Profile:
Nick Lowe

MODERN RECORDING & MUSIC

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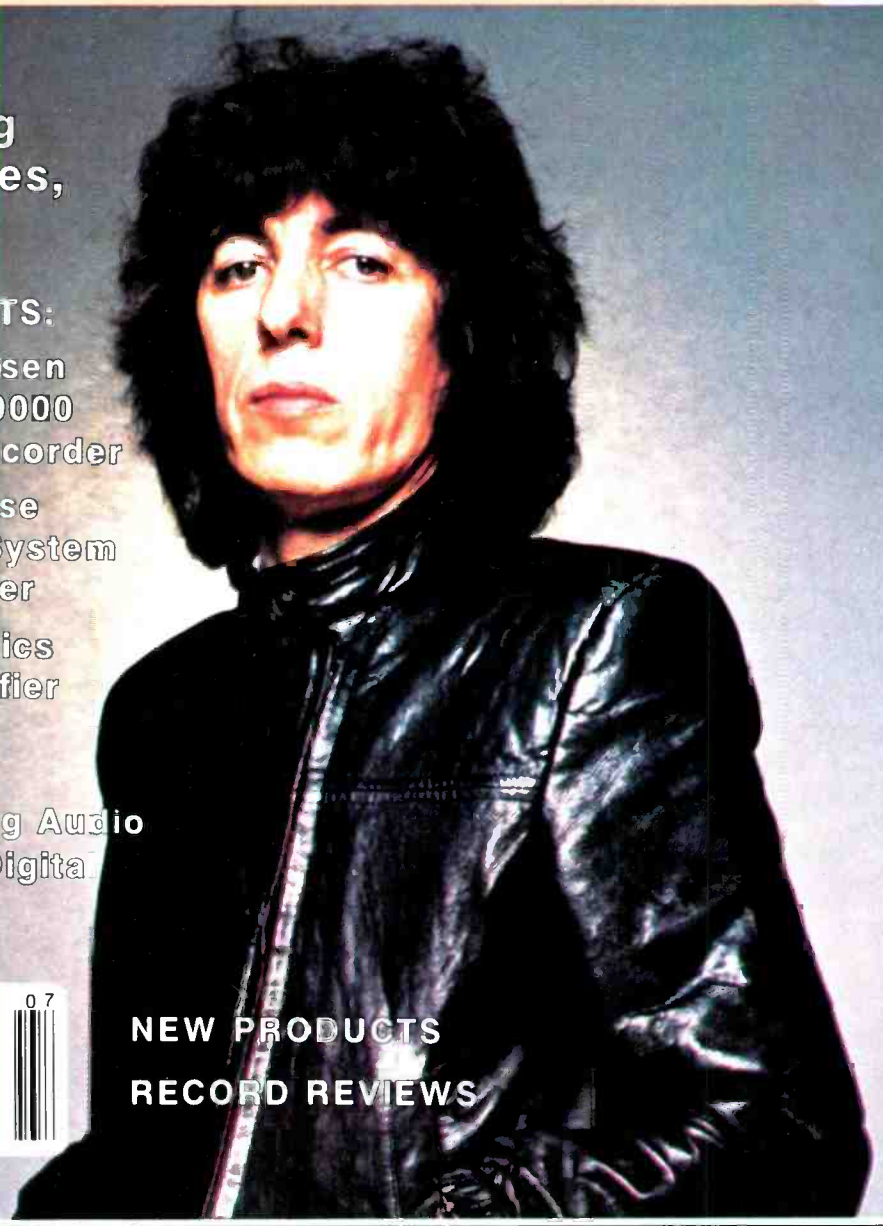
VOL.7 NO.10
JULY 1982

recording with
Bill Wyman



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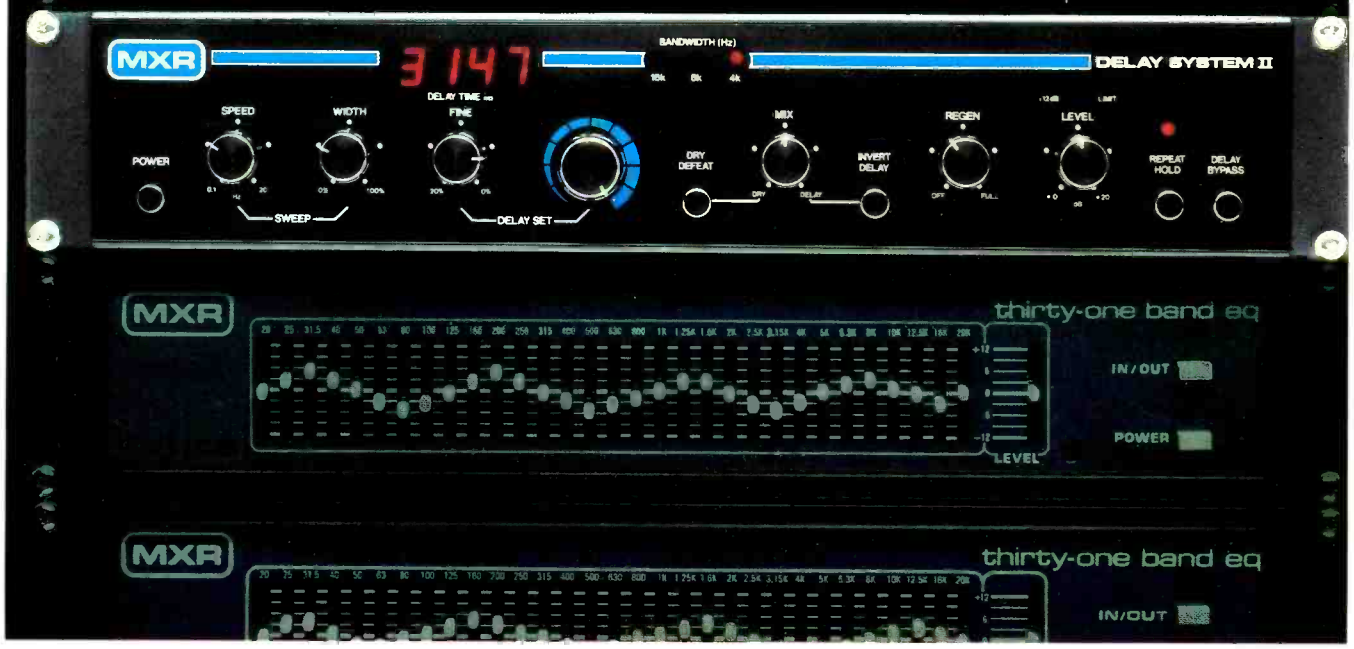

