

AES SPECIAL ISSUE

**OCT
1992**



THE RECORDING & SOUND MAGAZINE

MY HENDRIX EXPERIENCE

by
Eddie Kramer

**Roger Nichols
Specs Out
ADAT**



**Lindsey
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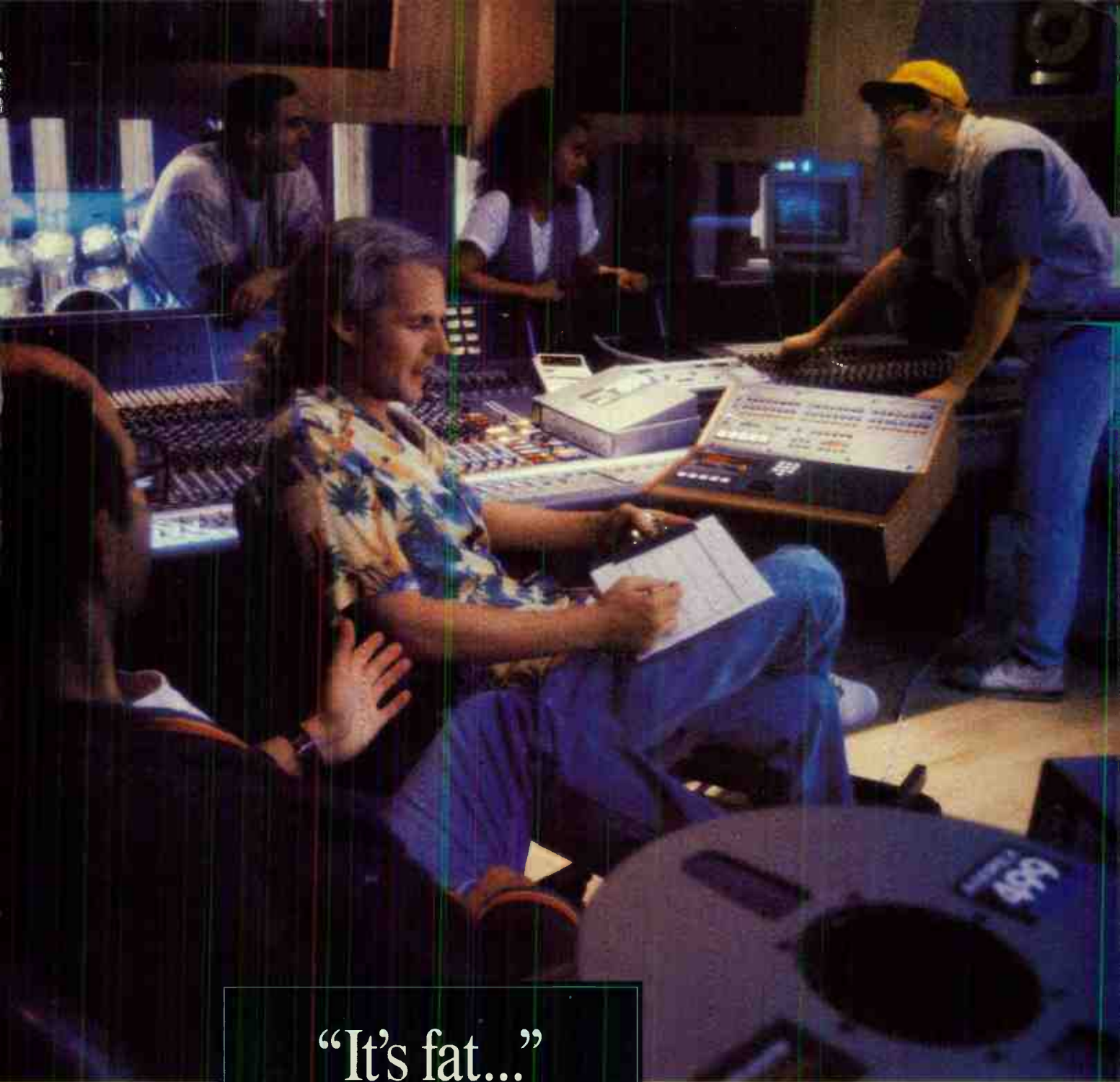


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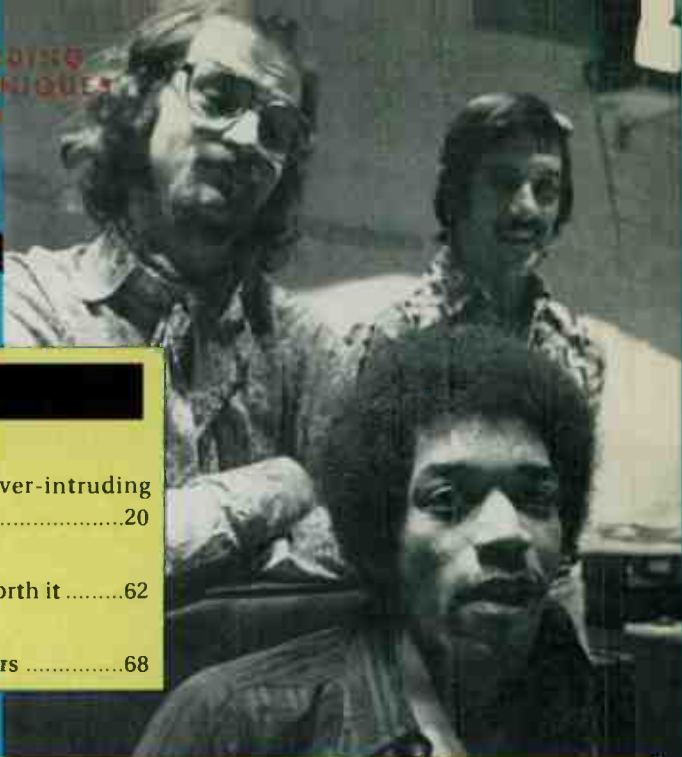


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VOLUME 3, ISSUE 4
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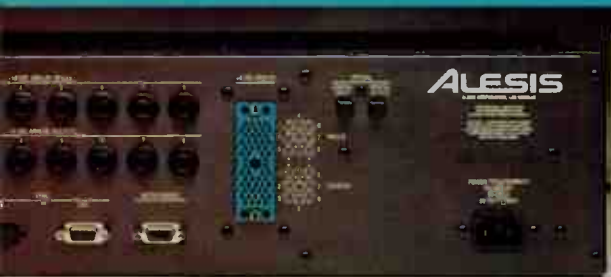
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On the cover: Hendrix by Gered Mankowitz, courtesy of I.G.; Colorization by Mark Alhadef; Buckingham by Ed Colver; Band In A Van logo by Mark Alhadef

EQ (ISSN 1090-7061) is published bi-monthly by F.W. Publications, 2 Park Ave., 3rd. Fl., New York, NY 10011. APC: Audit Applied for second class postage pending at New York, NY and additional mailing offices. POSTMASTER: Send address changes to EQ, P.O. Box 9812, Bldg. 10, NY 11445-0012. SUBSCRIPTIONS: U.S.: 1 yr. \$19.97; 2 yrs. \$32.97; 3 yrs. \$42.97; CANADA add \$5.00 per year for surface. Other countries add \$11.00 per year by air-mail. All rates \$20 per yr. for Annual. Back issues \$2.



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A PSN Publication
Vol. 3, No. 4
October 1992

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EQ (ISSN 1050 7868) is published bi-monthly by PSN Publications, 2 Park Avenue, Suite 1820, New York, NY 10016. ABC audit applied for. Second class postage pending at New York, NY and additional mailing offices. POSTMASTER: Send address changes to EQ, P.O. Box 0532, Baldwin, NY 11510-0532. SUBSCRIPTIONS: U.S. 1 yr. \$19.97, 2 yrs. \$33.97, 3 yrs. \$49.97. CANADA add \$5 per yr. for surface; Other countries add \$10 per yr. for surface, All add \$20 per yr for Airmail. Back issues \$5. All product information is subject to change; publisher assumes no responsibility for such changes. All listed model numbers and product names are manufacturers' registered trademarks.

LETTERS TO EQ

IN THE YEAR 2525...

I have been a subscriber to *EQ* for about a year after Jim Rosebrook, director of the Recording Workshop, advised me and all the other students to do so. So far I have been pleased with your magazine and want to congratulate you on winning the *MagazineWeek* Award for Editorial Excellence. Job well done. But I do have some complaints.

First. In your "acceptance speech" in the August 1992 issue you said, "...*Modern Recording* was the magazine...of the 1970s, *MIX* was the magazine for the 1980s and *EQ* is the magazine for the 1990s..." Are you aiming for ten years? When we hit the year 2000 are you calling it quits? I hope this is not true.

Second. When are you going to become monthly? I must read *EQ* cover-to-cover five times in two months. Please stop starving your readers. Maybe you could make it a New Year's resolution. "Monthly by '93." Think about it.

Keep up the otherwise superb work and plan on more than one decade.

Eric Smith
Raleigh, NC

A WOMAN'S TOUCH

This letter is in response to "The Anderton Files: Women In Audio" in the August '92 issue of *EQ*. Did the words "prejudicial," "condescending" or "insulting" ever come to mind when *EQ* decided to print Mr. Anderton's endorsement and advice on the subject of Women in Audio? I'm sure that Mr. Anderton wrote this article with only sincere and noble intent. Still, how could you have let this be published in your magazine? I object vehemently to Mr. Anderton's sweeping generalizations about male/female relationships in the audio workplace. But even more insulting was the fact that these thoughts were wedged in between his endorsements and advice on the subjects of "CD-ROM and the Project Studio" and "Those New-Fangled RAM Recorders"...as if the idea of women in audio was just another leading-edge technological development!

Will he be doing a sequel? How about *Blacks In Audio*? (I can just see it now...Rule Number One: Don't assume that all blacks like to eat fried

chicken and watermelon at the end of a session!) Perhaps he could put his critical thoughts on inter-racial relationships between editorial comments on CD-I and DAWS.

I'm not questioning Mr. Anderton's intent, I'm questioning your choice of platform and approach for this type of subject. I think you can do better.

Sally Dorgan Potts
Production Manager
Jam Creative Productions, Inc.
Dallas, TX

Craig Anderton Responds: I attended last year's Women in Audio panel at AES to learn about the nature of the problems faced by women in the industry, and if men could do anything about those problems. The generalizations to which you object were voiced by many women in attendance. I did not judge their comments as prejudicial, condescending, or insulting, so I passed them along to the readers of EQ.

As for "Women In Audio" being lumped in with leading-edge developments, this was because part of the column that described the related tech development was cut. Here is part of the missing section:

"Technet, a non-for-profit organization for women professionals in the audio, video, broadcast, and related industries, networks via its own private conferences under the IGC telecommunications network. Its goal is to provide a higher profile for women in these industries, increase educational and career opportunities, and provide a common communications link. Men who want to advance these goals are also encouraged to join. IGC offers electronic mail, fax, and access to other conferences in over 100 countries. There's a \$15 sign-up fee and a \$10 monthly minimum, which includes an hour of connect time. For more information, send an SASE (with postage for 2 oz.) to Julie Perez, 110 Horatio St., #617, New York, NY 10014."

WRITE TO US

EQ wants to dialogue with you. Write to: Letters to the Editor, *EQ*, 939 Port Washington Blvd., Port Washington, NY 11050. Letters must be signed, and may be edited for clarity and space.

Finally, I don't think it fair to criticize my colleagues at EQ for providing a forum for opinions, since you are also using this forum to express your opinions. As you respect my intent, however, I respect yours, and very much appreciate your writing so that I could respond to your concerns.

MY WAY

In response to the EQ&A "Harmonizin" letter in the June issue, I found the Digitech response to be more of an advertisement than a solution. I, too, have a Digitech VHM5, and spent over 30 studio hours playing with it until I found a combination of things to make it sound reasonable. All of the testing I did used a Tascam 2524 console, Tascam MSR-16 and a variety of effects processors and microphones.

First, the things that did not work right, produced distorted sounds or made the singers sound like Alvin and the Chipmunks. These included: using a dynamic mic plugged directly into the VMH5 (even using a remote phantom power supply for a condenser had too much volume fluctuation); having a singer with a gruff, airy or scratchy voice (i.e., this product was probably not designed for a voice like that of Bryan Adams); using the unit on a track recorded with a dynamic mic; using the unit on a track recorded with the bass roll-off switch turned on; recording vocals wet; recording with any degree of phase errors or changes; and I just could not get most of the "diatonic" (scalar) harmony settings to sound like human voices.

The things that I do to produce reasonable-sounding harmony tracks using the VHM5 are as follows: I record the voice track to be the input source to the VHM5 with a Microtech Gefell GmbH UM70 with a pop screen. Compression is applied at .2 attack, .2 release, and a ratio of 3:1 to add warmth. Tape levels are peaked at +3 dB. EQ is set flat on recording except for a +2 dB boost to HF shelving. I have tried using several other mics including AKGs and EV RE27N/D, but the results produced were not as good, owing to their frequency curves. This may be corrected by EQ, but I just ran out of patience.

I run the direct output of the channel on tape playback into the

VMH5 input. In this mode I boost the proximity effect by boosting the 200 Hz area about 2 dB, and set the channel fader to zero. The VHM5 seems to need this EQ boost to prevent the Chipmunk effect.

I set the VHM5 input level fader low and gradually raise it until both the red light and the signal lock light are on.

I select a "Chord" harmony program and set the parameters to: Vibrato depth 1; speed 4; delay 9;

Pitch Randomize low; and Portamento fast. I found that "3-above" and "2-above, 1-below" sound best with a baritone voice. I then run the L/R outputs of the VMH5 into two unused channels on the console, using line-ins. I EQ the returned signal at +3 dB HF shelving, +2 dB at 6k and +2 dB at 200 Hz. These differ slightly based upon the singer's voice on input. I typically set the VMH5 "Effect" return to 75 percent.

continued on page 10

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MINDING YOUR ES AND QS OR ONE FLEW OVER THE CUCKOO'S STUDIO

When we ran a letter from "Unsigned In Denver" commenting on the EQ logo, we asked readers to send us their own impressions of what the logo looks like. The following letters offer insights into the weird things people will write to receive a free T-shirt.

PLAY IT AGAIN SIGMUND

The Q could be a rotary knob on a mixer or equalizer or some such device, placed at an extremely hot setting (my ears almost hurt just looking at it). If it happened to be the talkback volume pot on a mixer, the engineer in the control room could do some provocative heavy breathing sound effects at very intense levels into the headset of some pretty young thing sitting before a mic on a stool on the opposite side of the glass!! The fact that the logo already appears in red would indicate that we may be well into the distortion range, possibly nearing some sort of audio climax or something.

Another description might be that the E is the female and the Q is the male, who perhaps either is not interested or hasn't yet noticed the E. This may seem as particularly suggestive because the E may offer two sockets for the Q to choose from. Again, the fact that the logo appears quite often in red would indicate that this couple could very well be in a state of disagreement or anger. In this regard, your logo appears to suggest a continuous state of discord between the E and the Q, who is either not interested in the E, or is in a state of rejection of E.

I hope you found my explanations interesting. If you like my descriptions, please send my T-shirt to:

Gordon J. Gray
Foster City, CA

[Editor's Note: Okay, we'll send you a T-shirt — just stay away from my sister.]



E FOR EXACTLY

Your logo is obviously the "Excitement" or the "Energy" potentiometer (labeled "E"), turned up to the musicians' favorite level: 11!!!

Bob Ring
President
Aquarius Sound
Pacifica, CA

SUBTLE HINT

I think that the Q looks like an input pad or any knob on a desk that is run way too hot!

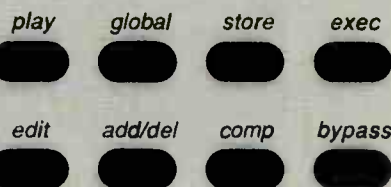
Second, I feel the Denver reader may be someone who is trying to quit his smoking habit and thinks that

The Ultra Effect Affect:

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In addition to these numerous effects possibilities, the SDR 20/20 offers the ability to focus all processing power to a single "Ultra" effect. An example of this Ultra



Dear Sirs at EQ magazine
 This letter was written by one of the delivery boys here.
 Apparently he wanted us to tell you for him how much he had said
 before we began his electro-convulsive therapy. From what I can
 understand, Mr. Dalziel has been a sound reinforcement man for
 several years now, and enjoys your magazine. Dalziel's boss is
 a multi-armed red-headed man and seaman for what the general
 public knows as "round eyes" with a 2-year history of success in
 re-incarceration would say into the general public as best as we
 can. We understand Mr. Dalziel is an extreme user, and that
 not all sound guys are like this.
 I, personally, think your logo is bitchin'.

Scott Colburn
 Resident
 DJ/producer
 Sacramento, CA
 for the artist-follower

DEAR EQ PEOPLE:
 I think your logo looks like a large
 letter 'E' AND A SOLID CIRCLE, No,
 OVAL, WITH A RECTANGLE FROM
 THE CENTER OF THE OVAL CUT-
 BREAKING FREE FROM THE
 CONFINES OF THE
 CIRCLE-OVAL-OUT
 INTO THE BEYOND,
 DEFILEING THE PAGE
 WITH ITS
 PRESENCE!

SECRET,
 DEREK DAHLSD
 405 203 AVE. N.
 FARGO, ND 58102

anything long and skinny
 with a red end looks like a cigarette.
 The reader should be glad there is a
 great publication such as EQ to get
 info from. My shirt size is XL.

Thanks.

Jeffrey Rein
 Waukeeshia, WI

OBVIOUS ANSWER

I thought that everyone knew that the
 logo was an E sitting next to a Long
 Island iced tea with a swizzle stick in it.

Terry
 Sacramento, CA

ROUND & ROUND SHE GOES

Depending on what angle you look at

the logo, it looks like different
 things.

Straight up it looks like a
 knob marked "E" turned all the way
 up.

Lying on the E, it looks like a guy
 with a Mohawk getting a dentist X-ray
 or a depiction of a VU meter complete
 with element.

Upside down it looks like the inner
 workings of a slot machine and stand-
 ing on the Q it looks like a guy with a
 cigarette about to be hit by a large
 cross-section of a speaker magnet.

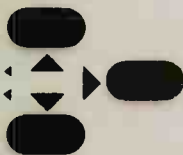
Scott Colburn
 Hollywood, CA

**YOU'RE
 WELCOME**

EQ magazine. Excellent publication.
 Can't wait for the next issue. Logo's cool.
 Looks like a cigarette sticking out of a
 fat, red guy's nose. Way cool. Thank you.
 Okay, maybe it looks like the EQ knob
 on a Tascam Porta. Really. Thank you.

Andy Mace
 Tallahassee, FL

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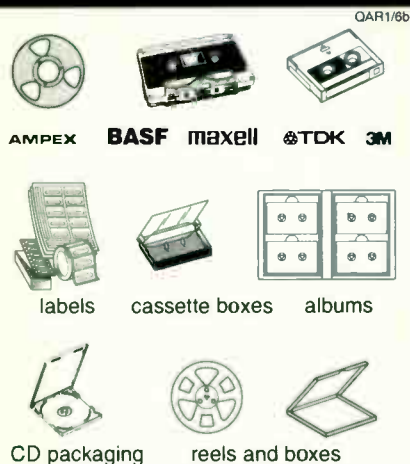
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LETTERS TO EQ

LETTERS TO THE DOCTOR

The April '92 issue of *EQ* seemed to open a large can of worms. Many people were panicked by what I had to say about storage and other problems with magnetic tape. Let's not get too weird about this. Magnetic tape is, for the most part, a very stable medium, but, as I mentioned, care and vigilance with it is very important.

This is the skinny on tapes that I know have caused problems. Most of the major problems come from tapes manufactured between the late 70s and the late 80s. It seems that many tape manufacturers changed their formulations to conform with worldwide EPA standards. These are the tapes I have had problems with:

All (1958-1978) — Stiction, shedding, backing disintegration

Ampex 406 (1978-1982) — Stiction problems. (1/4-inch only)

Ampex 456 (1981-1989) — Severe stiction problems and edge slitting. (All formats)

Scotch 206 (1971-1976) — Backcoat peeling and stiction

Scotch 250 (1986-1987) — Improper manufacturing and bulk erasing. (2-inch only)

Agfa 468 (1986-1988) — Severe shedding and stiction. (All formats, batches 81xxx, 82xxx and 83xxx)

Agfa 469 (1986-1987) — Some shedding and stiction. (2-inch only)

The process of recovering these tapes was fairly simple. Hours of tedious work transferring :30 to 1.5 minutes at a time and then some careful splicing. Some tapes could not even be played, and masters were lost. There is no magical cure for a tape gone bad. The IDT in Florida (800-447-3083) might be the closest thing to a tape saviour you might find.

Always back up your tape to another using a different brand. There is no substitute for making safety copies of a tape. Having the tapes on two formulations can cut down on the risk of loss, but will not eliminate it. Re-read the April *EQ* for other tips on storage and care of magnetic tape.

Dr. Richie Moore, Ph.D.

CORRECTION

In our last issue (August '92) we incorrectly listed Kurzweil's phone number in the review of its K2000. The correct number is (310) 926-3200. **EQ**

I set the MTR record levels to peak at +3 dB and compress both channels for warmth (same settings as input vocal).

I start the MTR and record the outputs on one or two tracks. I use the VMH5 keypad and variation keys to control the harmonies generated by chord changes. I find it very helpful to have gapless punch in/out, as this is typically a line- or phase-at-a-time job.

After recording the harmony, I play back the original vocal track without any EQ, and the recorded harmony tracks. I EQ the recorded tracks where needed for a better blend, which is usually in the same range as before.

I add a warm plate program (2-3 ms) with a soft attack and a slight chorus/detune to all harmony parts — human and VMH5 — which adds ambience and a slight thickening (delay effects seem to sound really bad).

Kyle McCormick
Music Partners
Belle Mead, NJ

BEAT OF A DIFFERENT DRUM

Re: "The Art of Drum Replacement," August '92, pg. 38.

Roger Nichols' challenge to do real time triggering — "...play the tape, feed the snare drum into something, and come out with the perfect snare sound" — has been used by one of my clients since early 1986.

To get around the delay trigger units, I connected the erase head of his 24-track Otari MTR-90-II to the reproduce amplifier. The wide double gap of the erase head gives a dull, echoey sound, but there is plenty of level, and all we want is a trigger. At 30 ips, the erase head is 35 to 47 milliseconds ahead of the record head of the MTR-90-II, so a delay unit is needed to add to the trigger delay and adjust the synchronization.

I took the idea one step further and developed a product, the Trigger Advance One (TA-1), to modify the MTR-90-II for erase head playback.

David Carlstrom
Service Manager

ElectroMedia Service, Inc.

[For more information, contact ElectroMedia Service at 24166 Haggerty Rd., Farmington Hills, MI 48335; Tel: (313) 477-6502; Fax: (313) 471-2611.]

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8 Tracks

RECORD INPUT 1 2 3 4 5 6 7 8



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Here's some specs. Bandwidth 20Hz to 20kHz ± 0.5 dB. Total Harmonic Distortion plus Noise 0.009%. Wow and flutter unmeasurable. ADAT uses the professional standard 48kHz sample rate and delivers better than 92dB dynamic range.

Here's some features. ADAT uses the familiar tape recorder controls that you already know how to use so

recording is fast, intuitive, effortless. Connections are provided for balanced +4dBu levels on a single 56 pin ELCO** connector and unbalanced -10dBV signals on 1/4" jacks. And ADAT uses S-VHS tape because it's a proven, robust recording medium with wide 1/2" tape to solidly support ADAT's 8 recording tracks while delivering 40 minutes of recording time.

The best part. ADAT's Proprietary Synchronization Interface (Patent Pending) locks multiple ADATs, independent of the audio tracks, to single sample accuracy $\pm 5\%$ of 1/48,000th of a second! In other sciences this is referred to as 'air tight'. So multiple ADATs function in perfect mechanical and electronic unison: up to 16 ADATs without an external controller. That's 128 tracks!

More best part. ADAT's Proprietary MultiChannel Optical Digital Interface (Patent Pending) simultaneously sends all 8 tracks of recorded information out the Digital I/O for perfect safety tapes and perfect track bounces.

Even more best part. The optional BRC Master Remote Control opens a whole other door to the ADAT miracle. With it you can control up to 16 ADATs (128 simultaneous tracks) with full transport functions, track offsets, machine offsets,

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To Megatracks

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What does all this mean? Here's just a few benefits.

It's commonly known that many hours are wasted during expensive album projects while the artist, producer and engineer work in vain to reproduce the rhythmic feel and tonal nuance of demos. Demos that couldn't be used because they suffered from noise, limited bandwidth and overall sonic feebleness. Those days are over forever. ADAT's Sync and Digital I/O perpetually link your demos to your masters making them all part of the same creative process. Every track you record on ADAT is a master track that can be flown into any other ADAT recording, at any time. The best part is that ADAT can be there at any time to catch you at your best, flawlessly stored in the digital domain...forever.

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In time we'll all start taking these little miracles for granted. Before that inevitable event, unpack your first ADAT and track a minute of single notes and chords on your favorite instrument. Play loud, play soft. Play it back and listen really close. It's always a good feeling to have your mind completely blown.

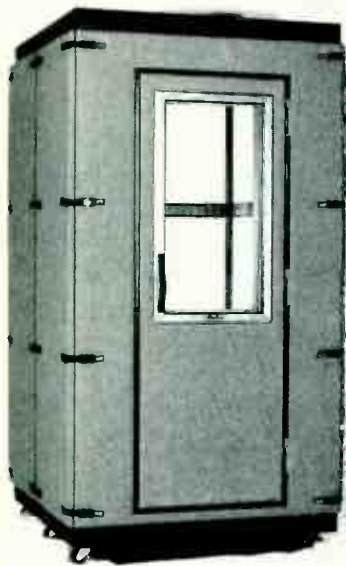
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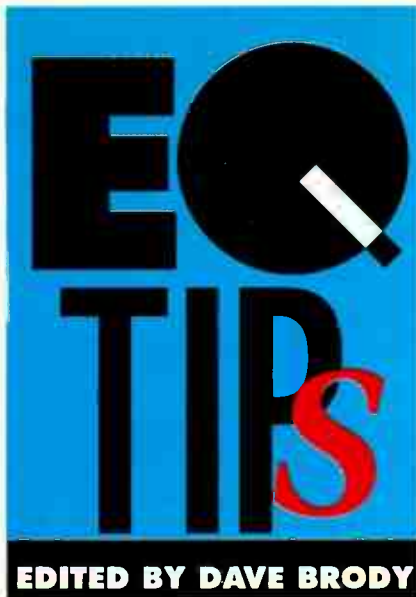
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DAT AS DRAFT-HORSE

I have a way to make a great-quality CD master, with lead and backing vocals, for very little cost. We start with a sequencer with Sync I/O (FSK, SMPTE, DTL, etc.), multitimbral tone generators with individual outputs, a sampler, effects units and two DAT machines.

Once we have the musical arrangement roughly finished, we run a mono mix to the Right input of a DAT machine and the sequencer's Sync signal to the Left, thus recording a "SYNC/GUIDE DAT." Next we take our tape to a pro studio, dump the SYNC/GUIDE onto two tracks, then record our lead vocal and backing vocals. Now we say goodbye to the guide track and record back onto DAT: Sync to Left and Lead Vocal to Right. This produces a "SYNC/LEAD VOCAL DAT." Backing vocals are mixed down to a separate DAT or directly sampled. This only takes a few hours of studio time per song and allows for the recording of beautiful, clean vocals tracked with an expensive mic in a good acoustic environment.

Now we have everything we need. We sync the backing vocal samples to the sequenced music by just playing them in and we run all of it with the "SYNC/LEAD VOCAL DAT." We take individual outputs from the tone generators and run each signal to its own mixer channel. The sequenced MIDI instruments are going down live into the mix and everything is crystal clear. Do the mix to the second DAT machine at 44.1 kHz, and the tape is ready for the record company!

*Derek Pearson
Producer/Engineer
Kyoto, Japan*

[Editor's Note: Some users have reported hassles with trying to record and play back accurate SMPTE on certain DAT machines. Sometimes a small level adjustment can make the A-D/D-A converters happier about what you're asking of them. Also remember that if you intend to dump SMPTE from one tape to another, you must "reshape" it using a reader/generator capable of this operation. Users of PCM F-1 (501, 601 etc.) type equipment may find the above game plan unworkable, because of interleaving. You may get away with recording your Sync signal on an audio track of your video transport, but be sure to bring that same transport with you to the pro studio. In consumer VCRs (and even some "pro" formats) there is no absolute spec regarding placement of the audio heads in the tape path. The result can be "shifted Sync," a condition that can really deflate one's aura...]

TUNING IN THE WORLD

These days, most of us base our project studios around keyboards with incremental master tuning controls, so it's easy to forget the obvious. If your reason for going to a pro studio is to record instrumental sections or soloists (horns, strings, guitars, etc.), it's a good — and usually overlooked — idea to put down a Tuning Pad. Fifteen seconds of the tonic note recorded in front of the count-off for each song or cue can save many expensive studio minutes. You can, of course, use your A=440 (442, etc.), but musicians (and even some vocalists) will better appreciate a pitch that is diatonic to the key of the track. If you're using a synthesizer to generate the tuning pad, go for something with a medium number of harmonics but don't use pulse waves (like square waves) that have skips in the harmonic series. Electronic tuning meters will generally track best in the midrange of the keyboard.

Q-TIP

Head cleaning tip: Use NAPA Thermo-Aid part no. 7100. It contains only 99.9 percent pure isopropyl alcohol and is easily available at NAPA auto supply stores.

*Jorge Chinique
Orlando, FL*

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EQ & A

boxes. External transformers also make for easier UL approval and reduce the weight of racked units. They also save on the cost of shielding, since the biggest source of hum is located external to the box. One tip: look for units that have an AC line cord coming out of one end of the transformer in addition to power leads that go to the unit (such as those found on units like the Intelliverb, Rane's MPE series EQs, Alesis 1622 mixer, etc.). This saves space on barrier strips and gives you some leeway on where to position the transformer. Don't forget to label the transformer associated with each piece of gear so that you don't accidentally swap transformers.

Bob Waller
Vice President
RSP Technologies

OUT OF CONTROL

Q I'm using a Fostex R8 with an MTC-1, and most of the time all my computer-controlled transport functions work perfectly. On one song, however, every time I reach measure 57, the R8 enters Fast Forward and won't stop until I command the system to cease operation. What gives?

Mike Oakley
Jacksonville, FL

A Check DIP switches 1 through 4 on your MTC-1 to ascertain your MIDI address (channel). Next, look at DIP switch 6 to determine whether or not the MTC-1 is responding to Channel Voice messages. Assuming that the MTC-1 is acknowledging Channel Voice messages, your sequence probably contains an A2 (note number 57) that is intended for one of your synths, but is also being recognized by the MTC-1 on the same MIDI channel. This note-on message will thus engage the undesired transport function. The easiest ways to resolve this situation are to change the address (MIDI channel) of the MTC-1, to disengage DIP switch 6, or to control the R8 via another MIDI port — independent of the port feeding your synthesizers.

Roger Maycock
Product Specialist
Fostex

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MAKE THE SWITCH

Q I am having problems switching back and forth (via program change commands) between the various modes of the Yamaha TG55 multi-timbral tone generator. If, for example, the TG55 is in Multi mode, using the chart below, I can get to a particular Internal or Program Voice preset and vice-versa. How do you accomplish the above not knowing which Voice/Multi I or P preset the TG55 is currently set at?

I have the TG55 set up for "direct" in the MIDI Program Change Utility which equates to:

0 - 63	select voices	1 - 64
64 - 79	select multi	1 - 16
119 - 127	TG55 'modes'	

Start Mode	Voices	Prog. Change #	Target Voice
Voice 'P'	(0 - 63)	pc 119 to Voice 'I'	(0 - 63)
Voice 'I'	(0 - 63)	pc 121 to Voice 'P'	(0 - 63)

Voice 'P'/'I'	(0 - 63)	pc 125 to Multi 'I'	(64 - 79)
Voice 'P'/'I'	(0 - 63)	pc 127 to Multi 'P'	(64 - 79)
Multi 'I'	(64 - 79)	pc 127 to Multi 'P'	(64 - 79)

Multi 'P'/'I'	(64 - 79)	pc 122 to Voice 'I'
Multi 'P'/'I'	(64 - 79)	pc 124 to Voice 'P'

Thank you for your assistance in this matter.

David M. Christi
Kingston, NY

A If I understand your question correctly, your TG55 is in the "Direct Mode" and you want to select a voice (Preset, Internal, or Card) in either the "Voice Play Mode," or the "Multi Play Mode," regardless of the current mode of the TG55.

For example:

If we want to select Preset Voice number 2 in the "Multi Play Mode," and we don't know what the current mode is, we would send the following MIDI setting (assuming MIDI channel 0):

HEX => C0, 7F, 41
DEC => 192, 127, 65

If we want to select Internal Voice number 3 in the "Voice Play Mode," we would send:

HEX => C0, 7A, 02
DEC => 192, 122, 02

It shouldn't matter what mode the TG55 is in, as long as you use the complete MIDI command. This includes the Program Change Mes-

sage, Mode Select Message, and the desired Voice number.

Also, remember that when selecting voice (0 - 16) in the "Multi Play Mode," you must use Voice numbers (64 - 79). For example, if you want panel voice number "3," you would use voice number 66 (42 hex). These MIDI voice numbers equate to panel voices as follows:

64=1, 65=2, 66=3, 67=4,
68=5, 69=6...79=16

I hope I was able to answer your

question. If you have any difficulties in the future, please feel free to contact Yamaha's Service Department by calling (714) 522-9011 and asking for the Electronic Service Division. They will be happy to offer assistance.

