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& MUSIC

APRIL 1984 VOL. 10, NO. 4 \$1.95



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Sounds of Success

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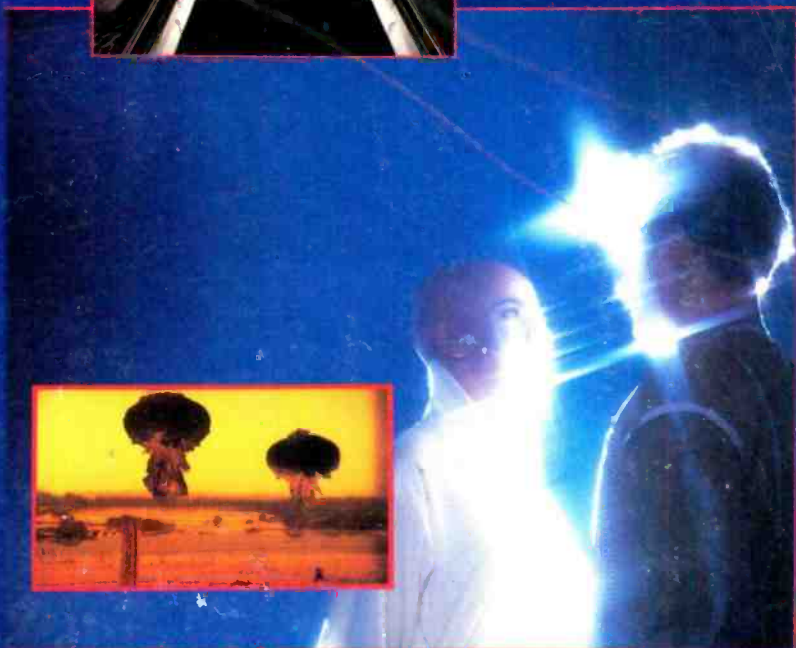
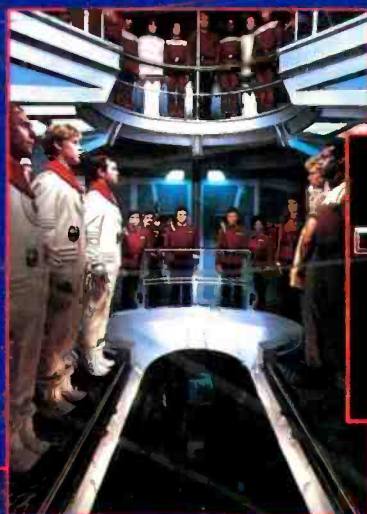
On-Location
Live Recording

MUSICIAN'S NOTEBOOK:

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our
System

DO YOU WANNA BE
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PART V

NOTEBOOK:
Contest Results



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Producer Series



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MODERN RECORDING & MUSIC

FEATURES

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by Bruce Bartlett

Many bands want to be recorded "live"—they feel that's when they play and sound their best. There are many ways to do this, ranging from simple mic techniques to elaborate equipment set-ups.

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by Denny Andersen

If you think recording your demo tape was a test of your creative abilities, just wait until it's time to market your recording! Part V of this series examines your marketing options.

34 FRANK SERAFINE: SOUNDS OF SUCCESS

by Vicki Greenleaf

His name might not be a household word, but chances are you've encountered one or more of his creations. Frank Serafine is the designer of music and sound effects for several major motion pictures as well as dozens of commercials.

42 WAS (NOT WAS)

by Jeff Tamarin

Don Fagenson and David Weiss are the men behind this Detroit based duo. Their style is a unique blend of rock-funk-pop and jazz, and they've had a lot of experience in both the music-making and production end of recording.

48 PHIL RAMONE PRODUCES RESULTS

by Rob Hoerburger

Phil Ramone has become one of the most successful and sought after producers in the business. Yet despite his superstar clientele, Ramone takes an active interest in finding and working with new talent. Ramone recently spoke with *MR&M* about some of his projects and the art of record producing.



Phil Ramone Photo: Courtesy of Phil Ramone, Inc.



Frank Serafine Photos: Courtesy of Frank Serafine and Paramount Pictures

SOUND IDEAS

MUSICIAN'S NOTEBOOK: IBANEZ DM500 AND DM2000 DELAY LINES

by Craig Anderton

This review compares the features of a budget model delay with an expensive model made by the same company. It is designed to aid the musician in purchasing a delay line that will really suit his needs.

GETTING THE MOST FROM YOUR MONITOR SYSTEM

by Rick Chinn

Just as the title says—Mr. Chinn discusses various techniques that help you get the best sound.

SOUND ADVICE

by Susan Borey and Mark Oppat

This month our sound reinforcement team addresses the subject of power with regard to a power distribution system.

STUDIO NOTEBOOK

by James Rupert

Meet the First Prize winner of *MR&M*'s Design-A-Studio contest, and read about his award winning studio.

DEPARTMENTS

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Making Amends

In our February issue we ran a Lab Report featuring the "little brown packages" from Accessit (pages 58-63). So far, so good. However (there's *always* a however when you've goofed), we didn't include a Reader Service number or the name and address of the distributor (Connectronics Corp.) for the benefit of readers who might like to know more about those fine products. Information on the Accessit Line can be obtained from Connectronics Corporation, 652 Glenbrook Road, Stamford, CT 06906.

Our apologies for any inconvenience we might have caused.

Buying Blind

I live in the St. Louis area and therefore do not have access to many of the high-end audio products that are continually being introduced. I have purchased most of my equipment from New England vendors for the sole reason of low prices. Among the items I have bought without ever having seen them (in 3-D) are: Lexicon Prime Time, Otari 1/2-in. 8-track, Arp Omni-2, Orban Reverb, UREI Limiters, etc.

My opinion is that if you know what you basically want, you can depend on the reputation of long-standing, "solid" manufacturers. I have never been disappointed with any of these products. In fact, there is much to be said for the process of "discovery" when learning to use such products. In the near future I hope to purchase an Itam 16-track, H949, and Kurzweil 250, all sight unseen. Three cheers for the deep crevices of the unknown.

—Richard A. Byron
Penguin Productions
Ballwin, MO

Don't Worry, We Can Help

I am a new reader of your unique and original magazine. And, as such, I have missed some articles that you have published. Specifically I missed part I of your series "So You Wanna Be a Rock'N'Roll Star," which appeared in the November 1983 edition.

Is it possible to order this issue by mail? I would be indebted to you if you could help me, as the information in this article would be very helpful to me.

—David Kirkdorffer
Boston, MA

Back issues are available for purchase by anyone interested in obtaining magazines they might have missed. If you're ordering just one issue the cost is \$2.20 plus 65¢ postage. If you want to order more than one issue, you should contact the magazine to arrange the most cost-efficient way of mailing.

Inquiries should be directed to:

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Please keep in mind that there is a limited quantity of back issues available.

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phase, every product is graphed and compared against its exacting design goals. Finally, products move to Quality Assurance where they are life-cycle tested to insure pro-rugged dependability.

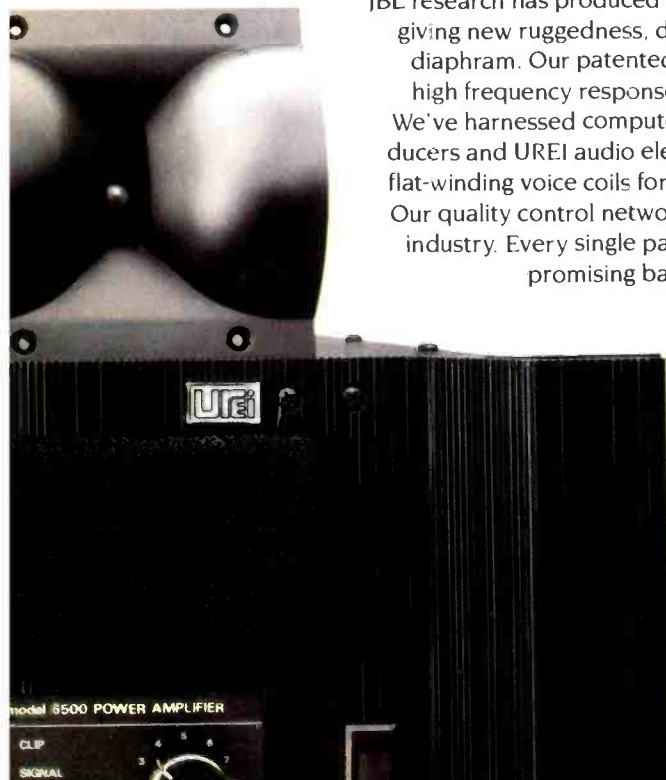
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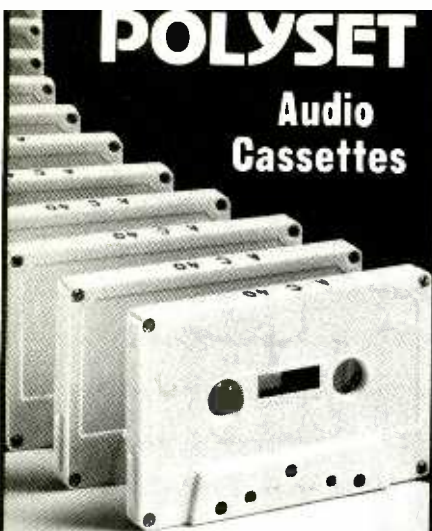
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Talk Back

Doing The Bounce

While reading Denny Andersen's article on recording a demo, I noticed that he overlooked my favorite method of recording drums on eight track. I call this method the four-to-two bounce. To use this method you must have a mixer with either eight outputs or direct out on each channel.

First, begin by patching the kick drum via the direct out to channel 1 of the recorder, then the snare via direct out to channel 2. The toms and cymbals are then fed to channels 3 and 4 via the stereo outputs of the mixer. Toms and cymbals are panned however you like your stereo spread. Into channels 5 and 6 I usually put bass and guitar respectively. After the basic recording has been made, the drums can then be ping-ponged onto tracks 7 and 8 in stereo. As you are bouncing the drums down they can be re-equalized and effects can be added, allowing you to really "beef up" the sound of the drums. When this step is done, you simply wipe out tracks 1-4 and dub in the other instruments:

- 1) kick drum
- 2) snare
- 3) Toms and cymbals in stereo
- 4)
- 5) Bass
- 6) Guitar (or whatever)
- 7)
- 8)

One challenge I ran into when recording demos for a full band was that the musicians said they could not play with just the three piece rhythm section. They needed the whole band playing to get the "feel." So I put the other instruments and vocals on tracks 7 and 8 as "scratch" tracks, later recorded for real onto tracks 1-4 after the drums were mixed onto tracks 7 and 8. This gave the group the live feel they feared losing. (You could also have them play without recording them.)

I hope this is of some help to those working in small studios.

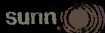
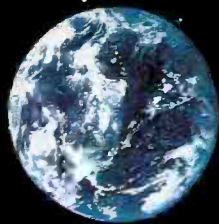
—Pete Vredenburg
Brainzville Studio
Beardstown, IL

- 1)
- 2)
- 3)
- 4)
- 5) Bass
- 6) Guitar
- 7) Drums in stereo
- 8)



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Finally, no other manufacturer controls assembly more precisely than Sunn. We use custom designed computer test equipment for pre-inspection and testing of all critical components. Furthermore, completed circuit boards are tested to individual component specifications in a rapid twelve seconds with Sunn's fully automated computer circuit analyzers. We insure specifications are exact by applying the same technology used by the microwave communications industry for testing marine navigation devices.

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Line Inputs to Main Outputs: 20 Hz to 50kHz

DISTORTION: Conditions: Gain @ -20dB, EQ flat, fader @ max, 7VRMS output into 600 ohms.
Main Output:
TOTAL HARMONIC DISTORTION (THD)
Bal Input: 0.05% max, 50 Hz to 20kHz
0.1% max, 30Hz
Line Input: 0.03% max, 20Hz to 20kHz
INTERMODULATION DISTORTION (IMD)
Bal Input: 0.04% max, 20Hz to 20kHz

HUM AND NOISE: Signal to Noise Ratio (S/N) A-weighted, referenced to 10V output into 600 ohms
Residual (all faders at min): 120dB
Main (Main fader at 0dB, other faders at min): 95dB
Main (Main fader at 0dB, one pre-amp at -20dB gain, EQ flat, fader max): 92dB
Equivalent Input Noise: (150 ohm source): -127dB

SLEW RATE: Greater than 6V/ μ sec

COMMON MODE REJECTION RATIO (CMRR)
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Recording Techniques

bruce bartlett

On-Location Live Recording

Sooner or later you'll want to record a band—maybe your own—playing in a club or concert hall. Many bands want to be recorded “live” because they feel that's when they play best. Your job is to capture that performance on tape and bring it back alive.

There are many ways to do this. We'll start by explaining simple two-microphone techniques and work our way up to elaborate multi-console, multi-track setups.

Two Microphones Out Front

Beginning recordists might start out with two microphones and a 2-track tape deck. This is the easiest method of recording a group. First, mount two high-quality cardioid microphones on a stereo microphone stand adapter. Angle them 110 degrees apart (55 degrees to the right and left of center) and space their grilles seven inches apart horizontally. This is the ORTF stereo mic'ing system. Place this arrangement about 10 to 15 feet in front of the stage, on a microphone stand or hung above the reach of the audience.

Don't expect this particular recording to sound like a commercial record! We've become accustomed to the clean, tight recorded sound of rock groups picked up by multiple close-placed microphones. You can't duplicate that sound with a simple two-microphone pickup. However, such a recording is useful for musicians who want to hear how they blend in the audience area.

Most rock groups use loudspeakers at each end of the stage to reinforce the vocals (and sometimes certain instruments). A centrally placed stereo pair of microphones far from the P.A. speakers may not pick up the vocals adequately. To gain better

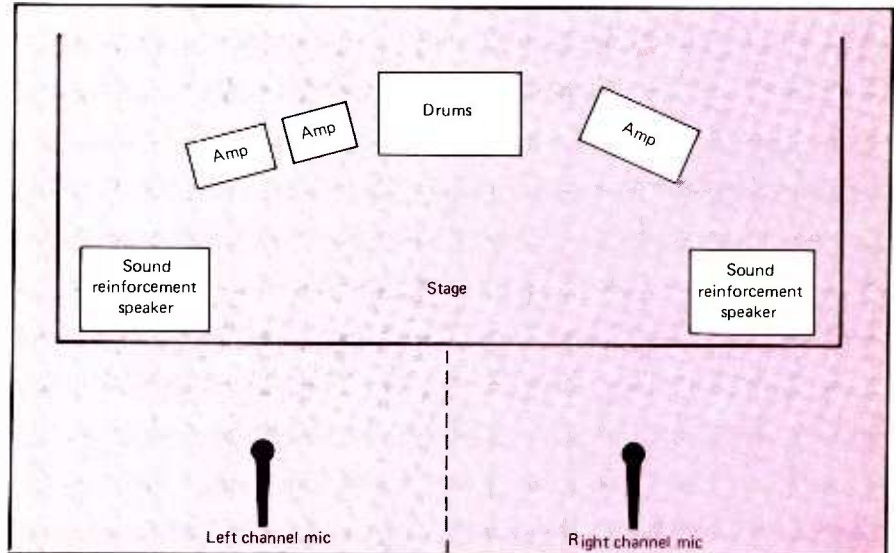


Figure 1. Recording a rock group with two spaced microphones.

control over the vocal/instrumental balance, try aiming two cardioid microphones, spaced about five to 15 feet apart, straight ahead toward the group (Figure 1).

Place the microphones far apart (that is, close to the P.A. speakers) to make the vocals louder in the recording. Do the opposite to make them quieter. The stereo imaging of this arrangement is poorer than with

the ORTF system, but at least you can control the balance between instruments and vocals.

If the playback sounds distorted (and you did not exceed a normal recording level), the microphones probably overloaded the microphone preamps in the tape deck. With loud sound sources such as rock groups, a microphone can put out a signal strong enough, to clip the tape deck's

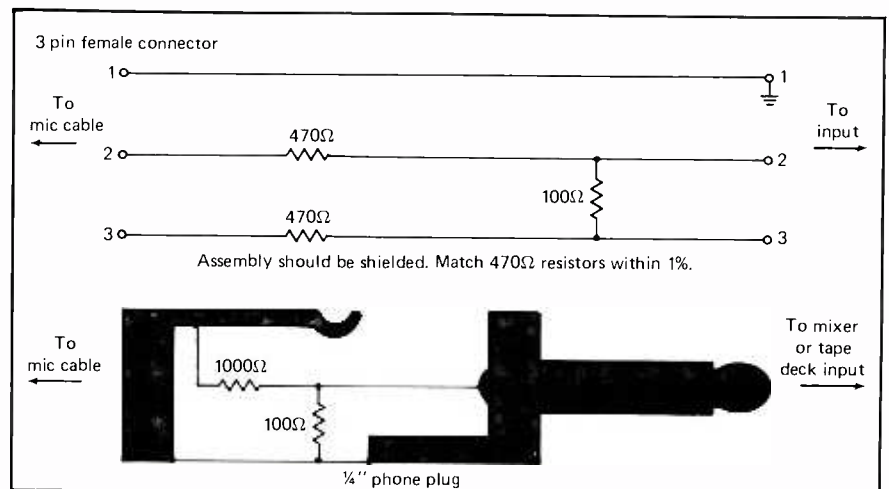


Figure 2. Balanced (A) and unbalanced (B) microphone pads.

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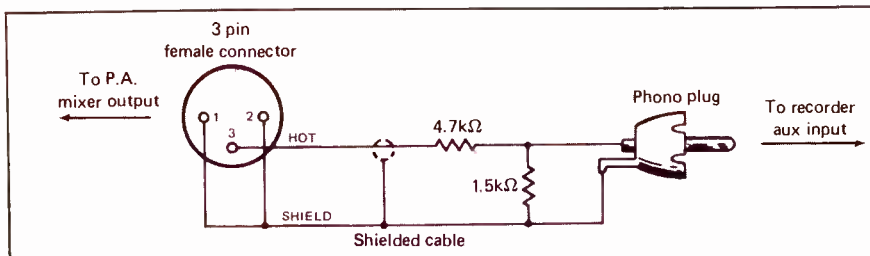


Figure 4. 12 dB pad for reducing signal level of P.A. mixer.

the main output of the band's P.A. mixer. Connect the line output(s) of the mixer to the line or aux input(s) of a 2-track recorder. Use the P.A. mixer output that is *ahead* of any equalization or active crossover used

to correct the speakers' frequency response, (as shown in *Figure 3*).

Note: Some mixers may put out a signal that is too strong for the recorder's aux input, causing distortion. This is probably occurring if

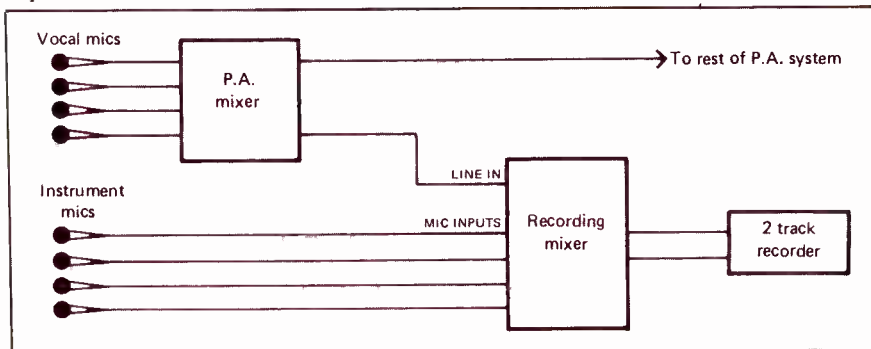


Figure 5. Recording off the P.A. mixer for vocals, with separate microphones for instruments.

your record-level controls have to be set very low. To reduce the output level of the P.A. mixer, turn it down so that its signal peaks around -12 VU on the P.A. mixer meters, and turn up the power amps to compensate. Alternatively, make a 12 dB pad as shown in *Figure 4*.

Recording off the P.A. mixer works best when all the instruments are mic'd and mixed through the P.A. mixer. The recorded mix might be bad, though. Here's why: The P.A. operator hears a *combination* of the live sound of the band and the reinforced sound through the P.A. system, and tries to get a good mix of *both* these elements. That means the signal coming off the P.A. mixer is mixed to *augment* the live sound—not to sound good by itself. A recording made off the P.A. mixer is likely to sound too strong in the vocals and too weak in the bass.

If the performance is in a large hall or arena, however, most of the sound heard in the audience comes from the sound reinforcement system. In this case, a recording made off the P.A. mixer is likely to have a good mix. That is, it will be as good as the "live" mix was.

This method sounds best if the sound reinforcement speakers were

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- F DCA800 800W (bridged) Stereo Amp — \$549. DCA300 300W — \$399
- G DCM301 300W Amp w 9 Band EQ — \$369. DCM151 150W — \$299
- H EQ2029 29 Band 1/3 Octave Equalizer w Hi & Lo Pass Filters — \$279
- I XC1000 Stereo Electronic Crossover for Bi & Tri Amping — \$279
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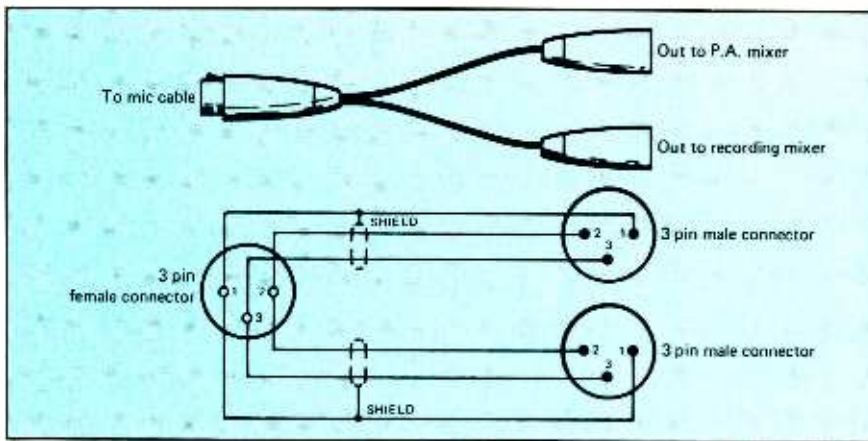


Figure 6. A Y-adapter for splitting microphone signals.

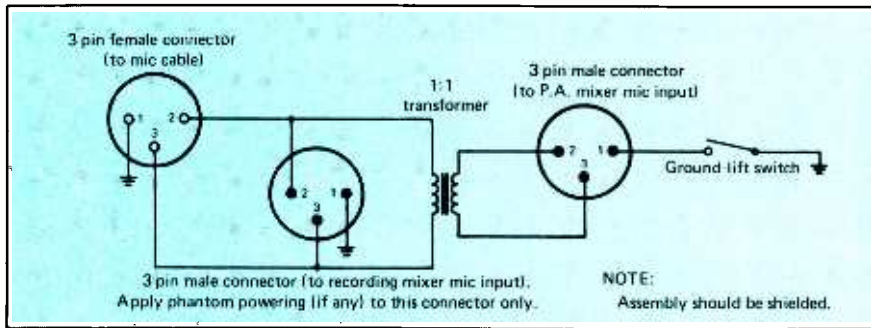


Figure 7. Transformer-isolated microphone splitter.

previously equalized to sound “hi-fi” when playing a good recording. If the frequency response of the P.A. speakers is not wide-range and smooth, the mixer operator may equalize each instrument to compensate for the P.A. speakers. If you record this “compensated” P.A. mix and play it back over a good stereo system, the tonal balance will be wrong because of the equalization used on the P.A. mixer.

In some small P.A. systems, only the vocals are reinforced. In that situation you can take a line-level feed off the P.A. mixer for vocals and use your own microphones for the instruments. You’ll need a separate mixer for recording. Place recording microphones near each instrument, and mix their signals with the P.A. vocal singer (as in *Figure 5*). Check the P.A. mixer’s clipping indicators (if any) to make sure there’s no distortion.

Splitting the Microphones

As we’ve seen, a good P.A. mix does not guarantee a good recording mix. It’s better to make an independent

recording mix by using a separate mixer and separate microphones.

However, the stage will be cluttered if you place a recording microphone next to every P.A. microphone (it’s especially clumsy to double the vocal mics). Instead, you can plug a *Y-adapter* (*Figure 6*) into the end of each vocalist’s microphone cable. This adapter splits the microphone signal two ways—to the P.A. mixer and to the recording mixer.

Plug one output connector of the Y into a cable going to a P.A. mixer mic input; plug the other output connector of the Y into a cable going to a recording mixer mic input.

This arrangement might cause ground loops and hum unless both mixers are plugged into the same AC outlet strip. Experiment with AC-plug orientation to obtain the least hum. If you use phantom powering, supply it from one console only.

A better solution is to transformer-isolate the two outputs as shown in *Figure 7*. This device is called a *microphone splitter*. It’s available at sound dealers and some music stores. You need one for every microphone you want to share with the P.A. system.

In some sound reinforcement systems, every instrument is mic’ed with a high-quality microphone that feeds the sound reinforcement system. Then you can split all the microphones. But in many other systems, only the vocals are mic’ed for reinforcement. In that case, you split the vocal mics and use your own recording mics on the instruments.