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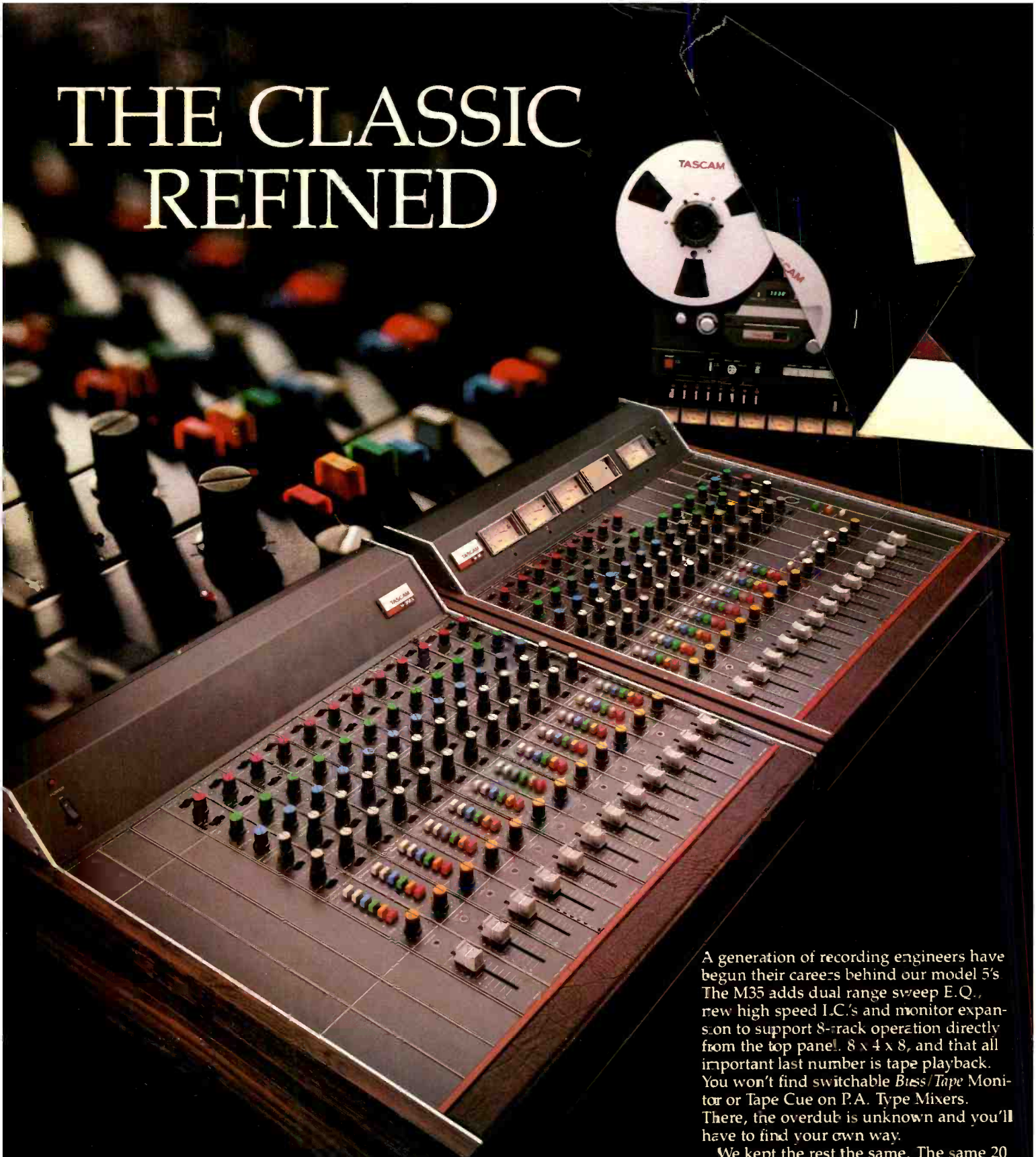

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*The ADM 256 offers 256ms of delay at full bandwidth. Also available is the ADM 1024 with over 1 full second of delay (full bandwidth) for under $700.