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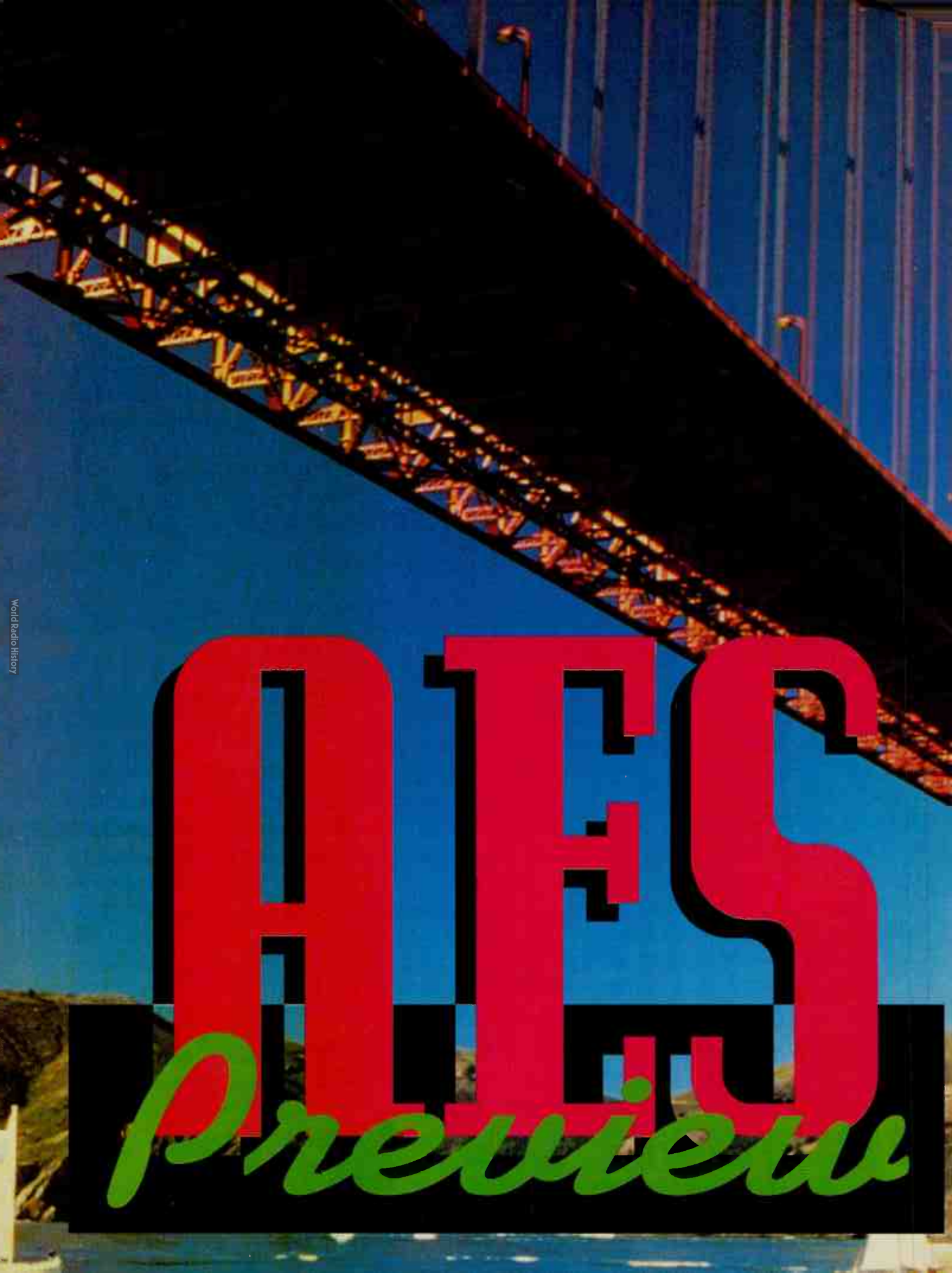
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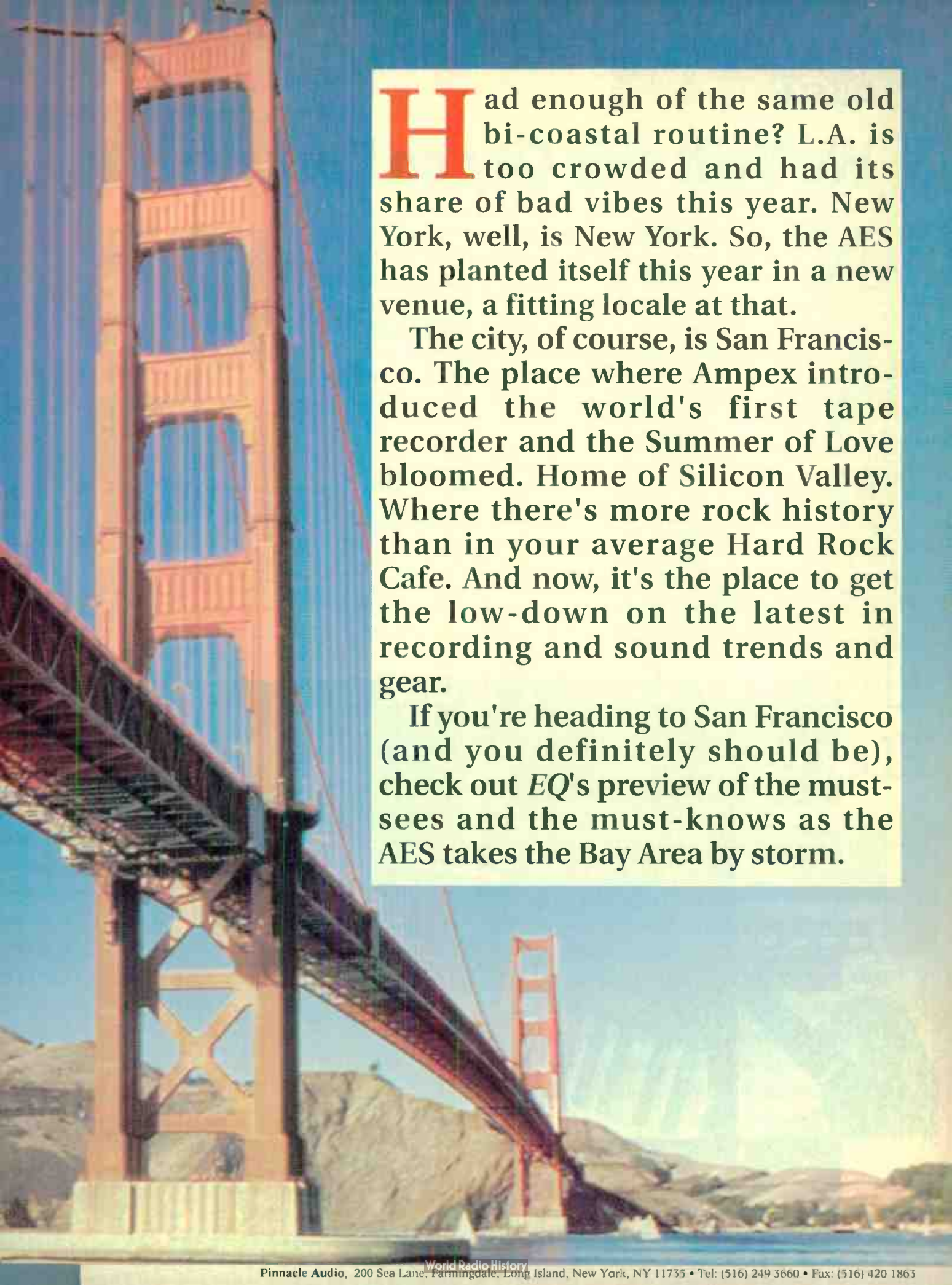
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World Radio History

ALLES

Preview



Had enough of the same old bi-coastal routine? L.A. is too crowded and had its share of bad vibes this year. New York, well, is New York. So, the AES has planted itself this year in a new venue, a fitting locale at that.

The city, of course, is San Francisco. The place where Ampex introduced the world's first tape recorder and the Summer of Love bloomed. Home of Silicon Valley. Where there's more rock history than in your average Hard Rock Cafe. And now, it's the place to get the low-down on the latest in recording and sound trends and gear.

If you're heading to San Francisco (and you definitely should be), check out *EQ's* preview of the must-sees and the must-knows as the AES takes the Bay Area by storm.



ty — by Chris Stone and Gary Kellgren. It was intended both to serve the burgeoning Bay Area recording scene, and act as a getaway for L.A.-based artists. Room acoustics were by Tom Hidley. Significant artists of the early days included Fleetwood Mac and Stevie Wonder, and Sly Stone actually *lived* in the studio for some time. The studio changed hands in 1981, in 1984, and again in 1986, when it was auctioned off by the U.S. government (it had been seized in a tax-evasion and drug-trafficking bust). Regardless of ownership, the studio remained incredibly busy, with Huey Lewis, Journey and the Starship just a few of the world-class acts passing through the doors. Recent revisions include the installation of an SSL 4064 G Series console in Studio A, along with new monitoring and room revisions. Studio B features a 16-track Synclavier system manned by Greg Shaw, while Boomtown occupies a third room. This is a media production facility, and to it we owe the soundtracks of ads for Levi's 501's, the California Raisins, and much more. Today

the Plant remains as busy as ever with Tracy Chapman, Michael Bolton and New Kids on the Block all recording there. A mobile facility is also almost constantly in use.

THE SCENE

Coast Recorders was also built in 1972, originally as a Mercury Records project. It was designed by Bill Putnam, noted as the owner of UREI (now a part of JBL) and of United Western Recording in L.A., as well as of a studio in Chicago. Blue Cheer, a Mercury-signed band, was one of the groups to record there in the early '70s. Today Coast is very much alive; owned by Dan Alexander, an internationally-recognized trader in vintage microphones. Needless to say, Coast has quite a collection of tube microphones and signal-processing equipment along with three Neve consoles. Some recent and current projects include Faith No More, Joe Satriani, Chris Isaak, and Maria Muldaur, and Coast has a steady diet of advertising work as well.

CBS Records built a first-class facility in San Francisco as the '60s drew to a close. One room of the studio was eventually leased to David Rubinson. He was a respected producer, and partners with the late Bill Graham in several record labels, including Fillmore Records. This room was the original Automatt; when CBS tired of the S.F. scene (circa 1974), Rubinson took over the lease for the whole facility. The Automatt was one of the first studios in the Bay Area to automate, with a Harrison console matched to a custom-engineered fader automation system. Santana, Blue Oyster Cult and Quicksilver Messenger Service were just a few of the many bands that recorded there. Economic conditions prompted Rubinson to shut down the studio in 1984; recently, the building was destroyed in a fire. Some of the last sessions recorded there were produced by Narada Michael Walden, and resulted in hits for Aretha Franklin and Whitney Houston, with "Freeway of Love" and "How Will I Know?," respectively.

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David Porter, President, MUSIC ANNEX, Inc., San Francisco, Customer President, SPARS, 1995-1999



PHOTO: GENNIE BAYTER

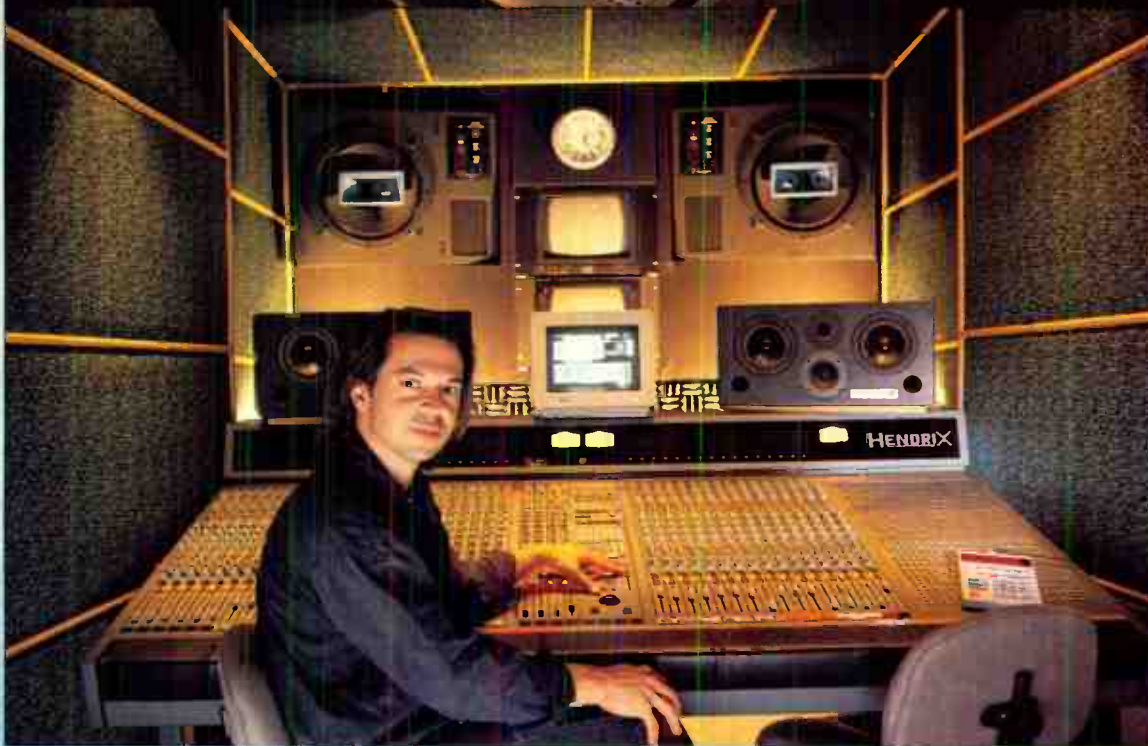


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World Radio History

CIRCLE 12 ON FREE INFO CARD





Narada now has his own studio, known as Tarpan, in San Rafael. It was built in the early '80s as Tres Virgos Studio using the design talent of Chips Davis and his LEDE™ (Live End Dead End) plan. Narada moved in in June of 1985. Something about the design must be special, because Narada continues to produce cuts in a steady stream; recent projects include an album for Al Jarreau, and cuts for Howard Hewett and Mica Paris. An SSL SL 4000 G Series Total Recall board and

two brand-new Studer A827's are the heart of this one-room facility.

SURVIVORS

Different Fur is one of the studios that have made the transition from the '70s to the '90s. It was started in the early '70s by synthesizer specialist Patrick Gleeson, and featured an immense modular Moog 55 system, quite extraordinary at the time. This was the first studio in S.F. to automate, using a Harrison system. Herbie

Hancock was an early client, and other significant artists who have used Different Fur include Brian Eno, David Byrne, Dead Kennedys and The Tubes. The soundtrack for *Apocalypse Now* was also cut there. Owners Susan Skaggs and Howard Johnston acquired the studio in 1985, and currently offer an SSL SL 4056E with G Series Total Recall, along with two Studer 24-tracks and a Sony PCM 3324 digital. Recent talents attracted to the studio include Bobby McFerrin, Phil Collins, George Winston, Stevie Wonder, and many more.

A significant survivor from the early '70s, and a case study in changing with the times, is Music Annex, located in Menlo Park (next to Palo Alto). It was started in 1973, basically as a rock studio. Names such as Todd Rundgren, The Tubes and Sylvester all made recordings there, but owner David Porter thinks a recording by Steve Halpern in 1973 is the most significant one, since it heralded the birth of the New Age recording boom. Music Annex was used by numerous Windham Hill artists in the late '70s, including Will Ackerman, Robby Basho and George Winston. Sensing a shift in the studio business, Porter built four rooms in San Francisco that opened in 1986, dedicated to video postproduction. Three rooms currently employ Post Pro digital recording systems; there's hardly any analog recording going on at all. Music Annex also acquired SRO in 1989, which got them into the film score business, which is what the fourth room is all about. Another aspect of the Music Annex operation is cassette duplication; their facility in Fremont employs 40 people and is one of the largest duplicators around.

Another survival story is that of Russian Hill Recording. It began in Jack Leahy's Victorian townhouse, located in Haight Ashbury, called Funky Features and equipped with just an Ampex two-track. The funding to upgrade came from the sale of concert posters (Funky Features produced many of the classic Fillmore and Avalon Ballroom posters during the Summer of Love). Steve Miller recorded "Fly Like an Eagle" at Funky Features in the mid '70s, and the studio moved through 8-track to 16. In 1975, the owners decided to establish

continued on page 41

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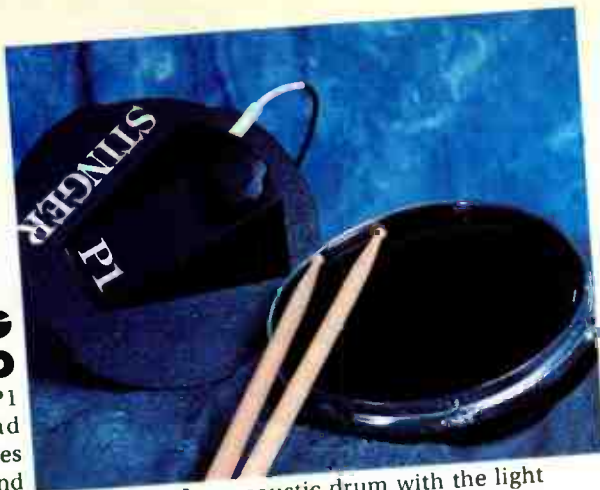
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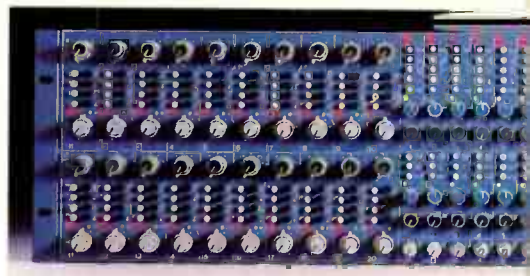
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World Radio History



POUNDING YOUR HEAD

The new Stinger P1 Drum Trigger Pad from S&S Industries uses a 10-inch drum head and rim to provide the feel and rebound of an acoustic drum with the light weight and portability of an electronic pad. Dual trigger zones on the head and rim allow for two sounds on one pad. Multiple sensors on the head provide an even dynamic response as well as high output. A built-in mounting clamp easily attaches to your existing rack or tom mount. Constructed on an aluminum frame, the Stinger P1 resists the cracking that may occur with plastic housings. For a head start contact S&S Industries, 5406 Thornwood Dr. #190, San Jose, CA 95123. Tel: (408) 629-6434. Circle EQ free lit. #109.



MASTER MASTER

TDK has introduced the CD-W12 Recordable Compact Disc. The CD-W12 is capable of storing up to 63 minutes of stereo audio. CD-W12's will retail at about \$80 each. To disc(ern) more, contact TDK, 12 Harbor Park Drive, Port Washington, NY 11050. Tel: 1 (800) TDK-TAPE. Circle EQ free lit. #110.



i

The Next Best Thing To An SSL...

LOGICFX

World Radio History

from Solid State Logic

XTRA FINE

The new XTRAMIX from Speck Electronics packs a lot of "extras" into an ultracompact unit that takes up just four rack spaces. This feature-filled mixer/submixer offers 40 synth inputs configured as 20 stereo channels. Each stereo input channel includes level, pan, eight effects sends, mono switching, high/low level select, and more. The 8x2 monitor section allows you to create an independent stereo and in-place solo capable mix of the eight subgroups. According to the manufacturer, the bandwidth is from 6 Hz to 154 kHz — this is not a misprint. For the whole story, contact Speck Electronics, 925 Main Street, Fallbrook, CA 92028. Tel: (619) 723-4281. Circle EQ free lit. #111.



NO DISSIN' DIS DAT

Sony's Professional Tape Division has introduced its Pro DAT Plus professional digital audio tape. The new formulation includes new features to reduce the threat of drop-outs and to make the tape more rugged both in the field and in the archive. For more information, contact Sony Recording Media of America, 2 Van Riper Road, Montvale, NJ 07645-0406. Tel: (201) 476-0136. Circle EQ free lit. #112.



FACE OFF

Otari has introduced its DTR-90 Series R-DAT recorder. The DTR-90 has a unique removable front panel that can be operated from an installed position or mounted on any work surface for remote operation. For all the DAT(a) contact Otari Corporation, Sales Department, 378 Vintage Park Drive, Foster City, CA 94404. Tel: (415) 341-5900. Circle EQ free lit. #113.



Now you can have G Series quality wherever you work -- with the new LOGIC FX modules from SSL. LOGIC FX provides the advantages of SSL's world famous G Series Stereo Compressor and Dual Mic Amp/Equaliser in separate rackmount units. They bring SSL's sound treatment and advanced engineering into your studio.

- ▶ Recording engineers/mixers make LOGIC FX standard gear in their racks.
- ▶ SSL studios use them to extend their E or G Series console capabilities.
- ▶ Studios simulate the legendary SSL sound with LOGIC FX on other consoles.
- ▶ Live sound mixers add SSL studio quality to concert performances.

For more information about the LOGIC FX G384 Stereo Compressor and the LOGIC FX G383 Dual Mic Amplifier and Equaliser call:

1-800-343-0101

Solid State Logic, Inc. 320 West 46th Street New York, N.Y. 10036

CIRCLE 66 ON FREE INFO CARD



FAT BOTTOM

The Bag End ELF (Extended Low Frequency), introduced at the 1992 NAMM and NSCA Shows, has begun shipping to dealers across the country. The ELF-1 system module is a two-channel



loudspeaker controller that employs low-frequency integrators, active equalization, frequency dividing, and system protection in an advanced configuration in which system parameters are digitally controlled. The ELF-1 Low Frequency Integrator and its companion series EL-18 transducers work together to provide low-distortion, extended bass response in a compact, high efficiency design. For the complete low-down contact Bag End, P.O. Box 488, Barrington, IL 60011. Tel: (708) 382-4550. Circle EQ free lit. #114.



HOLD THE HORN

KRK has just introduced a new line of close-field monitors that rely on KRK's compact transducer expertise for their design and feature accurately time-aligned driver elements. The KRK-7000, KRK-9000, and KRK-13000 feature newly-designed 7-inch, 9-inch, and 13-inch woofers, respectively. KRK monitors don't utilize horns, because the manufacturer prefers avoiding what it feels are the throaty characteristics and phase anomalies often associated with horn drivers. For an earful, contact Audio Intervisual Design, 1155 North La Brea, Los Angeles, CA 90038. Tel: (213) 845-1155. Circle EQ free lit. #115.

C A U T I O N
THE YAMAHA SPX900 AND SPX1000 ARE HIGHLY SOPHISTICATED DIGITAL EFFECTS PROCESSORS. THEY PROVIDE REVERB, EARLY REFLECTION, DELAY, ECHO, MODULATION AND PITCH CHANGE WITH AN EXCEPTIONAL DEGREE OF RELIABILITY AND AUDIO CLARITY. FOR PROFESSIONAL USE ONLY.

YAMAHA PROFESSIONAL MULTIEFFECT PROCESSOR

SPX900

800 937-2171
REV DLY = 50-100

57

YAMAHA PROFESSIONAL MULTIEFFECT PROCESSOR

SPX1000

EXTENSION 300
TRG DLY = 2-100



LOGICAL CHOICE

Audio Logic has just introduced the 266 dual-gate compressor/limiter that effectively combines natural sounding gating with smooth "soft knee" compression and automatic variable-knee soft limiting. Gate and compression controls are capable of over 112 dB dynamic range, while the limiter blankets an unobtrusive roof on the output signal level. The 266 takes up just 1U of rack space and can be mounted in either a flushed or recessed position. For more information, contact Audio Logic at 5639 South Riley Lane, Salt Lake Cit, UT 84107. Tel: (616) 695-5948. Circle EQ free lit. #116.

GET DISC-OVERED

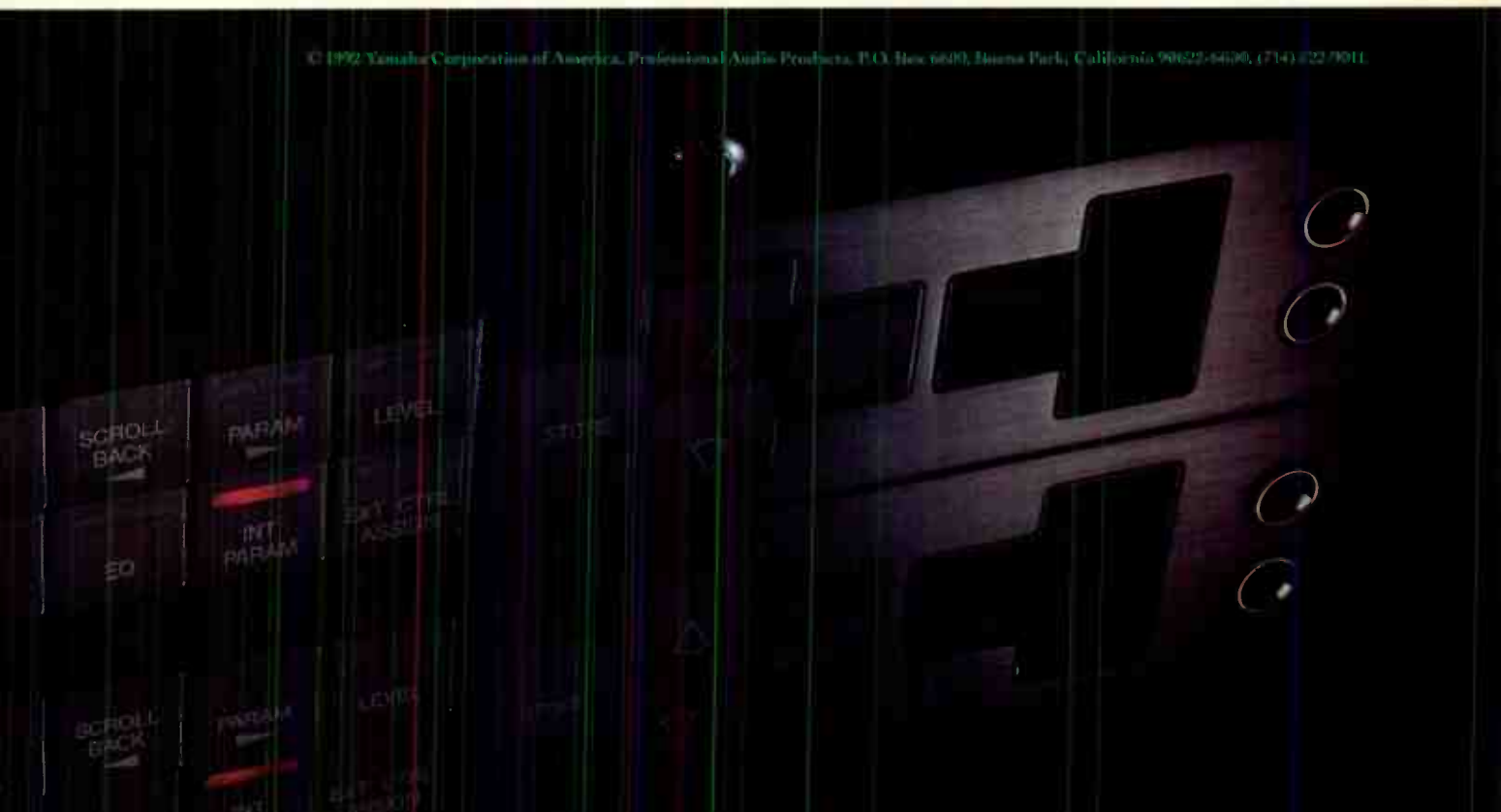
DiscMakers, a one-stop manufacturer of CDs, cassettes and LPs, is offering a seven-day Express cassette duplication service. The package includes: free graphic design; test cassettes and art proofs sent to you via Federal Express at no additional charge; film and printing of one- or two-color inserts; high-quality Dolby HX-Pro duplication; and packaging in Norelco box and poly wrap. Ideal for demos, the price is affordable and the finished product is at your doorstep one week after submitting your job. In addition, DiscMakers is offering a complete line of promotional services such as the design and printing of T-shirts, posters, baseball caps, postcards, and press kits. For a free copy of the DiscMakers catalog and for price information, call 1 (800) 468-9353. Circle EQ free lit. #118.



RACK 'EM UP

The new DOD Series II rack-mountable line features five new EQs, including the 231seriesII. The 231seriesII offers two separate 31-band EQs while occupying just two rack spaces. It provides 12 dB of boost or cut. The other new products in the line include a real-time analyzer, a quad noise-gate and a compressor/limiter. For the full story, contact DOD Electronics, 5639 South Riley Lane, Salt Lake City, UT 84107. Tel: (801) 268-8400. Circle EQ free lit. #117.

© 1992 Yamaha Corporation of America, Professional Audio Products, P.O. Box 6600, Elms Park, California 90622-6600, (714) 622-7911.



CALL 1-800-937-7171, EXT. 300 FOR THE DEALER NEAREST YOU.
World Radio History

CIRCLE 60 ON FREE INFO CARD



And The Envelope Please...

No, you haven't stumbled into the pages of another magazine — this is still *EQ*, but yes, we are talking about the TEC Awards. The TEC Awards have become the de facto Grammy's at the AES Convention over the past few years, so we here at *EQ* decided to offer our own take on the year's nominations and hereby put forth the votes of a few of the members of our distinguished staff. Some participants voted in only certain categories. Some voted for companies that are not among the original list of nominees. We left all such decisions entirely up to them. By the way, we're not trying to predict the ultimate winners, here. They're just our personal favorites.

DAVE BRODY

- Recording School/Program*
Berklee College of Music, Boston
- Remote Recording Facility*
Effanel Music
- Recording Studio*
The Hit Factory(s)
- Audio Post Production*
Ken Hahn
- Mastering Engineer*
Herb Powers
- Record Producer*
Don Was
- Recording Engineer*
Bruce Swedien
- Recording Devices*
Digidesign Pro Tools Workstation
- Transducer Technology/Microphones*
Audio Technica AT4033
- Transducer Technology/Loudspeakers*
KRK 9000 Studio Monitors
- Computer Software/Peripherals*
Opcode Galaxy Editor/Librarian
- Signal Processing Technology*
Avalon EQ
- Ancillary Equipment*
Pygmy AD-1 A-to-D converter
- Console Technology*
Solid State Logic SL8000
- Recording Product of the Year*
Solid State Logic Ultimition

ALAN DI PERNA

- Acoustics/Facility Design Company*
studio bau:ton, Los Angeles
- Sound Reinforcement Company*
Showco, Inc., Dallas, TX

- Recording School/Program*
Middle Tennessee State
- Mastering Facility*
Masterdisk Corporation,
- Recording Studio*
Ocean Way Recording
- Mastering Engineer*
Bernie Grundman
- Record Producer*
Butch Vig/Nirvana
- Recording Engineer*
Ed Cherney
- Recording Devices*
Digidesign Pro Tools Workstation
- Transducer Technology/Microphones*
Audio Technica AT4033
- Transducer Technology/Loudspeakers*
Genelec 1031A Studio Monitors
- Computer Software/Peripherals*
Opcode Studio 5 Interface
- Signal Processing Technology*
Demeter VTMP-2A
- Ancillary Equipment Technology*
Lexicon LFI-10 Digital Format Converter
- Console Technology*
AMS Logic 2
- Musical Instrument Technology*
Roland JD-800 Synthesizer
- Recording Product of the Year*
Solid State Logic Ultimition

HECTOR G. LA TORRE

- Audio Post Production Facility*
EFX Systems, Burbank, CA
- Audio Post Production Engineer*
Joel Moss

OUTSTANDING INSTITUTIONAL ACHIEVEMENT

- Acoustics/Facility Design Company*
Russ Berger Design Group Inc., Dallas, TX
- Perception Inc., Los Angeles, CA
- Audio baction, Los Angeles, CA
- Waters-Worsham Design Inc., New York, NY
- Worsham Design, Los Angeles, CA
- Stanton, Production Place, IL
- Maryland Sound Industries Inc., Chicago Park, CA
- Shoreco Inc., Dallas, TX
- Ultra Sound, San Rafael, CA

OUTSTANDING CREATIVE ACHIEVEMENT

- Audio Post-Production Engineer*
John Adams
Tom Davis
Ken Rubin
Joel Moss
Gary Rydstrom

OUTSTANDING TECHNICAL ACHIEVEMENT

- Recording Devices*
Alesis ADAT Digital Multitrack
Digidesign Pro Tools Workstation
Roland DM-80 Synthesizer
Solid State Logic Ultimition
Yamaha DARA Digital Recorder/Console

Recording School/Program

- Berklee College of Music, Boston, MA
- Middle Tennessee State University, Murfreesboro, TN
- University of Massachusetts—Lowell, Lowell, MA
- University of Miami, Coral Gables, FL
- University of Southern California, Los Angeles, CA

Remotes/Broadcast

- Recording Engineer*
Bill Davidson
Randy Benay
Ed Green
David Howe

Mastering Facility

- Bermer Grandstar Mastering, Hollywood, CA
- Congrains Master, Nashville, TN
- Masterdisk Corporation, New York, NY
- Precision Mastering, Hollywood, CA
- Sealing Sound, New York, NY

Sound Reinforcement

- Rob Coffey
Dave Koff
David Morgan
M.L. Procter
Robert Scovill

Audio Post-Production Facility

- ESB Post Productions, Los Angeles, CA
- EFX Systems, Burbank, CA
- Post Logic, Hollywood, CA
- Skywalker Sound, San Rafael, CA
- Spac Sound, New York, NY

Mastering Engineer

- Bermer Grandstar
Ted Jensen
George Marino
Denny Purcell
Doug Sax

Remote Recording Facility

- Digidesign Pro Tools Recording, Culver City, CA
- Effanel Music Inc., New York, NY
- Le Mobile, North Hollywood, CA
- Remote Recording Services Inc., Lehigh, PA
- Skymob Choir Mobile Recording Division, Culver City, CA

Recording Engineer

- Bill Boush
Ed Cherney
George Massenburg
Al Schmitt
Boris Svendsen

Recording Studio

- A&M Studios, Hollywood, CA
- Cosmos Recording Studios, Hollywood, CA
- Cherry Way Recording, Hollywood, CA
- High Tech Recording, New York, NY
- Skylark Studios, New York, NY

Transducer Technology/Loudspeakers

- Genelec 1031A Studio Monitors
- Opcode Studio 5 Interface
- Signal Processing Technology
- Demeter VTMP-2A
- Lexicon LFI-10 Digital Format Converter
- AMS Logic 2
- Roland JD-800 Synthesizer
- Solid State Logic Ultimition

- Mastering Engineer*
Denny Purcell
- Record Producer*
Daniel Lanois/Brian Eno
- Recording Engineer*
George Massenburg
- Recording Devices*
Alesis ADAT Digital Multitrack
- Transducer Technology/Loudspeakers*
Genelec 1031A Studio Monitors
- Signal Processing Technology*
RSP Technologies Intelliverb
(Could be in the running next year)
- Sound Reinforcement Product*
TIE: Circuits Maximus C:Max
Wireless Monitors/Future Sonics
Ear Monitors
- Recording Product of the Year*
Ampex 499 Analog Tape

HOWARD MASSEY

- Acoustics/Facility Design Company*
Russ Berger Design Company
- Sound Reinforcement Company*
Showco Inc., Dallas, TX
- Recording School Program*
University of Miami, Coral Gables, FL
- Mastering Facility*
Masterdisk Corporation,
- Audio Post Production Facility*
Skywalker Sound
- Remote Recording Facility*



Effanel Music
Recording Studio
A&M Studios, Hollywood
Audio Post Production Engineer
Ken Hahn
Remote/Broadcast Recording Engineer

Guy Charbonneau
Sound Reinforcement Engineer
Rob Colby
Mastering Engineer
Bernie Grundman
Record Producer
David Foster
Recording Engineer
Ed Cherney
Recording Devices
Sonic Solutions Sonic Station
Workstation
Transducer Technology/Microphones
Groove Tubes Model One
Transducer Technology/Loudspeakers
JBL 4200 Series Studio Monitors
Computer Software/Peripherals
Opcode Galaxy Editor/Librarian
Signal Processing Technology
Meyer VX1 Equalizer
Ancillary Equipment
TimeLine MicroLynx
Synchronizer
Console Technology
Soundcraft Europa
Musical Instrument Technology

Yamaha SY99 Synthesizer
Sound Reinforcement Product
Soundcraft Europa Console
Recording Product of the Year
Apogee AD500 A-D Converter

WADE MCGREGOR

Acoustics/Facility Design Company
Russ Berger Design Group Inc.,
Sound Reinforcement Company
Electrotec Productions, Inc.
Sound Reinforcement Engineer
Robert Scovill
Recording Devices
Yamaha DMR-8 Digital
Recorder/Console
Transducer Technology/Microphones
AKG Tri-Power Series
Transducer Technology/Loudspeakers
AKG K500 Headphones
Signal Processing Technology
Digitech VHM5 Vocalist
Ancillary Equipment Technology
Crown 3600VZ Power Amplifier
Console Technology
Euphonix CSII
Musical Instrument Technology
Kurzweil K2000 keyboard
Sound Reinforcement Product of the
Year
Meyer SIM System II
Recording Product of the Year
Digidesign Pro Tools Workstation

DR. RICHIE MOORE, PH.D

Acoustics/Facility Design Company
studio bau:ton, Los Angeles, CA
Sound Reinforcement Company
Ultra Sound, San Rafael, CA
Recording School/Program
University of Southern California,
Los Angeles, CA
Mastering Facility
Bernie Grundman Mastering,
Hollywood, CA
Audio Post Production Facility
Skywalker Sound, San Rafael, CA
Remote Recording Facility
Le Mobile, North Hollywood, CA
Recording Studio
Conway Recording Studios,
Hollywood, CA
Audio Post Production Engineer
Joel Moss
Remote/Broadcast Recording Engineer
Biff Dawes
Mastering Engineer
Bernie Grundman
Record Producer
Walter Afanasieff
Recording Engineer
Al Schmitt
Recording Devices
Studer D740 CD Recorder
Transducer Technology/Microphones
AKG Tri-Power Series

continued on page 40

DECISIONS, DECISIONS

EQ wanted a slightly different perspective in addition to the list, so I figured I'd choose fewer categories and explain the reasoning behind my picks. *Full disclosure consumer alert:* Some of my choices for winners are companies I've consulted to, but I've consulted to many of the other nominees as well so I don't think it made any difference in the outcome.