For on-location work, you have to place each microphone within a few inches of its source to reject feedback, leakage, and room acoustics. (Microphone techniques were covered in the August and September ’82 issues of *MR&M*.)

Recording Live To 2-Track

If your recording mixer has EQ, reverb, and panning, you can use these effects to refine the sound. A recording mixed live to 2-track can sound as good as commercial LPs of live concerts—you bypass the noise and distortion added by a multi-track recorder. There is a disadvantage: The mix may not be optimum because you have to mix as the musicians are playing. A multi-track recorder lets you tailor the mix after the concert.

Ambience Microphones

If you have enough microphone inputs, you can add two *ambience microphones* to pick up the room sound and audience noise. This helps the recording to sound live. Without ambience microphones, the recording may sound too dry, as if it were done in a studio.

One popular technique is to put two Crown PZMs on the walls or ceiling; they provide a clear, realistic pickup of audience sounds. Or you can hang two crossed cardioids, or spaced omnis, over the audience.

Ambience microphones can muddy the sound if mixed in too loudly. Keep them down in level, just enough to add some “air.” Bring them up gently to emphasize crowd reactions.

Multi-Track Recording

Now we’re getting into professional techniques. Each microphone on stage is split to feed the sound reinforcement mixer and a separate multi-channel recording mixer (as in *Figure 8*). Some splitters have three outputs to feed a stage monitor mixer as well. To prevent ground loops between the three systems, the microphone-cable shields are grounded

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only to the recording console. The cable shields going to the house P.A. and stage monitor mixer are floated (disconnected) at the splitter with ground-lift switches.

Each microphone, or each instrument's group of microphones, is routed to a separate track of a multi-

the mix you hear during recording is the mix you'll hear during playback.

A situation where 4-track recording is easy might be a jazz trio. You could put bass on Track 1, piano on Track 2, drums overhead on Track 3, and kick drum on Track 4.

for set-up and bring plenty of spare parts, adapters, and cables. There's always something going wrong, something unexpected. Don't be caught without the little things—spare tape reels, hub adapters, pencil and paper, and electrical 3-to-2 adapters, etc. Bring a repair kit and plenty of gaffer's tape. Consider recording with redundant (double) systems so that if one fails, you have a backup.

Set recording levels before the concert (during the sound check). It's better to set the levels a little too low than too high, because during mix-down you can reduce noise, but not distortion.

dbx noise reduction is a great help in live recording. In addition to reducing tape hiss, it compresses the signal going on tape so that the level variations are less extreme. You're less likely to saturate the tape during loud peaks.

If a concert will be longer than the running time of a reel of tape, switch reels at intermissions. Another method is to feed two identical tape machines the same signal in parallel. Record on one machine. As the reel of tape nears the end, start recording on the second machine so that none of the performance is lost. Edit the two tapes together back in the studio.

Summary

We've covered a variety of on-location recording techniques. In general, the more sophisticated the setup, the better the sound. Here's a list of the methods discussed, from simple to complex:

- Place two microphones out front; use with pads into a 2-track tape deck.
- Record off the P.A. mixer.
- Record vocals off the P.A. mixer and mic the instruments separately.
- Use microphone splitters. Mix all the microphones with a recording mixer live to 2-track.
- Record onto a multi-track tape machine for later mixdown.
- Do the multi-track recording in a truck or van.

On location recording is a difficult but rewarding challenge. It's instructive—and fun—to listen to your own recorded performance the day after a gig. And it's always a thrill to capture the excitement of a great performance on tape.

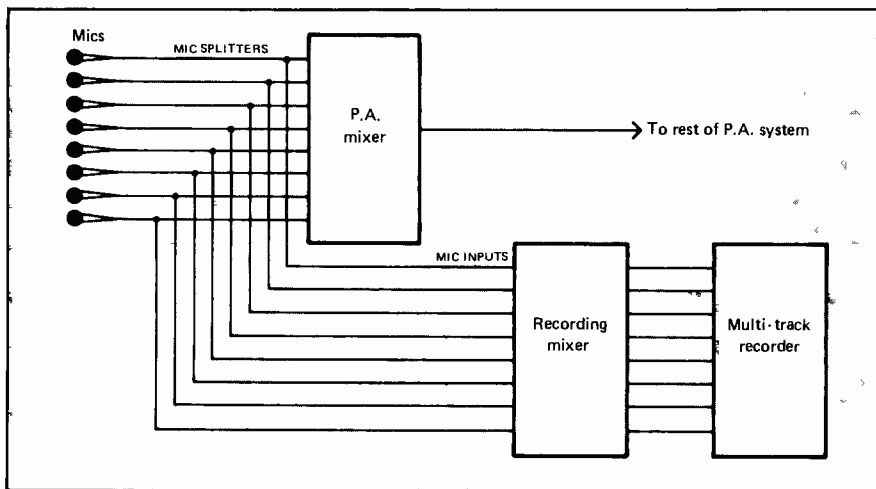


Figure 8. Recording with mic splitters into a multi-track recorder.

track recorder. After making the recording, you mix down the tracks back in the studio, spending as much time as needed to perfect the mix. You can even overdub parts that were flubbed during the live performance, taking care to match the overdubbed sound to the original recording.

A portable 8-track deck with microphone inputs works great for recording small combos. Simply plug a microphone into each mic input (padded if necessary), set levels, and record. Then mix down the tape at home, adding EQ and effects.

In my experience, the 4-track format is most difficult to use for live recording. That's because you have to submix several microphones onto each track, and monitor all four tracks. You must set up the 4-track monitor mix very carefully, because you can't change the mix *within* each track after recording (except slightly with EQ).

Eight tracks are easier to work with because you do most of the mixing after the concert. You might need to mix the drum microphones to one or two tracks at the recording session, but typically each microphone feeds its own track. Most of your work during recording is level-setting.

Even the 2-track format is easier than 4-track. Monitoring is simple—

24 Tracks in a Van

Here's the ultimate setup. Each microphone on stage is split three ways to feed the snake boxes for the recording, reinforcement, and monitor consoles. A long snake (multi-conductor cable) is run to a recording truck or van parked outside the concert hall.

Each microphone line in the recording van is connected to a multi-channel console, which is used to submix groups of microphones and route the signals to a multi-track tape machine. Sometimes two tape machines are run in parallel to provide a backup in case one fails, or two machines can be synchronized with SMPTE time code to increase the number of tracks available.

This sophisticated setup permits total control over the sound without compromising the P.A. monitor, or recording mixes. The engineer can set up a quick mixdown with effects to play for the musicians after the concert.

During mixdown, the recorded tracks of the ambience microphones can be faded up or down as required—up for liveness and audience reaction, down for cleanest sound.

Tips

Here are some helpful hints for successful on-location recordings. Arrive several hours ahead of time

1

Acoustic foam "pop" and moisture filter.

2

Three-layer mesh grille resists denting for better element protection and appearance.

3

High-output moving-coil dynamic cardioid capsule.

4

Felt dust cover protects entire element.

5

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6

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7

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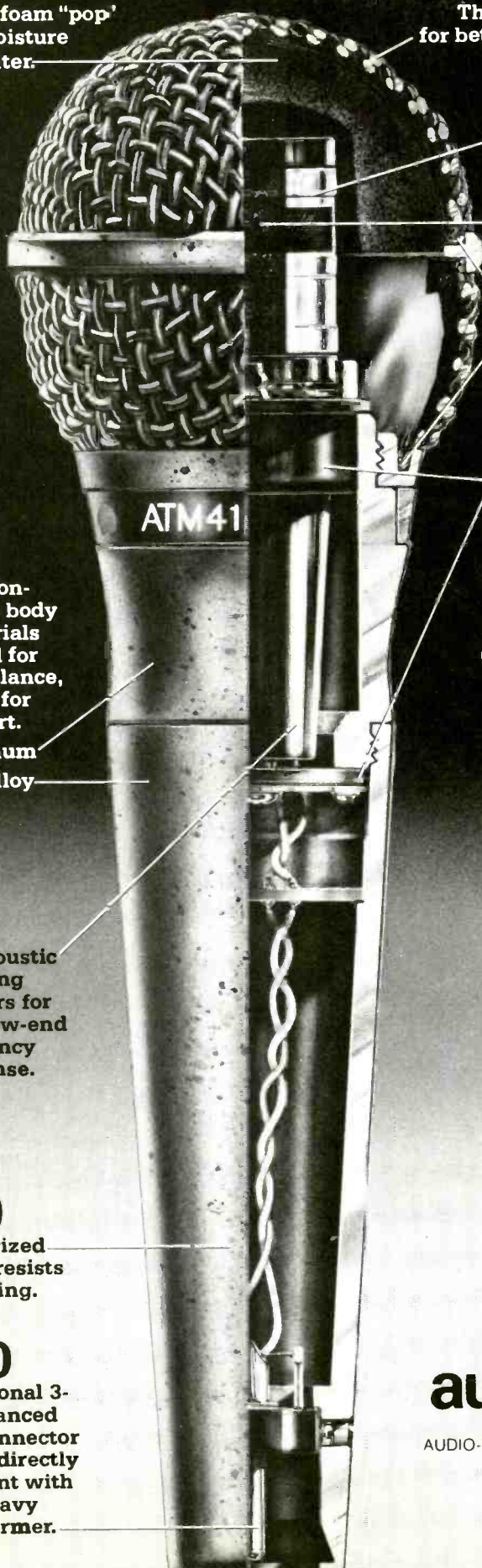
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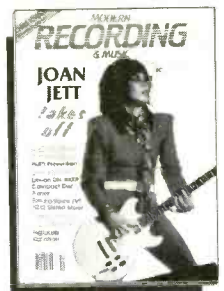
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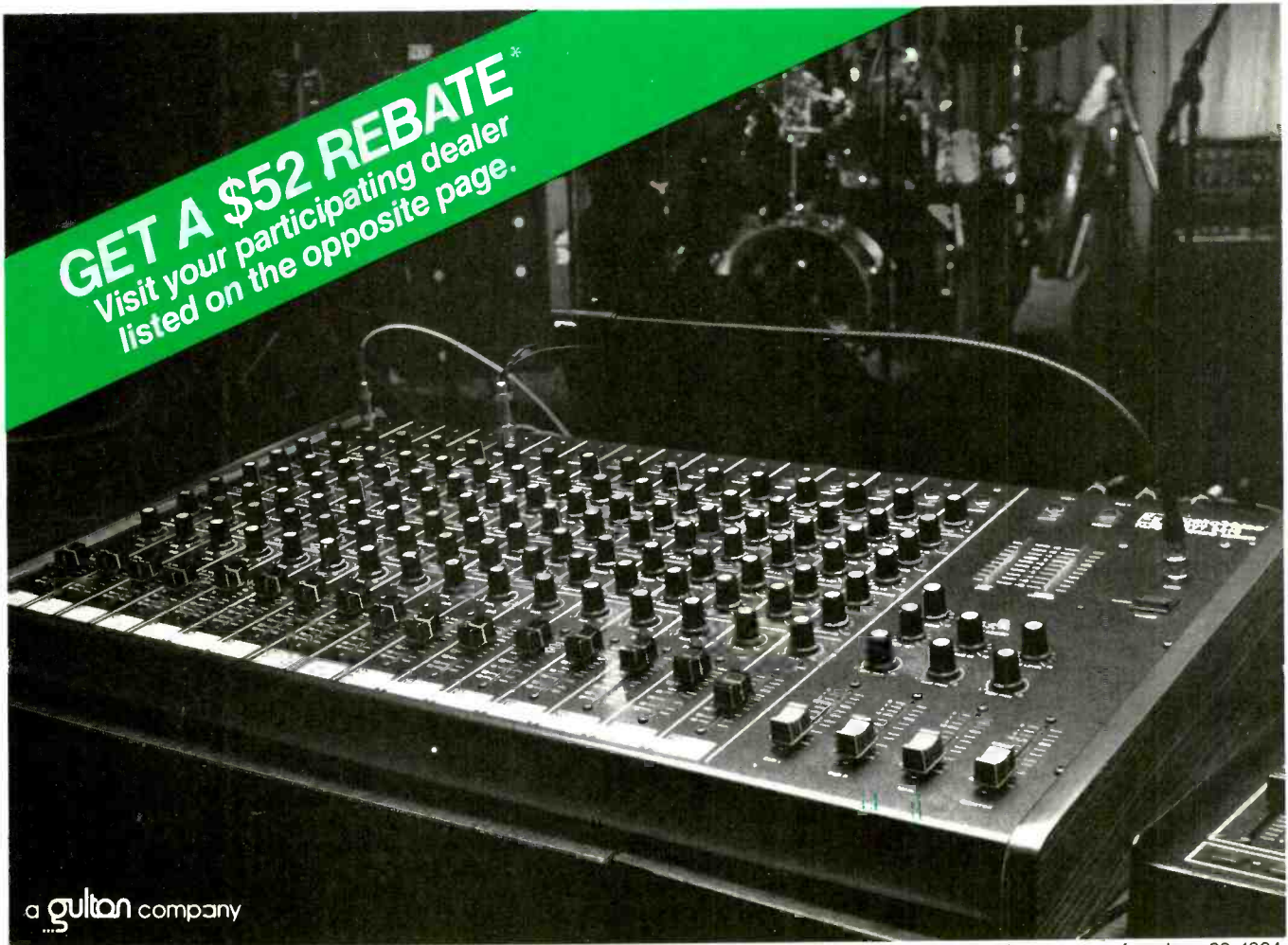
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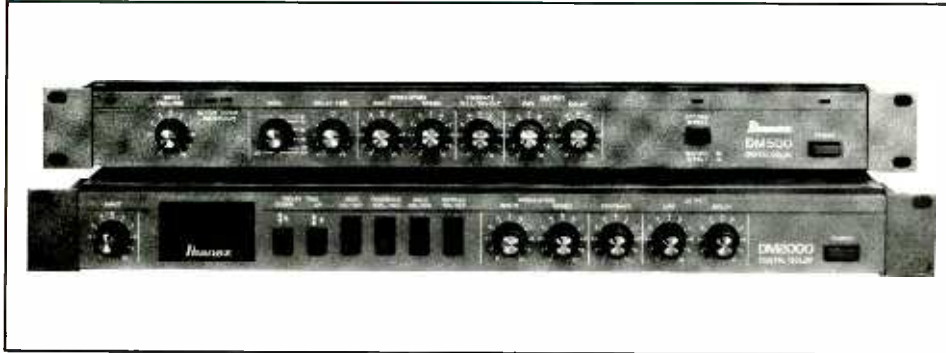
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Musicians Notebook

Ibanez DM500 and DM2000 Delay Lines



Companies keep making them...musicians keep buying them...and I keep reviewing them. What are they? Digital delay lines, whose popularity shows no signs of letting up.

As opposed to previous delay line reviews, however, this month we're going to try something a little different. You see, the local UPS driver has delivered not one, but two Ibanez delay lines—the DM500, which lists for \$349 and offers a 256 ms (millisecond) maximum delay, and the DM2000, which lists for \$499 and delivers over a full second of delay. After playing with them for a while it occurred to me that by now, most musicians probably know how to obtain the more popular delay line effects such as flanging, chorusing, doubling, slapback, etc.; however, when it comes to deciding whether to go for a budget model or lay out the bucks for something more expensive, many musicians are not quite as knowledgeable. People are constantly asking me to recommend the “best” delay, but the simple fact is that there is no such thing as a best delay—only the one that is best suited to your application. One delay might be the best regardless of cost, another the best combination of performance and cost-effectiveness, another the best for a particular type of music (you get the idea).

Is it really important to have a full second of delay, or is a quarter second sufficient? Just how important is it to know the exact delay time? Do you really need a loop in the feedback path, or will you never really use those jacks? Sometimes knowing the answers to these questions is just as important as knowing a unit's specs. In this month's column, we will concentrate on the differences between the DM500 and the DM2000, and offer some opinions as to what these differences mean in everyday applications.

Delay Time. The DM500 delay range spans 0.5 ms to 256 ms, while the DM2000 covers 1 ms to 1023 ms. Although many musicians feel they need to be able to get long delays (one second or longer), the fact is that the most popular delay line effects—flanging, chorusing, doubling, and slapback echo—are all easily obtained with under 256 ms of delay. It makes bad economic sense to pay for more delay than you really need, so unless long echoes are a part of your act, think twice before automatically deciding that “longer” is better.”

Delay Time Selection. The DM500 uses an eight-position rotary switch to select a nominal delay setting of 1, 2, 4, 8, 16, 32, 64, or 128 ms; a Delay Time control varies the nominal setting from 0.5 times the indicated value (Delay Time counterclockwise) to two times the indicated value (Delay Time clockwise). Thus, with an initial setting of 16 ms, the Delay Time varies the delay over a 4:1 range, from 8 ms to 32 ms.

The DM2000 uses two Delay Time pushbuttons, Up and Down, to respectively increase or decrease the delay time as indicated on a four digit LED readout. These pushbuttons have a dual action: pushing lightly slowly changes the delay time (you can see each ms tick by quite easily), while pushing with more pressure changes the delay time more rapidly. Although I generally don't like setting delay times with up/down switches, the dual action switches make the whole process fairly painless.

The readout feature is very handy if you need precise, repeatable delay settings. For example, if you have a stage act that uses an electronic drum unit for a certain song, and know that a particular echo time works well with that song, the readout makes it easy to

JOE GOTTFRIED ON FOSTEX

Joe runs Sound City where groups such as Tom Petty and the Heartbreakers, Fleetwood Mac, the Beach Boys and Barry Manilow have recorded. Joe also runs Carman Productions and has managed artists such as Rick Springfield, Gus Hardin, William Katt, Jaye P. Morgan and Theresa Brewer.

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“Fostex is great because it’s so efficient. It’s time, it’s money,



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call up the desired amount of delay. With the DM500, this is more of a hit-or-miss proposition. However, if you mostly use a delay line for a few specific effects where delay time isn't crucial (e.g., chorusing), you might actually find the DM500 easier to use than the DM2000.

Input characteristics. The DM500 has an input jack, Input Level control, and dual LED level-setting indicator (green for active, red for overload). The nominal input impedance is 500 kilohms with unity input gain, but pulling on the Input Control knob activates a switch that reduces the impedance to 5 kilohms and adds 30 dB of gain. The latter is the preferred setting for microphones, the former for instruments such as guitar.

The DM2000 has an input jack and Input Level control but also includes a rear-panel Master Input switch; this selects between nominal -20 dB and +4 dB input signal standards. There is also a five-LED overload indicator (three green LEDs and two red LEDs) to give you a graphic indication of your input signal dynamics. The input impedance is approximately 100k.

With guitar, the DM500 (with the Input control pushed in) gives the least loading and the very best high frequency response. The DM2000's lower input impedance tends to load down passive pickups a bit more, thus dulling the high end somewhat. However, this effect is very subtle—most people probably wouldn't notice it.

What I did find noticeable, however, was that plugging a synthesizer into the DM500 produced some really terrible sounds. At first I thought that the synthesizer was malfunctioning; but plugging the same synthesizer into the DM2000 produced no problems at all. I then thought that perhaps I had fried the DM500 somehow, so I tried it with guitar...yet this time, all was well. I then tried the synthesizer once more with the DM500, but for this test pulled back on the synthesizer's high frequency content.

Lo and behold, the terrible sounds went away. I'm sure that the high frequency harmonics produced by the synthesizer were the source of the problem, probably because the DM500 had a hard time converting these to digital form (aliasing with the system clock might also be a problem). Turning down the Input control helped reduce some of the distortion, but nowhere near as much as attenuating the synthesizer's high frequencies. Moral of the story: If you play an instrument with a lot of harmonics, you're probably better off with the DM2000.

Modulation. Both units are pretty similar in this respect, and include the standard Width and Speed controls to modulate the delay time over a 4:1 range. However, the DM2000 also features a front panel switch, paralleled with a rear panel footswitch jack, that lets you selectively bring the modulation in and out as required. This is a feature I have not seen on other delay units, but it is most welcome. Want to vibrate the tail end of a note? Preset the controls for the right modulation effect, then bring the modulation in and out with the footswitch as needed.

The DM2000 also flashes two LEDs (located to the

right of the four-digit readout) in time with the modulation speed. The DM500 has no such indicator.

Feedback. Both the DM500 and DM2000 include a Feedback control and the ability to select "normal" or "inverted" feedback. Like many delay units, the DM500 and DM2000 only switch the phase of the signal going through the feedback loop and do not seem to alter the phase of the delayed signal being summed into the output mixer; I feel this is less satisfactory than the approach taken in a unit such as the "Hyperflange + Chorus" (July and September *MR&M*), which switches both feedback and delayed signal phases simultaneously in order to give positive and negative flanging of equal intensity. Still, this is a trick most designers don't seem to know about, so I can't complain about this aspect of the Ibanez delays without complaining about a bunch of other delays as well....

Incidentally, the DM2000 uses a pushbutton switch to select normal or inverted feedback, with an LED (mounted in the switch) to indicate when inverted feedback has been selected. With the DM500, you pull on the Feedback knob to select inverted feedback (there is no LED indicator); as a result, it is easier to see which mode has been selected with the DM2000.

Output Section. Both units have individual level controls for the Dry Output and Delay Signal Output. While I would have preferred one of these controls to be a pan-pot to pan between dry and delayed signals and the other a separate master output control, the approach Ibanez has taken saves money and works just fine. Both units also have Mix and Inverted Mix output jacks (this combination allows for synthesized stereo, as discussed in several other *Musician's Notebook* columns), but the DM2000 also includes a Dry output jack so that you can bring the Dry signal out separately from the delayed signal. This is a handy feature; you can connect a tuner to the Dry output jack so that it's not affected by any pitch changes created by the delay line, or you can feed the Dry output into one channel of a stereo mix and the Mix output (with the Dry Output control turned all the way down) into the other channel for stereo panning and stretching effects. While it is possible to create these effects with the DM500 as well, you would need an extra patch cord and Y-adaptor.

Convenience Features and Other Features. Both units include an easily accessible fuse post on the rear panel along with a front panel power on/off switch, but the power cords are two conductor, not three conductor. (I prefer the latter, although you generally have to be more careful about creating ground loops if all your units have three conductor AC cords.) Each unit additionally includes a front panel bypass switch with associated LED indicator, and a rear panel footswitch jack that parallels this switch.

The DM2000 also includes two other features not found on the DM500. First is a front panel Hold switch (along with an associated rear panel footswitch) that allows for infinite repeat effects. Like most hold switches, this one has its limitations (i.e., if you hit Hold during the quiet part of a signal, you may end up with a splicing glitch sound), but for drones and

creating one-second "solid-state tape loops" the hold function is very useful. The second feature not found on the DM500 is a set of rear panel send/receive loop jacks that let you insert signal processors in the feedback path. This feature—discussed at length in previous columns—allows for effects such as pitch-shift-with-echo (by plugging a pitch transposer into the loop jacks) or "soft" echo (by using an equalizer to cut the high frequencies going through the feedback circuitry).

Quality of Sound. To my ears, the DM2000 sounds cleaner than the DM500 and also handles signals with lots of high frequency content in a far more satisfactory way. The DM500 sounds particularly "dirty" with the Feedback control up towards maximum, but with a lesser number of repeats the sound is quite acceptable. (The DM500 also gives some "spikey" distortion effects with the Delay Time control at minimum, but backing away from this full counter-clockwise setting eliminates the problem.)

General Comparison. After using both devices, I feel the DM2000 is more applicable to studio situations (where flexibility and quality of sound is

most important), while the DM500 seems intended more for the performing musician (where cost and simplicity must also be considered). Of course, small studios that need a "utility" delay might find the DM500 useful, and performers (especially synthesizer players!) who need more features will prefer the DM2000.

I also feel that the DM2000 is the more cost-effective of the two; in fact, there are no other units I know of in the under \$500 price range that include a delay readout (which I often find indispensable), modulation on/off footswitch, and feedback loop jacks. Compared to the DM500, the DM2000 gives you some really nice extras and a cleaner sound for a fairly small additional investment.

Remember, any feature you pay for but do not use represents wasted money. While no delay line will include all the features you want and exclude all the features you don't want, some models will be more appropriate to your application than others. As noted at the beginning of this article, there are many delay lines available to the musician; choosing the one that's right for you becomes more and more difficult as the number of choices multiplies. Hopefully this column has provided a model for how to compare a higher-priced delay to a lower-priced version and also, how to decide which device is most cost-effective for your particular needs.

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Getting the Most From Your Monitor System

I guess it all started when the guys in the band couldn't hear themselves. Used to be that the folks that were supposed to know about sound systems and such said that you couldn't put a speaker in front of you so you could hear yourself. Said something about feedback or something.

Then, one day, some bright(?) soul who either didn't listen or didn't care did it anyway. All of a sudden he could hear himself (sort of). Ever since then, it's been: **MONITOR WARS.**

As I stated above, monitor systems (or as the British say, foldback systems) were borne out of necessity. Increasingly complex vocal harmony, higher and higher sound levels, and other factors combined to make a good monitor system a necessity, rather than a nicety.

Let's get a definition out of the way right now:

monitor system: a special sound system designed to operate in close proximity to a performer's microphone for the express purpose of allowing the performer to hear himself (herself). It must be capable of being too loud all of the time. Above all, in spite of being too loud, it must not self destruct.