JULY 1982
VOL. 7 NO. 10

MODERN RECORDING & MUSIC

THE FEATURES

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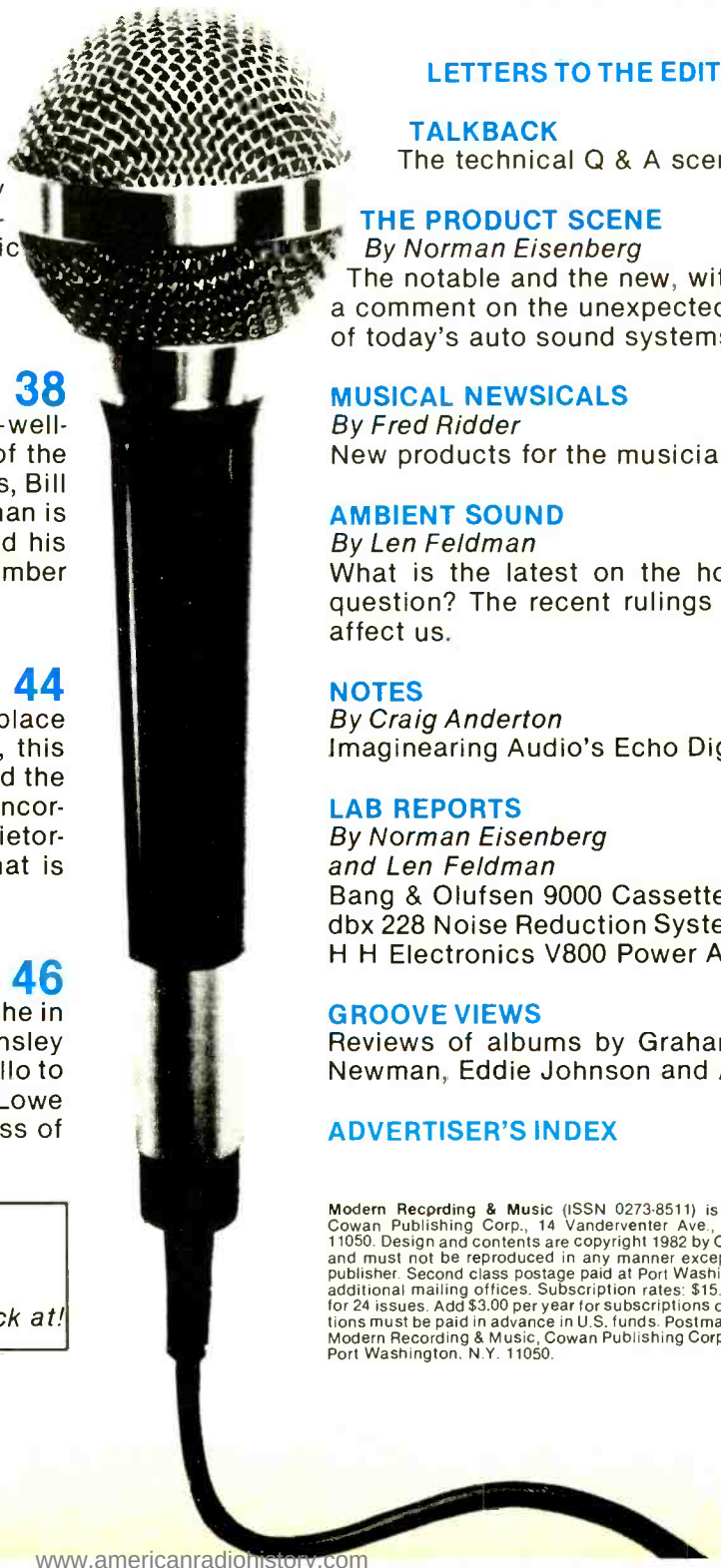

THE STAPLES

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LETTERS TO THE EDITOR

In Support of Fostex

We received the following letter from a reader responding to our May, 1982 review of the Fostex 8-track recorder. It seems he feels our reviewers were a bit harsh in their assessment of the machine and he states his case:

With regard to your product review of the Fostex 8-track recorder in the May, 1982 issue, I thought your readers might be interested to hear from someone who uses the machine in the home setting.

I am a professional musician who is interested in (1) good performance, (2) good material and (3) good sound in that order. Because I play all string, keyboard and percussion instruments, I initially wanted to set up a home recording studio that would give me multi-track capabilities. I record no one except myself and use the tapes to send out to publishers and record companies to showcase my material. I also use the tapes as background tracks for a single act in small clubs.

After a lot of shopping around and price comparison, I settled on the following equipment: The Fostex A-8, the Fostex A-2 half track machine, the Fostex 350 8x4x2 mixer, the Fostex digital delay, dbx 163 compressor, and Orban 111B reverb. My two microphones are the Sennheiser 421 and AT 813; the playback system consists of a 55 watt JVC amplifier, EV Sentry 100 speakers, and Sennheiser 414 headphones. The entire system, including patch cords, remote control and a couple of rolls of tape, cost $5,500, which is considerably below list price. In this day and age of competitive pricing, anyone who pays list price ought to have his head examined.

Contrary to the implications of your review, I have been very satisfied with the A-8 and its peripheral equipment. True, I would not recommend it for someone who is recorded complete groups or who wishes to invest in a "professional" studio, but it suits my needs quite nicely. The machine is easy to use, reliable, and faithfully reproduces a broad spectrum of recorded instruments. When I record my bass through the compressor, I do not notice the low frequency effects you describe. Compared to a standard 4-track setup, 8-track recording gives you a more complete stereo mix, and that is why I decided to go with the Fostex instead of, say, the Teac 3440. I was also pleasantly surprised to hear how good the channel separation was on the Fostex A-8 in a mixdown situation and found little sound depreciation even after modest ping-ponging of tracks. Your point about the ridiculous rivet pins on the underside of the machine, however, is well taken. Fostex ought to fix that.

I hope this information is of some value to readers like myself who are musicians first and engineers second. I consider myself a "serious" recordist, but only insofar as it enhances my own performance. Your implication that anyone who purchases the A-8 is not serious about sound is a bit pristine for my tastes, and not too subtle at that. A broader view in the future would be appreciated.

—Roger Hughes
De Pere, WI

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Professional Groups like: Jefferson Starship, Pink Floyd, Thin Lizzy, The Knack and Frank Zappa are using Carvin because they believe it's the best sound they've been able to obtain for their performances.

At Carvin you're not only buying the best, but our "Pro Net" prices are attractive because you're buying Direct from us. Write for your FREE 80 page Color Catalog. Include $1 for RUSH 1st Class mail, $5 for foreign countries. For product information, Call Toll-Free 800-854-2235 (Calif. 800-542-6070). Master Charge & Visa accepted.

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- 780J Pro stage monitor w JBL & Renkus — $549
- MX1608 16 in x 8 out board w 2 track mix down — $2595
- XC1000 Stereo electronic crossover — $279
- DCM301 300W monitor amp w 9 band EQ — $399
- DCA800 800W (bridged) stereo power amp — $599
- XB-812 British styled "X" stack w Celestion — $1399
- XV-100 All-Tube "X" amps w EV or Celestion — start at $449
- DC200 Stereo guitars — start at $455

Write: CARVIN, Dept. MR-42, 1155 Industrial Ave., Escondido, CA 92025

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The Ramsa WR-8112 is a 12x4x2x1* mixer that embodies a whole new concept from Ramsa: one mixer that is not only a high-performance, multitrack recording mixer, but also a high-performance sound reinforcement mixer.

*12 input x 4 group output x 2 master output x 1 mono output.

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Ramsa engineering. One set of circuits actually performs as two. Functions like stereo tape monitoring are switchable to become stereo effects sends for PA. PA monitor sends can be switched to effects sends for recording or mixdown. And that's just for starters.