Recording Devices

Winner: Alesis ADAT. Putting eight tracks on S-VHS tape for under \$4,000 qualifies as an outstanding technical achievement in my book (enough to forgive it for coming out a year and a half after it was announced).

Runner-up: Yamaha DMR-8. Regardless of how it sells, it puts a lot of important pieces together in a "total recall" package that's ahead of its time.

Musical Instrument Technology

Winner: Kurzweil K2000. All the nominees sound great but lots of stuff sounds great — that doesn't necessarily translate into a technical achievement. The difference is that the 2000's user interface and manual deserve an award for making something this complex fairly easy to understand.

Runner-up: Roland JD-800. It sounds really clean, you

can program it without going blind, and it even looks cool. But you can't assign the most important sliders in a patch to continuous controller messages — a problem for sequencer jockeys.

Computer Software/Peripherals

Winner: Opcode Studio 5. Its outstanding technical achievement is that it can simplify a complicated MIDI studio, and in today's techno-world, that's worthy of an award.

Runner-up: I think Cubase 3.0 for the Atari (or 2.0 if 3.0 missed the cutoff) should have been nominated instead of the Mac version, but the Mac version gets runner-up for eschewing the "inbred" look and feel of other Mac sequencers.

Recording Product of the Year

Winner: Ampex 499. You can blast it with level and it still sounds great. Who would have thought that an analog tape would get so many "ooohs" and "ahhhs" in 1992.

Signal Processing Technology

Winner: Digitech VHM5 Vocalist. Yes, the other nominees are nifty signal processors, but the VHM5 does harmonization so convincingly — and at such a reasonable price — that it gets my vote for an outstanding technical achievement.

— Craig Anderton



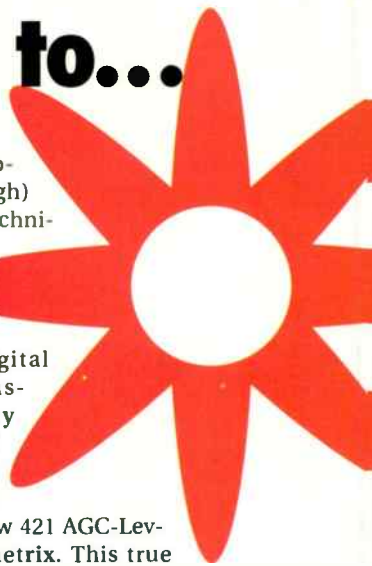
AES Insider: If You're Going to...

We put our ears to the fault to bring you the scoop on rumblings from the audio industry's main event

So Karl Malden worked the streets and Tony Bennett misplaced his heart there, but an even bigger event is heading for San Francisco. Forget Oscar Night, The Grammys and the MTV Video Awards. This year's stars will be out in full-force at the 93rd AES Convention. No, we're not talking Cher, Stallone and DeNiro. We're talking Clearmountain, Nichols (gratuitous plug), Swedien, Massenbug ...Not to mention all that gear...Tascam's ADAT-killer, the notorious ADAT itself from Alesis, maybe even an Einstein, Hendrix or Rupert Neve?...So if you're ready to dive into what is expected to be the biggest and best AES yet, read on and get the inside scoop on what everybody will be talking about (with 294 manufacturers, 675 booths and 166,000 square feet of Moscone Center, you're gonna need all the help you can get!)...AES will see the introduction of Tascam/TEAC's's awaited MDR 88 (\$4500), an eight-track digital multitrack recorder, which is SMPTE capable and has multiple deck slaving capability; it uses 8mm videotape and is expected to be ready before the end of the year...While you're at it, compare it to Alesis' own ADAT. It's here, it's ready, and the reviews are hot (see Roger

Nichols' Review this issue). But how long will we have to wait for the BRC?...Did someone say ADAT? Ampex will be introducing their 489DM digital audio mastering S-VHS tape designed especially for products like the ADAT...It has been confirmed! Fostex will introduce their DCM-100 digitally-controlled mixer, complete with 8 inputs, 2 effects sends and a master input...What's all this talk about 20-bit CDs? Can you hear the difference? Find out from Sony; they're the ones pushing this format to its max. While you're at Sony's booth, check out their new K-1203 super bit mapping processor and DPS-F7 digital audio effects processor...Building on the extraordinarily popular technology of the HD-1, the Meyer Sound HD-2 High Definition Audio Monitor offers similar state-of-the-art accuracy in a more powerful unit...USA Series will debut its new line of professional amplifiers...We hear that JLC Cooper's dataSYNC (\$350) MIDI synchronizer for the Alesis ADAT is in sync with today's AES attendees (find out what Roger Nichols thinks of it in this issue)...Attention all touring sound professionals: Turbosound's Flashlight system, highlighted in the recent U.S. Dire Straits tour, has landed at an AES booth near you...Seeing as we have you touring professionals' attentions, don't you dare miss Yamaha's booth where they will be showing their MC3210M and MC2410M stage monitor mixing consoles as well as the PM4000M stage monitor version of their popular PM4000 console...dbx has done it again with the 172 dual channel super-gate, complete with expansion, ducking and several proprietary features...Akai's booth is sure to be hopping with the release of two new models of its magnet-based digital recording/editing system, the DD1000i (which replaces the DD1000) and the DD1000s...Word has it that new facilities and stricter quality control have set the stage for Quested's brand new Q108 self-powered monitor speakers...While redefining product categories with ease, BSS Audio has made way for the long-awaited FCS926 digitally controlled parametric EQ...What's the deal with DCC and Mini Disc? Find out in a special paper

entitled (appropriately enough) "The Latest Technical Presentations on the Philips Digital Compact Cassette and Sony Mini Disc" ... Be sure to stop by and see the new 421 AGC-Leveller from Symetrix. This true AGC can not only control levels from mics or audio chains, but it can also sense the difference between noise and signal...Stop by the Applied Research & Technology (A.R.T.) booth for the first AES showing of their Phantom powered mixers...JRF Magnetic Services, maker of the fully-adjustable head assembly for the Otari DP-1610 C4, recently formed NXT Generation, a spinoff company specializing in maintenance on Sony professional DAT recorders...Did we say stars? Rumor has it that Rupert Neve himself will be on-hand to discuss the creation of the 9098 console, introduced by the good people at Amek/TAC. And don't forget Amek/TAC's introduction of the large format Einstein Super E console (80 inputs!!)...Pssst! AKG is rip-roarin' and ready for the AES blitz, debuting their new Blue Line modular condenser microphone series...Did you know that the first tape recorder was developed in San Francisco? You didn't? Then check out the Ampex Museum for the full story (and then some)...Look Ma, no wires! Shure delivers the goods with the EC Wireless Line...Over at Demeter Amplification's booth, check out their new VT275HF all-tube reference monitor power amplifier...Lexicon's out-of-this-world software will make its debut at AES as the company's 3000 Digital Effects System blasts off in a 4-algorithm configuration...Do you need to be in the know? Of course you do! Make sure you check out as many of the 133 presented technical papers as you can. They cover a wide range of topics including psychoacoustics, digital audio and computer music, and many oth-



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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CIRCLE 22 ON FREE INFO CARD

38 OCTOBER EQ



ers...Over at the Audio Services booth, check out Mackie's 24 x 8 x 2 8-bus mixer...Briel & Kjaer will be highlighting their much-touted 2012 Audio Analyzer at the show as well as other test instrumentation for the discerning audio engineer...Mac Attack: Passport Designs, Inc. will roll out their Passport Producer software (\$395) for the Apple® Macintosh® computer...Sound lovers rejoice (this means you)! The Intelliverb will be on-hand, at RSP Technologies' booth, readily displaying its vast array of chorusing, reverberation and pitch-shifting capabilities (check out Craig Anderton's review in this issue, but first finish the Insider!)...Apparently, Hush Systems has been working double-time to make their new Hush I.S.P. the cream of the crop. With its unique "auto" mode adjust and helpful compression control, this dynamic goodie is sure to yield good vibrations, without any unwarranted noise...Bringing in the big guns is Crown, who will introduce the CM-310 differoid handheld microphone and SASS-P Mk II stereo condenser microphone, as well as the new PCC-170, a new boundary mic that minimizes background noise and feedback...Need a break from the exhibit floor? Seminars including Silicon in Audio and Computers in Audio are expected to draw record crowds. On the technical paper beat, try not to miss Dan Levitin's paper on perfect pitch (more people have it than expected), Durand Begault's talk about new developments in multichannel sound (he's working on sound for virtual reality, cool stuff), and test results on the longevity of the CD (by Denis Oudard) and DAT tapes (by Slobodan Popvic)...Ampex support specialists, ATR Service Company, will demonstrate various format machines equipped with Flux Magnetics mastering heads...Bassists are ecstatic over the new advances Fishman Transducers is making in their new Bass Blender, a special version of the popular Acoustic Blender®...Speaking of happy bassists, Furman is introducing the Punch 10™ Bass Enhancement System, a subharmonic processor which augments the bass content of recorded music...Where can you see the CFT 1800 convection-cooled MOSFET amp with 200W/channel @ 8 ohms and 300W/channel @ 4 ohms? Where else but at Ashly Audio's booth...Have you heard? All weekend, SPARS will be holding meetings which

will provide attendees with a forum for education, conversation and of course, elections...Following the success of their Megas line, Soundtracs is unveiling their newest musical monsters, the Solo Midi and Solo Live consoles. Both units have 4 band EQ and 6 aux sends, while the Solo Midi showcases desirable MIDI mute automation features... Meanwhile, Behringer will deliver a double-whammy comprised of the Composer® Model MDX 2000 Interactive Dynamics Processor and the Intelligate® Model XR 2000 Interactive Class-A Expander/Gate/Ducker (Whew!)... UREI has a hit on their hands with the LA-22 Dual Channel Parametric Compressor/Limiter/Expander... Sources say that the new "front of house" Vienna by Soundcraft may be the console to beat this year...JBL also brings in a fresh delivery with the Array Series Model 4894, a high power, 2-way loudspeaker system that's destined to rock the house...TOA Electronics will present a trio of new modules, the IS-110AD, IS-110DA and the IS-110TM, all of which are built to be put to work in the existing SAORI mainframe...You ain't seen nothing till you hear Community's latest power-player, the VBS412 subwoofer is said to deliver an accelerative impact unmatched by most conventional 15- and 18-inch subwoofers...R.J. Mutt Lange and Jean Michel Jarre are just a few out of a multitude of industry pros who have benefited from using Jeanius Electronics' new rack mount Russian Dragon, the RD-R (\$499), which measures the timing accuracy of two sounds that were meant to happen at the same time...Ever wonder about the future of audio technology? Well wonder no more as audio pioneer W.A. (Bill) Palmer of W.A. Palmer Films soothsays in a special session...Other hot stuff will be coming from DIC Digital, who's new recordable CD is set for an AES blast-off...Rappers are rejoicing as Roland's revolutionary new DJ-70 Sampling Workstation puts the power back in the performance...Word has it that Audiomation will show two new UPTOWN automation systems, currently being used for the Broadway shows *The Will Rogers Follies* and *City of Angels*...Drawmer/QMI will be introducing their DL441 Quad Auto Compressor/Limiter, in addition to featuring their DL251 Spectral Compressor...This

continued on page 107

NO AUDIO TAPE HAS EVER RATED SUCH INCREDIBLE RESPONSE.

"I love the extra headroom it gives you. Different types of music call for you to hit the tape differently. I've hit it light and I've hit it hard, and the 3M 996 will definitely take the level." —Ed Cherney, independent producer

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continued from page 35

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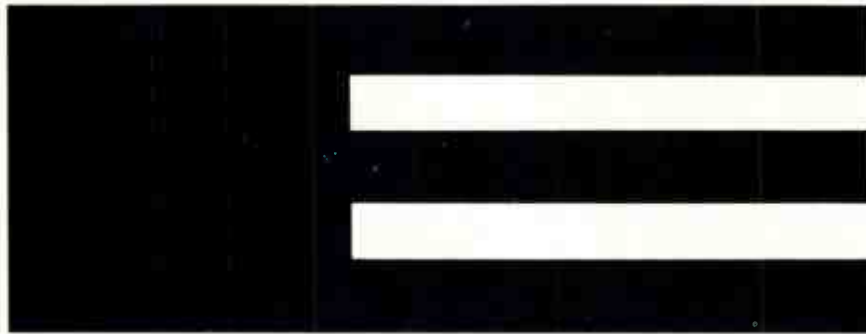
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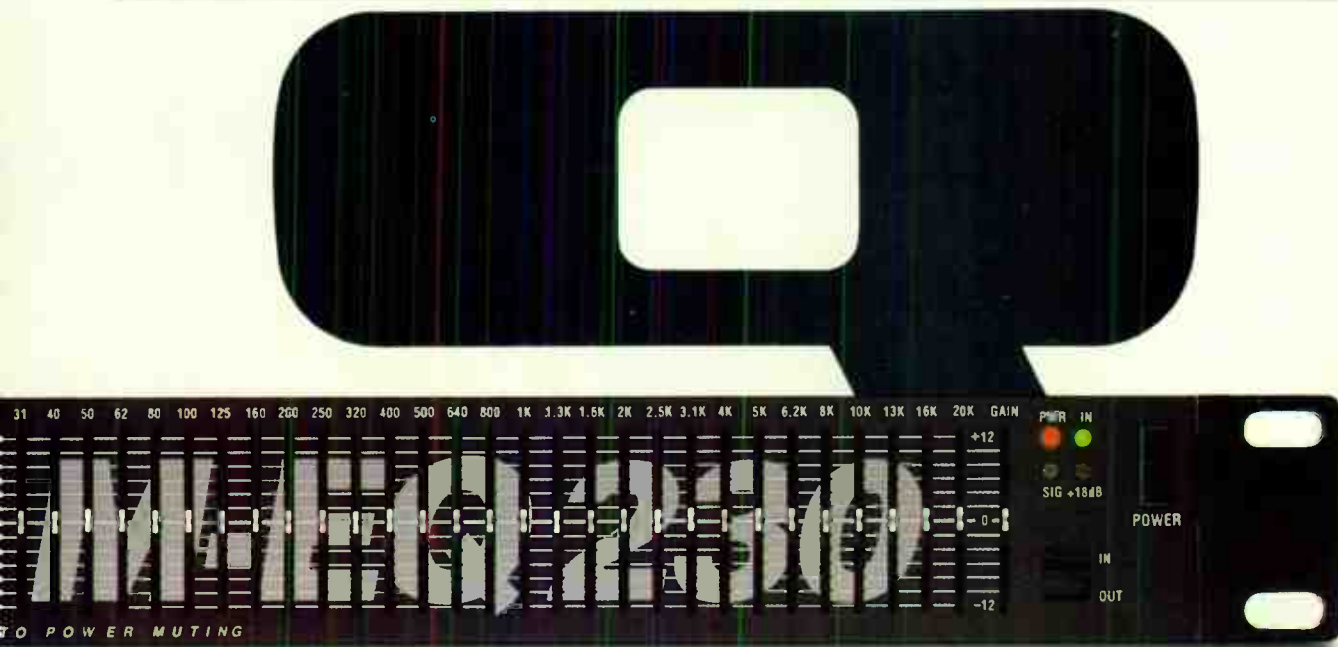
continued from page 26

a new studio closer to downtown. Little did they know it would take five years from the day design was started until the doors would finally open! Russian Hill got underway in 1980, just as interest rates headed through the roof. By 1982 recording budgets were drying up, withering away with the recession, and the debt load was crushing. To survive, Russian Hill turned to media clients, and also brought onboard the first functional lock system in the area, a Q-Lock. Lucasfilm needed a place for incidental recording and started to use the studio for Foley and ADR work. One thing led to another, and suddenly Russian Hill was in the soundtrack business, starting with Disney's *Never Cry Wolf*, soon followed by *The Right Stuff*. The studio remains a hive of activity, with a mix of film, TV, advertising work, and the occasional album.

Fantasy Records was a more or less obscure label most noted for producing transparent red records of jazz greats like Charlie Parker in the '50s and early '60s. They signed up an obscure band named Creedence Clearwater Revival in the early '70s and their immense success produced the profits to build Fantasy Studios, located in Berkeley, into a top facility. The studios were opened to the public in 1980, having been used until then for in-house work. Fantasy also got into the movie business and ended up with a smash hit, the film version of Ken Kesey's *One Flew Over The Cuckoo's Nest*. This resulted in the creation of a complete film sound facility under the same roof. This sizable facility has been world class from day one. The recording studio side has four rooms plus a separate keyboard room, and consoles cover the range, with an SSL SL 4056 with G Series Total Recall, two Neve 8108S's with Necam automation, and a Trident Series 80. There's no shortage of high-quality decks either, with Studer

A800's and a Mitsubishi 32-track digital multitrack, along with numerous digital and analog two-tracks from Studer and Mitsubishi. There are even five live echo chambers! Recent clients have included Joe Satriani, Lynyrd Skynyrd and Hammer.

In addition to being home to many major facilities, the Bay area is covered with personal, artist and project studios. Lucasfilm has their own Skywalker Ranch facility, used both for in-house and selected outside recording projects. The Grateful Dead have maintained their private facility for years. Neil Young has a pair of Sony digital 24-tracks synchronized at his ranch near the coast. The list goes on and on. To this you must add a sizable number of additional second-tier multitrack sites found in almost every town in the area. Remarkably enough, most of these facilities are quite busy, leaving the impression that the Bay area recording scene has managed to adapt, survive and even prosper through the recent recessionary era and the advent of the MIDI studio. **EQ**



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Buckingham's Palace

LOCATION: Lindsey Buckingham's home in Bel Air, California

MAIN MEN: Lindsey Buckingham (owner, producer), Richard Dashut (producer)

CREDITS: *Out of the Cradle* (Reprise). Buckingham spent the last three years working exclusively on his solo album here. The studio was originally built to complete tracks for Fleetwood Mac's *Tango in the Night* LP.

CONSOLE: Neotek Lite

MONITORS: JBL (mains), Yamaha NS10's (near-field). Buckingham prefers near-fields and rarely uses the mains.

RECORDERS: Otari MTR-90 24-track, Sony PCM 3324 24-track digital

OUTBOARD GEAR: Bertech ITR-1 DI box, Lexicon PCM-70, Yamaha Rev 5, Rev 7, dbx 160X compressor/limiters, UREI LA-4 compressors, Drawmer gates, Groove Tubes Studio Series guitar preamp

KEYBOARDS/MIDI GEAR: Fairlight Series I & II, Yamaha RX-5 drum machine

MICS: Neumann U89, U87, Sennheisers.

EQUIPMENT NOTES: Buckingham states: Because we don't mix here, we don't need certain things. The Neotek serves us well. It has a transformerless sound and EQ similar to that of an SSL, although it doesn't have the flexibility or features such as limiting on each channel. I still like the sound of analog, so we've got the analog Otari deck in addition to the Sony 24-track digital deck. I continue to have mixed feelings about digital. It's great when you're working on tapes over a three-year period, however. You don't have to worry about losing the high end or dealing with the noise problems of analog tape. You just have to transfer your tapes occasionally to prevent loss, because when a digital tape goes bad, it goes *bad*.

PRODUCTION NOTES: The whole approach that Richard Dashut and I have is intuitive. We'd never think of ourselves as being Bob Clearmountain-type engineers. Our theory is turn the knobs until it sounds good. We also recorded a lot of parts in mono. You can record an acoustic guitar with a direct box and a couple of mics to get a beautiful stereo spread from left to right, but when you do that, you're making a symphony out of one instrument. **EQ**



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color and 20-inch monochrome monitors, MIDI gear, etc., etc. The most significant feature is system integration: if you load up a Mac with all these things, your "net production power" multiplies the value of each element. The Opcode product line helps by creating a system that's extremely powerful, with modules designed to work with each other. (But StudioVision is still a great sequencer, even without the other bells and whistles.)

In developing electronic music systems for Broadway, I needed a way to trigger multiple sequences, some overlapping, some not, via MIDI — instantly. Only StudioVision could do that. Also, it can handle 4 tracks of digital audio with full edit control over MIDI — you can sequence to a final vocal. Furthermore, tape machines are linear; music doesn't have to be. The program lets you work linearly, in segments (drum machine style), or in a combination of the two modes.

The program is easy to navigate. Key combinations get you from any place to any other place with a click or two, and zooming options are very powerful.

What don't I like about the sequencer? It doesn't wash my dishes or iron my shirts. — *Jeremy Roberts.*

PIECE OF CAKE

My first sequencer was a Roland MC300. It was easy to learn, did what it claimed to do, and worked without corrupting files or crashing. It was great — just not enough memory.

I eventually graduated to a Mac Plus with Vision. Unfortunately, it often crashed in the middle of a tune. A friend of mine with a Mac IIsi had similar problems with Vision. So now I own an IBM compatible (286) and use a 386 DX40 at the office running Twelve Tone Systems' Cakewalk 4.0e. What a relief! Finally, a system that is logical to use and does not require reading a 300-page manual to tell me how to transpose or quantize a track. Cakewalk is very user-friendly and flexible.

The upgrade policy is one of the best I've ever experienced with any software company. I plan to upgrade to Cake for Windows very soon.

— *Greg Barrett*



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a place called TT&G. Still later Elektra Records built their own studio, and we used that. The final album, *L.A. Woman*, was recorded in our rehearsal hall on a 16-track machine we had brought in.

Multi-tracking, which we take for granted today, was in its infancy and we had to do a lot all at once. The first album, *The Doors*, was 4-track, the second, *Strange Days*, was 8, the third, *Waiting for the Sun*, was 8, the fourth, *Soft Parade*, was 16, and *Morrison Hotel* and *L.A. Woman* were 16 — we never did get to 24-track.

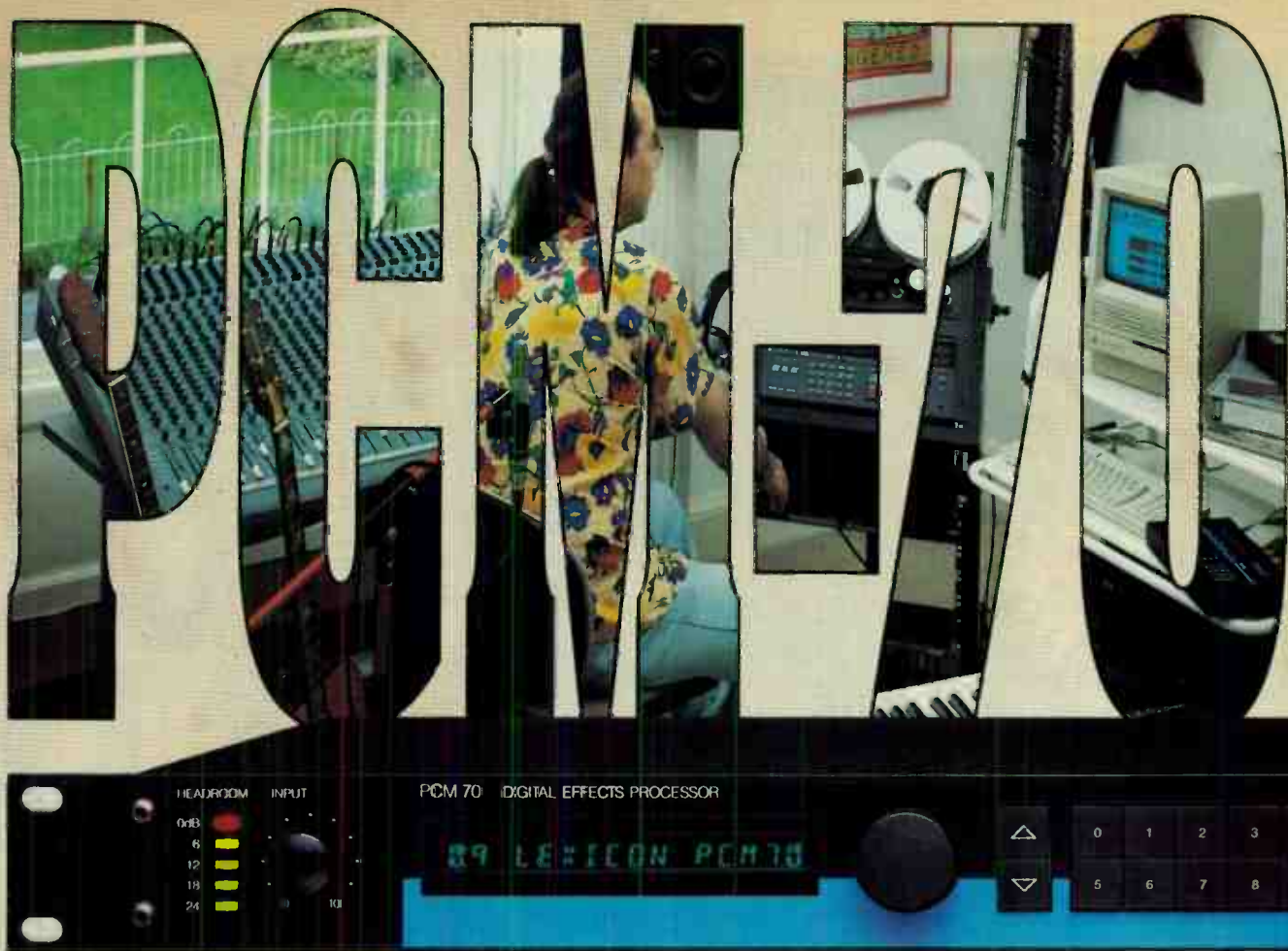
On the first album we didn't do overdubbing because there was only one extra track. But we did do second passes of vocals. With the second album, we started doing a lot of experimenting. That was when *Sergeant Pepper* came out and everybody thought they had to put a million things down. If you listen to the second album there are some backwards piano parts and some other weird stuff.

At that time the tape machines were the big old Ampexes and Scullys. You didn't have the variety or the miniaturization that makes the project studio possible today. The first album was done on one of those old tube boards with the big black round knobs. At the time, Sunset Sound had the best echo chamber in the United States and I think that accounts, in part, for the great sound they were able to achieve.

Bruce Botnick was pretty much our exclusive engineer. A guy named John Haney also did a few things for us, and Fritz Richmond was sort of assistant to Paul Rothchild [founder and president of Elektra at that time]. Bruce currently owns Digital Dynamics in L.A., which was one of the first digital studios.

Prior to The Doors I had limited recording experience. Because Gold Star, the "Wall of Sound" studio, was one of the few independent studios in L.A. at the time, however, my experience included sessions there. This was back in the early '60s. In those days the record companies like Capitol had their own studios for the most part, so independents were uncommon.

IN THE BEGINNING THERE WAS THE END
I'd say the most interesting recording session I did with The Doors was "The End." That was at Sunset Sound and Jim



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Play it Again

Once you've gone forward, you can't go back. I don't know about you, but ever since I started working with sequencers I've had a hard time dealing with tape.

Unlike tape machines, sequencers can loop a section of a song endlessly, never having to stop and take time to rewind. Things slow down considerably once tape enters the picture (running the sequencer from a tape machine via timecode or "smart sync"). For example, after recording vocals, I decide to redo the bass part in verse 1. Since I want to hear the vocals while I'm working on the new part, I'll have to run the sequencer from tape. But there's no way that the tape machine is going to rewind to the top of the section as quickly as the sequencer would alone; very often the amount of time it takes for the tape machine to rewind or autolocate to the right point is enough to make me lose the groove or forget a fleeting musical idea.

Does this sound familiar? Well, break out your sampler and experience better living through technology. (Some of the terms, e.g., "One Shot" or "Play To End," may be specific to Akai products. Your sampler may use different terms to define the same functions.)

There are a number of approaches to using your sampler as a surrogate tape machine. The most basic would be to sample a mix of the section of the song to be worked on (in this case, the vocals but not the bass). Trigger this sample by using the front panel playback button or a keyboard or drum machine pad, and it will play immediately from the beginning every time, just like any other sample. While it plays back, you can work on the new bass part. If you make a mistake halfway through, you don't have to wait for the sample to play through — just retrigger it from the beginning. This method allows you to try out musical ideas almost as fast as you can think of them. Once you've solidified the part, you can record it in the

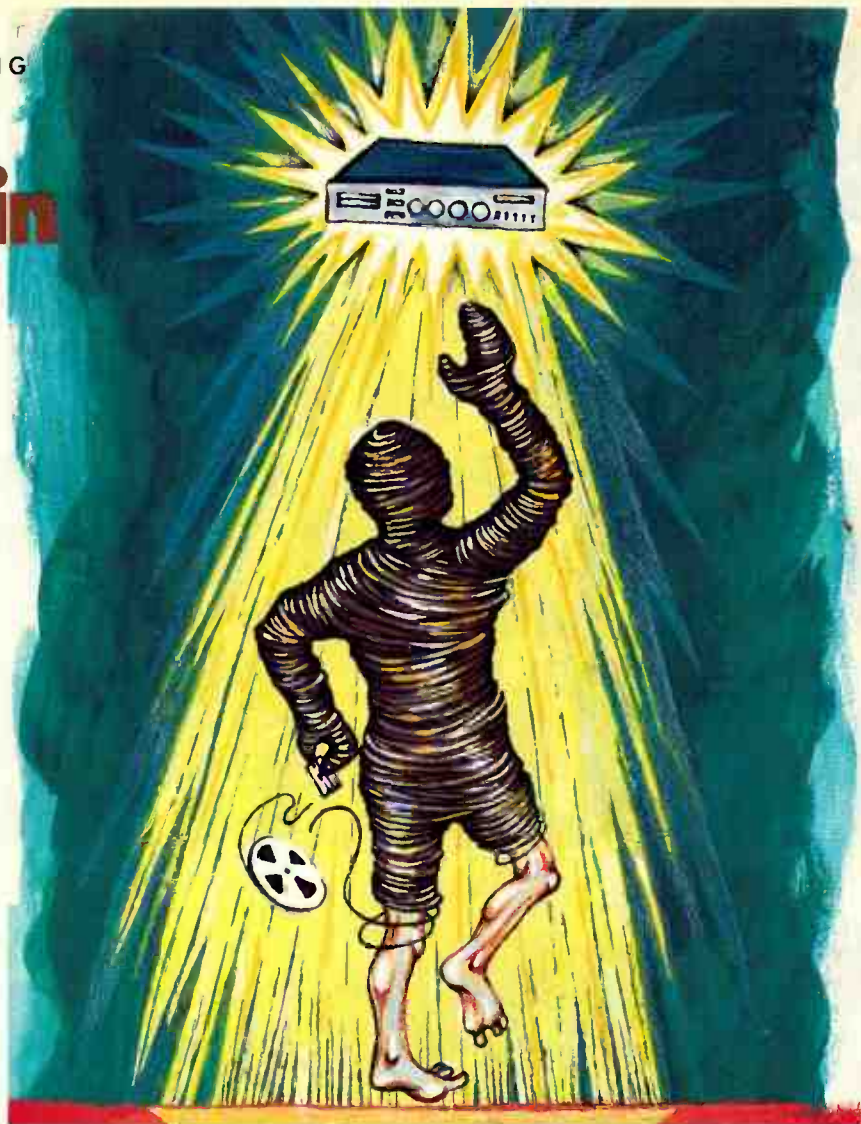


Illustration by Normal Rockhard

sequencer, either running it by itself or synced to tape.

Here's another approach: If you have a stereo sampler, sample a mono mix on one side. On the other side sample the code directly from tape. Play the code sample directly into the sequencer or sync box (replacing the code from the tape) while you monitor the mono mix. This is the functional equivalent of an all-digital "tapeless studio." Instead of rewinding tape, you retrigger the sample. If you alter the start point of the sample, you can change the point from which playback commences. Using this method, you can actually record your new bass line in the sequencer as it syncs to the sampled code.

It has become common practice to sample background vocals and "fly" them into other sections of the song. Another application might be to get the vocals off tape entirely to free up tracks for other instruments, or to rearrange the vocals for purposes of changing the song's structure. For this

kind of work I use an Akai S1000 because it has a particularly indispensable feature: you can initiate sample recording with an incoming MIDI note.

PREPARATION

Let's say you take a stereo sample of eight measures of the soloed lead vocal on one side, and code from sync track on the other. When you repeatedly retrigger a sample, you can quickly become very familiar with little nuances and details. This will help you find the perfect point just before the

Some smart sampling
techniques for
fun and profit

BY PETER SCHWARTZ



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beginning of each phrase. It's much harder to do this from a tape machine. While the sequencer is in Record and running from the sampled code, listen to the vocal and record notes in the sequencer, unquantized at points just before the beginning of each vocal phrase. After you've gone through the whole song in this way, you'll have a sequence of notes that you can use to sample each vocal phrase via the aforementioned MIDI note-trigger feature, as well as to play each one back. I would suggest using successive notes (C3, C#3, D3, etc.) to mark each phrase. After marking all the points, it's time to take the vocal samples for real.

TAKING THE SAMPLES

Patch the timecode from tape back into your sequencer and prepare your sampler to record the vocal phrases at a high bandwidth. Using the MIDI note-trigger function in the S1000, you can now go to the beginning of the song and sample each individual vocal phrase. Make sure the sampler isn't receiving any MIDI notes other than

the trigger notes, since it doesn't discriminate between channels in this mode. Listen to each sample after you've recorded it. If you've chopped off the beginning, move the note trigger back a few clocks in your sequencer and try again.

USING THE SAMPLES

Create a program with as many keygroups as you have samples. Working upward chromatically, set each one's high and low keys to the same note. Make sure that each successive sample is assigned an "original pitch" that corresponds to the pitch of the keygroup. In your sequence, make sure that the velocity of each of the trigger notes is the same, say 100. Later on, you can raise or lower the volume of an individual sample simply by altering the velocity of the note that plays it.

There is a chance that the lengths of your trigger notes will be too short to play back the full lengths of the samples. Make sure that the note lengths are at least as long as the length of each sample they are playing

or you can leave them as they are and set the playback mode of the samples to "Play To End" or "One Shot." This is especially useful if the vocal phrase starts before the downbeat in a section in a pattern-based sequencer.

Finally, a word about timing. Some sequencers have a higher resolution than others (clocks per quarter note). This will affect the feel of the sampled vocals. In order to get the samples to play exactly in time with the original vocal, listen to the sampled vocals together with the vocals off tape, in mono, at the same levels, soloed. You should hear them flange or phase. If you don't, chances are that your sequencer is playing the samples a little late. In this case, slide the entire sequenced vocal track back one clock tick at a time until you hear the flanging. That's all, folks!

