

Directory:  
Tape/Tape Recorders

# MODERN RECORDING & MUSIC

DECEMBER 1985 VOL. 11 NO. 12  
\$2.25

## HEART



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CONSTRUCTION PROJECT:  
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# MODERN RECORDING & MUSIC

DECEMBER 1985  
VOL. 11 NO. 12

## FEATURES

### 12 NEW MUSIC SEMINAR SIX: THE INDUSTRY UNITES

by Rita Wolcott

The sixth annual New Music Seminar ran from September 25-28 drawing a record assortment of eclectic industry personnel.

### 16 JAN HAMMER: FREEDOM WITH A VICE

by Bob Grossweiner

Jan Hammer is perhaps most well known for his scoring of the television series *Miami Vice*, a monumental task considering that he has less than a week per episode and comes up with over twenty minutes of music for each program.

### 28 DUPLEXITY IN THE HEART OF ROCK

by Sammy Caine

Part of the reason for Heart's recent success could be the strength of the new and diverse material on their new LP. At the time of printing the album, *Heart* has given them two Top 20 hits with "What About Love" and "Never."

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### 47 BRUCE JACKSON: MIXING IN THE USA

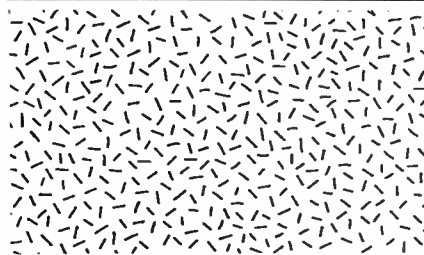
by Susan Borey

Bruce Jackson has been working with Bruce Springsteen since 1978. This year he went out with the largest traveling sound system ever assembled.

### 52 THE LATIN RASCALS: A SPLICE OF LIFE

by Havelock Nelson

Looking for the perfect beat, the Latin Rascals have re-invented the studio approach of joining pieces of tape together, along the way becoming in-demand members of a funk mob.



Cover photo by Rebecca Blake

Spread photo by Steve Rapport

## SOUND IDEAS

### SOUND ADVICE

by Susan Borey

Susan Borey talks with NY based audio engineer Danny Kapilian who acted as concert director for live showcases sponsored by September's New Music Seminar.

### AD VENTURES

by Brian Battles

Need some tips on how to make the mechanics of writing advertising jingles a bit easier? Brian promises to help you out.

### CONSTRUCTION PROJECT: LED BAR GRAPH METER

by Jon Gaines

Jon describes the construction of a 12-segment LED meter in this first of a series of articles on "electronic building blocks."

### POOR RECORDER'S ALMANAC

by Bob Buontempo

Bob goes in for Round Two with snare drum recording.

### TAX COLUMN

by Mark E. Battersby

This month *MR&M* is featuring a brand new column to take care of all of your taxing needs, kicking it off with a look at how a recording studio may be helpful to your tax bill.

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### **Recorder Request**

You have a great magazine with many good informative articles for one who likes to know how the pros approach and solve some of the many recording problems. But will there ever be an article on the head of the recording chain, the tape recorder?

— William G. Hughes  
Cleveland Hts, OH

*Thank you for your kind words. We're planning many features revolving around the tape recorder. In fact, in this issue, we're featuring a directory of tape recorder manufacturers, with all the pertinent specs. And you can also check our last issue for a test of the Fostex B-16...*

*Gene Kalbacher and the editors of Modern Recording & Music would like to thank Dennis Amrhein for his invaluable help in providing archive information used in preparing the Beach Boys feature in the October issue.*

### **More Sound Advice**

I enjoyed your "Sound Advice" column in the September issue of *MR&M* as I have been doing that for ten years. I feel that Danny Kapilian would have less problems, ie., blown speakers, diaphragms, etc., if he would follow the correct turn-on procedure, ie., mixer, outboard gear, etc., then power amps last. By leaving amps for last, it allows all the power transients to subside, therefore causing less problems. I hope this may help.

— Andrew Byrd  
Sound On Sight  
Beaumont, TX

*Thanks for the sound advice, Andrew. We'll forward your suggestion on to Danny.*

### **Cassette Request**

*We received the following letter directed to Bob Buontempo.*

The column on backwards hand erasing in the September issue of *MR&M* was excellent. I'm writing to request a cassette version. There are simply too many cassette multitrackers out there for you *not* to do it.

— Rob Cook  
Mt. Pleasant, Michigan

*Thank you for the letter. We'll pass the kind words on to Bob. Since soundsheets are not feasible right now for *MR&M*, we will be making cassettes available at a nominal charge. Stay tuned for more info...*

# Talk Backs

## Bouncing Tracks

We received this question for Bob Buontempo:

I'm a practicing songwriter and I have a problem I thought you might be able to help me with.

In your "Poor Recorder's Almanac" article (July '85 issue), which I must say I found very exciting, you mentioned that with a 4-track recorder similar to a Porta-Studio it was possible to bounce three tracks onto the fourth track *plus* play a "live" part simultaneously, making a single first "bounce" having a total of four parts or tracks (onto one track).

My problem is that I own a Fostex X-15 Multi-tracker and I cannot seem to bounce the live fourth part on this machine. The maximum I've been able to bounce at one time is three tracks down to one track.

Internally, the machine won't accept the live fourth part since the remix position for internal bouncing cuts off my mic/line inputs.

I do understand that you didn't specify an X-15 recorder in your article but your ideas mentioned forced me to write to try and find an answer to the problem, using an X-15.

I tried one other way to do the job, and here is where I wonder if there would be some possibilities. I took the individual track outputs from the X-15, that is, tracks 1, 2, & 3, and fed them directly into the mic input of track 4; using a splitter or two, I also fed in the fourth live part. As it turned out the fourth live part was somehow cancelled out and only the three parts would feed into the machine. Is there some way around this cancelled out effect; by impedance matching or possibly something else?

Any help you may give would be appreciated Bob, and at any rate, let me commend you on a fine article. I'm looking forward to more.

—Lane Schreck  
Pittsfield, MA

Reply from Mark Cohen of Fostex:

You can add up to two (2) live parts with the X-15 if you use the Fostex MN-50. The MN-50 is a 5 input, 1 output, mixer with a built-in compressor. By using the "tape outs" on the X-15 to three line inputs on the MN-50, you can then add two more signals, and take the output of the MN-50 to one of the "line inputs" of the X-15. This is a great way to add more parts in your submixes and help keep the number of bounces down to a minimum (every time you bounce, you lose some fidelity—on any analog recorder). The fifth input on the MN-50 can be used for line level or microphone. You'll also find the built-in compressor useful for drums, vocal, and bass. The MN-50 can be used with any recorder that has -10 operating levels.

Reply from Bob Buontempo: First, I must commend you on the way you handled the problem at hand. Although you lacked the exact technical information or knowledge, your logic and thought processes were correct, and that's ninety-nine percent of the technique of signal flow or troubleshooting. With a few technical details, you would have had it licked. Again, good going.

Now, as to the reason for your specific problem; the lack of extra input facilities is inherent in the design of the Fostex X-15. It was probably considered a necessary evil to be able to offer such an excellent machine at such a reasonable price.

When you thought of bypassing the mixer section of the machine, taking the direct tape outs, and combining them along with another "live" signal

to feed the input of the X-15, you were exactly right. The only problem was in your choice of hardware to perform this function.

When you use the term "splitter," I assume you mean a "Y" cord or a similar device. The problem here is the lack of compatibility of the various signals. For instance, if you took three line outs from the Fostex, and tried to combine them with the signal from a mic or direct electric guitar, your live signal wouldn't be "cancelled out," but be overwhelmed by the gain of the line outs from the Fostex, as well as encountering some impedance mismatch. Although, assuming all is high impedance, it would not be as great as the level differences.

The solution, therefore, is not to "split" each signal, but send them all into another mixer capable of accepting either line and/or mic signals, blending them to your taste by monitoring the output of the mixer, and sending that output to the input of the Fostex.

Fortunately, Fostex foresaw your problem, and came out with a 5-input/1-output mixer that will solve your problems. It even has a compressor built into it!

Designated as the model MN-50, it has four line level inputs (to accept up to the four signals from the X-15, or any other machine), and one more input that will accept either a mic level signal, a line level signal, or an attenuated line level signal (for a device that has more gain than an X-15 i.e., high output [+4 dB synth]).

This all goes into one output that has adjustable compression. The more output, the more compression.

So you could thereby feed the outputs of tracks 1, 2, and 3 to the MN-50, another synth to line input four, and switch input five to the "mic" position, and sing and play synth along previously recorded tracks 1, 2, and 3 of the Fostex, while all being recorded onto track 4!!

Best of all, the unit lists for well under \$100.

For those of you wanting to get fancier by using submixers, check out Craig Anderton's book, *Electronic Projects for Musicians*. It contains a lot of useful projects including a 8 x 1 mixer.

And keep an eye out for my book, tentatively entitled *Guide to Portable Studio Recording*, due out in early 1986!

## SMPTTE Inquiry

I have a Tascam 80-8 with dbx. Can I link an 80-8 with a Fostex 16-track 1/2-in. tape machine using a SMPTTE time code computer system? If so, how does this system manage to keep the two machines running at exactly the same speed? Does a tape machine have to have any special modifications to be compatible with the SMPTTE time code system?

—Les Nifort  
North Star Recording  
Nova Scotia, Canada

Reply from Mark Cohen at Fostex:

The Tascam 80-8 and the Fostex B-16 can be sync'ed or locked together using any of the SMPTTE time code based synchronizers on the market (Shadow, Q-Lock, Adams-Smith, Lynx, SMPL Lock, etc). Because of the older transport control design of the Tascam, you'll have to use the Tascam as the master machine and the Fostex as the slave. (The 80-8 transport can't be controlled by a synchronizer.) The newer Tascam models (58 and 48) can be used as either a master or a slave.

Remember that you'll have to stripe SMPTTE code on one track of each recorder. We suggest recording SMPTTE on the B-16 with the Dolby C noise reduction on. Other noise reduction systems may need to be defeated when recording SMPTTE (experiment with your system to find the best results). You should check out the new Fostex 4030 (\$1,500), if you want the most flexible, bonzo-proof, and cost-effective synchronizer available. It will also work with other manufacturer's recorders. Good luck!

put into two channels of the main board, which would, of course, then be put on two of the eight tracks of tape.

That's not really asking that much except that with the exception of Teac, (almost) everyone else's equipment is rated at +4 instead of -10. Now, of course, if I was loaded I'd get a bigger board, but I'm not loaded and I'm quite happy with the Model 5's simplicity and sound.

So, I thought I would write someone who knows.

Now, as of yet, I haven't tried this mismatched set-up, but I've been told that the +4 into the -10 would be noisy and in your article you have a diagram for padding a +4 3-pin to match into an RCA -10. So my question, of course, is, with the equipment set-up described; do I need to build some kind of pad like you mentioned to go inbetween the two boards? Or, can I buy some kind of 12 dB pad to go between unbalanced RCA connectors? If I did not properly interface them would it damage any of the equipment and/or be excessively noisy? Once again, I've appreciated your articles and would appreciate any help you can give.

—David Bryham  
Austin, Texas

## dB or not dB....Again?

First let me say how much I've enjoyed and learned from your column ("Recording Techniques") over the last few years. Combining your articles with those of the other great writers in *MR&M* indeed equals a wealth of information greatly appreciated.

But, being more of a musician than an engineer, I tend to lose interest in technical specs after so many microbars and microfarads.

I'm addressing this to you because it is in relation to your "dB or Not dB" column in the July '84 issue (also reprinted in the October 1985 issue).

I have a fairly small home studio which I use for my own demos, TEAC 80-8, Model 5 board, Rocktron NR, a lot of outboard gear, etc. To record drums, which I like to do later as opposed to earlier as most people prefer, I've often felt it would be nice to have more inputs on my board or have a smaller sub-board (such as an old 6-channel E-V, Tapco or Biamp) to record the mic'ed drums through, then put that stereo out-







Reply to David Bryham from Bruce Bartlett: I'm glad the articles have been helpful to you.

In this reply, "+4" means "+4 dBm" or "1.23 volts." "-10" means "-10 dBV" or ".316 volt." A +4 dBm level is 12 dB higher in level than a -10 dBV level.

If you connect a +4 output to a -10 input, you run the risk of less headroom (more likelihood of distortion on peaks). That is, the +4 equipment will overload the -10 equipment. If you connect a -10 output to a +4 input, you must set the gain higher on the +4 equipment to obtain a normal operating level, resulting in more noise.

One solution is to turn down the +4 drum mixer by 12 dB, so that you peak at -12 VU on its meters. Another solution is to build the pad shown in the article or have an electronics friend make it for you. As far as I know, such a simple pad is not commercially available, although there are more complex level-matching devices on the market. Good luck!

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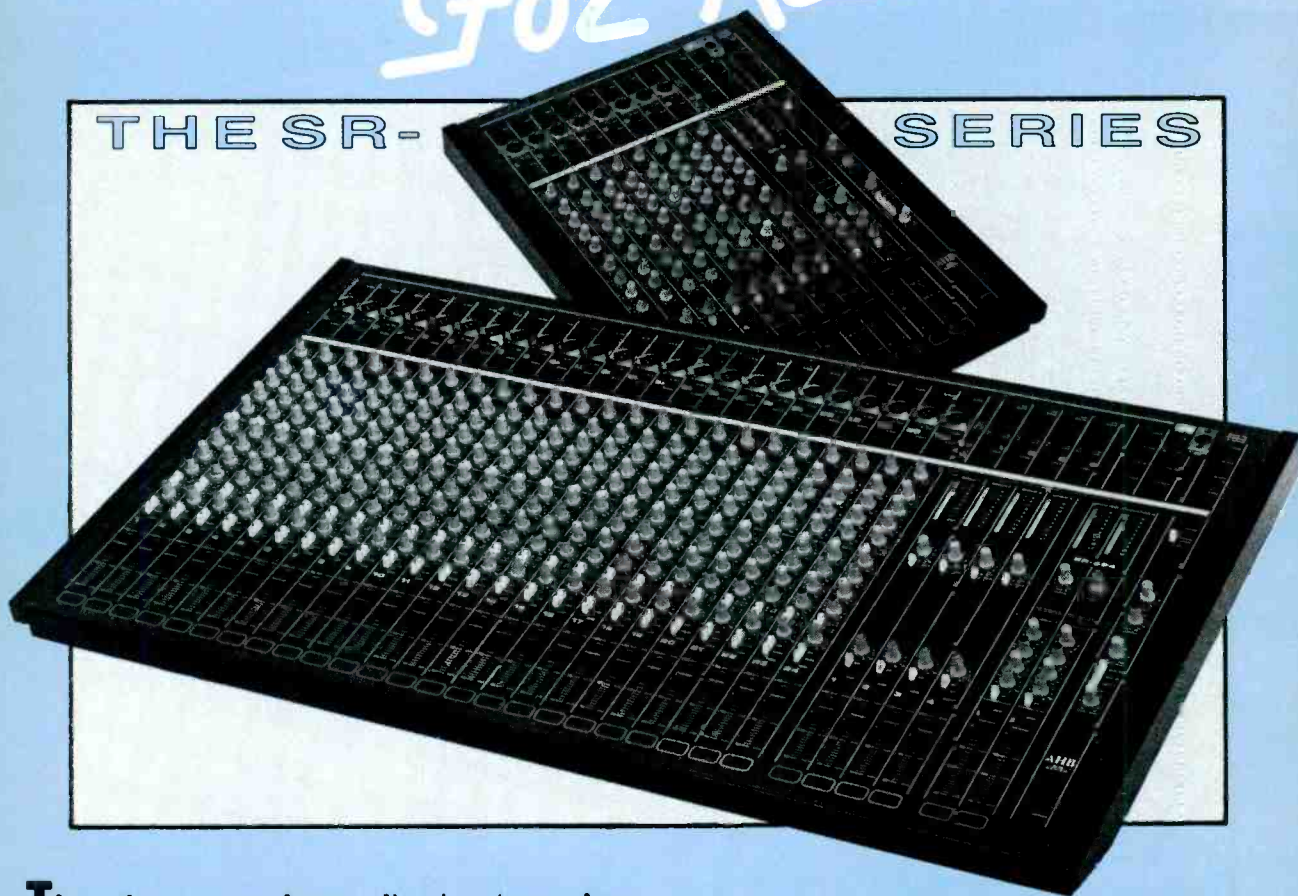
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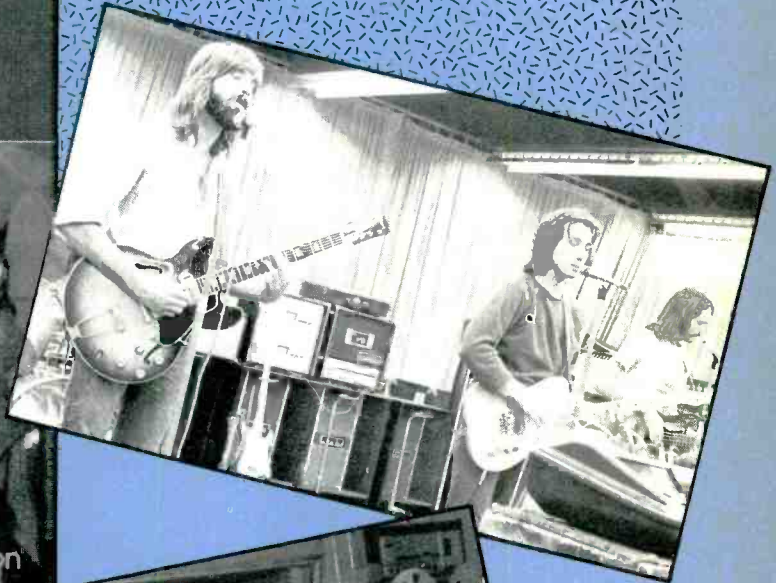
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# Sound Advice

## Live Sound For NMS6

Once again we persuaded Danny Kapilian, New York City-based audio engineer, tour director, and concert producer, to share a recent audio experience. Last September Danny acted as concert director for the live showcases sponsored by the New Music Seminar. He also booked some of the talent for the shows, including Ruben Blades who was the Seminar's uncontested hit. Danny juggled many responsibilities in order to maintain a

smooth running series of shows, and exercised the right combination of diplomacy and daring to insure the success of such a demanding assignment.

**Sound Advice:** Most of the showcases for the New Music Seminar were held at three major clubs in Manhattan: the Palladium, Irving Plaza, and the Ritz. These venues are all quite different in size, shape, and other fea-

tures. Can you briefly describe each one from a sound point of view?

**Danny Kapilian:** The Palladium, for seventy years or more, was the old New York Academy of Music, which later changed its name to Ron Delsener's Palladium. It was a wonderful old 4,000-seat movie house, with two balconies, a great stage, a domed ceiling, and ornate decor. The new owners of the Palladium, under the direction of Ian Schrager and Steve Rubell, the

*Soundcraftsmen* presents...



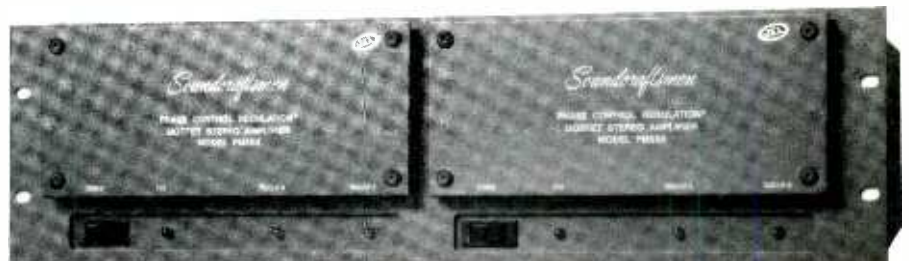
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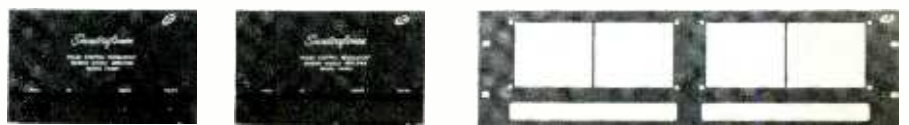
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ex-proprietors of Studio 54, completely gutted the place and built a building within a building. They extended the lower balcony straight across horizontally to the rear of the stage wall, creating a new floor. Below that, where the original stage and orchestra section once were, became a new basement, lobby, and workspace area. The upper balcony was kept intact with several revisions in terms of staircases.

Live music is the great exception there. It's usually a discotheque with state-of-the-art everything. Extraordinary video and disco PA systems. It's the only place in the country with an inhouse Vari-lite system. The Palladium is huge. It has about a 3,600 capacity. I think it's the largest dicotheque in the world.

The Ritz is an old art deco ballroom from the 30s. It was an RCA recording studio after World War II for a while. Jerry Brant, the owner and founder of the great club of the 60s, the Electric Circus, took over the direction of the place and turned it into the Ritz, which opened for rock 'n' roll in 1980. It's probably the number one venue of its size and kind in the country. The Ritz holds a capacity of about 1,600, with a three-sided balcony. They have an extraordinary array of big name talent playing there all the time. There are fine inhouse sound, video, and lighting systems, a giant 40-foot video screen and many monitors, the best house production staff in New York, and one of the worst load-in spots anywhere, unfortunately. You have to bring everything in through the front of the building and up two flights of stairs.

Irving Plaza is similar to the Ritz, but without the flash. It's an old union hall that's actually owned by the Polish War Veterans Association. They have no video, no flashing lights—it's a wonderful old unpretentious place. There is also a small, three-sided balcony, and their capacity is about 800. The stage is smaller than the Ritz', and their booking policy is less mainstream. They're great supporters of the local music scene, as well.

**SA:** What kind of advance work did you have to do?

**DK:** I had to contact the nineteen acts and make lists of all the band members, their production crews of sound people, lighting designers, stage managers, roadies, personal and tour managers, as well as the affiliated record company personnel. I needed to find out what equipment each person required to perform with, how much of

it they were supplying, and how much they intended to rent. I had to work out the logistics for all the rentals, including determining whether the Seminar or the artist would be responsible for the rental fee. Part of my advance work also had to do with personally interfacing with the promoters, theater and club owners, and the staff of the venues regarding all aspects of production.

I also helped out bands. For example, Joe Ely needed someone to act as his stage manager and equipment technician for a couple of nights before the showcase, and I hooked them up with technical personnel from the New York area. I also helped them with transportation, hospitality, and things like that.

I made arrangements with Studio Instrument Rentals for the best instruments and equipment to be reserved in case there were any emergencies. They were a tremendous help in that department, helping us out on the spur of the moment with last minute changes in instrumentation, amps, and things of that nature.

I was in charge of coordinating the load-in, soundcheck, and show schedules at each venue, which didn't work out to be much of a problem. We started preparing for the Seminar two months in advance, and had planned as much time as we needed each day to deal with it. There was a little juggling of people's schedules, but it all worked out all right.

**SA:** Were you determined to have as little equipment as possible onstage in order to speed up set changes?

**DK:** Of course, especially at Irving Plaza.

**SA:** The bands all used the board set-ups at the clubs, including out-board gear?

**DK:** For the most part. The only band whose demands for extra gear that I acceded to was Midnight Oil. I let them bring in a 40-channel mixer, because the house board at the Ritz, with 24 channels, wasn't enough to accommodate what the band really needed.

**SA:** How did they use 40 channels?

**DK:** I think they ran their guitar amps all in stereo, mic and DI on the bass, and a lot of drum mics. The drum sound for Midnight Oil was sensational—crisp and clean, no caffeine.

**SA:** Let's go through the shows one by one and examine your procedure and any problems which other people in your position might have to deal with.

**DK:** The first night featured King, an English sort of U2 meets Duran Duran kind of band, at the Palladium. We couldn't really use the house system, which is a disco PA system, whose physical positioning does not lend itself to a live concert situation. The speakers surround the circular dance floor, unlike PA stacks.

We brought in our own Meyer sound system with Gamble boards, preceded by Ultrasound, the Grateful Dead's sound company. There was no stage there either, so we had to bring one in and set it up using the staff of the venue. They also loaded in the musical equipment, which included the 40-input board, the PA, and the monitor system, an 8-mix Gamble board through a Meyer monitor system.

These Gamble monitor boards are each built by hand and have built-in graphic and parametric equalization. They're really an amazing product. Coupled with the Meyer monitors, they did away with the need for external processing units, since the Meyer processing units have built-in compression and automatic cross-over networks. It caught King's monitor mixer by surprise, but he had nothing but praise for it after he had to use it. That night, by the way, the Palladium drew the biggest crowd in their history, with over 10,000 people passing through the doors.

The next night was Indoor Life, Ruben Blades, and the Philip Glass Ensemble at the Ritz. We brought over the 8-mix Meyer monitor system, which impressed the Ritz so much that they might go out and buy one.

Indoor Life was pretty basic, but several things could be said about Ruben Blades. Their sound engineer at first insisted on a Yamaha CP70 piano. The Ritz has an acoustic baby grand, a Yamaha, and I asked the engineer if he wouldn't rather use that. He said that he would use it only if I could get C-ducers, which are tape mics. (See Sound Advice, June '85 for an indepth report on C-ducers.) I called Ultrasound, and it turned out that they didn't have any, but they went out and bought them for me. Ruben's soundman, Mark Ferron, got an incredible sound out of that piano, and out of the band as a whole.

As a matter of fact, Ruben stole the show and drew a crush of broadcast media at the last minute. This threw a real curve to me. An hour before Ruben was supposed to go on, I was introduced to, and had to accommodate camera positions and live audio feeds

for Cable News Network, MTV, Sygma Television, CBS' 60 Minutes, and an Austrian TV network. They wanted to tape the performance and do live interviews in the dressing room. I was a little ticked off by the lack of communication between myself and these people, because it would have been easy for all of them to get in touch with me before the show. Instead, I had to take care of all their technical needs with a house full of people, running cables and all that. It held up Ruben's show for a little while.

**SA:** Where did you place the video cameras?

**DK:** On the floor, directly in front of the lip of the stage. It didn't interfere in any way whatsoever. As it turned out, the tie-in for the live sound feed to the board was a lot easier than I expected because the Ritz had been prepared for things of that nature by running sends from the board to the stage cable connectors. They all just took a mono feed directly out of the board.

The Philip Glass Ensemble, was on next, and was the only act at the Ritz that didn't use the Ultrasound monitor system. They had their own monitor system that was part of their whole set-up, and was, in fact, such an integral part of their show that their monitor mixer sat onstage in the position a lead vocalist would normally take. He mixed like a conductor, with the eight musicians of the Ensemble around him.

A segment of the Philip Glass Ensemble set was accompanied by video excerpts of the film *Koyaanisquatsi*, which Philip Glass scored. They were broadcast over the Ritz's video system, on all the video monitors around the club. The monitor mixer had a video monitor onstage so that he could see what was being broadcast and keep the musicians in sync with the video tape. The Ensemble consisted of synthesizers and woodwinds.

The next night at Irving Plaza, it was all inhouse sound and lights. That show was headlined by Joe Ely, the Texan master of balls to the wall rock 'n' roll. He had, as a special guest, Bobby Keyes, the Rolling Stones' sax player, which was great. Things were cramped onstage, but everything sounded good.

The next night was 10,000 Maniacs, Shriekback, and Midnight Oil at the Ritz. There was a late show at Irving Plaza that same night with Certain General, Red Lorry Yellow Lorry, and

Love and Rockets, and I was able to coordinate things by running back and forth—the clubs are only a few blocks away from each other. The first band at Irving Plaza went on when the last band at the Ritz went on, and as I emceed all the shows, I could announce a reminder to the audience that if anyone was up to it, they could run over to Irving Plaza and catch the balance of that show. When Midnight Oil got off the stage, the crowd started to pour over to Irving Plaza, so when Love and Rockets finally hit the stage at 3:15 am,

the place was packed to the gills.