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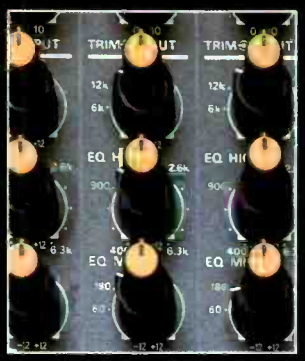

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CIRCLE 192 ON READER SERVICE CARD

The Other Tubes

In reference to Mike Kristofic's letter in the May 1981 issue of *MR&M*...I highly recommend Richardson Electronics, Ltd., 3030 North River Rd., Franklin Park, Ill. 60131, as a source for the foreign made tubes he is looking for. These people specialize in tubes, have *very* competitive prices (in some cases less than half of dealers' net!) and give very good service.

The only drawback is the $50.00 minimum order, but they do have will-call service at the Franklin Park facility for lesser amounts. They also have offices in California, Massachusetts, Florida, and in Canada via Metrone Corp. (Montreal).

I don't recommend buying tubes in an audio store. The ones that do carry the foreign tubes usually cater to the people who have money to burn, and charge accordingly. I could suggest that he get a hold of a "Tube Substitution Handbook" published by Howard W. Sams & Co., and look under "Industrial Substitutions for Receiving Tubes." Many industrial types are directly interchangeable "Five Star" types which are burned-in, high reliability tubes. The only difference that might be enocountered is a slight difference in gain, or the filament might take a little more current, but this is rarely a factor to be concerned with as 99% of the Semi-Pro or Pro tube gear has parallel filament circuits and a power transformer. (Note: Some amps use a D.C. filament circuit which the Pre-amp filaments act as a ballast resistor for the bias supply. These are the one you have to look out for.) I hope I could be of help in solving his problem. Keep up the excellent magazine! Even my sister reads it!

P.S. I hope no one is using a piece of A.C. operated equipment without a Power or Isolation transformer! Death comes so suddenly. I remain

Barry Fuerst
Oak Park, IL

Some Good Ideas

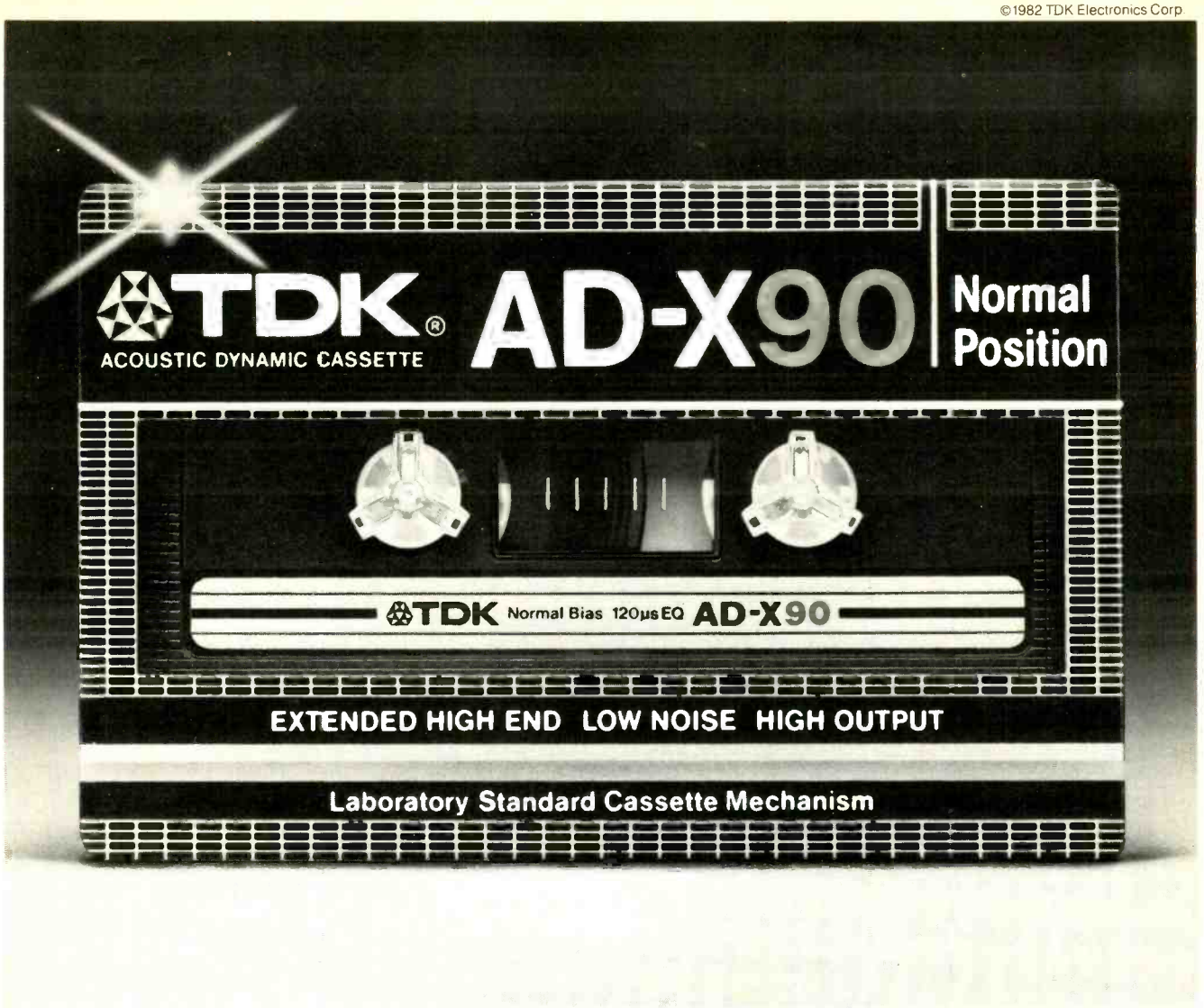
If I may, I'd like to suggest a topic for a future recording techniques column by Bruce Bartlett.

During my summers between college, I was fortunate enough to gain experience as an engineer in a 16-track studio near Pittsburgh, Pa. I am now working as a nuclear engineer but plan to open a basement business/hobby 8-track facility of my own, soon. Your recent "Studio Notebook" series was very timely in this concern.

Mr. Bartlett's past columns on microphone characteristics and room acoustics have especially helped enhance my understanding of the recording sciences. One area I could really use a primer on, though, is that of control room monitoring.