Well, not really. There are still plenty of details about setting up your sampler to make this process go smoothly. Maybe once the cards and letters start flooding in, the editors will make a second assignment. **EQ**

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World Radio History

Maximum

Creativity

As the story goes, the author of the poetic masterpiece "Kubla Khan" awoke from a dream and started writing, only to be interrupted by a neighbor insistently knocking on his door. The author was distracted, the moment evaporated, and the rest was lost forever.

How often does our music disintegrate beneath the distractions of the very tools — computers, software, signal processors, etc. — we use to create music? And what can we do about it?

As part of my work on interface design [Michael is the director of development with Digidesign's IBM Products Group — Ed.], I've been looking into how the brain works, with the hope that a better understanding will help create products that aid the creative process. Along the way, I've found some indications that the creative process may not be all that mysterious, and have developed some techniques that seem to help foster creativity.

I'M RIGHT, YOU'RE LEFT

Our brains are very complex, with different functions occurring in different locations. Our simplified cast of char-

acters includes Left Brain, Right Brain, Master of Ceremonies (Emcees), and the Roadies.

The left and right brains control and use different body parts. For example, the right brain controls the left hand and uses the left eye and ear. The two sides have separate memories and methods of storing information, and process information in different and mutually exclusive ways.

The left brain works serially (one thing at a time), as do most personal computers. The left likes math, language, logical analysis, and making categories. It sees life in a literal way ("How do you feel?" "With my hands"). A gap in the sequential logic, however, will generally bring it to a dead stop, like a computer crash.

The right brain processes images, makes something seem familiar, contributes emotion and music, gives you flashes of information, and also ties together seemingly unrelated information by "filling in the blanks" and delivering the entire picture. For example, translating data to visual

images (like false color atmospheric models) is more easily assimilated by the brain than pages of text! Yet our holographic image processor is very poor at language or math, and trying to decode a sequence of events boggles it.

In reality, both sides of the brain contribute to the thinking process, and those we call "geniuses" may simply be persons whose left and right brains share information with ease (which we'll cover later).

HOW THE HALVES MEET

We pay attention to only one side of the brain at a time; when we do math, the "Emcee" locks out the holographic side. Conversely, being deeply engrossed in music makes verbal activity difficult. Computer interfaces are also emcees that influence how data is directed to either the sequential or holographic processor.

The Roadies (the so-called "Lizard Brain" that remains after eons of evolution) handle muscle control, and take charge of such things as walking, tennis strokes, or where the fingers go for a G chord.

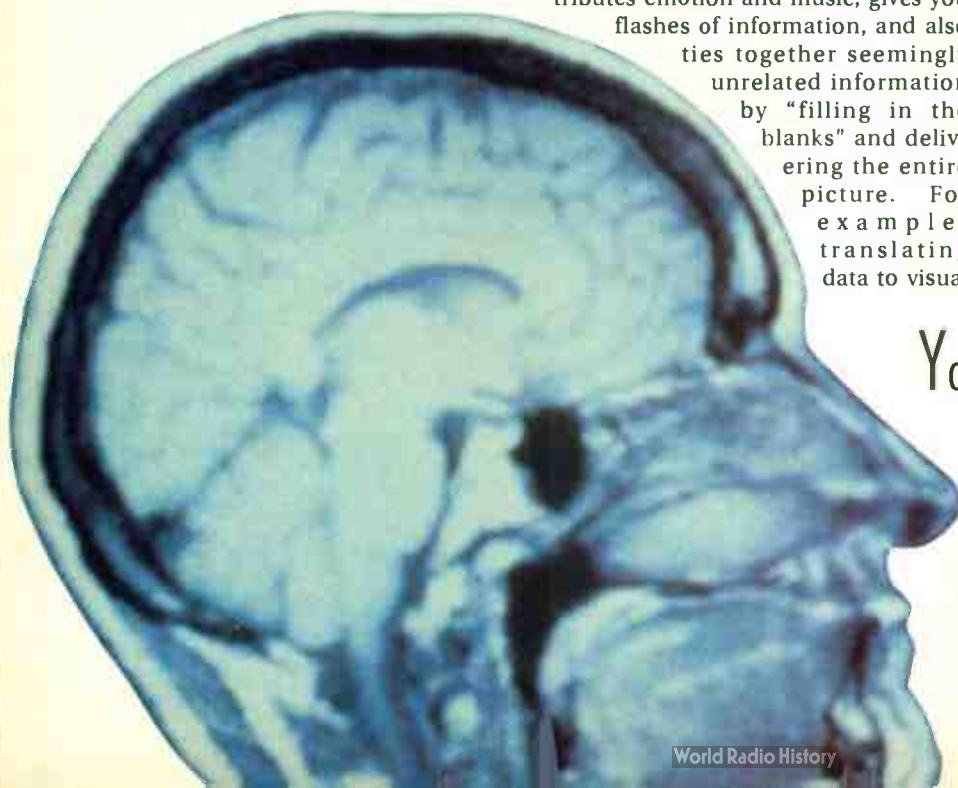
Ping Pong illustrates how these all interplay. The Roadies direct the muscles, the image processor gives spatial cues such as the ball's position, and the sequential part contributes strategy tips. When we start analyzing our game, we often play poorly because that locks out spatial cues.

WEIRD SCIENCE

Some operations require cutting the connections between the left and right brain, and afterwards, sometimes the split halves don't agree. While getting

You can increase your creative output by simply being in your right mind

BY MICHAEL STEWART





Phil Ramone photos by Michael Bloom

We asked Phil Ramone to field test our new AT4033 studio condenser microphone.

He wouldn't give it back!



AT4033
Studio Condenser
Microphone

Phil Ramone knows exactly what he wants from a studio microphone. And when he tested a sample of our new AT4033 cardioid condenser microphone, he knew it was right for him and ideal for the artists he records.

He liked being able to concentrate on getting the right music from the musicians, rather than first spending time experimenting with EQ to get the right sound.

What Phil Ramone heard was the result of new condenser technology inside the AT4033. The diaphragm is only 2 microns thick, with a vapor-deposited gold conductive coating just 50 angstroms thick. This sophisticated, very low-mass diaphragm is aged in a five-step process that insures unchanging performance for years.

The high head-room and wide dynamic range, plus low noise floor, make the AT4033 ideal for the most demanding digital recordings. And the maximum input SPL is an awesome 140 dB, so important when recording high-output instruments and very close-up vocals. In addition, transformerless design contributes to overall sonic transparency. The AT4033 also includes a switchable 10 dB pad and lo-cut filter, plus a built-in pop filter and internal shock mounting.

We're not certain we'll ever get the sample AT4033 back from Phil Ramone, but no matter. We're busy making your AT4033 right now. For more details on this impressive new microphone, ask your A-T sound specialist to schedule a test of the AT4033 today.



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Hall of Fame Inductee



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ready to leave the doctor's office, the first split-brain patient was putting on his trousers with his left hand, when his right hand started taking them off. He asked his wife to help, and while he held onto her with his left hand, his right hand punched her.

A patient with the left brain removed could not speak, but could sing. Apparently, the right brain memory stores songs, while speech is stored in the left. (Interestingly, chronic stutterers can often sing without stuttering.)

In addition, the existence of intuitive knowledge and inspirational experiences, which are typically right-brain contributions, are often denied by a society that operates mostly from a language-based, left-brain world. Since we are governed by words, texts, and laws, it is difficult to speak of the right brain without invoking the left.

Try this: Cover your left eye and read the last two paragraphs. Now cover your right eye and read them again. I'll wait...

Most people find that reading with

the right eye covered (left brain inactive) is more laborious, because the right brain has to process the words and send the word images to the left brain, where they are decoded into language — there's more "overhead."

GUNG HO GUINEA PIGS

To see if this information could lead to an improved interface (software or hardware), I conducted some experiments on the folks at work, most of whom are musicians. They had to pattern match, read, or do math — all of which are components of most computer interfaces — while playing music at the same time. Here's what happened:

The easiest task was pattern matching colored objects; the second easiest was black and white icon matching. In general, the more cluttered the background, the more it disrupted pattern matching.

I assumed that reading would be very disruptive, but it enhanced the playing experience for some people. Further investigation showed they were not really reading, but simply

recognizing words as objects. One fellow reported that the criticizing voice he sometimes hears when he plays disappeared when he "read."

(When producing vocal overdubs, I'd often have the artists play their instruments. I didn't record what they played, it just gave their criticizing mind something to do while they sang.)

The subjects then read the same passage again, but had to answer specific comprehension questions. That's when it got weird. In trying to read with comprehension, some people would suddenly stop playing. With others, the music became a repetitive lick (maybe Lizard Brain took over). And a few could look at the words and know that they were words, but were unable to see them as sentences until they stopped playing.

Regarding math, most couldn't even do simple addition in their head while playing, and those who could stopped dead when the math required a carry. They could not play music and perform sequential operations at the same time, which emphasizes the



Cause.

mutual exclusivity of the two brains. On the other hand, some found that staring at mandala-like optical illusions helped recover a playing vibe.

Doing sequential operations while playing music is counterproductive. This is probably why doing sequencer "housekeeping," setting levels, etc., disrupts the creative process.

A cluttered field of choice requires logic to decode the camouflage, which shuts down the right brain.

The longer you stay in a mode (either analytical or creative), the more you tend to stay there.

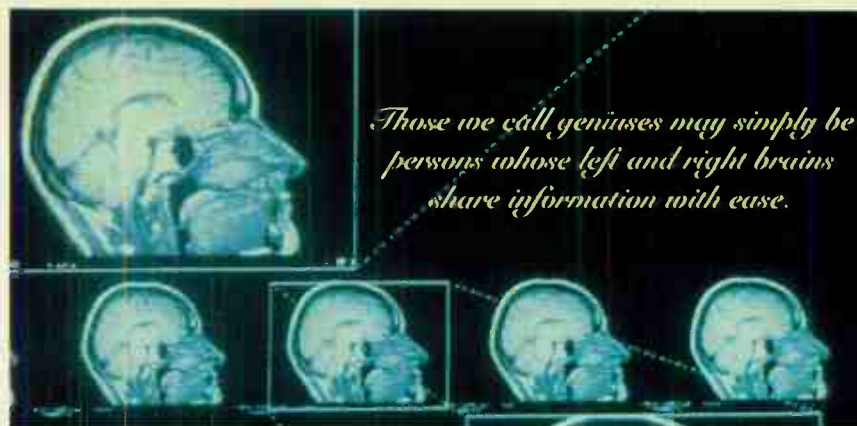
There is more information in images than in text.

Color is the least disruptive choice descriptor. (Try using color-coded cables instead of numbered ones.)

It is possible to recover from sequential paralysis and return to the creative flow through visual means, like looking at an image.

And now for some tools you can use:

Binary Foreplay. Try to do all the technical setup things required for a



session at one time, so that when you get creative, you can stay creative and avoid having to alternate between being Stravinski and Einstein.

You can also stack up left-brain tasks during a session. For example, name a track or change its "track sheet" position during playback, when you're analyzing your playing to decide which take to keep.

Token Music-Making. Jimmy Haskell, a great string arranger ("Bridge Over Troubled Water," etc.) would sometimes sketch out arrangements with notes more like lines and shapes ("tokens") than like standard

scores. A trusted copyist would do the detail and technical work so Jimmy was free to see the big picture. When we operate out of our visual or musical mind, we can use tokens as "place holders" to be filled in later.

Often we have a "feel" of what we want in certain places, but not much more. The first cut can be tokens of what you're after that let you compose the big picture more quickly; fill in the details later.

Songs in Graphic Detail. An overview is important because you can only grasp so much information at one

continued on page 114

1. What would independent multiple effects be like if you couldn't apply them separately to the different inputs? Like Rogers without Hammerstein.

2. True stereo inputs let you do two independent reverbs at once at once. Got it got it?

3. Also because of true stereo inputs, you'll have both gate and ambient reverb to play around with simultaneously.

4. Can you say *ambience*? Then you can also simulate the use of an ambient microphone while recording.

5. You'll not only be able to utilize up to five independent delay lines, but also set intervals up to two seconds apiece without compromise.

6. How do four independent pitch shifters, each with a four octave range, sound? Great, that's how.

7. Join this rotary club and you'll simulate a classic rotating speaker with separate rise/fall times for the lows and highs.

8. Severely detuned signals. Mild flanging. And everything in between. Ladies and gentlemen, the SE-50's stereo flanger.

9. For a mild phase to one that's truly radical, the stereo phaser is sure to come in handy.

10. Plug a mic into one input and a keyboard into another and you're set for vocoder.

11. Shhh! The SE-50's noise suppressor is about to kick in.

12. Having separate EQ and noise suppressors per input is one thing. Being able to add reverb, delay and chorus to either or both is quite a cool other.

13. The SE-50's chorus recalls the renowned Roland space chorus circuitry.

14. Naturally, you'll be able to call up the classic gated reverb effect with the SE-50.

15. The compressor evens out dynamic levels and produces more sustain on your guitar.

16. For everything from heavy metal to blues to country, the SE-50 is ready to kick into overdrive or even distortion.

17. You've also got a line driver with the SE-50. Drive carefully.

18. The limiter prevents clipping or overloading on a mixer, an amplifier or even a tape recorder.

19. To simulate panning, move this magazine from one ear to the other while flipping the pages.

20. Add more high end, more low end—you know, more clarity—with the SE-50's enhancer.

21. Need enough reverb to fill a small room? How about the Royal Philharmonic Amphitheater?

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Effects.

THE ROGER NICHOLS REVIEW:

ALESIS

A THOROUGH TESTING OF THE DIGITAL EIGHT-TRACK

I have been waiting to get my hands on an ADAT for almost two years. I have made plans for it. I even marked off a place on my work bench and labeled it "Reserved for ADAT." Well, we all know that "All things come to those who wade," and so here I am up to my knees in test equipment.

Here's a list of a few of the important points I plan to cover in this review. They are (not necessarily in order of appearance):

1. Input to output delay
2. Frequency response, distortion and noise levels
3. What about SMPTE lock and syncing sequencers?
4. Punch in/ punch out crossfade time
5. Sonic quality
6. Track to track bounce delay analog (digital needs BRC)
7. Does BRC (Big Remote Control) have better error correction indication?
8. What about Track slipping?
9. Is the transport tough enough?
10. How much does a \$4000 ADAT really cost?

SMALLER THAN I THOUGHT

I have to tell you right up front, though, when I took the ADAT out of the box my heart sank. It didn't weigh as much as I thought it should. Something with this much technology should weigh at least 35 lbs. This ADAT thing barely tipped the scales at 17.5 lbs. It's a good thing they aren't selling them by the pound.

The ADAT comes with a small but comprehensive manual, an AC cord, one blank tape and the LRC (Little



ADAT

OK. ALL HYPE ASIDE, DID ALESIS REALLY DELIVER?

Remote Control). The only tape you should use in your new ADAT is S-VHS (Super VHS) tape. There are basically two reasons: One, because Alesis says so and two, because I say so. Those of you who don't need any more reasons, please skip to the beginning of the next paragraph. For those who do need more reasons: S-VHS tape is capable of recording higher frequencies and can better handle the bandwidths necessary for the high amount of data storage required for 8 tracks of

digital audio data plus control track information. S-VHS tape also treats your video heads better because of the higher polish on the tape surface. OK, now you can join the others.

As with all digital multitrack machines, the tape must be formatted before you can use it. Provisions have been made so that you can record audio at the same time, but until you get used to the machine, I recommend formatting the blank tape all the way through before trying to record any

audio. Remember to press rewind after inserting the new tape so that the transport knows it is at the beginning of the tape. The format operation will not proceed correctly until you do so.

HOOKING IT UP

The analog inputs on the ADAT are available as 1/4-inch phone jacks for -10 dBV interface requirements, and as a multi-pin ELCO connector for balanced +4 dBu installations. Alesis



instituted a unique implementation of the 1/4-inch interface. All of the odd-numbered channels are normalled together and all of the even-numbered channels are normalled together. If your board only has two busses, you don't have to re-patch every time you want to record on another track. Plug the output of your board into tracks one and two of the ADAT. For the first pass, arm tracks one and two on the ADAT and record. On the second pass, arm tracks three and four without changing any patch cords and bingo! If you have a four-bus board then plug into tracks one, two, three and four. Anything plugged into a higher track in the sequence breaks the normal. If you have an eight-bus board then plug in all of them. If you have a 16-bus or bigger board you can afford to buy more ADAT's so quit bitchin'.

Here is where we get down to the nitty gritty. After formatting the ADAT, I recorded some Donald Fagen rough mixes to it. Whoops, no level trims. In Donald's studio, all of the digital machines (3M, X-880, Sony PCM 3348 and an assortment of DAT machines) are set for -16 dB as the digital reference level (the way we've set them up). The ADAT is set for -15 dB at the factory. Not too much of a

problem, I just had to trim the output of the console 1 dB to keep from producing "overs" (I swore only to touch that knob during the fade).

I printed the rough mix to the ADAT and then compared it with the source. The stereo imaging was not quite as good as what went in, but I have heard the same thing in other digital machines. Mind you, we're talking subtleties, but it is there. If you are not comparing the ADAT in an A-B test with a straight wire, but record, rewind and playback what you did, then you can't tell any difference. It's good enough for me.

What happened to the sound quality if you had to bounce tracks in the analog domain? I bounced one track of the mix 20 times, or until it was 20 generations down from the original signal. (Try that with an analog machine.) It sounded very good. There was a little difference, but not much. If you didn't know which track was the original, the only way you could tell was by a little bit of low level dithering noise before the tune started. Impressive. So if you thought you had to have the soon-to-be-released BRC just for digital bouncing, don't worry, just go ahead and Ping Pong your brains out. Oh yes, the amount of delay during an analog

bounce is about one sample time (1/48,000th of a second), which is the same for the Sony PCM 3348 digital 48-track.

SUMMON MY SCOPE, WITHOUT DELAY

The next thing on the agenda was to test input to output delay. All digital convertors have a small amount of delay associated with the conversion process. Oversampling convertors with digital filters have more delay. During the overdub process, most studios are set up so that everybody is monitoring the output of the multi-track machine (so you can hear what you are overdubbing to, I guess). To hear yourself play, the easiest thing to do is to listen through the multitrack machine. This way, you can hear what's on the tape during playback and hear what you are doing when the machine is in Record or Stop.

Some precedents: The 3M 32-track digital machine is notorious for the 15 ms delay present when the machine is stopped and on input. This would drive the musicians crazy because it was hard to play while hearing themselves delayed. It made for extra work switching back and forth from a digital machine feed to the headphones when the tape was rolling, to the console feed to the

JLCOOPER DATA SYNC

Third-party involvement in the Alesis ADAT has begun. JLC Cooper is producing a box called the dataSYNC that will allow you to lock your MIDI studio to the ADAT without having to spend \$2000 for the BRC or sacrificing one of your eight tracks to SMPTE.

The dataSYNC reads the absolute timecode from the ADAT and sends MTC (MIDI Time Code) to your sequencer. All you have to do is plug it in, select whether you want the MTC to generate 30 fps, 25 fps or 24 fps timecode, and turn it on. At your sequencer, you need to set the SMPTE offset for the start of your sequence just as you would with a SMPTE striped tape.

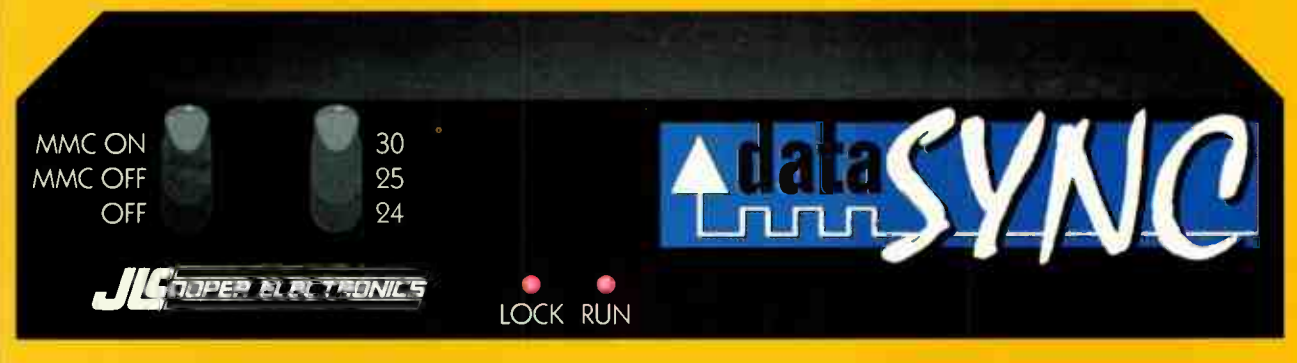
The dataSYNC is in a half-rack package similar to their SYNC•LINK Macintosh interface. The dataSYNC

plugs into the "Sync Out" db9 connector at the rear of the ADAT with a 9-pin cable. The only other connections on the back of the dataSYNC are MIDI OUT, MIDI IN (for merged MIDI info) and power.

The only thing I wish it did was put out SMPTE so that I could lock up other machines besides the sequencer. JLC Cooper says this is possible by using the dataSYNC in combination with another one of their boxes (PBS2+ or SYNC•LINK Plus).

It's a brilliant add-on for the ADAT. I could never fool it into thinking it was where it wasn't. The closest thing to turning your eight-track into a nine-track that you are likely to come across. A "gotta-have-it" if I ever saw one. List price is \$350 and it is available now. (Could you tell that I liked it?)

— Roger Nichols



IT'S IN THE MIX!

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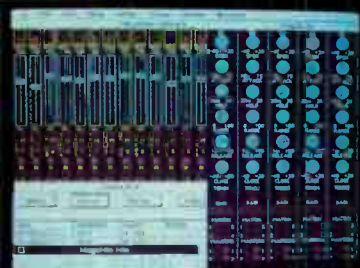
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CIRCLE 29 ON FREE INFO CARD



PUBLISHED ADAT SPECS

For more info, circle 18 here (p. #119)

Recording Time:	40 minutes per S-120 tape.	Sample Rate:	48 kHz with VSO (+1, -3 semitones)
Rewind time:	20x with tape unwrapped 10x with tape wrapped	Freq. Response:	20 Hz - 20 kHz +/- 0.5 dB
Channels:	Eight	Dynamic range:	>92 dB 20 Hz - 20 kHz
A/D conversion:	16-bit linear Delta-Sigma 64x oversampling	Distortion:	.009% THD+ Noise @ 1 kHz
D/A conversion:	18 bit linear	Crosstalk:	Less than -90 dB @ 1 kHz
		Wow and flutter:	Unmeasurable

headphones whenever the tape was stopped. (Dean Parks started bringing a chainsaw to the sessions hidden in an extra guitar case, just in case I got too lazy.) The Mitsubishi machines and the Sony 24- and 48-tracks were no problem. The new Sony PCM 3324-S incorporates 64-times oversampling converters in and out. The input delay is about two milliseconds. Sony has added a switch so that you can loop the analog signal through the machine instead of the digital signal if the delay becomes a problem.

Back to the ADAT. Because of the 64-times oversampling used in the ADAT, I expected some delay when the machine was on input. When the ADAT is on input, the analog signal is looped through to the output so there isn't any delay. If it's good enough for Sony...

IT FIGURES!

The next test: Roll out the Audio Precision. We pretty much ran every test known to modern audio science, with the exception of the digital I/O tests. I don't have the digital interface box from Alesis, but want to test it as soon as possible. Because most of you will be using the ADAT through the 1/4-inch inputs, all tests were made in that configuration. Remember that audio performance will improve with the use of the balanced +4 I/O.

My test result specs were close to Alesis's published specs (see sidebar, Published ADAT Specs), although the noise floor was considerably lower in my tests.

Figure 1 shows the frequency response curve. It looks like the frequency response is better than the specs you get from Alesis. The small amount of ripple as you approach 20kHz is normal for a digital device

and is caused by the filters.

Figure 2 is the THD + noise vs. frequency plot. The results are basically .008 percent with a little rise at the higher frequencies, probably because of the unbalanced -10dB interface. Perfectly fine for a digital piece of hardware, about what was expected.

Figure 3 is the intermodulation distortion plot. The frequencies are 500 Hz and 7 kHz. The response is very good and the noise floor looks like it is around -115 dB.

Figure 4 is the FFT trace with a 1 kHz tone at the input. The noise level seems to settle around -117 dB with harmonics showing up every 1 kHz up through 13 kHz. Usually, each succeeding harmonic decreases in level, but here they seem to be about equal all the way up. Excellent performance.

Figure 5 is the 1 kHz square wave response of the ADAT. The rise time seems to be pretty good — on the order of 40 microseconds. The ringing present after the rise seems to center at around 20 kHz, which is as far as a digital recorder ordinarily goes. The ADAT seems to perform like a textbook example of a digital multitrack.

Punch-in punch-out performance is great. The crossfade time during this maneuver is approximately 10.67 milliseconds. Perfect for punching in rhythm tracks individually — or the whole band all at once for that matter. If you want longer crossfades for punching during sustained events, that is possible only with the BRC.

The transport Alesis used also seems first rate. The tape is handled with kid gloves. All motion changes are smooth and are not rough on the tape in any way. I had the test unit loop play over a 60-second section of

tape for three days with no ill effect. All of the buttons are nicely laid out and work well. The LRC and foot switch inputs worked fine also. I was performing auto-punching with an external MIDI - GPI box (it converts MIDI events to switch closure) with no problems.

If you start having digital error problems, the only indication is that the rightmost decimal point in the LED display will start to flash. This happens just before the point of no return, so you better clone the tape before continuing. I am not sure how many hours of use the tape can get before this happens, but keep an eye out for that LED. There is no improved error indication on the BRC.

STACKING THE DECKS

One big plus with a modular system like this is that you can have virtually unlimited tracks to work with. I would configure my system as 16 basic tracks (two ADATs) with eight work tracks (a third ADAT). If I was working on vocals, I would fill up eight tracks on the "work" machine and then comp them to one track on the basic 16. I would then be able to keep the eight passes of vocal by removing the tape from the work machine. Insert a new formatted tape and do the same thing with guitar solos and comp those eight to the basic 16. No matter what I am doing, I will still have eight more tracks. If you decide that 24 tracks should be your basic configuration with 16 work tracks, then just buy two more ADATs and plug them in. That's all there is to it.

When it arrives on the scene (supposedly later this year), the BRC will allow you to control multiple machines from one location. It is possible to sync additional decks without it since up to 16 ADATs can be synchronized by simply connecting a nine-pin cable between decks, but the BRC is required for functions such as SMPTE-based synchronization, track slipping, lock to video sync, auto-punch, MIDI machine control from an external source, and digital track bouncing. Of course, if all you need to do is sync a sequencer to SMPTE, you can stripe one ADAT track with time code, although there is an alternative (see sidebar, JLCoper dataSYNC) that doesn't require giving up a track. The BRC will add another \$2000 to the price of your digital multitrack. A full blown 24-track system will set you back \$14,000. Actually closer to

continued on page 106

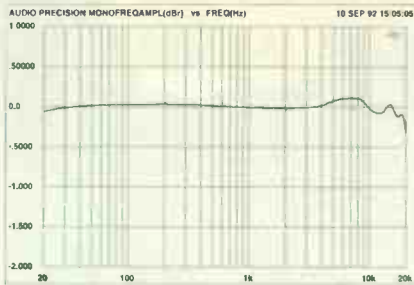


Figure 1: Frequency response on and off tape

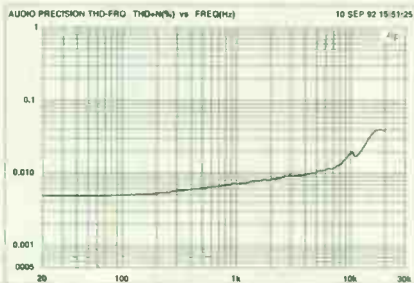


Figure 2: Total Harmonic Distortion + Noise 20 Hz - 20 kHz

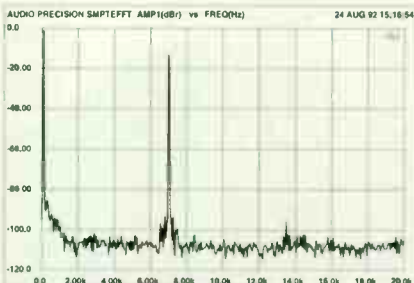


Figure 3: FFT plot SMPTE IMD (Inter Modulation Distortion) 500 Hz - 7 kHz

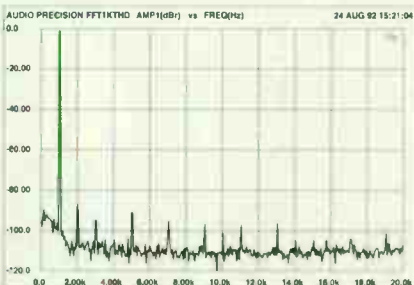
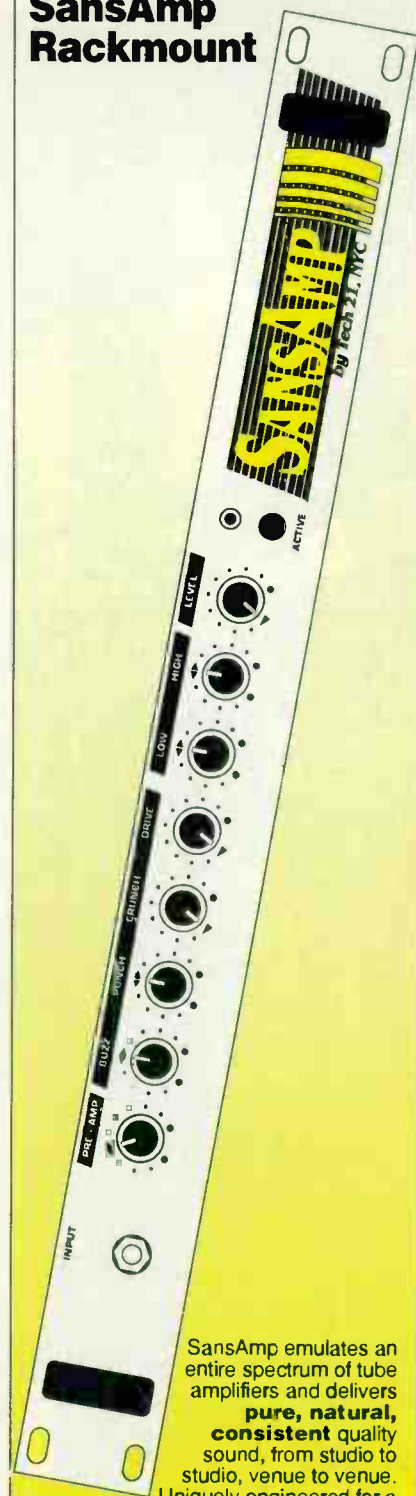


Figure 4: FFT plot THD (Total Harmonic Distortion)



Figure 5: Square wave response 1 kHz tone

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these large Marshall amps come in.

Jimi arrived shortly thereafter. He was very quiet and shy. I liked him immediately. And although quiet, he was very demanding. It's not often you hear these characteristics combined, but he knew exactly what he wanted in the studio.

Chas Chandler, Jimi's producer, was the one who actually made the decision to come to Olympic Studios in London. Olympic was, at the time, the newest studio that was probably the best in all of Europe. Traffic and Small Faces had recorded there.

It was also the most advanced studio at that time, although we only had four tracks to work with. The Americans had eight tracks, but we had better consoles and rooms. American rooms were typically pretty dead, acoustically; ours, however, were alive.

MAKING TRACKS

The basics of how I got Jimi down on tape are as follows: I would fill the four basic tracks with stereo drums on two of the channels, the bass on the third, and Jimi's rhythm guitar on the fourth. From there, Chandler and I would mix this down to two tracks on another four-track recorder, giving us two more tracks on which to put whatever we wanted, which usually included Jimi's lead guitar and vocals as well as backing vocals and some additional percussion.

I came up with this method of recording Hendrix because he had been used to the eight-track studios of America and he liked hearing the basic tracks across on all four tracks. Doing it this way made him feel much more comfortable and at ease in Olympic.

Of course, there is much more to Jimi than just these basics. Jimi and I shared a love of the weird and bizarre. Jimi liked to be pushed creatively, and I used to take so many chances with his sound — he loved that. Whenever I did something wild and strange in the studio, it was an inspiration to him. And consequently, whenever he did something unusual in the studio, it was an inspiration to me. It was all pretty subconscious. We never knew exactly what was going to come out when we rolled tape. It was all new and fresh.



Photo by Deborah Gray Mitchell

THE KRAMER CHRONICLES

If you were to make a list of the greatest legends in rock and roll, you would undoubtedly include Jimi Hendrix, the Beatles, the Rolling Stones, Eric Clapton, Led Zeppelin and David Bowie. One of the amazing things about this list is that it matches a major portion of Eddie Kramer's client list. So who is this man who helped shape the sounds that shaped music history?

In the mid-1960s, the South African native went to work for Pye Studios in England, which was a very unusual studio at the time in that it was outfitted with American equipment. "I learned a tremendous amount there," said Kramer. "It showed me how you could integrate European equipment with American equipment."

Pye Mobile, a division of Pye Studios, was where Kramer honed the on-location recording skills that would later capture the legendary Woodstock Festival. "Bob Auger, who is still around today and perhaps one of the best classical engineers in England, ran both divisions of Pye," explains Kramer. "I used to go out with him and record huge 100-piece orchestras on a three-track, half-inch machine with three microphones. It was all pretty amazing."

From there, Kramer opened his own demo studio, went to work for Regent Studios and then to Olympic Studios, where he worked with a veritable Who's Who of rock and roll that included the Beatles, the Rolling Stones, Traffic and Jimi Hendrix, among many others.

A year-and-a-half later, Eddie left England to work in New York City's newly opened Record Plant. It was there that he continued to work with Hendrix as well as with other artists, including Joe Cocker and N.R.B.Q.

After a year-long stint as an independent engineer for the likes of Led Zeppelin and Johnny Winter, Kramer was hired as director of engineering for Hendrix's Electric Lady Studios. He engineered all the Hendrix albums made during his lifetime. After Hendrix's death in 1970, Eddie compiled Jimi's posthumous recordings and created four albums.

For the next five years, Kramer would stay on at Electric Lady and record a variety of talent that included David Bowie, Led Zeppelin, Dionne Warwick, Lena Horne and Dion and the Belmonts. It was at this time that Kramer started his own company, Remarkable Productions, Inc., for which he produced artists like Carly Simon and Sha Na Na.

In 1975 he left Electric Lady to become an independent producer/engineer, working with Kiss, Peter Dinklage, Foghat, Santana, the Rolling Stones, Ace Frehley and many others. Over the last ten years he has engineered and produced many successful artists including Anthrax and Triumph and he is constantly seeking up and coming bands as well as established artists to work with.

In addition to his musical duties, Kramer has just finished, together with rock historian John McDermott, the quintessential Jimi Hendrix book entitled *Hendrix: Setting the Record Straight* (Warner). This book not only describes Jimi's life and music, but also discusses the way Jimi changed the recording business that have endured to this day. Kramer will soon be hosting a syndicated radio show and producing and engineering an album of Hendrix tunes covered by contemporary artists.