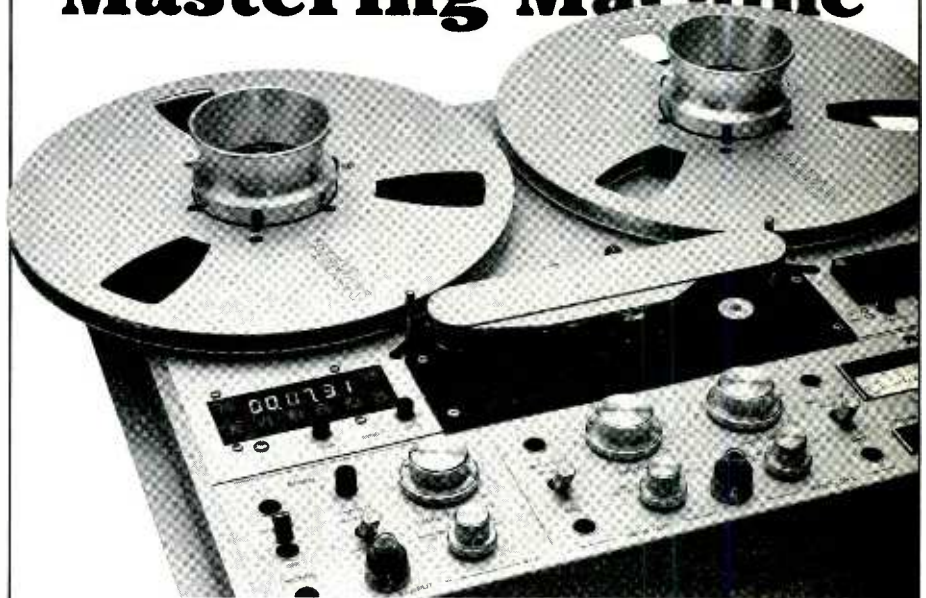
**SA:** The Friday night show took place during the day that Hurricane Gloria visited New York City. Did she make any trouble for you?

**DK:** At first I was afraid of the projected severity of the hurricane and how bad the damage might be. I almost thought it was going to cancel the whole show that night. But, as a matter of fact, everything ran beautifully on schedule. Everybody arrived on time, and we drew a good crowd, hurricane or not.



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NMS 6 has been deemed the music industry's largest annual convention. This year major record labels distributed tapes of new artists, television crews came from as far away as Japan to catch the panels in action, and radio stations and magazines were heavily represented.

While the seminar was previously myopically focused upon a distinct goal—breaking into the industry—there were two definite highlights of NMS 6.

Nineteen-eighty-five's spirit of political activism guided the first issue to rear its head. Recent social and political action directed towards relief funds from the music community, prompted keynote speaker Dick Griffey (chairman of Solar Records and president of



Dick Griffey delivering his keynote address.

Photo by Roz Levin

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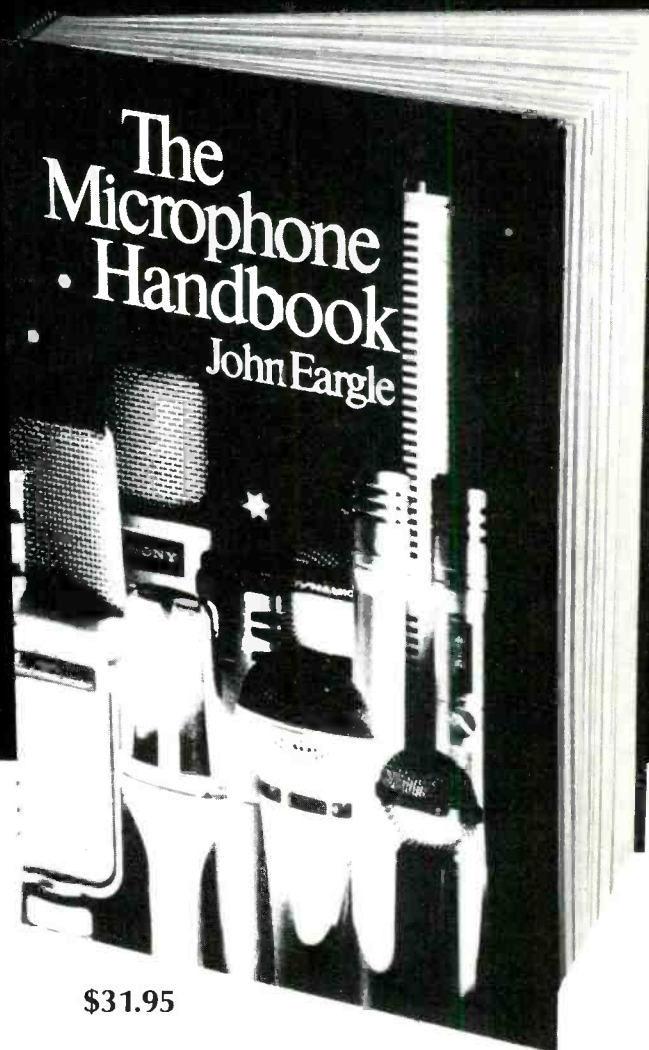
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the Black Musician's Association) to give attention to the raging issue of apartheid. Griffey urged the recording industry to "act as a communicator" on the issue of South African Apartheid. He stressed, "Most people don't know what institutionalized racism is. Our responsibility is to make them aware."

Griffey also proposed a cultural boycott of South Africa; the organization of a radio and TV program (ie., Live Aid or Farm Aid); and the donation of all profits accrued in the country to anti-apartheid organizations.

He added, "We should not pull our record companies out of South Africa, but we *shouldn't* make a profit." He also suggested that artists boycott the country. "We need to let Tina Turner, Rod Stewart, George Benson, Frank Sinatra, and others know that we disagree with them," he stated, citing those who have performed there.

A rough cut of "Sun City" made its debut during the apartheid panel. The single was written by Miami Steve Van Zandt and features such artists as Miles Davis, Bruce Springsteen, Herbie Hancock, and Jackson Browne. Of course, all royalties are directed to the anti-apartheid group, Africa Fund.

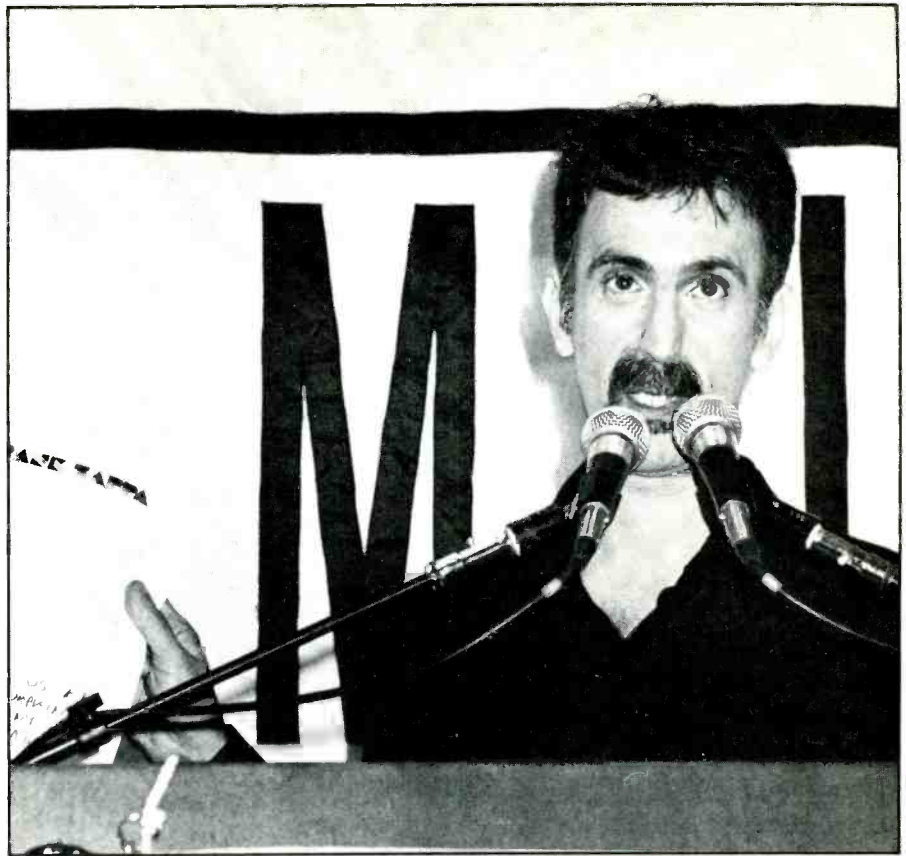


Photo by Roz Levin

Frank Zappa delivering his keynote address.

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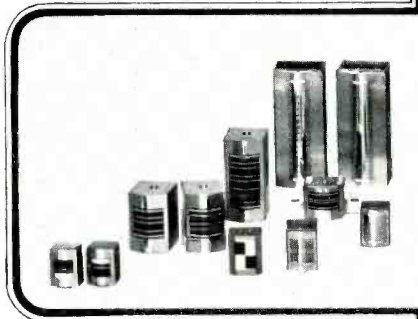
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Record censorship was the other major issue studied at NMS 6. Frank Zappa, the second keynote speaker (who addressed the Senate Commerce Committee on September 19th), urged that individual attention be given to the proposed album censorship.

Zappa urged that those concerned "not organize" against the PMRC. Instead, he advocated individual letters and telephone calls to elected officials and bureaus like the FCC which have been hearing from the PMRC. "Just remember," he said, "they've gotten this far just by writing letters and making phone calls."

Zappa also introduced a service by which people can obtain a printed information package simply by dialing (818) PUMPKIN. He finished up by warning that it's important to "oppose the wives of Big Brother and their dangerous program by writing to the addresses (provided) with *your* entertainment preferences."

Although no representatives from the PMRC were present, the seminar's censorship panel proved to be enlightening. Moderator (record company executive) Bruce Harris accused the PMRC of "launching a fascist assault on rock music." Panelists included journalist Dave Marsh, Scot Muni

MODERN RECORDING & MUSIC





Producer panel in progress.

(WNEW FM, New York deejay), and record executive Barry Goldberg among others. Goldberg said that the PMRC wanted to "curb freedom of speech under the guise of protecting children."

Marsh fiercely criticized another panelist, Stanley Gortikov (president of the Recording Industry Association of America), for his suggestion to have the industry police itself and not release those recordings that they judge indecent. Marsh openly pointed a finger, "That's a call for a blacklist...and it's coming from him."

Other panels featured were: Publicity and Talent Booking, Music Video Promotion, Band Management, Corporate Sponsorship, Pop Programming, A Recording Deal Workshop, etc. The Producer panel might be of noted interest *here*. It featured Bob Clearmountain, Jellybean Benitez, Arif Mardin, Jimmy Iovine, and Steve Thompson among others.

NMS 6 drew to a close with an artist panel that featured Yoko Ono, Debbie Harry, Marianne Faithfull, Adam Clayton (U2), Suzanne Vega, and Herbie Hancock to name a few.

NMS 7 is scheduled for July 13-16, 1986, and will be held once again at the Marriott Marquis Hotel in New York.

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# JAN HAMMER

## FREEDOM WITH A VICE



Photo courtesy of Elliot Segev Management

**A**lthough Jan Hammer was an original member of the Mahavishnu Orchestra, has recorded duet albums with Jeff Beck and Neal Schon, and has recorded six solo albums, he is perhaps most well known for his scoring of the television series *Miami Vice*. He scores all of the instrumental music each week, a monumental task considering that he has to work extremely fast—less than a week per episode—and comes up with over twenty minutes of music for each program. Hammer is also featured on the *Miami Vice* soundtrack album along with Phil Collins, Glen Frey, Chaka Khan, Grandmaster Melle Mel, and Tina Turner, (although MCA Records almost dropped him from the LP in favor of more vocal oriented music).

Hammer has a free hand to compose any type of music he feels is appropriate for the program. He has recorded swamp, Southeast Asian, Afro-Cuban, R&B, funk, heavy metal, slight country, and some jazz flavored music, for the most varied musical soundtrack to any television program (probably in the history of the medium).

"Through a picture," says the thirty-seven year old Czechoslovakian keyboardist, "music can establish thematic connections and make the story line flow. At best, it can bring about the total expression of an emotion, mood or feeling that can sometimes only be implied by the actor, director or cinematographer working without music. When images, story, and music are perfectly in tune, a film becomes the highest form of magic."

"I sometimes have a problem with action scenes," he reveals. "There are always tires screeching and gun shots. Music can convey so much about the action, but it tends to fight with sound effects. I particularly like to musically underscore heart-to-heart talks. There I usually approach the music in an operatic or melodramatic way. And the music can carry through several scenes. For me, that's the highest form of what I do and that's *totally* up to me."

Hammer usually plays off of songs by well known people. If it is a Phil Collins song, then Hammer is in seventh heaven. "If the song is a distinctive one like Phil Collins' 'I Don't Care Anymore,'" he mentions, "then it inspires me and the rest of the musical score has that flavor. In some cases, the score ends and the song begins."

"To me," Hammer says, "the music is an actor, the third co-star. Music finishes acting. With acting, you're only half-way there. Well, not always. There are some things that work, but there are certain scenes that wouldn't have the same impact, the same emotional gesture, if it weren't for the music. The music can make a person think, 'Boy, this guy is an actor.' And without words, the music can complete the total statement."

While viewing a cassette of an episode, Hammer takes notes using code words like "dreamy," "doom," "bad news," "trouble," and "got away." He plans out his score in advance before writing a note so as to estimate the amount of work needed for the episode. While each episode is about fifty minutes long, Hammer provides between fifteen and twenty-two minutes of original music for each show.

Ever since coming to the US in the early 70s, Hammer has made a musical impact, first with the Mahavishnu Orchestra, then with his solo albums (*Jan Hammer*, *The Jan Hammer Group*, and *Hammer*), and with Jeff Beck, Neal Schon, Al DiMeola, Stanley Clarke, Carlos Santana, John Aber-

crombie, Tommy Bolin, Roy Buchanan, Elvin Jones, and Mick Jagger. In the 80s, Hammer has produced and scored soundtrack music to various films in addition to *Miami Vice*.

Hammer works in his home studio, Red Gate Studios in Holmes (actually Kent), New York. With all the work he does each week on *Miami Vice*, he has isolated himself a bit from outside projects. Two years ago, he started producing Styx's James Young for a solo which has not yet been released.

As a keyboardist/synthesist, Hammer has an affinity for working with strong guitarists. In fact, Neal Schon recently said that his two albums with Hammer freed him of Journey's identity and actually let him explore guitar playing again. It's no wonder that many "guitar heroes" have called upon Hammer as both a sessionist and equal collaborator.

**Modern Recording & Music:** How did you get involved with scoring *Miami Vice*?

**Jan Hammer:** It was the right combination of people getting together at the right time. Michael Mann wanted to do something unusual with some unique ideas. We hit it off. The whole show from the ground up is different from a run-of-the-mill tele-

vision show. Michael liked my sketches on tape, which fit his framework.

**MR&M:** You had the sketches on tape before you met him?

**JH:** Obviously. I do continuous recording so that if I'm not working on a particular project, there are demos and sketches of new tunes. The show was not even cast then. This was very early in pre-production. All I knew was that the show was going to be a cop show but different looking, a very atmospheric, artsy looking show. Some of the sketches I initially played for Michael wound up in the show.

**MR&M:** Had you done any scoring for TV shows or movies before *Miami Vice*?

**JH:** Yes. Two films, *Night in Heaven* and *Gimme An F...*, which still has not been released.

**MR&M:** Is there any difference in scoring a film versus a television show?

**JH:** It all depends upon the attitudes of the people I'm involved with. It depends upon the amount of freedom that they give me. It depends on how much they fancy themselves as composers as well. There are certain producers and directors who think they can do the music, but don't have the time. They hire a composer and look

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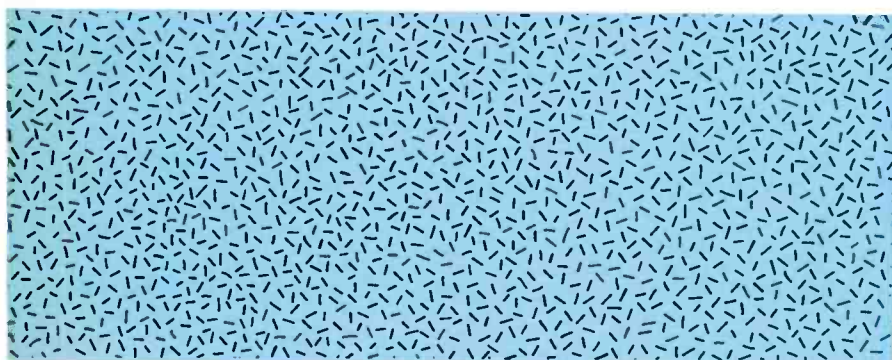
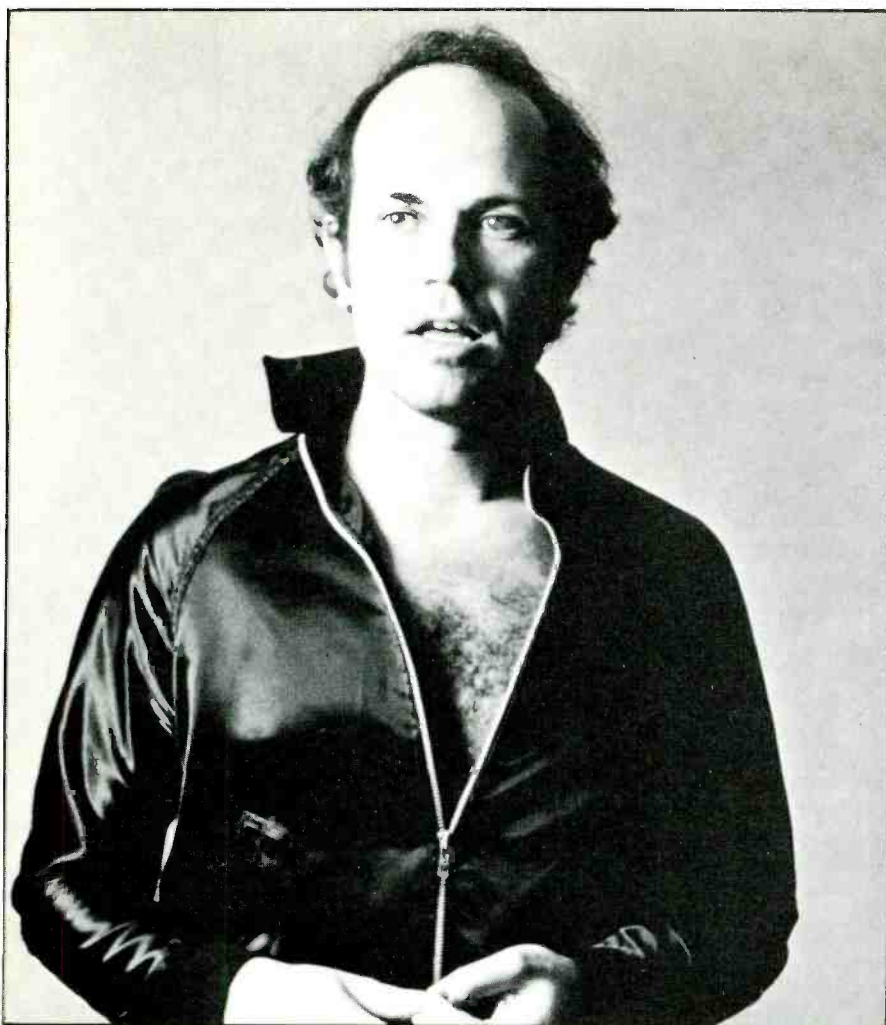
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over his shoulder and tell him note by note what they want. That's the worst example of what can happen. It doesn't matter if it's film or TV—it's the people I work with rather than the medium.

**MR&M:** What do you think is different (musically) about *Miami Vice* other than using well known songs each week?

**JH:** *Miami Vice* treats its weekly series every week like a mini-movie with its own original music. I write original music every week. We do a different type or flavor of music every week, all the way from the left to right—classically colored to hard core, new wave, heavy metal to pop, black, and jazz—depending on the show. That's the kind of freedom I was given.

**MR&M:** Do the producers tell you what kind of music they want for a particular episode?

**JH:** No. It's left up to me. Fred Lyle picks the songs. I get a rough cassette of the show with the songs included, generally one-to-three songs are included in each show. The rest of the show is blank—dialogue and production track. The rest of the music is totally left to me. There is no direction at all. I have my own freedom.

**MR&M:** You said that Fred Lyle picks the songs that are used. Do you have any say in what songs are used?

**JH:** I can express my displeasure at some songs if they really bug me. Sometimes they get pulled, but other times if they work dramatically, they sometimes grow on me and I can be convinced. But I don't pick them.

I like songs that move me. I notice that we cannot go wrong with Phil Collins. His music is tailor-made for the show. Phil and I think along the same wavelength. It's easy for me to work a score around a Phil Collins song. I can make it sound like you don't know where the score ends and the song begins or where the song ends and the score begins.

**MR&M:** Do you try to score an extension to a song or add a different mood?

**JH:** It depends. If the song really hits my fancy and if I feel the song really connects with the show, sometimes the scene with the song in it might be completely unique and have nothing to do with the show, an isolated scene. Other times, I might not necessarily extend the song. I would go for the feel—similar instrumentation, similar sound.

**MR&M:** Should music be subordinate to the film or TV program?

**JH:** No! It should really complete the experience. If you work on something and really enjoy it, ninety-nine percent of the time the music is as good as the film. I get inspired by the story.

**MR&M:** They film *Miami Vice* mostly in Florida and do the post-production at Universal Studios in Los Angeles. You do the scoring at your own studio, in New York, about an hour north of New York City. How does this work? Do they mail you the cassettes?

**JH:** Mail is too slow so it's done by courier services. I get three to four cassettes a week as the show reaches its final version and gets tightened up and trimmed down to the final editing. It starts out at about sixty minutes; the final cassette is about fifty minutes. For each show, I probably see four different versions as they get better.

**MR&M:** Do you have to adjust your music accordingly as the cassettes change?

**JH:** First, I write very rough sketches. I don't do the timing until the final few days because changes in film editing are continuous. Film editing only stops because it has to go on the air. I have a week to do a show, and generally I do it in five or six days.

**MR&M:** After you send back the final version, when does it air?

**JH:** Sometimes three or four days later. It's been a very tight schedule. We do it about four times a month now since the show became so popular.

**MR&M:** Is there a lot of pressure working on this type of schedule?

**JH:** It's a different kind of pressure because it's all on me as far as I have to come up with the music. It can become pretty scary. It's also very enjoyable because when things get rolling, I feel I accomplished a tremendous amount of work and then I see the final version. The first time I see the final version is when it's broadcast. It's really nice to hear it on Friday night.

**MR&M:** Does it bother you that some of your music is edited out or mixed way down?

**JH:** It's frustrating, but at other times it's spotlighted and works like a charm. *That's working with film!*

**MR&M:** After they send you the cassette, how do you compose for the show?

**JH:** I have a synchronizer set up with my 24-track board. It's set up on a 3/4-inch professional cassette with a

time code on it. I print a time code on my 24-track, and I synchronize the two machines together. I have a lock when I'm recording. It's a repeatable phenomenon. I can do things in a fine synch.

**MR&M:** How much of your music is included on the *Miami Vice* soundtrack album? I understand you were

rest of the album is irrelevant. I now have the theme and three other pieces.

**MR&M:** The theme on the album is different than on the television show.

**JH:** The album has two versions. Side one opens with the one-minute TV title version; side two opens with a single length, 2 1/2 minute version.

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## *If I had millions to throw around, I wouldn't mind having an SSL board and a digital tape machine.*

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supposed to have a side of the album.

**JH:** It was almost none of me. It was a very long battle, but I got some of my music on it. If it was up to the record company (MCA), there would be none of my music on it. All they want to do is put songs on it...

**MR&M:** That's because songs sell more records than instrumentals.

**JH:** If they have three or four hot songs, they will sell the record. The

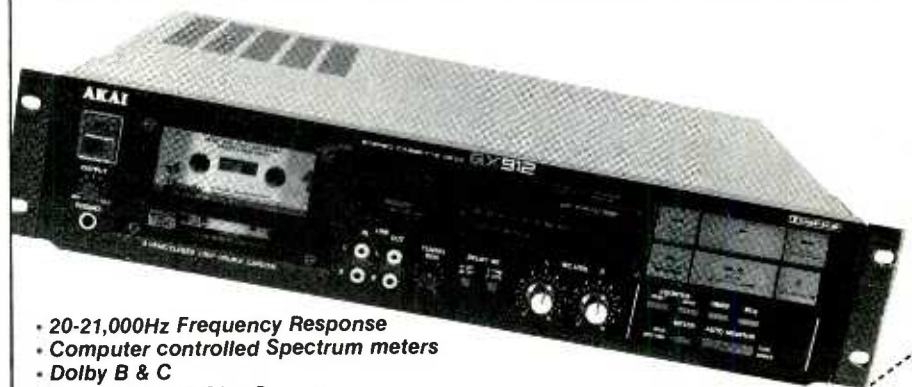
They have different arrangements. We're also working on a dance version for a 12-inch, which is freaky, more like a dub version, from a real hot mixer.

**MR&M:** How do you score a soundtrack?

**JH:** The first few days will be writing the basic ideas and recording rough demos, sketching it out. Then there are two days of recording, and then a day or a day-and-a-half of mixing in synch

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to the film. I give them a stereo mix, mono compatible, with the pilot film.

**MR&M:** Are you the only one recording?

**JH:** Yes. All the drums are stored in my Fairlight. Most of the rhythm section—bass, drums, congas, and percussion—are all recreated in the Fairlight. I also play some parts manually on the Fairlight. I play a lot of Yamaha DX-7 and the Memory Moog. Those are my main instruments. Once in a while I'll play a real guitar, very functional rhythm stuff. I'm not a guitar flash. I basically use keyboards and sampling instruments, like the CMI, which has a keyboard but is ten times more than a keyboard.

**MR&M:** Why don't you program the guitar?

**JH:** Because it's the only way you

can get the sound where the strings interact and the guitar body resonants. There are certain things that cannot be reproduced on a keyboard, including all the sampling stuff. I play rudimentary rock rhythm chords—very basic, anyone can do it.

**MR&M:** How many times do you watch the cassette while scoring?

**JH:** I don't read the script. I watch the cassette about twice through and then go to work. When I'm recording I have to watch certain particular scenes many times, but I only watch the cassette through twice. When scenes take a lot of overdubs, I may view them twenty times.

**MR&M:** How long have you had your studio in your home?

**JH:** Ten years.

**MR&M:** Did you add more equip-

ment when you started working on *Miami Vice*?

**JH:** I went from 16-track to 24-track with an Otari MTR 90 Mark II and a JVC U-Matic 3/4-inch with two Lynx Time Code synchronizers. I had to have the video locked up or it would have taken me twice as long. I just got a new Soundworkshop Series 34 console, automated. I had an old Soundworkshop 30, not automated. It was getting long in the tooth. There were things that sounded better. I started the studio from scratch ten years ago with an 8-track.

**MR&M:** Why did you build your own studio?

**JH:** Having recorded at Caribou a long time ago, I couldn't imagine a better environment than being in a home setup. It was a natural outgrowth of being a synthesist—I tweak sounds. If you tweak sounds on a synthesizer, sooner or later you're going to tweak sounds on a console because they're both very similar. It's ear-to-hand coordination. That's what it takes. The studio takes up most of the ground floor of my house. I have done all my albums here and some of the sessions with Jeff Beck. Wired was mixed here and some of the overdubs were done here. All the albums that I've produced have been done here.

**MR&M:** Do you rent your studio out to other people?

**JH:** No, because it's in my house. The studio is like my big living room or big den. It's not a commercial studio.

**MR&M:** Do you use an engineer?

**JH:** No, I'm alone. I produce and engineer.

**MR&M:** Is it difficult to do both?

**JH:** You have to develop shortcuts. You have to know the room, console and instruments. It's all a matter of experience. I would hate to go to another studio and do it all on my own. Obviously, I could not. Here, it's all set up, and I'm so used to it that I could do it without another person.