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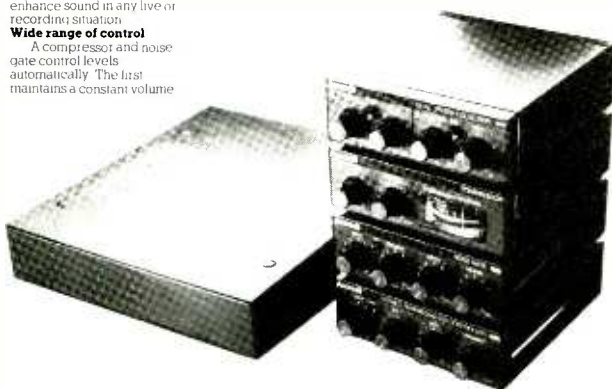
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Some Early Solutions

Early attempts at monitor speakers ran the gamut: small speakers, big speakers, A7s, big speakers with horns, big speakers in pseudo-horns with horns... Get the picture?

One early monitor speaker was known as the "Rebel." Paul Klipsch (ever heard of a "Klipschorn?") developed it in the early days of hi-fi. It was a small rear-loaded horn. Oddly enough, it was a corner speaker that had various odd angles built into the box to allow it to be placed in a corner. Someone tried laying one of them on its side and the rest, as they say, is history. Variations of this resulted in the use of numerous types of tweeters to try to improve the high-frequency response of the system.

As time marched on, the Rebel gave way to a speaker in a multi-faceted box (to facilitate the weird angles that monitor speakers have to be positioned in). Of course, tweeters and/or midranges have been added, ad nauseum.

Eventually, someone discovered that if you used some sort of an equalizer, you could help make the system less prone to squealing after you had just gotten it so you could hear it. Of course, more is better, so simple hi/lo equalization gave way to octave-band graphic equalizers, which gave way to 1/3 octave equalizers, which gave way to...

How the Big Guys Do It

Today, most touring sound companies are using a variation of the multi-faceted box with an added horn. Speaker choices have varied over the years, ranging from a single 12-in. with a horn to two 15s with a horn that takes two *big* roadies to move.

Naturally, if a sound company works with a loud group, the monitors have to be louder. This has caused the Monitor Wars to escalate, with various sound companies resorting to larger speaker components, bigger hi-frequency drivers, bi- and tri-amplification, etc.

In recent years, it has almost become the rule, rather than the exception, to use a separate mixer, located onstage, for monitors. Four to eight independent mixes are not uncommon. For smaller groups, each person could have his own individual monitor mix. Placing the monitor mixer onstage has the obvious advantage of locating the monitor mix engineer in close proximity to the group. This way the musicians can work closely with the monitor mix engineer to get the monitors exactly the way they want them. This also means that if it isn't right, it's a lot easier to yell at him (or her). Finally, it means that if the monitors are too loud, the musicians can pay the monitor mix engineer the ultimate compliment: "Turn the #@#! monitors down, they're too #@%#! loud."

If you have any doubts about just how effective a real, no fooling monitor system can be, you needn't. A typical system is easily capable of being too loud (110 to 120 dB at the microphone).



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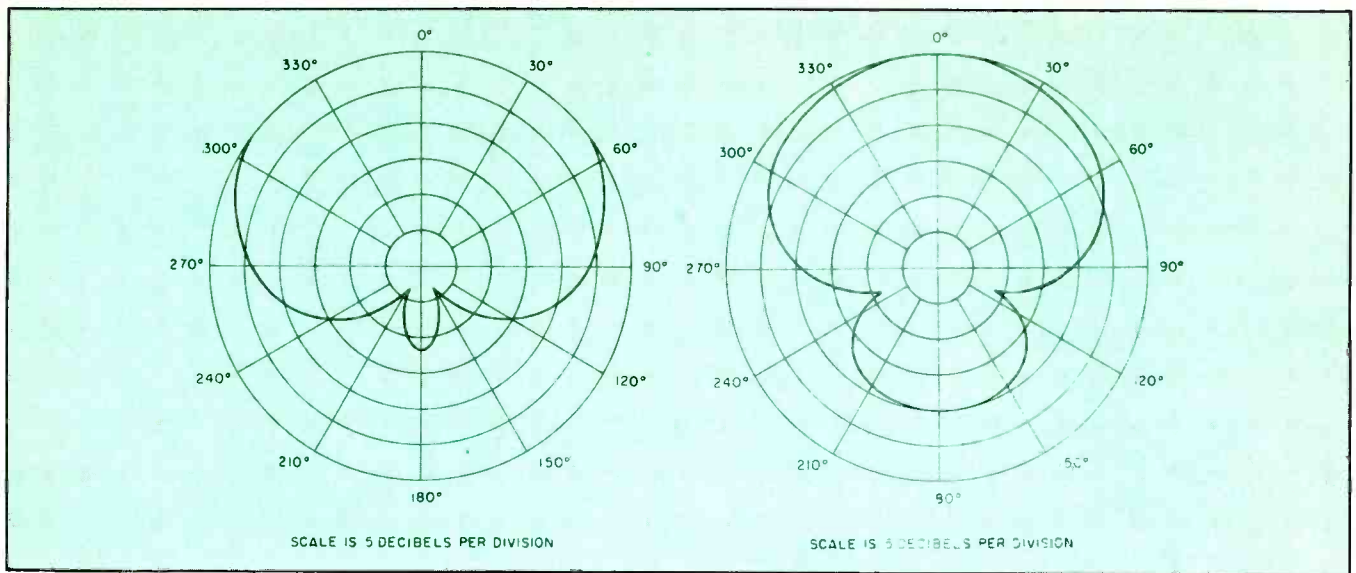


Figure 1. Polar response of a super-cardioid mic (A) and hyper-cardioid mic (B). (Scale is 5 dB per division.)

What Can You Do About Your Own System

It's easy to describe how to do all of this—provided you have a bank account that looks like the National Defense budget. It gets a bit more difficult if you don't, but it's not impossible. Let's see what can be done on a much more realistic budget.

Microphones. At the beginning of any sound system, microphones are very important, both for yourself and for your audience. For most musical applications involving monitors, cardioid microphones are commonly used, since the microphone's pattern may be used to help minimize the effects of close loudspeaker placement. Regardless of what directional pattern you use, the first requirement is to get the source as close to the microphone as possible. This helps to increase the signal (you) to noise (the monitor) ratio at the microphone, and allows you to lower the gain. Both of these things are essential if you want good monitors.

Although the omnidirectional microphone has largely been ignored by most musicians, it has a few redeeming properties that just may make it ideal for a few choice applications. These properties include the absence of proximity effect, freedom from "P" popping, and lower handling noise. If the source-to-microphone distance is very close, and monitor level requirements not completely ridiculous, an omnidirectional microphone just may be the one to use.

A commonly attempted cure is to try more and more directional microphones, generally super- or hyper-cardioids. While each of these can have a higher front-to-back ratio than a "vanilla" cardioid, the specs do not tell the entire story. The polar patterns for the microphone, however, do. *Figure 1* shows typical polar patterns for both of these microphones. Note that both microphones exhibit a rear lobe to their pickup pattern. What this means is that a vanilla cardioid microphone has its minimum pickup region at 180 degrees from the front; the super-cardioid has its minimum pickup region at 150 and 210 degrees; the hypercardioid has its minimum pickup region at 120 and 200 degrees from the front. The rear lobe is typically 15 dB down from the frontal response, compared with 20 dB or more at the minimum pickup

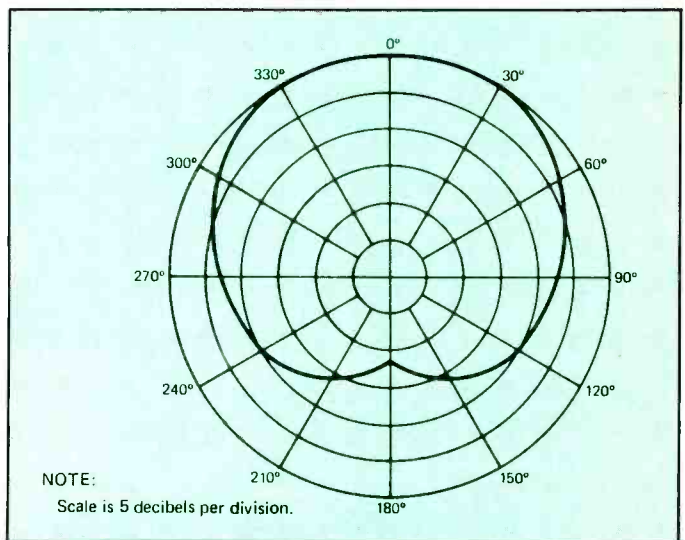


Figure 2. Polar response of a vanilla cardioid mic (scale is 5 dB per division).

regions. *Figure 2* shows the polar pattern of a typical vanilla cardioid microphone.

What this means to *you* is that regardless of what sort of cardioid microphone your favorite mic is, try to place the monitor(s) at the region of minimum pickup. For instance, a super-cardioid should have two monitors placed at 150 and 210 degrees from the front to best use its pattern to minimize feedback.

Real microphones don't necessarily maintain their "textbook" cardioid pattern at all frequencies. Stated another way, the off-axis response of many microphones does *not* look like the on-axis response attenuated by 15 or 20 dB. What you should do is look at the published frequency response curves. The line describing the off-axis response should be as smooth as the line that describes the on-axis response (see *Figure 3*). If it isn't, and especially if it peaks near the on-axis line, beware (see *Figure 4*). This mic will probably have a feedback problem around the peak. This is because the cardioid pattern deteriorates at that frequency.

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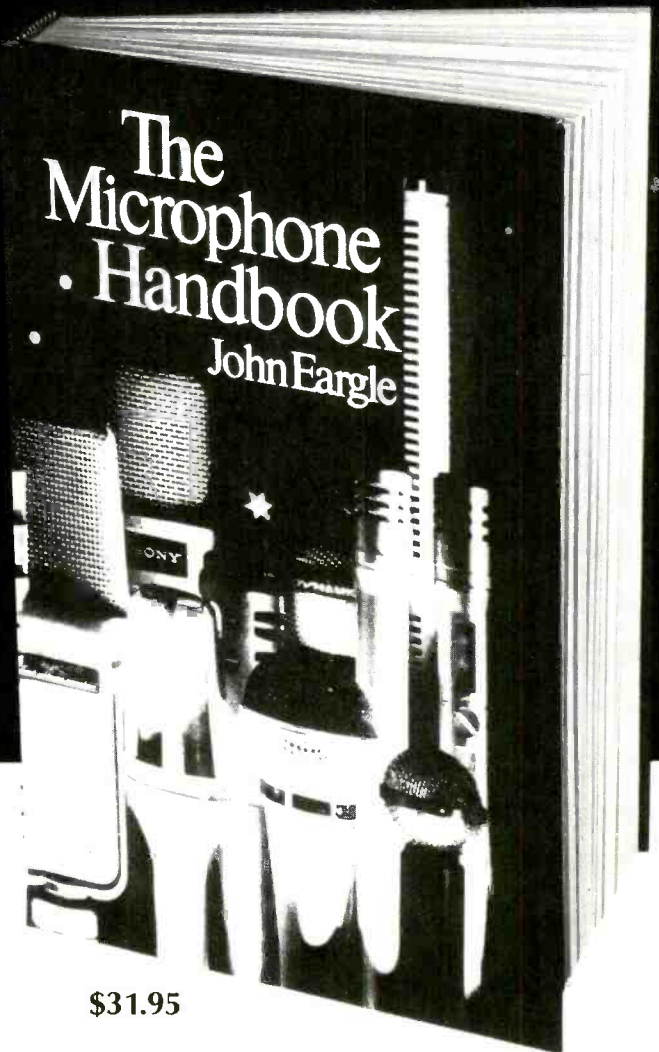
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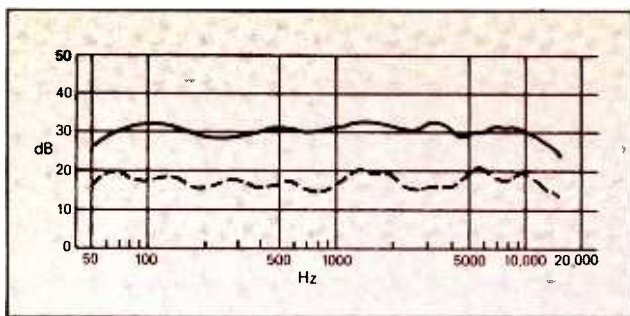


Figure 3. A cardioid microphone that holds its pattern at all frequencies.

Finally, in a situation where a group of microphones must all feed the monitor system, and the amount of level needed is critical, use identical microphones. This works because the off-axis response (the frequency response measured from the rear) is more or less the same for each mic. Feedback occurs because the system gain from the loudspeaker to the microphone exceeds unity at some frequency. If any single mic has an inferior front-to-back ratio compared with another mic, that mic will be the weakest link in the feedback chain since it will be the first to cause feedback.

Acoustical Level and Watts. Probably one of the most underrated factors of today is the question of how much power is really needed for an adequate monitor system. For many folks, the monitors get what was left from the last band that one of the members was in.

Since loudness is a matter of personal taste, it's sometimes hard to relate just how loud *LOUD* really is. One person's idea of soft might be another's idea of loud. The simple way to bring everything to a common ground is (of course) to put it into numbers. In this case, that means Sound Pressure Level, or SPL for short.

Like many things audio, SPL is measured in dB. If you remember from Audio 101, decibels are a representation of the ratio of two quantities, one of them usually being some sort of reference. In this case, the reference is the threshold of human hearing. This represents 0 dB SPL. For a matter of reference, most human speech is at approximately 60 dB. Recorded music played back at 90 dB SPL is perceived as quite loud by most people. Many rock'n'roll bands play at a stage level somewhere between 105 and 115 dB SPL.

This is fine, but you still don't know how loud 70 dB really is. Fear not... Radio Shack has an inexpensive (less than \$50) sound level meter that really works. Furthermore, it is fairly accurate. Now you can tell just how loud your own idea of loud really is.

At any rate, in order to hear yourself, the level from the monitor speaker must be at least as loud as the "noise" from the rest of the band. Thus, if you play at 110 dB SPL average, your monitor system must be capable of delivering at least that at your ears. If you're really monitor conscious, you might even want 3 to 6 dB more SPL capability. As you will see, getting that 3 to 6 dB can require lots of watts.

OK, time for a little math. What you've got to do now is to figure out how many watts you're going to have to shove into the monitor speaker to equal the ambient noise level (the music on stage). Here's how:

1. Find out the sensitivity of your monitor speaker. This is the figure on the spec sheet that says: ___dB @ 1W @ 1 meter or something similar.

2. (If you know how loud your stage volume is, do this step, otherwise skip to step 3.) Take your stage volume and add 10 dB to it. This allows for peaks that the sound level meter misses. This isn't a fault of the Radio Shack meter. It's just a fact of life that a plain "moving-needle" type of meter can't follow the peaks. Now use the steps shown in *Figure 5* to calculate how much power you need.

3. If you don't know your stage volume, but you have an existing amplifier, you can calculate how loud that amplifier can make your monitor speaker. *Figure 6* gives the steps needed.

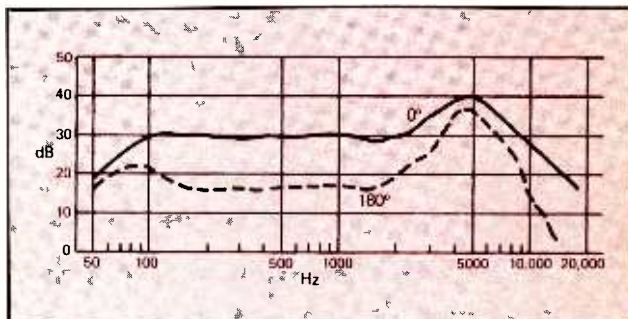


Figure 4. This cardioid microphone will probably have a feedback problem around 4-5 kHz.

1. $A = 20 \times \text{LOG} (D/DR)$
2. $B = \text{SPL} - (\text{REFSPL} - A)$
3. $C = 10 \Delta (B/10)$
4. $P = PR \times C$

Notes:

READ step #3 as: 10 to the power (B/10)

- A = level correction due to distance
- B = SPL difference from reference, corrected for distance
- C = power ratio of B
- P = amplifier power required
- D = distance from listener's ears to the speaker.
- SPL = highest required sound pressure level
- P = amplifier power required
- DR = reference distance, usually 1 meter (3.3 ft)
- REFSPL = reference SPL
- PR = reference power (usually 1 watt)

DR, REFSPL, and PR are the sensitivity rating of the loudspeaker. The distance and power at which the SPL reading is taken are usually 1 meter and 1 watt, but not always.

Figure 5. Finding the amplifier power required for a given SPL.

1. $A = 20 \times \text{LOG} (D/DR)$
2. $B = 10 \times \text{LOG} (P/PR)$
3. $\text{SPL} = (B + \text{REFSPL}) - A$
 - A = level change due to different distance
 - B = Power ratio between available amplifier power and reference power
 - D = distance from listener's ears to the speaker
 - SPL = highest required sound pressure level
 - P = amplifier power available
 - DR = reference distance, usually 1 meter (3.3 ft)
 - REFSPL = reference SPL
 - PR = reference power (usually 1 watt)

DR, REFSPL, and PR are the sensitivity rating of the loudspeaker. The distance and power at which the SPL reading is taken are usually 1 meter and 1 watt, but not always.

Figure 6. Finding the SPL for a given amplifier power.

EXAMPLES:

The JBL 4602A Cabaret series monitor speaker is spec'd at 103 dB SPL @ 1 watt @ 1 meter. How much amplifier power is needed to obtain 110 dB SPL at the singer's ears (6 feet tall) with 10 dB allowance for peaks? How much SPL can be expected (including the 10 dB headroom allowance) with a 50 watt amplifier?

Amp power to get 110 dB (with 10 dB headroom):

$$\begin{aligned} A &= 20 \times \text{LOG} (D/DR) \\ &= 20 \times \text{LOG} (6 / 3.3) \\ &= 20 \times \text{LOG} 1.82 \\ &= 20 \times 0.26 = 5.19 \text{ dB} \\ B &= (\text{SPL} + \text{peak allowance}) - (\text{REFSPL} - A) \\ &= 110 + 10 - (102 - 5.19) = 22.19 \text{ dB} \\ C &= 10 \wedge (B/10) = 10 \wedge 2.22 = 165.58 \\ P &= PR \times C \\ &= 1 \times 165.58 \\ &= 165.58 \text{ watts} \end{aligned}$$

110 dB SPL with 10 dB peak allowance will require 165.58 watts of amplifier power. (This is a conservative figure and does not make any allowance for the reflections that occur within a room.)

How many dB for 50 watts input:

$$\begin{aligned} A &= 20 \times \text{LOG} (6/3.3) = 20 \times \text{LOG} 1.82 = 20 \times 0.26 = 5.19 \text{ dB} \\ B &= 10 \times \text{LOG} (P/PR) \\ &= 10 \times \text{LOG} (50/1) \\ &= 10 \times 1.7 = 17 \text{ dB} \\ \text{SPL} &= (B + \text{REFSPL}) - A \\ &= (17 + 103) - 5.19 \\ &= 114.81 \text{ dB SPL @ 50 watts} \end{aligned}$$

50 watts of amplifier will produce 114.81 dB SPL with this loudspeaker. Subtracting 10 dB to allow for peaks gives 104.81 dB average. (Again, this is a conservative figure and no allowance is made for any reflections that might occur within a room.)

As you can see, a 50 watt amplifier would be adequate for a group that plays at approximately 100 dB SPL onstage. However, it will take around 165 watts to get the same speaker up to a sufficient level to be heard over a group that plays at around 105 dB SPL. (These estimates are based on the monitor speaker being 5 dB hotter than the average stage level.) Gee...I only bought 5 dB for a three times increase in amplifier power.

If you try to compare these numbers with something else, remember that increasing the stage volume by 3 dB *doubles* the power required. Decreasing the speaker system sensitivity by 3 dB also doubles the power requirements. Thus, trying to get 3 dB more level out of a speaker three dB less sensitive is going to require four times the power. If you have the time and the inclination, try to calculate the power required to reach 115 dB SPL, with 10 dB of peak headroom.

Most commercially available monitor speakers use a passive crossover to limit the input to the individual loudspeaker components to the frequency ranges for which they were designed. It's perfectly reasonable to use a huge (200 watts plus) amplifier to run a monitor system... Reasonable, but dangerous. The reason is that as the amplifier power goes up, more and more is asked of the passive crossover. Most internal crossovers simply won't take this sort of punishment. If

you do manage to exceed the crossover's ratings, the crossover characteristics will be anything but what was designed into them. If you use a huge power amp, expect to find the speaker cones in the next county if someone drops a microphone.

A far better solution is to bi-amplify the monitors. While this may seem excessive at first, it can't be beat from a reliability aspect. Furthermore, the additional headroom available before the onset of clipping really goes a long way towards making the monitors too loud without having to resort to a huge power amplifier.

Hard-to-Amplify Instruments. Aside from the wattage race, some things are just plain hard to hear via a monitor system. Hard-to-amplify instruments got that way because they:

1. Don't produce much sound in the first place.
2. Have resonating chambers in their mechanical makeup.
3. Put sound out in several places, all of them important.
4. Won't let you get the pickup device close to them.

Item 1 is a problem because it says that you need more acoustic gain to make the instrument heard. Acoustic gain is the level difference caused by the presence of the sound system. Put the sound level meter's microphone at your ear. Next, play the instrument and measure the SPL produced without the sound system. Now turn the sound system on and measure the SPL present at your ear. The difference between the two SPL numbers is the acoustic gain.

Item 2 is a problem because the microphone can point into the chamber and pick up the resonance. The resonance causes the microphone to be more sensitive at that frequency, which makes the whole works more susceptible to feedback at that frequency. In case you haven't guessed, this is very true of acoustic guitars when the microphone is pointed into the sound hole. Solution: If you play guitar, don't point the microphone into the hole. Try the end of the fretboard, or near the bridge. If the microphone is pointed into the hole, and there's nothing that can be done about moving it, then try using an equalizer to put a hole into the frequency response of the monitors around the frequency of the body resonance (usually around 250 Hz).

Item 3 is less of a problem than items 1 and 2 if the instrument produces lots of sound in the first place (like an accordion). The rub is that doubling the number of microphones lowers the potential acoustic gain by 3 dB.

Item 4 is a problem because of leakage. Leakage takes two forms: other instruments and sound from the monitor speaker. Both are undesirable. The first diminishes the benefit of the individual microphone and the second causes feedback.

Acoustic guitars cause problems (1, 2, and 4). In the studio you can just back the microphone away from the instrument to get a balanced tone and record it as an overdub. If you are doing reinforcement, it's all you can do to get the microphone close enough so leakage isn't a problem. Note that we haven't even dealt with the problem of making it sound like a guitar.

Possible solutions include careful equalization and microphone placement along with a concession from the musician that it can never be *really* loud. One of my favorite solutions is to use a contact-type pickup like a

Barcus-Berry or a Frap to feed the monitors only. You can't get much closer to the instrument than with this sort of pickup. This improves item 4 to the point where leakage almost isn't a problem. Using the pickup for volume and a microphone to catch some of the tonal quality also works well. This technique works very well with pianos.

Playing Too Loud. Playing too loud on stage is an insidious problem. This causes several things to happen. First, the monitor system requires lots (underline that) of power just to be heard. Second, all this sound must go somewhere and the player's ears are no exception.

Constant exposure to high sound levels causes the threshold of hearing to shift upward, to accommodate the louder sounds. In a sense, the ear goes into compression like a compressor/limiter. The problem is that the release time is measured in days! If the exposure continues, the threshold continues to shift upward. After a while, things don't sound as loud, so the stage volume tends to drift upwards. As you can see (or hear), this is the beginning of a vicious cycle. The losers are the musician's ears and usually the monitor system, which is usually at a loss to keep up. (Research has shown that in a day or so, the threshold drops again, but never to the same level as it was, always higher. This form of hearing loss is permanent.)

Why the Monitors Aren't for Monitoring the House System

A loud, well-designed monitor system will never achieve the same quality that the house system does. The equalization required for feedback elimination is usually too severe to make this possible. Furthermore, the requirements of a performer who needs to hear himself (or herself) are different than the audience's. In addition, the acoustical environments are usually quite different. The house system radiates into a large space (in comparison with the stage), but the monitors radiate into the stage area, which usually has walls, floor and ceiling in close proximity. This doesn't mean that the monitors have to sound bad, just that it's impractical to expect them to sound like the house system.

It's also almost impossible to judge the mix from the stage. This is because the mix in the house is the sum of the stage sound and the sound from the sound system. Many instrument amplifiers develop their true sound at a distance from the speaker cabinet. Simple stage placement can cause balance differences on stage that are more or less inaudible to the audience, but are very real on stage.

The only *real* way to judge the house system is to be in front of it.

Equalization

Aside from lots of power, the one other tool that I always grab when someone needs monitors is an equalizer. Equalization (or EQ) carefully used can make a monitor system come to life. Equalizing works because it allows the frequency response peaks that can cause feedback to be removed or minimized. With these peaks gone, the system gain can be raised beyond what it was with the peaks present.