— Tony Savana

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LIFE OF A LADY

Over 20 years ago Jimi Hendrix decided to build his own personal studio. He is on record as saying that he wanted it to be the best studio in the world. Hendrix knew what he wanted — something new, something designed for rock, a place in which he could be comfortable and inspired. Eddie Kramer was the key person when it came to materializing Jimi's dream and he was given the job of overseeing the studio. Now, 20 years later, it has become commonplace for musicians to have their own personal studios, but Jimi led the way in this endeavor, as he did in music.

Electric Lady Studios is proud to have helped a number of famous rock and roll musicians over the years. A few of the classics include: Jimi's *Rainbow Bridge*, Stevie Wonder's *Songs in the Key of Life*, and parts of *Led Zeppelin II*. Additionally, Led Zeppelin recorded and mixed *Houses of the Holy* and *Physical Graffiti*, and mixed the soundtrack to *The Song Remains the Same* at the Electric Lady. The Rolling Stones are said to have recorded *Exile On Main Street* there, as well. AC/DC did *Black in Black* and Foreigner recorded *Foreigner 4*. David Bowie gave us *Fame* and, with John Lennon, recorded *Across the Universe*. KISS recorded and mixed at least seven albums at the "Lady," and Iron Maiden mixed five albums here.

Today, Electric Lady Studios is still making platinum and gold records for artists such as Prince, Mariah Carey, C&C Music Factory, Lou Reed, Anthrax, Warrior Soul and David Sanborn. The present staff continues to make Jimi's studio a place he would be proud of.

Much has changed over the years and much has been retained. A person familiar with the original studio would recognize, on the hall walls, the original Lance Jost murals that Jimi commissioned as well as the collages in the washrooms. Studio A acoustically looks and sounds very much as it did 20 years ago. The control rooms have gradually changed as the technology improved. Today Studio A features one of the two original Rupert Neve-designed Focusrite consoles.

Studio B has evolved the most. Seven years ago it was rebuilt, swapping the studio side with the control room side to provide enough space for ever-bigger consoles. New in this room is a custom 80-input SSL G Series console with Ultimatum. Along one wall sit the Studer analog machines and a Sony PCM 3348. Both Studio A and Studio B feature George Augsperger-designed monitors powered entirely with Manley tube amps.

Studio C, on the top floor, likewise features SSL with Ultimatum. It also has TAD components in the monitors and a pair of Studer multitracks. This room is a favorite of many top New York music makers owing partly to the proximity of

the monitors and the tight low end, and partly to its seclusion and privacy.

The microphone and effects list is too long to list here. Older classic EQs from Neve and Pultec are standard, as are UREI LA2's and 1176's. There are also newer Focusrite EQs and a variety of Lexicons and Eventides. Lately ELS has been featuring the Manley tube mics and EQs. And history continues to be made... —

Craig "Hutch" Hutchison,
Chief of Maintenance,
Electric Lady Studios

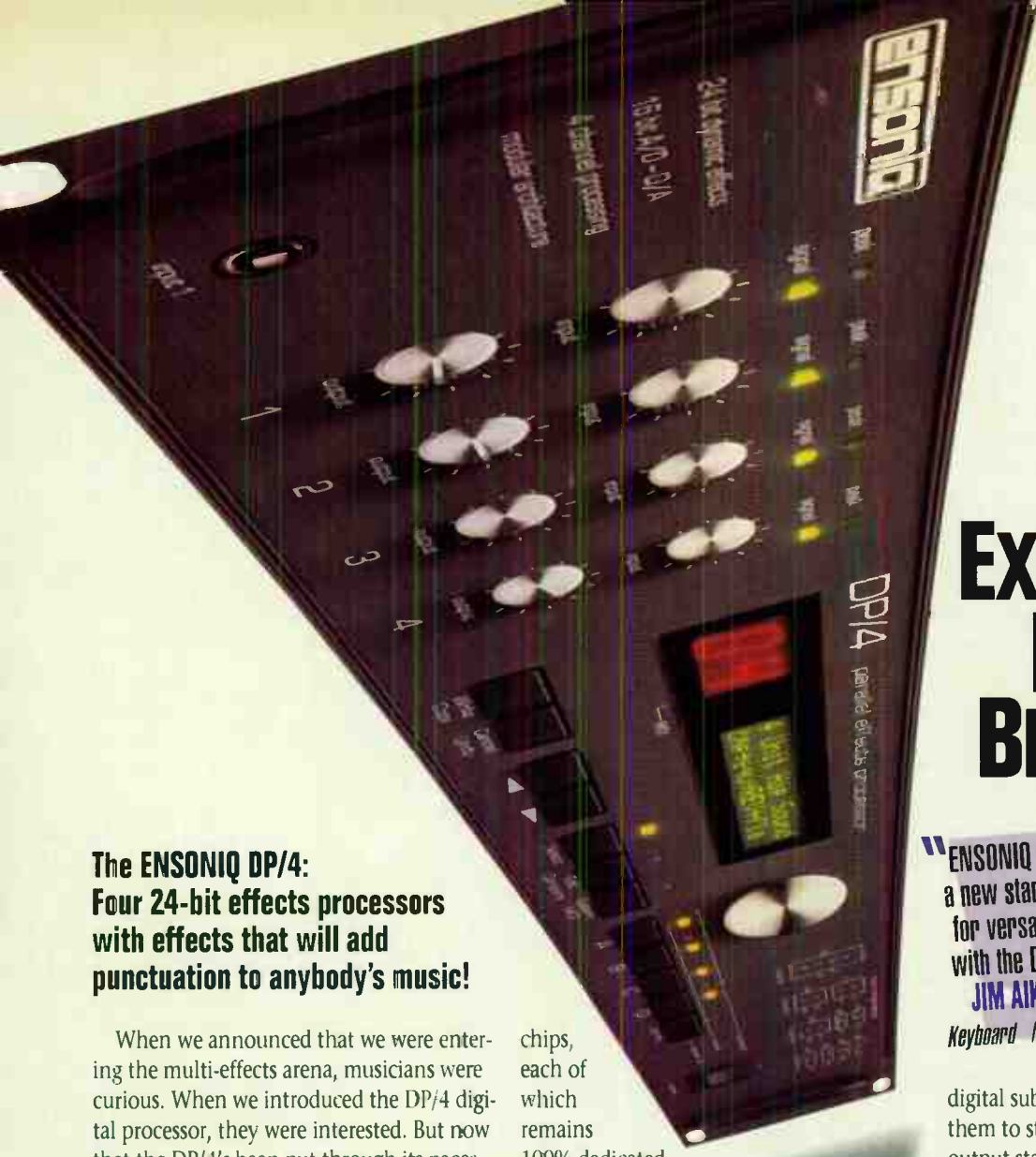
Jimi was vastly different from his contemporaries. His whole approach to recording was different to me. He was in his own little world of sounds. Basically, he created the sound in the amp and I just took it and ran with it — expanded upon it. With the Beatles and many of the other groups, much of the sound was created in the control room. Jimi was so wrapped up in his guitar and his sound, that whatever he produced from there was part and parcel of him. So when he plugged in and did something wild with the guitar — whether he would scrape a string or make a rumbling kind of motorcycle sound — he would be creating that so his style would be radically different from anybody else's. And his contemporaries realized this. They all used to come in and watch, whether it was the Stones or whoever else was around. They would just hang out and watch in amazement.

I remember how different it was recording the Beatles' single "All You Need Is Love." They came in and said (in their Northern accent), "We've got to do this television thing and John says he's got something." So we set up a place for John to sit in the control room and we wired up the talk-back mic in such a way that he could sing into it while Paul, George, Ringo and George Martin (who played keyboards) set up in the studio. We would run tape continuously for an hour, with John singing next to me the whole time. When they got a take they liked, they said, "O.K., that one," and that was it. It was pretty amazing, but also completely different from my sessions with Hendrix.

Case in point: I remember in particular the June '68 recording of "If Six Was Nine," which appeared on the *Axis: Bold As Love* LP. Olympic Studios often recorded classical sessions, so they had built special platforms to hold all the members. We had pulled one of these platforms forward and put Mitch Mitchell's drums on it. We also put a mic above and below the platform in order to record a foot-stomping track. Jimi was the "stomping leader." Graham Nash and Gary Leeds of the Walker Brothers had stopped by and were recruited to walk.

I compressed the foot stomps so much that you can hear the compression kick in and out. To add even more to the song, at the end of the tune Jimi played a recorder that he had purchased for two shillings from a street vendor.





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WHAT WOULD JIMI THINK?

A hands-on test of the Amek Hendrix console.

When I first learned that Amek named a console the Hendrix, I expected to see a tie-dyed board with grass sticking out of it. I'm basically opposed to using names on consoles. That being said, I recently had the chance to put this console to the test and see if it was truly worthy of Jimi's name.

For the purposes of the test, I used the Hendrix console at the new Artisan Recorders Red Truck, a 36-foot trailer that houses the 40-input Hendrix automated console. Peter Yanilos, owner of Artisan, tells me that although the truck is pretty new, it has already been used to record Gloria Estefan and Whitney Houston.

Operation. Coming down the line, the tape section has ± 20 dB of gain with a detent, which is a lot. That's great. I like the idea of the detent. Pretty cool. The EQ section is very good for a console of this price range. It seems to be fairly smooth. I like the fact that the frequencies overlap and that you can pull different sounds in the upper mids. There is an effective broad-to-sharp bandwidth control and a bell curve button that is impressive on the high end — very smooth.

In the mid range, if you really want to get nuts (which some people like to do), you can have a fine old time tweaking and ducking and creating a range of special effects — very wild. The board is extremely responsive, and easy to get at.

It did take some getting used to how the numbers are written in. In the lower midfrequencies, there is a duplication of 50 Hz through 1 kHz, which, although in the same range, sounds different. This is because the "Q" point of the mids is different from the "Q" range of the highs and lows. They don't tell you that. Some form of ID is necessary to differentiate between them.

Sonically, the EQ/mic line section is the heart and soul of this console. I think that it is a fairly comprehensive, far-reaching EQ. It can get you into trouble if you don't know what you are doing (by going over something very quickly) but on the other hand, if you have some experience and you want to go for some crazy tweaking, you can duplicate yourself up the wazoo. One has to be careful not to accidentally push the little insert button, which does have an LED. So does the EQ On button. The phase button, which is grey on a grey back-

ground, is very hard to see. (An LED here would have been helpful — failing that, a bright color would suffice.)

The bus monitor or tape return switch has a nice master-on/off feature. Fader reverse is good to have on an economically-priced console. I think that the layout of the two sets of pan pots is well thought out, this being an area in which I particularly like to work.

The action is smooth and I like the detent in the middle. Plus the knob itself has a molded pointer to indicate where you are at, so I can do fast panning. The VCA Out switch, which is a master fader, is another excellent feature.

The mute switches feel very good. I don't mind the fact that when you activate the switches a red light comes on. (There is supposedly a link inside that enables one to reverse the process so that the light will be on in the off position.)

What I would like is a master mute switch and some group muting outside of the automation. Two to four groups would be wonderful.

The feel of the faders is not great. It's a little light with not quite enough resistance. They work well, though. I like the feel of the stereo bus faders. It feels like there's some heft to them — a bit more professional.

One thing I did notice when I got into the mic pregain control: When I was up all the way (or close to it) for a low level acoustic guitar — the pot itself gave a strange amount of gain at 3/4 way around — it all of a sudden went nuclear! It's not very linear. Whether it was that particular pot or would also have happened with the other mic pots I don't know.

One of the other things I found was that the control monitor pot (which one uses a million times a day) cuts out on the right side toward the end of its travel counter clockwise, and leaves you with a tiny bit of volume on the left. Once again, it's not linear. And the actual feeling of the pot itself is stiff. One possible explanation for non-linearity of the monitor pot is because of the console's film mode, which allows four-track film monitoring and requires a four-gang pot that feels different from standard audio pots. As for the stiffness of the pot, I don't know if this is on all Hendrix consoles, but it could be that this unit's pot is binding on the metal plate itself.

Layout. One of the first things I noticed about the console was that, for its size, its facilities are very com-



Eddie Kramer (left) and Peter Yanilos sit at Artisan Studio's Amek Hendrix console. Photo by Deborah Gray Mitchell.

pact. Craming them all into a module that small was a pretty neat piece of engineering, although from an operator's standpoint, it does make it a little tricky; you've got to have dainty fingers to get in and out of those bus assignments up at the top. I think it's a good idea to have busses 1-24, but only 12 buttons with a change-over switch. Very economical.

The control part of the console is very well laid out. Unfortunately, I did not have a chance to use the integrated computer equipped with Supertrue, which I'm told adds a new dimension to the console. The keyboard, by virtue of the size constraints of the center panel, is laid out alphabetically and not in the traditional keyboard manner.

Looking at the console from a sitting position, as we come down the strip, you cannot see beyond the middle row of EQs. Many of the numbers get lost on the way up so you have to get up out of your chair to see what's really happening. That's one of the disadvantages you find with any angled console. So as you come down the line after the bus selection (which is pretty much hidden), the auxes really require standing up to see.

Another visual problem is that there are no LED indicators for the mic and line switches. Other LED functions that should be included are the four auxes to monitor or channel and the stereo assign on the monitor. The stereo assign is important because there are two of them, and it's kind of confusing. You have one stereo bus here and you also have the stereo bus up top for the big fader and have no idea whether it's on or off. (Short of using LEDs, the whole situation would be helped immensely by using different colored buttons.)

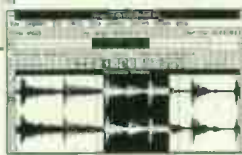
The lack of a writing strip for the monitor gain selection is probably the primary glaring omission. A 1/2-inch strip above the monitor pots to write what track you're on would make our job much easier.

continued on page 105



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PURPLE PHAZE

Another technique I used with Jimi was phasing. He had come to me wanting to produce an underwater sound he had heard in his dreams. He often described sounds to me and I was able to produce them, but this one proved to be a bit of a challenge. I had been experimenting with phasing and its possible uses for Hendrix, and when I played the results for him he yelled, "That's it! That's the sound I've been hearing in my dreams."

We first used phasing on "Bold As Love." I phased Mitch's drum roll (that rushed from left to right), then I panned the drum sound through the speakers, canceling the phase mere seconds before Hendrix's guitar re-entered the recording — also enveloped in phased sound. This was

one of the first times phasing had ever been recorded in stereo.

Jimi and I communicated very well. Later in Jimi's career, however, it would be harder to keep him focused in the studio. His life at that point was filled with pressures — from legal troubles to touring problems. To keep him focused, I found myself continually challenging him in the studio — keeping things interesting for both him and me.

I also knew how to make Jimi feel comfortable in the studio. From the outset, he had strong reservations about his vocal ability — he never really liked the sound of his voice. To help him overcome this discomfort, I would put partitions all around him when he placed the lead vocal overdubs. Jimi also asked that the lights be

dimmed, so they were. After we recorded the track he would poke his head around the screen and ask, "How was that? Was that O.K.? Was it all right?" And I would tell him it was fine because, when it came to his singing voice, Jimi needed all the confidence he could get.

(MOVE OVER ROVER) JIMI TAKES OVER

After the recording of *Electric Ladyland* in 1968, Jimi had been given a band to produce, named *Eire Apparent*, and he asked me to be his engineer. We always worked well together, and Jimi had always helped produce his own recordings, so I accepted.

But Jimi was at a point in his life where he wanted to be in control of everything — and it started to creep into my area of the board. Not that I didn't like that when I was working on one of his projects, where we would share the console. On certain pieces I would say to him, "You grab the vocal and do the pan on the echo," and I would grab the rest of the console. But with the *Eire Apparent* sessions he wanted to take control of the whole process, and I was annoyed at that. I think he was just expanding his horizons, but he was trying to take over my gig.

We had a parting of the ways because of this project. I didn't even finish it. I put my foot down — as a producer on his albums it was fine because we shared everything. On *Eire Apparent*, I felt as though my job was being usurped. That was the year I became an independent engineer.

BOXEY LADY

The separation didn't last long. Jimi and I didn't work together again until the building of Electric Lady Studios in 1969. We got together by chance — Jim Marron, manager of the soon-to-be-built studio, invited me down to the site where the studio was to be built — unbeknownst to Jimi. I had known Marron through visits to the Scene Club and he asked me to come down and look at the site, being completely unaware of my relationship with Hendrix.

Jimi and I, however, were happy to put the *Eire Apparent* incident behind us and work together again. I was brought on as chief engineer for Electric Lady Studios and was deeply involved in its design and construction.

John Storyk and Bob Hanson were brought in on the project. Storyk as architect and Hanson as acoustician. Storyk had originally designed Electric

Hendrix, Kramer and Jim Marron at the Electric Lady. Photo by Fred W. McDarragh

ELECTRIC LADY STUDIO WAS MEANT TO BE WOMB-LIKE AND COMFORTABLE, A "GROOVY PLACE TO WORK."



Lady as a nightclub, a plan he had to scrap when it was decided that the facility would be a full-fledged studio. He was really pissed-off about that. He had never designed a studio before. (He has since become one of the foremost studio designers in the country.)

My role was to play devil's advocate. I would say, "Hey guys, I want it live. I want wood here and carpet there and I think the control room should be this big," and so on. I tried to incorporate some of the design elements I had been aware of in both Europe and America. It was not a huge studio by any stretch of the imagination, but it did have a 16-foot ceiling at one point that dropped down to about 12 feet. American studios were largely boxes — pretty dead. So I incorporated part of Olympic Studios, which is a fairly live studio, into the design. I kept insisting that we make it as live as possible. After the studio was constructed, we stood there and clapped our hands and said, "Yeah, sounds good — there's a little bit of flutter." So we built these large heavy screens in order to absorb the flutter and separate the studio into two halves. In one-half there was all wood, in the other, carpet. We were very

lucky because, in those days, acoustics were pretty much 50 percent luck and guesswork, and the rest was created. It must have worked out well — acoustically the studio is still the same and still sounding great.

Philosophically, the studio was completely different from anything that had ever been done before. It was a studio that was built specifically for the artist. Plus, it was built with moods in mind. We had installed theater lighting and white carpet on the walls — so that you could wash the walls in color. It was meant to be womb-like and comfortable, a "groovy place to work."

In comparison, Olympic and the Record Plant were boxes. They were all multitrack, the Record Plant being 16-track and Olympic 8-track, but the Lady was 24-track. We had the first 24-input console that actually had 24 busses. It was a Datamix (which was sold at a Hendrix memorabilia auction earlier this year). We also had one of the first 24-track tape machines, as well — an Ampex MM1000.

WORKING WOODSTOCK

While I was working on the construction of Electric Lady, I was asked to head to Bethel, New York, to record

the Woodstock Music and Art Fair. I agreed and was looking forward to capturing Jimi live (I love to record live). I remember driving up there at about five in the morning. We had to walk a mile to get to the gate from where we had parked the car. I especially remember the sun coming up from behind the stage, which was still in the process of being built. Despite this idyllic scene, I was about to become involved in a nightmare — an absolute, horrendous nightmare.

The PA system was still being built as the show started. We were in the back of this tractor trailer with two Scully 8-track machines balanced precariously on an orange crate. It was a 12-input console that had these horribly noisy switches for selecting the track bus, which I had to switch in between songs. We had a stack of Shure mixers on top of the console to give us enough inputs. There was only one monitor, an old Altec 604. It was madness!

The communication between the tractor trailer and the stage was equally horrendous. The stage was circular, with one band performing on one half and another band setting up on the other. It was on wheels, so the idea

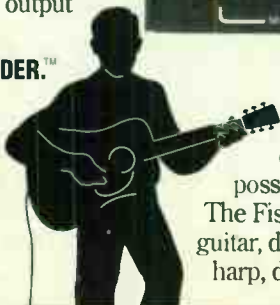
continued on page 104

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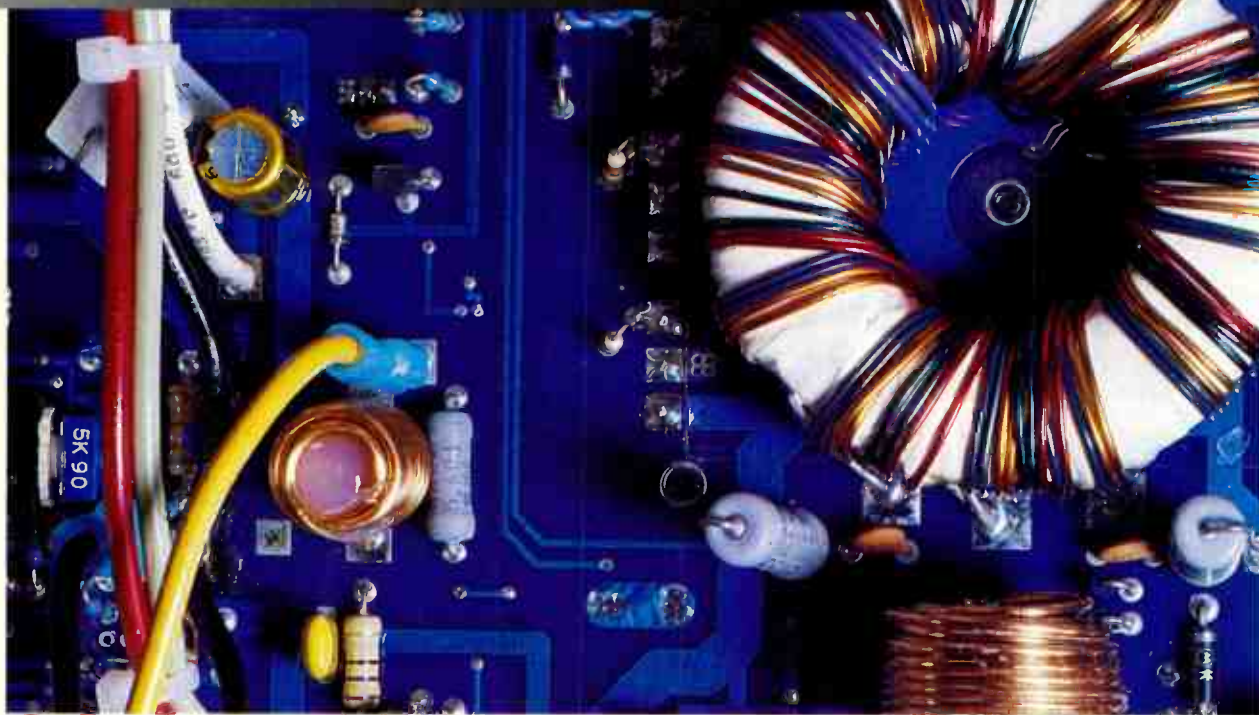
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IN A BAND VAN



AMP TIPS
PAGE 59

A SPECIAL SUPPLEMENT TO EQ MAGAZINE

GROOVE TUBES



INSIDE: MIDI MAXIMUS

ELECTRIC BLUES

■ **THREE BLUE MEN** take center stage and stare forward, holding enormous boxes of that ever-tasty childhood delicacy, Captain Crunch cereal. They begin to throw gobs of the gunk into their open mouths, and chew. "KrrrRUNCH!"

Apogee loudspeakers pump out loud "crunching" sounds as the blue men start to chew more vigorously, each with his own unique pitch and tone. Slowly, a powerful rhythm begins to take root as the quirky trio chews in perfect synchronization with an ITC Delta cart deck, a relic from the old days of radio that supplies the blue men with everything from yelps of pain (Ouch!) to sizzling bug zaps. Before long, the the-

ater is filled with a symphony of perfectly timed (and mimed) eating exclamations, and the audience is treated to an audio/visual mind-blower. But that's only the prologue to a show that features a hilarious ear-tweaking bit, a journey into virtual reality, watered-down drum solos (literally!) and finally, a rousing dance, en masse, to KLF's "Last Train to Trancentral." What else would you expect from three men who paint themselves an alien shade of blue and play tubes for a living?

More, of course. And that's what these musicians cum performance artists are giving their curious public, most of whom can't seem to get enough of their hit New York City show, *Blue Man Group: Tubes*. By

selling out New York's Astor Place Theater for ten months straight, and appearing on *The Tonight Show with Jay Leno*, Blue Man Group (comprised of Phil Stanton, Chris Wink and Matt Goldman) has proven that hit shows can exist on a minuscule budget and more than a modicum of creative thinking. Plus, a good soundman doesn't hurt, either.

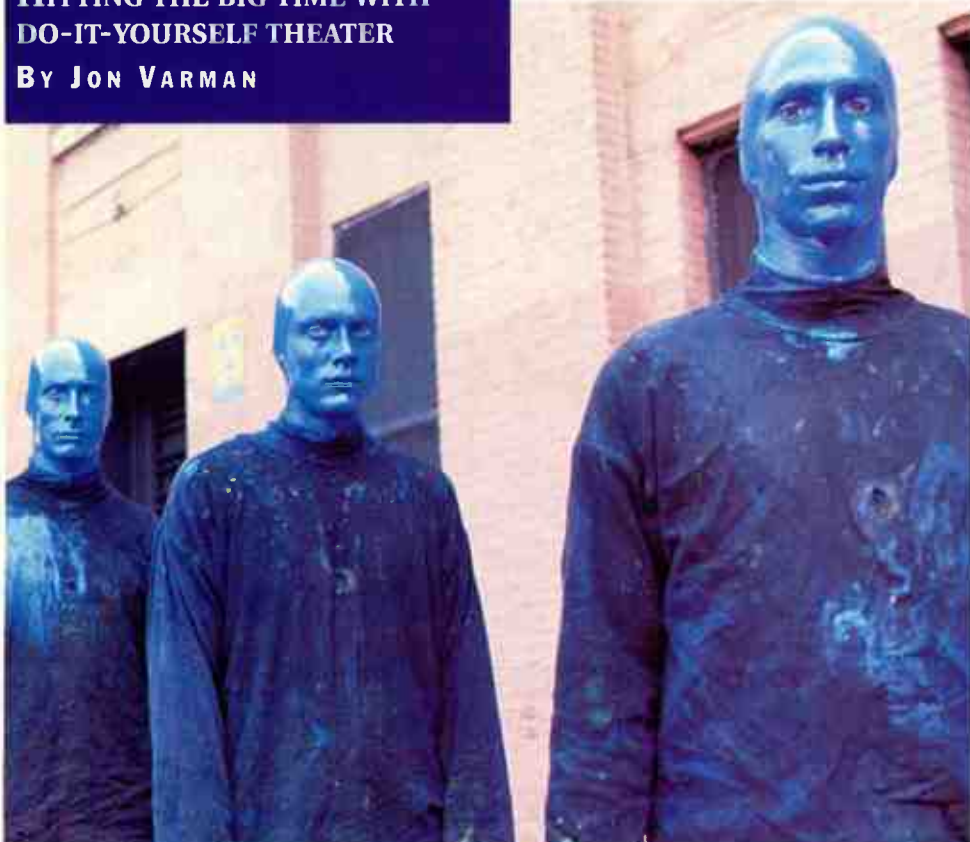
"Essentially, this show is run on a populist theory, which allows for complete accessibility," says sound engineer, John Weidenbusch. "We want to reach out to everyone by remaining a very down-to-earth operation." Keeping in line with the blue-man mentality, Weidenbusch and sound designer Raymond Schilke have come up with a bevy of homegrown techniques for monitoring, mixing and protecting the sound elements of *Tubes*. For example, in order to protect the Shure

and AKG stage mics from paint and flying food (a staple of the wild show), Weidenbusch covers them with a "weird" substance that he found in the group's road boxes. "I don't know what it is," admits Weidenbusch, "but it protects the mics and keeps them from shorting out." Since the discovery, the Blue Man's sound team has assigned their own moniker to the mysterious translucent protectant: "acoustical condoms."

Another sound solution, which Weidenbusch credits to the production's populist atmosphere, is the monitoring of the show's musical anchor, the tubes. Primarily constructed of the household plumbing material known as polyvinyl chloride, this home-made instrument is played with flip-flops (that's right, thongs!) to create harmonious melodies, mostly of a primitive nature. Initially, the blue men had trouble hearing their tube monitors, which, like the mics, were covered with splash-resistant drapes. To remedy the situation, the creative team decided to monitor their blue subjects head-first by carefully concealing Walkman headphones beneath their bald caps. The headphones, in turn, were plugged into small preamps that took the board feed and converted it to Walkman applications. Almost immediately, complaints of feedback and excessive noise were silenced, and to everybody's amazement, standard consumer equipment capably took the place of their professional counterparts. Once again, do-it-yourself theater prevailed.

HITTING THE BIG TIME WITH DO-IT-YOURSELF THEATER

BY JON VARMAN



ASTOR BLASTER

Surprisingly, the most pressing sound problems associated with *Tubes* were mutually inclusive factors



THE GEAR IS COVERED WITH
A "WEIRD" SUBSTANCE
THAT WAS FOUND IN THE
GROUP'S ROAD BOXES

made concrete by the production's venue, the Astor Place Theater.

"This theater is a real challenging space," says Weidenbusch, a part-time rigger who toured with the Rolling Stones and Dire Straits before returning to the medium of off-Broadway. "Because the building wasn't really designed as a theater, we have these brick walls and steel doors to worry about. Mostly everything up above the high-mid can sound really dirty, almost to the point of piercing." Weidenbusch pulls down a considerable amount of the high-end on his 16-channel Soundcraft 400B console. He makes up for toned-down frequencies by bringing selected dynamics back up on the graphic equalizer wavelengths, courtesy of Klark Teknik and dbx. "Basically, everything is EQ'd around the last song (KLF's "Last Train To Trancentral)," he continues, "because it's played louder than God and recycled three times. In order to set up the room's acoustics, it's essential that we work it around the most powerful part of the show."

BAND IN A JAM

Located to the right of the stage, jammed into a small square loft, is the Blue Man Group's band, a trio of musicians who refuse to limit their musical exploits to conventional instruments like guitars and keyboards. Hell, why would someone want to play a keyboard when he can play a zither or a Chapman stick instead? In any case, these were the instruments Weidenbusch had to deal with when plugging the band into his sound system.


"The zither (a flat harp) was plugged right into the musician's amplifier," explains Weidenbusch, "so we took the studio feed right off the back of his amp. But for the Chapman Stick, we'd

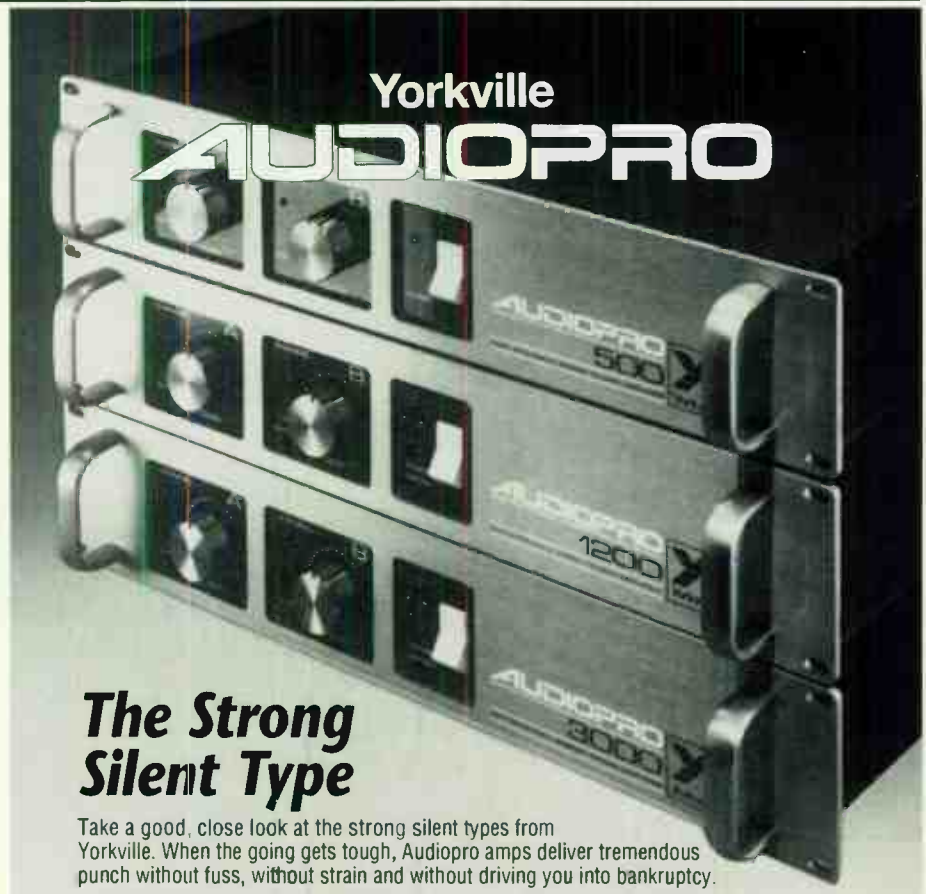
take the signal right from a direct box since it's such a clean instrument." Played with a style described as "half plucking, half tapping," the Chapman Stick is a 10-stringed instrument that helped define the sound of Peter Gabriel and Angelo Badalamenti. Several percussion instruments can also be heard during the show. In order to stave off

any unwanted drum reverberation while the band was in full swing, Weidenbusch draped stage blacks around the inside of the small band loft and crossed his fingers.

OFF-BROADWAY BLUES

So what pearls of wisdom does John Weidenbusch have for those who dream of mixing down the bright stars on (or off) Broadway?

"Off-Broadway pays a lot better than club work," explains Weidenbusch, "but not as well as national tours. Look at doing off-Broadway as a stepping stone instead of a lifestyle, otherwise you're going to go hungry if you don't have a hit show." 



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■ WHAT'S THIS WITH all the trapezoids? A reading of the spec sheets of most popular PA loudspeaker brands

takes you back to your days in geometry class, wondering how to calculate the area of that mysterious (yet

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What is a trapezoid, anyway? And why is this

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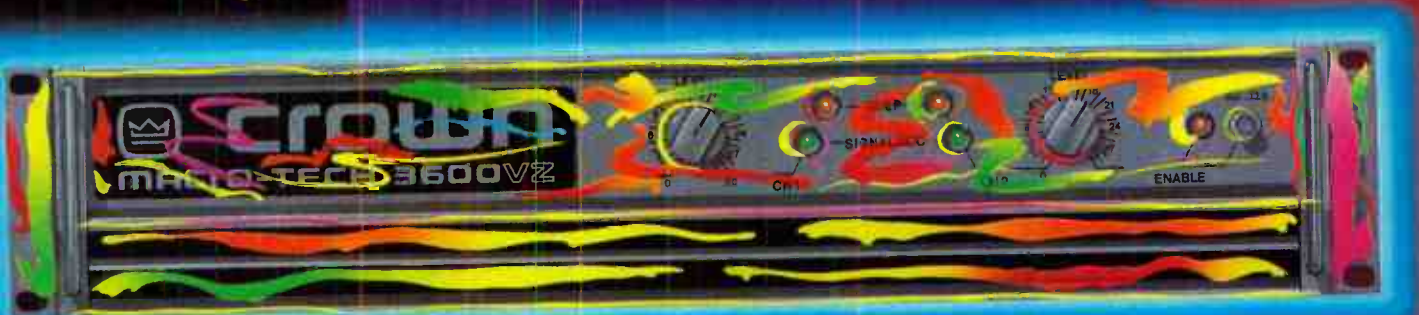
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World Radio History



cabinet shape is that, by using it, speakers can be efficiently married to itself in arrays. [If, for some reason, this term is new to you (or if you are new to sound reinforcement), arrays are simply groupings of speakers (usually of the same kind) that provide more output together than they would individually, thus allowing for controllable dispersion patterns.]