First, I could use a professional hand in helping me select the right type of monitoring system for an eight track facility. Speaker placement and system/room equalization could also be considered here. Due to size and cost constraints, I plan on using only one pair of medium sized speakers and one pair of small speakers (probably JBL 4311's and Auratone 5C's). Does this sound adequate?

Secondly, the topics of psychoacoustics and monitoring techniques need to be explored. Does occasionally switching monitors during a session help keep my objectivity high? Does referencing my playback system with some familiar records just prior to a session really help get my ears in the ball park or am I unknowingly deceiving myself? How about awareness of the Fletcher-Munson Effect? (As we



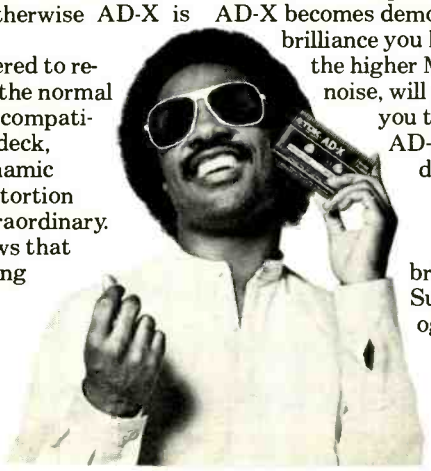
Someone who's a Wonder thinks AD-X is extraordinary.

As far as Stevie Wonder is concerned, the only thing that's normal about TDK AD-X is its bias. Otherwise AD-X is extraordinary.

AD-X is engineered to record and play back in the normal bias/EQ position. It's compatible with any cassette deck, delivering a wider dynamic range with far less distortion than ever before. Extraordinary.

Stevie also knows that even at higher recording levels, the increased headroom in AD-X handles strong signals easily without over-saturation. Extraordinary.

But, it's when you (or Stevie) press the playback button that the superior quality of TDK AD-X becomes demonstrably clear. The brilliance you hear, resulting from the higher MOL and lower bias noise, will make it difficult for you to believe how much AD-X "improves" your deck. Extraordinary.



Of course, there's a solid reason why AD-X performs so brilliantly. It's TDK's Super Avilyn technology at work. You see, AD-X is the first normal bias audio cassette to use TDK's Avilyn magnetic particle—based on the same formulation that's made TDK the leader in audio and video tape technology.

Another advantage about AD-X is the housing it comes in. It's TDK's Laboratory Standard Mechanism, and it's protected by TDK's lifetime warranty. Extraordinary.

When you add it all up, what TDK AD-X gives you is the ideal audio cassette for all-round personal entertainment suitable for *any* cassette player. That's why Stevie Wonder chose TDK before we chose him. This, too, is extraordinary.

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CIRCLE 67 ON READER SERVICE CARD

mentioned in "Recording Techniques—Part II") and minimizing its effect when deciding what EQ to apply to the various tracks? And last, but not least, how can a pair of headphones be effectively incorporated into a well-balanced monitoring system?

I have my own ideas on all these topics, but I (and countless others, perhaps) would truly enjoy reading a professional's (one of the big boy's) discussion of all these aforementioned topics.

—Bill Thompson
Idaho Falls, ID

Well! We like your suggestions, and hopefully we'll be able to get one of those big boys to help us out by elaborating on several of the topics you mentioned in your letter. So, thanks for the great ideas, and keep watching to see them in the pages of Modern Recording & Music.

A-8 Explanations From Fostex

We received the following letter from Fostex:

We wish to thank the publishers of *Modern Recording & Music* for offering us this opportunity to present the product and design philosophy behind the Fostex A-8 to you (the readership). To be quite frank, we were both delighted and dismayed at the May 1982 review of the A-8.

We were delighted that the frequency response, weighted noise, and wow and flutter of our "shipped from stock" machine measured considerably better than our published specifications. We were dismayed at the severe criticisms of our conceptual design approach to this machine.

Fostex makes personal multitrack recording gear—specifically designed for musicians, songwriters and producers. Our products are in many ways analogous to the "personal" computers. While many beginners use these computers, many "professionals" who have access to a "professional computer" (such as the large IBM's) have an Apple II in their offices because they are not only handier, but in some applications they are more flexible. Fostex is meant to be the musician/songwriter/producer's own musical "notepad," "sketchbook," and "production tool."

Our goal is to make it easy and economical to get the musician/songwriter's feelings and ideas onto recording tape. To allow the creation of tracks for reference, demo, or finished masters. The Fostex A-8 is born out of these design goals.

* Why 8 tracks on ¼" tape?
A new class of machine with economy for the user. A reel of ½" Ampex 456 retails for $62.25 vs $8-10.00 a reel for more readily available ¼" tape. Also, the increased cost of building a high performance ½" tape transport would mean we would have to sell our noise reduction as an accessory to keep the A-8 at the same price. The savings gained by purchasing the less expensive A-8 could be used for mics, equalizers or other peripheral equipment which would give the user a more professional, commercial sound than simply going to the ½" tape format. And we were confident that we could make the ¼" format work. The Fostex engineering team is the same one that originally pioneered the ½" 8 track format. We submit that ¼" 8 works and sounds great.

* Why only four tracks at a time?
The requirement for simultaneous 8 track recording is rare in contemporary multitrack production. But why limit

McCoy Tyner's string section on Bose.®

When John Blake and Avery Sharpe aren't performing with McCoy Tyner, one of the world's foremost jazz pianists, they conduct seminars and master classes on theory and technique at major colleges and music schools nationwide. Here's the advice John and Avery give on amplifying acoustic instruments:

John: "My violin has a naturally sweet and mellow tone, and it can also be very dark. Ordinary speakers don't do this instrument justice—they add an unpleasant edginess, a kind of glare that makes it sound like an electrified instrument.

"Bose 802 speakers come closer to reproducing the natural, acoustic sound of my violin than any others I've heard. With the Bose system, the instrument doesn't sound 'amplified.' It just sounds louder."

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Avery Sharpe, c/o Jade Enterprises, P.O. Box 177, Amherst, MA 01004.