Equalizers fall into various classes, depending upon the number of controls, physical layout, boost/cut configuration, and adjustable parameters they

accommodate. Graphic and parametric equalizers are the types most commonly used in sound reinforcement.

The graphic equalizer has a number of controls, each controlling a specific fraction of the audio spectrum. It got its name because of the slide controls used to control each frequency band and the similarity to a frequency response graph of the knobs, once adjusted. The fractions of the spectrum controlled by each control determine the octave classification of the equalizer. If each control affects a portion of the audio spectrum that is one octave wide, the equalizer is known as a one octave bandwidth graphic equalizer. Graphic equalizers are commonly available with one, one half, two thirds, and one third octave bandwidths.

The parametric equalizer has individual controls for each aspect of an equalizer's performance: amplitude or boost/cut, bandwidth (sometimes called "Q" or shape), and frequency. These three controls are repeated several times, typically three to six times for an average unit. Since each frequency band may be centered on the exact frequency needed, the parametric seems to be the ideal equalizer to control feedback in a sound system.

Adjusting the Equalizer for Minimum Feedback. There are several methods for adjusting any equalizer for optimum performance. All of them rely upon finding the critical feedback frequencies and then attenuating (cutting) them. There are two basic methods:

1. Pink noise and a real-time analyzer (RTA).
2. Feedback tuning, either by ear or with an RTA.

Tuning With an RTA. The first method is deceptively simple. Feed a pink noise (sounds like the noise between stations from an FM tuner) source into an input, pick up the outside of one of the onstage vocal (vocal because they're usually the most important) microphones, and feed that into an RTA. Adjust each band of the equalizer to minimize any peaks that appear in the overall response curve.

It is generally preferable to try to smooth out the major peaks and leave the dips alone. Large amounts of boost should be avoided. Dips in the response may be caused by absorption or standing waves within the room and can soak up incredible amounts of power. It's fortunate that dips are much less audible than peaks are to the human ear. A good job of system/room equalization will probably require less than 6 dB of equalization at any single frequency if done properly.

For the final touch, it's usually beneficial to strive for a 3 dB per-octave rolloff beyond about 4000 Hz. If you try to make the monitors ruler-flat, they will probably sound very shrill.

When using a real-time analyzer, you have the choice of using pink noise and one of the sound system's microphones to adjust the equalizer for smoothest overall response or to simply use the analyzer to tell you which knob to move when doing a feedback tuning. The best method is to use pink noise first, and then do a feedback tuning to get out the last small peaks. Having the analyzer connected to the system during performance may help you to spot feedback more exactly when it happens, as it will usually be the slowest frequency band to decay on the analyzer's display.

Feedback Tuning. The second method is known as feedback or regenerative tuning. It relies upon bringing the sound system up to feedback in a


```

470 B = SPL - (REFSPL - A)
480 C = 10 ^ (B/10)
490 REM ----- display the answer -----
500 PRINT SPL: " dB SPL at ";D;" feet requires ";C * PR; " watts."
510 PRINT "10 dB of headroom requires ";C * PR * 10;" watts."
520 PRINT "-- run again";
530 INPUT YN$
540 IF YN$ <> "n" THEN 10
550 END

```

NOTE

If your computer can run BASIC programs, but does not use Microsoft BASIC, this program should run with little or no modification. In particular, be sure that the LOG function in your version of BASIC is the *natural* log function. If the LOG function in your BASIC is the common log function (LOG base 10), the the following program lines should look like this:

```

380 A = 20 * LOG (D/DR)
390 B = 10 * LOG (P/PR)
460 A = 20 * LOG (D/DR)

```

If you are not sure, then run this short program:

```

10 PRINT LOG(2)
20 END

```

If your particular version of BASIC displays 0.30102 or something very close (there might be more or less digits), then the LOG function in your BASIC is the *common* LOG function (LOG base 10) and the program lines mentioned above should be changed as shown. If your version displays 0.693147, then the LOG function in your BASIC is the *natural* LOG function, and the program may be used as is.

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So You Wanna Be a Rock'n'Roll Star: Part V

denny andersen

In the past three installments we've been concentrating on demo production. This month we'll shift our focus and look at the process of *marketing* your finished tape. We'll begin by preparing an effective demo presentation for the record company.

The Demo Package

You should put a fair amount of effort into developing a visually attractive promotional package to accompany your demo. A brief, pertinent profile of the artist can help your listener "flesh out" the music and get a better fix on how the act fits into the current market. The label will be interested in knowing what the act looks like, where they're from, and a little about their musical background. Be specific and succinct, and focus clearly on your commercial strengths. You want your whole presentation to demonstrate that you have a solid handle on the current record market and that you can combine strong material, skillful production, and visual style into a product that fits readily into that market.

Submitting Your Tape

Once you have your demo package together, you're ready to take the big step and actually submit your work to the record company. The easiest, cheapest way to do this is to simply mail your tape to the label, marked "Attention: A&R Dept.," and hope for the best. Your tape will go into the "slush pile" of unsolicited material that comes in every day; someone in the A&R department will eventually wade through the pile, and you can be sure that they'll give your material a quick once-over. If it doesn't hook them right off the bat, they'll go on to the next tape on the pile, and you'll be out of the game before it starts. If your material is very good, and you manage to hook them with something they think is promising, they'll send it on up the corporate ladder for further consideration.

Given the rather high stakes involved, isn't there some better way to insure that "the right people" give your tape their undivided attention? There is, but it's much more difficult. The only way to really be *sure* that your tape gets a fair hearing is to hand-carry it to the label, wangle an appointment with an influential person within the company, and make a face-to-face "sales presentation" to them. Naturally, this is a tough

nut to crack. (Don't count on just dialing up the vice president in charge of A&R and setting up a Tuesday lunch date.) If you're really serious about this approach, you may have to hire an agent to "shop" your tape for you.

Whichever approach you use, a decision will eventually be made: either the label will pass, and your tape will be rejected, or they'll contact you to let you know that they're interested. They may want to hear more material (*another* demo?!) and if you're performing live somewhere they may want to send someone to look at you more closely. Finally, if all goes well and they decide to offer you a contract, they'll advise you to hire an attorney and keep in touch. Then the fun begins.

The Recording Contract

In a typical "record deal," a record company contracts you to make a specific number of records for them over a specified period of time. The label advances you a specified sum of money to cover the cost of recording, and they handle the manufacture, distribution, and promotion of your record as they see fit. The artist receives royalties of perhaps ten or fifteen percent of retail for each album sold, and the company gets the rest. Your advance money is considered a "recoupable expense." This means you have to pay it back out of your share of the royalties before you begin to make any profit on the record. The company holds the option to drop you if your record doesn't sell well enough to recoup the advance.

In addition to your record royalties, you're also entitled to certain publishing rights on your original material. Your publishing deal is separate from the recording contract, and it often proves to be more lucrative in the long run. It pays to familiarize yourself as completely as possible with the various legal and business aspects involved before you begin submitting tapes. Homework is essential; I'd recommend the book *This Business of Music* as a good place to start.

Offering an artist a recording contract represents a sizeable investment on the part of a record company. The average album today costs upwards of \$120,000. When you add in tour support and a couple of videos, the total outlay can easily approach a quarter of a million dollars, even for a debut album by an unknown

act. This is an expensive gamble, and there is no guarantee that it will pay off. For every jackpot there are dozens of losers. Understand that it is entirely possible for an artist to score a six-figure contract with a major label, produce a record, shoot a video, play a forty-five-city tour, and not make dime one. The trick is not getting to *make* a record; the trick is making a record that will *sell*. This is why we've been placing so much emphasis on producing a demo with strong commercial appeal. It's also the reason the record labels will be judging your tape so ruthlessly on that basis.

Marketing Your Own Record

Many artists bypass the hassle of shopping a demo altogether and opt instead to market their own records directly to the record-buying public. There are any number of commercial outfits that will take your finished master and press it into records or dub it onto cassettes, which you can then try to sell yourself—in effect becoming your own record label. Some of these companies will even handle artwork and packaging for you. (Naturally, you pay for all this.) It's not difficult to go this route, provided you have the money, but it *is* difficult to achieve any kind of commercial success with it. I don't want to discourage you from exploring this option, but I would discourage you from jumping into it recklessly. It's easy to get caught up in the excitement and ego-strokes of making your own record without realizing how much is involved in actually selling it.

Key Factors in Record Marketing

The business of selling records is intense and complex. Whether you manage to win a contract with an existing record company or opt to market your tape directly, the same key factors come into play when it comes to selling your finished product. Let's look at each one in detail.

Distribution. In order to sell your records yourself, you're going to have to physically haul them around to all the record stores in town, convince the store owners that it'll be worth their while to carry your record, and work out wholesale purchase or consignment agreements with them. You'll need to keep making return visits in order to re-stock as necessary, and you'll have to keep an accounting of how many units you've sold and how much money you need to collect from each store. (As you can see, even small-scale local distribution can become a full-time job in itself.)

Widespread regional distribution is nearly impossible to achieve on your own. You may be able to swing a deal with an independent distributor to handle your record in exchange for a share of the profits. The trick is to prove that your record will sell well enough to make it worth distributing.

Under the terms of a recording contract, the record company generally handles distribution for you. The major labels have national distribution networks all set up. Many small labels contract out their distribution. (Geffen Records, for example, is distributed in the U.S. and Canada by Warner Brothers; their overseas distribution is handled by CBS/Sony.)

Promotion. Another factor to consider is promotion. Your record isn't going to sell if no one hears about it, no matter how good it is. The major labels maintain

full-time promotion departments whose sole responsibility is pumping their new product to radio programmers, wholesalers, and other influential people within the industry. The smaller independent labels tend to have smaller promotion budgets and proportionately less clout in the market. If you're marketing your own record, you'll need to work especially hard to generate interest in your product. This will involve making the rounds to pump your record in the local media, taking out advertisements in appropriate publications, and providing promotional copies of your record to local music reviewers and radio stations.

Radio Airplay. As we've said before, widespread and repeated radio airplay is absolutely essential to record sales. Getting radio airplay for your own record is extremely difficult, even on a small regional basis. Most stations decide what to play according to very strict formats that are determined in turn by demographic research and patterned after the playlists of certain influential stations in key metropolitan markets. Program directors (the people responsible for deciding what gets played) tend to be extremely cautious about taking chances on unproven local records—to the extent that most stations won't even consider playing them. (Remember, radio stations are not in the business of promoting music; they're in the business of selling audiences to advertisers.) Nevertheless, if you're lucky, persuasive, and holding a really hot, commercially viable product, you may find a station in your area that will take a chance on your record. If you're luckier still, the listening audience will respond positively to it and you'll have a toe-hold from which to approach other stations.

Concert Tours. Another factor in selling records is touring. Immediately after a band plays a concert in a given city, their local record sales tend to increase. Touring is extremely costly, both in monetary terms and in terms of the artist's creative energy. Nevertheless, the labels figure the promotional value of live concert appearances offsets the expense. Consequently, a typical recording contract may include a certain amount of money intended to help defray the cost of touring. This "tour support" money, like the recording advance, is recoupable.

Video. While the precise *monetary* extent of its promotional value has yet to be determined, it's pretty clear that video is becoming a major factor in breaking in new acts and spurring record sales (see Gilbert Elliot's interview with Stuart Young in the March, '84 *MR&M*—Ed.) More and more newly signed artists are seeking video support budgets in their contracts, and established artists are climbing over one another to get onto the bandwagon. So far the labels have been advancing video production costs (to the tune of about \$35,000 per clip, on the average) as a promotional expense. This, too, is recoupable from the artist's royalties.

In our next installment, we'll look further into the burgeoning role of video, both in the demo process and in the record industry as a whole. We'll examine the current market and note the development of potential future trends.

FRANK



vicki greenleaf

SERAFINE

Tomorrow's Sound



Although Frank Serafine is grown up, he has never put his toys aside. He has just gotten more expensive ones. Standing in his west Los Angeles studio, there is something childlike about Serafine, who is more than glad to play show and tell with the state-of-the-art synthesizers, computers, and video and recording equipment that surround him.

"Vicki," he says into a microphone connected to one of his primary pieces of equipment, an E-mu Emulator digital synthesizer. Pushing a button marked Backwards, the computer replies, "Ickiv." Serafine phonetically imitates this unfamiliar word back into the computer banks, presses the same button, and the synthesizer now pronounces, "Vicki." Serafine beams proudly.

Serafine is a music/sound designer. He has created music and sound effects for such major motion pictures as *Star Trek*, *Tron*—which he lauds as the most-advanced audio effects movie ever produced—*Brainstorm*, and the controversial television drama, *The Day After*. His “techno-pop” music is featured in dozens of commercials, including recent ones for Chrysler, Binaca and Alcoa. In 1977, he designed the sound effects for Disneyland’s multi-million dollar Space Mountain ride.

Although the 28-year-old electronics whiz retains his enthusiasm throughout the conversation, one soon realizes that this isn’t child’s play. Serafine is the next generation of the video/audio evolution and he’s a pioneer.

Serafine recently took the time to talk with *MR&M* at the studios of Serafine Fx, Inc. to discuss the complicated step-by-step process involved in creating the sound effects for scenes like a warp acceleration in *Star Trek* and a nuclear explosion in *The Day After*; the psysio-psychological emotions of internalized sound, such as the effects created for the heart attack scene in *Brainstorm*, and the creative aspects of being an electronic musician and artist.

Modern Recording & Music:
What exactly is it that you do?

Frank Serafine: I’m called a music composer/sound designer.

MR&M: Which entails what?

FS: It depends on the project. For a motion picture, I create sound; anything from a dog’s bark or a cricket’s chirp to a warp acceleration. In music, I utilize an array of analog and digital synthesizers which allow me to create full orchestral sounds.

MR&M: You’re incredibly young to have such impressive credentials. How did you get interested in this area?

FS: I’ve always been interested in electronics. I used to have ham radios that I played around with—not to communicate with other people, but to experiment with the voices and sounds between the bands. When you turn the dial, you get into all the different bands. You can phase and slow the voices, compress and expand them. To me, it was really intriguing that you could actually manipulate a voice. I’m an Army brat and my father traveled all over the world. He collected stereos, which had all these

incredible short and broad waves and all these little buttons that I could play around with. From that point on, I was always intrigued by electronics and what they could do. At that point, I got an electric guitar. I was very influenced by Jimi Hendrix and the Beatles. Their music was very sound effects oriented. They would play drums backwards, etc. *Sargeant Pepper* was packed with sound effects. I think that’s one of the main reasons their records were so great, because of the sounds—things beyond traditional Chuck Berry rock ‘n’ roll. It had a lot of complex sound layering. I started putting together planetarium shows in Boulder, Colorado, which boasted the most sophisticated planetarium at the time. It cost about eight million dollars to put together. Part of the time, I was doing production work in a little eight-track studio, where I was doing sound effects and putting them to visuals, as if I were making a film. The shows incorporated cultural arts from both coasts. I incorporated dancers who danced behind a screen and it looked as if they were floating in space...I had musicians and poets. I gathered all the talents from the community together to put together a cultural event. It drew tremendous audiences for a couple of years and was very successful. But it didn’t really satisfy my performance needs, so I played guitar and had a six-piece band. I had been playing with Robin Ford for the L.A. Express and we were doing this really hot, experimental fusion/rock music.

MR&M: Impressive roots, but still a long way from Boulder.

FS: Well, word had gotten to L.A. to the Disneyland entertainment department and they shipped out a few scouts to check out this thing in Boulder. That was on a Friday night; the next Monday I was in the penthouse suite of the Disneyland Hotel. I thought what I was doing in Boulder was fairly interesting, but on a world scale it was probably pretty small. So to be picked up by a major interest like Disney amusement park in one day was surprising. It kicked the ball off. In 1977 I created the sound effects for the grand opening of Space Mountain.

MR&M: Why do you feel your electronic approach is preferable to the older technology, which remains prevalent in the motion picture industry?

FS: Because the technology is there. Instead of hiring 10 sound engineers, they can hire me. It’s cost effective and sounds better. Most of the motion picture libraries consist of old, optical tracks. When they put sound to movies, they print it on the film itself, which is crackling and crusty and usually horrible. Lately, they’ve advanced to mag, but even that was state-of-the-art four years ago. In the recording industry, however—where it is so highly competitive—the technology has been moving much faster. I think a lot of the problem is political. If you do a (Steven) Spielberg film in 1970, you work on the Spielberg film in 1984. That’s just the way people work. Once they find people they’re satisfied with, they’re locked in. That’s why technology hasn’t changed much, because nobody has come out and said, “Hey, this is better.” But now, with all the new technology from Sony, the television industry is growing and these technologies are being implemented. It’s kind of forcing the film industry to delve into other areas. The budgets may be bigger, but producers are skimping more and more.

MR&M: You’ve been recruited for some pretty prestigious projects. Why are you over and above the next guy?

FS: Because I have the right equipment. Everybody has a synthesizer, but to be in the motion picture industry, you have to have a certain amount of broadcasting equipment. I have a tremendous amount: BTX interlocking systems, video equipment, etc. All that costs a lot of money, and unless you’re dedicated to the film and television industry, it’s a major investment that I don’t think your average musician is willing to make. The reason I made the investment is because I was forced into it! I had to buy all of that stuff when I was working on *Tron*. I had companies endorse me or whatever I could do to get the project under way. Disney had money to invest to accelerate the research and technology.

MR&M: How does your system differ from traditional ones?

FS: The system is completely different from your traditional approach to cutting sound and doing music. Traditionally, music for motion pictures is scored with slick-tracks, put on paper, and then presented to an orchestra. They compose or score it and then it’s edited on 35mm. My process enables the musician to

record directly onto multi-track. It utilizes recording industry technology, which is my background. The first film I worked on was *Star Trek* and the reason I was hired is that the sound editors were not able to create sounds that had never been heard before with synthesizers. They could have gotten sounds out of a library, turned them backwards and moved it at half speed. In fact, a lot of sounds were created that way. But there were a lot of sounds that required synthesizers. I was provided with an opportunity to really get into it. I was probably one of the first people in Los Angeles to have a Prophet 5 and that put me on a certain plateau in my research in synthesized sound development. When *Tron* came along, part of my deal was that the technology was provided. I had to shovel a lot of coal in the back room to keep up with what was going on.

MR&M: Can you categorize your musical style?

FS: It's techno-pop or ethno-pop, because I've gotten heavily into ethnic music. I just produced and performed on a record with Ravi Shankar. We took Indian music and synthesized it. We conceptualized Indian music with my Emulator digital synthesizer. You can take organic, live sound effects—any sound, a sitar, a tabla, a rock guitar, any existing sound—store it in the synthesizer and perform it back. I have a full ethno library, all African and Indian instruments, Japanese kotos, etc. This has enabled me to create multi-cultural music in which I can blend rock drums with tablas or Indian grooves with jazz. I can take instruments that would never normally meet and blend them together to make strange music. I also do electronic space music. It's electronic pop with classical or symphonic influences. I use an electronic drum machine for a rock beat and synthesized bass and augment it with classical overtures: staccato French horns, strings, and tympani drums. I just did something like that—a *Star Wars*-like tune for a trailer for a movie called *The Last Star Fighter*.

MR&M: How do you approach creating a sound?

FS: I record sounds. I have a digital location recorder: the portable Sony PCM-F1 recorder. What it does is process sounds into computer information and stores it digitally. The process is a step beyond analog taping. It doesn't work on a

tape principle any more. It works on video. It just stores the information. Therefore, the quality is phenomenal. I go out and have a dog bark into the microphone or I'll go to an ethno music library at a University and I'll take a sample of each instrument home—just one note. I can store that note into the synthesizer and have it multiplied all the way up the keyboard. I can go out on location or just bring the instruments in, as I did with Ravi Shankar. The entire room was filled with Indian instruments and, one by one, we just sampled them.

MR&M: Can you detail the difference between digital and analog a little further?

FS: Analog is probably the oldest form of technology. It's the difference between a watch that works with arms and a digital watch with an LED readout. The analog principle is mechanical in nature and digital is computerized and operates on a numbers principle. It calculates numbers and generates information. With analog, the sound is magnetically recorded onto tape. With digital, the computer converts the sound into computer code and stores it on tape. Therefore, if you transfer it, you don't lose a generation. It's always the master—everytime you transfer, it's as good as the first one. That's because you're not transferring magnetic codes, you're transferring information. You can send your composition to New York by computer over a telephone line and it will be reproduced on the other end just as plain as it is in your studio. That's the joy of digital.

MR&M: You obviously prefer digital over analog.

FS: A lot of people disagree with digital. But Sony has gone through its second generation of development and I feel that it's the most clear, real and accurate sound available. The dynamic range is phenomenal.

MR&M: For which type of effects do you use digital and for which type do you use analog?

FS: I use analog to create synthesized music. If I'm going for a real synthesized sound, I will create on either a Moog or Prophet. For example, I used analog to create the warp acceleration in *Star Trek*. In fact, I didn't even have digital equipment until I undertook *Tron*. A lot of the sounds I created were analog tape material that I manipulated and turned backwards.

MR&M: So you're using analog for abstract sounds, rather than realistic ones?

FS: Yeah, right. The thing about analog is that it generates sound. It sprays harmonics and therefore it makes and creates its own sounds. Digital sound computers—except for Synclavier and digital synthesizers, which now generate digital sound—don't do anything. They're dumb until you put information into them. Once it's in, you then have the possibility of manipulating it and making it sound analog. On the other hand, analog is generated from an oscillator and you can manipulate it or filter it or whatever. Analog creates the synthesizer sounds that we've heard for the last 10 years. Now we're moving into music and sound that we won't know comes from a synthesizer, because it's real. How will you know where it's coming from if it's a real sound?

MR&M: How do you avoid the sterility that some people feel is inherent in synthesized sound?

FS: I don't think the sound itself determines sterility. I think it's the way that it's performed. I use pitch controls. It's the way you program it and edit it that has to do with the emotional impact.

MR&M: Isn't that hard to gauge due to the fact that you work alone?

FS: I have an assistant engineer, but it's just how it hits me. I almost look at my creative process like making love. To me, it's real personal. I lock my doors. I'm like an alchemist brewing up a brew. I do a lot of strange things that I wouldn't want people to watch me do. I get excited. If people were sitting around watching me perform, I might not come up with the things I do when I'm alone. It's real intimate and I try to keep it that way. I try to keep producers and directors out of the room until I'm done creating. When they do come in, if they like it, great, if not, okay, let me have more time to show you what I can do.

MR&M: Are there boundaries to what you're able to create?

FS: With the budgets and talent that is available in the motion picture industry right now, I don't think there are any boundaries. They're only going to make more outrageous films in the years to come. One of the reasons I got into film is because I feel that I was one of the early visual music artists. I was doing what MTV is doing now 10 years ago at the

I think a lot of the problem is political. If you do a (Steven) Spielberg film in 1970, you work on the Spielberg film in 1984. That's just the way people work. Once they find people they're satisfied with, they're locked in. That's why technology hasn't changed much, because nobody has come out and said, "Hey, this is better."

planetarium. So instead of moving in the direction of becoming a visual music artist, I went for a higher plateau. I feel that motion pictures are the ultimate in visual art and music. Manufacturers are coming up with better technology and synthesizers and it's just going to evolve into something incredible. Visual presentations are becoming 3-D, they're using higher film scan rates. They've done tests on some new filming techniques in which they've increased 24 frames-per-second to 60 frames-per-second. Medical tests show a phenomenal response from people. The human is able to perceive twice as much information on the screen as he had been in the past. But the format was locked at 24 frames-per-second for 80 years. Why didn't it ever go faster than that? I think with the visuals becoming so much more intense and sophisticated, that it's only going to boost the creative effect of sounds. When I get my first look at these visuals, I almost fall over thinking that I'm going to be the one to create the sounds or music for this stuff.

MR&M: How do you approach a project?

FS: I can't really start working on a film until they have a locked picture. I can conceptualize and design. In fact, I began work on *Tron* before there was one visual effect. There were all these little pencil scratch tests on film and they would write, "fantastic visual effect here" with a

picture of a motorcycle. They would have me create a world of sounds before it was ever done. Then the visual designers would create around the sounds. That was Disney's approach to film making. *Fantasia* was music first and then animation to the music. No other filmmaker has done that until now. Whereas in the motion picture industry today, the film is made, cut and edited and then it's given to a composer and sound designer. It's a backward kind of approach. But through the years, visual designers and sound designers are coming to the agreement that it's a 50/50 world. You can't have visuals without sounds or vice versa. They're working together more and more.

MR&M: In general, where does your work begin?

FS: After they hand the completed film over. The first step is to transfer the film to video with SMPTE time code. SMPTE time code is a visual code that is displayed on the video tape, so I have a reference to where every picture is—right down to the frame or the 100th of a frame, which is very accurate. Then I log the film. I go through it frame by frame and look at every little particle. For instance, we're in this room, but there are people walking up and down the hallway. There are cars outside, a plane flying over, a dog barking. We may not see them, but they're there. In order to create a mood, you often have to cheat. The second step is to go out with a location recorder, get

fresh, new, high-quality sound effects, bring them back into the studio and stripe them with SMPTE time code. I log them so I have quick access to them. Then the process goes into editing; manipulating sounds, creating new sounds, sampling the sounds in the synthesizer and laying them onto tape. I design the correct moods to accompany scenes.