Aside from basic vertical or horizontal groupings, several layout options are available to the engineer because of the shape of the cabinetry. Arrays are often semi-circular or can appear in V-shapes or combinations, depending on the dispersion required. Usually, such arrays are hung or "flown" above the stage. Each cluster, or parts thereof, may feed off a particular

channel from the console or other source, allowing the engineer to assign and EQ arrays as desired.

AN EMERGING PATTERN

A trapezoid is a trapezoid is a trapezoid? Not so. Pattern control is of the essence in good trapezoidal enclosure design. Most arrayable enclosures are of multidriver configurations, and some are of a direct-radiating design. Different manufacturers take different tacks to achieve as balanced a sound as possible. Two-way, three-way, four-way and coaxial enclosures are among the designs available, and a host of dispersion patterns is currently available. As is the case with so much in pro audio, the "right" opinions are the ones that agree with yours. Kidding aside, there are many ways to approach

the goal of achieving the best sound — but it takes skill, experience, experimentation, and a little luck. Arraying speakers in any public address application has its own challenges that need to be tackled.

Particularly in mid- and high-frequency ranges, if there is too much space between adjacent drivers, a "hole" effect may result: there will be an audible drop in volume in these frequencies between cabinets, and audience members facing this space will be denied the full spectrum. The closer the mouths of the mid- and high-frequency drivers come to the outside edges of the cabinets (preferably an inch or less), the closer the adjacent ones will be in the array, eliminating this drop-out effect or reducing it to an inconsequential level —

theoretically. It's a tricky process for the designers to accomplish this, while still maintaining a good high-frequency response. Low frequencies are stronger, characterized by larger mass and slower movement; thus they are less prone to measurable drops in volume between sources. Bass is more non-directional, so it doesn't rely on being aimed so much. There are also comb-filtering problems, however, that can arise from this close positioning of the horns. Sometimes, because of their close proximity to one another, certain frequencies will be boosted. Trapezoidal direct-radiating enclosures are designed to address the problem of comb-filtering that occurs between adjacent high frequency horns, but some feel

continued on page 95

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POWER BROKERS

■ POWER AMPLIFIERS are actually very different from one another, but they may not look that way at first glance. That's because the things that separate one amplifier from another are mostly hidden. Like a table full of birthday presents, power amplifiers look pretty much the same until they're "unwrapped."

Yet "unwrapping" power amplifiers, by studying their features and specifications, produces another problem: too many choices. In today's power amplifier market, there are too many specs to consider and too many features from which to choose.

One way to help solve these problems is to put traditional features and specifications into groups that help buyers focus on those that are most important to his particular application. Below, I'll discuss several such specification groups created for buyers of common sound systems.

GROUP 1 — BASIC AMP TYPE

The most common amplifier types are card-cage, 70-volt, "classic stereo," and special designs.

Card-cage amplifiers are open-frame amplifier systems with optional accessories like signal pro-



Photo courtesy of Crown

MORE HOW-TO-BUY-A-POWER-AMP ADVICE
BY CHRIS FOREMAN



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cessing and computer control. They are most often chosen for large, multiamp permanent installations.

Seventy-volt amplifiers are single or multichannel designs with high-voltage (70-volt) outputs designed for distributed loudspeaker systems like those used in background music and paging systems.

Classic stereo amplifiers are general-purpose devices with two channels of amplifiers in one chassis. These amplifiers may have plug-in options such as crossovers or limiters.

Special designs include the amplifiers in self-powered loudspeakers and powered mixers and those high-tech, often high-priced, esoteric designs chosen for some special attribute such as vanishingly small size or weight, or super, golden-ears sound quality.

GROUP 2 — POWER OUTPUT

Before studying power output specifications, ballpark the needs of the application. Remember that low-sensitivity loudspeakers, like some studio monitors or subwoofers, require lots of amplifier power. Remember that too small an amplifier can actually be dangerous to loudspeakers. An amplifier with more than double the power recommended by the speaker manufacturer, however, is also dangerous.

GROUP 3 — BASIC FEATURES

This specification group includes things like metering, attenuator types, I/O connections, operational modes (stereo, mono-bridge, parallel) and accessories (plug-in crossovers, etc.).

Amplifier metering may be as simple as a "Power On" LED or as sophisticated as a multifunction LCD. Some amplifiers now offer computer ports that feed all

kinds of status information back to a computer screen. Others offer full-size traditional VU meters.

Attenuators may be simple rotary volume controls. They may be detented and calibrated in so many dB per step. They may even be DIP switches. The calibrated types are most useful in installed systems and in mul-

tiplier portable systems.

The most common operational modes are stereo, mono A/B, mono-bridged and parallel. Mono-bridged and parallel allow the individual amps in a multichannel amp to work in pairs or in groups to provide more power to a single loudspeaker load.

Plug-in accessories may

include input transformers (to provide balanced inputs), electronic crossovers, high-pass filters, and limiters, and may even enable remote computer control. Some plug-in accessories may be very cost-effective in comparison to their stand-alone counterparts, but make sure these accessories really offer what's needed for the application.

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GROUP 4 — PORTABILITY

If the application requires portability, certain features and specifications such as the following will be important: size and weight, construction (exterior and interior), rack mountability and multiple power source capability for world travel.

GROUP 5 — INSTALLATION

If the application is an installation, features like the following will be important: UL listing, cooling system design, AC power requirements, 70-volt capability, detented attenuators, balanced inputs and computer control.

GROUP 6 — PERFORMANCE

The performance specifications of modern power amplifiers are almost always very good. The result? In a controlled, blind listening test where SPL levels are truly equal and amplifiers are not allowed to clip, only a very few true "golden ears" can hear the difference between two power amplifiers.

When does one amp sound better than another? When they are operated under real-world conditions, pushed hard into difficult loudspeaker loads and run up to clipping level regularly.

Consequently, traditional written specs (unless they're unusually poor) may not be particularly important in determining amplifier sound quality. And listening tests must simulate real-world conditions to be conclusive.

GROUP 7 — REAL WORLD

Is it possible to determine how well the amplifier will perform under real-world conditions without actually trying it out? Some traditional specifications will help. For example, if the amplifier is rated to perform well at 4 ohms, its 8-ohm

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performance is probably quite good. If it has circuit design features that promote soft clipping, it will probably sound better during real-world use.

Other real-world features and specifications include balanced inputs to reject hum and noise, and protection features (the amp should protect itself and the loudspeakers in an unobtrusive way).

GROUP 8 — RELIABILITY

Amplifier reliability depends on basic design and construction, quality of manufacturing, protection features and the design of the sound system itself.

A reliable basic design will operate the critical amplifier output stages well within their "safe operating area" under all conditions. The cooling system of a reliable amplifier will maintain

a consistently low operating temperature at all times. A reliable amplifier will be constructed, inside and out, in such a way as to stand up to the rigors of travel. A reliable amplifier will protect itself against short circuits, excessive input levels and other system problems. It will also protect the system loudspeakers against turn-on/turn-off transients and against damage due to an

amplifier failure.

Of course, amplifier reliability also depends on good overall system design. Don't connect a 2-ohm loudspeaker load to an amplifier rated for a 4-ohm minimum load. Use good-quality loudspeaker cable and connectors. Pay careful attention to system grounding and shielding and watch input levels, or even better, use a limiter in front of the amplifier.

GROUP 9 — DEALER SUPPORT

This may be the most important specification group. Warranty is important, so is ease of repair. Where does service take place? Will the dealer help out with loaner or on-site repair?

THE BUYING DECISION

Specifications groups like those described help a buyer focus on those amplifier features and specifications most important to the required application. To actually choose a product, try to narrow the selections by studying the product reviews and buyer's guides published in this and other audio magazines. Dealer catalogs and manufacturer literature are two other good sources.

What should a good amplifier cost? Retail prices range from a dollar-per-watt for a no-frills amplifier to as much as two to three times that amount for an advanced-design amplifier loaded with accessories. Price will vary from dealer to dealer, so shop for both dealer and price.

Remember that this is a buyer's market! This means that the number of choices is increasing daily, that prices are competitive and that it's easier than ever to make a good product decision.

[Editor's Note: We receive more reader queries about buying amplifiers than any other product group. So don't expect this to be the final word on shopping for power.] ☺

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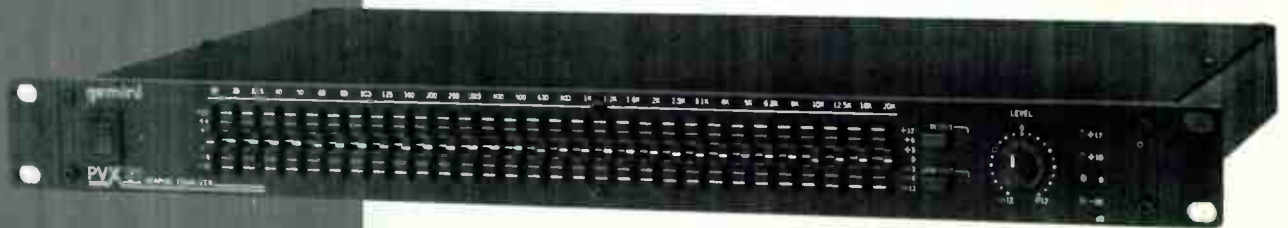
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MIDI MAXIMUS

**HOW TO CONTROL
YOUR EFFECTS
RACK WITH YOUR
EYES CLOSED
(ALMOST)**

**BY WADE
MCGREGOR**

THE EFFECTS units that fill your rack are sometimes sold with promises of unprecedented control. Once the rack hits the road, though, just pressing all the buttons may take more time than you have in a month's worth of rehearsals.

Yes, it is possible to squeeze all those promises out of your effects units, but you must first take the time to really know the subjective effect that each parameter can produce. Spend some time listening and adjusting in a situation where that is your primary focus, such as at a day of music rehearsals where the band is more interested in the charts than in the monitor mix (you should be so lucky).

Once you are comfortable with the processors, then the presets that suit your situation can be built. If you assign presets to MIDI Program Change numbers, then a MIDI remote control sitting on the mixer can provide you with access to the effects during the show. A sophisticated remote control can not only step the units through presets, but will also have continuous controllers and switches that can be assigned to control those parameters so that you can foresee tweaking during the show. Now you can focus on mixing the show and not

have to kneel in homage to your effects rack.

TRUE FACT

Here's a specific example of MIDI control in a real-life concert situation:

The equipment in the effects rack included a Yamaha DEQ7 digital equalizer, a Lexicon LXP-15 digital effects processor, and an Ensoniq DP/4 parallel digital effects processor. To control these units from the mixer, I used the Lexicon MRC (MIDI Remote Control). I did not have to send out large quantities of MIDI data at a time, so I simply connected one of the two MIDI outputs to the MIDI input on the DP/4, and from the DP/4 MIDI Thru port to the LXP-15 MIDI

input and through to the DEQ7. The DEQ7 was last in the chain because it lacks a MIDI Thru connector.

The venue was a small cathedral converted into a theater. Over a five-day period, four groups — a country band, a pop music duo, a folk music duo, and a four-person theater group — performed in "Rep" (alternating shows). Each of the groups required specific front-of-house volume, equalization and special effects.

During the initial setup of the sound system, I created a house EQ curve and signal delays for the E-V Deltamax loudspeaker system, using the Yamaha DEQ7 digital equalizer and a Techron TEF 20 acoustic analyzer. This basic equalizer setting was copied to ten memory locations in the DEQ7 so that I could modify the EQ settings based on this raw house curve to suit each group or even specific parts of their acts.



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The advantage of having stored equalization and delay settings was immediately apparent. The theater group, Zenendaba, from Johannesburg, South Africa, required four wireless lavalier microphones. I used parametric equalization on the house sound system to make these mics sound natural and give a high level of gain before feedback. The signal was delayed to the loudspeakers so that the audience localized on the voices from the stage, and the output level from the EQ was adjusted to optimize the gain structure of the system. These settings were stored in a preset and recalled for each performance, never affecting the presets made for the other performing groups.

CHANGE IN PROGRAM

During the brief rehearsal

with each group, I stored all effects and EQ settings to specific memory locations in each processor. In my notes I recorded the MIDI program number and cueing information to use during the run of the show. After the rehearsal was over I would program the Lexicon MRC with the Program Change numbers for that group and save them as a "setup." The MRC uses the term "setup" to refer to a stored group of settings for its assignable controls. This is done by modifying "Machine #4," which is a General MIDI setup called Orchestra-4. Selecting "Setup 2" and pressing the EDIT button allowed me to create settings for the MRC's four miniature faders, sending out a range of Program Change commands on a MIDI channel that corresponds to the presets I had



The Yamaha DEQ7 Digital EQ

stored during the rehearsals. I also assigned the four push buttons above these faders to a default Program Change command for each processor as a form of panic button. The default program was typically a bypass or mute setting for the effects units and the original house curve for the equalizer. I saved a series of different control groups and program changes as "Setup 3," "Setup 4," and so on.

The Ensoniq DP/4 parallel effects processor included some very useful noise-gate, expansion and compression programs. When I used these effects I would assign a "page" of four MRC faders to

Threshold and Ratio for two processing units of the DP/4. This allowed the dynamic processing to be done with quick access to the crucial controls by simply pressing the page button on the MRC. This page button accesses the second set of four fader assignments. The DP/4 could then be left on a display that showed the gain reduction meter for one of its four units and I could adjust the parameters on the MRC; a glance at the front panel of the DP/4 could verify the amount of gain change. This made the DP/4 easier to operate than a conventional dynamics processor — after all, you still have to reach over to the

continued on page 96

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TRAP-A-ZOIDS

continued from page 82

that overall frequency response and wider dispersion patterns may be somewhat compromised.

SPECIALIZED SOUND

Most enclosures offer fixed dispersion angles, but a variety of dispersion patterns are also achievable thanks to trapezoidal enclosure designs. Very tight patterns, such as 60 degrees by 40 degrees or 65 degrees by 50 degrees, for example, are possible. So the sound designer can cover a certain area of the audience with one group of enclosures, while the section next to it will cover another area, the one next to that, another area, etc. Thus, unlike the old days when giant speakers blasted the sound forth randomly these arrays ensure that all frequency ranges can be heard clearly from all angles.

For loudspeaker arrays, it's obvious that a tremendous amount of power is required to push all those drivers. Many arrayable cabinets have their own power, and some are bi-amped, tri-amped, or more.

Certainly, the larger the venue, the greater the need for sophisticated arrays. But you can start outfitting with trapezoidal speakers even when playing small clubs. Remember, if you're planning on upgrading to an arrayed loudspeaker configuration, it will take some research on your part to determine just what kind of system, and how large and how powerful a system, will be right for you. But once you've found it, you'll gain a degree of control over your sound that you didn't have before, ensuring that you're being heard closer to the way you want to be heard.

— David Jacobs

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YOUR EFFECTS RACK.**



MAX MIDI

continued from page 94

effects rack to adjust conventional devices.

In one section, a performer told a story over music. During the course of one sentence he wanted to be heard as though moving from the theater into a very large room. I assigned the reverb decay time on the LXP-15 to MIDI Pitch Bend and, on the MRC, a fader to MIDI Pitch Bend. I set the fader controller range from +2 (a 0.8-second reverb decay) at the bottom of the fader, to +11 (a 2.9-second reverb decay) at the top of the fader throw. The range was preset to

match the rehearsed settings so that I was able to move the fader, during a single sentence, across its full range without looking at the MRC or LXP, knowing that I was always at the correct setting. The MRC also allows the law (the rate-of-change value) of the fader to be adjusted; using a logarithmic taper, I was able to make the transition smoothly and consistently in each show without having to look away from the stage. My cue sheet simply had to note the correct "machine" for the MRC at the beginning of each show and the "page" for each section of the act. This was instead of my having a long list of parameters to set and my spending each cue squinting at the processor display.

With an additional 10 or 15 minutes spent recording the setting into the proces-

sors and MRC after each rehearsal, I was ready to run each show. I would probably have required considerably more time just to make legible written notes of parameter settings if I had to set up the same effects from the front panel of the effects rack.

Unfortunately, it was only possible to access the DEQ7 filter settings through MIDI System Exclusive messages. I did not have the time (okay, or patience) to sit down and work out the hexadecimal codes to assign the MRC faders to control filters. If the DEQ7 had the sophisticated MIDI implementation of the LXP-15 or the DP/4, it would have taken only a few minutes to create a remote control for the equalization. (Yamaha now offers the more sophisticated DEQ5.) I did use conventional 1/3 octave EQ for

the monitor systems because I was not comfortable changing the monitor EQ during a show by paging through one frequency band after another. The house system required very little change to the EQ after the rehearsals, so the DEQ7 interface didn't pose a problem in that application.

At the end of five days and 20 shows, I had not experienced one failure or even a glitch in the processors and control. The performers were happy, the promoter had good reviews, and there were no unexpected costs for dealing with technical problems.

Festivals are a common part of the sound reinforcement business and with the assistance of a little MIDI control and digital processing, they can even be fun for the person mixing the show. ☺

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Once you have your finished master in hand, what's next?

**BY BRUCE BARTLETT
WITH JENNY BARTLETT**

Ever consider releasing your own records? It's exciting to take control of your own record project, and it's easier than you might think. Once your master tape is done, you'll want to have it duplicated on CDs or cassettes. Here's what you need to know.

MASTER TAPE FORMAT

The usual tape formats are DAT and open reel (15 ips, 1/4-inch half-track stereo). Many houses, however, can accept a wide variety of formats: DAT, audio cassette, VHS Hi-Fi, Beta Hi-Fi, 3/4-inch U-Matic, VHS or S-VHS, and open-reel (at various speeds, widths and track formats). Generally, master tapes must be ready to run; that is,

songs edited, in the proper order, each at the correct level and equalized. If your master tape needs changes, most houses offer editing services for about \$50 to \$120 per hour. You can edit a rough DAT master with a digital audio workstation. A low-cost system (about \$1500) installs in your personal computer. You also need a high capacity hard disk drive — about 660 Mb of disk space for an hour-long album. To save cassette tape, sequence the songs so that Sides A and B are about the same length. Make Side A slightly longer than Side B so any extra blank tape will be at the end of Side B.

GET WITH THE PROGRAM

Here are recommended program lengths for cassettes and CDs:

Format	Optimum length	Maximum length
Cassettes	22 min/Side	48 min/Side
Cassingles	3 min/Side	6 min/Side
Compact discs		72 minutes

Avoid maximum lengths, as they are more difficult to transfer.

PREPARING THE MASTER TAPE

Clearly label the master tapes Side A

and Side B, and include the title and project number. If Sides A and B are on the same master, leave a space of 2 to 5 minutes between them (except for a CD). For analog master tapes, splice on leader tape at the head and tail of the tape and between cuts. Include test tones at the head: 20 sec. each of 100 Hz, 1 kHz, and 10 kHz at 0 VU. Also include tones for Dolby A or SR, if used. Store the tape tail out to reduce print-through, and fasten down the tail with splicing or masking tape.

DAT tapes have special requirements:

1. Rewind the tape to the head and zero the tape counter.

2. Record 30 seconds of a 1 kHz test tone at 0 level (maximum recording level). With some houses, this tone is optional.

3. Record a 2-minute preroll of silence (called digital black) before the start of the program. This avoids dropouts, which are common near the head of DAT tapes. Some houses ask for a 1-minute preroll, others ask for 15 seconds.

4. If you want cassette duplication, put two to five minutes of digital black between Sides A and B. If you want CD duplication, put two to four seconds minimum between what



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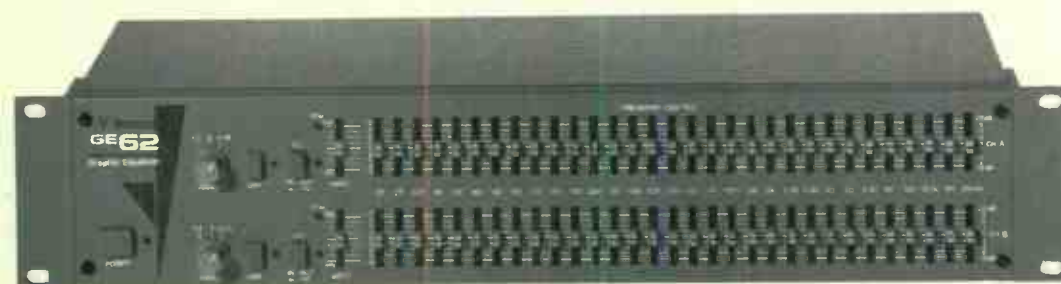
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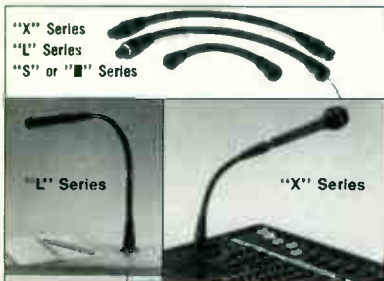
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would be Sides A and B for a cassette job. If you want both cassette and CD duplication, do the latter.

5. Recording levels must not exceed 0 dB. You might want to aim for -2 dB maximum to allow some headroom for errors or miscalibration of your deck's meters.

6. At the end of the program, record 15 seconds of digital black with the recording level knob turned down. Some houses prefer a 1-minute postroll. After all the songs are recorded, manually write a start ID at the beginning of each selection, in sequential order. First check the house requirements — some houses want the start ID to appear one second before the exact start of each selection. There must be only one start ID per song, so erase any extras. Include a tape log. If possible, record your DAT master at 44.1K to avoid the sampling-rate conversion. 48K tapes

will be converted to 44.1K for premastering, sometimes with an extra charge — so, make sure to ask. The mastering engineer might opt to use the DAT player's analog outputs instead of a sample-rate converter.

CASSETTE DUPLICATION OPTIONS

Your master tape can be copied onto cassettes in three ways: at regular playing speed (realtime), mid speed, or high speed. The higher the speed, the less the cost, but the lower the sound quality. Realtime duping sounds the best. It has the flattest response and the least distortion and noise. The engineer copies your master tape in real time using a high-quality cassette deck. Some duplication houses copy simultaneously to several decks in parallel. Your master tape is played several times until all the copies are made.

An intermediate method is mid-speed duping — about 10 times normal speed, done in-cassette. The cost is about \$1 less per cassette. Not all houses offer this service. For high-speed duplication, the engineer first copies your master tape to a bin-loop duplicating master. This is an endless loop of 4-track tape used for high-speed duplication. The bin-loop master plays the program at high speed, and copies it to several "slaves" also running at high speed. Finally, the

CASSETTE PARTS AND COSTS

Label — adhesive label or printed on cassette.

Container — hard Norelco box or soft poly box.

O-card — cassette-single sleeve.

Insert or J-card — sheet for liner notes and artwork.

Typical prices below include mastering, ferric tape and Norelco box with no printed insert.

100-300 high-speed C-45's: \$1.80 each.

1000 high-speed C-45's: \$1.02.

100 real-time C-60's: \$2.05; high speed: \$1.16.

Chrome adds 15 cents each.

Additional costs are those for printed labels, label typesetting, inserts, and insert back printing. For highest quality, use chrome tape, real-time duplication, and Dolby.

CD PARTS AND COSTS

Jewel box — hinged plastic container.

Tray card — card on back for song titles and credits.

Liner or insert — card in front for album title, artwork, and some text.

Folder or booklet — option for the front.

Blister pack/longbox — plastic/cardboard enclosure that fits a record bin.

CDs will be sold in jewel boxes only by April 1993.

Typical prices below are for 1000 60-minute CDs, including manufacture and jewel box.

No insert (or you supply): \$2.17 each. Black & white cover insert, one photo: \$2.43

Full-color tray card and 4-page booklet: \$3.13. Price goes up as printing gets longer.

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slave tapes are trimmed to the exact length of your program, and are loaded into cassette shells.

DUPLICATION HOUSES

Look for duplicator ads in the backs of recording magazines. Ask musician friends and studio engineers for recommendations. The quality of cassette duplicators varies widely, so be sure to ask for a sample cassette made as you want yours to be made.

Some houses offer discounts for CD/cassette combinations. Prices range from \$2 to \$3 per CD (including mastering, but not printing).



Printing quality is the main difference among CD manufacturers. You might prefer to hire a local printer so you can supervise the print job more closely. The printer will need the dimensions of CD booklets and J-cards; these are available from duplicators. Some houses require you to supply typeset text on film; others will do the typesetting, printing, and film for you at extra cost. *Read the fine print!*

A few houses have impressive client lists, so be sure to ask for one. Look for such extras as computerized documentation of the formatted master tape, and in-house custom artwork. Typical turnaround time is two to three weeks for new orders, while reorders take about one to two weeks. Some companies offer express packages at higher cost: seven working days from receipt of your order, to shipment. It takes only three or four days to do the mastering and compact disc cutting, once time is available for them to get to your project.

WHAT'S NEXT??

Always make a safety copy of your master tape before sending it out. This copy will be used if the master is lost or damaged. Send the master tape by UPS, Federal Express or registered mail so that you can trace the shipment if necessary. Be sure to get a proof cassette or DAT tape that represents the final product. This way, you can approve the sound quality before proceeding. After receiving your finished cassettes or compact discs, celebrate! Now you have the power to make profits, get gigs, and reach many people with your music.

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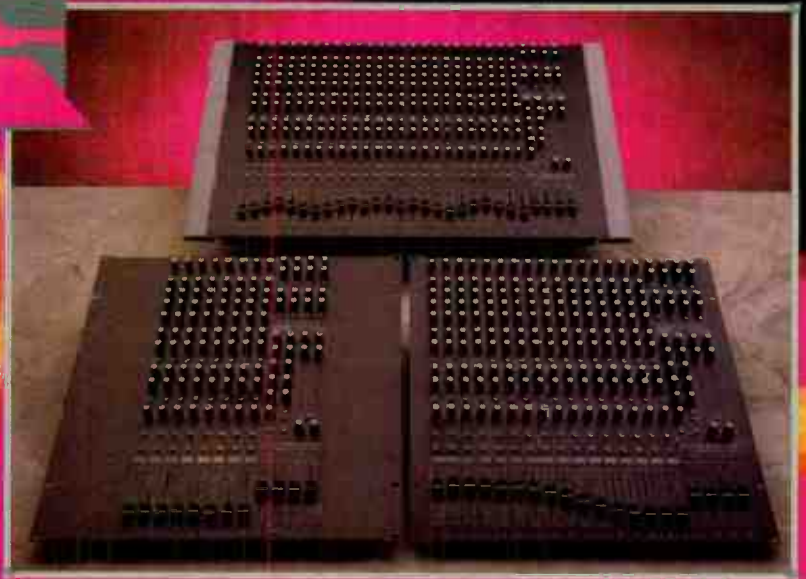
CIRCLE 75 ON FREE INFO CARD

World Radio History

A.R.T. SHATTERS THE PRICE OF PROFESSIONAL MIXING TECHNOLOGY!!!

THE PHANTOM PROFESSIONAL SERIES CONSOLE

Every once in a while a product comes to market that offers a brilliancy in design that seems beyond human engineering. The Phantom Series consoles offer the performance and features of mixing boards costing thousands of dollars more. They are rugged enough to take the pounding of steady live use. They are also so transparent and utterly free of noise that they are the first choice for precision multitrack recording! From a four track home studio to 32 channel digital, the Phantom consoles offer a level of performance that is inspiring. A.R.T. has taken the fidelity of world class recording mixers and made the technology available in a professional console that is as silent as its' name implies. Production unit will vary slightly from photo.



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JIMI HENDRIX

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was to have it turn to change bands — unfortunately, the wheels broke off after the very first band performed. I had to keep running up on stage in between acts and make sure that the mics were set correctly. Then I had to run down to the truck and make sure everything was running properly.

On top of all this, only seven of our tracks were usable because the eighth had a 60 cycle pulse on it for the purpose of the movie that was being filmed (SMPTE timecode hadn't been invented yet). With all of this and the wind and the rain, it was amazing that we got anything down on tape. What's even more amazing is that it ended up sounding as good as it does.

BACK ON TRACK

The next time I would record Jimi would be when Electric Lady opened in mid-1970. It was different working with Jimi at Electric Lady from working with him at a hired studio. For one thing, he was on time at Electric Lady. He loved the studio. He was so enthralled with

the idea that he had a place of his own — it was his pride and joy.

It was a treat just watching him in the studio because his whole demeanor changed. He was like a kid in a candy store, the way he fussed over everything. He loved that room.

The year before Electric Lady opened, Jimi had a particularly rough year. He would go into the studio and jam and get stuff down on tape, but it lacked focus and had no direction. Electric Lady helped him regain focus. I think my presence also helped. In the studio, he could relax and know that I would take care of everything.

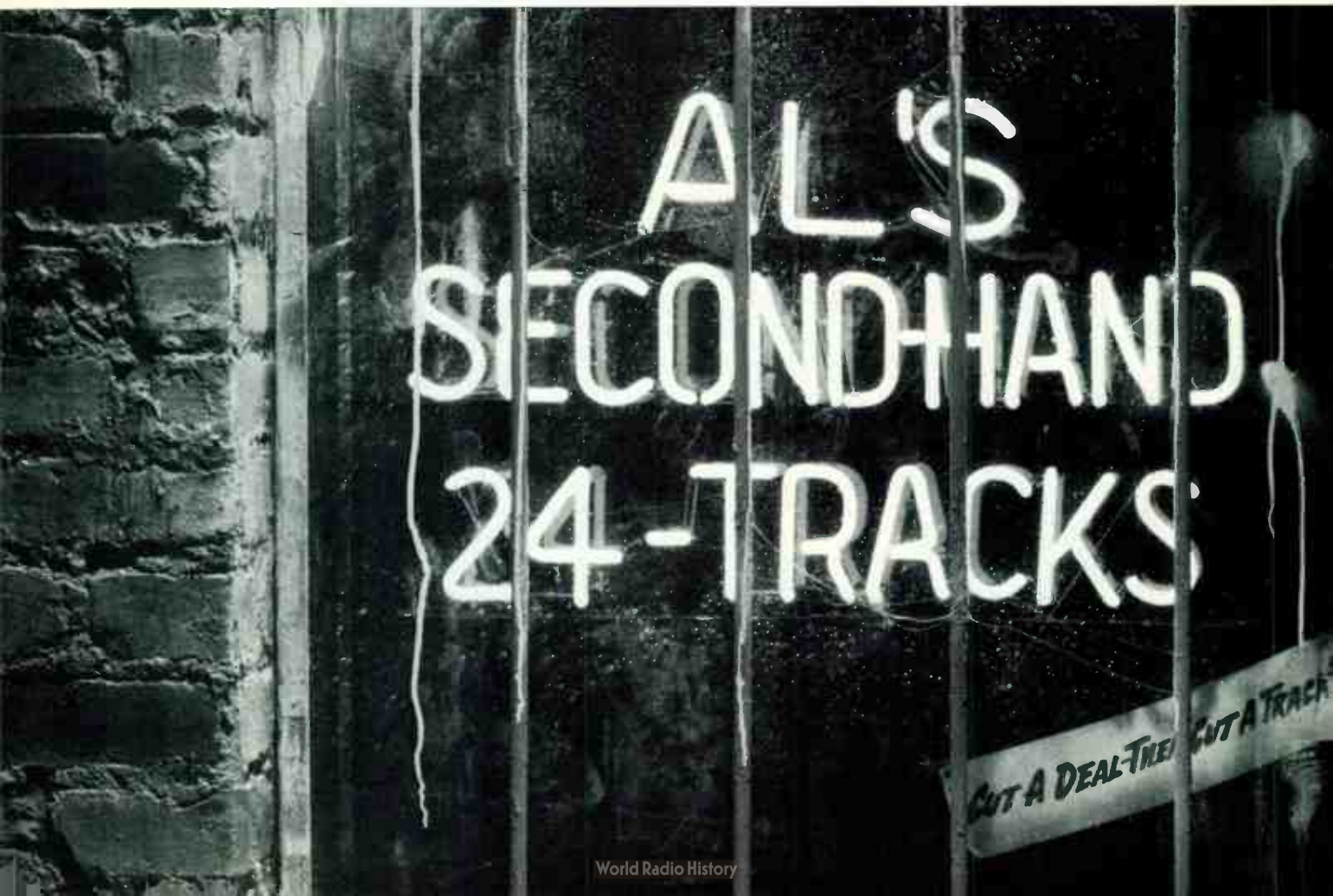
One of the best sessions Jimi had during his short time at Electric Lady was the recording of "Dolly Dagger" in July and August of 1970. Actually, he had cut the song twice: once at the Record Plant in November of '69 and again here at Electric Lady. We cut the basic tracks in one evening, but spent three or four days overdubbing guitars and finishing the background vocals. Jimi would do a solo one night and it would amaze everybody listening — except Jimi, who would call it a piece of shit the next day and redo it. The only thing was, he *would* do it better! I had nine or ten solos to choose from

and they were all incredible. I let him continue playing because I knew I would be able to mix together the best ones, keying them in and out of the mix to savor the highlights of each.

Ultimately, "Dolly Dagger" was a complex track with many layers of sound. Hendrix's lead guitar floated through the entire song and locked it together. We recorded his guitar in stereo, combining direct feeds from both his guitar and amplifier. Since both Jimi and bassist Billy Cox were playing basically the same riff, it locked the rhythm in. We applied the same technique to Cox's bass, and later overdubbed a fuzz bass to capture just the right effect. When we were cutting the basic track, Jimi put a lead vocal down at the same time he was recording his lead guitar to get into the mood of the vocal.

This set continued for a long time, breaking into different songs that included Jimi's "Pali Gap" and the Spencer Davis Group's "Gimme Some Loving." It was an amazing set that brought Jimi's confidence back to him.

Jimi recorded furiously during those months, but he had to leave on a tour shortly after the "Dolly Dagger" session. He would never get to record at Electric Lady again.



Jimi died on September 18, 1970, while in London. It's a shame that Jimi died before he could use his studio to its full potential — and before he himself could reach his own. I think that had he lived he would have surprised us all in terms of the expansion of his music. He had a very inquisitive mind and he never stopped searching for new sounds.


BACK TRACKS

One final comment: When I listen today, on compact disc, to the stuff we did back then, I'm disappointed. Transferring all that we did to digital — I don't feel good about it, quite frankly. First of all, they didn't call in the people who originally did the work to help out with the remastering. I know the guys who are doing the transferring are doing the best they can, but it's not the same. If Phil Ramone did a record 15 years ago, why don't they call him up and say, "Would you please supervise this for us, just to make sure that it is going to sound pretty much like the original?"

I'm not a big fan of digital. I think it has its place, but I also think it's very cold. What I have done on some occasions is combine the technologies: I

use an analog machine for the drums, bass and guitar tracks, then transfer them to a 48-track Sony digital tape machine to keep them in pristine condition. When you mix, you lock the two back up again; this way you don't lose anything and the voices sound pretty good. Many times the budget won't allow for this procedure, in which case you would have to use two analog machines — which is fine with me. By the time the bloody thing gets to CD or cassette and people are playing it on their car stereos, you're not going to hear that extra little bit of hiss. People get so hyper about hiss — that's bullshit, analog still sounds great.

Much of the music that has influenced people for years was recorded on analog equipment. Jimi alone is responsible for many of the sounds heard today. Artists like Prince and Living Colour cite Hendrix as a major presence in their musical lives. I hate to hear that sound tampered with.

Of course, Jimi was influential in more than just his sound. He was a trailblazer in the record business and in the recording studio as well. And as a legacy, he has left an unforgettable sound, millions of fans and, of course, his Electric Lady. 