John Blake, c/o Joanne Rile Management, P.O. Box 27539, Philadelphia, PA 19118.

it to 4? The reason is the relatively powerful current in our 8 track erase head. The current needed to erase all 8 tracks at once would generate too much heat. If someone needs "eight track simultaneous record" for applications like remote recordings, we can modify their A-8 so it will record all tracks at once. For that, we must disconnect the erase head. Thereafter, they would have to use virgin or bulk-erased tape. This is practical for remotes but not for over-dubbing. For the musicians, songwriters, and producers our machine is designed for, 1 to 4 tracks at a time fit their needs.

* 22½ minute recording time?

For most production work, the tape needs only be as long as the song. Since most songs are 3 to 5 minutes long, 22½ minutes is more than enough for several takes. A standard 2" 24 track recorder running at 15 ips gets 30 minutes a reel and at 30 ips, it gets 15 minutes. In many studio productions, individual cuts from various multitrack masters are mixed-over to the 2 track and edited together to make a stereo full-length master.

* Why the low frequency contour effect?

Ever wonder why the bass builds up on your 4 track recordings? The "contour" effect is a well known and common phenomenon in tape recording. All small format (including ¼" 4 track *and ½" 8 track*) recorders suffer from this effect of physics. The smaller the track width, the greater the effect.

The physics say that if you minimize the contour effect by head design, you lose channel separation in the sync mode and vice versa. We chose to improve sync crosstalk. This is critical if you want to ping-pong to an adjacent track. We chose creative flexibility over "contour" effect since the bass rise can always be compensated for with EQ. Incidentally, even though Dolby "C" does not operate in these low frequencies, we find it preferable to the effects of dbx which will double the "contour" problem each generation because of the way dbx works.

* Last but not least...why are there no mic inputs, level controls and headphone jacks?

Costing tens of thousands of dollars, big 24 track or 32 track recorders are all missing these features. Consider the headphone jack. What tracks would it listen to and how loud on each track? You would need to create a mix of eight tracks into stereo with pan and level. Then, the microphone inputs would each have to be assignable to any track. After all, you don't always want to put mic-jack 1 into track 1. That would require channel assigns and pan pots. Input overload LED's would be nice, and maybe some trim controls and EQ. And there you have it—our 350 mixer.

The mixing and routing requirements of multitrack recording need the flexibility of a recording mixer to fully exploit the creative possiblities. Why waste money on "built-in" half-way solutions? Fostex's philosophy is to make a flexible product and not charge the customer for features he does not use. The all-in-one packages are much more practical with the simpler four track cassette format.

We hope that we have answered some of the questions that have been raised. But no matter what anyone says about the A-8, its real credibility comes from listening to it, and using it. So far, talented people everywhere have produced record albums, videodisc soundtracks, national television commercials, film scores and bunches of great sounding music with their Fostex recorders. We have had virtually no user complaints about the A-8. We are proud of this machine, and we appreciate the opportunity to explain the product in a multitrack context. Thank you.

—Fostex
Norwalk, Ca.

Track Tips

This letter is in response to a quote from the May, 1982 issue..."If anyone out there has any ideas or information they'd like to share about 8-track recording techniques, please send them to us."

I've been in "Talkback" a few times already and I have asked for answers. Now I think it's time for me to give some answers to small studio owners who have recently upgraded to Tascam or Otari 8-track systems.

I'm 32 years old, and have been recording music for about 20 years. My musical heritage goes way back—from the days before even Webcor or Wollensak were household words—to the present digital age. For about the last five years I've been operating a "bedroom studio" in my home, where I've produced many original recordings of great commercial quality on an eight track with ½" tape. I have got this track format down to a science or "state of the art." The knowledge that I am about to disclose should clear any doubts that there is plenty of versatility in this format. This is the basic layering method that can be utilized to attain "Wall of Sound" recordings that will even please a recording executive on the way up!

All you need first is your main instruments (in my case, it's many instruments—2 play synthesizers, electric piano, an assortment of 12 and 6 string guitars, electric guitars, bass guitar, Ludwig drum kit and Latin percussion!).

The next thing you'll need is one (or two) either ribbon or hyper-cardioid mics. You don't need too many mics if you use proper placement. One or two mics is enough to record any instrument in any room and capture its ambience. Most instruments should be recorded directly whenever possible, eliminating any room noise build-up that occurs during this layering process when using mics.