MR&M: Are you working alone at that point?

FS: On a film there is usually an orchestral composer as well. In television—shows, commercials, videos—I usually do music and sound effects. But on a major motion picture, I work with an orchestral director. It's a battle, because we're both supposed to provide material for every inch of the film. Rarely do the two sides get together and say well, you put music here and I'll put a sound over top of it, although Wendy Carlos and I did some of that on *Tron*. Usually, there's no time for that. The director wants work from both sources so that he's not stuck with a hole in his film where somebody didn't provide something. Once all the sounds are created and edited, it's taken and put on a dubbing stage in a large-sized theater. Then it's mixed. At that point—depending on what works better—the sound effects are played up and music is dropped, or vice versa. It can be a very emotional experience when you've put a lot of time and effort into a certain scene and it's dropped. That's why I hope to take on a film in which I do all the music and sound effects in the future. I was being considered for music as well as sound effects on *Tron*. But the reality is that I probably would never get both things done without help, because it would take a long time to do all that. So I chose to go for sounds, because it would help me explore more barriers. It was interesting to blend the sounds together with Wendy Carlos to make a whole soundtrack.

MR&M: How much time is involved in a project like that?

FS: On *Star Trek*, Al Howarth and I—who both have basically the same systems—were the two people primarily responsible for the sound effects. There were two other people as well. We helped one another figure out how we were going to approach that monster. It took about nine months to complete it...and we spent two months prior to that just trying to get the job and conceptualize

what the sounds were going to be like. We had to present something to the director that would convince him to hire us. *Tron* took a year to develop the technology and get the facility ready to go into editing. *Tron* was the first film ever to be edited electronically. That was a breakthrough. It also used the synthesizer's potential to the maximum. There had never been a film that was so packed full of sounds. *Brainstorm* was a tough one, because Natalie [Wood] died during filming. There were budget problems. That also took about a year. It usually depends on the condensed nature of what has to be included in the film. *Tron* probably had more special effects than any movie ever made. Designing the sounds alone took six months. We had to figure out how we were going to make motorcycle sounds and how we were going to "de-rez" people, that type of thing. *Brainstorm* was more of a physio-psychological state. For example, we took real sounds and muffled them to make them sound as if they were internal; for instance, the heart attack scene. I went to hospitals and researched the sound of machines that surgeons use for testing heart attack symptoms. I recorded those sounds digitally and took them back to the studio where we processed them by putting them through subwoofers. That took a couple of days just to figure out. We had the director running around the room in circles and then we took a stethoscope and jammed microphones down his shirt. We were trying to figure out how to create a clean heart attack sound. How can we create a heart attack when everybody is healthy? You can't expect to go to the hospital where somebody is dying and plug your Walkman jack into a console and record a heart attack sound.

MR&M: You were also involved with the controversial television documentary *The Day After*.

FS: I created all the special sound effects of the nuclear bombs taking off from Russia, hitting Kansas City, and all the ambience sounds. What would it sound like if a bomb were to go off? I went down to Disneyland and put microphones right up on their Roman candles—they use them to shoot fireworks off—which is about the loudest sound I ever heard. I also recorded them at various distances. The director wanted it loud! He wanted to scare people to

Studio Equipment List

Audio Equipment

Tascam Model M-16 Mixing Console
 Tascam AQ85 Auto Cue Unit
 Tascam 85-16 16 Channel Recorder
 Sony TC-766-2 ¼-inch Deck
 Sony Digital Audio Processor PCM-F1
 Studer TR-99 ¼-inch Deck

Synthesizers & Accessories

Emulator Digital Synthesizer
 JLC Cooper Mod
 Prophet 5 Synthesizer
 Vako Orchestration
 Roland CSQ-100 Digital Sequencer
 Roland Vocoder SVC 350
 Roland Pitch-To-Voltage Synthesizer
 Moog Synthesizer
 Ultimate Support System
 Omnimount

Signal Processors

Audio & Design Scamp Rack
 DeltaLab Harmonicomputer
 DeltaLab Memory Module
 EXR Exciter
 Polyfonic Digital Delay
 Maxon AD 230 Analog Delay Flanger
 Quad Eight AM-23B
 Audio Digital TC 2
 Telecom C4 Noise Reduction

Video & Sync Equipment

BTX Model 4600 SMPTE Tape Controller
 BTX Model 4500 Edit Code Synchronizer
 Sony VO 5850 Video Cassette Recorder
 Sony SL 2000 Beta Video Cassette Recorder
 Sony 388 Beta Editing Deck
 Sony 7220 Video Projection System

Speakers & Amps

APT Corp Amps & Pre-amps
 Eastern Acoustic MS50 Speakers
 Auratone 5 C "Super" Speakers

Computer Equipment

Atari Computer
 Apple 2 Plus computer
 Votrax Personal Speech Synthesizer
 Votrax Type'N'Talk Speech Synthesizer
 Mountain Hardware
 Olympia ES 100R0 Printer
 California Computer

Microphones

Electro-Voice RE 20's, DL 42, & CO 94
 Shure SM 80
 AKG D 224E & D20
 Audio Technica 9-52V
 Crown PZM
 Pearl Mics & Power Supplies

Analog is probably the oldest form of technology. It's the difference between a watch that works with arms and a digital watch with an LED readout. The analog principle is mechanical in nature and digital is computerized and operates on a numbers principle. It calculates numbers and generates information.

death, and I think we did. For the wind effects, I went out to Lockheed and recorded 2,000 tons of air bursting per second. I put microphones right in the middle of that. It was used for the nuclear winds. The people screaming while they were being disintegrated were really pig squeals and lion roars—in lieu of human screams—which I think subliminally added a more horrific effect. A lot of the special effects for the movie were done by the same people who did *Star Wars*. They were very real and accurate. In addition, they used a lot of film footage from the '50s when they were doing nuclear bomb tests in Nevada. It was a great experience. Television has never really done that much before. I know that I can't tell the world not to shoot the bomb off politically... there's nothing I can really do. I can't get up and speak like the President. The one thing I knew is that I could scare the hell out of people. The government tried to stop this film from airing because it was so controversial. It was my contribution.

MR&M: What is the primary piece of equipment that you are utilizing?

FS: The Emulator. We rented a Fairlight for about nine months while we were working on *Tron*. The Fairlight was an extremely powerful tool, but it was a computer and I come from more of a synthesizer background. I found the Fairlight to be a little bit frustrating because I had to type in this and that, go to this page or that page before I could ever get a squeak out of the darn thing. I was usually under heavy deadlines and didn't have time to work it manually and figure the monster out. The Emulator is much more user-friendly. (The Emulator's bandwidth is not the widest, and it's not the

highest quality sound—nor is the Fairlight—but I feel that at the rate technology is moving, it would be useless to invest a major amount of money to buy a Fairlight or a Synclavier. The major synthesizers are not useful to me. All I need to do is record sound and have it stored.) I'm waiting for technology to move into a new generation, which is stronger and runs through midi ports that tie into computers. Midi is a new interface that by way of computers, allows synthesizers to talk to each other. It's now the newest technology in interfacing. You won't have to buy one unit like the Fairlight that does everything. You can buy any synthesizer you want, click it into the midi port and the midi port will talk to your synth computer. You have one intelligent interface that talks to all of your synthesizers. It's one master control console and it gives you flexibility. It talks to your computer on every level. You wouldn't even really have to play your synthesizer; you could do it all from the computer.

MR&M: You're not giving input to your computers verbally, are you?

FS: Yeah, through a pitch to voltage converter. I can actually change recorded pitches. I have played flute all my life and with my flute technique I can do things that I technically couldn't do on a keyboard. Things I can do with my mouth. What I do is I take a microphone and I trigger the sound, rather than play the keyboard. I just sing into the microphone. If I can't play a really intricate line, I just trigger it through my voice. It will then produce the sound of the Emulator or the Prophet.

MR&M: What type of boards are you using?

FS: I'm using the Tascam model 16. It has parametric equalization on

each channel and it has stereo effects. That's the main reason I use it, because it has stereo effects on each channel. I'm also running a Lexicon 224 on one send. But there are two sends, so I can open up Lexicon digital reverb on each channel, or I can run delays. I have several delays on each channel, so I can obtain an amazing amount of delay and reverb effects. I do a lot of that.

MR&M: What are some of the other projects you've been working on?

FS: I do a lot of commercials. I just did the Chrysler laser commercial. I did their commercial last year and it was a very successful campaign, so they asked me to create a whole new Chrysler campaign. I did all the music and sound for their new laser car. I've done about 15 major commercials, including Binaca and Alcoa.

I've also just completed *Ice Pirates*, which will be released by MGM next summer. It's a space comedy. I designed the voices and personalities for 12 different robots. I conceptualized them around the personas of the Three Stooges. Each of these robots had to have a different personality. I used a lot of different voice processors like Vocoders, DeltaLab harmonic computers and those types of things. They can lower or raise your voice and completely process them to sound like anything you want them to sound like.

MR&M: Anything outside the film and television industry?

FS: Yes. In fact, I'm working on something in the medical field with Dr. Richard Aubbou from France. He came to me with the idea of taking cardiograms of skin and certain vibrations of organs. You can take those graph representations and see what the sounds look like. You put those sounds into a synthesizer in the exact same way they are represented on the medical graph. There are certain wave forms that come from your body and they can be translated into sound to monitor illness. We're calling the project, "The Sound of Living Matter." He comes over for a couple of weeks at a time to work with me on this project and he plans on gathering funding so we can create a laboratory and really delve into the research.

MR&M: Maybe you'll be a Nobel Prize winner?

FS: Maybe. I'm not banking on it, but it's fun doing all this stuff. It's something beyond what I had anticipated when I got involved in all of this.

Was (Not Was)
Are (Not Are)
Zengineers



Detroit's rock'n'roll legacy stretches back to the late 1940s when the local r&b label Fortune Records opened for business. By the early '60s, the Motor City was watched by everyone as the Motown sound of the Supremes, Temptations, Stevie Wonder, Four Tops and Marvin Gaye took off. Later in that decade, the hard rock of Bob Seger, MC5, Iggy and the Stooges and Alice Cooper shocked the rock world. Today, the sound of Detroit is perhaps best represented by Was (Not Was), the duo consisting of Don Fagenson and David Weiss.

Don and David Was, as they're called professionally, have been a part of the Detroit studio scene since their teens, when they began experimenting with tape recorders and making demos with such friends as Marshall Crenshaw and future Knack leader Doug Fieger. By the time Fagenson and Weiss knew their way around an 8-track studio, they had amassed a list of talented friends who were all willing to contribute to their productions.

A few years ago, their experiments paid off when Was (Not Was) was signed to Ze Records and released their first 12-inch record, "Wheel Me Out," under their own name. They produced other artists such as Cristina and r&b singer Sweet Pea Atkinson (who also sings on their records) and then released their own debut album on Island/Ze, *Was (Not Was)*. The critical reaction was phenomenal and subsequently, the duo attracted the attention of Geffen Records, which signed them.

People think that it's a joke that we used Mel Torme, but it isn't. He's a guy with great chops and he's not going to be singing "Feelings." What he does fits in fine with the album. In a way it's saying, "You thought that he was this, but he's more." A lot of people who buy records don't know the difference between him and John Davidson, but it's like the difference between Bob Dylan and Rick Springfield.

Work began on the second album in the duo's own Detroit studio, Sound Suite. Before long, a shockingly diverse array of talent, ranging from heavy metal hero Ozzy Osbourne (singing a rap tune!) to jazz-pop singer Mel Torme (a song about a Vietnam vet) to Mitch Ryder was dropping by to join in on the project. The album, *Born To Laugh At Tornadoes*, was one of the most impressive collections of rock-funk-pop-jazz-etc. released in 1983. Recently, Was (Not Was) spoke with *Modern Recording & Music* at their studio about their music and recording philosophies.

Don Fagenson: Let's get this out of the way first: The band's name came from my two-year-old son.

Modern Recording & Music: OK. How did it start?

David Weiss: I thought Don had legs like Cher.

MR&M: Let's try it this way: What was your introduction to music while you were growing up in Detroit? What kind of place was it, with Motown and all the great bands that were in this area?

DF: It was a weird time. There was a lot of energy, with groups like Bob Seger, MC5, Iggy and the Stooges, Ted Nugent, Alice Cooper. That was all hometown music here, and it was happening at the same time as Motown. There was an excitement about it, and the radio stations reflected that. As for Motown, because it was from Detroit it seemed as

if every other song on the radio was a Motown hit. You could drive down the street in those days and see Marvin Gaye throwing a football. I worked in a store and Stevie Wonder would come in. Those people were out on the streets. By the way, the board in our studio was originally from Motown.

MR&M: Detroit's hard rock scene in the late '60s—the acts you mentioned like Seger and Iggy—was unique in its own way. I can't think of any other American city that had, at that time, such a concentration of heavy rock bands that didn't veer off into psychedelia and progressive rock. The end result of that, I guess, was Grand Funk.

DW: Detroit is a working class city, so the music reflected that; it wasn't far removed from that lifestyle. Detroit has a different kind of energy than a city like L.A.

MR&M: When did you jump into the game?

DF: My first gig was in a band that put on Beatle wigs in 1964. We won a talent show and I got a TV set; I was in sixth grade. I've been in bands ever since. David and I played together in high school. But there's another kind of scene in Detroit, which has always existed, and that's in the recording area. We've been making tapes since we're 14, going from tape deck to tape deck. That's really where the roots are of what we're doing now, more than the live thing. And if you go back now and listen to those tapes we made when we were 14, they were

essentially the same thing that we're doing now, except that now we've got more of a technical facility to work with.

MR&M: How did you learn to produce? Was it through experimentation with the equipment you acquired over the years?

DF: I was talking to Marshall Crenshaw, who came up the exact same way: working on his own and moving up to a 4-track, and so on. And like us, he learned basic production values that way. Then eventually you have to make the transition to the larger studio. I took a class at an RIAA school, and that's when I started working with an 8-track studio. I didn't know a lot, but I knew that I liked the sound of the dbx 160 compressor on the voice. And one night I was in the studio with my old band, before Was (Not Was), and I said to the engineer, "Just put the compressor on the voice." He said, "But it's unnatural." And I said, "Yeah, put it on." He got upset and said, "You want the compressor, you hook it up." I didn't know what I was doing with the board and the guy went home. So I had to learn how to do that myself. And that's just an example, one step, of how I learned my way around the studio.

MR&M: What were you using to make your home recordings at the time?

DF: Just a couple of Revoxes. They didn't have 4-track home studios then, and by the time they came out with those I was into an 8-track studio.

MR&M: Were you planning to be professional recording artists that long ago, or were you doing it more as a hobby?

DF: We did it to let off steam. The normal pattern was that we'd drive this one street called Woodward Avenue, cruising. We'd try to pick up girls and then after our nights of failures we'd blow off the steam by doing some tapes...

DW: ... Sexual frustration.

DF: Right. So in a sense when we did the first Was (Not Was) single, which was "Wheel Me Out" (though we weren't called Was (Not Was) in the early days), that was, in a way, us blowing off some of the other things we were doing. David had been writing and I had been doing studio things for other people. Someone would come in and ask us to make a female singer sound like Donna Summer doing "Bad Girls." Obvi-

ously, it would stink but it was good for building chops. So the first single we did was like an explosion, because we were blowing off all this extra energy. And by that time I had done enough sessions with people so that I could get real good musicians to work with us. We knew that "Wheel Me Out" wasn't going to end up on a major label or anything like that; in fact, David used his press credentials (he's a music critic in L.A., where he lives when not recording) to get through to Michael Zilkha [of ZE Records]. He seemed like the natural person for us to go with, and he was. He's been very supportive. He never questioned anything we did, or dictated anything.

MR&M: When you recorded the first album, *Was (Not Was)*, on Island/Ze, had the material already been written and put down on tape by you, or was it all new stuff?

DW: Don has always acted as the official *Was (Not Was)* archivist, so some of it was updated from material we already had. The rest was newly written, so that album was put together somewhat helter-skelter.

MR&M: Where did you find the musicians and singers who contributed to the first album. Most of them were not really well known outside of Detroit.

DW: Detroit has never had the kind of club scene that some cities have, like the CBGB's scene in New York in the late '70s. The clubs are spread out here, so the real scene is in the studios, where you'd run into these guys day after day. They're all friends. And you get a mixture of people, from Sweet Pea Atkinson [the R&B/funk/rock singer they've produced and who sings on their records] to Wayne Kramer [former MC5 guitarist].

MR&M: Who is Harry Bowens, the other Detroit singer who has been on both albums?

DF: He's kind of the fourth member of the O'Jays. He sings harmonies and plays piano with them and does vocal arrangements. He came in and helped us on the very first record we ever produced in here. It's a really weird thing: When we started making records in here, people who were very established came and said they wanted to help, and they didn't want to be paid or anything. The same people are still working with us.

MR&M: Technically, how was the first album recorded? Did you lay down the rhythm first and build up,

or was there a good deal of "live" recording done?

DF: The first one was done beginning with drum loops. We made ½-track drum loops and bounced them off of the 24-track and built up from there. It was all overdubs. At that point I had trouble maintaining a large group of people and I needed that one-on-one, so I wouldn't get bulldozed. It goes back to the technique of doing sound-on-sound by myself.

MR&M: So, you obviously don't subscribe to the theory that it's more spontaneous with a group of musicians playing together at the same time.

DF: No, I do. That's how the new album was done mostly. The bulk of the rhythm tracks for *Born To Laugh At Tornadoes* were cut with everyone sitting on a couch in the studio: Randy Jacobs on guitar, a guy named Felix Morris playing bass and Luis Restos on keyboards. He's got a wild setup with an Oberheim and a Moog. We take a different approach to recording. We had someone who's on

oxide without thinking about it—to stop the flow. I don't like it when an engineer says, "You can't do that because you're gonna get -3 dB distortion," or whatever. The idea is to be invisible between the inspiration and the tape. As a result, there's a lot of meters that get floored and a lot of weird stuff that you're not gonna pay attention to. You have to master the technology to the point that you have to roll through it, but after that it's like, keep it out of the way. The important thing is to capture the performance on tape.

DW: Rock'n'roll isn't Shakespeare, but it isn't John Davidson either. You have to maintain your enthusiasm.

MR&M: Is there a conscious tie-in between the lyrics you write and the music?

DF: Oh, definitely, but I don't sit down and think about whether the music is going to fit the lyrics. There was a period when David was writing some really depressing songs and I was in the mood for some up songs, and I couldn't figure out why I couldn't write the songs.

I don't like it when an engineer says, "You can't do that because you're gonna get -3 dB distortion," or whatever. The idea is to be invisible between the inspiration and the tape.

the staff at Electric Lady Studios come in to work on some tracks when we produced Cristina's album, and he was horrified by the way we work. He called it the school of reckless engineering. I was explaining to David that it's like Zen and the art of the recording engineer, which he has now dubbed Zengineering. That's how I'd label our method. The overview of the thing is that you're capturing inspiration and changing it into a different form of energy. You're taking creative inspiration from a musician and transferring it into oxide particles. People are concerned about the boards, and transformers and distortion. But the worst distortion is when you allow technical thinking—which you want to flow as quickly as possible to the

MR&M: Did you use any unusual setups or techniques in the making of the second album?

DF: There's really a total disregard for the technical aspects; that's the only thing that really runs through the whole record. Whatever it took to get the sound, we did. And if it meant impairing a UH 7 with a blow from a hammer, then that's what we did.

MR&M: When you toured following the release of the first album, you assembled quite a band of diverse talents. How did you manage to find the people who played with you?

DW: When I came back from L.A., where I live, to Detroit, Don surprised me with the composition of the band. It looked like a heterosexual Village People.

DF: He came to me and said we really can't go out with this band. But we did, and there's a good feeling to this band. It goes back to the days when people came to us offering their help with our projects. We had maybe 15 people with us and there wasn't a bad feeling among them.

MR&M: What were some of the problems taking such a large band on the road?

DF: We had trouble fitting on the stage in some places. But the biggest problems are those little things like trying to go out to eat with 20 people. We weren't financially equipped to move that many people around like, say, the Rolling Stones are.

MR&M: Was it difficult to reproduce the sound of the album live?

DF: We really didn't try to do that; we tried to maintain the feel of the music. It should be easier to reproduce the sound with this second album.

MR&M: Now that you're signed to a major label [Geffen], how does that change your approach to music-making?

DW: We could have used another few albums to just freak out. But now we do have to think about making hit records as well.

DF: It's a very disheartening thing to release a record and not have it heard by people. You can deal with the rejection: when people hear it and say it's the worst shit in the world. But you can't deal with it when you put your blood into something and you get the plug pulled before they get to hear it. So I'm really grateful to be with a company that's going to complete the communication process. The important thing that we have to remember is that if we lose who we are, it's idiotic to go and try to make what we think is a "Geffen" record. We have to make a Was (Not Was) record and then cross our fingers.

I don't think either of us have anything against reaching people. There's no point in goofing off in the studio; we want to reach people and bring them in to what we're doing. It keeps you on your toes just having the realization that if you do what you do well enough, and let Geffen Records take you the rest of the way, you will reach people.

DW: It's such a transitory life (being in the music business) that you have to take it while you can get it. [Signing with a major label is] the opportunity of a lifetime because you don't know where you'll be in 10 years.

DF: I believe that the important thing is to be sincerely inspired by what you're doing. I'm sure that Helen Reddy is sincerely inspired by what she does. I'm sure she dug "I Am Woman." In the end you've got to do that and just hope you reach people.

MR&M: Isn't there a pressure that comes with signing to a major? Don't they make it plain that they want you to come up with something they can sell?

DF: Sure, but I think that's implicit in signing to a major. I think that by signing you they're saying they already believe you'll come up with something they can sell. So you just come up with the best you can come up with. That's not a vulgarity to me; I believe we owe it to them. I'm sitting here, 30 years old, and I'm getting by with my music. If that's the price you have to pay, then that's the price you pay.

MR&M: How do you compare *Tornadoes* with the debut?

DF: They both have a lot of styles but that's because, like we said before, that's what we grew up with. The one comment that people made about the last album which really cut through was that it was a little abrasive, that there was some anger and paranoia in there. A few people told me that if they put it on at parties it would clear out the room. So we thought it would be nicer to make a record this time that people could listen to without having to make a major effort.

MR&M: The lyrics on the first album were a bit hard to dissect. Is this one more literal, lyrically, in your opinion?

DW: I think being literal is a good thing because I think without any platform whatsoever, logic can become disjointed. And I think the strictures of form make for better communication. It's more of a challenge. The mistake people made after Coltrane was thinking they could just blow free, put on metal teeth and just bite through the mouthpiece. I think you have to hide in technique and not come out for awhile.

DW: We have a song on *Tornadoes* called "Man Vs. The Empire Brain Building." It's our manifesto. The lyrics go: "In this life there's just three things: Man vs. nature/Man vs. woman/And Man vs. the Empire Brain Building." There's another track called "Bow Wow Wow Wow," which Mitch Ryder sings. There's a song called "Professor Night," about a math genius we grew up with who

has become sort of the king of the singles bars. Mel Torme sings one called "Zaz Turned Blue," about a veteran. There's one called "The Empire Falls Flat," that didn't go on the album, that was basically about Reagan and the demise of the country. We have one called "Return To The Valley Of Out Come The Freaks," which is a continuation of a song on the first album. We decided that on every album we're going to continue this song, adding new lyrics and recutting the track to fit the style of the album. Then, after the fourth album, David Geffen can bankroll our first movie, *Out Come The Freaks*. There were other songs that didn't make it, with names like "K-Mart Wardrobes," "I Love You Vegas," and "Dead Plants." And "The Three Seasons" didn't make it.

MR&M: How did you get people like Mitch Ryder, Doug Fieger, Mel Torme and Ozzy Osbourne to work on the same album? That's a first of some sort.

DF: Being on Geffen gives us the chance to work with heroes. That's the fun part of the gig, to be able to go into the studio with someone like Mitch Ryder. The first time he sang we immediately felt, "I know that voice." In junior high school he was like *the* guy—especially since he was from Detroit. And to hear that voice coming back over the speakers—sounding just like he used to sound—was a gas. It's an honor to work with those people. As for Ozzy, it wasn't so much that he was a big Was (not Was) fan as much as the fact that we share the same attorney. I think we've always had this streak in us of wanting to defy convention. So to have Mitch Ryder and Mel Torme on the same album... that shakes people's idea of convention. It's fun to do. Doug Fieger is our oldest fan, and the three of us were never in the studio together before.

MR&M: Mel Torme sings a song called "Zaz Turned Blue." What's that about?

DW: It's about a guy who, during his adolescence, lets a guy come over and put a wrestling hold on him, and he turns blue. He joins the Marines and comes back shooting smack, and the song asks if it was that night that he fainted that's responsible. One of the things we try to do, though not always consciously, is to make a statement that it's not always what it appears to be. It's so easy to categorize, especially with radio being set up the way it is, and we try to defy that.