AMEK HENDRIX

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We had to put a 1/2-inch piece of sticky tape across a whole bunch of buttons — which is not very convenient.

Conclusions. The overall look of the console is remarkably sleek. It has a very substantial feel (weighing 1200 pounds). It does not wobble or move and it feels extremely solid. It has some ergonomic problems, but in a console this compact, inexpensive and with this many functions, it is almost expected.

All in all, the console is a very good value for the money. It has many of the same functions of a larger, more expensive console, but it packages them in a small economical body. It is exactly geared toward the small studio on a tight budget that wants to get a good sound but can't afford a Neve, SSL or Focusrite. It's a great place to start.

There is apparently a motorized fader version of the Mozart console in the works and I'm told that they will eventually be offered as an option for the Hendrix. This will be a great addition to an already worthy console.

— Eddie Kramer

OR, FOR JUST \$12,499 YOU COULD BUY A NEW MSR-24.

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CIRCLE 43 ON FREE INFO CARD

ADAT

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\$16,000 if you buy the remote meter bridge and the two-channel digital interface. The plus side is that you can do all of this in increments, eight tracks now, eight more later; you can wait until a client calls up and wants video lock-up to buy the BRC, and so on. Your spouse will never know how much money you really spent.

A lot of people have asked me to compare the Alesis ADAT 8-track with the Akai ADAM 12-track. The similarities between the two machines are that they are rotary head digital audio multitracks, you can synchronize multiple units without an external synchronizer, and they use videotape as a storage medium. That is about it.

The ADAM uses 8mm videotape, the ADAT uses S-VHS tape. The ADAM costs more than the ADAT. The heads on the ADAM must be cleaned after every few hours of use or you can lose precious data. (This is because every time you record on the ADAM you are re-recording data that is being played back. If a drop out happens during this operation, you will not be able to recover the track that was only supposed to be playing back. This has happened to me.) I am not sure how often you need to clean the ADAT heads and, apparently, Alesis doesn't know either. They are still trying to get one dirty enough to have to be cleaned. Alesis also says that when recording a track, you are not disturbing any information on playback-only tracks. You can actually pull the AC cord out of the wall while recording without corrupting any data.

This is a hard decision to make. I think to be fair, you have to compare systems of the same track configuration and capabilities. To make a 24-track ADAT system, you need three ADATs and the BRC. That comes to about \$14,000. A 24-track ADAM system consisting of two transports, two meter bridges, and one remote will set you back about \$29,000 — basically twice the money for the same configuration.

If you want the most tracks for your dollar, the ADAT wins. If you need recording time, especially for live recording, it's ADAT's 40 minutes over ADAM's 20 minutes (and ADAT's more portable). If you need 12 tracks on one piece of tape, ADAM. If you need to transfer all tracks simultane-

ously to a professional multitrack in the digital domain, ADAM (a third party box is required; no third party box is available yet for ADAT, although you can send all ADAT tracks simultaneously and in the digital domain to another ADAT via the fiber-optic connector). I give up.

HIGHER AND HIRE

For home and most project studios, the ADAT is the right acquisition. If you are planning to make your studio available for hire, however, I would think carefully about my decision. One reason the big pro machines cost so much is because they are built to withstand the day-to-day abuse that a professional machine will receive. The ADAT is a new machine that hasn't yet had the time to prove its reliability, although my review unit has passed every test I could throw at it. Only time will tell for sure.

If you have a small post studio that wants to move up to digital inexpensively, then maybe the ADAT is the way to go. However many tracks of ADAT you want, I would seriously consider an extra ADAT as a spare. If you need 24 tracks on line, buy four ADATs and use the extra one as a spare only. The extra amount of money you will spend for this insurance will be nothing compared to the cost of telling your client that you couldn't play a tape back anymore.

On the other side of the coin, I have done a lot of albums on the 3M digital multitrack, and you always had to have a screwdriver ready to assure that every track would play back every time. Most studios that still use 3M machines have a whole 32-track as a spare. Because of the sonic quality of the machine, everyone took the chance. Because of the low investment necessary to get into the ADAT system, maybe it too is worth the slight risk. Maybe there's no risk at all. As I said, only time will tell. And I guess it's up to you to decide.

I AIN'T LINE

Bottom line? I can't think of any reason not to have an ADAT. It is a fine piece of equipment. I would like to try using ADAT for a full blown record company project like Walter Becker's solo album. I would need at least four ADATs, the BRC, the remote meter bridge, the two channel AES interface and a lot of tape. Tell you what. If you buy one and don't like it, give it to me, and I'll add it to the stack. I'll even give you album credit and pay the freight.

EQ

AES INSIDER

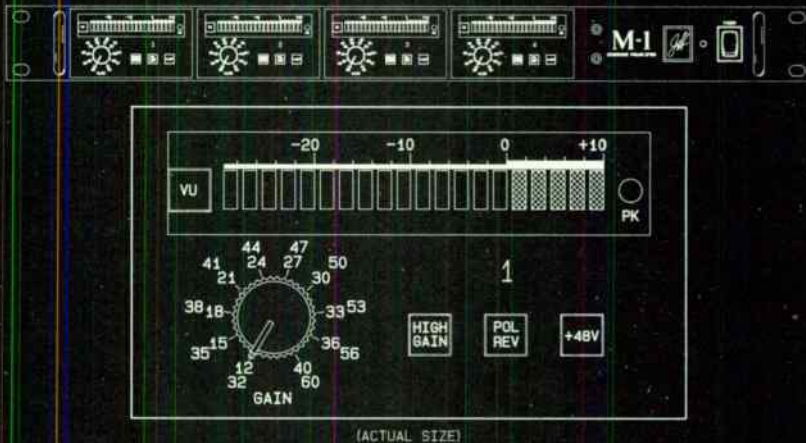
continued from page 38

year's AES will be the site of the debut of new high-performance heads for the KABA 4-track real time and 2X duplication system...Don't miss Metro Tracks (\$595), Metrosoft's first commercial multitrack audio software for NeXT workstations, running NeXTSTEP 3.0...Olà! The AES, in cooperation with the Spanish Edition of *MIX Magazine* (you know, that other magazine), will present the first professional forum for the Spanish-speaking world...Sennheiser ups the ante in the age of wireless with its awesome EM1046 and UHF 1B wireless microphones...Opcode will be introducing Version 1.4 of their popular Studio Vision sequencing program...Illbruck will be presenting several new colors of painted SONEX at AES, as well as their ProSPEC Pyramid...Studer is premiering the Dyaxis II second generation digital workstation...Rock on with Digitech's debut of the RP-1 guitar effects controller/processor, fully-equipped with 64 user-definable patches and presets...The Model 408 OMX Optical Multitrack Recorder/Editor will be featured in Augan Instruments' AES booth... Intelix will hold a private showing of their newest products, including the Studio Psychologist and the MIND-Net communications processor...Allen & Heath will debut their GL-3 series live sound mixing console with 6 aux busses and a dedicated monitor mix output level...For a walk on the high-end, don't miss Neve's U.S. debut of its Capricorn digital console, and SSL's AES debut of its Scenaria digital soundtrack system...A new joint venture between Russ Hamm, George Massenburg and AT&T will be offering a whiz-bang digital mixer add-on called DISQ to the studio elite...Meanwhile, big news from Euphonix in the form of THE CUBE for their CSII (or for any console), allowing an infinite number of custom mixing console configurations...Symetrix Inc. is previewing the Model 421 AGC-Leveler, designed to be a true AGC (Automatic Gain Control) for level control anywhere in the audio chain...Lynx-2 from Timeline is making its debut. This new generation of Lynx Time Code Module, like its predecessor, uses RS422 intelligence for synchronization of tape transports and communication between tape transports and controllers...MIDIMAN will be showing their new MIDI Inter-

face kits for IBM and Macintosh computer platforms. The software includes a generic System Exclusive Librarian, MIDI viewer/channelizer, diagnostics and Windows help files for all popular sequencers...CM AUTOMation is showing the MX-816 165-channel automated mixer that features 16 inputs and outputs, 100 snapshot memory and automatic fade times. The FX-100 automation control console will be debuted as well. It features 100 millimeter faders with mute and solo controls...On the AES news front, Ray Dolby will be presented with the AES's most prestigious award, the Gold Medal, at the AES

Banquet, for his lifelong contributions to the audio industry...Expect some news to be generated by the workshop The Future of Women in a Man's Field, which will be chaired by Ellen Goldstein of Pro Media, and which will focus on the future for women in the audio business, and the barriers that they have to overcome...Don't forget to get out a little and enjoy the city by the Bay. There's tons of audio history on every street. Try to hook up with one of the AES tours to Dolby Labs (shhhh!), Fantasy (watch Zaentz dance), Silicon Graphics (is this the workstation platform of tomorrow?), and to Ultrasound (beware of Dead Heads).

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Standard equipment: illuminated push-buttons, shielded toroidal power transformer with 6-position voltage selector switch, silver plated XLRs, ground-lift switches, phantom power, polarity reverse and gain controls. Options include the Jensen JT-11-BM output transformer, VU-1 meter (shown), PK-1 meter, gold plated XLRs.

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Wanted! Dead Or Alive!

How to find the right audio tech without a lie detector test

BY RICHIE MOORE, PH.D.

So you need to hire someone to do the tech work around your project studio. You're not alone. The audio industry is always looking for a few good people, and I do mean ALWAYS! A good audio tech is as rare as clean air in Los Angeles. They do exist (so I hear), but you have to seek them out.

The first thing to do is figure out exactly what you need for your particular facility. Every studio is slightly different, so you have to appraise what the technical job requires. You probably have a pretty good grip on what you need done to your equipment; after all, you have to deal with *everything* daily.

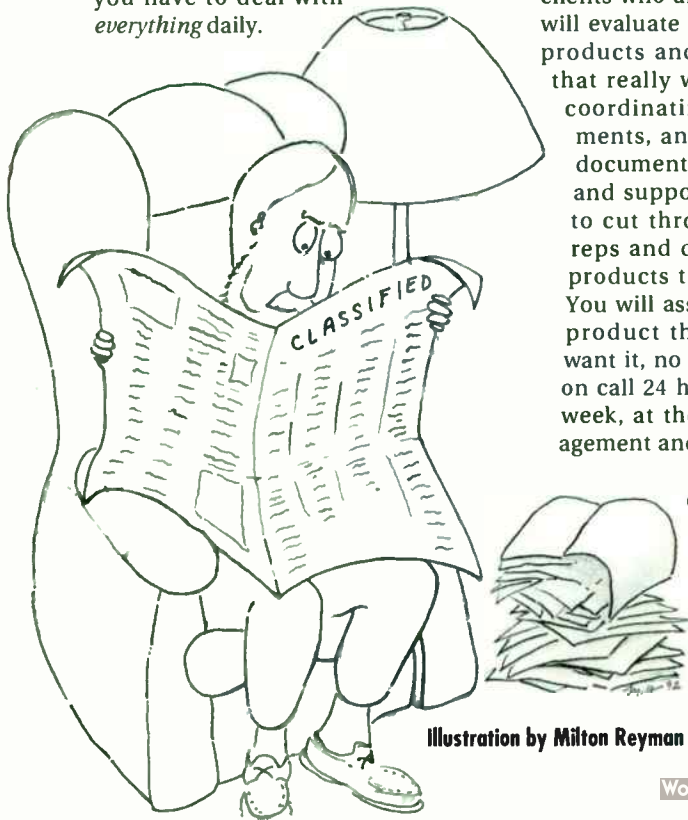


Illustration by Milton Reyman

That's the easy part of the audio-tech-tracing process. The next problem is how to find one. How do you announce that you need someone? Where do you look? First, make up an outline for a "want ad" for the technical position. The purpose of this is to clarify exactly what you need. Put your expectations down on paper and talk them over with your staff. Once you have your ad written, place it in music-related publications, trade magazines and the local papers. I did this not long ago and it read something like this:

WE WANT YOU!

Hole-In-The-Wall Studios is looking for a talented audio technician to join our team in sunny Novato. We make really cool records and have a fun time doing it. We are expanding into many exciting new areas, including audio postproduction, and are searching for someone to technically guide us.

Technical Director — You will have the day-to-day responsibility for keeping everything running properly, and will design and create the audio subsystems that are required from time to time by management and clients who are a little off-center. You will evaluate all sorts of dubious new products and recommend the ones that really work by defining specs, coordinating purchasing requirements, and approving equipment documentation, quality assurance and support. You will be required to cut through the hype of audio reps and dealers to choose those products that are truly necessary. You will assist clients in getting the product they want, the way they want it, no matter what! You will be on call 24 hours a day, seven days a week, at the beck and call of management and clients.

If you possess technical management experience and have from 5 to 1000 years of experience dealing with complex systems and people, we are interested in you. A thorough knowledge of analog and digital

audio/video and computer systems is helpful, including, but not limited to NAB, AES/EBU, serial and parallel communications, DASH, PD, RDAT, SMPTE, NTSC, D1, D2, D3, BetaSP, VHS, Dolby, DSP, VLSI, CMOS, MIDI, MTC, IBM, Macintosh, SCSI, hard disks, LANs, and fiber optic telecommunication. Being able to describe in accurate detail the difference between various frame rates in SMPTE code is an asset. A working knowledge of DOS, Windows 3.1, *Inside Macintosh*, Apple's *Human Interface Guidelines* and "C" are required. The abilities to design and maintain WARP-DRIVE engines and manipulate matter/antimatter mixtures will be given special consideration. Strong writing and interpersonal skills, the ability to balance multiple projects and personalities, and an eye and ear for detail are also required. The ability to pull off miracles is an advantage.

At Hole-In-The-Wall, you'll enjoy a working wage and perhaps a benefit package including several days off a year without pay. Opportunities for advancement are based solely on the ability of the studio to pay off massive amounts of debt and stay in business. For immediate consideration please forward your resume and working examples of your work, in complete confidence, to:

*Hole-In-The-Wall Studios, Ltd.
Human Resources Dept., MS-HELP
12 EQ Way
Novato, USA 9999-0990
211-555-1212
No phone calls please.*

Hey, what do you have to lose? Put this classified ad (or your personal variation on the theme) here in *EQ* and see whom it draws. Also, place flyers or copies of your want ad at local music stores. Keep an eye out for technical talent in the road crews of bands that pass through your facility. (I know a few guitar roadies who are excellent audio technicians.) Finally, be aware of the talent you already have in your organization. There just might be someone on the payroll already who would like to get out from behind a console and get underneath it (who am I kidding?). **EQ**

MIXING TO DAT?



Bernie Grundman and fellow engineers, Chris Bellman and Brian Gardner, have earned a reputation for excellence. At Bernie Grundman Mastering a lot of mixes come in on DAT. And a lot still come in on 1/2" analog. That's when the highest quality analog - to - digital conversion is required.

When it came time to equip their studios with reference A/D converters, Grundman, Bellman, and Gardner auditioned the best available.

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"In our tests, the Apogee retained more of the ambience and definition... and was discernable all the way to the end product, the CD. It brings forth more of the information that was originally intended for the CD consumer. We use Apogee's DA-1000E as our reference D/A converter, and now we've installed an AD-500 in each of our mastering suites."

—Bernie Grundman

"It's the closest you can get to 1/2" analog."
—Frank Filippetti

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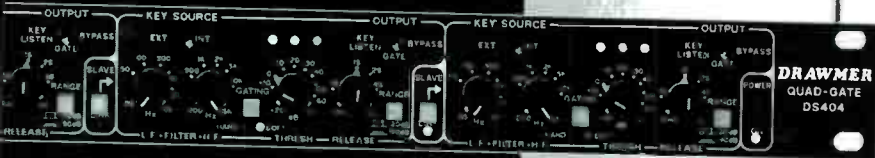
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Back to School

If you're looking to expand your knowledge, here's what to look for in an audio school

BY MARTIN POLON



Be true to your school...rah, rah, rah, rah!" So goes a golden-oldie Beach Boys lyric. Yet the toughest job facing anyone interested in an audio education is selecting the right school to be true to! But there are a number of simple questions that anyone can ask that will help to match the "right" audio education program to the specific needs of the potential student. Try to answer all the questions in your own way. After all, what you are looking for is a program that will enhance your career. Strongly consider a visit to a program or programs that you must clearly favor. Only by your being on-site can certain of your questions be properly answered. A frequent complaint against an on-site visit is the cost. A few hundred dollars spent on a short trip now could save many thousands of dollars later, preventing a hasty decision that is based on insufficient information.

1. **Faculty** — Meet the faculty that will be instructing you. By having a meeting with one or several of the

individuals who will prepare you for your career, you can gauge whether a program will really "fit" you correctly. Personal contact is far more important than a remote review of the achievements of a faculty member. The person will be teaching you — not the achievements!

2. **Technical Facilities** — Ascertain the number and equipment complements of the teaching studios used in the program. It is not expected or necessary that any of an educational program's studios be 1992 state-of-the-art. But facilities need to be current. What is being taught is the art, method, subjective listening techniques and technological concepts needed to produce a recording. A successful graduate of any program should be able to master any piece of equipment with time. Expect there to be enough facilities available to allow for frequent hands-on experiences.

3. **Classroom Environment** — Do the classroom facilities all have built-in sound systems? Learning by listening is important! Are there learning lab facilities with electronic music and ministudio mixing capability? Is there a library and does it have a complete section of audio and recording "trade" magazines such as *EQ*, *Pro Sound News* and *Mix*? Can students obtain access to these areas 12 to 14 hours per day as part of on-campus two-year and four-year programs? Are facilities available 8- to 10-hours per day for private programs without living arrangements?

4. **Learning Ambience** — If you are looking at a recording program in a four-year music school, does the school emphasize popular music categories such as pop, folk, country, and jazz as well as classical? In any program of any length, how busy are the actual studio facilities? The presence of a busy studio recording various kinds of music offers students and faculty "hands-on" contact. Are there established internship programs? This is especially important for four-year and some two-year programs where internships provide both real world contact and "a foot in the door."

5. **Student Response** — When

making an on-site visit to a program, ask to talk with current students. Consider that "gripping" can be institutional, like soldiers' "gripes" about the food in the army, but this source of information can be a valuable indicator of a program's real worth.

6. **Placement** — Inquire about the program's placement services. Be aggressive in obtaining answers. Vague declarations that "we place most of our graduates" do not count. Ask for specific details of how graduates are helped to enter the audio industry. The most desirable option is a combination of direct outreach to audio industry jobs and an informal instructor network of acquaintances in the industry.

7. **Affiliation** — Program or faculty membership in the Audio Engineering Society (AES), Society of Motion Picture and Television Engineers (SMPTE), Society of Professional Audio Recording Services (SPARS), and the Music and Entertainment Industry Educators Association (MEIEA) is affordable and available to all. The encouragement of student membership in the AES and SMPTE is another measure of recording/audio industry contact. Some programs large enough to support them even have student chapters.

8. **Alumni Feedback** — Ask for a list of alumni from each school or program you are considering. Most will be glad to "brag" about their success stories. Use these as a "grapevine" to contact other graduates. Try to have a conversation with as many former graduates as possible. Ask them about their reaction to the program after graduation — both in terms of reputation and in terms of placement. In short, evaluate the program from the perspective of its end product: the graduated practitioner. **EQ**

Martin Polon is the principal of Boston-based Polon Research International (PRI). PRI forecasts the electronic entertainment industry for the financial community. Polon is a 14-year veteran of service to the Audio Engineering Society (AES) as a national officer.

dBs De-mystified



Photo by Peter Monroe

A de-lighful de-bunking of dB dilemmas

BY LEN FELDMAN

We work with decibels all the time, but it's amazing how few of us know a dBu from a dBm or a dBV. Before I get into these more subtle concepts (and since this column is entitled "Basics"), let's get back to basics.

To begin with, decibels are not a quantitative measurement of level (or power, or voltage). If you tell someone that a given power measures 23 dB, you will not be telling that person anything useful. Decibels are always a relative measure. To make a dB statement meaningful, you would have to say that a given sound level was so many dB louder than some reference sound level. Or that a power level was so many dB greater than some arbitrary power level (e.g., 1 watt, 1 milliwatt, etc.).

These reference levels are what make the various dB notations confusing. But before we get into that, let's talk about why the dB or decibel is a useful form of relative measurement in the first place. The sound pressure of a

rock-and-roll band is perhaps a million or more times that of rustling leaves. Such a wide range of sound pressures is too great to be conveniently accommodated using a linear scale. So, instead, the industry came up with a logarithmic scale, where ten-to-one changes in amplitude (or power, or sound pressure) result in equal increments on the decibel scale.

FORMULA COMPARISONS

A decibel value is defined as the logarithmic ratio of two power measurements or as the logarithmic ratio of two voltages. If you want to calculate dB values of a pair of voltages or a pair of power levels you have to use the proper formula for each. You'll also need a table of logarithms, unless you're using a scientific calculator that can work with logarithms to the base 10. The formulas are as follows:

For power comparisons: $\text{dB} = 10(\log P_2/P_1)$

For voltage comparisons: $\text{dB} = 20(\log V_2/V_1)$

In the above equations, P2 and P1 are the two power levels (in watts) being compared while V2 and V1 are the two voltages being compared. You might be wondering why two different equations are needed for these two calculations. An example will help to clarify that.

Suppose we had a couple of voltages, 2 volts and 1 volt, each driving current into 1-ohm loads. The two power levels would be 4 watts (2x2 divided by 1 ohm, in accordance with good old Ohm's law). Using the formula power levels, we get $10(\log 4/1)$. The \log of 4 = 0.602, or rounding it off, 0.6, so the dB value is 10×0.6 or 6 dB. Now let's try it with the two voltage values and the voltage dB formula: $\text{dB} = 20(\log 2/1)$. The \log of 2 = 0.301, or, rounding off once more, 0.3. So, the dB value of our two voltages is also 6 dB (20×0.3). In other words, there is no difference between decibel values from power measurements and decibel values from voltage measurements if the impedances involved are equal.

REFERENCE LEVELS

The two examples shown above used arbitrary pairs of power levels and arbitrary

(but equivalent) pairs of voltage levels. So, the results would simply be expressed in dB — in our examples, specifically 6 dB. No third letter would be attached to the dB notation. Audio engineers and others involved in audio measurements often express the dB value of a given signal relative to some standard reference level rather than to some other signal. And that's where the confusion often arises.

DBM DEFINED

Perhaps the most common dB term encountered in this field is dBm. Most of us know that the "m" stands for 1 milliwatt. In other words, if a given signal measures 10 dBm that means it is 10 dB greater than 1 milliwatt. Working backwards, we could figure out that the given signal has a power level of 10 milliwatts. ($10 \log 10\text{mW}/1\text{mW} = 10 \times 1 = 10 \text{ dB}$.) All well and good, but there's something missing here. For the 10 dB to work out as such for the voltages involved, we also have to know the impedance across which the 10 milliwatts is being developed. When we speak of dBm, we not only assume a 1 milliwatt reference level but we also assume an impedance of 600 ohms. In fact, to be completely correct in this case you should specify the reading as 10 dBm (600 ohms), since both 600 and 150 ohms are common references in audio work. In this case, if you use a voltmeter that reads in dBm, it is a high impedance device; so to make the readings come out in true dBm, the voltmeter is calibrated so that a voltage of 0.775 volts reads out on the meter as 0 dBm. 0.775 volts is the voltage required to produce 1 milliwatt across 600 ohms. Unless you actually terminate the line in 600 ohms, however, the 0 dBm reading will not correspond to a 1 mW power level.

DBU (OR DBV)

If the line is not terminated properly, it is incorrect to speak of a dBm measurement. Decibels in an unloaded or improperly terminated line are often referred to as dBu (presumably, the "u" stands for unterminated) or, in some cases, as dBv, to denote that it is being referenced to a voltage level of 0.775 volts without regard to impedance values.

Another common reference level in voltage measurements is 1 Volt. When audio engineers or technicians use this reference, measurements are reported as so many dBV. (Note the

upper case "V" here, as opposed to the lower case "v" when reporting dB voltage measurements relative to 0.775 volts.)

Another dB notation worth noting is dB SPL. The SPL stands for Sound Pressure Level. 0 dB SPL represents a sound pressure of 0.0002 microbars or, as some people define it, the lowest sound pressure level that can be detected by humans. As I mentioned, the difference in sound power between the softest sounds we can hear and the loudest exceeds a power ratio of 1,000,000-to-1! In decibel terms that works out to a change of 120 dB SPL. A well-insulated recording studio will have an ambient sound pressure level of around 20 dB SPL. A properly administered library might expect to have a residual sound pressure level of around 40 dB. Normal speech, listened to at a distance of 1 meter from the speaker, would have a sound pressure level of around 60 dB SPL. A 75-piece orchestra, listened to at a distance of around 25 feet, would produce an average sound

pressure level of 80 dB. The threshold of physical discomfort is said to occur at around 120 dB SPL and I have monitored rock concerts, standing some 50 feet from them, at levels perilously close to that level! Physical pain occurs at a sound pressure level of around 130 dB SPL, while immediate hearing damage occurs at between 150 and 160 dB. A jet aircraft engine, 33 feet from the listener, will produce 150 dB SPL!

DB RELATIONSHIPS TO REMEMBER

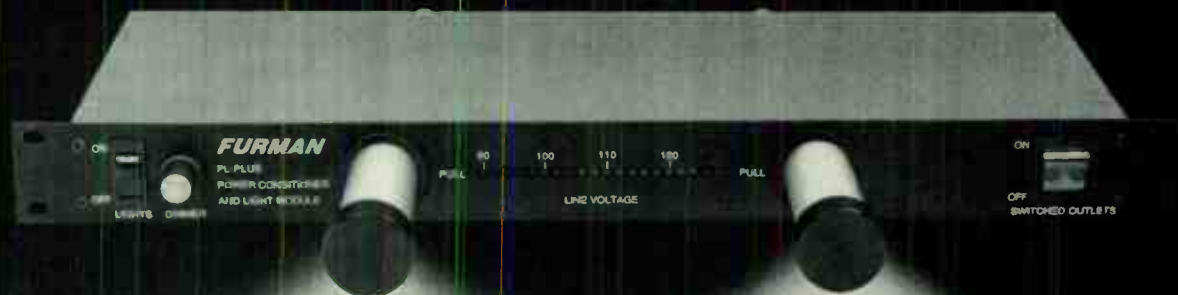
Log scales are not always at hand, so it's not a bad idea to become familiar with some common dB relationships. Doubling the power level of an amplifier results in a change of 3 dB. A change in sound level of 3 dB, however, does not result in a sound that seems twice as loud. In fact, a 3 dB level change results in a sound that is only slightly louder than the previous sound. For apparent loudness to double, you need a change of around 10 dB. And remember, that a change of 10 dB in power levels represents a change of 10-to-1 in

actual power. In other words, if an amplifier is producing 10 watts of audio, it would need to pump out 100 watts of audio power for you to perceive the resulting sounds to be "twice as loud" as the previous sounds!

DISTORTION LEVELS & SIGNAL-TO-NOISE

Often, distortion levels are quoted in decibels or dB below some reference level (usually, rated output of the device) instead of in percent. A -40 dB THD rating is equivalent to 1 percent. Drop down another 20 dB, to -60 dB and that translates to 0.1 percent, while a -80 dB distortion rating is equivalent to 0.01 percent distortion. Signal-to-noise ratios are almost always quoted in dB and, if related to maximum output of the device in question, should be above 75 dB if residual noise is not to interfere with the wide dynamic range of today's digital program sources. You may want to keep these dB relationships handy. Next time I talk dBs in this column you'll be on your own—I don't plan to define these pesky ratios again, O.K? **EQ**

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MAX Creativity

continued from page 61

time. Use visualization as a gateway to problem solving. If you get stuck in a song, create a graphic of it to give an overview. This taps into your powerful image processor, and eases you back into a right brain groove.

Putting the "Head" in Headphones. Make a stereo recording with different melodies in each ear. According to brain researchers, you will more easily recognize the melody that's playing into your left ear (and

going into your right brain). For a less "detached" sounding overdub, try placing the part you're adding in your left earphone along with that part of the bed to which you want to "lock."

Create, Then Edit. When writing a song, just write and if a line isn't perfect, so what — just go! Don't stop and analyze. In recording sessions, you may listen to a playback and get hung up on some detail that no one else will hear anyway. Do the polishing later; the longer you analyze, the harder it will be to get back into a free flow.

Symmetry, Layers and Space. Symmetry in a user interface means that you operate one thing in the

same way that you operate another, throughout a product or situation. If possible, construct an interface out of a few simple rules. This makes it possible to "intuit" how to do something, and keeps you in the right brain flow.

For proper layering, put least-used functions farthest away, and most-used ones close up. With software, this equates to hiding functions behind menus, or using shading and color to "pop" some devices and "cool" others.

Although it might seem that giving the user as many choices as possible would create a "powerful" interface, it could end up closer to an amateur song demo in which there were 48 tracks — and all were used. With so much going on, nothing is important. Space is your best ally in creating music or creating an interface. Consider this: it is the space around objects or words that gives them meaning.

All Together Now. This method of integrating the two brains has been used by many "genius thinkers" such as Einstein:

1. Use your left brain and gather clear, unemotional information about the problem.
2. Forget about the problem. Do nothing. Take a walk, make love. While being uninterrupted, your right-brain holographic processor will return an answer. We call this a flash of inspiration.
3. Use your analytical brain again to test the evidence. This cooperative interaction of both brains greatly enhances the ability to succeed.

SIGNING OFF...

In addition to the previous suggestions, know that you can get back into the creative flow, as surely as you are drawn out of it, by doing something that your left brain will probably tell you is silly. That is, visualize music, make pictures of arrangements, use the visual gateway into your "mysterious muse." Nonverbal communication and visual stimulation can take you back — or as Laura Nyro was reported to have said, "Can you play it more green?"

Michael Stewart had a hit back in the '60s with a group called the We Five, and went on to produce Billy Joel's first album. He is currently working on a project for Digidesign that he wishes he could tell you about, but you'll find out about it soon enough.



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By Mickey O'Callahan
Special Correspondent

Politicians, military, noted scientists, even special plain-

T. arrival. digital has the community tarists, keyboard bassists, vocalists and other musical abuzz.

The first astonish the appearance of the es." as the press is ca that never before have heard such powers of ex such compact packages, with to match. And wh represents a first own a high-quality processor, many plenty of use for friends.

Equally astonishing manner in which appeared — experts that such technology and size was years of

sent! Yet here we are, in the present, and musicians the world over are ming in with these most which also provide nce as to the ight of their ee new family. is home as well as arsal and live mance; another ized for elec acoustic gu he third "dre

Scientists Baffled by Expressive Quality of Flying Wedge 16-bit Stereo Boxes: "Whoever built these little things obviously knows something the rest of us don't."

While musicians rejoice the unexpected arrival of these digital processors, members of the world's scientific community are scratching their heads. How can such tiny parcels produce such expressive tone?

According to Dr. Niels Hartvig-Nielsen, of the Institute of Advanced Intelligence in Ludevisk, Finland: "First we were impressed by the efficient industrial design. Then we plugged in. What we heard was beyond the realm of understanding."

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WERE UFOs?
which Schmardecker, Germany, points toward he sighted the first Wunderbox, which "zoomed into my hand. It seemed friendly enough, so I just held it right in. Never in all of my days have I or my neighbors in Wolfsnorf heard such beautiful sounds."

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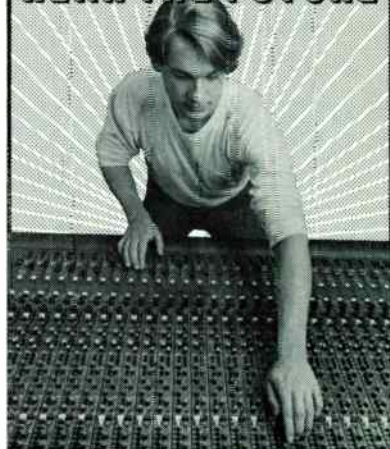
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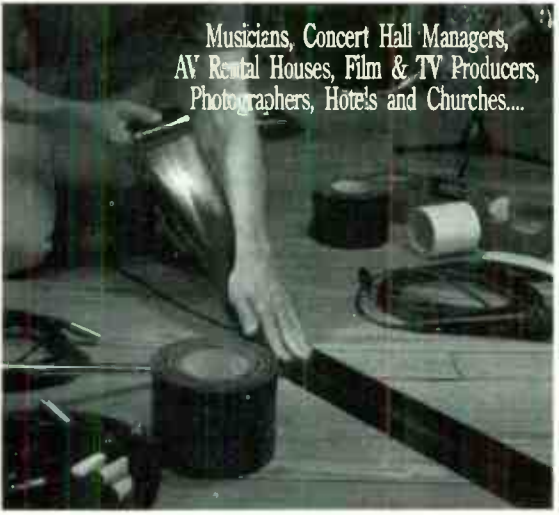
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IN REVIEW

Orban 290RX Processor



MANUFACTURER: Orban, division of AKG Acoustics, Inc., 1525 Alvarado Street, San Leandro CA, 94577. Tel: (510) 351-3500.

APPLICATION: Signal and harmonic enhancement plus single-ended noise reduction.

SUMMARY: Fast and effective improvement of signal clarity.

STRENGTHS: Two types of noise reduction. Harmonic adjustments are effective and easy to make.

WEAKNESSES: Subjective taste is the determinant factor.

PRICE: \$1200

EQ FREE LIT. #: 120

HELLO. AND WELCOME to the program that asks new equipment to speak for itself. Today's piece o'gear is the Orban 290RX Adaptive Enhancement Processor. Tell us about yourself "RX."

290RX: Well, as my name implies, I am an audio signal processor — with two channels, by the way.

EQ: What kind of processing do you do?

290RX: Basically, my signal restoration circuitry improves intelligibility. Noise and hiss can be minimized with the built-in noise reduc-

tion. Both features can function independently.

EQ: "Adaptive Enhancement Processor." That's quite a name. Are you difficult to use?

290RX: Oh no, quite the contrary. Mother and Dad insisted on the name, but actually, while my manual is quite informative, anyone can use me without it. A single control, "Spectral Level," adds EQ dynamically — that is, only when necessary. The same applies to the dynamic filter. That removes unwanted hiss when no signal is pre-

sent. Of course I can be very sophisticated, as well. I can generate second-order harmonics to signals lacking high-frequency information. Plus, my downward expander reduces broadband noise.

EQ: One more rather personal question about your "last" name, "RX." Are you a chemist?

290RX: In a manner of speaking, y-e-s! I am the prescription for tired audio. I bring definition without headaches and I reduce noise so you can rest.

EQ: Thank you, 290RX! And now for the user test.

ROAD TEST

Quite often I find myself daisy-chaining enhancers, equalizers, high-frequency limiters and noise reduction devices. All work quite well except that in addition to configuration time, I'm tying up a handful of devices — usually for a pair of background vocal tracks. (Not to mention all of those expensive patch cords!) The Orban 290RX conserves space by combining all of the aforementioned features in a two-rack-unit space.



IN REVIEW

IN THE MIX

I mixed two songs for writer/producer, Warren Rosenstein, whose current project, "Out of the Blue," features vocalist Marlon Saunders. The 290RX's first challenge was a pair of background vocal tracks. It added air and depth, those elusive qualities that make tracks stand out, with much less effort than my kitchen sink approach. The "Spectral Level" control adds brightness, clarity and intelligibility to the program material. The effect is not harsh or dangerously sibilant when used judiciously. It can be overused, though, so be sure you've chosen a designated operator! Since there are two types of noise reduction, any background noise can be greatly subdued. The dynamic filter zaps the hiss, while the downward expander wrestles the hums and midband noise. These two features alone make the 290RX a valuable tool. So, what more could you ask for?