**MR&M:** Have you always done it alone?

**JH:** When I recorded some of my early band records, the live sound engineer who worked with me in concerts was like an assistant engineer here watching the console. But I still worked on the production end of the sound.

**MR&M:** Do you like to do a lot of overdubbing?

**JH:** It depends. I do all the instruments myself so I have to overdub. With the Fairlight, a lot of things happen simultaneously all running in

## EQUIPMENT LIST

### CONSOLE

Soundworkshop Series 34

### TAPE MACHINES

Otari MTR 90 Mark II 24-track  
Otari MTR 10 1/2-in. 2-track and  
4-track, 30 ips  
Studer/Revox A-700 (modified to B67  
specs), 2-track  
Sony 854-4 4-track  
Vector Research 500 cassette decks  
(2)  
JVC KD-D55 3-head cassette  
machines (2)

### OUTBOARD EQUIPMENT

Dolby A361, 2-track  
Studio Technologies Ecoplate reverb  
Lexicon 200 digital reverb  
Delta Lab Acousitcomputer digital  
delay/reverb  
Ibanez digital delays (4) Urei 1176 LN  
limiters (2)  
Universal Audio 176 tube limiters (2)  
Allison Kepex/Gain Brain (8)  
EMS London Fixed Filter Banks (2)  
MXR Auto flangers (2)  
APSI graphic equalizers (4)  
Ibanez one-third octave graphic  
equalizers (2)  
"Rockman" (2)

### MONITOR SYSTEMS

JBL 4333s with McIntosh amps  
Yamaha NS-10s

### MICROPHONES

Neumann AKG  
Beyer  
Sony  
Shure

### INSTRUMENTS

Fairlight CMI  
Steinway grand piano  
Memory Moog  
Yamaha DX-7  
Roland Jupiter 8  
Polymoog  
Mini-Moogs (4)  
Oberheim 6-voice custom modular  
system  
Prophet 5  
Hammond L100 organ with Leslie  
Fender Rhodes (2)  
Fender Stratocaster guitar (1978)  
Guild S250 electric guitar (1978)  
Guild 12-string acoustic guitar (1981)  
Rickenbacker bass guitar  
Linndrum  
Gretsch drums  
Camco drums

### INSTRUMENT AMPS

Sundown  
Marshall  
Music Man  
GMT  
Acoustic  
Cerwin Vega  
Ibanez Sundown

### VIDEO

JVC U-Matic 3/4-in. with 2 Lynx  
Time Code Synchronizers



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real time, so it's less like overdubbing. It's more like a live band.

**MR&M:** What is your favorite microphone?

**JH:** Definately the [Neumann] U787 because I trust it. I've used it on so many different things. It's the first microphone I go to.

**MR&M:** What kind of equipment would you like to get that you do not have now?

**JH:** I wasn't even sure. I was into everything. I was into sports and running around the streets. I was geared to music by my parents. I played piano and picked up drums immediately. We had a piano in the house, and my parents showed me a few basics, and gave me lessons from age six.

**MR&M:** You were in a group with bassist Miroslav Vitous, who came to America two years before you did. You

come from. I'm talking about the hassles of going through borders every hundred miles in Europe.

**MR&M:** You went to the Berklee School of Music and started out in a more straightahead jazz context.

**JH:** That was my real background.

**MR&M:** Do you plan to tour again in the near future?

**JH:** Right now it's impossible to tour due to *Miami Vice*.

**MR&M:** For six years, from 1974-79, you released solo albums. You have not done one since. Does that depress you?

**JH:** No, because I'm doing things that get me across very well. It's all a matter of being accepted. That's all I knew how to do in the 70s; I didn't know what else to do. Things have changed. Touring is no longer as important. Now, it's marketing, and the businessmen are running it. The music on its own is very hard to get through. It's a very rare occasion when something that's musically interesting comes out on its own.

**MR&M:** Do you want to record another album of your own?

**JH:** Maybe, but it will be at least a year away.



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## *The first time I see the final version is when it's broadcast.*

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**JH:** It all comes down to money. If I had millions to throw around, I wouldn't mind having a SSL board and a digital tape machine. It's a bit extravagant, but by the time I could afford it, it would probably be out of date.

**MR&M:** Was music an important part of your life when you were growing up in Prague? Did you always want to be a musician?

were obviously fascinated with this country. Why did you decide to stay in America?

**JH:** It's so hard to explain. I didn't think I could ever accomplish what I'm doing now or what I have been doing for the past ten years anywhere else—from having a band and putting it on the road with such ease. It would be hard to do in Europe, and I'm not just talking about Eastern Europe where I

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**Technics**  
The science of sound



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## Brian Battles' Ad Ventures

We've spent a lot of time discussing how to snag clients for your studio's radio commercial production. Reading this column is not going to automatically guarantee that you make a successful career in commercial production, but if you sincerely plan to put your time and effort into finding prospects and closing deals, the ideas put forth here may save you a lot of trouble. As I stated back in July, the purpose of *Ad Ventures* is to give recording studio owners or operators a sense of what to do and what to expect when you decide to make a little extra money cutting ads. Now let's take some time to get into the production itself. I'm no composer, and I don't profess to know a quadrille from a quaver, but I can give you a few hints and help you take some short cuts that'll make the mechanics of writing advertising jingles a bit easier.

Whether you've signed an agreement to produce a commercial, or you're just working up a demo tape on speculation for a prospect, there are a couple of basics that will tend to make

slogan is altered, special promotions are run, the client has an obviously drug-induced brainstorm, etc.). If your piece is written properly, there should be no major migraines involved in fitting rewritten lyrics to the existing music tracks. Obviously you'll want to take these considerations into account when you sit down to compose.

Another common situation is the need for various or multiple versions of a jingle. Many of the businesses that do extensive radio campaigning provide radio stations with several variations on their spots. These may include the same song in different musical styles, such as a special version for rock stations, one for reggae fans, an adult contemporary cut, something for the new wave audience; a purely instrumental track; and a couple of variations on the variations which may involve placing the singers at just the beginning or just the end of the spot; and, of course, fifteen, thirty and sixty second formats.

This all appears fairly complex, but careful planning will allow you to anticipate the possibilities, and you'll

since you don't actually know in advance what your prospective client may be looking for (and he probably won't either).

From a purely mechanical point of view, most radio commercials that use a jingle are commonly of the "donut" variety; that is, a spot opens with five to fifteen seconds of singing (the "intro"), followed by fifteen to forty seconds of instrumental (the "bed") to be used as background for the announcer's voice-over, and ends with a five to fifteen second sung ending (the "outro"). Sometimes there is also a short three to ten second instrumental tail at the end to be covered with another brief voice-over (the "tag"). It helps to organize your writing style to allow flexibility in the format of the jingle. One advertising composer I know uses an interesting grid system to create an outline for his commercials. (He also uses an interesting system involving V-8 juice, vitamin C tablets, and bizarre sex acts to cure the hangover that occurs the morning after a strenuous jingle-writing session.)

The grid technique involves a time

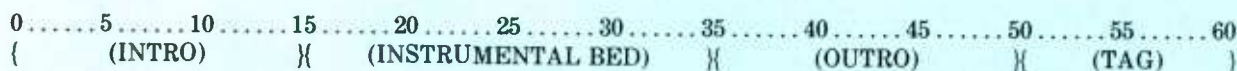


FIGURE 1.

life easier. The primary rule of thumb is: expect to do revisions. Lots of revisions. Never carry sharp objects or lethal weapons to a meeting with a client. Most of the time the advertiser will want to make quite a few of what are known in the trade as "stupid little insignificant changes" before he's happy with his new jingle. Even if the client has settled on a suitable finished product, the truly professional commercial producer will make it relatively simple to revise and update a spot as copy changes become necessary, (such as when a new store location is added, a

benefit by being in a position to offer many of these options to your clients. Instead of just handing a radio sponsor a reel with one sixty second jingle, you'll be equipped to provide all sorts of spots in the final package. This will give the client the foolish impression that you really know what you're doing, and may get you more money if he buys a complete set rather than just one cut. You'll demonstrate your flexibility and proficiency by playing prospects a generic demo tape containing a good selection of variations on one single tune. This is very important

scale with a method of blocking out the different parts of the commercial and serves as an outline for the writer. An example of this type of grid is shown here:

See Figure 1.

This is a very useful way to organize your ideas when composing, because once you have a melody in mind, you can simply convert the segments denoted by time (seconds) into a corresponding musical score, depending on the tempo you've gauged for the tune. It then becomes fairly easy to change



FIGURE 2.

# PLAY OTARI

The magic of creativity often happens in streams of musical ideas, and the nuances of this process are compromised by interruptions. The creation of music demands an audio machine that is in harmony with musicians, and their instruments.



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the segments to accommodate different formats, as in the example below, where the intro must have another verse added, the bed needs to be shortened, and the tag is eliminated:

See Figure 2.

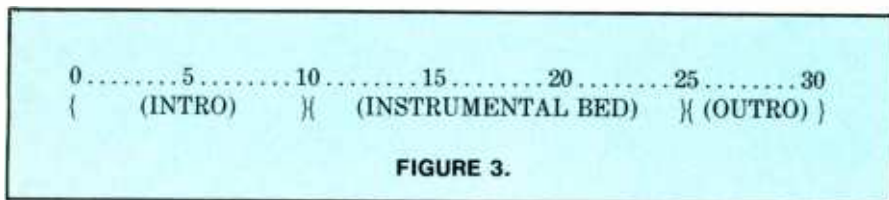


FIGURE 3.

The grid method of structuring your work will also make it easier to convert a sixty second ad to fit into a thirty second spot, as shown in this example: See Figure 3.

When you write a jingle on speculation for a prospect who doesn't buy it, (upon your release from imprisonment for homicide), you can often rewrite the lyrics to the same melody and sell it to a completely different customer. This is also true of a jingle you've written to use purely as a demo. Don't think you'll sell your demo and then have nothing to play for other prospects; just take the completed commercial you've sold and let it form the beginning of your portfolio. You must be opportunistic and understand that spots which actually aired serve as the best sales tool you can get without breaking any federal or state laws, and in time you should have a whole cassette full of finished ads to proudly

show off when making a client presentation or boring your friends.

When it comes to creative composing, I can't do your writing for you (unless you send me a large quantity of

unmarked tens and twenties), but I can offer some tips on how to make your jingle sharper and more effective. Catch the listener's attention; open up with a snappy effect (horns, percussion, synthesizer, a capella singers, etc.). Think of a recurring riff that will serve as a "hook." End with a crisp flourish. Keep the instrumental bed under the voice-over simple and unobtrusive so that it won't compete with the announcer's script and distract the listener from the message. Yet it will maintain the overall "feel" throughout the ad. Be daring—try out the sound of pauses, solo instruments or voices, electronic effects, and so on. Avoid using sounds that suggest intimate bowel activity. Don't go overboard, but remember that you really aren't attempting to create a work of art, and it's more important to make your commercial memorable than to achieve subtle understatement. In producing

most songs you try to keep the use of studio effects and musical gimmicks to a judicious minimum, whereas in an advertising jingle you have thirty or sixty seconds to make a bold impression. If you can learn to make that sixty seconds count by bringing the advertiser more results (i.e., more customers), you will have created a work of art, and your wallet and your head will swell as word gets around town.

If you can get results for your client, he'll brag about your work to his family, friends, business associates, and even competitors. Use customer satisfaction to your advantage. A well-publicized radio commercial production house will have plenty of work coming in, so keep your future reputation in mind and take the time to plan, prepare, and do your best on every job. Cutting corners to get a spot cranked out quickly (just so you can grab the money) will do inestimable damage further down the road, so be patient and meticulous from the start. Think of all the meticulous attention to detail and careful planning as foreplay; the effort is worthwhile when you know the climax will be fulfilling. In addition, keep in mind that advertising people already have a rather unsavory image, the least we can do to improve our integrity is to provide high quality production. Next month we'll go over some practices and policies to help you make a good business impression on your prospective clients.

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Heart guitarists Nancy Wilson and Howard Leese.

DUPLEXITY

IN THE HEART

OF ROCK

“**H**ard rock with a surprise.” That’s how guitarist Nancy Wilson describes the recognizable music that has long been a trademark of Heart. Since 1976, when they began churning out their “crackerjack” rock ‘n’ roll, Heart has released nine albums and has sold over fifteen million records worldwide.

Their work has yielded them five platinum or multi-platinum records and such classic tunes as “Barracuda” and “Dog & Butterfly.” In fact, their debut album, *Dreamboat Annie*, sold six million copies, and contained two instant classics, “Crazy On You” and “Magic Man.”

Sisters Ann and Nancy Wilson started the band in Vancouver B.C. (Canada), though they are originally from Seattle, Washington. Ann’s powerful and aggressive vocals have since proved to be one of Heart’s trademarks. The other is the aggressive and innovative sounds of guitarist Howard Leese. Howard originally joined the Wilson sisters when they first went to Canada to record their debut record.

The lineup of the band consisted of Michael Derosier (drums), Roger

Fisher (electric guitars), Steve Fossen (bass), Nancy (acoustic guitars) and Howard Leese (Moog, acoustic and electric pianos), along with the super lungs of Ann.

Over the years the lineup suffered some changes. Finally in 1982, as the band was about to break up, the current members came together. Ann, Nancy and Howard, who had stuck together during the rough times, were joined by bassist Mark Andes and drummer Denny Carmasi. Both were seasoned veterans when joining Heart, with separate credits in bands such as Firefall, Montrose, Jo Jo Gunne and Gamma. According to Nancy, "The addition of Mark and Denny was probably the best thing that could have happened for us."

The first album with the new (and current) lineup was *Passionworks*, which garnered radio success with the hits "How Can I Refuse" and "Allies." The record was produced by Keith Olsen and was one of the very few times the band sought outside production help. Most of the records were produced by either Heart or their long-time friend, Mike Flicker.

Now they have a new producer (Ron Nevison) and a new image, look, and sound, as well as new management and a new record company.

Nevison, whose credits include Led Zeppelin, The Who, Survivor and Ozzy

Part of the reason for the strong success of *Heart* is the strength of the new and diverse material. "Never," the second single from *Heart*, was co-written by Holly Knight, and makes the first time Heart has worked with Holly. Her previous credits include "Better Be Good To Me," "Love Is A Battlefield" and "The Warrior." Other collaborations include "Shell Shock," "Nobody Home" and "What He Don't Know," which were co-written with long-time Heart friend and collaborator Sue Ennis.

Bernie Taupin is another outside writer on the record with his composition called "These Dreams," which is sung by Nancy.

The blonde Wilson sister shows versatile and diverse talent by playing keyboards, as well as singing and playing guitar. Nancy also displays acting talents in two feature films, *Fast Times At Ridgemont High* and *The Wild Life*, in which she appeared as a featured actress.

During their recent performance at New York's Radio City Music Hall, Heart once again proved their live presence couldn't be beat. The crowd proved that they loved Heart's new music as much as their older classics.

Only time will tell if Heart can regain a top slot on the rock charts. But for now, all signs seem to point up.

*Modern Recording & Music* spoke to

get some new input. We listened to a trillion cassette tapes sent to us from all over the place. And then the band went into extensive rehearsals to try out a lot of different songs and to work on them. We arranged them with the band first and then with Ron Nevison. So we pared down the arrangements and chose the songs. That's very hard to do since we, along with our friend and co-songwriter Sue Ennis, came up with about thirty songs of our own. And then we learned about five other new ones. We had to shave that down to ten songs for the record, which was also hard to do. That kind of decision is the hardest decision to make in the world.

**MR&M:** Who does most of the songwriting?

**NW:** Well, over the years Ann and I have done most of the writing, but the band has been increasingly writing as a fivesome—songs like "How Can I Refuse," "Shell Shock" and "The Wolf," are all band tunes. Actually we've never liked each other as much as we do now, so it's easier to write with each other.

**MR&M:** Where and how do you do most of your writing?

**NW:** We basically write our way around the world. We're always trying to write wherever we are. The way the last album came about was that Ann, Sue and I did a lot of writing in Ann's beach house. Before that, the other guys in the band and myself did a lot of jamming during the soundchecks on the previous tour, and the jams became songs. A lot never made it on any record, but they did become songs. Some started as lyrical ideas I brought to Ann and Sue, and we would put melodies and lyrics to them.

**MR&M:** Who wrote "What About Love"?

**NW:** Jim Vallance, who writes with Bryan Adams, and two of the people that used to be in a group called Toronto all co-wrote that song. That was one of the songs that we did the *least* to when we got it, most of the others—except "These Dreams"—we really had to work on a lot.

**MR&M:** On *Heart* there are only two songs that you and Ann wrote...

**NW:** Everything else was a collaboration. Ann and I worked with Holly Knight on "Never" and "All Eyes," and Ann and I really rewrote "If Looks Could Kill." We didn't take any credit on it because a lot of outside writers—especially ones you haven't met—don't take too kindly to you changing things

---

**When you have 16-tracks, even at home, the temptation is to say, "Oh, I won't do that now, I'll just do that on another track." NW**

---

Ozbourne, brought the band the new commercial sound that Heart needed to get back on top.

Their new record, simply entitled *Heart*, has already given them two Top 20 hits with "What About Love" (which went into the Top 10) and "Never," which is steadily climbing the charts. In addition, AOR stations around the country have picked up on the hard rockin' "If Looks Could Kill." At the time of printing, *Heart* is slowly ascending the Billboard top album charts and is currently at number eight. The band is still hoping for a number one spot.

Nancy Wilson during the last leg of their tour that finished up in New York.

**Modern Recording & Music:** Why has it been over two years since your last LP?

**Nancy Wilson:** We were actually on the road touring for the last record (*Passionworks*) for the past two years—it wasn't time off. Then we came back and spent much more time than ever before writing new songs. We really wanted to have a bigger selection of songs, and we were going out and meeting new songwriters and collaborating with new people just to



around. We added a verse to it and some guitar parts to make it more of a Heart song.

**MR&M:** Tell us a little about the relationship you and Ann have with Sue Ennis and Holly Knight.

**NW:** Sue is a long-time friend—actually Ann and Sue went to high school together—and we were all avid Beatle fans for many years. That's pretty much why we picked up the guitar. For Ann and I, all through our whole friendship, she's been the only other girl that we could actually jam with—play guitars and keyboards with. We wanted her to be in our band years ago, but she's too shy. She graduated from Berklee. She's a really great inspirational influence as far as concepts and musical stuff goes. We started writing with her on *Dog & Butterfly* and she's been a real part of the hits ever since.

Holly Knight, on the other hand, is a brand new friend. She sought us out during our pre-production and rehearsals which took place partly in my basement studio in Seattle. We also did a lot in LA, right before the recording sessions. We were just flattered that she came to us. She's got a lot of great things going on right now—a lot of great credits. She came in and we just hit it off. She's a great songwriting influence and we are still working on things on the side. She just got her own Fairlight and she was trying to teach me how to use it a couple of weeks ago. Holly's such a bright person. She taught herself how to use all that stuff. She has her own little home studio with a Teac 8-track and all kinds of mixers. That's where I'm heading with my home studio, to have the capabilities for making really good demos at home.

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

**NW:** I've got a Teac 8-track, and I'm looking for a 24-track. I've got a MIDI Master keyboard, four Yamaha DX-7 control modules and a lot of amplifiers, old and new. I have an acoustic piano, a really good Yamaha drum machine and all kinds of effects. I've also got a whole footswitch console that I designed with my guitar roadie and it's really handy for recording.

**MR&M:** A lot of people now say that 8-track recordings sound a lot better than 24- and 48-track recordings that are being done because there is actually a lot less happening. You can't overdo it or overproduce that easily with fewer tracks.

**NW:** There are fewer 'moving parts' and a lot less could go wrong. You have to economize. I think that that's a really good thing because when you have 16-tracks, even at home, the temptation is to say, "Oh, I won't do that now, I'll just do that on another track." And then you do eight lead guitar solos and thousands of background vocals. And if there's anything

ly, but it's not necessarily human sounds. There are just certain times when you want a little bit of imperfection to make it sound more human.

**MR&M:** Are you involved in the recording process at all?

**NW:** Yes, very much so. The band gives a lot of input...we always have. We co-produced a lot of our records. As far as engineering goes, we're not as

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**The idea was to capture the way we are on stage and put that on tape. The biggest challenge this band has ever faced is to keep the energy we have on stage.**

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this band doesn't like, if there's anything that's out of character for us, it's that overlaid type sound. I call it a layer cake sound. I think that you lose something that's raw and energetic really fast by piling it on. So that's a basic philosophy we always try to follow. We try to do as much live in the studio as we can and save a lot of that "everyone playing at the same time in the same room, looking at each other" kind of feeling. There's a physical, chemical kind of thing that happens. When you're not in the same room at the same time there's a chance that it becomes stiffer.

**MR&M:** Going back to the first album—It was very successful for you and you had two hits that became classics—"Magic Man" and "Crazy On You." Was that a real surprise, or did you know you had potential hits as soon as you recorded them?

**NW:** Yes, we really were pleased with the record and we were crossing our fingers, our toes, and our whole bodies hoping that everyone else thought so, too. But when I listen back to that album now...it was pretty innovative for its time. We were one of the first bands to use synthesizers with rock guitars and heavy sounding music. Now when I listen back to it, it sounds kind of cute, kind of naive, and kind of sparse, in an interesting way. The studio that we used for that record was an old tube studio. The board was an old tube board and it has a really warm sound to it. It's really interesting now because everything is so digital and maybe a little better, technical-

knowledgable in that respect, but with getting sounds and finding different kinds of sounds, we're always trying to help out—bug the producer as much as we can.

**MR&M:** The band produced a few albums...

**NW:** Well, we pretty much had our fingers in all of them. "Tell It Like It Is" was a single the band produced that did really well. *Bebe Le Strange* and *Greatest Hits/Live* was mixed with some digital remastering. But we never did a lot of digital or computerized mixing. The only time we really used it was on *Private Audition*. I don't trust those systems. When your hand is sitting on the fader there's just that little bit that will make the difference that you might hear. I don't think the computer can remember all the minute things. I think it approximates. It's handy if you're mixing *Ben Hur* or something, but when it's rock 'n' roll, I think that the human touch is always a good way to go.

**MR&M:** *Bebe Le Strange* was fairly successful. Why did you choose to go back to an outside producer after that?

**NW:** One good reason is that it's a lot of hard work to produce yourself. It just means a lot more commitment and a lot more objectivity that is hard to get in the studio. It is really hard to be objective when you're on both sides of the glass. There are a lot more important roles that a very good producer can play in the studio as far as arrangements and just having an overview and keeping a fresh ear on things

go. The hardest thing about producing yourself is to stay objective. It's hard anyway, even for a producer that's not a band member, too.

**MR&M:** Why was Ron Nevison chosen for the new album and how did that come about?

**NW:** We were kind of over a barrel as far as who was going to produce the record. A lot of the guys we had gone to had turned us down. We were hoping to work with one of those big hotshot

ago. But Ron just came in with a really great attitude. We sat down and really communicated with each other a lot in advance, and he really talked to us about what he wanted to do overall and how he wanted the album to be. He wanted to go to the studio with everything almost finished first, song wise and arrangement wise, and not waste any time arranging it and learning it, or deciding which ones to do after we stepped foot in the studio. But overall,

in a way. It's a pretty up song when we play it live. It's got those roaring guitar sounds and that exuberant Ann Wilson performance on the vocals. It's so tricky. There is so much you can do in the mix. There are a lot of cases where you can actually make or break a song in the mix. But a good song is a good song, and it has to go through the maze of not being lost in translation.

## There's no end to what you can do with synthesizers. And there's almost too much that you can do with them. NW

techno guys. Ron Nevison didn't think he could do it at first, but he heard that we were in a bind and he came to our rescue. He made time and pushed his other projects around for us. It was really one of the greatest things that has ever happened to this band, other than getting Denny Carmasi and Mark Andes involved in the band three years

he wanted to bring something back out that is a characteristic of this band, and that's been characteristic on the best albums we ever did. And I think he was really successful doing that. I think he really brought out a unique sound that we had into the foreground on this record. And we didn't go off on too many experimental tangents in the meantime.

**MR&M:** And that *had* been the case in the past?

**NW:** Yes. I think it's hard to explain, but a lot of it was picking what material to use. And the arrangements of it—not going overboard on experimental sounds and, you know, all that. The idea was to capture the way we are on stage and put that on tape. That is the hardest thing for me. The biggest challenge this band has ever faced is to keep the energy we have on stage. Because usually, unlike most groups, this band usually comes off better live than on record. We just have a cohesive kind of a power on stage that I think we captured on this album very well. You can sense the energy that's there.

**MR&M:** Conversely, the last two LPs, *Private Audition* and *Passionworks*, seemed to be almost filled with mediocrity...

**NW:** A lot of that can be done in the production and the mix. I thought we had a lot of really strong songs on both of the last two albums—especially *Passionworks* which had "Allies" and "How Can I Refuse," which was the number one radio hit for two weeks.

**MR&M:** But "How Can I Refuse" is like a down type of song. It's not a typical rockin' Heart song.

**NW:** A lot of that is the production. You should hear it live—it's deceiving

**MR&M:** How do you feel about working with your sister constantly for so long? Is there a lot of extra friction because she *is* your sister?

**NW:** Not really. The friction usually comes from outside. We are really close. A lot of people can't believe it. It's like, "Wait a minute, aren't you supposed to be really sick of each other?" I think it's because we have music as our common denominator. It's the language we speak. It's the thing that's bigger than all of us. And it's the pursuit of that that keeps us from worrying about our own little "Private Idahos". I guess it's always been the challenge of dealing with the politics around us and the strain of everything else coming at us that's been really hard. It's never been from within our relationship as sisters or friends. She's probably the closest friend I have in the world. When you're out on the road all the time and in the studio with all men around you, you definitely appreciate the company of another girl.

**MR&M:** Did you find any problems when siding with Ann during artistic conflicts, people saying "Oh sure you're on her side, she's your sister"?

**NW:** Yes, there was stuff like that. You can only imagine—it's pretty typical. In general, it's really hard. I don't mean to make this sound like a girl versus a boy type thing, but we probably work closer, better and tighter with men than any women I've ever seen. I think it takes a rare person to be able to work really closely with women and give the credit, and not make the sexual qualification. There aren't a lot of men that we've met or worked with, until now, where we feel like true equals. They are giving us all the credit and we can see eye to eye, as human beings.

**MR&M:** Are you happy with the way *Heart* turned out?

**NW:** Oh yeah! I'm very happy with it. I think "These Dreams" was really great. I just feel lucky that I got to sing that song. It was one of those songs that I felt like I could have written myself. It actually reminds me of the



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song I did on *Dog & Butterfly* called "Not A One." It's got that sort of mysterious kind of touch to it. I felt like Bernie Taupin could have written it for me. But, unfortunately, I found out he wrote it before that, so I can't go around saying that.

**MR&M:** The band has gotten away from the old organ-type sound and has replaced it with the more contemporary synthesizer sound that is a big part of the sound on the new record.

**NW:** There are so many new toys out, so many gadgets that you just can't help but want to know about, and the sound in music in general is at such a higher level now than its ever been. It's really exciting right now to be in the recording business because there's no end to what you can do with synthesizers. And there's almost too much that you can do with them. The temptation is to do too much, I think. It is really exciting when you have an instrument like the DX-7 or the MIDI Master where you have touch sensitivity. The MIDI Master has real acoustic keyboard action and it has the dynamics of a piano. You can play softer or harder and get some expression into it so that it's not quite so clinical.