People think that it's a joke that we used Mel Torme, but it isn't. He's a guy with great chops and he's not going to be singing "Feelings." What he does fits in fine with the album. In a way it's saying, "You thought that he was this, but he's more." A lot of people who buy records don't know the difference between him and John Davidson, but it's like the difference between Bob Dylan and Rick Springfield.

MR&M: Do you plan your records out beforehand or do they develop a direction once you begin work on them?

DF: They are sketched out, but it's a rough sketch. This is a real good band we have now and they're all used to being in the studio, so it's more like sitting at home jamming. This studio has a very relaxed atmosphere. There's no system engineer who going to go crazy if I align the machines; we don't send out for food and have a guy in a white apron come and deliver. We have to run into the 7-11 and have a sandwich put in the microwave. We're not paying an hourly rate, so there's no time limit. I sleep on the coach in here more than I sleep at home.

MR&M: Who are the main members of the band?

DF: Randy Jacobs on guitar, Luis Resto on keyboards, a couple of different bass players—Felix Morris of Felix and Jarvis and Jervonny Collier—plus I play synthesizer sometimes while Randy plays bass. David plays flute and saxophone. David McMurray plays saxophone. There are a couple of different percussionists, Bruce Nazarian on guitar. We use LinnDrums for most of the drum sounds on the album, and Yogi Horton for most of the live drums. There are also a number of background vocalists.

MR&M: What equipment do you have in your studio?

DF: We have a Westlake designed room; the monitors are three-way Westlakes. The board is from the MCI 500 series, and MCI 24 and 16 track ½-inch decks. There's a Lexicon digital delay, harmonizer; I'm real partial to dbx 160 compressors. There's a dbx rack with noise gates and a parametric equalizer we use a lot; For mics I've been into Sennheiser 451s. We use Rockmans. Even when we cut guitars with amps, we try to stay in the control room so everyone can talk. We try to dispense with headphones because they're impossible.

I said to the engineer, "Just put the compressor on the voice." He said, "But it's unnatural." And I said, "Yeah, put it on." He got upset and said, "You want the compressor, you hook it up." I didn't know what I was doing with the board and the guy went home. So I had to learn how to do that myself. And that's just an example, one step, of how I learned my way around the studio.

MR&M: Is it difficult to balance your role as musician, producer and engineer?

DF: No, because I just never lose sight of what we're trying to do. Over-technical people drive me nuts. When I've worked in other studios I've taken compressors and put them on infinite compression and whenever I turn my back they'll put them back to 4-to-1. For some people that works, but it's not how we like to do things. For example it was a pleasure to work with Michael Brauer mixing when we did Sweet Pea's album. He's incredible—he's also done Luther Vandross's albums and Aretha, and that's part of his sound. But it's not what we're about. It's good to be concerned about sound and I enjoy records that sound good, but I don't even own a stereo system. I have a little box; I like to turn it down and just hear Miles Davis's trumpet coming right out at me. It's always the feeling of the music first, and you can't hide behind great sound if there's nothing else there.

MR&M: How do you approach the outside productions you've done, like Sweet Pea or Cristina? They might not want to approach a record the same way you do.

DF: Then they can go home! No, just kidding. The challenge there is to have those obstacles put in front of

you. When we do somebody else's record, we're not trying to make a Was (Not Was) album. We try to be invisible and add what we can without stamping our personality on it. You have to become part of the person you're producing. Some people want you to put your stamp on it, though. Doing these things is like putting a Rubik's cube together.

MR&M: How did the production roles differ on Sweet Pea and Cristina's records?

DF: Cristina is an overall concept, and you want to embellish on that. Sweet Pea is primarily a voice, and you want to choose songs that are conducive to his voice. Sweet Pea is very much rooted in that Wilson Pickett, Otis Redding kind of soul sound. But Sweet Pea is out there listening to people like Prince, whereas Wilson might not be. With Sweet Pea, we tried to do what people wouldn't expect with a voice like that, rather than stick him with a Memphis horn section. So all the songs on his album are difficult songs that somehow got pieced back together; it's a much more musical concept than Cristina, whose concept is more philosophical. We have some other projects coming out and then we're going on tour. And then we'll probably come back to the studio and start on the next album.

PHIL RAMONE

PRODUCES
RESULTS

Phil Ramone produces hit records, but there is something that makes him more than just a “record producer.” It goes beyond having an ear for the right song or the right singer, or knowing the studio and the market. That something is respect—for the artists and for their music. He brings out the best they have to offer without imposing his own ego on their records. He is more like a baseball manager, content to let the members of his team shine while he juggles lineups, suggests strategies, and calls the plays that ultimately make winners.

Although he only began producing full-time in 1974, Ramone built his reputation in the '60s as an engineer. He has since become one of the most successful, sought-after producers in the business, working with the cream of pop/rock artists: Billy Joel, Barbra Streisand and Paul Simon. In spite of this superstar clientele, it is not unusual for Ramone to jump into something as new and immediate as the *Flashdance* soundtrack, for which he served as musical supervisor. At 42, Ramone is a study in contrasts: touches of gray in his beard, yet near shoulder-length hair, and dark, wise fatherly eyes looking out from glasses with metallic-blue rims.

Ramone recently spoke with *MR&M* about the art of producing. He also discussed some of his recent projects, including Barbra Streisand's *Yentl* for which Ramone supervised the post-production of the soundtrack and, along with Dave Grusin, re-cut two of the songs.

"I'm known for doing a lot of crazy things in the studio. I'm a nut about earphones. I found I could take Fostex headphones apart and they would give me sound and I could equalize it and put limiters on it. I was one of the first in New York to use a 40-input console..."

"[Although] the music in the picture was based on the turn of the century, we added synthesizers and electric guitars," said Ramone. "However, we did keep a lot of the original vocal lines. We didn't want to bastardize the songs for the sake of a hit." Ramone had previously teamed with Streisand on the soundtrack for *A Star Is Born*. "Streisand's voice can be very intimate, but her crescendo gives her a dynamic range similar to that of an opera singer. So I use an old mic with the old tube sound and a lot of external padding. That way you maintain the warmth. Then, by recording with the Sony 24-track digital, you get the full dynamic range without crunching the tape."

Aside from soundtrack work, Ramone has spent much of the last seven years working with Billy Joel. Ramone has produced every Joel album since *The Stranger*, and each has been platinum-plus. This winning streak was recently extended when *An Innocent Man*, their sixth album together, flew to the top of the charts.

"Billy arrived at a point in his life where he wanted to make a singer's album. We were talking about doo-wop records and he was into some things that he loved when he was growing up. A very different kind of song style existed at that particular time, very romantic, very danceable, and as I said he wanted to make a singer's album. He just felt he was able to sing certain things now, and that if his voice were to change in a

year—start to mellow or go down—he might not be able to get some of those screaming high notes. This is probably the best vocal album he has done because he wrote not for the genre, but for the song."

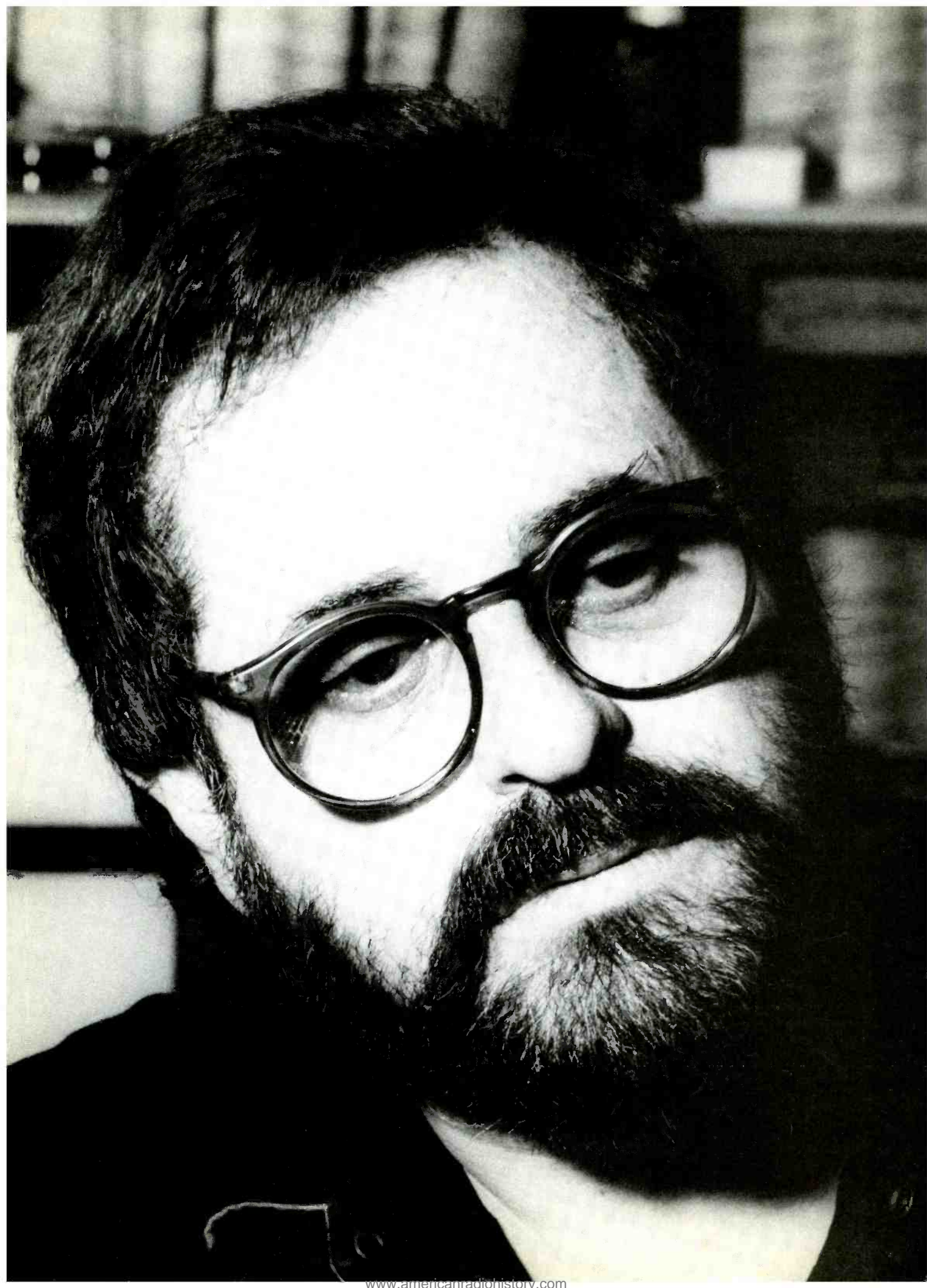
The songs on *An Innocent Man* vary in their influences, from James Brown to the Drifters to the Four Seasons. At one point, Ramone and Joel tried to duplicate the sound of the old records, despite Ramone's feeling that it wouldn't work. "You forget about how those records were made and what they were made for. Coming out of a jukebox or portable record player is a lot different than a good sound system, which is what most people are tuned to today. I felt very strongly about not copying because then the album would be a salute to some period which I didn't feel it had anything to do with at all."

So Ramone and Joel came up with a light-spirited, straight-forward pop album that reflects an era rather than recreates it. As usual with Ramone and Joel, the sound is tight, sparkling clean and yet captures Joel's raw power. Ramone gets this sound by using a minimum of overdubs. "Billy is a terrific 'giver' of a performance. Yet that's not to say he can't overdub. Since he has to play the piano and sing, something happens to his body, his mind, his throat, putting a strain on his neck in a certain way. When you're standing around singing it's different. The band responds to Billy; it's an environmental thing that happens in a

song and it only happens for so many minutes when the room is live, which means isolation but not total isolation. Liberty DeVito plays a certain kind of drums against the vocal that he can't play with the same intensity alone. The live drum sound is back. I don't use booths with Liberty. I need [to keep] as much cubic footage [as I can] because I make Liberty play like he does on stage. I've always maintained there should be some kind of coordination between what people feel and hear—not necessarily a big arena sound, but close to it without the monstrosity. There's nothing like an exploding set of drums in a big room, when you can feel the foot pounding in the room, and the bass kicking and Billy playing piano extremely hard. When you do that you get an intensity that translates right away to a record. We haven't done much with machines or synthesizers, but we change every album."

Ramone is one of the few who can truly make that claim; *An Innocent Man* is a complete turnaround from Joel's last album, *The Nylon Curtain*. Ironically, *Curtain* was the first Ramone/Joel album to get good reviews, yet it sold relatively poorly (which means a little over one million instead of three). "It was an interesting adventure technically, I mean we did a lot of strange things using orchestras and odd sounds. I never thought of it as a serious album in the sense of 'dark' serious. It just has lots of things that he wanted to say. I think any artist who has had that many albums should be able to say something as long as it is not self-indulgent. If you don't touch something that's part of your life musically or chronologically, you end up doing clone records. Everybody has clues about why albums sell or don't sell, you know that kind of Monday morning quarterback, but I don't think he or I would ever regret that we made that album. It was an album we wanted to make and it freed us to go on to the new album, which doesn't sound like the son of *The Nylon Curtain*, son of *The Stranger* or son of *52nd Street*. I think that's healthy with a guy like Billy, who will probably write something totally different next time."

Ramone feels the main reason he and Joel have worked together so long is that they haven't "bombed" commercially yet. A more subtle reason may be that they're both staunch New Yorkers; Joel, middle-class and suburban street tough, and



Ramone, a Manhattanite transplanted from South Africa in his childhood. Ramone's New York upbringing is evident in his candid, get-to-the-point speech. He seldom records anywhere but New York. "New York has an energy that produces a sound much different, that's much rougher and tougher. Players play differently here than they do when they live in L.A. or anywhere else. New York also has the influence of street music, which I love."

When Ramone works with an artist who isn't based in New York, he usually brings them to the city to record. In 1979 he brought Karen Carpenter from her recording home in Los Angeles to New York to work on a solo album. That album was meant to tap the more complex rock-and-funk-oriented side of her voice, that went unheard on her Richard Carpenter-produced MOR albums. "I took her away from her sheltered environment in L.A. and made her record in New York," Ramone recalls. "It was a matter of taking that magnificent instrument and placing it in different settings. Karen went to school during the project; Donna Summer was hot at the time, and Karen said, 'Well, I've got a voice too; let me try some different things.'" Ramone and Carpenter cut eighteen tracks that to this day remain mysteriously unreleased. The "official" explanation was that Carpenter lost interest in the project as it neared completion, however, there has been speculation that someone—Carpenter herself, her management or record company—got cold feet about changing her musical image. In any case, Ramone is reluctant to say much about the album, especially since Carpenter's sudden death in February 1983.

The New York street sound of Ramone's work is also evident on the *Flashdance* soundtrack. "It's the kind of thing that's in the ghettos as well as the clubs, says Ramone. "You can bring part of this town to a studio, and that's part of the fun for me. New York keeps me alive and fresh. You don't get jaded."

Flashdance is the first commercial soundtrack album Ramone has been involved with since the eight-million-selling *A Star Is Born* in 1976. *Flashdance* was a gamble because, with one or two exceptions, the market has been poor for soundtracks since the *Saturday Night Fever/Grease* heyday. Though Ramone

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only produced three of the songs—Michael Sembello's "Maniac," Karen Kamon's "Manhunt" and Laura Branigan's "Imagination"—he served as musical supervisor for the film. "I took a different approach than a lot of music producers. If a Keith Olsen was working with Kim Carnes, I would say 'let me come while you do the demo, give you my input and then I'll stay the hell away while you produce the record!'"

Ramone also felt it was important 1) to only use songs that were written specifically for the movie, 2) that women sing the majority of the songs, and 3) that the album help break one or two new acts. "The producers said, 'Fine as long as you get some three hundred hitters up there as well.' You gotta have your Donna Summers to attract people to buy a soundtrack."

And people did buy it, more than any other soundtrack since *Grease*. One of the reasons was one of those new acts, Michael Sembello, performing the Ramone-produced "Maniac." Ramone knew of Sembello through his songwriting for such artists as Diana Ross and Donna Summer. When he asked Sembello to write something for the movie, he wasn't prepared for what he got back.

"Michael has a small studio in his house, and he took a limiter and just crunched it, literally crunched it, to get the handclap to sound like a

riveter. Sometimes when you don't own a lot of equipment you come up with better things than when you own fourteen dozen harmonizers. In this case he overloaded a little Yamaha limiter."

The success of "Maniac" led Ramone and Sembello to work together on Sembello's first album, *Bossa Nova Hotel*. Ramone feels the strength of the album, like the strength of his albums with Billy Joel and Paul Simon, lies in the songwriting. "It's a very difficult role for a producer to play when you have somebody who has as much knowledge as Michael does. He's waited too long to make an album. It's an eclectic album because he's eclectic and so am I. *Bossa Nova* means 'new beat,' and the *Bossa Nova Hotel* is a fictitious place where you go to find rhythm."

One of the assets Ramone brings to musicians is his engineering background. He is perhaps the leading producer to come from the engineering school. "A player brings a different discipline to the studio. He can practice for ten hours a day, so you know his production technique is going to be different. It's gonna be longer and more fussy, although because of home equipment a lot of guys know more. I don't love it though when musicians sit down to mix."

Ramone's engineering expertise also helps the engineer of his pro-



ductions. Although Ramone tries to stay away from the console as much as possible, he is always available to help engineers with any problems that arise. Recently he was working with a young engineer who was having a hard time recording drums. Ramone showed him how to place an overhead mic and then allowed the engineer to work his own way through. It was just one of several tricks Ramone learned in the sixties, when records were made with less time and less equipment, and engineers had to learn fast. "My growing-

up period was so different than that of most engineers today. People made an album in a week and you had to learn things like how to build a booth.

"I'm known for doing a lot of crazy things in the studio. I'm a nut about earphones. I found I could take Fostex headphones apart and they would give me sound and I could equalize it and put limiters on it. I was one of the first in New York to use a 40-input console, and yet I'll still record strings sometimes with three mics if I believe the room will handle it."

But for all the studio wizardry, Ramone is quick to point out that he owes much to the musicians he has worked with over the years, the musicians who spread the word about him and helped make his reputation. Once again, it all comes down to respect. "The lack of respect between engineers and musicians even today in many cases is horrible," he says. "Without it, the spirit of the date goes; there's no rapport, and that's probably one of the keys to all the technical stuff I know. I wouldn't be anywhere without the musicians."

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Sound Advice

With this installment of our column we're going to address the subject of power, and discuss a very useful piece of sound equipment—a power distribution system. This system, commonly called a power distribution box (PDB) or a power-D, usually consists of a power box or circuit box, several circuit breakers, and outlets that will service your own sound system independent of the lights or any other power needs. It's just for you and the band. A lot of groups carry around outlet strips or quad boxes and consider these to be their power-D. Sometimes these are sufficient, but when it gets to the point where you have circuit breakers blowing more than occasionally, face unsolvable problems with excessive noise, or see smoke coming out of overloaded outlets, you should definitely consider your own power-D. In the potentially confusing world of small club electrical systems, it's nice to work with a power system you are familiar with. Most assuredly you'll know your own power-D—since you will probably be building it. At a gig, you'll have the circuit breakers right at hand; if you blow one, you won't have to go looking in the closet down the hall for the breaker panel.

You will need to bring in your own power when the existing power in the wall outlets is not sufficient for your requirements, when a persistently noisy lighting system is also running off the house power system, or when your system calls for putting power in many different remote locations. A general rule for determining your power needs is to add together the current ratings of all the equipment you plan to run.

If the band will be deriving power from the wall or a branch outlet of your potential power-D, this figure will include the stage equipment.

The majority of your power will go to the main PA amp racks. Substantially less will power the amps on stage, and a very small percentage will be fed to the mixing board and other signal processing equipment found in that vicinity.

How can you determine the existing power on hand? First of all, locate the circuit panel. Often located in a dingy corner, closet, or right in the path of tray-laden waitresses, the panel's array of switches and fuses is something you should be familiar with. If you're lucky, the circuit panel will be marked and the locations of different areas serviced by each breaker will be labeled—east wall, bar lights, etc.—Often you'll have to discover the correspondence by your own experimentation. It's a good idea to label the breakers, if only with duct tape, if it hasn't been done.

If you don't have your own power-D, you will be running your AC cords into the wall outlets at the venue (unless they have their own power-D system hooked up for your use). It's important that the ground wire is always intact on both the AC cord that runs from the wall outlet to the amp rack and the AC cord that runs from the amp rack to the mixing board. Don't cut the ground pins; if the wall outlet will only accept a two-pin plug, use an adapter to switch it around (by turning it upside down) to find its least noise-producing position. If you do this, be sure to screw the ground wire from the adapter to the screw of the outlet. Adhering to this suggestion will cut down your risk of getting shocks,

obviously, but it'll also help lessen your chances for unwanted noise in your system. If you are mixing from out in the audience and you don't have transformer inputs on the amps you are using to send the signal back down the snake, you may find it useful to break the ground on the signal-carrying cord (they usually have mic [XLR] connectors on the ends). You see, if you have a complete ground on your AC going out to the mixing board from the amp rack onstage, and a complete ground coming back through the signal wires, you may encounter a ground loop, characterized by excessive noise or hum. Because it can arise from many variables, a ground loop can be one of your most difficult problems to contend with. In this case, the ground loop can be broken by having mic (XLR) connectors on hand that are wired male to female without connecting pin 1 to pin 1. (Pin 1 will be labeled by the manufacturer inside the connector casing.) This type of cord is called a ground-lift adapter, and would be inserted between the output of your mixing system and the input of your amp rack. This should cut down, if not eliminate, at least one source of extraneous noise. You will need one groundbreaking cable for each amp channel.

If a fairly complex lighting system is in use at the venue where you are working, you are potentially in for some trouble with unwanted noise, known affectionately as "dimmer buzz." Your first step in pinpointing this particular problem is to operate the lighting system, making it go from complete darkness to full brightness. Generally, if this affects the noise level, the intensity of the

buzz will change, peaking between the one-quarter and three-quarters level of brightness (there may be no dimmer buzz at the lighting system's off or full position). If a definite change is apparent, your problem lies at the power source; find out where the lighting system is getting power. If the lights and sound are feeding off the same breaker, try to move one of them to another circuit. If the simple test of operating the lighting system has had no significant effect on the buzz, your problem may lie with induction, the ability of cords to radiate energy to other cords within the proximity of several inches. One by one, unplug or switch out all the inputs to the board. If one in particular seems to make a change in the buzz level, it's likely that A) you've got a bad cord (replace it), or B) the cord is touching (or is near) a cord from the lighting system. In that case, all you've got to do is separate the offending pair of cords. Tape them out of each other's way, if necessary. Be sure to check the cords onstage between mics, amps, and instruments; they are likely victims of induction. Having your own power-D system will, by the way, eliminate the whole problem of dimmer buzz in almost all cases.

If you finally decide that you want your own power-D system, it's a fairly easy task to build your own customized unit. In order to do this you will have to make contact with a good electrical supply shop in your area. After you explain exactly what you want to build, they will supply you with specific information for assembling and connecting your individual system and furnish you with the materials to do so.

The first step in building your own power-D is to evaluate your needs. Go back to the formula recommended earlier in this article for determining these needs. Along with this information, you will need to estimate the lengths of cables you need. You should know (or guess) how far you will want to send your power, and where (this includes AC power you will send to the stage, to the amp racks, and to your mixing board). Of course, venues vary in dimensions and will have different set-up requirements, so when determining your cable requirements, allow enough length to accommodate yourself in any situation you may encounter.

Generally, the best place to situate your power-D system is right off the

stage (on the side that's most accessible to you), close to one of your amp racks. This means that the cable going to the mixing board will be your longest; it should be at least as long as your snake. This cable can be a 16 gauge, 3 conductor (16/3), which is not considered to be very heavy cable. But keep in mind that your current draw from the mixer is usually never more than 5 amps. The cable going to the amplifiers needs to be heavier; it may draw up to 25 amps per rack. Generally, a 12 gauge, 3 conductor (12/3) is a good cable to use. We recommend type SJO cable for use in small clubs; it's a 300 volt rated insulation cable with properties that resist oil. It's also heavy-duty enough for your needs, yet not extremely heavy in weight—which you'll eventually be grateful for when you lug a crate of cable around. The stage cable can be a lighter gauge than the amp cable; however, you may want them to be the same gauge so you can interchange them and possibly save some money when buying cable. It's best to buy AC cable in as large a quantity as possible to take advantage of price breaks. You may find that 500 feet of cable costs no more than 375 feet.

Your power-D will consist of a breaker panel, circuit breakers, short pieces of cable coming out of the breaker panel that have 3-pin female outlets, strain relief to keep the cables from being ripped out of the box, and a master cable going into the power box that should be heavy and rated to handle the current drain of the whole system. For most applications you can use 8 gauge, 4 conductor (8/4).

Having your own power-D means that you will have to have it wired into the main power breaker panel in the venue by a licensed electrician. With your own power-D you will not use any of the venue's wall outlets, but will have your own built into your unit. Try to recess them a bit to promote durability.

In the next edition of this column we will (hopefully) be answering some of the questions you have sent in. Please continue to write us about your positive and negative experiences with audio; we just might be able to make your job easier and more enjoyable.

Address your questions to: Sound Advice, c/o MR&M, 1120 Old Country Rd., Plainview, NY 11803.