SPECIAL FEATURES

The 290RX generates second order harmonics that can be adjusted via Harmonic "Level" and "Tuning" controls. When applied to program material lacking lots of high-frequency information, the 290RX can either bring a dead track back from the grave, or put "air" in a "flat tire." This

is especially useful on synths, telephone communication and less-than-great samples. I really didn't "get" this feature at first. But then, all I was feeding the unit was the good stuff. It wasn't until I put on a tired cassette of big band material that the 290RX pulled a rabbit out of its XLR connectors. While the complex program may not have been the easiest job, the 290RX did put some bite back into the trumpet section. With this in mind, I was ready to go back into the studio.

At the next session with Warren, the 290RX was introduced to a "Hammond Organ" type synth patch. A real Hammond has a percussive attack that adds the airy sound of a pipe organ, something that's missing on many synth or sampled versions. The 290RX gave the iron-poor organ track so much pep that I had a hard time keeping the fader down. Really, you've got to try it.

OTHER APPLICATIONS

On the back panel are both XLRs and barrier strips. The inputs and outputs are active balanced. Optional output transformers are available. Internally, the 290RX inputs can be strapped for "Minus 10" gear.

SPILLING THE GUTS

Inside, the 290 RX is first rate. Only

low noise, one percent metal film resistors are used, as well as high stability capacitors. Ground planing is used on the PC board and the unit is well protected against RF interference. All of the front panel controls are securely mounted to the front panel with nuts and connected to a separate PC board that is shielded on both sides. This unit is exceptionally road worthy. Both the top and bottom covers are removable to facilitate access to the main PC board.

THE MANUAL

The operating manual is very thorough, covering every topic from grounding to service, with many helpful suggestions in between. I can't praise the manual enough, but suffice it to say that it pleases me, and I am one tough critic.

FINALE

Yes, there are quite a few signal processors on the market. Some enhance, some reduce noise, some may do both. In one box, Bob Orban has created an enhancer that is different from the others, sounds good, gets rid of noise and has a few harmonic tricks up its sleeve. The 290RX is highly recommended. — Eddie Ciletti



E-V Interface Mixing Console



MANUFACTURER: Electro-Voice, Inc. 600 Cecil Street, Buchanan, MI 49107. Tel: (616) 695-6831.

APPLICATION: Multi-purpose mixing for four- or eight-track project studios and small-to- medium-scale sound reinforcement.

SUMMARY: This flexible mixing console delivers good sound quality and offers the user a variety of options.

STRENGTHS: A well-built mixer with level meters on every input, balanced inputs and outputs and a good noise floor. Users can modify many functions to suit their needs by changing the internal jumpers.

WEAKNESSES: Channel-On switching does not control the prefade auxiliary sends, and the rack-mounted power supply is cooled by a noisy fan.

PRICE: \$9399

EQ FREE LIT. #: 121

THE LAYOUT

The Pro Input Module 2802 has switches that feel positive and are clearly labeled. At the top of each input module are switches for phantom power, a 20 dB pad, mic/line input selection, input polarity and a 80 Hz high pass filter. A single knob controls both mic input gain (continuously adjustable over a 70 dB range) and line input gain (-10 dB to +20 dB). In combination with the 20 dB pad, this was more than enough control range for every situation I encountered. Setting an input level is fast and accurate, thanks to the meter beside each input's fader. These five LEDs indicate levels from -13 dB to +17 dB (3 dB from clipping?). I would prefer it if this meter were labeled in dB below clipping, as the +17 dB indication is not really referenced to anything. The meter is post-EQ, so it will display levels boosted by EQ but it may not show excessive signals that have been heavily filtered. As usual, the metering on any device is only an indication of what the signal may be doing and is not a substitute for using common sense and your ears!

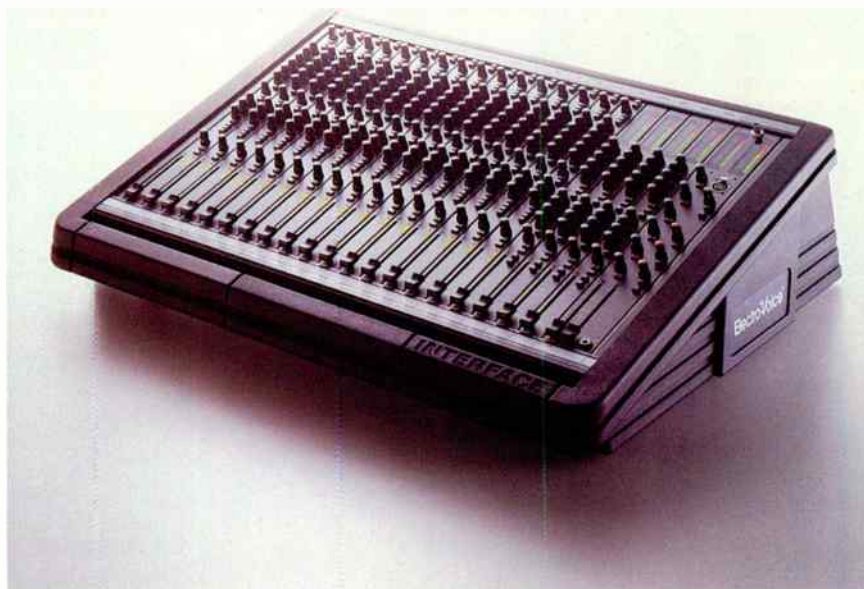
The equalization section is com-

MIXING CONSOLES are a critical factor when marketing your sound system or recording facility to clients. When upgrading, there are such a wide variety of mixing consoles available, especially in the low- and middle-price ranges, that it becomes difficult to take a really close look at every model that could meet your needs. The Interface mixing console, though, might be easier to check out; it's available from your local E-V, Altec-Lansing, DDA and Dynacord dealers. The Interface, from industry giant Mark IV Audio, is built by Dynacord in Germany from a design by Dynacord and British console manufacturer DDA.

The Electro-Voice unit I received for review consisted of individual modules for 24 inputs, four groups and stereo master. The one-piece input and output modules are solid and well built, their mounting screws neatly hidden behind the module legend and scribble strip. The entire console is surrounded by a flexible high-density foam molding that acts as both an arm/pencil rest, and protective bumper.

I used the mixer for over 30 shows of varying styles and formats, including theater, jazz, dance, pop and folk music. I also put the unit in a couple of different recording situations: digital mastering and TV broadcast mix-

ing. The Interface performed most of these tasks without any problems. System connections, some of them quite complex, were without incident as all the inputs and outputs are balanced except for the inserts, direct outputs from each module and control room monitor sends. Even without the optional transformers, grounding problems were rare, and the connection of balanced and unbalanced equipment could be easily compensated for.



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53	SOUNDTRACS	68	516-932-3810
19	SPECK ELECTRONICS	69	619-423-4281
78	STEWART ELECTRONICS	71	916-635-3011
87	SUNN/FINDER	72	714-990-0909
86	SYNTHETI	73	206-282-2555
104, 105	TASCAM/TEAC AMERICA	09	213-726-0303
24, 125	TASCAM/TEAC AMERICA	74	213-716-0303
102	TDK	75	516-625-0100
67	T-1121	76	212-315-1116
107	THE JOHN HARDY COMPANY	77	708-864-8060
50	THE RECORDING WORKSHOP	78	614-663-2510
99	WESTER CORPORATION	91	707-427-1920
14	WHISPER ROOM, INC.	79	410-997-1440
32, 33	YAMAHA PRO AUDIO DIVISION	60	714-522-9011
15	YAMAHA PRO AUDIO DIVISION	80	714-522-9011
81	YORKVILLE SOUND INC.	81	716-297-2920
15	ZOOM CORPORATION	82	415-873-5885

prehensive and can be bypassed with a switch. The two overlapping sweepable midrange sections (70 Hz to 2.2 kHz and 470 Hz to 15 kHz) may be a little low in Q for solving narrow-band problems, but work very well to adjust the tone and balance of instruments and voices. The channel insert jack on the rear of the mixer is post-EQ.

The PFL (pre-fader listen) switch has an integrated LED indicator, receives the signal after both the EQ and channel insert return, and feeds the signal to the monitor/headphone output and the master output meters.

OPERATION

The auxiliary sends on each input channel have some interesting features. The Aux 1 send can be switched to be a level control for the direct output, muting the Aux 1 send from that input. There is a switch to alternate sending signal to Aux 1 and 2 before or after the channel fader and the clearly-marked internal jumpers can route the prefade send before or after the EQ section. An unfortunate problem for live sound applications is that the Channel On (mute) switch only affects postfader sends. This makes muting a mic to both the house and onstage monitors a cumbersome task. In a common compromise to reduce the size and cost of a mixing console, the Aux 3 and 4 level controls switch to Aux 5 and 6. This is fine when the mixer is used for multitrack mixdown, as reverbs and DDLs can be assigned to various inputs with relatively few conflicts. When the mixer is used for live sounds, this feature becomes, effectively, an Aux 3 and 4 mute switch. In live sound we may need to send to three or more onstage monitor systems. For instance, the side fills can be fed from Aux 3 postfader but that only leaves Aux 4 for an effects send. We cannot send to Aux 5 and 6 without losing the send to the side fill monitors...*aarrgh*. Internal jumpers can route Aux 3/5 and 4/6 — pre-fader, before or after the EQ.

After the signal passes through the LED-indicated Channel On switch, it flows through a smooth 100nm fader. The output from this fader is

I N R E V I E W

sent to the pan pot. The output from the pan pot can be assigned to odd/even pairs of subgroups and the left/right masters. In theater applications, this assignment can be limiting when it is necessary to change output assignments for each sound cue. It is also not easy to use specific group outputs for the house while the masters create a stereo recording mix, as panning will affect both. For those applications, the flexibility of this console will be greatly enhanced when a Matrix Output Module becomes available.

The Group Module 2808 is designed to allow the Interface to perform as a four- or eight-track recording console. The pair of tape returns (A and B) on each group module include shelving EQ, allowing 8 kHz and 60 Hz to be adjusted by ± 15 dB and a pre-return-level control send to

I used the mixer for over 30 shows of varying styles and formats, including theater, jazz, dance, pop and folk music.

the Aux 1 bus. There are individual PFL and On switches with integrated LED indicators for each of the eight tape returns. The design allows the Interface to switch the tape returns over to the group output during overdubs in a recording session, direct the effect return B to the Group, or place the EQ into the subgroup path in live sound applications. The function and metering of the group can be assigned to Return B using the RET/BUS switch. The groups are assigned to individual

left and right switches. If both switches are depressed, then the pan pot for Return B is reassigned to the group. There are a number of possible combinations for the RET/BUS and PA/Recording switches, each providing functionality for a different application. Typical of such flexible multi-purpose approaches, these switches may fill many of your needs in a variety of applications, but at the cost of confusing the first time user.

The Stereo Master Output 2810 module includes: the two 100mm L/R master faders, master level control knobs for the six Aux busses, an XLR-type connector and level control for the talkback mic, 1 kHz Oscillator level, monitor/headphone level, headphone on/off switch and Mono Output level. The AFL (after-fader listen) switch provides the monitoring and metering for the Aux outputs. The

Exclusive Direct Out (DO) switch maximizes flexibility. Allows reconfiguration of M1500 Series mixers without use of external patchbays

3-band EQ with sweep mid-range

In-line configuration allows easy monitoring of channels, use as separate monitor mix or double number of inputs for mix-down

Link (3-4 to 1/L-2/R) allows buses 3 & 4 to be used as a sub-group during mix-down



I N R E V I E W

Mono output, a balanced output that is simply the sum of the left and right masters and switchable pre- or post-L/R fader, does not include an AFL switch. It is therefore impossible to monitor the level or quality of this signal from within the console. In one instance, a TV cameraman had forgotten to patch the signal through to his Betacam; I had to get an adaptor and plug headphones into the XLR connector at the rear of the console to confirm that there was a signal leaving my mono output.

There are four LED ladders indicating the output of the Group>Returns and two for the L/R Masters/PFL. The indication ranges from -24 dB to +18 dB and can be changed from reading peaks to reading average levels (similar to a VU meter) by changing an internal jumper. The console is supplied in

peak mode, but as most of us are now dealing with digital processors every day, we are getting used to reading peak meters.

The headphone output should provide more output level. It didn't have enough gain for my old 600 ohm AKG K240 headphones, which are usually the test of every console's headphone-output capability. It takes a lot of headphone gain to confirm that mic lines are quiet after they have been repatched for the next act during a show.

CONCLUSION

The Interface console offers some new twists to a very familiar console layout. It is easy to operate, quiet, and sounds as good or better than anything in this price range. Mark IV Audio have left their options open on this one; there are internal jumpers to

allow all the outputs to be changed from +4 dBu to -10 dBV for many project recording studios and the input module PC board is laid out to add four more subgroups to future models. Mark IV is also talking about a series of optional modules including digital audio inputs, multimic inputs and matrix outputs.

The console is quiet enough for digital recording or theater applications and provides plenty of headroom (+27 dB!) at the master outputs. In fact, the only significant noise problem the mixer has is the power supply. This two-rack space unit uses a cooling fan that is very audible in a quiet theater or control room. If you can find a place to hide that thing, you will have a good sounding mixer that is robust and serviceable, and that will perform a variety of tasks for many years. — Wade McGregor

8 input/4 buss output/8 monitor

3 Aux sends;
Aux 1, pre or post;
Aux 2 & 3, either post
or dual (monitor) send

Dual Master allows for
mixing of dual section to
either buss 1/L-2/R
or buss 3-4

SUM 1+3 switch allows
Aux 1 and 3 to be summed
to allow signals from both
main and dual sections
to be sent to one effects unit

2 stereo and 2 mono
effect returns

YOU GET WHAT YOU PAY FOR. AND GET. AND GET. AND GET.

One look at the features of the new M1508 (left) and you'll agree that it's a lot bigger than it appears. And, if you like what you get with our rack-mountable 8-channel M1508, you're gonna love the 16-channel tabletop M1516 all the more, because it lets you simultaneously utilize up to 32 input sources for mixdown, plus two stereo and two mono effects returns.

One way or the other (\$1,149* for the M1508, \$1,849* for the M1516), you'll get what you pay for, over and over and over again, at your nearest TASCAM dealer.

TASCAM

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RSP Intelliverb



Manufacturer: RSP Technologies, 2870 Technology Drive, Rochester Hills, MI 48309. Tel. (313) 853-3055.

Application: Midpriced signal processing for home and project studios, with the emphasis on reverb.

Summary: The Intelliverb costs more than budget reverbs, but boasts a very effective dedicated reverb algorithm, clean and transparent sound quality, more effects, and reasonable MIDI implementation.

Strengths: Easy programming. Excellent sound quality. Built-in digital HUSH noise reduction tidies up incoming signals.

Weaknesses: Doesn't respond to MIDI messages other than continuous controllers and program changes. Unbalanced audio inputs and outputs only.

Price: \$1299

EQ Free Lit. #: 122

STUDIO-ORIENTED reverbs seem to cost either hundreds of dollars or thousands of dollars, with little in between. Meet the Intelliverb: at \$1299, it's positioned for those who can afford to bypass the bargain gear, but can't stretch to something like a high-end Lexicon or AKG. What do the extra bucks get you compared to the little guys, and what do you sacrifice compared to top-of-the-line processors? Let's take a look.

FACTS AND SPECS

Six configurations combine the available effects in specific ways. (Although you can't delete or add effects, or change their order, turning down an effect's mix level

effectively takes the effect out of the signal chain.) Editing these lets you create up to 254 *presets*, which are saved in nonvolatile memory but can also be dumped to a MIDI system storage device for subsequent retrieval.

The configurations are: Virtual Room (the unit's most sophisticated reverb algorithm); 4-Voice Chorus/Delay/Reverb/Ducker, Delay/Ducker; 8-Voice Chorus/Delay; 4-Voice Pitch Shift/Delay; and 2-Voice Pitch Shift/Delay/Reverb/Ducker. A stage of digital HUSH single-ended noise reduction precedes each of these. Although noise reduction usually goes at the end of a signal chain, the Intelliverb generates virtu-

ally no noise; the HUSH is there to clean up signals prior to processing.

There are more effects available than the configuration list would imply. For example, every voice in the 8-voice chorus has adjustable level, pan, initial delay, modulation depth, and modulation rate, so you can do simultaneous flanging, slapback echo, and delay up to 740 ms — in any combination, up to eight voices in all). The delays can give standard stereo, tapped, or Ping-Pong effects.

Because processing power is finite, squeezing more effects into a configuration requires compromises. For example, the Virtual Room reverb has 46(!) reverb-specific adjustable parameters, whereas the standard reverbs have eight. The number of voices for the chorus and pitch shift varies with the configuration, as well.

The stereo input and output jack pairs are 1/4-inch phone, unbalanced types that also work for mono. The only other connectors are MIDI in and switchable out/thru, and a power connector for the external transformer. That transformer, by the way, has an AC cord coming out of it, so it doesn't take up more than one slot on a barrier strip.

COOL STUFF AND APPLICATIONS

The Intelliverb pays attention to detail; for instance, the regeneration is limited so that it can't degenerate into runaway echoes. Ducking is a nice touch, too — it lowers



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the delay or reverb level in response to input signals, so that long "tails" don't muddy compositionally dense passages. And the clipping indicator reads the unit's output, not input, since distortion can occur with elevated processing levels or input overload.

The Virtual Room reverb algorithm is a joy, not just because you can synthesize virtually all kinds of rooms but because they're good-sounding rooms. Also, the multiple panning and mixing parameters encourage creative stereo imaging effects.

Regarding MIDI, the Intelliverb can optionally remap incoming program changes (although selecting programs at the front panel does not send a program change message over MIDI out). Eight parameters per preset are assignable to MIDI continuous controllers 0-120, with adjustable upper and lower limits that "compress" the range of incoming control messages. Thankfully (and unlike many lower cost units), most control changes are smooth and glitch-free even with audio going through the unit; if you don't play while sweeping perennially problematic parameters like delay time and reverb type, you won't hear any glitches. Switching presets can cause minor glitches, but don't play while switching and you won't have any problems.

One limitation: the Intelliverb

doesn't recognize pressure, pitch bend, velocity, note number, or timing clocks (for synchronizing delay times and such). Hopefully, a software update could address this in the future.

When sequencing, a good use for MIDI controllers is to create "smart" harmonies instead of parallel ones. Assign a preset's harmony pitch to a controller, and send the Intelliverb controller data (e.g., from a MIDI foot pedal or sequencer) that provides the appropriate amount of pitch shift. Amazingly, this parameter does not glitch, so you can even slide from one harmony to another.

Fortunately, the Intelliverb operating system makes it easy to access all these features. One knob is dedicated to selecting the available presets. Editing parameters is simple: scroll through the available functions with one knob, through the available parameters for that function with another knob, then edit the parameter value with a third knob. An attractive, and very readable, blue fluorescent display monitors your programming moves.

OPINIONS

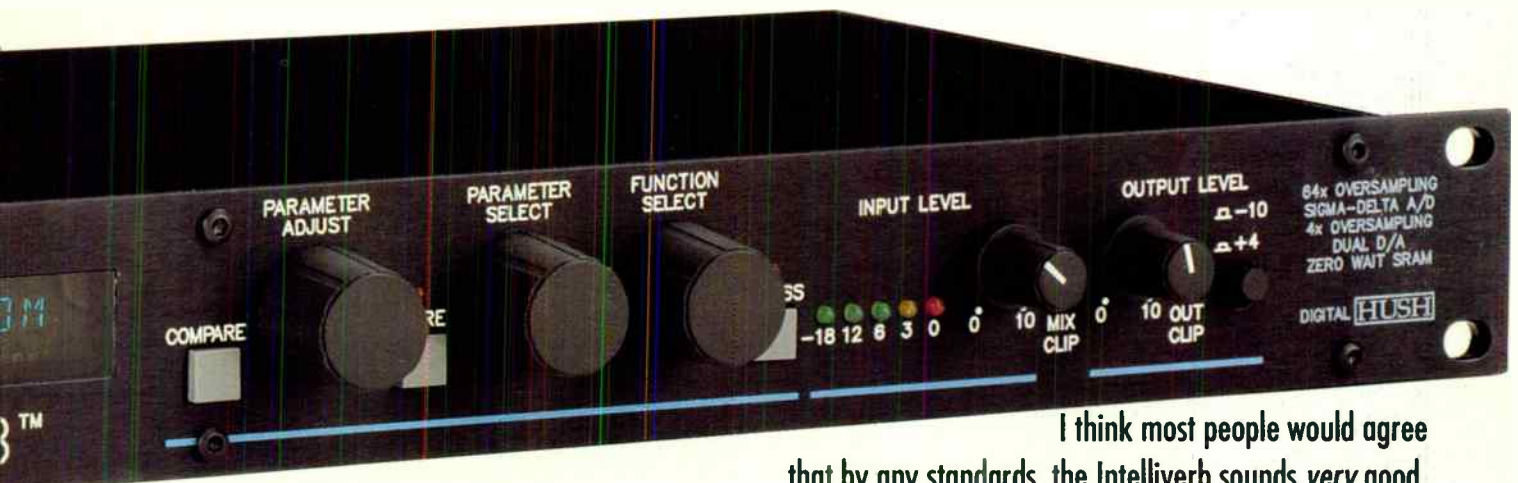
The main reason why this is not a \$300 reverb is obvious when you audition the Virtual Room-based presets. They sound rich and are free of the

periodicity and "flutter" found in lower-cost units. (Another point of interest: the Intelliverb lets you program not only room size, but the location of the sound source in the room *and* the listener's position.) The pitch shifters are also a cut above those found in budget units; there is a bit of delay and a tremolo effect, which speeds up more as you approach the limits of transposition (up to one octave up or two octaves down), the signal's fidelity is very good. The eight voice chorusing is also a welcome addition for guitars, synths, and other sounds that need thickening.

What do you give up compared to the real high-ticket devices? You'll have to live without digital I/O, XLR connectors, changes triggered by SMPTE time code, certain MIDI control capabilities, and some other relatively esoteric features. Of course, sound quality is an issue, too; asking the Intelliverb to compete with something like a \$7000 reverb is a bit much, but I think most people would agree that by any standards, the Intelliverb sounds *very* good.

This processor fills the gap for a reverb that sounds better than the budget guys and offers more capabilities, but doesn't destroy your budget. Couple that with ease of programming, and it looks as if RSP has come up with a winner for upscale home and project studio owners.

— Craig Anderton



I think most people would agree that by any standards, the Intelliverb sounds *very* good.

GEAR SLUTS

continued from page 130

creek. The same thing holds true for cassette duplicators. A lot of them have just invested in digital bin machines and all sorts of new high tech stuff to make cassette duplicating better and more profitable. With Philips sticking to a cassette-based system, most of the equipment used to duplicate the old analog cassettes can be modified to duplicate the DCC tapes. Oh yes, and Philips still gets their royalty. Actually, isn't the patent on the cassette about to run out? Ah, now I get it.

Philips said they did a survey and most people preferred cassettes instead of CDs. Really? I decided to do my own survey. I went to Tower Records in Nashville and started asking questions. They were:

1. How many CD players do you own? (86 percent owned a CD player. 52 percent owned at least two. 20 percent owned three or more.)

2. How many cassette players do you own? (100 percent owned a cassette player. 76 percent owned two, while 51 percent owned three or more.)

3. What are you buying today? (62 percent cassettes, 17 percent were buying both.)

4. Which do you play more at home? (92 percent play CDs more at home.)

5. Which do you play more away from home? (87 percent play cassettes when not at home.)

6. How many cassettes have you ruined? (100 percent have ruined cassettes. No one had lost fewer than four tapes.)

7. How many CDs have you ruined? (32 percent ruined CDs on purpose while trying to show someone else that they couldn't be ruined. One guy was there trying to return a CD because it wouldn't play after he microwaved it. 9 percent melted them in their cars.)

8. Do you copy CDs to blank cassettes? (82 percent of CD buyers copy them for use in their portable and car cassette players.)

9. Did you think that a DCC tape would play back on your existing cassette player? (93 percent thought they could.)

10. Which of these would you prefer DCC or Mini Disc? I showed them samples of both. (71 percent preferred DCC until they found out that you couldn't

play the DCC tapes on their old players. 100 percent preferred Mini Disc. Nobody cared that they could play their old analog tapes on the DCC machine.)


11. If you bought a new deck (DCC or Mini Disc) would you get rid of your cassette deck? (100 percent said no.)

12. Would you prefer a DCC or Mini Disc car player? (60 percent said they would prefer the DCC in the car if it would also play analog tapes.)

13. Would you prefer DCC or Mini Disc portable? (89 percent leaned toward Mini Disc because of potentially smaller size.)

14. Would you buy fewer CDs when DCC and Mini Disc become available? (92 percent said no.)

Well there you go. I thought that everyone would prefer CD and Mini Disc. The one thing that sticks out for me is that everyone thought that DCC tapes would play on the machines they have now. They said the ads said that DCC was completely compatible with their existing cassettes. What's a little misleading semantics among friends? It's all in how you look at it.

That reminds me of a joke. A horse wanders into a bar. The bartender looks up at him and says, "Hey fella, why the long face?" 

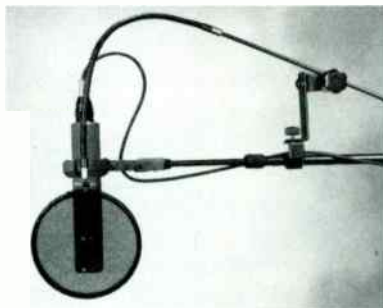
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—Dave Dion, *Engineer's Quarterly*, Feb/March '91

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—George Petersen, *Mix Magazine*, April 1991



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50EE9

Here For The Gear



Photo by Ed Colver

And now, a word from
the president of
Gear Sluts...

BY ROGER NICHOLS

Well, it's official. This week I am president of Gear Sluts. Last week, Walter Becker was president. And next week? What is Gear Sluts? I'm glad you asked.

Gear Sluts is a new pro audio club whose members will do anything for equipment. You'll see thousands of potential members walking the floor in San Francisco at AES. We have even come up with a crest and a motto and everything. The motto, in Latin, of course, is "We're Only Here For The Gear." Sort of catchy, huh?

To become a member of our exclusive club, you have to dispose of at least 20 percent of your income on equipment, and in the process you must have not been able to afford some other item that was budgeted as a family necessity. For example, you couldn't afford to buy a new backpack

for your kid to carry his school books because you just purchased a new B&M blower and fuel injection for your Z-28. Or you couldn't go get your dog fixed because you were down at the music store plunking down a deposit so you would have the first ADAT in your neighborhood.

There are other symptoms that potential Gear Sluts members display. Here's a typical scenario: The newest and biggest hard disk comes out and you run down and buy one at three times what the going rate will be in six months. A year later, you buy another one of the same hard disk because it is on sale at 1/20 of what you originally paid. You don't really need it, it's just such a good deal and you should have one for a spare. You never took it out of the box and now both of them are out of production and obsolete. But wait a minute, check out this new Erasable Optical Disk!

Someone who is a "loner" is not really as inclined to become a Gear Slut. Part of the fun of getting all this "stuff" is showing it off to your friends. Do you think for a second that all of those kids with the 5000-watt sub-sonic car stereo systems have them because *they* enjoy them? No way! It is so *you* can enjoy them, every time they drive by your house. The kids in the car aren't enjoying themselves at all. With that much sub-sonic energy they are bound to be having uncontrollable bowel movements.

Imagine how much fun it would be to invite the boss over to watch an advance copy of the newest *Star Wars* movie, you open up your video cabinet and reveal your new Sony D-2 digital video deck. Remember how cool it was to send a DAT copy of your rough mixes to the record company and they didn't even know what it was. Have you walked into Tower Records lately and asked for blank CDs? "You got any blank TDK CDs like this one? No? Well I guess I'll have to try Goody's down the street." As you walk out the door, turn and look at all of their mouths hanging open.

Someone I know flew with John Denver in his learjet (talk about a Gear Slut!) to Canada to get the first U.S. version DAT machine. We (oops) got it there because the Canadian machines don't have to have those stupid little transformers on the AC cord like the Japanese versions do. John would

book a tour in Japan just so he would have an excuse to go pick up the latest un-released Nikon lenses.

To make it a little easier on potential Gear Sluts, Walter and I have decided to review equipment that would be a worthy purchase for any Gear Sluts member. In essence we will be giving the "Gear Sluts Stamp of Approval" onto equipment that should not be passed up as long as your credit card is under the limit. We have acquired the appropriate test equipment and access to the facilities necessary to run each piece of equipment through the Gear Sluts Gauntlet. The first such test is of the Alesis ADAT and appears under my byline elsewhere in this issue.

Well, by now you should have a good idea of what it takes to be a Gear Slut. Maybe in the future we can have Gear Sluts membership cards. Yeah, maybe we could get discounts because of volume buying. Maybe someday there will be a Gear Sluts Depot across the street from your favorite shopping mall. Maybe we'll even have our own trade show?

DCC VS. MINI DISC

Last August, Philips brought a production unit of their consumer DCC machine to Nashville for me to listen to. I've made no bones about my feelings about this machine in past columns. Maybe they thought it could change my mind. It really didn't.

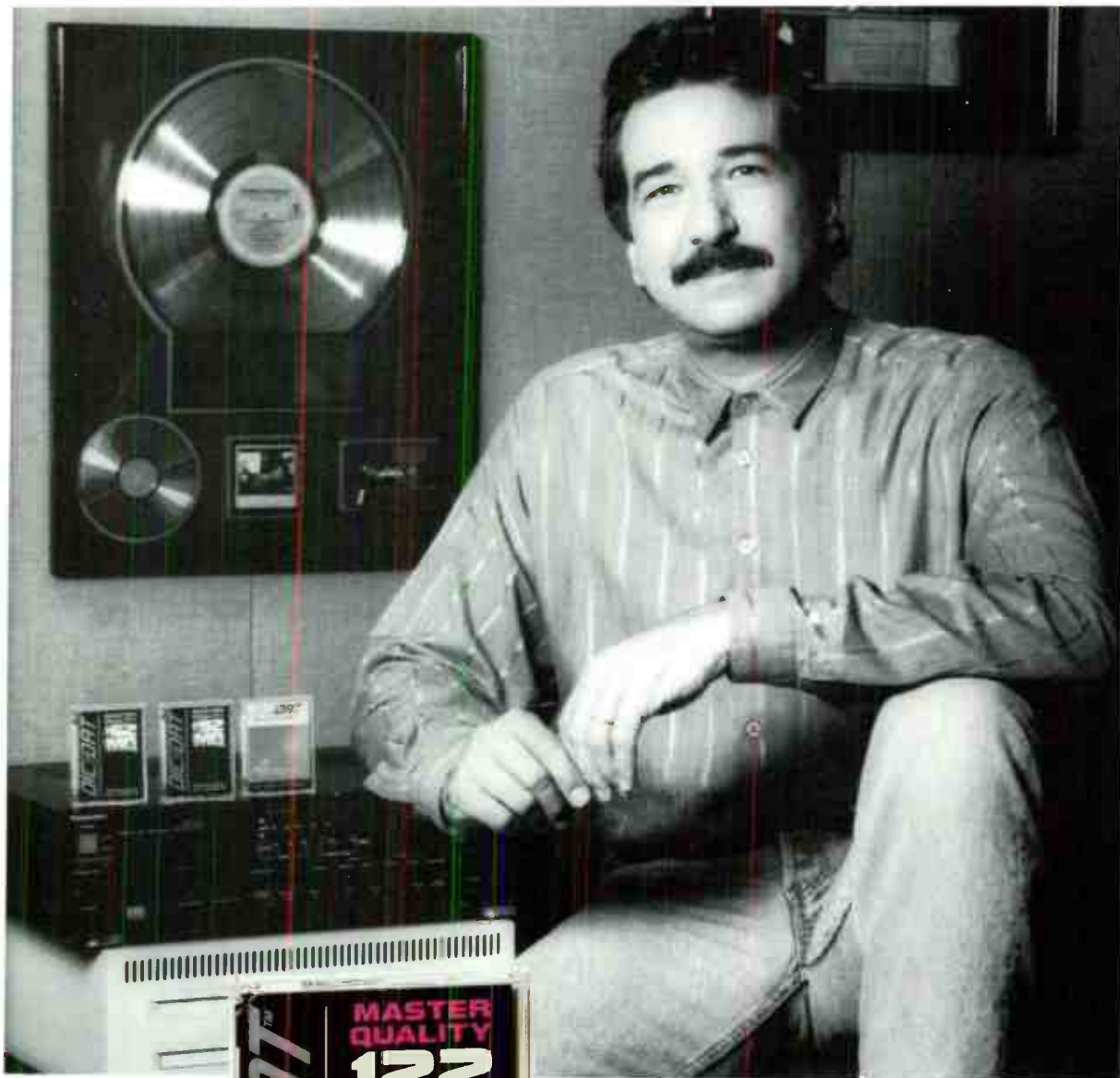
Everyone in the room could tell every time which was the DCC and which was the CD. The overall sonic quality was acceptable for what the machine is supposed to do; that is, to replace the analog cassette, but I still prefer the Sony Mini Disc. The preference isn't because of sound quality one way or the other, it is because of format. I don't think tape is the proper format. I think that Optical is the way of the future just as CD was a decade ago.

Both Sony and Philips could have come up with something that would have been an improvement over CD. The reason they didn't is because of the investment that everybody has in the CD. All of those CD pressing plants cost umpteen million dollars. If a new format like holographic ruby crystal came along, then Philips and Sony and all of the investors in all this equipment (i.e., the record labels) would be up the

continued on page 128

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What's The Weakest Link In Your Sound System?

Professional audio systems are only as good as the weakest link in the chain. Whether you rely on your system for sound reinforcement or recording, to earn a living or just for fun, each "link" has to be the finest it can be. You get the best performance from the best components and, more importantly, from components that are designed to work together. A matched system.

M Series Electronics are truly designed with the "matched system" concept in mind. They had to be, because we manufacture the loudspeakers used most by the pros and market a wide range of world class recording and sound reinforcement consoles. With both ends of the audio chain anchored so solidly, we just couldn't compromise on the links between.

Engineered to deliver the best performance in their class, all M Series Electronics products feature lower noise levels and wider dynamic range than the competition. They incorporate intelligent controls and front panel layout designed for

easy operation. M Series is designed to maintain the high level of performance you expect from your audio system, from end-to-end and in-between. And, they are priced to be very affordable.

Both the M552 and M553 Electronic Crossovers provide you with "constant directivity horn pre-emphasis", a special equalization curve that optimizes the audio signal for JBL Bi-Radial® horns. The result is a system that delivers balanced power response across both the horizontal and vertical planes for superb coverage.

The M644 Noise Gate offers four discrete channels of gating with user-adjustable Threshold, Attack and Release. The M712 Gating Compressor/Limiter features "Soft-Knee" compression characteristics for transparent gain control. And all four devices incorporate Servo-Balanced outputs for proper gain matching and elimination of extemporaneous noise.

If you've got a "road" system, "home" studio, or maybe both, ask yourself, "What are the weakest links in my audio chain?" Chances are excellent that you can greatly improve the performance of your system with JBL M Series Electronics.



*From top to bottom:
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