**MR&M:** What about the band's new look and image?

**NW:** We did want to come out with our guns blazing this time, image-wise too (as well as songs). It was a conscious band decision to come out with

the bold colors and we wanted to have a look that was really hard and really soft at the same time. That's how our music is. Like the real striking blattant colors are the primary opposites of everything. The colors are like loud and hard and then there's a soft edge to it. There's a frill here and a little lace there. So it's got the feminine touch, like our music. It sort of sets us apart from most groups, I think. That's why we had an album called *Dog & Butterfly*, that was the whole concept for that too. There's really no other band that has that versatility in that particular way, as we do. Because of that we've been really hard to typecast and really hard to define, and that hasn't always worked in our favor. But I think once you're around long enough, people start to accept you in your own category. We kind of made our own category. I guess you can call what we play hard rock with a surprise.

**MR&M:** Are you happy with Capitol Records so far? I know you had some problems with some of your previous companies.

**NW:** Yes. Everywhere we go, everyone we talk to says, "Capitol is doing an 'A Number One' job." They're out there and they're working really hard for us. We see the Capitol reps in every city. They come out and show us all the displays they are working on and they are just doing a great job. We're the heaviest rock band on the label and I

think right now we're their hottest band. They've really made it happen. And now we are starting to do the worldwide sales, too. In Germany, Sweden, and Japan the record is really starting to get hot. We haven't had a worldwide distribution deal for years. They just have done wonders. So, yes, we are happy.

**MR&M:** What were the problems with the other companies?

**NW:** It was a situation where we started out great on our first label, but a lot of the people that were our friends in the company left the company, so we didn't really have anyone pushing for us anymore. We just didn't feel we were receiving individualized attention.

Originally, every major label turned us down. Then a little label up there [Vancouver] called Mushroom—an affiliate of EMI—wanted to sign just Ann, and she said, "No, I won't do it without my sister and the guitar player."

We've been on a lot of labels since then. After Mushroom, there was Portrait, which was a CBS affiliate, which then changed hands into Epic. We then changed from Epic to Capitol.

**MR&M:** How and when did Howard Leese join the band?

**NW:** Howard was actually a studio musician up in Vancouver. He was a long-time friend of Mike Flicker, who was our first producer. Howard produced our first demo, in fact. He is a really incredible guitar player and he plays a lot of keyboards. And he is good at writing charts for strings. He's probably the most technically adept, as far as reading and writing, musician in the band. He is the most well rounded-musician, as well. He even plays some drums. Although most of the lyrics and melodies come from Ann and I, nowadays we've merged our talents more than ever with Howard and the other guys in the band. But Ann and I have a great relationship with Howard. He could be our brother.

**MR&M:** What equipment are you using? Are you using the same equipment on the road and in the studio?

**NW:** Pretty much. We did buy some new toys after the studio. We got the big DX-7 rack, with eight DX-7s. That was still only available in Japan when we got it. Peter Wolf, from Austria (not the J. Giels Band), who is a keyboard wiz, went to Japan and brought us a rack for the record. And we used some of Holly Knight's cartridges for the DX-7. But for the most part, we are



Photo by Henry Diltz

***I like the live kind of performance type of thing. RN***

using Seymour Duncan guitar amps. They are those great covertible amps that allow you to put in different cartridges for different sounds. So you only use one amp and just throw in whatever sound you want. It's incredible and it's working really well on the road. I've got two heads, one I use, and one is a backup. I use two different cartridges, one for a hefty, "dirty" scorching kind of sound, and the other for a cleaner, heavy sound. I also use a Roland DDL which I can control from my footswitch box. I have a custom made flanger and a chorus, which is separate, as well.

I've been using a lot of Dean guitars. I really like the way they play, and I have just been trying different pickups all along. I've been using Seymour Duncan pickups, too. I use my MIDI Master, with those four DX-7 brains. We are using some high tech stuff.

Mark is using a synthesizer with his bass. I think it's a Casio, where he can have the keyboard and bass or just the keyboard or just the bass by using a switch. He can have any type of mix between real bass and synthesized bass.

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#### HOWARD LEESE

Howard Leese has been with Heart since the very beginning. He survived internal band problems, and has probably been closer to Ann and Nancy than anyone else.

His multifaceted talents abound on *Heart*. His searing and unorthodox guitars permeate Heart's sound. In addition, it was Howard that wrote and performed one of the most famous keyboard solos of all time, the one on "Magic Man." Back to the present; Howard rounds out the sounds on *Heart* with very textured and layered synthesizer sounds. Howard possesses a devastating musical attitude that are a big part of Heart's direction and sound.

*Modern Recording & Music* spoke to Howard just after the conclusion of their tour.

**Modern Recording & Music:** What equipment are you using on the road?

**Howard Leese:** For guitar amps I'm using the Seymour Duncan convertible amps, the same as Nancy. I also have a digital recorder called an Echo, made by a little company in Oregon. It's actually a full digital recorder that digitizes my guitar signal. Then it will spit it out later if you

want an echo. I also use it to spit my signal out backwards, so I can do live backwards guitar. I use two amps (split signal) and the backwards signal only goes to one of the amps so I can have one going forwards and one going backwards at the same time. It will also do an echo sixteen seconds later. You can record an eight bar rhythm phrase and by pushing continuous play, it will repeat, allowing you to solo over your own rhythm guitar part.

Most of my guitars are custom made, and I'm also using the new Kramer/Ripley stereo guitar. It's really great because I can pan different strings, so I can have the low strings going straight and the lead strings going through the Echo, backwards. I use a flanger on the channel with the Echo. So one guitar signal is always clean and the other has all the junk on it. I also use the top of the line Nady wireless transmitter/receiver.

**MR&M:** What do you use in the studio?

**HL:** In the studio I cut the basic tracks with my old Marshall amp and a Rockman through a new device called a Rockbox. You plug your Rockman into

my whole live set-up in because it's just too big. I used my own settings and my own tones, etc.

**MR&M:** What writing did you do for the new record, Heart?

**HL:** I co-wrote "The Wolf" and "Shell Shock," and there's a song that's on the B side of the "What About Love" single called "Heart Of Darkness." It was just a keyboard jam I had cut over in my home studio and Mark and Denny came over, and since they liked it, we worked on it. The songs like "The Wolf" and "Shell Shock" are songs that I came up with the riff for and I'd end up jamming with it with Mark and Denny. We'd work it up until we had a basic track type of thing. Then we made a cassette of it and sent it over to Nancy who worked on it first and then Ann helped her finish it off.

**MR&M:** I like "If Looks Could Kill."

**HL:** That was a song that somebody wrote for Tina Turner. She didn't do it so we got a hold of it. The girl on the demo even sounded like Tina. It was too short, so Ann and Nancy added a third verse. We got it from the people at Capitol.

***When the songs that I did the big solos on, "Magic Man" and "Crazy On You," became hits, they thought they better have me around. They asked me to join, but I originally said no.HL***

this box and it gives you silent FET switching and control over all the parameters of the Rockman and it cleans up the sound. Otherwise, your Rockman makes a loud click if you switch it on or off. This way it looks like a normal footpedal and the Rockman is inside it. I use the two-channel set-up. All the solos are on the Seymour Duncan with the Rockman—all dual channel. I just mix the two sounds and get a bigger fatter combination of sounds. All the distortion and raunchyness is natural tube overdrive. And, I ran the heads through a couple of Carvin cabinets for this record.

**MR&M:** Were you involved in the recording process at all?

**HL:** It's your sound and you want to get it how you like it. I couldn't bring

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

**HL:** I just have a Tascam 8-track recorder, a Tapco mixer, and all my keyboard stuff. I'm using the Yamaha TX-816, which is a rack of eight DX-7 brains which I run with another DX-7, so you actually hear nine DX-7s. On some of the stuff that is programmed and sequenced I use the Yamaha QX-1 digital sequencer that is 8-track and will control the rack. On a couple of songs, all I have to do is push run, and it plays it by itself, and I just have to play on top of it with my live DX-7. And I have the Yamaha RX-11 drum machine. It's really a powerful set-up.

**MR&M:** How long have you been involved with synthesizers to this

extent? Aren't you primarily a guitarist?

**HL:** When I joined the band I was a session guitar player, but the guy that I replaced was a keyboard player, so I had to take over a lot of his keyboard duties. But one of the most famous early Moog synthesizer solos was the one I did on "Magic Man." I've been playing synthesizers since about 1968.

**MR&M:** And you've gone away from that kind of (Moog) sound now?

**HL:** Yes, I tend toward the more orchestral sounds. I like to simulate the real orchestra sound. Our first six albums all have real symphony orchestras on them. I used to write charts and conduct string sections in the studio. String synths didn't sound so good back then, but now they sound good.

**MR&M:** How did you first get involved with Ann and Nancy?

**HL:** I was a studio musician up in Vancouver. I was the hot session guitar player in the area. When they went in to record their first LP, the guitar player that was in the band at the time (Roger Fisher) was just a little slow in the studio and he wasn't getting the results everybody was looking for. They just hired me as a hired hand to play on some of the tracks. I ended up playing on all the cuts. When the songs that I did the big solos on, "Magic Man" and "Crazy On You," became hits, they thought they better have me around. They asked me to join, but I originally said no.

**MR&M:** When you heard "Crazy On You" and "Magic Man" for the first time, did you think they would be such big hits?

**HL:** When I first heard the basic track for "Magic Man" I thought it was the lamest thing I ever heard. It didn't have the same catchy rhythm riff at the beginning. When I heard "Crazy On You," I knew that was a great song. We faced amazing odds on that first record because we made that record on a very small label in Vancouver. But we tried to get a deal with all the labels in the states, and all the major labels turned the record down. So we opened our own little American subsidiary of our label, Mushroom Records, and put it out ourselves and it sold three and a half million copies.

**MR&M:** Why did the band go back to outside production if everything you produced was successful?

**HL:** We went in to do *Private Audition*—we were working with Jimmy Iovine, and that didn't work out at all.



Photo by Steve Rapoport

**Heart.** From left to right, Nancy Wilson, Mark Andes, Ann Wilson, Howard Leese, Denny Carmassi.

We got so bummed out that halfway through it we told him to just stay home. We finished it ourselves, but we weren't being analytical enough; we weren't being objective enough. It ended up being a big disaster. So we thought we'd get some outside help. We always used friends of ours and stuff. The first five albums were produced by Mike Flicker, a guy that I grew up with in LA. So we thought, "Let's hire a big hotshot producer and see what he can do." So we got Keith Olsen to produce *Passionworks*. He was pretty good and we thought that was a step in the right direction. It was easier for us, because when you produce yourself, not only do you have to worry about how well you're playing out there, but you have to worry about how much you are getting on tape, and if you are saturating the tape. You've got to go in there and cut your own mothers and stuff. It's just a lot more work. So this time we said, "Let's use a producer again and let's try somebody different." We called around and listened to people's work and ended up picking Ron Nevison.

**MR&M:** Ron has a reputation of being a very strong producer. Did that affect you at all—him coming in and basically changing the sound of the band?

**HL:** I think we really wanted to work with him because of the work he did with Led Zeppelin, and particularly with the drums. And we knew that he knew how to get the raw rock sounds which had been our weakest point on

records. We were always powerful live, and the hardest thing was to get that kind of fury on vinyl. When you're in the studio it's just not the same. We wanted to get that raw edge. Our records always sounded a little too slick for our own tastes. So we thought Ron could do that. I think the main influence Ron had on this record was the choosing of the material. He was fairly brutal with choosing what songs were going to be on this record.

**MR&M:** Are you happy with the way the record turned out?

**HL:** Yes, I think it's a pretty good record. I think it's about the third best so far.

**MR&M:** Are you happy with the idea that Heart is Ann and Nancy, and not being so well known as the guitarist in Heart?

**HL:** Well, that depends on how well they know us. But then again, how many people know who plays bass in the Rolling Stones? It doesn't bother me too much, because being that famous is somewhat uncomfortable anyway. What really pisses me off is when I read a review saying what a great hot guitar solo Nancy does on "What About Love," or how hot her playing is on "If Looks Could Kill."

**MR&M:** Being a producer, did you find Ron doing anything you disagreed with?

**HL:** No, I think he's a really great producer. I did feel he was just a little bit too conservative in a couple of areas. I don't think he's completely tuned into the avant-garde leading

edge of what's happening with lead guitar playing these days. He's still a little bit in the 70s as far as lead guitar playing goes. This is our first album that has no backwards guitar solos on it. He let me try one, and it was great, but he wouldn't let me keep it. And I did some wang bar and feedback stuff that was on the tape, but not on the

**Ron Nevison:** We recorded the basic tracks at the LA Record Plant, and did the mixing and overdubs at the Record Plant in Salsalido. It took about three months, including pre-production. We moved to Salsalido because the Salsalido Plant was equidistant between LA and Seattle, where the band is from.

all my keyboards, until he got too expensive. He used a Synclavier, and a Fender Rhodes Chroma, which is a great analog synthesizer. He had a wall full of synthesizers. He also used a MiniMoog for some things.

**MR&M:** Howard mentioned that you were a little resistant to some of his effects.

**RN:** No, not at all. Not to his effects. I was resistant to his unorthodox style of playing. As for the backwards things, I let him try them, but everyone in the band agreed that they didn't work.

**MR&M:** You kept the band from getting too experimental on this record...

**RN:** Yes. There was no room for experimentation. The fact is that the band was going down the tubes. I had to make a commercial album.

I'm happy with the way it turned out. Now there's room for experimentation, now that they got themselves worked into a position where they have an audience that's attentive again. The album did exactly what we wanted it to do, which was put them into a position where it's like, "Here we are again folks."

**MR&M:** You took Heart from selling less than 500,000 records on their last two LPs to over one million on this. How?

**RN:** The most important thing is the material. Heart had about twenty songs, and they really weren't good. Only a few were really good. We had to augment that with outside material. That is something that probably wouldn't have been possible a few years ago with Heart. The quality of their writing was not really up there. They made a couple of albums where the actual quality of the songs was not happening. That's the main difference between the last two albums and the new one. The material is better.

**MR&M:** In retrospect, is there anything that you would change?

**RN:** Nothing is ever perfect. You always listen to something and think, well I could have done better. But you do what you can do in the amount of time you have to do it. No one ever knows about the one day somebody was sick, and they couldn't do something as well as they could have done. You work everyday for a couple of months and every performance won't always be brilliant. Listening back to it you always have the feeling that there are things that could be better. But what is better? Who would know anyway?

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## *A couple of years ago, it wouldn't have been so easy for me to make the changes that I did, because they wouldn't have been so open to somebody helping them out.* RN

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record. He only let me get loose a couple of times, like on the end of "Shell Shock." In "If Looks Could Kill," there are a couple of places that I get a little bit crazy. But he was good for our band because some of the members of our band tend to be a little lazy and Ron is a non-lazy person. You have to be there every day, and he's pissed off if you're late. And he pushed us a lot harder than we would push ourselves.

### RON NEVISON

Along with an impressive list of credits, producer Ron Nevison brought something else to Heart, that they really never had. He brought out a commercial sound that has helped Heart regain command of the radio air waves.

In the past, Heart has had a propensity to go "off the track" and experiment a lot. Although diehard Heart fans will say that this produced some of their best music, it was also their least successful.

In fact, their last two studio releases, *Passionworks* and *Private Audition*, sold less than 500,000 copies each.

However, now, thanks in part to Ron Nevison, they are already back over the one million records sold mark.

*Modern Recording & Music* took a minute to speak to Ron for his views on Heart.

**Modern Recording & Music:** Where was *Heart* recorded, and how long did it take?

**MR&M:** What equipment was used in the studio?

**RN:** We used an SSL console and a Studer A-800 tape machine. I don't use that much outboard equipment. I use digital echos—Yamaha, AMS and Lexicon. But not that much by way of outboard effects. I like the live kind of performance type of thing. And, of course, I always do my own engineering.

**MR&M:** Did you have any preconceived notions as to what working with Heart would be like?

**RN:** I knew it would be easy in some respects. They had a couple of albums, and their first six albums went platinum. But then they had a couple that didn't do so well, with a couple of years in between. They also switched record labels, and I thought they were a bit humbled by their past failures, so it was fairly easy for me to go in. A couple of years ago, it wouldn't have been so easy for me to make the changes that I did, because they wouldn't have been so open to somebody helping them out. In that respect, I knew ahead of time that it would be easier than it probably was for Jimmy Iovine, a couple of albums ago. I'm sure he had a tougher time with them because of the fact that they hadn't yet gone through the failure part yet.

**MR&M:** Tell me about working with Peter Wolf.

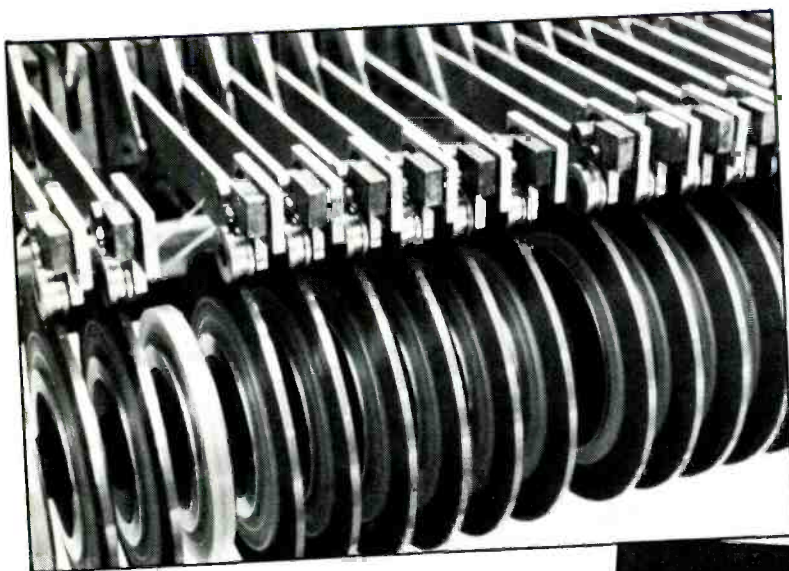
**RN:** I went through a period of three or four albums where I used Peter for

*MODERN*  
**RECORDING**  
*& MUSIC*

Looks At

*Tape and*

*Tape  
Recorders*



The pages that follow indicate some of the common characteristics of tape. Some of them seem to be obvious—back coating, tape length, and thickness are, after all, statements of simple fact. But what do these specifications and others actually mean?

### Open Reel Tapes

Open reel tape is a lot less complex than cassette tape. Length and thickness are really the same spec. A thicker tape on the same size reel will ultimately not have the same length as a thinner tape.

Tape typically comes in two basic thicknesses. A thickness of 1.5 mils (a mil is one-thousandth of an inch) will put 1/3 less tape on a reel than will a tape of 1.0 mil thickness. (There are some 0.5 mil tapes on the market, but their extreme thinness makes them too fragile for practical use, and none appear on our pages).

Print-through is a phenomenon that affects all recorded tape. The audio signal on the tape is stored as magnetic impulses. When the tape is wound on a reel, each layer is just one thickness away from the recording on the next layer, causing one layer of tape to become slightly magnetized and absorb some sound from an adjacent layer. (This phenomenon is common to all magnetism. If you bring a piece of iron close to a strong magnet, the iron will itself become slightly magnetized.) You hear this print-through as a kind of echo starting just before the beginning of music, but actually, it is there throughout the recording. Three factors affect print-through—time, temperature, and distance. You can do

nothing about time. The longer a tape lies around, the greater the print-through. In practice, however, there will be only so much actual print-through, and then there is no more. Higher temperatures promote greater print-through, so it is best not to store recorded tapes where it would be uncomfortable for humans.

Finally, print-through is greater when the adjacent layers of tape are closer to each other. This, then, poses the question of when to use a 1 mil or 1.5 mil tape. Because of print-through problems, it is usually best to use the 1.5 mil tapes, except when the greater recording time allowed by the 1.0 mil tapes is paramount.

### Back Coating

Back coating is simply a layer of carbon compound on the back (non-recording side) of the tape. Its purpose is to provide a smoother wind of the tape, especially in fast forward/reverse modes. Tape, running at high speed, can also generate small static charges (which might affect the recorded sound). Back coating the tape reduces this effect. In general, buy a back coated tape, if permanence of the recording is necessary.

### Time

At the common pro speed of 15 inches-per-second, 1200 feet of tape go by in 15 minutes. You'll need 2400 feet for 30 minutes, and 3600 feet for 45 minutes.

If you record at 7.5 in/sec, these times are doubled, of course. Some professional machines can accept 12.5 inch reels, which hold 3750 feet of 1.5 mil tape.

### Cassette Tapes

There is, of course, only one size cassette. The shells are loaded with tapes of similar characteristics to open reel in that there are thicker and thinner tape—for longer and shorter playing times—and with the same pluses and minuses. Cassette tape manufacturers have developed a standard of Types. A cassette tape is classified by its manufacturer into one of four classes of Type, depending entirely on the bias and equalization characteristics of the tape. In other words, where you set the bias and EQ switches on your recorder is dependent on the cassette tape Type.

All of this is general information. It really is less important whether the tape is coated with a ferric oxide, a chromium dioxide, some combination to the two, or even something new. Perhaps the only exception is the new Type IV metal formulation. These tapes, which require a recorder that has a metal-capable bias and EQ position, are for a specific purpose—live recording. They are capable of truly superior recording, but only if the sound source is either live or from a digital disc or tape. Under these conditions, the new metal tapes are truly superior. They employ an iron metal (not an oxide) coating that is expensive to make, and therefore, to buy.

In general, you get a quality level that you pay for in cassettes. Virtually all are assembled using screws to hold the shell parts together (instead of heat welding). This seemingly fine point will become important if you ever have to splice a cassette tape. There are several professional quality splicing blocks available for the narrow cassette tapes.



## **TAPE**

### **AGFA-GEVAERT**

#### **MAGNETITE 12**

This is audio tape with extremely low noise, super high output, and exceptional high-end response. Formulation is for IEC Bias I, 120 microsecond recording for the professional user who demands maximum dynamic range, and the purest high-frequency response.

#### **PEM 469**

This is studio mastering tape featuring high output and low noise for a wide dynamic range, standard bias for compatibility with a wide variety of tapes and machines, low print-through, and excellent slitting for consistent phase stability and superior winding characteristics.

#### **PEM 468**

This audio mastering tape features high output and low noise for a wide dynamic range, low print-through, excellent slitting for consistent phase stability, and batch number and web position printed on the back coating for permanent tape-type identification.

#### **PEM 297D**

This is digital audio mastering tape combining the low dropout characteristic associated with the finest Agfa videotape, along with the mechanical stability and slitting of Agfa's studio mastering tapes, for outstanding performance.

#### **PE 627/827**

This is extremely low noise, pure chromium dioxide cassette tape, optimized for complete compatibility with the IEC Bias II, 70 microsecond chrome equalization. Engineered for the highest quality music recording where strong dynamics, excellent high-frequency response, and low noise are critical performance factors.

#### **PE 611/811**

This is low noise, extremely high output, exceptional high-end response, and super low distortion iron oxide cassette tape for bias compatibility with the industry's Standard I designation.

#### **PE 619/819/1219**

This is low noise, high output, extended high-end response iron oxide cassette tape for bias compatibility with the industry's Standard I designation. Engineered for high music duplication where excellent sonic qualities and high productivity are major factors.

## **AMPEX**

### **AMPEX GRAND MASTER 456**

This is analog mastering tape produced on a 1.5 mil polyester base film using a high performance oxide system. All production is backcoated to provide clean running and excellent winding characteristics. It is available in 1/4, 1/2, 1 and 2-in. configurations, with reel diameters of 10-1/2 and 14-in. Both 1/4 and 1/2-in. widths are also available in 12-1/2-in. reels. Tape lengths are 2500, 3750 and 5000 feet.

### **AMPEX 467 DIGITAL MASTERING TAPE**

This new product line for digital recorders is available in 1/4, 1/2 and 1-in. configurations, with reel sizes of 10-1/2 and 14-in. diameters. Tape lengths are 4600 and 9700 feet; 12-1/2-in. reels are also available in 1/2 and 1-in. configurations, with 7200 feet tape lengths. All reels are end-to-end tested on fixed-head recorders.

### **AMPEX 4-6/407 ANALOG MASTERING TAPE**

This product line is produced on a polyester backing, backcoated to provide clean running and with an oxide system meeting demands for a wide range of mastering uses, including bin looping mastering. It is available in both 1.5 mil and 1.0 mil configurations in widths of 1/4 through 2-inch. 1/4-in is available in reel sizes from 5 through 14-in. while 1/2, 1 and 2-in. widths are available in reel sizes of 10-1/2 and 14-in. diameter. Tape lengths for 406 produced on 1.5 mil backing are from 600 through 5000 feet and 407 produced on 1.0 mil backing are from 900 through 7200 feet.

### **600 SERIES OPEN REEL AND DUPLICATOR TAPE**

Ampex offers a complete line of 1/4-in. open reel audio tapes. The 631 Series is 1.5 mil, polyester, standard grade tape; 641 Series is 1.0 mil, polyester, standard grade tape; 632 Series is 1.5 mil, low noise, high output tape; 642 Series is 1.0 mil, low noise, high output tape; 651 Series is 0.5 mil, tensilized, standard grade tape with a 0.4 mil oxide coat; and the 661 Series is 0.5 mil, polyester, standard grade tape with a 0.2 mil oxide coat. Ampex also offers the open reel products in bulk form for high speed duplication and high volume applications.

## **672 PROFESSIONAL AUDIO CASSETTES**

This product is available in bulk or clear package. Lengths are C30, C45, C60 and C90. Bulk cassettes are available in white or black shells; packaged in black only. Product includes low noise, high output ferric oxide tape for Type I applications. Suitable for music and voice duplication. Bulk cassettes are packed 25 per tray for convenient handling.

## **CASSETTE DUPLICATOR TAPE**

Ampex supplies bulk cassette tape for cassette loading and high-speed duplication. Ampex 615/616 low noise, high output gamma ferric oxide tape is Type I. Ampex 619/620 chrome tape is high performance Type II bias, music grade. Both products are packed 30 pancakes per carton and are sealed in protective styrene trays.

## **BASF**

### **STUDIO MASTER 911**

This is ferric oxide based tape for high quality studio masters with wide dynamic range and low print-through. All 911 tape is back coated 1.5 mil base film. Tapes are available on NAB hubs or metal reels in lengths of 2,500 to 5,000 feet in widths of 1/4, 1/2, 1 and 2-in.

### **LOOP MASTER 920**

This is chromium dioxide mastering tape for loop bins in high speed cassette duplication. High coercivity formulation offers 7.5 in/sec performance at 3.75 in/sec recording speed and maintains high frequency performance longer than ferric tapes. Tapes are available on NAB hubs in 2,500 foot lengths and 1/2 and 1-in. widths. Loop Master 920 is back coated.

### **LH EXTRA I**

This features an outstanding ferric formulation and a precision cassette shell for use on the normal (Type I) setting on your recorder. It is available in C-60 and C-90 lengths.

### **LH MAXIMA I**

This is BASF's newest premium Type I tape. It allows higher recording levels because it can be recorded louder, and driven harder than ordinary bias tapes. LH Maxima I's high maximum output level (MOL) increases signal to noise ratio and reduces distortion. Available in C-60 and C-90 lengths.

### **CHROMDIOXIDE EXTRA II**

This is the improved version of the well known BASF Pro II chrome tape. This exclusive pure chrome formulation gives you superb high-frequency response and low background noise. Designated by IEC as the Type II (chrome) world-wide standard. Available in C-60 and C-90 lengths.

### **CHROMDIOXIDE MAXIMA II**

This combines the extremely high recording density and low background noise of pure chrome with an exclusive cassette housing to produce a tape that provides unparalleled sound reproduction and an outstanding dynamic range. Ideal for recording compact discs or other digital sources. Available in C-60 and C-90.

### **METAL IV**

This uses pure iron formulation for tremendous energy reserves in demanding recording applications, particularly live recordings. Exceeds the Type IV (metal) standard, allowing spectacular high-frequency dynamic range. Available in C-120 length only.

## **FUJI**

### **FR METAL**

A type IV metal cassette tape with tension stabilizer guide and a loop prevention guide. Only available as a C-90.