HE WAS FIGHTING FOR HIS LIFE THE MINUTE HE WAS BORN.



He was born too small, too soon.

Premature birth is the leading cause of newborn illness and death in the U.S. Some 250,000 babies are born prematurely each year. The March of Dimes is working to prevent prematurity and other health threats to babies before and after birth.

The March of Dimes saves babies. You can help.

Support
March of Dimes
BIRTH DEFECTS FOUNDATION

Studio Notebook



...In addition to these three floor plans, if any of you have an unusual, clever or unique design that you've already used in your own studio, give us a peek at them as well. Share the wealth, if you please. The object is for all of us to learn from each other.

Studio Notebook, April 1983

When the above sentences were written, I imagined that there would be a few proud current studio owners sending in the designs they had used for their own operations. As the entries came in, I began tossing all such designs in a desk drawer to insure that they would not be lost in the shuffle when the deluge of layouts based on the three design examples given in the original article began rolling in. All entries based on the contest floor plans would be sorted and stored in a shiny new file cabinet I had wheeled in for the occasion. Plenty of space, individual file folders, reference index tabs—the works! Nothing to do now but hope there would be enough room for everything in the file cabinet and make a mental note not to overlook the two or three odd “unusual, clever or unique” entries that would be sleeping it off in my spare desk drawer.

Six months later, the file cabinet was three-quarters empty and my desk looked like a bomb went off at a Charmin factory. The few proud studio owners had turned into an insistent horde, and an avalanche of designs for existing studios had overflowed from drawer to drawer to bookcase to conference table and finally to the floor. We received some fine entries using the sample layouts originally pictured in the April '83 Studio Notebook, but the response to our request for “other” studio plans was staggering, to say the least.

Consequently, after wrestling my way through the mountain of super entries surrounding my desk, we are pleased to announce that first place in the Design-A-Studio contest is being awarded to Mr. Dave Miller of Absolute Recording in Elkhart, Indiana. Dave has designed, built, and put into operation a mobile and studio based recording business that combines the best of both worlds for himself and his customers. In a terrific letter that accompanied his entry, Dave gives us a running commentary on the history and logic behind his studio's progress. Let's go back in time and hear Dave's story in his own words....

Here it is, the spring of 1973. [A good year for me, I still had hair in 1973!—Rupert] I am returning home after graduating from a school in the art of recording engineering at a studio outside New York City. With grand illusions of owning a 24 track studio in demand by the country's finest recording artists, it didn't take long to realize that Elkhart, Indiana, was not the hub of the nation's music industry. After being refused a job at the only area studio (which later folded), I realized that any involvement in the industry, short of moving to a larger market, would have to be done on my own. My initial plans would need a few major revisions if I was to create a successful recording business. I say business, rather than studio, because anyone can create a recording studio. I wanted a recording business.

It seemed that the recipe for studios in larger markets was based on visual appeal and functionality as the prime ingredients that would invite—indeed, create—business. Studios in smaller communities, however, must provide services innovative enough to justify their existence. To accomplish this, I decided to base my recording priorities on business first, with functionality and visual appeal following. Another must for my business had to be accessibility. Hence, the need for mobility seemed obvious. Rather than relax in the studio and wait for clients to find us, Absolute Recording based itself on the idea of a stationary studio with a control room on wheels (see Figure 1).

After his initial equipment purchase, including a used dry cleaning truck to become his first mobile unit, Dave was on his way to a new career and Debtberg simultaneously. Still, he kept at it....

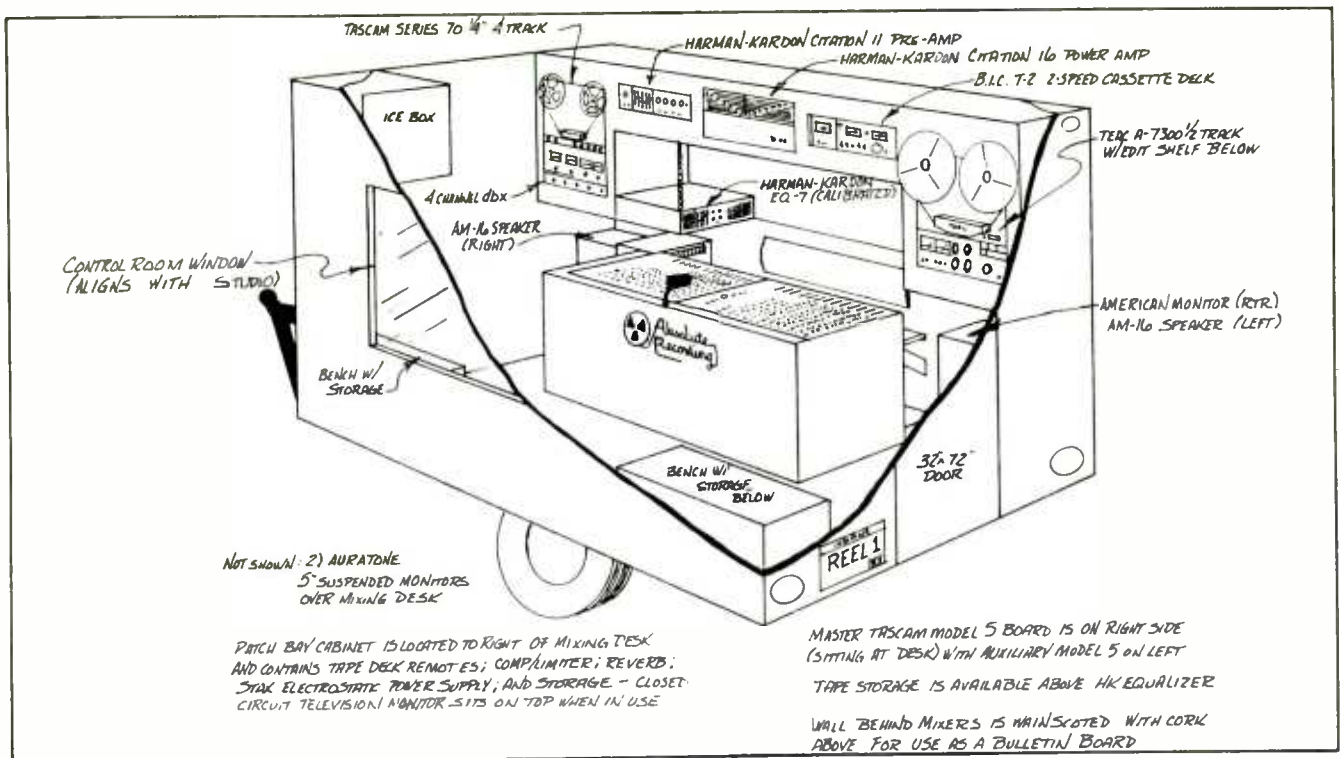


Figure 1. Absolute Recording—a stationary studio with a control room on wheels.

With a great deal of enthusiasm, and a much smaller degree of actual business, I somehow managed to pay off my loans and purchase even more equipment in 1975. A few more mics here and there, and another Tascam Model 5 Mixer—a gift from my mother ('I would have offered you a lot more than this if you would have gone to a *real* school!')—made me feel I was ready for anything. Since my budget had a very large lid on it, the stationary studio had to wait several years. I went on with just a mobile control room. At the time, the lack of a studio did not seem to restrain me too much, with excellent results found in the living room, bar room and even outside my home. The bulk of Absolute Recording's business was on location in strange night clubs, musicians' basements, practice halls—you name it.

I had survived the early years with a little help from my family, the bank, and the technician at the stereo store (who is now my brother-in-law... I had to marry his sister to get any more free advice!). Most importantly, I think I survived the early years on sheer excitement.

Looking back, it was easy to realize the things I had done right. Yet the things I had done wrong, or had not yet done, eluded me. I now had several competitors; how did they do it? I surmised that they had done it the same way I first had, by just *doing it*. Every single problem that I had or would encounter would be overcome. My worst mistake would be trying to avoid making mistakes.

If Absolute Recording was going to make it, I needed to devote more time than I had been able to in the past. This meant I needed to quit my full-time job, my security blanket. Did this make me unemployed or newly employed? I preferred the latter. The time had come for a few new purchases, like that stationary studio that had been envisioned,

It really wasn't hard to stick my neck out beyond human proportions—simply promise the bank our first born male and develop a taste for pot pies. Actually it wasn't as hard as it sounds. I did manage to obtain a beautiful little studio for a very fair price from my father-in-law. (I really do love you for more than your family, dear!) It took some imagination to picture a studio in the building at first, as it was designed more for a used car lot's office (see *Figure 2*).

The basic design was workable; a 16' x 12' studio section on one end, a 10' x 12' lounge area on the other, with a half bath and a guest closet separating the two. Placing a 4' x 4' isolation booth approximately centered in the studio allowed for an excellent drum booth in the corner made of 4' x 4' removable gobos. Large floor to ceiling windows on the opposite wall worked well with the control room window in front of the mixing console in the trailer (as shown in *Figure 3*).

The isolation booth can be torn down to accommodate larger groups. The fabric walls, over R-11 insulation (combined with a paneled rear wall, solid door, and plexiglass windows) provide just the right amount of "liveness." There is carpeting

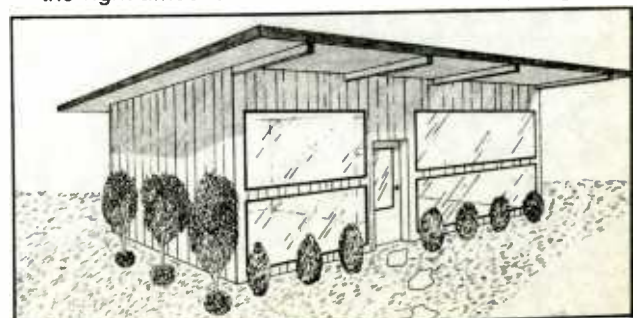


Figure 2. Do we have a deal on a creampuff used studio.

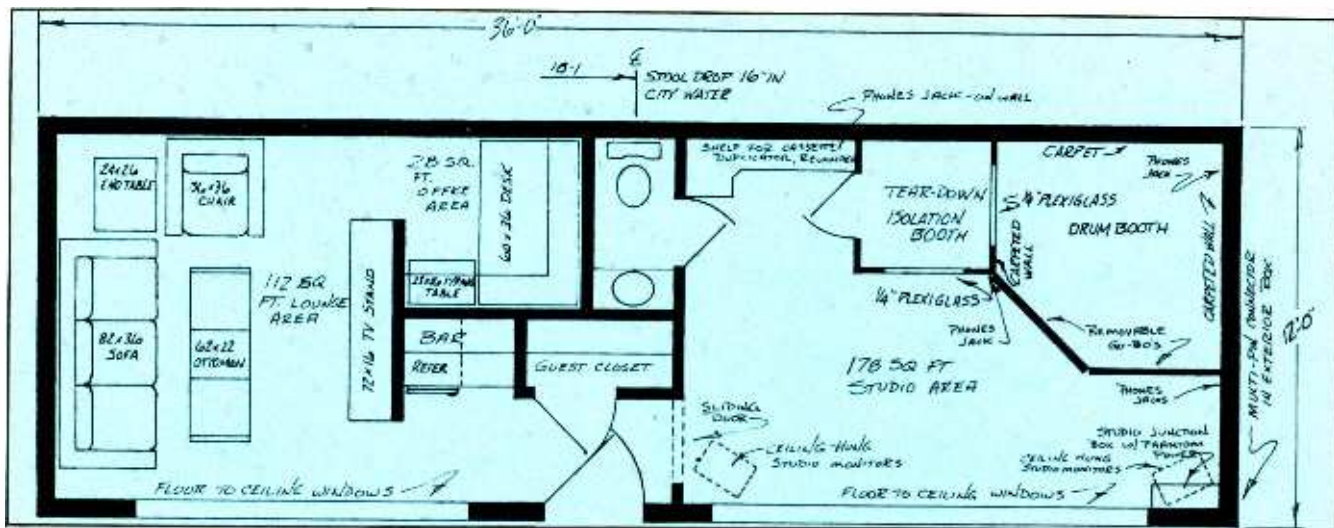


Figure 3. Floor plan of Absolute Recording Studio.

on the exterior of the booth and on the walls of the drum booth, while the rear and side paneled walls are reflective surfaces. The studio windows may be deadened with "woven-woods" curtains, affording just the right amount of control over the room. The cathedral ceiling helps with the problem of standing waves. The studio's size has worked out very well and seems to be ideal to complement the control room's capabilities.

The lounge required only a 42-inch high wall to facilitate a bar area with a 6 cubic foot refrigerator to assist in making the "creative juices flow." An eight foot wide wall makes an excellent place to put a stereo/TV stand, while at the same time providing a small 5' x 5' office area, affording privacy. The lounge is set up as a nice living area (for when the in-laws are over), and for that "touch of the islands," we have a parrot that continues to squawk, even at this very moment.

Interfacing the studio with the control room is achieved via homemade revisions on the 19 pair, 100-foot snake by installing multi-pin connectors at each end. The snake may be plugged into the control room exterior-mounted counterpart at one end, and into either the exterior mounted box on the studio or into an on-location stage box on the other end. (Both providing phantom power supplied from the trailer.) The stage box contains transformer coupled XLR inputs to allow up to 32 mics into 16 channels, or to split with an existing house or band's sound reinforcement system.

The mobile control room is approximately 10-ft. long, 7½-ft. wide and 7-ft. high. Space is sufficient; there is plenty of room for an engineer and even a producer or two (which is often the case), and then some. The mixing desk is elevated from the floor to afford easier access to the wiring and to help reduce the number of people wishing to be seated behind the board. Through the use of 36-in. high walls and an onboard equipment cabinet, there is but one path of access to the engineer/producer's area.

Visual monitoring may be obtained by either closed circuit television installed in the control room, or by simply parking the trailer in front of the studio window mentioned earlier.

The studio's monitor system accepts signals from either the lounge stereo or the studio monitor amp. It feeds studio monitor speakers, studio headphones, or lounge stereo speakers in any combination. An override toggle switch in the lounge affords convenient switching to the lounge stereo without affecting studio settings. Double headphone jacks with stereo L-pad controls in the isolation booth may either be directly connected to a one watt amplifier built into the board for single voice narrations and vocal overdubs, or be connected to the studio monitor amp in parallel with the additional headphones.

In talking with Dave on the phone, he estimates about \$3500.00 in total renovation and remodeling costs for both the trailer and the studio. While no small hunk of change, keep in mind that this figure bought him a nice little studio and a mobile control room that anyone who does much on-location work would give their back teeth for. (All this and a parrot, too!) Our congratulations and best wishes for the future go out to you, Dave.

That's about it for now. Next month look for the Overall Design Championship Winner and keep your fingers crossed in the meantime. Maybe even those of us who didn't win anything can learn a little something along the way. With that thought in mind, we'll let Dave Miller have the (almost) last word....

Absolute Recording is no doubt much like countless other studios across the country, and I hope that any budding potential studio owners who have taken the time to read this have not only enjoyed it, but found a few morsels of information and ideas that may be incorporated into their own businesses. As a relatively young company still striving for success, I must honestly say that looking back over the years and knowing what I know now, if I had to do it all over again, I would not have changed a thing in the development of Absolute Recording. Oh yes, maybe there is just one thing I would change...I would find another place to put that damned parrot!!!!"

Polly want a condenser microphone? See you next time.

Ambient Sound

The 90 dB Misunderstanding

The favored audio buzz-words these days seem to be “dynamic range.” With the proliferation of digital audio recordings, whether in the form of master tapes that are then used to make misnamed “Digital LPs,” or in the form of Compact Discs, digital audio is here to stay. And with it comes all sorts of exaggerated claims; some of them made unwittingly, others nothing more than sales hype.

The chief misunderstanding that arises in the world of digital audio has to do with dynamic range. We have all seen specification sheets for the new CD players (and, for that matter, the less widely distributed PCM processors and the professionally used stationary head digital tape recording systems) that mention dynamic range figures equal to or exceeding 90 dB. The implication, of course, is that the new digital program sources are going to provide us with that much dynamic range. Nothing could be further from the truth.

Let’s consider what would happen if digital discs or tapes did provide us with that much dynamic range. If you live in a quiet, suburban home or apartment, the typical ambient noise level is probably between 30 and 35 dB SPL. If you live in the heart of a metropolitan city, more than likely the ambient noise level in your listening room is of the order of 40 dB SPL or more. Now, suppose you had a Compact Disc or a Digital Master tape with 90 dB of dynamic range on it. That means that the *softest* sounds of music contained in that disc would or should be played back at an absolute sound pressure level of at least 40 dB. (I know—you’re going to tell me that our ears can separate the music from the noise even if the music is buried a bit below

the level of the noise, but let’s keep it simple, for argument’s sake.) Now, if you add 90 dB of dynamic range to that (again, assuming that’s the dynamic range inherent in the program source), the loudest reproduced sounds will hit your eardrums at an absolute sound pressure level of 130 dB—or just about at the threshold of pain; the sound pressure level at which sound ceases to be an audible sensation and becomes one of physical pain!

Let’s take the argument a bit further. From all reports, the day is not far away when we will be listening to digital audio in our cars—either because manufacturers will supply CD players in automobiles or because the industry will finally agree on a digital cassette-like standard for consumer audio tape players. In any event, countless measurements have shown that the ambient noise level in a rapidly moving automobile, even with all windows closed, ranges from 60 to 70 dB SPL. Try adding 90 dB of dynamic range to that and you come up with a maximum sound pressure level of 160 dB! That’s not only painful, it’s capable of causing almost instantaneous deafness to anyone subjected to that level for more than a brief period!

Obviously that’s not what digital audio recording is all about. I recently presented a seminar concerning digital audio, in which I was asked whether or not the digital master tapes used by Polygram to make their CDs had been made using electronic compression. I instinctively answered “no.” The gentleman who asked the question, a Mr. Ken Sheehan of Middletown, New Jersey, wasn’t satisfied with my answer (he had evidently listened to a number of Polygram CDs and felt that compression *had* been used in the course of

their creation). He took the trouble to write to Polygram's offices in New York City and sent me a copy of the reply received from Mr. Peter Clancy. I think the Polygram letter is extremely interesting and important—so interesting, in fact, that I'd like to share it with you. Mr. Clancy writes, in part:

"I am able to furnish an explanation with the kind assistance of Mr. Wolfgang Muczinski of our Hannover, Germany, office. While the reproductive capabilities of the Compact Disc and its player make a 90 dB dynamic range possible, *Polygram CDs have a measurable dynamic range of about 50 dB* [emphasis mine], equal to that of the corresponding LP. When recorded material is produced for release on LP, cassette, and CD, there is little point in creating an audio signal that exceeds the capability of any one sound carrier. With this in mind, Polygram CDs are not 'compressed,' but mic'ing and studio techniques are geared toward the production of music that will sound good in *every* configuration. In comparison to an LP, the *audible* dynamic range of CD, due to the purity of sound, would seem to exceed the measurable dynamic range. In the strictest sense, however, dynamic range is the same for all configurations on any given title.

"Furthermore, it may be noted that even an LP is scientifically capable of handling a 70 dB range, but this this isn't done because listeners at home would constantly have to readjust their volume controls. It should be borne in mind, also, that sometimes 'dynamic range' is confused with 'signal-to-noise ratio.' In the latter instance, the typical CD playback unit has a S/N ratio above 90 dB...."

While I cannot fully agree with Mr. Clancy regarding the amount of musical dynamic range of CDs (I have a good number of them in my collection that have a great deal more than 50 dB of dynamic range incorporated in them), I do agree with the principles he enunciates in his letter. In line with that, when I visited the headquarters of Philips (the co-inventors of the CD) last year, I was startled to learn about an engineering project being actively pursued by that company's research staff. The project involved the development of a compressor that could be attached to, or incorporated in, Compact Disc players! To those of us who had not thought this whole thing through, the obvious question was, why, after going to all the trouble to achieve a 90 dB music storage medium, would we want to "throw away" some of that dynamic range with the aid of an electronic signal processor such as a compressor?

When you consider the absolute sound pressure levels that we are talking about in real-life environments, it becomes clear that in most cases we cannot tolerate 90 dB dynamic ranges in our program sources. On the other hand, just to set the record straight, in a live music performance 70 dB dynamic ranges are not only quite commonly encountered but are quite acceptable. And 70 dB of dynamic range

would *not* readily be accommodated by the conventional LP or any pre-recorded tape cassette that I know of.

How Far Down To The Noise Floor

All of this brings us to the subject of residual noise, or signal-to-noise ratio (which Mr. Clancy rightly points out is often confused with dynamic range). Given the 90 (or even a 95) dB signal-to-noise capability of the digital recording medium (tape or CD), and a maximum desired *musical* dynamic range of, say, 70 dB, if the recording engineer makes certain that the loudest sounds recorded are at or near maximum available recording level (the level at which the digital sample consists entirely of "1s" in binary code), the softest sounds of the musical performance will be recorded at a level that is still 20 to 25 dB *above* the noise floor of the recording medium. This is perhaps the most outstanding benefit to be derived from digital recordings: The noise floor is so far below the lowest level musical signals that, for all intents and purposes, it becomes inaudible when amplifier volume controls are set to musically realistic listening levels in a typical listening environment. Even if we agree with Philips that a good LP is capable of handling a 70 dB dynamic range, there is another good reason why LPs of this nature would never contain that much dynamic range. If they did, the softest musical passages would be no louder than the residual surface noise of the vinyl record. That would be even more intolerable than the surface noise levels we encounter with highly compressed LPs.

The Inverse Distortion of Digital

There's another good reason why no recording engineer in his or her right mind would attempt to record music using the full dynamic range capability of any digital medium. It has to do with the way distortion sets in in the digital domain. Having now tested nearly two dozen different CD players, I can attest to the inverse relationship between harmonic distortion and recording level. The impressive distortion specs quoted for the players always use "0 dB" (maximum recording level) as a reference. For sound recorded at that level, measurable total harmonic distortion is indeed of the order of 0.003 percent or so. But unlike amplifier or analog tape recording distortion, distortion in digital varies *inversely*—and almost linearly—with level. So, at 20 dB below maximum recording levels, THD would be about 0.03 percent. At -40 dB levels it would be 0.3 percent, and at -60 dB it would have increased to about 3.0 percent! You can figure out for yourself what it would be if audio levels get even smaller than that. Of course, very little has been said about this phenomenon, for obvious reasons.

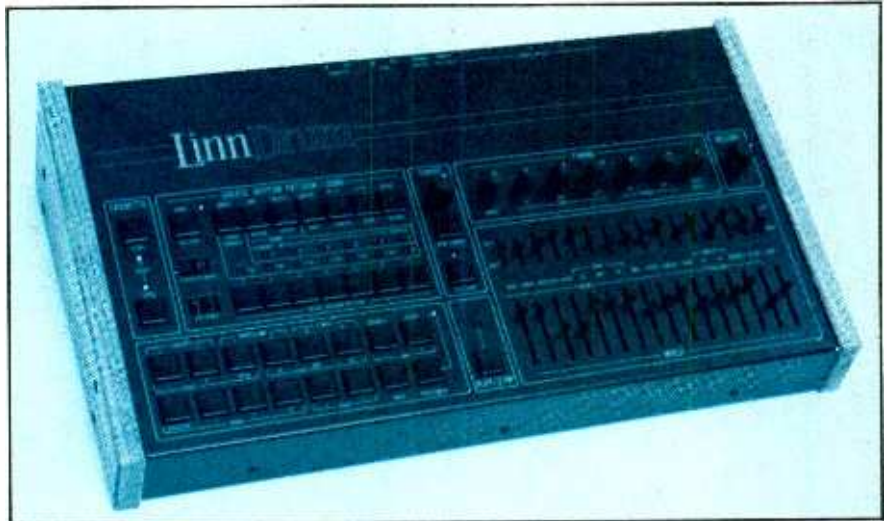
There are many wonderful advantages that digital audio has over analog recording, not the least of which is the integrity of the recording with repeated dubbings, the absence of wow-and-flutter, and the ruler-flat frequency response. With so many good things to talk about and emphasize, it seems rather a pity that those who should know better are confusing the music-loving public with talk of 90 dB dynamic range—a level of dynamic range that no one would really appreciate or even be able to tolerate.

The Market Place

what's new in sound and music

NEW LINNDRUM FEATURES

Linn Electronics is now offering several new features and options for the LinnDrum programmable digital drum computer. New features include: an increased synchronization flexibility that allows the LinnDrum to directly sync to most popular sequencers, single step programming that allows the user to step through rhythm patterns note-by-note when programming or editing, and an increase in the number of steps available in song mode from 99 steps to 250 steps. Along with these new features, Linn Electronics has also announced new options available for the LinnDrum including a memory upgrade option that increases the memory capacity from 2,600 events to over 5,200 events. Many new sounds have also been added to the LinnDrum's library of alternate sound chips. There are now over sixty



different conventional studio quality drum sounds available and over fifty different musical sound effects such as DogBark, GunShot, GlassBreak,

BassGuitar, HumanVocals, etc. All sounds are production quality and carry a suggested retail price of \$40.00 to \$60.00.