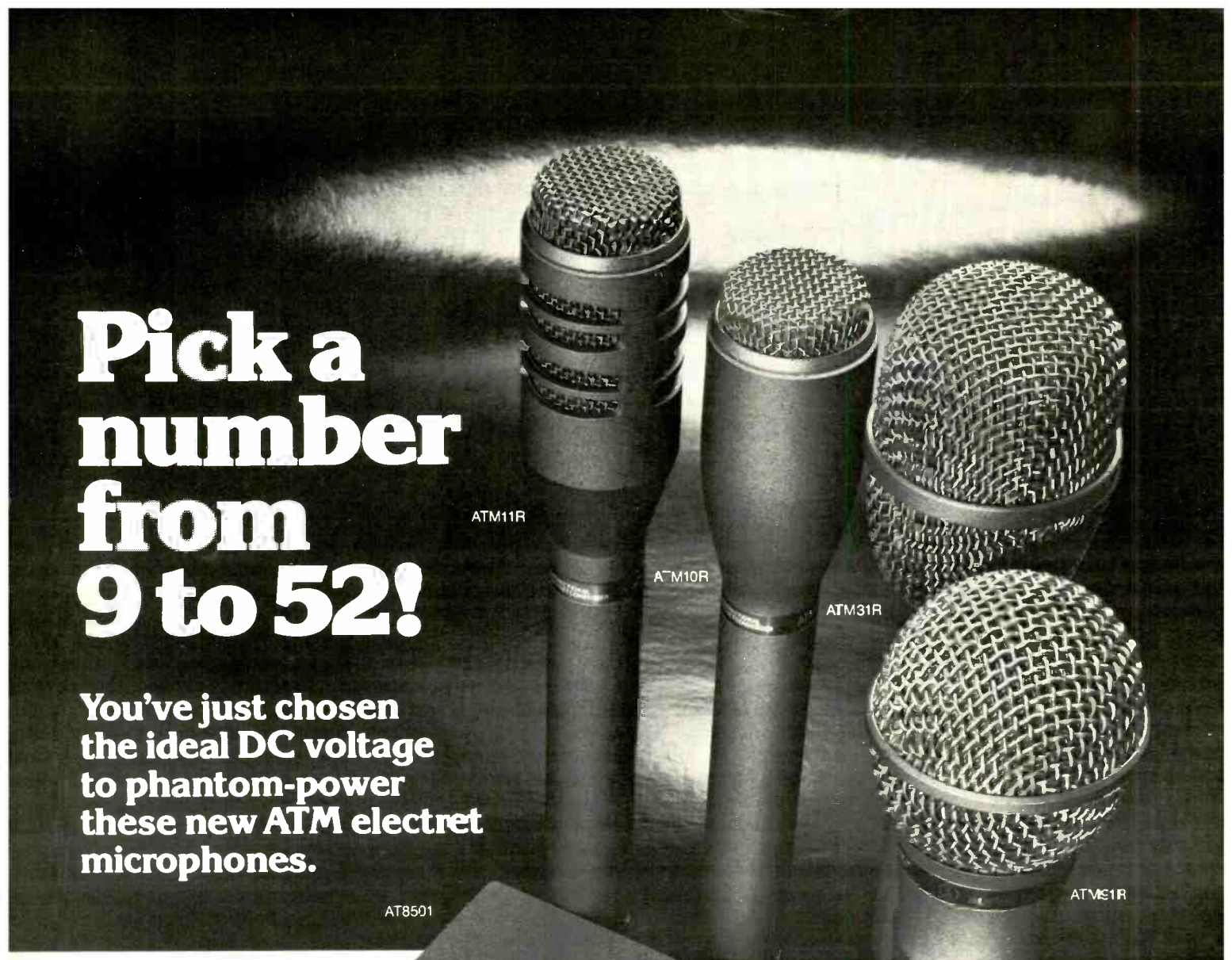
Now, just take out your 8-track, your small board, one dbx compression unit, (or two for stereo), and one good two channel device and you're all set to produce a stereo master with balanced frequencies and proper panning. This means that you will select "special imagery" of the recorded instruments during the process of recording by assigning tracks 1-8 either 1) Center, 2) Left, or 3) Right. After all the musicians have done their overdubs, you will have the perfect blend of sonic balance, as if the whole band was playing all at once in a big hall, and you happened to be sitting front row center!

Designate track 1 (to begin with) as your reference or "click track." This track will assure that the musician's timing will be perfect and in sync with the rhythm section until the drums are recorded. Tracks on the edge of the tape have much better response with low frequencies than with high frequencies. High frequencies on an extreme outside track are much more likely to be vulnerable to dropouts, especially after multiple overdubs.

After your click track is complete on track 1 (this might be a drum machine), designate tracks 4 to 8 (5 tracks altogether as your "rhythm section (left)." What the musicians will do now is lay down 5 tracks with the basic rhythm instrument (usually either piano or guitar). Now, follow this closely, and you will realize that you don't have to do too much ping-ponging, and you don't even need a digital delay to create many astonishing effects with merely the simple tools that I have mentioned so far. Record each one of these five tracks with varying amounts of dbx compression 1.2-2.0%. Many interesting effects can be created when combining these tracks, such as delay or slapback echo that expensive outboard gear produces. Now, do a "submix" to create "rhythm section left" by mixing these tracks onto

Pick a number from 9 to 52!

You've just chosen the ideal DC voltage to phantom-power these new ATM electret microphones.



Introducing four "universal" phantom-powered electret microphones. Designed to work from external power, internal regulation automatically handles any voltage from 9 to 52 VDC without adapters, switches, or rewiring. Just plug in and enjoy. With current drain a mere 0.3 mA at 9 volts (4 mA at 12-52V) a 9V battery lasts thousands of hours, not just the 60 or 70 hours typical of other mikes.

When your power supply isn't available, or isn't enough, use ours. The new AT8501 Dual Battery Supply holds two 9V batteries. One to use, and one in reserve. Instant switchover and test LED eliminates guesswork. And spares are as near as the closest shopping center. Neat!

But convenience and versatility are just two of the advantages of the new ATM models. All-new electronics provide plenty of headroom inside the microphone with no more than 1% THD even when used in acoustic fields of 141 dB SPL. Which sets new standards for clean sound even close-up to big brass or inside a powerful drum kit.

And the sound you hear is wide-range and *musical*. Presence without peaks. Highs to 20,000 Hz but without a raspy "edge." Yet despite their responsiveness, these new ATM microphones have the "Road Tough" reliability proved so often on stage and in the studio.

Before you add another microphone, compare our sound, our convenience, our reliability, and our cost. Write for literature and list of nearby ATM microphone specialists. Get great sound...right from the start! AUDIO-TECHNICA U.S., INC., 1221 Commerce Drive, Stow, Ohio 44224. (216) 685-2600.

audio-technica

CIRCLE 102 ON READER SERVICE CARD

track 2. Now we have completed our first two tracks. Next, track three will be designated as "rhythm section right." This will be another "submix" from tracks 5 to 8 which gives you 4 more tracks now to add different riffs as you overdub to produce a parallel rhythm section on the right. Now that the first 3 tracks are completed, you have actually 9 usable tracks of blended rhythm (tracks 2 and 3). The tracks are in perfect sync, due to the click track on track 1, and some left and right channel perspective has already been established as far as our end result of a balanced stereo master. The slight compression level we used took some of the "rough edges" off of the instruments that were recorded. Special note: The only time we do any ping-ponging or submixing is as described already: There is no need to combine tracks together that have many tracks already on them. This is when you make sacrifices in the sound quality! Adhere to my advice...it is tried and tested... you can have a total of 18-24 tracks recorded at the end—and none of the tracks will be down more than just one generation. You will have the ultimate "wall-of-sound" that an 8 track machine can produce.