### **FR II**

A type II tape using Beridox formulation with tension stabilizer guide and loop prevention guide. C-90 only.

### **FR-1**

A type I tape with ferric formulation. Other features as FR II above.

### **DR**

Uses dual spring pressure pad and is both heat and vibration proof. Ferric formulation, C-90 only.

### **GT-II**

Uses dual spring pressure pad and is both heat and vibration proof. Beridox formulation for type II performance. C-90 only.

## **MAXELL**

### **COMMUNICATOR/DUPPLICATOR SERIES**

All models of this cassette series feature tensilized polyester based tape with a tape thickness of 0.73 mils on the C-30, C-45 and C-60 lengths; 0.49 mils on the C-90 and 0.35 mils on the C-120. The cassettes feature a cleaning leader tape which gives you a 5-second cue before recording begins, and five-screw shell construction.

## **MEMOREX**

### **MEMOREX dB SERIES**

This series is normal bias (Type I) tape with ferric oxide formulation to deliver low noise and high output for clear reproduction. Memorex dB Series is available in 60 and 90-minute lengths and is an excellent general purpose tape for music or voice recording.

### **MEMOREX MRX**

This is a premium normal bias (Type I) tape available in 30, 45, 60, 90 and 120-minute lengths. The ferric oxide formulation of MRX I delivers higher output and greater sensitivity compared to standard cassettes. MRX I audio tapes feature a unique storage album that allows the cassette to be inserted and closed in either direction.

### **MEMOREX HB II**

This is a high bias (Type II) tape available in 60 and 90-minute lengths. The exclusive crystal ferrite formulation delivers improved low-frequency output and a bright high end for greater life and realism. The cassette shell features a high quality five-screw assembly.

### **MEMOREX HBX II**

This is a premium high bias (Type II) cassette capable of superior sound reproduction with classical, jazz or rock recording. The high magnetic density ferricobalt formulation provides higher maximum output levels, greater sensitivity and increased frequency response as compared to standard high bias tape. Memorex HBX II is available in 60 and 90-minute lengths. The cassette shell features a high quality five-screw assembly.

### **MEMOREX CDX II**

This extra high quality (Type II) tape that provides better-than-metal performance at the high bias setting. The pure metal formulation of CDX II enables it to outperform conventional high bias tapes and rivals the finest standard metal formulations in recording compact discs, digitally mastered LP's and other demanding signal sources. The precision-engineered five-screw cassette provides optimum tape performance. Available in 90-minute length.

## **SCOTCH**

### **250 and 266**

These are 1.5 mil mastering tape available in 1/4-inch to 2-inch widths. All have backcoating, high output, low noise and are designed for critical mastering.

### **206**

This low noise back-treated 1.5 mil polyester is also available in 1/4-inch to 2-inch widths on all reel sizes.

### **207**

As 206 above but 1.0 mil thickness.

### **227**

This is a 1.0 mil tape back treated and with high output/low noise characteristics for critical mastering. Available only in 1/4-inch width.

### **275**

A digital audio mastering tape available in 1/4, 1/2, and 1-inch widths, on both 10-1/2 and 12-1/2-inch reels.

### **CASSETTES**

3M has a full line of metal and oxide-based cassette tapes in all C sizes and for type I to type IV.

## **SONY**

### **DIGITAL MASTERING TAPE**

Sony has digital mastering tape in both 1/2 and 1/4-inch widths for both 24 and 2-track recording.

#### **ES-90**

This is a type IV metal tape in a one-piece molded shell for live or digital recording.

#### **UCX-S90**

This is a cobalt/ferric tape for type II high bias recording.

#### **UCX-90**

Uses a wide-window shell, otherwise similar to UCX-S90 above.

#### **HF-90**

This ferric tape has a see-through, one-piece molded shell.

## **TDK**

### **GX-50**

This is a backcoated 1.5 mil high output, low noise tape available on both 7 and 10-1/2-inch reels. The magnetic material is gamma ferric oxide.

### **GX-35**

As GX-50 above except 1.0 mil tape.

### **HX-S**

Pro-series metal particle tape requiring type II bias. Available as C-60 and C-90.

### **MA**

Lab standard metal tape as HX-S above.

### **SA-X**

Super Avilyn in both C-60 and C-90 sizes.

### **SA**

As SA-X above but extended highs.

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## **TAPE MACHINES**

### **AKAI**

#### **MG1212**

This is a 12-channel/14-track recorder/mixer using 1/2-in. audio tape in a cassette cartridge. The input section features mic and line inputs, 3-band sweep frequency EQ, stereo and mono effects send, track mix and fader mix. The output section features sync-track, effects returns, and fader monitoring. The tape section features 14-tracks, 12 audio, 1 control, 1 sync; a 50 Hz-20 kHz frequency response, auto mute and auto location. Price: \$6,995.

#### **GX912**

This is a rack mounted cassette master mixdown deck with double capstan, double tune bias, 3 heads, 3 motors, 0.025% wow and flutter, a S/N ratio of 60 dB, THD 0.5%, and a frequency response of 20 Hz-21 kHz, +/-3 dB. Features include computer controlled tuning, spectrum analyzer, real-time counter. Price: \$649.95.

### **FOSTEX**

#### **X-15**

This is a 4-track cassette unit with 2 heads, a DC servo motor, W&F of 0.1% (peak), a frequency response of 40 Hz-12.5 kHz, LED bar graph meters, a THD of 1.5% (at 0 VU), and S/N ratio of 50 dB. The dimensions are 11.5 x 3 x 9-in. and weighs 6.4 lbs. Price: \$495.

#### **250**

This is a 4-track cassette unit with 2 motors, 2 heads, 3.75 in/sec tape speed, a DC servo motor, W&F of 0.1% (peak), a frequency response of 40 Hz-14 kHz, four VU meters, a THD of 1.5% (at 0 VU), and a S/N ratio of 53 dB. Usable as a separate recorder/mixer. The dimensions are 17 x 3.25 x 14 and weighs 19 lbs. Price: \$995.

## 20

This is a 2-track tape machine with 3 motors, 3 heads, 7.5 and 15 in/sec tape speeds, DC servo motors, W&F of 0.1% (peak), a frequency response of 30 Hz-22 kHz, LED bar graph meters, a THD of 1% (at 0 VU), and a 67 dB S/N ratio. It also features center cue or SMPTE track availability. The dimensions are 14 x 13.5 x 8.5-in. and weighs 29 lbs. Price: \$995.

## 80

This is an 8-track tape machine with 3 motors, 2 heads, 15 in/sec tape speed, DC servo motors, W&F of 0.06% (peak), a frequency response of 40 Hz-18 kHz, LED bar graph meters, THD of 1.0% (at 0 VU), and a 60 dB S/N ratio. The dimensions are 14 x 13.5 x 8.5 and weighs 29 lbs. Price: \$1,995.

## B-16

This is a 16-track tape machine with 3 motors, 2 heads, 15 in/sec tape speeds, DC servo motors, W&F of 0.06% (peak), a frequency response of 40 Hz-18 kHz, LED bar graph meters, THD of 1.0% (at 0 VU), and a 60 dB S/N ratio. Also features a belt drive capstan motor. The dimensions are 17.5 x 17 x 9.25 and weighs 67 lbs. Price: \$5,900.

## B-16D

This has the same specs as B-16 except for a direct drive PLL capstan motor. Price: \$6,600.

## B-16M

This has the same specs as B-16 except for repro head and play back electronics added and weighs 77 lbs. Price: \$9,600.

## NAKAMICHI

### MR-1

This is a professional 3-head cassette machine with FG servo brushless motor. The W&F is 0.048%, the frequency response is 20 Hz-20 kHz, +/-3 dB, and S/N ratio is 70 dB (Dolby C NR). The dimensions are 19 (W) x 5.25 (H) x 10 (D)-in. and the weight is 14 lbs. Price: \$895.

## OTARI

### MODEL MX-70

This is an 8 or 16-channel tape machine in 1-in. tape format. An optional conversion kit permits operation with 1/2-in. 8-channel tapes. The 30/15 or 15/7.5 in/sec machine has two DC reel motors and a DC servo capstan motor w/ 20% varispeed. Maximum reel size is 10 1/2-in. Frequency response is 30 Hz-20 kHz at 15 in/sec. The signal-to-noise ration is 72 dB. Specifications at 250 nWb/m operating level. Dimensions are 25.2 W x 24.1 D x 40.2-in, H and the weight is 210 lbs for the 16-channel. Prices: 16-track-\$14,950; 8/rewired 16-\$13,500; 8-track-\$1,500; 1/2-in., 8-track conversion kit-\$1,875.

### MODEL MX-5050 MARK III/8

This is a 1/2-inch, 8-channel tape machine. The capstan is under DC servo control and speeds are switchable between 15 and 7.5 in/sec. Reel monitors induction type and head design is plug-in, 3-head configuration. Reel size capability is 10 1/2-in. Frequency response is 40 Hz to 25 kHz, +/-2 dB (15 in/sec at 0 VU). Input impedance is unbalanced, bridging 50 k Ohms; Signal-to-Noise ratio is 68 dB, unweighted (15 in/sec). All specifications at 320 nWb/m operating level. Dimensions are 16.9 W x 17.3 H x 26.6 D, and the weight is 77 lbs. Price: \$5,295.

### MODEL MX5050B-II

This is a 2-channel recorder available in quarter-track stereo, and half-track stereo. A full-track (mono) version is also available. The capstan motor is under DC servo control and is switchable between 15/7.5 and 7.5/3.75 in/sec speed pairs. Reel motors are induction type. Reel size maximum is 10 1/2 in. Frequency response is 25 Hz to 22 kHz, +/-2 dB (15 in/sec, 0 VU); Mic impedance is active, balanced, 150 to 10 k Ohms. S/N is 72 dB at 15 in/sec. The dimensions are 17.4 W x 10.2 D x 20.8 H, and the weight is 60 lbs. Prices: \$2,295 (\$2,350 full-track).

Other Otari models in the MX5050 Series include the following: MX-5050BQ-II, a 1/4-in., 4-channel machine (\$2,995); the MARK III/2, a 1/4-in. 2-channel tabletop version of the 5050B-II (\$2,795); and the MARK III/4, a 1/2-in. 4-channel machine (\$3,895).

The Otari "MTR" Series includes the following: The MTR-10/12 Series II 1/4 and 1/2-in. master recorders, the MTR-20 Super Analog master recorder in 1/4 and 1/2-in. formats including 1/2-in. 2-channel; and the MTR-90 multichannel master recorder available in 8, 16, and 24-channel configurations. All MTR Series machines have extensive options for external machine controllers, including SMPTE/EBU synchronization control and RS232C/RS422 communications interface pots.

## ROSS SYSTEMS

### 4X4

This is a 4-channel, 1/4-track recorder/mixer for simultaneous 4-track recording. The input section features VU meter, 2-band EQ, pan, track selector, mic/tape/line selector. Other features are noise reduction, track monitor counter, 2 heads, pitch control, 0.08% wow and flutter, S/N ratio of 65 dB and crosstalk 45 dB. Accessories included are batteries, power supply and carrying bag. Price: 499.95.

## **SONY**

### **APR-5000 SERIES**

This is a 1/4-in. analog recorder for all broadcast and production applications. It is available in 2-track DIN or NAB formats with IEC center-track time code also available. Frequency response for 30 in/sec (AES) is 40 Hz-28 kHz, +.75/-2 dB. The S/N ratio is 66 dB at 30 in/sec, 64 dB at 15 in/sec and 63 dB at 7.5 in/sec. Unit weight is 85 lbs. Prices range from \$6,800 to \$9,000.

### **APR-2003**

This is a portable 1/4-in., 2-track recorder and it is also available with an additional head for center-track time code. It uses 5-in. reels and has speeds of 7.5 in/sec and 3.75 in/sec. Frequency responses for 7.5 in/sec is 25 Hz-18 kHz, +/- 3 dB, and the S/N ratio at that speed is 58 dB. The unit weighs 14.75 lbs and dimensions are 13.25 (W) x 5.5 (H) x 12 (D)-inches. Price: \$2,950.

### **TC-D5 PRO**

This is a compact stereo cassette recorder with XLR mic inputs and easy to read VU meters with peak indicator. Frequency response using a standard cassette is 40 Hz-12 kHz, +/- 3 dB, with a S/N ratio of 53 dB. The unit weighs 3.75 lbs and the dimensions are 9.5 (W) x 2 (H) x 6.5 (D)-in. Price: \$790.

## **SOUNDCRAFT**

### **SCM 760 MKIII**

This series of multitrack recorders is for 2-in., 16 or 24-track recording, or 1-in. 8 or 16-track recording. It features speeds of 15 or 30 in/sec for 10-1/2-in. reels, and a heavy duty phase lock loop capstan motor/servo. The prices are as follows: \$10,750 1-in., 8-track prewired for 16-track with 16-track remote; \$13,500 for 1-in., 16-track with basic remote; \$17,950 for 2-in. 16-track prewired for 24-track with basic remote; \$19,950 for 2-in., 16-track prewired for 24-track, with autolocator; \$22,950 for 2-in., 24-track with basic remote; and \$24,950 for 2-in., 24-track with autolocator.

## **STUDER REVOX**

### **B77 MKII**

This is a 2-track, 1/4-in. machine with 3 motors, 3 heads, and direct capstan drive. Frequency response is 30 Hz-22 kHz, +2/-3 dB and mic impedance is 22K ohms. It features two meters with a peak LED on each and a S/N ratio of 68 dB. The dimensions are 16.5 x 17.8 x 8.3-in. and the weight is 37.5 lbs. This is also available in a 4-track version. Price: \$1,799.

### **PR99 MKII**

This is a 2-track, 1/4-in. tape machine with 3 motors and 3 heads. It features direct capstan drive, a frequency response of 30 Hz-22 kHz, +2/-3 dB, and a S/N ratio of 68 dB. Other features include two meters with LED peak indicator, real-time counter, vari-speed, and self-sync. The dimensions are 17.8 x 19 x 8-in. and it weighs 40.5 lbs. Price: \$2,250.

### **A810**

This is a 2-track, 1/4-in. tape machine with 3 motors, 3 heads, direct capstan drive, and a frequency response of 40 Hz-22 kHz, +/- 2 dB. The S/N ratio is 79 dB. This unit features two peak-reading meters, SMPTE time code option, and computer interface. The dimensions are 19.5 x 19 and it weighs 68.3 lbs. Price: \$6,870.

## **TANDBERG**

### **TCD 900 SERIES**

This is a professional master cassette recorder (TCD 910) and playback deck (TCD 911). The frequency response is 20 Hz-20 kHz, +/- 2 dB with standard tape and the S/N ratio is 68 dB. The weight of the unit is 21.8 lbs and the dimensions are 17.25 (W) x 6.5 (H) x 13.75 (D)-in. Price: \$1,995 for the record unit and \$1,795 for the playback unit.

### **TD 20A-SE**

This series of 2-track, 1/4-in. tape machines features a 3-head system with two speed combinations available: 3.75 in/sec and 7.5 in/sec, or 7.5 in/sec and 15 in/sec, both with 10-1/2-in. reel capacity. Frequency response at 15 in/sec is 20 Hz-30 kHz with a S/N ratio of 70 dB. The unit weighs 37.5 lbs and the dimensions are 17.25 (W) x 17.75 (H) x 7.75 (D)-in. Prices range from \$1,395 to \$2,195.

## **TASCAM**

### **TASCAM ATR-60/2T**

This is a professional 2-track master recorder with center-track time code. It is a 3-motor, 3-head, unit with PLL Direct Drive capstan motor and it uses 10-1/2-in. reels. Frequency response is 30 Hz-26 kHz, +/- 2 dB and S/N ratio is 65 dB, W&F .04% NAB. Dimensions are 19 (W) x 17.5 (H) x 9.5 (D)-in. (transport) and 19 (W) x 3.5 (H) x 9.5 (D)-in. (electronics). The weight is approx. 100 lbs. This recorder is also available in 2-track, high speed, 1/2-in.; 4-track, high speed and 1/2-in. 8-track and 2-track standard format versions. Price: \$5,495.

### **TASCAM MS-16**

This is a compact, 1-in. format 16-track recorder/reproducer. Supplied in two pieces (transport, electronics) it is suitable for rack or console mounting. It features 3 heads, 3 motors, PLL direct drive capstan motor and uses 10-1/2-in. reel size. The frequency response is 40 Hz to 22 kHz, +/- 2 dB and the S/N ratio is 63 dB unweighted, W&F 0.04% NAB. Dimensions are 19 (W) x 17.5 (H) x 9.5 (D)-in. (transport) and 19 (W) x 7.0 (H) x 12 (D)-in. (electronics). The weight is 120 lbs. Many options are available including autolocator, rolling console, dbx noise reduction, remote function select and remote control and heavy duty NAB hubs. Price: \$8,995.

### **TASCAM 52NB**

This is a heavy duty 2-track master recorder ideally suited for studio, production, or video postproduction application. It has 3 motors, 3 heads, FG direct drive servo capstan with a W&F of 0.05% NAB, and a frequency response of 40 Hz-12.5 kHz, +/- 3 dB. S/N ratio is 65 dB. The dimensions are 17 (W) x 20 (H) x 12.5 (D)-inches and the weight is 77.2 lbs. Price: \$3,495. Also available as 58-OB, a 1/4-in., 8-track format for \$5,995.

### **PORTASTUDIO 244**

This is a portable mixer and multitrack cassette recorder in a single chassis. It features 3 motors, 2-heads, FG servo capstan, speed of 3.75 in/sec, W&F 0.05% NAB, frequency response of 40 Hz to 15 kHz, +/- 3 dB, MIC/LINE source impedance of 10K ohms or less, S/N ratio is 85 dB w/dbx and the THD is 1%. Dimensions are 18 (W) x 4.75 (H) x 14.5 (D) and weighs 20 lbs. Also includes pitch control, 2-band EQ, separate cue mixer, pan pots, dbx NR, headphone volume, electronic counter and zero return. Price: \$1,200.

### **PORTASTUDIO 246**

This is a combination mixer and multitrack cassette recorder single unit design with 3 motors, FG servo capstan, 2-speed (3.75 and 1.875 in/sec), 2-heads, W&F 0.04% NAB, frequency response is 20 Hz-20 kHz, +/- 1 dB, S/N ratio is 90 dB w/dbx, THD is 1%, MIC/LINE source impedance 10K ohms or less. Dimensions are 19.75 (W) x 4.75 (H) x 15.75 (D)-in. and weighs 22.7 lbs. Other features are 6 mixer inputs, program master faders, 4 buss assignable mixer, odd/even panning, effects and auxiliary busses, zero return, dbx defeat, pitch control. Price: \$1,300.

### **TASCAM 122B**

This is a broadcast quality professional 2-track cassette master recorder with 2 motors, 3 heads, 2-speed (3.75 and 1.875 in/sec), FG servo capstan motor, W&F 0.04% line input source impedance 10K ohm or less, frequency response is 35 Hz to 24 kHz, +/- 3 dB, THD is 1%, S/N ratio is 65 dB w/Dolby B. Dimensions are 19 (W) x 5.8 (H) x 13.6 (D)-in. and weighs 19.8 lbs. Other features include +4 dBm XLR inputs and outputs, Dolby HX, front panel line input switching, front panel bias and record calibration, rack mounts. Price: \$825.

### **TASCAM 234 SYNCASET**

This is a heavy duty, full function 4-track cassette multitrack recorder with 3 motors, FG servo capstan, 2 heads, high speed (3.75 in/sec), frequency response of 40 Hz to 16 kHz, +/- 3 dB, W&F 0.04% NAB, source impedance 10K ohms or less, THD is 1%, S/N ratio is 90 dB w/dbx. Dimensions are 19 (W) x 5.75 (H) x 14.25 (D)-in. and weighs 21.6 lbs. Other features are output volume and pan on each channel, stereo cue output, pitch control, zero return, independent function select, headphone volume, rack mounts. Price: \$900.

### **TASCAM 225 SYNCASET**

This is an economical 2-track master recorder with independent record function on each channel DC servo motor, 2 heads, W&F 0.07% NAB, MIC input 10K ohms, line input 12K ohms, S/N ratio of 61 dB w/ Dolby B, THD is 1.5%, frequency response of 40 Hz to 14 kHz, +/- 3 dB. Dimensions are 17 (W) x 4.25 (H) x 11.25 (D) and weighs 12.75 lbs. Other features are: input mix, output pan each channel, record indicators for each channel, headphone volume, optional rack mount, zero return. Price: \$349.

### **TASCAM 42 NB:**

This is a professional 2-track tape machine with 3 motors, 3 heads, PLL direct drive capstan motor, and 10.5-in. reel capacity. Frequency response is 40 Hz-22 kHz, +/- 2 dB, W&F is 0.05%, S/N ratio is 63 dB, the dimensions are 17 (W) x 20 (H) x 12.5 (D), and the weight is 70.5 lbs. Optional remote control, punch in/out footswitch, and rack mounts. Price: \$2,995.

## TASCAM 32

This is a 2-track, 3-motor, 3-head unit with FG servo capstan motor, 10.5-in reels, a frequency response of 40 Hz-22 kHz, +/-3 dB, S/N ratio of 60 dB. The dimensions are 16.25 (W) x 18.25 (H) x 12.5 (D), and the weight is 44 lbs. Price: \$1,300.

## TASCAM MINISTUDIO-PORTA ONE

This is a combination 4-track mixer and 4-track cassette recorder in a small, battery powered package with 1 motor, W&F of 0.05%, 2 heads, a frequency response of 40 Hz-12.5 kHz, +/-3 dB, a S/N ratio of 80 dB, with dbx. Dimensions are 13 (W) x 9.75 (D) x 2.75 (H), and the weight is 7.7 lbs. (including batteries). Also includes pitch control, 2-band EQ, pan pots, headphone volume, and carrying strap. Price: \$595.

## YAMAHA

### MT44D CASSETTE RECORDER

This is a 4-track, 4-channel recorder with Dolby B and Dolby C noise reduction. With the RM602 6x2 mixer and RB35B patch bay, this unit becomes a portable recording system. Features are: time/tape counter LED readout; zero start and stop; 4-peak reading LED meters, remote control capability; forward and reverse cue and +/- 10% speed control. There are 2 heads, 2 DC motors, W&F 0.06%, 1.875 in/sec, frequency response of 40 Hz-14 kHz, less than 1.0% distortion. Dimensions are 13.5 (W) x 12.75 (D) x 4.5 (H) and weighs 9.25 lbs. Price: \$535.

### C200

This is a professional stereo cassette recorder with 1.875 in/sec speed and W&F 0.08%. Linear EM transduction system delivers the audio signal directly to heads, without passing through distortion inducing bias tape. Choice of dbx or Dolby B noise reduction. Electronically balanced XLR and unbalanced RCA connectors. Features include: 2 DC motors, 4 heads, remote control capability (RC10) and automatic bias adjustment system. Frequency response of 20 Hz-20 kHz with chrome or metal tape types. S/N is 68 dB with Dolby; 108 dB dbx. Dimensions are 19 (W) x 4.75 (H) x 13.5 (D) and weighs 20 lbs. Price: \$895.

## TAPE

### Agfa-Gevaert

275 North St.  
Teterboro, NJ 07608

### Ampex Corp.

401 Broadway 22-2  
Redwood City, CA 94063

### BASF

19 Crosby Dr.  
Bedford, MA 01730

### Fuji Film USA

350 Fifth Ave.  
New York, NY 10001

### Maxell Corp. of America

60 Oxford Dr.  
Moonachie, NJ 07074

### Memtec Products

P.O. Box 58118  
Santa Clara, CA 95052

### Sony Corp. of America

Sony Drive  
Park Ridge, NJ 07656

### TDK Electronics

12 Harbor Park Dr.  
Port Washington, NY 11050

### 3M/Mag.Audio/Video Prod.Div.

3M Center-Bldg. 223-5S-01  
St. Paul, MN 55144-1000

## TAPE RECORDERS

### Akai Professional Products

1316 E. Lancaster  
Ft. Worth, TX 76102

### Fostex Corp. of America

1531 Blackburn Ave.  
Norwalk, CA 90650

### Nakamichi, USA Corp.

19701 S. Vermont Ave.  
Torrance, CA 90502

### Otari Corp.

2 Davis Dr.  
Belmont, CA 94002

### Ross Systems

1316 E. Lancaster  
Ft. Worth, TX 76113

### Sony Corp. of America

Sony Drive  
Park Ridge, NJ 07656

### Soundcraft

1517 20th St  
Santa Monica, CA 90404

### Studer/Revox America

1425 Elm Hill Pike  
Nashville, TN 37210

### Tandberg of America

1 Labriola Ct.  
Armonk, NY 10504

### Teac

7733 Telegraph Rd.  
Montebello, CA 90640

### Yamaha Int'l. Corp.

PO Box 6600  
Buena Park, CA 90622







Photo by Susan Borey

Bruce Jackson in mixing tower before show at Giants Stadium in New Jersey.

## Bruce Jackson

### Mixing in the USA

**W**ho's got the hottest mixing gig on the planet? Some people would agree that it's Bruce Jackson, soundman for Bruce Springsteen. Jackson has been working with Springsteen since 1978 and the *Darkness On The Edge Of Town* tour and this year, he went out with the largest traveling sound system ever assembled.

An amiable, articulate Australian, Jackson has been involved with audio at least since his first year at college, where he and a friend started a small sound and light company, JANDS, which has become the largest enterprise of its kind in Australia. In 1970, selling out of JANDS, he linked up with the owners of another young sound company, Clair Brothers, who were touring Australia with Blood, Sweat, and Tears and the first horn system ever used in that country. Bruce was eventually enlisted by Clair Brothers to design equipment and to mix for many of the top acts they serviced. Working with Elvis Presley, Bruce helped pioneer the Clair Brothers' hanging sound system, which used chain motors instead of ropes and pulleys to hoist massive amounts of gear aloft.

Returning to Australia in 1974, Bruce organized Clair Brothers Australia. Half-owner of this new company, Bruce was in charge of sound for the Jacksons, Rod Stewart, T-Rex, Barry White, Cat Stevens, Rick Wakeman, Uriah Heep, Three Dog Night, and others. Taking care of most of the PA requirements for that part of the world, he often toured with systems in Japan, Hong Kong, and New Zealand.

During this time, Bruce incorporated some experimental ideas into a prototype mixing console; today, many of his visionary ideas have become standard features on concert mixing boards. In this half of a special interview, Bruce Jackson explains other innovations he's implemented in Springsteen's massive sound system. He also talks about being an independent contractor, examines a few problems that come with large venues, and fills us in on Springsteen's legendary concern for having the best possible concert sound.

**Modern Recording & Music:** Can you tell us about the board you helped pioneer for Clair Brothers?

**Bruce Jackson:** I tried out some ideas such as built-in parametric equalization, which was very new at the time, using linear faders rather than rotary knobs to control EQ, which gave you a pretty graphic representation of what was going on. It had a patch bay on the side, and the board folded out of the case. These ideas became reality on the Clair Brothers' console we used on the Springsteen tour. That board was designed by myself and Ron Borthwick in 1975.

**MR&M:** You sat down with engineers, who then translated your ideas...?

**BJ:** No, I designed and built it myself. That board, which is known as the Clair board, is actually getting a bit dated now. It's very clean, from a sound point of view, but it doesn't have enough busses and all that kind of stuff, so it's time to start looking for something new.

**MR&M:** How did you hook up with Springsteen?

**BJ:** Bruce had just begun touring again after a pretty big break and they had a few sound problems out on the road. I came out for a few days, through Clair Brothers, to help them sort a few things out. We ended up hitting it off well, striking up a good relationship, and he wanted me to stay out on the road.

**MR&M:** How do you compare being an independent contractor (of your

services) with working for a company?

**BJ:** I like being an independent much better, because it allows you the freedom of making decisions without being caught up with company biases. It allows me the latitude to be a little more demanding and get better results.