Circle 30 on Reader Service Card

ELECTRO-VOICE LOW FREQUENCY DRIVERS

Electro-Voice's DL series of low frequency drivers, designed for high level, high quality sound reinforcement, playback, and studio monitoring, now includes two new models—The DL12X and DL18X. Like their predecessor the DL15X, these models perform at the high efficiency end of the direct radiator spectrum (on the order of five percent). They've been designed with different bass responses, enclosure size requirements, and target applications. According to EV, the woofers' carefully engineered drive system assures high efficiency, linear, low distortion output, and high power capacity. The low mass voice coils are made of rectangular aluminum wire, edge-wound on a rugged laminated polyimide form. A break-up-resistant diaphragm and suspension ensure a smooth, musical upper-bass sound and plenty of low frequency shock capability or "punch." The DL12X driver is suited to midbass applications in three- or four-way systems or as a woofer in



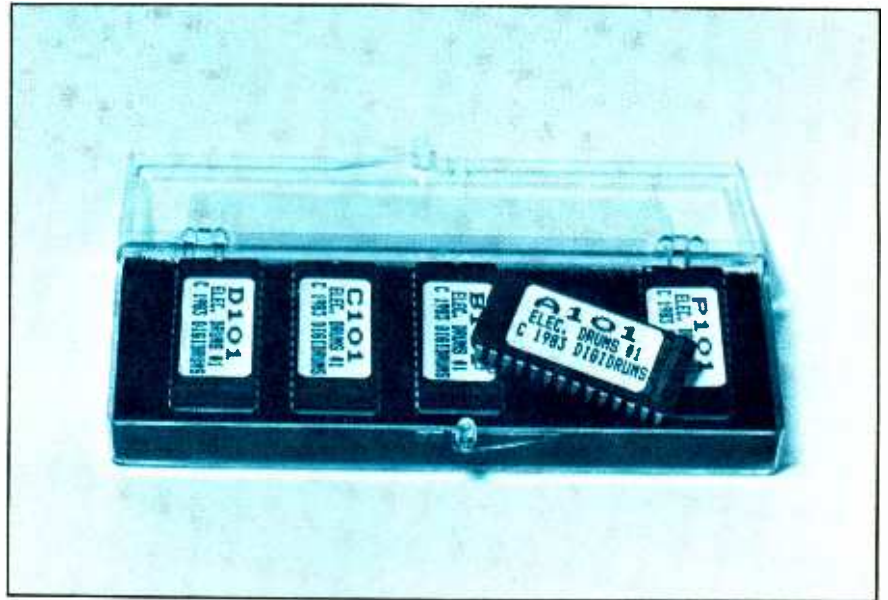
two-way systems where response to 70 Hz is appropriate, and a small enclosure, such as the 1.2-cubic-foot Electro-Voice TL806, is required. Its specifications include a frequency response (in a 2.6-cubic-foot vented enclosure tuned to 52 Hz) of 58 to 5200 Hz ± 3 dB, a 350-watt long term average power capacity per AES recommended practice (100 to 1000 Hz), and a sensitivity of 100 dB (average from 200 to 4000 Hz) at 1 meter, 1 watt. The DL12X weighs 18 lbs. Designed for subwoofer use in three- or four-way systems, the

DL18X offers the highest output in the lowest octaves because of its large cone area. Specifications include a frequency response of 36 to 3000 Hz ± 4 dB, a 500-watt long term average power capacity per AES recommended practice (100 to 1000 Hz), and a sensitivity of 99 dB (average from 200 to 4000 Hz) at 1 meter, 1 watt. The DL18X weighs 21 lbs. Electro-Voice also offers plans for computerized vented enclosures and horn enclosures.

Circle 32 on Reader Service Card

DIGIDRUMS DRUMULATOR SOUND CHIPS

Digidrums is now offering a wide variety of alternate drum and percussion sounds for the E-mu Systems Drumulator. Each Digidrums sound chip set consists of five EPROMS (special memory chips) containing an entire set of new, digitally recorded sounds to replace the standard Drumulator sounds. Sound chip sets currently available include electronic drums, Latin percussion, African percussion, heavy rock drums, jazz drums, sound effects, and analog drum machine sounds. A Simmons/Synthesizer trigger set provides eight programmable trigger outputs via the Drumulator direct outputs. All Digidrums sounds are studio quality, low noise recordings. Drumulator sound chip sets are easily interchangeable via the chips' mounting sockets; no soldering is required. Each set of Digidrums sound chips includes a program chip containing software that determines the length of each sound and permits longer,



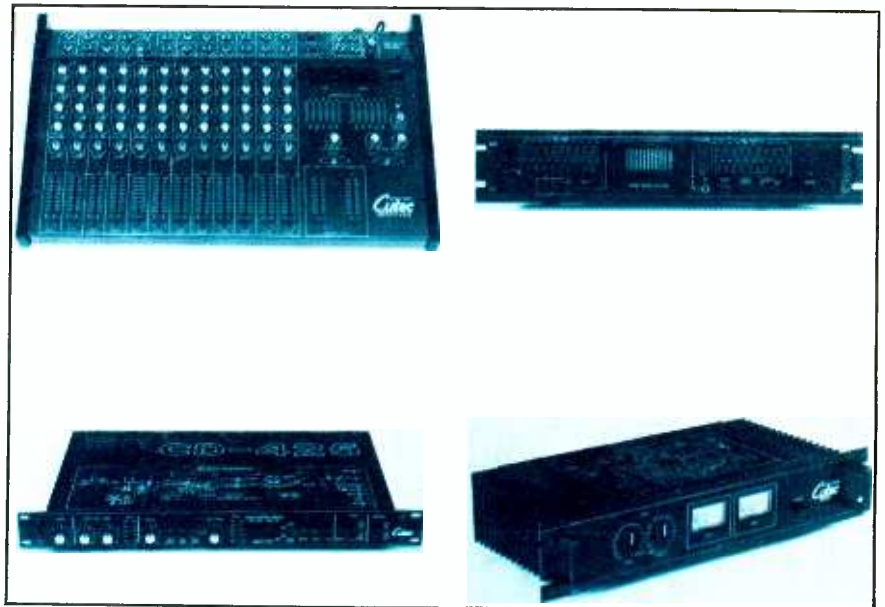
sustained sounds to be programmed. The program chip also contains updated E-mu software that increases the Drumulator's song stor-

age capacity to 64 songs. (Digidrums Drumulator sound chips are endorsed by E-mu Systems, Inc.)

Circle 33 on Reader Service Card

NEW DAUPHIN PRODUCTS

Dauphin Company is now complementing its recently introduced Cutec MR 402 multi-track recorder with a new line of products. New units include a 12-channel mixing console, rack-mountable digital delay, stereo power amplifier, electronic crossover (both two- and three-way models), and stereo graphic equalizer with spectrum analyzer. The new line is rounded out by a six-channel disco mixer with integral graphic equalizer and "talkover" capability. Standard features include: MX 1210 Mixer—12 channels with separate Mic/Line inputs, overload LED indicators for each channel, "Effect" and "Foldback" controls, and Phono 1/Phono 2 fader; CD 425 Digital Delay—"Hold" function for main delay, reverb effect with combination of Main- and Sub-delay, and Lo/Hi equalizer. PA 902 Stereo Power Amp—60 watts-per-channel at 8 ohms, 90 watts-per-channel at 4 ohms, or 160-watt mono capability, dual level controls and VU meters, two-way inputs on XLR/phone jacks, and two-way outputs on banana phone jacks; CX 230 and CX Electronic



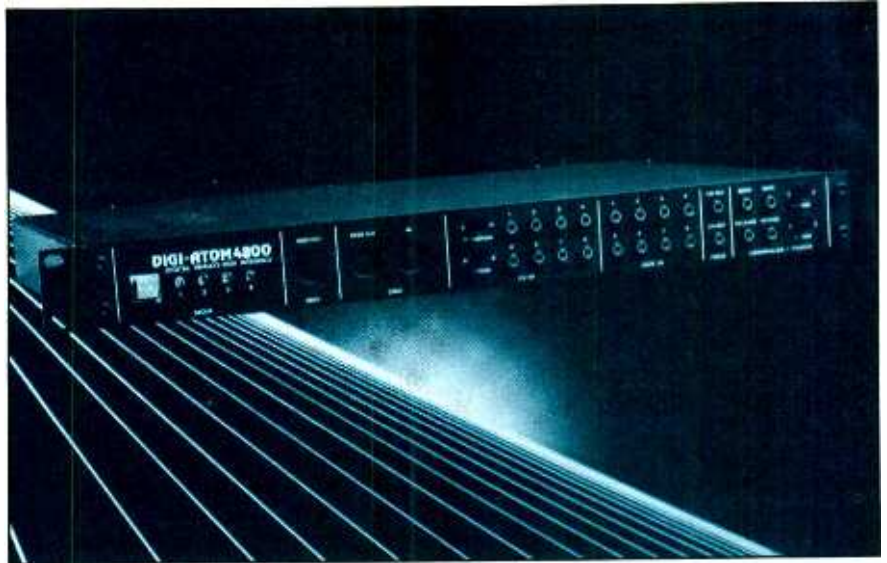
Crossovers—CX 230 features two-way stereo, eight-step dividing points from 250 Hz to 6 kHz, and convenient two-way balanced and unbalanced input jacks. CX 330 features six-step dividing points between low-mid and mid-high frequencies, and frequency phase switch for low, mid, and high frequencies; GS 2200 Equalizer—10-band graphic display, real-time spec-

trum analyzer, acoustic level pink noise generator, input selector switch for line or tape, and defeat switch with LED lamp; MX-1 Disco Mixer—nine-point LED display, six-channel monitor, five-band stereo graphic equalizer, "Talk" mic input with LED and level control, two phono channels, and output pan-pot.

Circle 34 on Reader Service Card

ANALOG-TO-MIDI INTERFACE

Zypher Electronics' DIGI-ATOM 4800 is an analog-to-MIDI (Musical Instrument Digital Interface) interface that allows analog sequencers to have complete expressive control over any MIDI synthesizer. It converts up to eight control voltages and gates into MIDI key data. Additional inputs include velocity control, pitch bend, modulation amount, release, and even sound program select. Since the DIGI-ATOM 4800 is under the intelligent control of a Z-80 microprocessor, the user can select from one of four different operating modes for eight-voice polyphonic control, or four-voice polyphony with independent velocity control on each voice. Other modes include double mode and, for a live ensemble of MIDI synthesizers, triple mode. The development of the DIGI-ATOM 4800 provides a much needed link between analog equipment and the new generation of MIDI synthesizers, as well as being an advanced production tool itself. By allowing existing analog equipment to become part of an expandable MIDI network, this device can save users a considerable amount of money. In professional studio applications, the double and triple modes can be used to control timbre and articulation as well. By alternating between different MIDI synthesizers on different channels,



subtle or exciting expression, dynamics, articulation, and timbre changes can be performed that otherwise are not possible to play in real time. The DIGI-ATOM 4800 also has numerous synchronization and interface applications. A Roland-type sync input can be used to synchronize a MIDI sequencer to an analog sequencer. Analog and MIDI synthesizers can be connected to play simultaneously together. MIDI drum

machines can be driven from analog pulses or gate signals. Even pedals, breath controllers, drum pads, or analog synthesizer control voltages can be interfaced to any MIDI synthesizer to control velocity, pitch bend, modulation amount, release, portamento (on Yamaha DX synthesizers), or program select. The DIGI-ATOM 4800 is 1 $\frac{3}{4}$ -in. high and is built into a standard EIA 19-inch case.

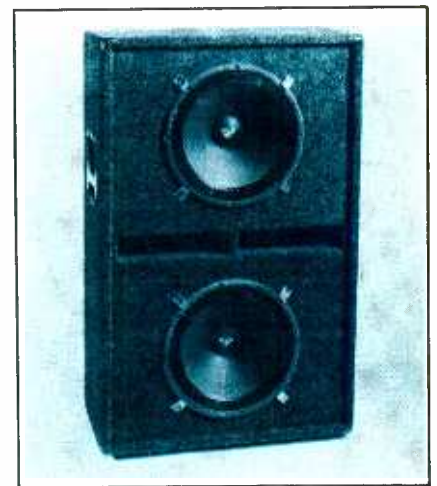
Circle 35 on Reader Service Card

CERWIN VEGA LOW FREQUENCY SPEAKER SYSTEM

The Cerwin Vega B-215 is a low frequency loudspeaker system employing twin vertically arrayed 15-inch woofers in a direct radiating vented enclosure tuned maximally flat to 35 Hz. The 15-inch 154EB-cone drivers operate in separate, individually tuned enclosures with closely coupled "siamese" vents for maximum low frequency acoustic output. The 154EB is a high performance loudspeaker featuring a diecast aluminum frame and a two-inch high power voice coil. This specially designed 15-inch driver features a copper clad pole piece that reduces inductance at high frequencies and serves to increase output by more than 50 dB in the 2 to 4 kHz range. The controlled dispersion characteristics of the vertically arrayed 15-inch drivers provide projection equivalent to traditional

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1/4 Notes

MAKING TRACKS

Bonnie Pointer was at **EFX Systems** recording overdubs for her new single produced by **Cleopatra Productions**. **Barry Brenner** engineered... Recent activity at **Kajem Recording** included the mixdown of **Judy Mowatt's** album on **Shaunachie Records** by producer **Skip Drinkwater** and engineer **Mitch Goldfarb**. The album features performances by **Sly Dunbar**, **Robbie Shakespeare**, **Chinna Smith**, **Marcia Griffith**, and **Rita Marley**... **Rob Freeman** (producer of the Go-Go's double platinum album *Beauty and The Beat*), will produce the original soundtrack for the upcoming film *Mugsy's Girls*. In addition Freeman will write and produce the film's score... **Dave Mason** was recently at **Dallas Sound Lab** recording keyboard overdubs for an upcoming album on **Marble Records**. **Jay Pardee** engineered with **Rusty Smith** assisting... At the **Automatt**: **Margie Joseph** was cutting tracks for an upcoming album on **Atlantic Records**. **Narada Michael Walden** served as executive producer, with **Preston Glass** and **Randy Jackson** producing. **Ken Kessie** engineered with **Michael Rosen** assisting. **Holly Near** was in working on a new album with **Leslie Anne Jones** engineering and **Ray Pyle** assisting. **Raul Rekow** was laying down tracks with the **Santana** rhythm section. **Phil Kaffel** engineered and **Maureen Dronney** assisted... **Jem Records** is due to release a new live record of **Elvis Presley**. The album contains five previously unreleased live performances of Elvis recorded in 1955-56 at the Louisiana Hayride. The album has been pressed from the original mono master tapes by **Greg Calbi**... Independent label **Compleat Records** has released a double album of the **Kinks**. The 20 song album is divided between well-known hits and lesser-known songs... **Passport Records** has issued a live two lp set of the **Everly Brothers'** reunion concert recorded at **London's Royal Albert Hall**. The concert was recorded on 24 tracks and then mixed down into digital stereo sound... Recent activity at **Bee Jay Recording Studios** included **Danny Joe Brown** of **Molly Hatchet** doing vocal overdubs with **Andy de Ganahl** at the board... **Chris Blackwell** founder of **Island Records** has signed **Andy Fraser** (formerly of the band *Free*) to the Island label. Fraser's first solo album is titled *Branded*, and was produced by **Hugh Padgham**. Other activity at Island includes the release of three new mini-lps by **The Waterboys**, **Jah Wobble/The Edge/Holger Czukay**, and **Paul Haig**...

ON THE ROAD

John Cougar will embark on a 30 city American tour this spring to back his recent album *Uh-Huh*. He plans on visiting small towns and major cities, where he will only perform in small concert halls... **Adam Ant** has begun his three month American tour in support of his latest Epic album, *Strip*... Members of **Kansas**, **Cheap Trick**, **Survivor**, **Pablo Cruise**, **Le Roux** and ex **Doobie Patrick Simmons** are joining forces for an overseas USO tour. They are scheduled to perform 12 concerts for Americans in all branches of the service... On the Video Scene: **38 Special** took time off from their national tour to shoot their latest video to accompany the release of the second single from their current album. The video was directed by **Gary Weiss**... At **Sound Emporium Studios** in Nashville, **Johnny Hallyday** teamed up with **Carl Perkins** and the **Stray Cats** for a videotaping for French television. Songs from this and several other video tapings will be combined with other recordings made at Sound Emporium in an album to be released in Franch by **Polygram**. **Pierre Billon** produced the recordings, with **Charlie Tallent** engineering and **Cathy Potts** assisting...

MISCELLANY

The **Experimental Music Studio** at the **Massachusetts Institute of Technology** will offer an extensive summer session of courses in computer music. The summer session, from June 18 to July 27, consists of two workshops focusing on digital audio techniques and composition. The first course, *Techniques of Digital Audio Processing*, runs from June 18-29. The second, *Workshop in Computer Music Composition*, runs from July 2-27. For application information, contact, Director of Summer Session, Room E-356, Massachusetts Institute of Technology, Cambridge, MA 02139...

& MUSIC...



POPULAR

CAROLE KING: *Speeding Time*. [Lou Adler, producer; Paul Brown, engineer; recorded at Warner Bros./Amigo Studio.] Atlantic 7-80118.

Performance: **Coming Around**
Recording: **Good**

There is a lot of encouraging news here. King has reunited with Lou Adler, the producer of her excellent string of albums in the early Seventies; she is playing again with members of her old studio band; and she's writing full-time again with Gerry Goffin, her best lyricist. The album doesn't retread the past, however. Instead, the old faces have brought out King's freshest, most vital music since she parted from them several years ago.

There is a pronounced shift in the production style of this album. The sound is heavier, denser than the usual homey King album—she experiments with synthesizers throughout, and on several of the cuts they replace her piano as lead instrument. Along with the musical change comes a new lyrical awareness, one that, ironically, focuses on maintaining values in the face of sweeping technology and age. Conceptually, the album sounds like a cross between Neil Young's *Trans* and Steve Winwood's *Arc Of A Diver*.

The change works because of an overall toughened attitude, an attitude that seems to have rejuvenated her melodies and vocals. "Standin' On The Borderline," for example, has all the bounce of King's Brill Building work, yet a synthesizer riff gives it a sharp edge. "Crying In The

Rain," a song King wrote in 1962 for the Everly Brothers, is transformed by a melodic synthesizer motif that trades off with Plas Johnson's furious tenor sax solo, bringing together the old and new schools of King's music. The balance between the two instruments is perfect, as the mix captures the fullness of both. King's vocal begins resigned and boils over by the end, without the deadpan rasp she's been prone to lately.

Even "So Ready For Love," a basic love song (King's best milieu), sounds more mature; cautious optimism has replaced the usual cheery, benign sentiments. The song is one of the few on this album to emphasize piano. Her four-note riff lingers at a brooding pace, while the revelation in her voice—which conveys equal parts hurt and hope—unfolds just as slowly, so that even a line like "There's a new moon tonight" sounds convincing.

The recording doesn't break new ground but remains consistently clean throughout—from the thud of the first bass notes on "Chalice Borealis" to the orchestral crescendo of "Alabaster Lady" to the inspired drumming throughout of Russ Kunkel. Only once, on "Dancin'," does the sound quality become murky. The bass, horns and King's vocals lack conviction, partly because of the lazy arrangement and partly because the mix is too low. By the time Lee Ritenour's charged guitar solo comes in at the end it's far too late to fulfill the song's dance floor potential.

Speeding Time probably still isn't the commercial album King would like to make; it should have come out three or four years ago, because by

this time she has fallen so far out of favor with radio programmers that it seems unlikely many will give it a chance. But at least King finally confronts the problems she and several of her contemporaries (James Taylor, Carly Simon, Joni Mitchell, Paul Simon et al.) have faced trying to reach the massive audiences they once commanded. Adler has taken her in the right direction, rescuing her from her late-Seventies bathos, giving her the support she needs, and making sure she records only quality songs again. This new stage of her music suggests that the age of speeding time hasn't yet passed Carole King by.

rob hoerburger

JOHN LENNON AND YOKO ONO:

***Milk And Honey*.** [Produced by John Lennon and Yoko Ono; Jon Smith and Michael Barbiero, chief engineers; Michael Barbiero and Steve Thompson (disco mix), remix engineers; Michael Barbiero and Paul Stubblebine, editing engineers; Alec Head, Ollie Cotton, John Davenport, Scott James, Fin Hunt, assistant engineers; Greg Calbi, mastering engineer, recorded at Hit Factory, NY; A and R Studios, NY; The Automatt, San Francisco, Sterling Sound, NY.] Polydor 817 160-1.

Performance: **Warm, present**
Recording: **Lucid enough**

It's a little hard to be objective about this record. All these love songs, the touching liner notes, and the couple splayed au naturel across the inner jacket only serve to accentuate the absence whose circumstances

have become an unsettling social symbol.

Along with a score of back-up musicians, Lennon and Ono's "heart play," when one has stopped down the emotion, adequately presents the two artists in a one-for-one forum of twelve songs. Far from being an "ex-Beatle plus wife-as-appendage" work, *Milk and Honey* presents Ono's songs without special fanfare or crutches. The composers' alternating order of songs does not provide a tennis tournament for the listener's attention. There is a continuity here, in the way the percussion crisply filters up in almost all the songs, in the non-competing layers of rhythm guitar, and in the loads of vocal reverb that never give up.

Two distinct song stylists, however, are at work. Ono's songs are the more experimental. Indelibly stamped with her unique vocal warble, they broach romantic themes from eccentric points of view, like the visualization of the lovers as famous pairs in "You're The One." Using synthesizers and an array of creative vocal gestures, an oriental flavor is consistently apparent in Ono's work. It is most attractively applied in "Don't Be Scared," a reggae-based song with Japanese-sounding background vocals that bow in and out of the arrangement.

Lennon's songs, on the other hand, are pure rock'n'roll. Content to revert to his blues-infused roots, Lennon's songs often touch on love from a mundane perspective that signifies a leap from a rock star pedestal (if it was ever occupied).

It is questionable whether Lennon's vocals on *Milk And Honey* were actually meant for the final mix. Often delivering cues to the band, or covering lines half-heartedly, these could indeed be rough drafts. Nevertheless, the conversational, light-hearted tone adds a warm, if unintended, touch.

Two "home recordings" are found on the album; the most remarkable is Lennon's "Grow Old With Me." Like some futuristic music box, the tinkly melody plays in time with a rhythm machine to support the endearing vocal.

Unusually coherent for a work featuring two artists with different hemispheres of influence, what is surprising about this album is that it features no duets or coauthored compositions. Perhaps Lennon's earth and Ono's sky were never meant to publicly touch.

susan borey

The Collective Joy of Jazz: The Duke and The Saints

nat hentoff

There was a lot of spontaneity in Duke Ellington's studio sessions because he did not believe a piece was ever finished, and so he and the members of the band kept making changes until it was time to pack up. Nonetheless, for sheer vibrant excitement, no experience of Ellington quite equalled hearing the band at a dance. Getting immediate, continuous reaction from people who were listening through their feet kept the players, especially Duke, eager to keep the mutually satisfying groove flowing deep.

Just such an Ellington night has been made available for the first time by Bob Thiele on his Doctor Jazz label (distributed by CBS Records). The title is *Duke Ellington/All Star Road Band*; the place was Carrolltown, Pennsylvania, a small agricultural center in the Alleghenies; and the year was 1957. Among the larger-than-life improvisers in the band at the time were Johnny Hodges, Ray Nance, Paul Gonsalves, and Harold "Shorty" Baker. And among the nonpareil Ellington originals that took on new dimensions while the dancers also improvised were "Diminuendo and Crescendo in Blue," and "Mood Indigo."

The recorded sound is very immediate; it's like being on the dance floor. And the crisp zest of the band, collectively and during the solo flights, is precisely captured. For this writer, who spent some of the most significant hours of his youth at Ellington dances, it is an unexpected delight to have memories turn into actual sound. For any jazz listener, this is a vital part of the Ellington canon.

The Ellington orchestras were true ensembles, the solos being integrated elements of the total textures Ellington so subtly scored. Also true ensembles were the vintage New Orleans jazz bands, with the soloists being so inter-

twined with the whole combo that there was never any space for self-serving, virtuosic showboating. And much of the enduring pleasure of the few of these bands that are left still comes from the collective exhilaration of the players.

To directly experience the strutting blues-laced, singing horns of New Orleans, there is no better route these days than the one leading to Preservation Hall in New Orleans and the Preservation Hall Jazz Band. Its third volume on CBS Records, *When The Saints Go Marchin' In*, is so exuberant that the band makes even the exceedingly well-worn title tune sound astonishingly fresh.

The players, most of them spry elders of the New Orleans scene, include clarinetist Willie Humphrey, pianist James Miller, and trumpeter Percy Humphrey. There is no sound quite as joyous as that of a traditional New Orleans band—the pungent clarinet, the crackling trumpet, the boisterous slide trombone, and the marching-band rhythm section that makes you want to turn a cartwheel onto the street and lead the parade.

Engineering is first-class, focusing on the dynamism of the whole—the gestalt—but by no means neglecting the hearty soloists.

DUKE ELLINGTON: *All Star Band*. [Bob Thiele, producer; Jack Towers, engineer.] DOCTOR JAZZ W2X39137.

PRESERVATION HALL JAZZ BAND: *When The Saints Go Marching In*. [Allan Jaffe, producer; Skip Godwin, engineer.] CBS Records FM 38650.

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