**MR&M:** Do you see any difference between working for a company and working directly with an artist?

**BJ:** Yes. What's interesting with working for an artist is that your work takes place basically during the tour. In between, even though I continue to

steen is that he stands behind me one hundred percent and he respects my input. I'm not limited by sound company funds if I need to get special effects on reverb, digital drum machines, or anything like that.

**MR&M:** In what ways were you able to get exotic on the Springsteen tour?

**BJ:** I felt we could use some extra reverb effects and Bruce went out and actually bought an AMS reverb, a Klark-Teknik reverb, and a Quantec reverb. We bought a DMX drum machine, a Dynacord drum machine, a Simmons SDS-7 drum machine, and had another custom drum machine made up. We wanted to play with the



Stage keyboard set-up showing stage monitors.

Photo by Susan Borey

work with Springsteen, I'm able to go off and dabble in electronics, fly my plane, and bounce around to do a bunch of different things. Whereas, if you work for a company, you have a set routine; your life is more planned out.

I like being able to work with different acts, and it also gives me the opportunity to work with different sound companies. I enjoy a better relationship with all the different sound companies being independent, in that there's no real company politics going on.

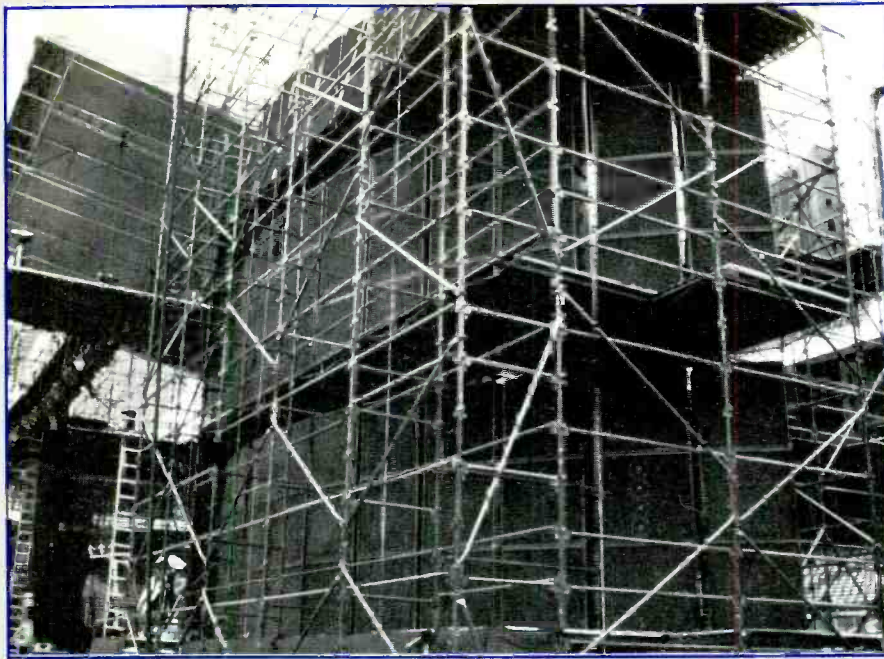
**MR&M:** Did becoming independent change your approach to mixing?

**BJ:** Yes, in that I could become a little more exotic. What's nice about working with someone like Spring-

bass guitar compression and were able to go out and buy a Drawmer vacuum tube compressor amplifier.

**MR&M:** What are the special problems that come with doing sound in large venues?

**BJ:** The most obvious problem is getting highs to the back. That's something I've toyed with for years. The Clair Brothers Series 2 cabinet was supposed to be an answer to that, but the reality is, that no matter what you do, air absorbs the highs faster than it absorbs the other frequencies. You're up against that basic fact no matter how well you design the horns. What you have to try to do is push more highs from the main stack, but even then, the amount you have to push becomes nearly impossible.



Main speakers at Giants Stadium in New Jersey.

Photo by Susan Borey

What I did for this tour was an extension of what we've been doing for indoor arena shows since 1978, that is, hanging superhighs on special towers. They just put back into the sound what is missing. They add an incredible amount of intelligibility and bring the excitement back to the music. When you're hearing something dull and muffled, it's nowhere near as exciting as crisp, tinkly highs and all that sort of thing going on.

With these outdoor shows I took this much further and also used intermediate ones. We had four different arrays with sixteen tweeters in each, driven by a phase linear amplifier. Each tower was delayed separately. They'd sit 200 feet back from the main stacks.

The far delay was set about 350 feet back, delayed about 350 milliseconds, and they, in addition to having super-

highs because more frequencies had been absorbed a little lower, had horns on them, too. That gave people in the back a chance to hear the same show that people in the front were hearing, so no one got cheated. If you looked around you could see everyone dancing and clapping in time, and they were obviously hearing well, which, in the outdoor situation, has typically not been the case.

The other thing we did that was unique and will possibly set new trends is to have the sheer amount of PA there so that things weren't pushing to death, and so that every person was covered with a cabinet. I think it added to people's enjoyment substantially—they could understand the words, that being very important with his show because you can hear a pin drop when he talks.

***If you looked around you could see everyone dancing and clapping in time, and they were obviously hearing well, which, in the outdoor situation, has typically not been the case.***

**MR&M:** How did you calculate the delays?

**BJ:** We don't even bother calculating it. I have an unusual measurement technique that is very basic. We take a pulse generator and generate a click into the PA. At each tower there is a microphone input. A guy walks around with a microphone and lines it up under each delay tower and, using a very accurate Tektronics oscilloscope, we're able to measure the actual time delay in fractions of a millisecond, which means fractions of a foot, from when it leaves the PA and arrives at the delay towers. That's the value we plug into the delay towers. It's much more accurate than measuring it and calculating what the value would be based on the speed of sound in air, because it takes into account all the factors like the temperature and the humidity. People usually make a noise into a microphone, stand back, and try to get the clicks to line up with the delay to the PA. That's such a pain, and you never get it right. This way, we didn't have time to mess around and do that sort of thing because we're on such a tight schedule. For instance, at New Jersey's Giant Stadium, we came in with the entire production, stage and all, the night before the show, because there was a game that ended at one o'clock. They built all that scaffolding, set all the speakers up, set all the delays, EQ'ed the system and monitors, and got everything together in that short number of hours. We were ready by five o'clock.

**MR&M:** How much diplomacy did you have to use on this tour with promoters and venues?

**BJ:** You're always dealing with diplomacy in this business, no matter what end you're on. I think that if you want to continue to work, you've got to be somewhat diplomatic. I was fortunate in that I was able to define the configuration of the sound system with my crew, and I had the best crew that I've ever worked with, or that I know of. Basically those guys were the diplomats in implementing what I wanted. I would go in and say, 'We'll do this in this particular place, let's change that around there, we'll stack the speakers in this fashion and wrap them in this fashion, let's put the delay towers here...' and then I'd leave and those guys would actually make it happen. I think that having a good crew is the difference between being able to sleep at night and enjoying a tour, and being an ulcer case.

**MR&M:** Did you ever run into situ-

ations where the venue or promoter would say that you couldn't set something up because it might obstruct seats or not comply with safety regulations?

**BJ:** We were already aware of those potential problems. Before the date was even agreed to by Bruce, we held all the appropriate seats. Between the accountant, Steve DePaul, the agent, Barry Bell, and the tour director, George Travis, they would communicate what the killed seats were, what the mixing position would be, how many seats they'd have to hold for relocation of people whose view would be blocked by the delay towers, and all that sort of thing. We'd come into a situation that was all ready for us. We would adjust things around because they wouldn't always get an angle or something right, but there were no surprises.

Usually, with killing seats, we'd be on the conservative side because Bruce is very fastidious about having people see and hear the show in the best possible fashion. After we'd have a look around, we would open up seats we had held. That had the double effect of also foiling the scalpers who'd go there expecting to sell a lot of tickets. Bruce thinks that people should be able to buy tickets at face value. He gets involved in all those kinds of things, surprisingly so.

**MR&M:** How big was your crew?

**BJ:** We had eight of our guys, and then we'd use maybe twenty union guys in each city. You're talking about maybe 200 S4 cabinets, which weigh over 400 pounds apiece, plus power transformers, and all sorts of things.

**MR&M:** What basically comprised the house speaker system for the tour?

**BJ:** The main house system consisted of 168 S4 cabinets in front and thirty two in the rear, for a total of 200 cabinets. We used all JBL components. In the main system, let alone the front fill, there were 400 18-in. speakers, 800 10-in. speakers, 400 2441 compression drivers, and 400 custom superhighs. JBL made a poster of the system.

The cabinets were driven by Carver amplifiers. Each cabinet had 1200 watts of power driving the loads, and averaged out with overall power of 2,000 watts of actual available power. We didn't use all that power—a lot of it was headroom. In fact, with headroom we probably averaged around 6 dB, just to keep the system clean and dynamic. The system we had out there

never clipped. We had 300 Carver amplifiers, of which 200 were 1,200 watts into 4 ohms, and the other one hundred were 800 watts a side into 4 ohms. In each S4 cabinet, which is Clair's proprietary design, there were two 18-in. speakers, four 10-in. speakers, two 2441 compression drivers on a custom-designed concert directivity horn and two custom superhigh drivers.

The system was a mix of two types of cabinets. Half the system was Clair Brothers' most recent design of the S4 cabinet, the E style cabinet. It has a

electronics. It was crossed over and EQ'd differently on the bottom level than it was on the mid and high levels. The system was not set up so that there was a big left and a big right. If you look at it, you'll see a vertical column of speakers stacked up. That would be a left, the next column would give out the right information, the next one left. Because they're set up in a big arc, one column of cabinets basically covers one area. If you're sitting in one spot, you're basically hearing one part of the S4 on one side of you, so you get this subtle stereo everywhere in the build-



Sound system at Giants Stadium in New Jersey.

certain style of porting. The other half was their new style cabinet, their S4 Series 2, which is a long throw cabinet. Basically, it has a twenty degree by twenty degree coverage. They also have custom design extruded corners with great strength. They pull-tested them, and I think it takes 25,000 pounds to pull them apart, which is unbelievably strong. Ron Borthwick, who's been working on cabinet design for years, has gone to incredible expense bracing the inside of these cabinets. He goes around with a mallet and taps them. If one's not right, he sends it back to the woodshop to work on bracing it up better. He's a madman, like one of those auto mechanics who goes around with a stethoscope.

The system was divided up on three different levels with different drive

ing. Everyone gets a bigger dimension than with just straight mono. If you switch it to mono, a big dimension goes away from the system.

Horizontally, the cabinets were also mixed up. Some cabinets were coupled so that the bass and the horns couple together, and other ones were uncoupled so you didn't get the peaks and interference patterns going on. Horizontally, it was stacked E-style, E-style, Series 2, E-style, Series 2, E-style, E-style and E-style.

Because things were EQ'd differently and you've got different cabinets, it tends to reduce the amount of comb filtering. When you've got several drivers aiming in the same position you get interference between those drivers and you tend to get peaks and valleys in the frequency response. We

tried to minimize that because we had so many drivers that potentially would interfere with each other. We tried to break things up as much as possible.

My crew did an amazing job with this system, which was the largest system ever out on the road. They'd tear it down in as little as three and a half hours. Normally, that system would be four or five separate Clair systems. It wasn't large so that it would be loud, but listenably loud; it doesn't make you want to die or run away from it.

**MR&M:** What did it take to cart that stuff around the country?

**BJ:** We had four tractor-trailers.

**MR&M:** What about Europe?

**BJ:** We took 140 cabinets across, because we didn't have the rear fill situation that we have in the States.

**MR&M:** Is there anything extraor-

same dynamics before the show anyway, because you always play harder for showtime.

**MR&M:** I thought you had the best drum sound I've ever heard in a large venue. Why did you choose to use synthetic drums?

**BJ:** It wasn't all synthetic. It was flavored with a little bit of real drums to give it a little variation and natural sound. The reason for using the synthetic drums was consistency. We couldn't afford to spend the time tuning snares, messing with tom toms, and playing with kick drum EQs. I just worked before the tour on that and Bruce came to my house in Santa Monica and I showed him some different sounds.

**MR&M:** How did you set the synthetic drums up?

224X, producing a different kind of tail with a gated cut-off.

The rack tom triggered the Simmons SDS-7 with a synthesized rack sound. Mixed in with that was a natural rack tom sound from the Dynacord. The floor tom was the same thing.

**MR&M:** Did you re-EQ during the shows?

**BJ:** Only on certain things. As a rule, I like to let the band do as much as they can, to let the musician control the sound. But where things became objectionable, or where certain things were necessary I would, but not vastly. Just little trims here and there.

**MR&M:** Would you record the shows?

**BJ:** I would record a cassette each night. Various members, mainly Nils Lofgren, would like to listen to a show here or there, to hear how they did with their harmonics, or how a particular arrangement worked. Bruce never used to listen to them.

**MR&M:** Did you sit in on any of the recording of *Born In The USA* so that you'd get an idea of how the songs should be put across live?

**BJ:** To a degree. You can't really hear in the studio anyway. I like to go and visit in the studio, but I have very little patience there. I have trouble sitting still for longer than about half an hour. I heard a lot of songs, but he did like seventy different ones and ended up using only a small fraction of them. I think listening to the record is good, but then again, a lot of the things that you do on a record don't really transfer live anyway.

**MR&M:** What are your priorities when you're mixing?

**BJ:** Outdoors, especially, I think you have to accent the rhythm side of things, so it's good to get the kick, snare, bass guitar, and basic rhythm instruments pretty well cemented together, and make it so that everyone knows where [beats] 2 and 4 are. I make sure the vocal is always clearly on top because with Bruce's music you can't really bury the vocals. The lyrics are so important. Also, I like to spotlight him acoustically, bringing his vocal out so it shines out strong, but not so you lose the feel, the rock 'n' roll of what's going on.

Next month, Bruce Jackson explains other innovative features of Springsteen's sound system, talks about working with the hardest working man in rock 'n' roll, and shares a few details on a whole new generation of mixing consoles that he's helping to design.

*I think that if you want to continue to work, you've got to be somewhat diplomatic.*

inary about the way you'd sound-check the E-Street Band?

**BJ:** What's extraordinary is that they weren't there! Unfortunately, the schedules of those venues wouldn't permit any time in the day to do that. We had to come up with a way of knowing what everything sounded like when we tested it, and then extrapolate that to know what it would sound like that night. When the first few bars of "Born In The USA," which opened the show, went on, I was going totally cold, but I was confident enough, based on what we did in the afternoon, that everything would work. We had it down to a science, so it wasn't really a nerve-wracking thing. I wouldn't have sweaty palms.

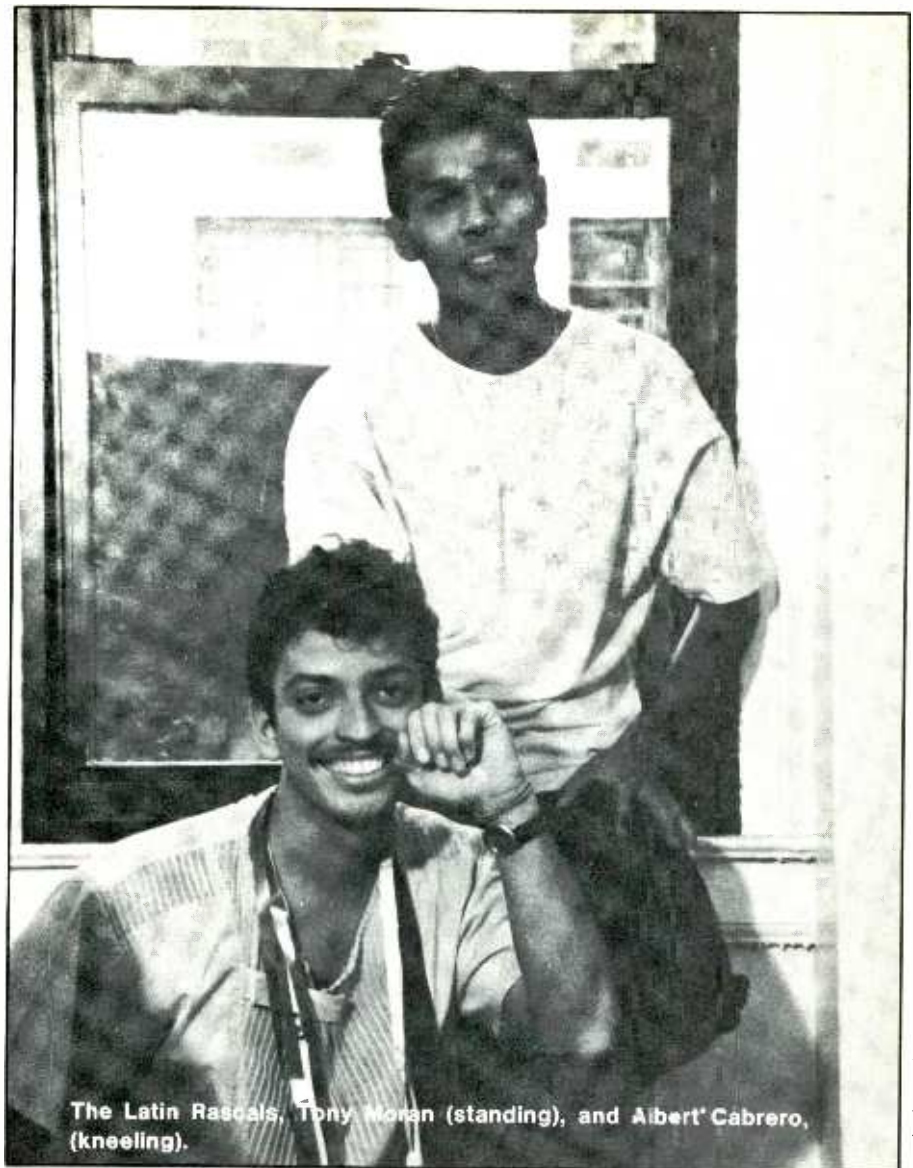
**MR&M:** But I saw Max Weinberg pounding his drums before the show.

**BJ:** We'd try to get Max in when we could to work on the drums, because that was the one real variable. Much of the drums were generated electronically and it required tuning as far as what were the loudest and softest he was going to play, and other functions. You can't get a roadie to sit in because they don't play with the same dynamics. In fact, Max never played with the

**BJ:** We used a bunch of different machines. A little metal disk mounted on the kick drum would trigger a guitar pickup which would run out to me and get buffered. That would be sent through the MXI unit which would set the threshold so it would trigger and then send the trigger voltage off to the Simmons plus the Dynacord. The Simmons was tuned with a synthetic sound that had an attacking kind of click to the beginning of it and a punchy kind of kick drum sound. The Dynacord was mixed in with that, but it was tuned with a big low end thump, like a punch in the chest. The combination of the two gave a nice sound.

The snare triggered off a variety of snare sounds, the main one being a DMX drum machine with a Linn snare sound in it. In addition, there was a custom snare sound machine built by Scott Morgan. We also used a Dynacord. There was a small amount of the top and bottom of the real snare mixed in with the synthesized sound to get the naturalness and variation. Also added was a big snare tail, which was a second or so of reverb on the AMS using their pre-set. In addition to that, for a longer reverb, was a Lexicon

# The Latin Rascals



The Latin Rascals, Tony Moran (standing), and Albert' Cabrero, (kneeling).

Photo by Cheryl Lynne

## A Splice of Life

**I**f you've checked into an electric-boogaloo outlet lately, or listened to the radio, or even called up your cable operator and demanded your MTV, you've doubtlessly twitched your butt to the wacko-crazy edits of the Latin Rascals. Looking for the perfect beat, they have reinvented the studio approach of joining pieces of tape together, along the way becoming very in-demand members of the funk mob. Those benefiting from their services include Bruce Springsteen, Run-DMC, Hall and Oates, Diana Ross and Cyndi Lauper.

When the Rascals—Tony Moran and Albert Cabrero—performed their first sadistic chopjob for vinyl two years ago, they were under the wings of master mixer Arthur Baker, who the *Village Voice* once described as “the Roland Barthes of the beat box.” The rhythmic pulse of his records—most notably Afrika Bambaataa’s “Planet Rock”—utilized ingenious metronomic manipulations that mesmerized even veteran dance-flooraholics. It was the recruiting of the Rascals that transformed inventive bop into a pleasant nuisance. Their multiple edits turned Baker’s previously arrogant beat

brutal.

After he fleshes out a song's groove factor, Moran and Cabrero cut up. "Dancing In The Dark," "Girls Just Want To Have Fun," "Swept Away" and "Out Of Touch" are just a few of the pop gems torn apart, worked over and sliced groove-thin by Baker and his Dynamite Duo. At times these Top 40 staples sound just vaguely familiar. But the hook, like a boomerang, always comes back. Baker pours off portions of the lead vocal, traps background voices in dreamy electronic worlds, and leads most of an original track's sounds on electro-excursions through his funk-ed-up head, using his arsenal of studio toys as tour guides. The arrangements change, too. Says Cabrero: "Through editing we could make our own melodies; we change beats around," and make already mixed tracks totally different. Many of their multiples aren't as obvious as the "Ow Ow Ow Ow!" on "Out Of Touch."

Careful listening to Ross' "Swept Away" and the Force MDs' "Forgive Me Girl" reveal multiples. A lot of their hip-hip wasn't created by Linn and Oberheim drum machines alone! And Ross' orgasmic groans on her remix come as much from her gut as from Moran and Cabrero's editing glue. BLAM BLAM Ow Ow pow! ain't all that these Rascals are about—especially now that they're remixing by themselves, working with more than just out-takes and in-mixes from Arthur Baker overhauls.

Originally, hooking up with Baker happened just like in a classic Hollywood movie. Carlos De Jesus, program director of New York's now washed up WKTU, walked into Downtown Records, the deejay hangout/record store that Moran and (later) Cabrero worked, heard one of Cabrero's mix sequences and flipped. He decided: "Wow, I wanna put this on the radio." Because Albert didn't have a needed reel-to-reel machine, Tony suggested doing something at his house, and from then on they've been partners. Baker, blown away by the mix/production chops he heard while tuning into the urban leader, called up the station, and then met with the duo. They've edited all of Baker's productions since. *Modern Recording & Music* sat down with Cabrero and Moran, who got their moniker from WKTU deejay Paco, just before they rushed off to do a commercial endorsement for the Razor Blade Manufacturers of the Milky Way.

**Modern Recording & Music:** Most people know you as editors. But you're also deejays. Tell us about that side.

**Tony Moran:** We're deejays only on the radio. When we play over the airwaves, we have to be a lot more direct—know what the people want and give it to them. In a club, you have more versatility because you could play off the crowd. We fortunately have a good sense of knowing what people want.

**MR&M:** That was on WKTU-FM (now WXRK), then WRKS-FM (both in New York).

**TM:** Kiss (WRKS) really expanded us a lot...because it opened us up to the Black market, which was very important. On 'KTU we used to play a little bit of everything, and we were known to all Spanish guys. Then we went to Kiss and got into rap; we were able to please more people. So when people saw our name on a record, they would say, "Oh, the Latin Rascals; this must be deaf!"

**Albert Cabrero:** When we started editing, we got into rock stuff—Peter Wolf, the Rolling Stones—while still doing rap.

**TM:** Which is why now that we're remixing we're open to rock 'n' roll as well as black and white pop.

**MR&M:** What's the story behind that?

**AC:** Arthur heard one of our tapes on 'KTU, and called up the station. Luckily Tony was there to take the call. He set up an appointment with him, and we went by his place and played him some remixes of his songs. He really liked them; then he asked us to edit "Breaker's Revenge," his first single as an artist. From then on it's been edits for Arthur all the time.

**MR&M:** Has your editing approach changed much over the years?

**TM:** When we first started making records, we didn't think about it from a commercial sense, but from what Arthur wanted. Later, we got our own style so we know how much to dish out. On a record you can't over-edit, or you'll lose the consistency and the feel of the song. You don't want the edits to dominate the record, you want them to enhance it. People still have to know what the song is called!

**MR&M:** When you first see reels and globs of tape in the studio, how do you proceed to piece it together?

**TM:** We'll spend hours and hours sorting through tape, putting out ideas, taking parts we like. Not everything we try works though.

**MR&M:** Do you ever get *really* frustrated?

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## ***You don't want the edits to dominate the record, you want them to enhance it. People still have to know what the song is called!***

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**MR&M:** How do you plan your mix sequences for the radio?

**TM:** We'll have maybe 200 records, and we go with a feel—the record we happen to pick up is the record we'll play. Those shows are prerecorded; those are tapes.

**MR&M:** And you do edits on those tapes?

**TM:** Oh, every tape! There are at least a *thousand* edits on those three hour tapes. And every one took at least two weeks of dedicated work to pull it off. We edit no records during these times.

**MR&M:** Did your radio segments help your post-production career?

**TM:** It gave us our start. That's how Arthur discovered us.

**TM:** In the middle of the night after I go home I'll say "Damn, what the f--- is up?" But when I do get it, everything changes and I feel this surge of happiness 'cause it comes out so good. When we finish we try to figure out how we made all those pieces go together; it's real strange. What we do is magic!

**MR&M:** Do you feel multiple edits would work on records?

**TM:** When we edit songs, multiple edits aren't the things that come out first. The priority is the structure of the song. That's the most important thing.

**AC:** Multiples make the mix itself interesting. We'll keep switching pieces of different sounds.

**MR&M:** So, for example, you'll have

a snare sound followed by, say, a kick, followed by a snare again. **TM:** Yeah. When you make a record, you have maybe two, three hours of tape. Our job is to condense those three hours to six or seven minutes, taking out the best parts from all the mixes, and putting them back together so that the song emerges as interesting as can be.

**AC:** That's what we do first—before the multiples. We don't think of only multiples; we just try to put parts in the song that'll make it sound happening, that'll click. Sometimes from a chorus to a break you don't feel it, so we'll put a multiple in between. Then the break will come in so strong!

**TM:** Like in Hall and Oates "Out Of Touch" there's an "Ow Ow Ow...!" If it were just to go "Ow!"...

**MR&M:** It would kinda fizzle.

**TM:** Right. That's how it went (on the LP version) Tommy Mottola (Hall and Oates' manager) told us to go crazy on this record, so we did. Aretha came out really cool, too. But they didn't let us go nuts. They had guns to our heads, sort of. They just said, "This is *Aretha*."

**MR&M:** She has to appeal to the older soul audience and also young teens.

**TM:** "Freeway Of Love" wasn't a soul record though.

**MR&M:** Sure it was. The electronics were there, but the drum beat is "Dancing In The Street," the Clarence Clemons sax solo is Junior Walker, and the vocals...Aretha!

**TM:** It was fun though.

**MR&M:** You edit for Arthur Baker, of course. But you're also getting into doing remixes completely by yourself.

**TM:** We've got our own corporation now—Latin Rascals Production, Inc. We've set up our own editing studio, and we're remixing songs for people like Brass Construction, Nayobe, the Force MDs, and we're producing a new group called Love TKA. We've also done post-production work for the Flirts on CBS, plus some stuff I can't tell you about yet. We're working on a lot bigger groups now.

**MR&M:** Where did the editing idea first come from?

**TM:** From people like Shep Pettibone and John Robie. They were the ones that started it, but it was different...

**AC:** It didn't stand out.

**TM:** What we did was make it stand out; we made it like an art. We made it



Photo by Cheryl Lynne

***There are some records that are great, and all you need to do is raise the drums and fine tune. But for others, you'll want to add new production things.***

so that everything could revolve around edits.

**AC:** Through editing we could make our own melodies; change beats around; make (already mixed tracks) *totally* different. Sometimes people can't hear our multiples.

**TM:** People don't hear most of our multiples. Because what we're doing is re-doing a song so that the edits sound like they're part of the song. For example, the snare sound (on the "Out Of Touch" remix) was cut up and the entire song's arrangement changed. What we do on edits is real post-production, and everyone that we've worked with will agree on that.

**MR&M:** What equipment do you call on when you're remixing?

**AC:** We use everything. Whatever we feel a song needs.

**TM:** AMS, the Fairlight, Emulator II, Publisons, the MIDI 15 keyboards—we try to create fresh, new sounds. Our engineer at Unique is Tom Lord Alge, and we go crazy sampling things—bottles, voices, tin cans. It's good that *we're* not engineers because we would

know what would work and what wouldn't—and we wouldn't experiment. If you keep trying to find something new, you'll find it. If you don't, you won't.

**MR&M:** You hear an LP or single version of a song. How do you map the remix?

**AC:** We always feel it isn't finished. So we always add something more. Even if we know we won't use what we've added, we'll still put it on...

**TM:** It'll be the feel as we're doing the remix. It's not something that should be pre-planned. After we've already gotten all the sounds we want, we go. If you listen back to a song with different sounds you can't really say this passage doesn't belong here, or this doesn't belong there. We're really spontaneous people. Once we've gotten everything, we use an automated SSL console.

**AC:** We also always like changing sounds. If, for instance, there's a keyboard sound from the LP, we'll have it played over differently.

**TM:** All remixes don't need people



to change things around. There are some records that are great, and all you need to do is raise the drums and fine tune. But for others, you'll want to add new production things. That's what we specialize in. So we'll add on keyboards or a new bass line; we might even get somebody to come in and sing background vocals; we really add a lot to songs.

**MR&M:** Would you ever take anything away?

**TM:** We did that on the Force M.D.s' "Itchin' For A Scratch." All we left in were the vocals. We re-did everything else.

**MR&M:** I heard a very curious remix of Michael McDonald and James

Ingram's "Ya Mo B There" by "Jellybean." He took everything away and just left vocals bathed in echo. Interestingly, it was danceable, and the deejay at the club added another record underneath.

**TM:** I never heard that. But what we did on "Itchin'" was replace everything because we felt it didn't belong.

**MR&M:** What's a good intro for a club song?

**AC:** For an intro, we'll put parts from the break, or something we've recorded for the intro.

**MR&M:** There are intros which are best suited for slam segs, and some for fade in/fade outs.

**AC:** We use something dramatic

that really catches your attention. Some songs sound good with a smash intro. Others like Jennifer Holiday's ("Hard Times For Lovers") don't. Something totally different from the LP version that gradually works into something you know grabs you, too. "Out Of Touch" did that. That's one song I'll never forget working on. Because every night for a week we were at Electric Lady doing edits. And only Arthur knew what we were doing. All the staff would look at us and wonder. Big engineers would go: "That's really incredible; I would've never thought of that!"

**MR&M:** Because editing for them is just the basic approach of joining together good takes and eliminating bad ones, and not the jolting stutter that you make it?

**TM:** Yeah, it comes from a different direction.

**MR&M:** For a multiple, did you ever use anything from an outside master?

**AC:** We thought of it once...putting it through a delay unit. But we decided not to.

**TM:** It would be wrong to use somebody else's thing. You should try to make the most out of what you've got.

**MR&M:** For the mix on Run-DMC's "Rock The House," did you stop the tape machine for the strange guitar envelope at the beginning?

**AC:** No. It was just an effect. But we do stop the machine sometimes to get a jerky sort of feel. That's one of the new-type tape edits we're doing now. Sometimes there are two things happening at once. It's real hard to explain. But on Jennifer Holiday, we made the clap sound forward and backward at once with edits. It's a secret. And we're working on it to make it sound a lot better. It takes a long time...edits are fun; I'm glad they're fun!

**MR&M:** What do you charge for an edit/remix?

**TM:** Let's say I gave you a number now, and when this article comes out, we have a *number one* record. We wouldn't charge the same thing. Just like "Jellybean," Arthur, Francois (Kevorkian), and Steve Thompson...the more successful you get, the more you charge.

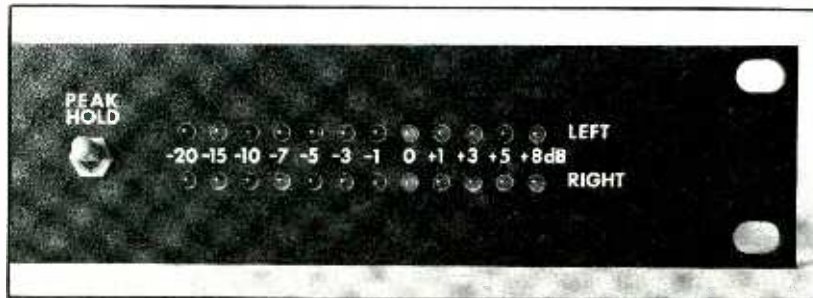
Albert and I started editing for dismal, dismal prices...well, not that dismal. But compared to what we charge now, it's a lot more profitable. For two twenty year olds, we do all right!

**Through editing we could make our own melodies; change beats around; make (already mixed tracks) totally different.**



The Latin Rascals funnin' it up at the splicing block.

# CONSTRUCTION PROJECT: LED BAR GRAPH METER



Completed project

As part of a series of articles on electronic “building blocks” for audio, this article describes the construction of a 12-segment LED meter that may be built as a stand-alone project or combined with other equipment. The need to visually monitor audio signal levels has traditionally been met with VU (volume unit) meters and, more recently, segmented type meters including LED, LCD, and vacuum fluorescent displays. VU meters provide a simple and visually attractive means of monitoring the average loudness of an audio system, but have the disadvantages of being expensive, bulky, and somewhat fragile due to their delicate mechanical construction. Also, the meter’s inherently slow response time makes it unsuitable for monitoring fast rise time signals, i.e. the peaky transients that are an important characteristic of pop music. Further, the mechanical meter’s low impedance requires an active buffer to be used to drive it so that it does not load down the line and add distortion to the audio signal.

Totally electronic meters, such as the LED meter presented here, have none of the limitations of mechanical meters. The speed of the meter’s response is determined by the detector chosen to drive the display. Peak response, average response, PPM, peak-hold, and VU are some of the possibilities. Early versions of this type of LED meter used strings of LEDs driven by individual comparators and generally required lots of

close tolerance components to make the meter accurate. In recent years, however, at least two semiconductor companies, National Semiconductor and EXAR, have offered ICs that consolidate most of the functions and parts of early discrete meter circuits into 18-pin DIP packages, making it easy to build LED meters that are simple, accurate, compact, and cheap.

This construction article focuses on

the EXAR 2278 Bar Graph Display Generator and provides practical information on the applications of the IC. The 2278 features a built in peak detector circuit that’s flat from 1 Hz to over 100 kHz and drives twelve individual LED’s over a nominal display range of -20 to +8 dB. The project requires a single supply voltage of 10 to 14 volts DC, with very low current requirements. A unique series configu-

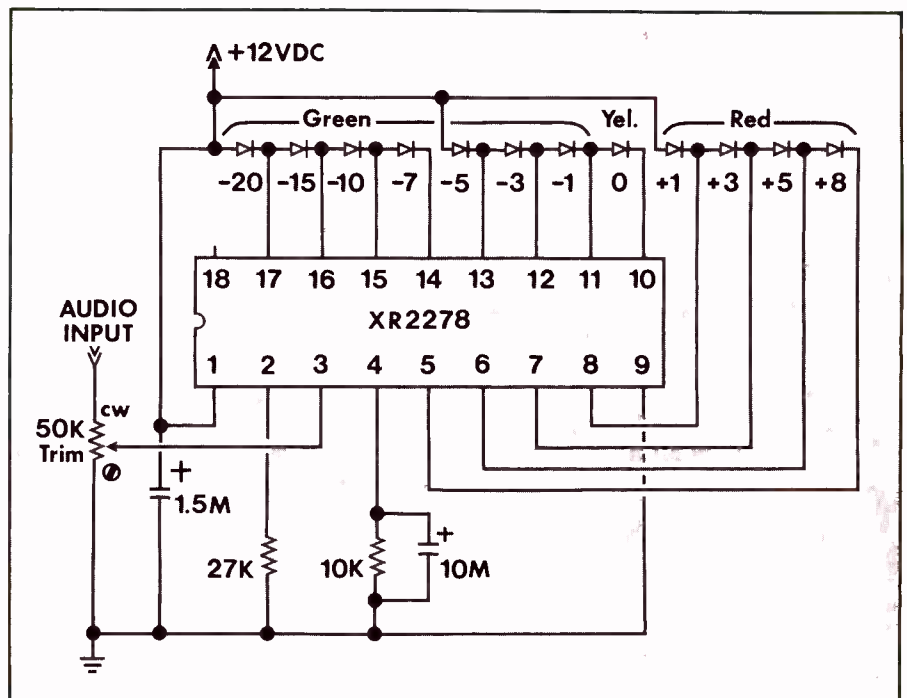


Figure 1. Schematic

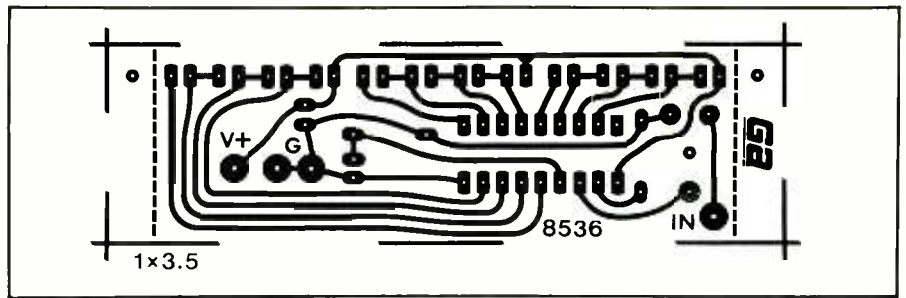
ration for the LEDs keeps current consumption under 50 mA total. Constant current outputs for the LEDs insure consistent display brightness even if the power supply fluctuates, and LED brightness is even readily adjustable. Any size, shape, and color LED may be used with the IC. The high impedance buffered input allows you to hang this meter onto any audio line without fear of loading or degrading the audio source. Input level and nominal zero are adjustable via an on-board trimmer to match your system's nominal zero level. Finally, the decay characteristic of the display is easily adjusted and a peak-hold function can be incorporated just by adding a switch. And all of this with virtually no parts!

Potential applications for this project range from a single channel test meter for monitoring signal levels throughout your system to 8- or 16-channel rackmount versions that enhance the metering of your console or multitrack recorder. The unusually simple powering requirements make this a good project for first time kit builders.

The schematic diagram shown in *Figure 1* is the complete meter project based on the XR-2278. Component values shown are for typical decay characteristics and brightness. *Figure 2* gives a layout with which you can fabricate a printed circuit board, and *Figure 3* shows the component locations as viewed from the component (non-copper) side of the board. If you are using a printed circuit board, simply insert the parts as shown, paying attention to correct orientation of the LEDs, capacitors, and the integrated circuit. ICs usually have a notch of some kind at one end, indicating the "pin 1" end. Pin 1 is also indicated by a tiny circular indentation in one corner of the IC. The remaining pins are counted consecutively, counterclockwise from pin 1. This is true of all ICs in dual-in-line (DIP) cases.

Most LEDs have a "flat" on one side of their plastic lens, sometimes indicating cathode, sometimes anode, sometimes neither as is the case with the ones I chose to use. Check the literature that comes with the LEDs you use to make sure you put them in correctly.

Solder carefully with resin-core solder, avoiding the use of excess solder and heat. Be sure to use a socket for the IC. *Figure 4* is a photograph of the completed circuit board. Note that the LEDs have been bent over at a right



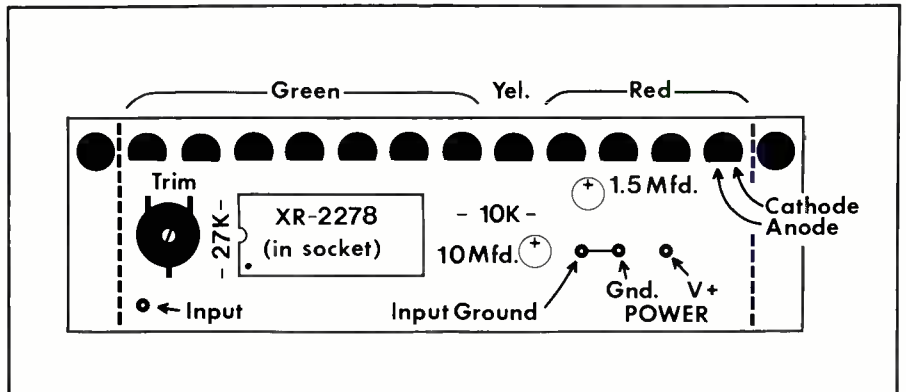
**Figure 2.** PC Board artwork. This view is from the copper side of the board.

angle and the capacitor leads are also bent so that they lay flat to the circuit board. You may not need to bend the components, depending on how you eventually want to mount the card to its panel.

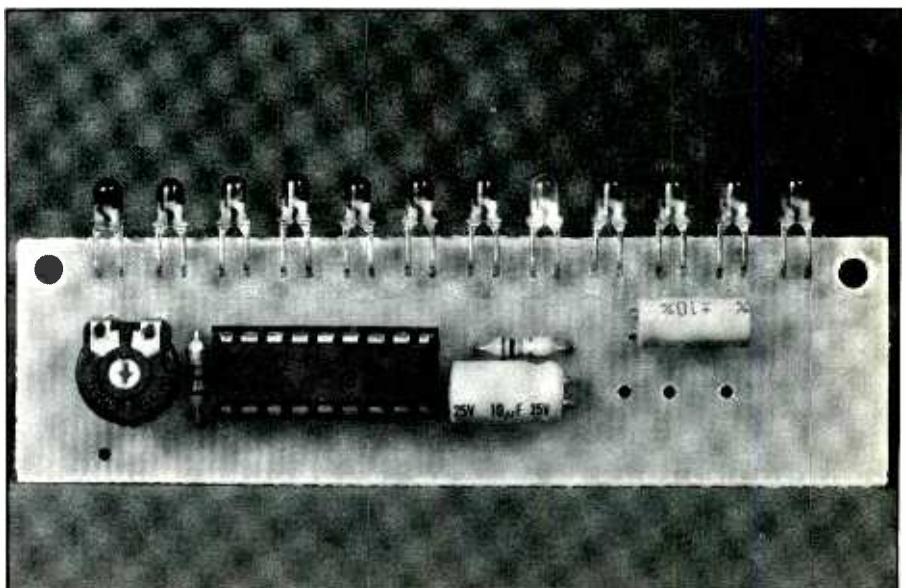
### POWER SUPPLY REQUIREMENT

The XR-2278 requires a single sup-

ply of 10 to 14 volts, DC (15 volts absolute maximum) at 50 mA. You can either build a dedicated 12 volt supply or purchase a standard plug-in supply of the type commonly used to convert AC for tape recorders and calculators. For example, Radio Shack sells an AC Power Adapter (Cat. No. 273-1652) which will power up to ten of these meter cards with all lights on simultaneously and even more under normal



**Figure 3.** Component insertion guide. This view is from the component side of the board.



**Figure 4.** Completed circuit board.

program conditions. The adapter is adequately regulated for this application and sells for about \$10.00. Be careful that you get the polarity of the supply correct when you hook it up to the circuit board or damage is inevitable.

If the meter is to be retrofitted into existing audio equipment, you may be able to share that unit's power supply. Most contemporary audio equipment

capacitor combination attached to pin 4 of the IC. By increasing either the 10K resistor value or the 10 microfarad capacitor you can slow down the decay time of the display without affecting the attack time. Stretching this concept a bit further, a peak hold function can be accomplished simply by disconnecting one leg of the 10K resistor for as long as you wish to hold the peak level. A SPST switch, either momen-

## MOUNTING THE METERS

The meter card layout was designed with two alternate mounting positions in mind. In the first, the LEDs extend straight out from the PC board, 3/8-in. standoffs are attached, and the card mounts parallel to the front panel of the chassis. Or, the LEDs may be bent over at a right angle as in the photo of *Figure 4*, in which case the card mounts perpendicular to the front panel. The latter position allows for denser packaging of multiple units. However, since the standoffs would now be oriented incorrectly for screw mounting, you'll need to attach the meters to the panel with a dab of epoxy.

## EXTERNAL WIRING

Connect the power supply to the pads marked V+ and G. Connect the audio input to the pad marked IN and the second ground pad. It's then a good precaution to check for correct power supply operation with a voltmeter before plugging the IC into its socket. You should see +12V on pin 1 and ground at pin 9 of the XR-2278.

## PARTS LIST

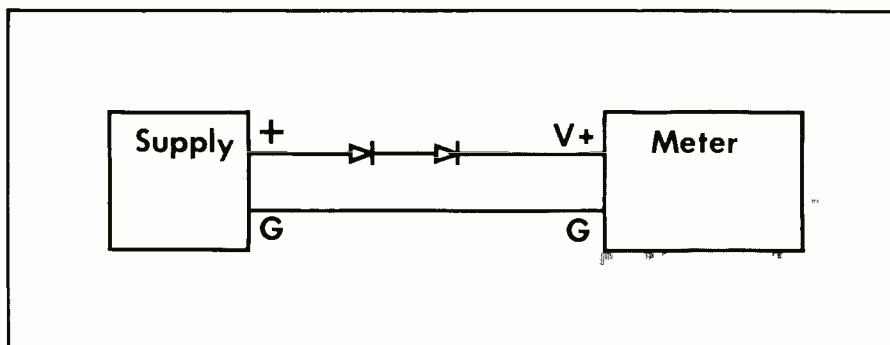
10K ohm resistor, 1/4 watt  
 27K ohm resistor, 1/4 watt  
 50K ohm trim pot  
 1.5 Mfd. electrolytic capacitor, rated at 16 volts  
 10 Mfd. electrolytic capacitor, rated at 16 volts  
 EXAR XR-2278P Bar Graph Display Generator IC  
 18-pin DIP socket  
 Green LEDs (7)  
 Red LEDs (4)  
 Yellow LED  
 3/16D x 3/8L inch standoffs (2), 4-40 tapped, with screws  
 Printed circuit board

## KIT INFORMATION

Parts for this project are available from Gaines Audio, PO Box 17888, Rochester, NY, 14617, (716) 266-0780, as follows:

Complete meter kit as described, minus chassis and power supply, \$19.95, plus \$2.00 shipping.  
 Circuit board only, \$7.50, postage paid.  
 IC only, \$8.40, postage paid.

Money order, VISA, MasterCard, COD, and checks accepted. NY residents, please add 7% state tax. Thirty day return privilege for full refund if not satisfied.



**Figure 5. Dropping a +15V supply to +13.5V with two 1N4148 diodes. This step is unnecessary if operating from a 10 to 14 volt supply.**

has an internal +15V DC supply. Depending on how much "headroom" a particular supply has, you might be able to draw an additional 50 mA from it without overload. If the supply is marginal and the regulators are already running hot, consider other options. If in doubt, consult the manufacturer of the unit.

Note that the XR-2278 specifies a maximum supply voltage of +15. Therefore, if you do use a +15V power supply with this project, it would be a good idea to drop the supply a bit by inserting a couple of diodes between the supply and the PC board as shown in *Figure 5*.

## OPTIONAL MODIFICATIONS

**Peak Hold:** The decay time of the display is determined by the resistor/

tary or latching, is all that's required.

**Brightness Adjustment:** The LED intensity can be dimmed by increasing the value of the 27K resistor attached to pin 2. You may substitute a 50K or 100K potentiometer, but keep the 27K resistor in series with it.

## CALIBRATION

A trim pot is provided to allow you to set the 0 dB reference level for your system. Set fully clockwise, the meter will display its zero LED with an input level of approximately -20 dBV. Turning the trimmer counterclockwise allows you to pad the input for higher level signals, ie. 0 dBV, +4, +8, or even speaker level inputs. A 0 dB input should just light the yellow LED after you've adjusted the trimmer.

## SPECIFICATIONS

Range	+8 to -20 dB
Frequency response	1 Hz to 100 kHz
Input impedance	50k ohms
Input range	-20 dBV to +30 dBV
Supply voltage	+10 to +14 VDC
Supply current	50 mA maximum, 4 mA minimum
Size of PC card	1 x 3 1/2-inches
LED spacing	1/4-inch between centers

## Snare Drum Recording—Part 2

First of all, our oral, er...sorry, aural pleasure problems have been solved. *Modern Recording & Music* plans to make available through the magazine, a series of cassette tapes that I will produce, covering several of these columns at once, so that you can now hear everything from doing a backwards hand erasure, to gating a reverb on a snare. (More about the specifics on *when* and *how* to get one next month.)

Now—how many of you think that the snare is one of, if not *the*, most important sound used in contemporary recordings? I sure do. Some producers or engineers are hired solely on the basis of their drum, particularly snare drum sounds. There are pieces of equipment that cost over \$10,000 that are usually dedicated *just* to the snare, (an AMS Reverb is a perfect example).

So after last month's first time round, let's get down to the snare sound that you'll most likely want to get, so all the drummers will be patting you on the back, telling you how great it sounds, your studio will be known for its "killer" drum sound, and you will be booked around the clock.

Anyway, first comes the hard work. Take the snare drum you are about to use and examine it. Make sure that there are no loose parts to rattle, see how much tension the snare release has, and how much it can be loosened or tightened. Check out whether or not there is a built-in internal muffler.

Do all this with the drummer and his permission, of course. You will learn more about drums; he will learn more about how to get his drums ready to be recorded, and you will both develop a unique rapport; an essential, no *the* essential element that makes a great engineer.

Seriously, it is much better to have a band love you than to be a technical wiz. I can only give the analogy of the doctor/patient relationship.

The band exposes themselves naked to you, and you cannot laugh. They are most vulnerable when they make their worst mistakes, sing their most terrible harmonies, etc.

You have got to be there and be supportive of them, laugh when they

do, be serious when they are, and calm them down when they get frustrated. If you don't think it's true, remember that trust the next time your doctor says, "Turn your head to the side and cough."

Getting back to the issue at mic, first determine whether you are going to be using: a metal or wood snare.

Metal will be brighter, and also more metallic, while wood will sound "warmer" and have more overtones and pitch. However, even if you choose wood, you probably want to get rid of most of the overtones and pitch, and damp the hell, (whoops, sorry, but you remember the PMRC ratings) out of the drum.

This is accomplished for the most part by the choice of drum heads. In the mid 70s, not a time particularly known for its wonderful musical contributions, a major accomplishment came about by a company called Evans and their manufacturing of a "Hydraulic head." This was actually two drum heads put together with a dab or two of oil in between. Up until then, people would gaffer-tape the hell out of each drum to stop it from being an out of control resonant ring.

The Evans head, combined with the elimination of the bottom head would do almost the same thing, but let a little tone, pitch, and decay come through, thereby eliminating the "oatmeal box" sound toms and a megabuck gaffer's tape/Kotex bills (sorry, but it's true, that's what was used...besides, remember the ratings) forever.

Unless, of course, you still use all that tape on the drums, which, being the cool guy or gal that you are, you don't.

A flood of similar products, "Deadringers," etc., soon hit the market which were similar only in that they eliminated the tape.

They basically were rings of foam that were self-adhesive to the underside of the head, but gave you the benefit of the "Evans sound"; a not-totally-dead drum with no nasties.

Then came my favorite product; the "Pinstripe" head by Remo. It used two layers of head in the center, but banded them near the rim so the head and rim were only one layer thick.

There were many improvements; more attack, just the right amount of overtones, exactly the amount of ring and resonance you wanted, and the variables were controllable (to a degree) by tuning.

Now we're really getting ahead of ourselves; these factors apply more to Tom-Toms, but tuning the head is still my preference for the snare. On the bottom, a thin head with wide snares is just right.

First, tune the bottom head medium-tight.

Then, for the top head, tune to the lowest pitch you can get. This is a good place to start from, the true top head tuning depends on the pitches of the toms.

Now, put on the snares. Hit the drum with a stick.

You probably have what now sounds like a nasty tom with snares.

Now, I'm going to go against everything I just said (but I said I would do this last issue, too).

Ask the drummer for his wallet. (This is where getting him to be your good buddy comes in handy.)

Put it on top of the head.

What you should now have is a low dead smack with rattles on top.

Adjust the snares until the rattle is where you want it.

Play with the pitch of the top head (and bottom head, too).

Use the internal muffler; try it on and off.

Try using an additional external muffler in addition to, or instead of, the drummer's wallet. (Although, if it does make the best muffler, tape it in place, and maybe by the end of the session, you can peek inside to see if he has enough money to pay you).

Two excellent external drum mufflers are made by Yamaha and Tama.

Do everything you can until it sounds like something.

When you finally get it, wait 'til next month to find out how we will gate, EQ it, mic it, and blend it in with the rest of the kit.

If you're really lucky, the band will wait a month too, and you can charge them for all that studio time.

Then you will *really* feel like a doctor.

# Taxing Tips

## A Recording Studio May Be Helpful To Your Tax Bill

**D**espite all of the talk about tax reform and tax simplification, all proposals remain just that, proposals. Today, keeping your money from the grasp of the tax collector is just as difficult as it has ever been. Fortunately, a recording studio or music-related business provides an excellent—and perfectly legal—way to reduce your annual tax bill. Or, put another way, tax savings can help subsidize your musical activities.

These do-it-yourself tax shelters have been around for years but misconceptions still exist. For instance, all that is needed to reap tax savings is a properly structured and operated music business. Profits in two out of any five consecutive tax years are not necessary to qualify your music venture as a business in the eyes of the ever-vigilant IRS.

And, even better, new tax rules phased in for 1986 now make tax benefits from using your recording studio or activities as a business more profitable than ever. But what makes your

studio a business—at least for tax purposes?

According to our tax laws, so-called “hobby” losses are not tax deductible. A hobby is defined as any activity not engaged in for profit. Naturally, expenses incurred while engaging in any hobby are either tax deductible or may be utilized to offset the income from that hobby.

Thus, expenses such as taxes, interest, casualty losses, etc., are deductible even if they exceed the income from the hobby activity. After the deduction of these expenses, some operating expenses may be deducted—but only if there is any hobby income remaining. If there is still hobby income left, then the depreciation and other basis adjustment items may be deducted.

With any music business, on the other hand, all operating expenses, interest, taxes, casualty losses and depreciation, may be claimed as a tax deduction. If these write offs exceed income from the activity, the resulting loss is used to offset income from other

sources, such as job or investment income. In effect, hobby/business losses create a legitimate tax subsidy for your fledgling musical business activity.

Obviously, merely calling your recording studio or activity a business is not enough to qualify for the special tax breaks that such a status carries with it. This is where the two profit years out of five come into play. Any venture that shows two profitable years out of any five consecutive years is presumed to be a business under our tax laws. If those profit years exist, Internal Revenue must prove that the activity is a hobby.

If, however, those two profit years don't exist, it is up to the taxpayer to prove—if asked—that the activity is a business rather than a hobby. Proving that a “profit motive” exists is not a cut-and-dried procedure by any means, but, fortunately, our lawmakers have provided guidelines. Some of the relevant factors that are taken into consideration when determining

whether an activity is engaged in for profit are:

1. the individual's history of income or losses with respect to the activity;
2. the amount of occasional profits earned, if any;
3. the cause of the losses;
4. the success of the taxpayer in carrying on other similar or dissimilar activities;
5. the financial status of the taxpayer;
6. the time and effort expended by the taxpayer in carrying on the activity;
7. the expertise of the taxpayer—or his or her advisors;
8. the manner in which the taxpayer carries on the activity;
9. the expectation of profit by the taxpayer;
10. the expectation that assets used in the activity may appreciate in value; and
11. the elements of personal pleasure or recreation.

This last guideline does not mean that enjoyment is a no-no. The courts have ruled that business—even loss generating activities—can be enjoyed by their owners and that enjoyment is not an indication that a hobby exists. But the IRS does weigh the enjoyment factor when looking at any recording business, so it is important to be able to document the profit motive, using as many of these guidelines as possible.

The US Tax Court has ruled that a taxpayer's expectation of profit, even if unreasonable, is indicative of an activity engaged in for profit. In fact, the US Court of Appeals for the District of Columbia has held that, although a taxpayer's expectation of profit is a proper factor to be considered in determining whether or not losses are deductible, the legal standard is whether the taxpayer has engaged in the activity with the objective of making a profit.

Now that you have structured your recording "business" to meet the guidelines, have good financial records and books, and operate your activity with the objective of making a profit—no matter how remote the possibility of profits may actually be—was it worth it? Even a brief look at the tax deductions (and a few of the pitfalls) will show you how lucrative tax write offs can be for the owner or owners of a qualifying tax business.

The biggest tax benefit is the investment tax credit. Purchasing a qualify-

ing business asset, such as a synthesizer, automatically entitles the owner to a ten percent tax credit. That's right, when the owner acquires that synthesizer, he is permitted to reduce his tax bill by an amount equal to ten percent of the asset's total value—even if financed.

If the investment tax credit is claimed, the amount available for depreciation purposes must be reduced (by fifty percent of the tax credit claimed). But with the five year write off for equipment, there is still plenty to help offset income—or create larger losses.

Most fledgling businesses don't need additional losses or write offs, but for those who do and for existing businesses attempting to offset income, there is a first-year write off of up to \$5,000 in newly acquired assets. Naturally, should this election be chosen, the tax credit and depreciation are not available—but only for the amount expensed or written off in the year of acquisition. If only \$5,000 of a \$10,000 asset is expensed, a \$500 investment tax credit could still be claimed and \$4,750 of the asset's value would remain for depreciation purposes.

The water clears slightly when claiming a tax deduction for the expenses of operating the recording studio or activity as a business. All operating costs or expenses including management, insurance, advertising, maintenance, repairs and supplies are offset by any income the venture generates. The resulting losses (or gains) are passed through to the individual owner(s) to be used to offset their income from other sources. But remember, losses from the recording business cannot exceed the capital interest of the individual in that activity.

To illustrate, suppose five individuals each invest \$5,000 in a studio and form an operating entity such as Doe's Perfect Sound, Incorporated. Doe's Perfect Sound borrows \$50,000 to purchase the \$75,000 studio. The five investors would each be limited to losses of \$5,000—the amount of their actual capital investment. Should the individuals borrow or invest the total of \$75,000 the loss deduction they could claim would be increased to the amount they have invested in the activity.

Which leads to yet another potential problem—that of the limitation our tax law imposes on the amount of interest paid for borrowed funds that have been invested. Generally, an indi-

vidual can deduct up to \$10,000 (\$5,000 for a married person filing a separate tax return) of investment interest plus an amount equal to investment income. Thus, someone with \$10,000 in investment income could pay up to \$20,000 of investment interest and deduct it all on his or her individual income tax return.

Offsetting all of these potential pitfalls, a recording studio or activity as a business also offers a number of nice fringe benefits. There are tax deductible travel and entertainment to inspect, promote business and oversee talent or promotion activities. While enjoyable, these tax deductible trips should be primarily for "business" purposes. But so long as enjoyment is secondary, there is no reason not to have a good time while conducting this recording business.

The biggest stumbling block to enjoyment of these tax benefits and those accruing from converting your studio or activity expressly for use as a tax "business" is not the ever-present Internal Revenue Service but, rather, our tax laws. The IRS must adhere to the tax laws and if they don't, going over the lowly auditor's head or even to the US Tax Court provides an escape route. But there is no getting around the need to prove that all-important "profit motive."

Going it alone, or in conjunction with several others, and employing any required maintenance, management or professional assistance leaves the door open to eventual profits. Maintaining the proper books and records—changing operating methods if those books so dictate—further increases the recording venture's credibility as a business.

A studio owner, partnership, or Subchapter 'S' corporation does not really need a great deal of expertise regarding a particular activity in the beginning in order for that activity to be considered "engaged in for profit" according to the Tax Court. However, professional assistance is strongly recommended as you wend your way through the maze of tax rules and regulations.

With a "recording business," your recording activities will be, at least partially, subsidized by tax savings. And, as many recording studio owners and independent programmers and producers can already attest, a recording business can generate not only tax savings, but also a great deal of pleasure. What more could any studio owner/taxpayer ask for?



**B.B. KING: *Six Silver Strings*.** [Produced by David Crawford, engineered by Freddy Stonewall, at The Studio, Hialeah, FL] MCA-5616.

Performance: **Modern day blues**  
Recording: **Polished and refined**

*Six Silver Strings* is the sixty year old blues master's fiftieth album in thirty five years and it shows, as usual, the guitarman's eclectic styles and tastes in blues and blues-based rock music. In contrast to the low quality sound of his first few LPs, *Six Silver Strings* is an excellent sounding record. Although there is no mention on the liner notes, I wouldn't be surprised if the recording used some digital technology.

Long a staple of B.B.'s music, the legendary warm lead riff sounds from his only love, Lucille, his custom made Gibson guitar, permeate the album. The full instrumentation and backing vocals that round out the record are very textured and clear. Unfortunately, the musicians are not individually credited, but they include David Crawford, Luther Dixon, Nathaniel Seidman, Julio Ferrer, Larry Dermer, Robert Caldwell, Willie Covington and Paul Mullen.

The album starts off with the mellow R&B type title track and sets the mood for the remainder of the LP which is as diverse as B.B. himself. The album contains three songs from the motion picture soundtrack, *Into The Night*, from the movie of the same name. This demonstrates B.B.'s ability to transform old style blues into modern day sounds. On the movie cuts, the transformation manifests itself by a constant Simmons type snare moving from the right channel to the left.

Two of the songs from *Into The Night* ("Into The Night" and "My Lucille") were written by Ira Newborn. "My Lucille" is a blues/rock tune about B.B.'s love affair with his one love, his guitar. The third, the Steve Cropper/Wilson Pickett classic, "In The Midnight Hour," shows off King's extended vocal range, and although his voice is as raspy as ever,

it has a soft, pleasant quality to it. All the other cuts on the album were written by producer Crawford, along with executive producer Luther Dix-

has made it into the 80s—a world of synthesized and digitized music—with flying colors.

—sammy caine



on. Of note, is the Motown-istic "Big Boss Man" with its tight drum intro and homey sax and "My Guitar Sings The Blues," a classic 12-bar blues tune that features very little by way of instrumentation. Again B.B. King shows he is surviving the 80s by using a synthesizer for the typical harmonica solo and an electric piano and bass throughout the song.

As usual, there are some great sounds on this album, due to both the fine writing and performing and the state-of-the-art recording that was obviously used.

B.B. King has garnered four Grammy awards in his illustrious career, (with two in the past four years). Once again, it goes to show that B.B. King

**WILLIE AND THE POOR BOYS: *Willie and the Poor Boys*.** [Produced by Bill Wyman, engineered and mixed by Stu Epps, Leif Mases, and Steve Foward, no recording studio listed.] Passport PB 6047.

Performance: **Good timing, jiving jam**

Recording: **Loose but professional**

What do musicians do when they get together in informal circumstances? Well, they generally jam if they have instruments around. Willie and the Poor Boys is the name chosen for loose fitting musicians put together by the Rolling Stones' Bill Wyman

MODERN RECORDING & MUSIC



to record an album and film a video with the proceeds directed to the Ronnie Lane Appeal for A.R.M.S. (Action Research into Multiple Sclerosis) that began with a series of concerts in 1983.

Wyman, fellow Stones drummer Charlie Watts, keyboardist Geraint Watkins, guitarist Mickey Gee, and guitarist Andy Fairweather Low comprise the core group of musicians on the twelve songs. For some reason, Ray Cooper, Jimmy Page, Willie Garnett, Chris Rea, Steve Gregory, Paul Rodgers, Kenny Jones, Henry Spinetti, and Terry Williams are listed as guest musicians, but with no instrumental credits. However, on an insert ad for the accompanying video, the musicians are given instrumental credits. And to make matters worse, the musicians are not given individual song credit so unless one sees the video, one will never really know who plays on what song.

*Willie and the Poor Boys* has a feel of immediacy without much, if any, overdubbing. Most of the material are covers from Otis Reddings' bluesy "These Arms of Mine" with R&B oozing all over the vinyl to the horn driven Chuck Berry "You Can Never Tell" to Little Richard's tickling piano inspired "Slippin' & Slidin'," to Clifton Chenier's jump "All Night Long," and the Big Bopper's "Revenue Man." Allen Toussaint and Amos Milburn also have songs covered. The only original, "Poor Boy Boogie," penned by Wyman and Low is a jiving fun boogie.

Although the album has its moments—even if the music is not spectacular—it is the video that probably transcends the spirit of the jam best. But as jams go, *Willie and the Poor Boys* had good intentions, and at least some of the present rock 'n' rollers have not forgotten some of the masters and their chestnut songs.

—bob grossweiner

**MEN AT WORK: *Two Hearts*.** [Produced by Colin Hay and Greg Ham, engineered by Tim Kramer, recorded at Fast Forward Studio, Melbourne, Australia.] Columbia FC 40078.

Performance: **Predictable pop**  
Recording: **Predictable perfection**

Men at Work craft extraordinary tunes, but placed together on an album they begin to sound too familiar. The Australian group has under-

gone some personnel changes though, and the once quintet is now a trio. They added a few guest musicians on some tracks, but on others, Colin Hay used a drum programmer in addition to his other instruments. All too often, there is a lot of obvious overdubbing to help get the group's intended feel. And oddly enough, Men at Work gets a more forceful instrumentation under its mid-tempo, ethereal ballads.

For the most part, *Two Hearts* follows the patterns established by Men at Work's preceding two albums. The percussive "Sail to You," which is a bit different than the other tracks, has an effective vocal echo fade out.

Hay adds an electric sitar plus female vocals to "Maria," one of the rare sitar offerings in rock since George Harrison.

Lyricaly, "Stay at Home" is about fear of the outside world. "Everything I Need" is a love song with Phil Colson on slide guitar. And "Hard Luck Story" has cinematic qualities.

Men at Work experiment with some exotic instrumentation, increasing the group's oeuvre. With just a trio, the group needs to be more aggressive with more of a live feeling to come up with the hits it had on *Business As Usual* and *Cargo*. It's too easy to rest on one's laurels.

—bob grossweiner

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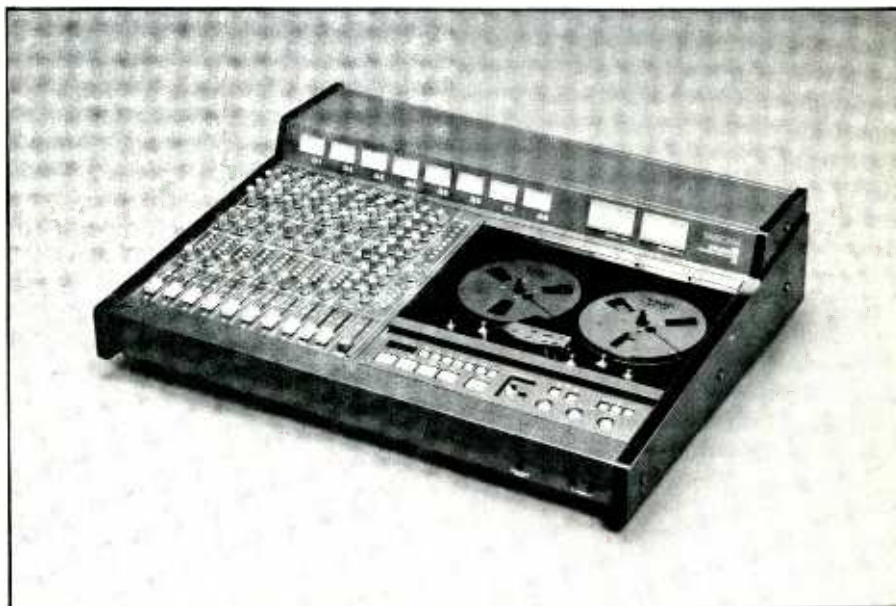
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# The Market Place

*what's new in sound and music*

## **TASCAM STUDIO 8**

The Tascam Studio 8 combines 8-track open reel fidelity and cassette convenience. An 8-track open reel recorder, 8-channel fully assignable mixer, SMPTE/EBU (Society of Motion Picture and Television Engineers/European Broadcast Union) interface, and a microprocessor controlled "Load" function combine to make the Tascam Studio 8 a powerful and flexible production system. Once a seven-inch reel of tape is threaded on the Studio 8, its Load function ensures that the tape will never run off the reels no matter what transport mode is in use. Thus, the tape can be manipulated with cassette-like ease while the fidelity and editing flexibility of the open reel is retained. SMPTE/EBU synchronizers and controllers are plug compatible with the accessory jack on the Studio 8. This feature makes the Studio 8 the ideal system to introduce high quality 8-track audio to the sync-video market at a very low cost. Composers working in the film or video industry and musicians using electronic systems based on MIDI/SMPTE will also find this feature essential to their work. The Studio 8 contains an 8-channel mixer with eight program busses and 8-channel monitor capability. The mixer also has a separate stereo buss that can be used for remix or as a solo buss during multitrack work. Any channel for the mixer may be recorded on any or all tracks of the



recorder at any time due to a unique combination of Assign and Record Function switches. An Auxiliary buss system can be used as an additional cue or effects mix and the stereo effects mix system accommodates the latest signal processors such as stereo digital reverbs and delays. The mixer's equalizer is a 3-band sweep-type parametric system to precisely control frequencies from 50 Hz to 15 kHz. Return To Zero, Search To Cue, and Real Time Counter are some of the recorder functions of

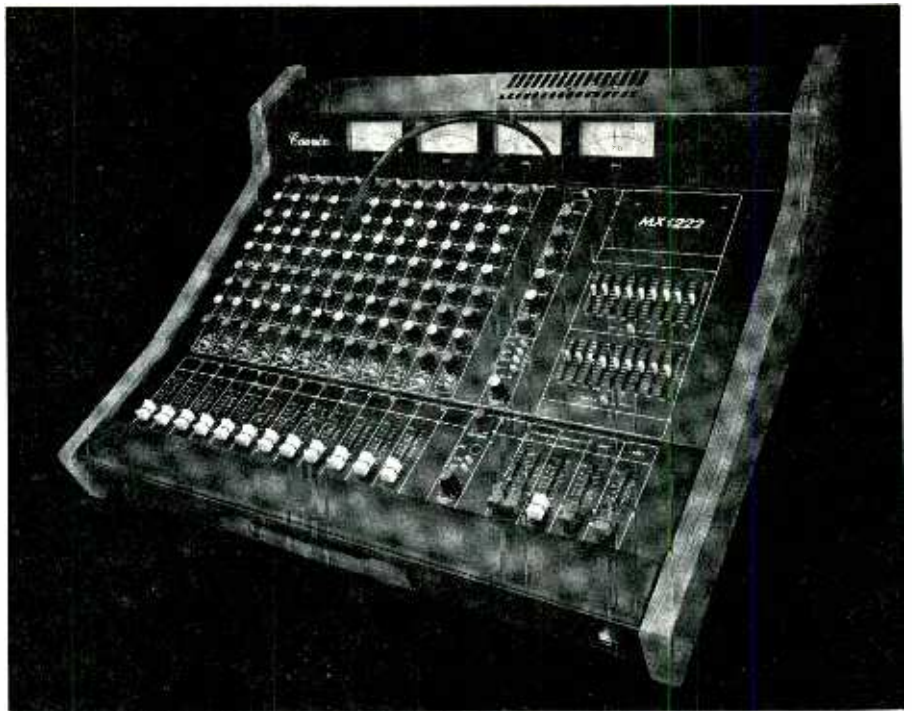
the Studio 8. Three motors with full servo-controlled mechanism are utilized. Noise problems are handled by the unit's dbx system that has a separate track-8 dbx defeat switch so that SMPTE/EBU or other time code material can be recorded on track 8. Even with time code on track 8, track 7 may be used for audio with absolute confidence that the time code will not bleed into the adjacent track. The suggested retail price is \$3,495.

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## NEW CARVIN CONSOLES

The Carvin MX-22 series consoles are available in 6, 8, 12, 16, and 24-channel formats. These consoles are professional specification units designed in response to current market demands for a flexible mixing console. They are suitable for concerts, recording, theater and broadcast mixing applications. They feature ultra-low noise differential mic pre-amps with mic/line switching. Extremely low noise op-amps establish quiet performance and extensive headroom that is preserved throughout the console by careful attention to signal routing and gain. Typical output noise performance is  $-90$  dBm. Other input facilities include 48V phantom power, 3-band equalization with sweepable midrange, two monitor sends per channel, one effects send (with built-in Hammond 3-Spring reverb system), stereo pan control, priority "Solo" switching and smooth 60 mm slider volume controls. The master section features 60 mm slider, 2-track outputs, mono-master output, BNC little lite, full talkback facilities including built-in condenser mic and volume control (for both talk-back and solo), 60 mm slider faders for monitor #1 and monitor #2 outputs and two 9-band graphic equalizers that are fully patchable. The MX-22 series consoles feature modular circuit cards. Channel cards



are connected utilizing highly reliable "Molex-type" connectors and computer ribbon cable. The majority of inputs and outputs are  $+4$  dB/ $-10$  dB and are fully compatible with other professional audio equipment. Input Noise is  $-128$  dBv, crosstalk is  $-65$  dB and 1 kHz,  $-55$  dB and 10 kHz, CMR  $-75$  dB and 1 kHz, THD typically less than .02%, 20 Hz to 20 kHz. Some models are

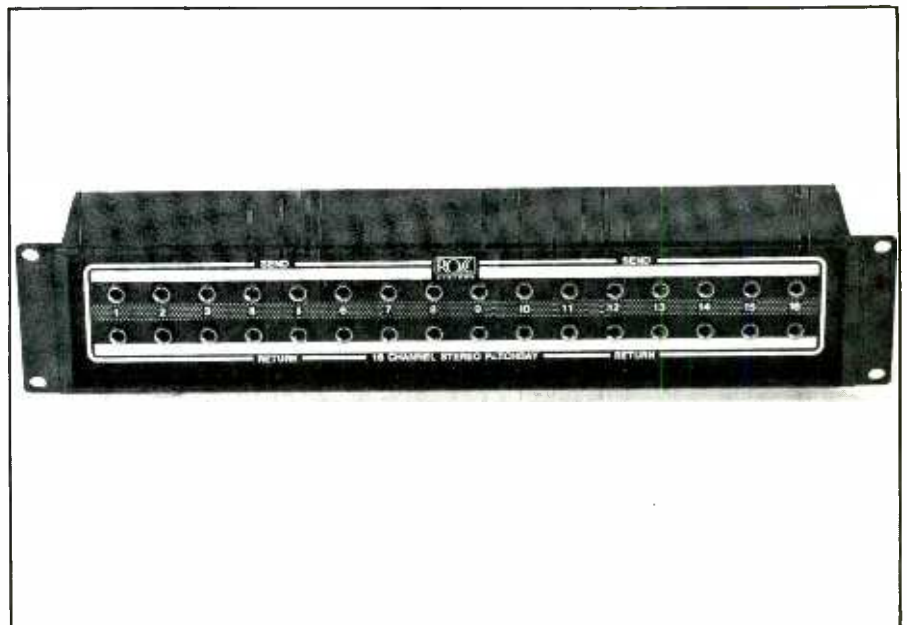
powered and feature Carvin's exclusive "Power-Track" dynamic compression circuit for extended power output of 300 to 400 watts. Prices are: MX-622P, 300W RMS-\$799; MX-822-\$749; MX-822P, 400W RMS-\$949; MX-1222-\$1,099; MX-1222P, 400W RMS-\$1,299; MX-1622-\$1,399; MX-1622P, 400W RMS-\$1,599; MX-2422-\$1,999.

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## ROSS 16-CHANNEL STEREO PATCHBAY

The new R16 Stereo 16-Channel Patchbay features 1/4-in. ring/tip/sleeve input jacks with sixteen independent channel cards internally. The R16 Patchbay comes wired front normalized but with a simple opening of the back panel and reversing the card one can have rear normalization for effects racks patch bay. The Patchbay chassis is made of heavily extruded aluminum with aluminum rack ears and molded sheet metal back panel. Using common 1/4-in. phone plugs eliminates the need to have to go out and find special RCA plugs not commonly used by the professional musicians in the MI industry. The R16 patchbay has a list price of \$99.95.

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## AUDIO-TECHNICA STUDIOPHONES

The Audio-Technica professional dynamic Studiophones are suitable for broadcast, recording, and sound reinforcement applications. The four models include both open- and closed-back types, 250, 150, and 8 ohm models. The open-back models are designed for those who must be able to hear outside sound, such as aural cues, while the closed-back versions are for those who need to exclude extraneous sound. The 250 ohm and 150 ohm model answer the needs of those requiring multiple ear-phone applications, where there would be danger of overloading the amplifier if 8-ohm models were used. The low-impedance Studiophones are for uses where only one or two units are required. At the top of the line is the ATH-M7/250, a closed-back 250 ohm model with a price of \$47.00. Reproducing sound over a 20 Hz to 20 kHz range, the headphone utilizes a circumaural foam cushion which effectively shuts out ambient sound while supporting the phone element at a slight distance from the outer ear, assuring excellent wearing comfort. The ATH-M7/250 also features high-lux samarium cobalt magnets and ultra-low-mass construction. Another feature is the cord which has a coiled midsection,



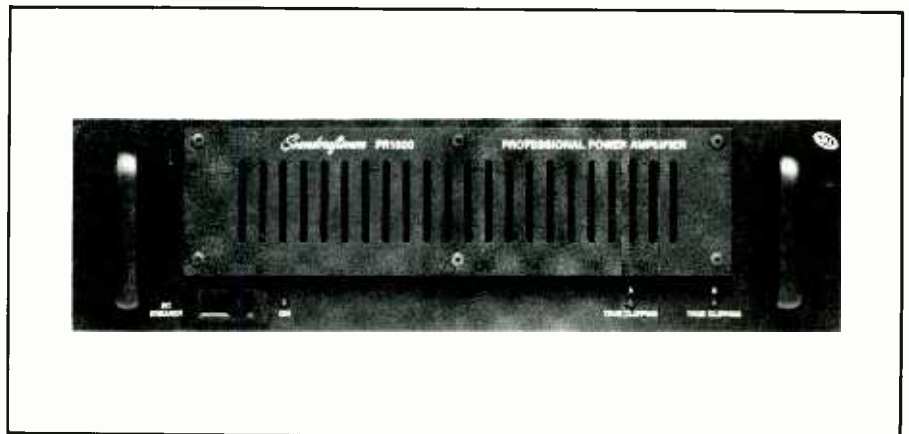
with straight lengths at either end. As a result, the cable allows extra personal freedom, extending from 4 to 8 feet, but with far less tendency to tangle. Similar to the ATH-M7/250, but in an open-back model, is the ATH-V7/250, with a price of \$42.00. Featuring the same construction and same type of cord, but in an 8 ohm model, is the ATH-V7, with open back, at \$36.00. An open-back, 150 ohm model with a straight cord is the ATH-M2/150, at \$29.95.

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## SOUNDCRAFTSMEN MOSFET POWER AMPLIFIER

Soundcraftsmen's new Model PR1800 MOSFET power amplifier is rated at 600 watts per channel at 4 ohms continuous power, 20 Hz to 20 kHz FTC at less than 0.09% THD. The amplifier is designed specifically for low impedance loads with High Continuous Power output, also rated at 900 watts per channel at 2 ohms, 375 watts per channel at 8 ohms. It is suitably designed for touring sound systems, recording studios, and other highly demanding professional applications. Construction is modular, for quick and easy field serviceability. The left and right channel driver and output boards are interchangeable, thus only one set of spares is needed. Speaker protection is provided by a separate output relay-breaker on each channel, as well as in-circuit DC Blocking. The front panel-mounted AC Circuit Breaker is coupled to a 7-second anti-surge delay



circuit. The inputs may be balanced or unbalanced, and connections are made via XLR connectors, barrier strip or 1/4-inch phone jacks. Outputs are 5-way binding posts. The rear panel also features Stepped Level controls for each channel, a Mono Bridging switch (1800 watts at 4 ohms-Bridged Mono), and a compressor-limiter selector switch. The Clip-Sensing-Compressor (CSC) circuit enables substantially

increased average power output, up to 15 dB potential gain advantage, before clipping. The Tru-Clip indicators for each channel are designed to detect actual waveform distortion, thus providing an accurate indication of clipping. This is housed in a compact, 3-rack space chassis, weighing 65 pounds. Dimensions are 19 x 5 1/4 x 16-inches and it is priced at \$1,299.

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## TRISTECH COMPACT STEREO POWER AMPLIFIER

The FX-600 compact stereo power amplifier, is a professional power amplifier, in a small package. Designed for driving both speakers and headphones, the FX-600 is perfect for those applications requiring a modest amount of power in a small space. Into either 4 or 8 ohm speakers, the FX-600 will develop a minimum of twenty watts per channel. Into headphones, the FX-600 will deliver as much as 70 volts of swing, which is more than sufficient. The FX-600 is perfect for use in recording studios (for driving small monitors, or for use as an active headphone cue system); sound contracting (for use as a zone amplifier or headphone amplifier); sound reinforcement (as a high-end amp in a multiway system, for replacing the underpowered headphone amps found in most mixing consoles, or for driving stage monitors); broadcast or production facilities (for use as a monitor or headphone amplifier); and for musicians (for keyboards, bass, or guitar, as a practice amp or for monitor systems



when used with devices like the Tom Scholz Rockman or similar device). The FX-600 is a stand alone unit which may be used individually, or mounted in a 19-in. rackmount. Each unit is self contained, and comes complete with an external power transformer for low hum and noise specs. Each unit measures approx. 7 x 2 x 4-inches, and is constructed in a heavy gauge aluminum case, with fully recessed connectors and controls. High reliability

components are used throughout. It will perfectly reproduce a 20 kHz square wave at full output (+24 dBm), insuring performance equal or superior to digital equipment. The FX-600 carries a suggested retail price of \$199.95. The dual rackmounting kit (which includes a filler panel for mounting a single unit in the rack) carries a suggested retail price of \$40.00.

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## ROLAND MUSIC SOFTWARE

The Roland MUSE (MIDI Users Sequencer/Editor) is for the Apple II+, IIe, IIc, and Commodore 64 computers. It is a powerful software system offering a wide variety of features for creating and editing music using any MIDI-equipped instrument. MUSE employs a highly intuitive user interface and a clear screen layout. All functions are accessed and controlled with on-screen windows and work together in a consistent and simple manner. The optional use of a joystick or game paddle provides fast "point-and-click" access to all functions. In fact, MUSE can be run without touching the computer's keyboard. There is no need to be a computer specialist or experienced typist. Mastery of MUSE can be achieved in a matter of hours. Among the features and functions found in MUSE are eight independent tracks for recording and overdubbing musical sequences, full editing by measure, track merging capability, auto-locating, automatic punch-in/out, track muting, a chain mode that allows entire tracks to be built out of smaller phrases, looping by song or track

length, transposition and MIDI channel reassignment of individual tracks, and selectable time signatures. MUSE's unique auto-correct function allows you to correct rhythmic errors



in recorded sequences without affecting articulation or phrasing. The editing functions are used to insert, delete, move, copy, and rearrange measures of any track so that a composition can be changed after it has been recorded. This also makes it possible to auto-correct, transpose, and rework portions of a track. In order to conserve the computer's available memory, you have the option to remove after touch, program change, and/or modulation wheel information from recorded sequences. Internal, MIDI, and Tape Sync modes allow MUSE to be easily synchronized with drum machines, other sequencers, and multitrack tape decks. The system is fully compatible with any MIDI instrument and has a capacity of approximately 6,000 notes. Hardware requirements are an Apple II+ (64K), IIe, IIc or Commodore 64, Roland MPU-401 Intelligent Interface, Roland MIF-APL interface card for II+ or IIe (J.L. Cooper MPU-401 interface card for IIc), and any MIDI instrument. The price is \$150 for software only.

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