Next, track 4 will be designated as "drums (left)." This will be a submix of three individual drum tracks, recorded on tracks 6, 7, and 8. Note that we always leave a blank track to skip over (in this case track 5). Again, as I say, almost any effect can be created by combining these drum tracks using dbx and maybe some variable speed. Now we can create "drums (right)" and add still 2 more drum tracks with different "fills" by combining tracks 7 and 8 onto track 5. This gives you a total of at least 5 possible drum tracks, with room even for percussion and certain tonal variations will be on the left, others on the right. OOPS! Let's not forget about track 1! Now that the drums are completed, we won't need the click track so we put the bass on track 1. Can you believe we now have 15 tracks in balanced stereo perspective on tracks 1 through 5 with virtually no second or third generation submixing done? We still have plenty of room left over now for tracks 6, 7, and 8. Next, record vocals on track 7. This leaves tracks 6 and 8 left for possible synthesizer or lead guitar solos. If more than those two are needed, have no fear. An infinite loop can be created here by bouncing 6 to 8, 8 back to 6, etc., while constantly adding new parts while bouncing. This should enable you to put the finishing touches on your "masterpiece." Some of the placement of these last tracks might be labeled "center" on the spacial perspective, to fill in any gaps in the music between the left and right channels during the crucial final mixdown. Now we have a wall of sound of about twenty tracks that are in balanced perspective, without much tape noise buildup. I hope this answers some of the questions of how to make the best possible recording on an 8 track. I leave you with these words: A great performance that is poorly recorded is still much more palatable than a bunch of lousy players recorded on state of the art equipment.

—Marc William Fallon
The Bedroom Studio
Teaneck, NJ

Send Down Your Number, Mike Bailey

Would Mike Bailey, who wrote the letter "Five Good Hits," which appeared in our June, 1981 issue, please get in touch with us again (write or call). Craig Anderton would like to offer some advice and information, and we would like to be the go-between. We unfortunately no longer have your street address, so please get in touch with us, so Craig can get in touch with you.

The 6th Annual Roland Synthesizer/Tape Contest

Whatever your level, be it amateur or professional, Roland invites you to enter its 6th Synthesizer/Tape Contest. Anyone with a creative interest and proficiency in synthesized sound is welcome.

Acting judges for this contest are the notable synthesists: Isao Tomita, Norihiko Wada, Shigenori Kamiya, Frank Becker, Makoto Moroi, Robert A. Moog, Oscar Peterson and Ralph Dyck. Judging of acceptable submitted materials will take place on December 2, 1982 in Tokyo, Japan. Winners will be notified soon after screening is completed.

Please examine the following conditions before completing our application form.

Class A
To qualify, you must be a Professional Synthesist or other Professional Recording Artist (Musician, Recording Engineer, etc.).

First Prize
3 winners will receive a Roland SDE-2000 Digital Delay, TEAC HP-200 Pro Headphones, 2 Scotch 10" open reel tapes, and 4 Maxell 7" open reel tapes.

Class B
To qualify, you must be a First Prize winner in one of the previous Roland Synthesizer/Tape Contests, or you must have substantial experience in synthesis or multi-track recording.

First Prize
5 winners will receive 2 Roland PX-6 Speaker Systems, TEAC HP-200 Pro Headphones, 2 Scotch 10" open reel tapes, and 4 Maxell 7" open reel tapes.

Class C
To qualify, you must be a beginner with a little experience in the synthesizer or multi-track recording.

First Prize
5 winners will receive 2 Roland PX-6 Speaker Systems, TEAC HP-200 Pro Headphones, 10 Scotch cassette tapes, and 10 Maxell cassette tapes.

Grand Prix
Out of all the entries submitted, this prize will be given to an extraordinarily good piece of music. The one person selected will receive, in addition to other prizes, a TEAC Model 244 Portastudio, and an exciting new Roland product coming out this year.

All winners in each Class of Entry will receive a Certificate of Merit, a Trophy, a BOSS FV-200 Keyboard Volume Pedal, and 10 TDK cassette tapes.

Anyone who enters the contest will receive a small gift from Roland.

Contest Specifications
1/Each contestant can enter only one tape, and it should be a premier piece that has never been presented elsewhere.

2/The entry tape should be limited to 3 minutes in length. Any tape longer than 3 minutes will be disqualified.

3/The contest is limited to synthesizer pieces recorded in the multi-track method. Live performances, pieces recorded without multi-tracking, or pieces using mainly acoustic instruments or voice will be disqualified.

4/No piece entered in this contest should be entered in any other contest until the winners have been announced.

5/Copyrighted material used for radio, TV, movies or records will be excluded.

6/Copyright of the winning piece will belong to the Roland Corporation.

7/Entries will not be returned.

Application Procedure
Fill in all the information on the preliminary application form below. Send it to:

RolandCorp US
Synthesizer/Tape Contest
2401 Saybrook Avenue
Los Angeles, CA 90040

You will then receive a formal Roland Contest Application, which when completed must accompany your tape. Send no tapes with the application below. This Preliminary Application must be received no later than August 31, 1982.

If you would like to receive a cassette tape of the winning pieces from last year's contest, enclose a check for $5.00 made out to Roland Corporation.

Preliminary Application

Name _____

Street _____

City _____ *State* _____ *Zip* _____

TALKBACK

"Talkback" questions are answered by professional engineers, many of whose names you have probably seen listed on the credits of major pop albums. Their techniques are their own and might very well differ from another's. Thus, an answer in "Talkback" is certainly not necessarily the last word.

We welcome all questions on the subject of recording, although the large volume of questions received precludes our being able to answer them all. If you feel that we are skirting any issues, fire a letter off to the editor right away. "Talkback" is the Modern Recording & Music *reader's technical forum.*

Playing The Numbers

I am considering the purchase of dbx noise reduction for my home 4-track studio. No one at any of the local dealers in my area, professional or audiophile, can tell me what the difference is between dbx Type I (as in the Model 150) and dbx Type II (as in the Model 224)! Can you help me?

—Michael E. Sherman
Chesterland, Ohio

The basic principle of operation of the two dbx systems is identical, yet the two systems, dbx Type I and Type II, are not compatible. A tape encoded with one system cannot be decoded by the other. Similarly, a dbx encoded disc cannot be decoded with the dbx Type I system since it was mastered with the dbx Type II system. Both systems offer the same 30 dB of broadband noise reduction, and a 10 dB improvement in headroom for tape recordings. Please note that our competitors frequently use different methods of measuring noise reduction. Therefore, for comparison purposes, it has also been advertised by dbx as "in excess of 50 dB tape noise reduction on the CCIR/ARM weighting scale," by dynamic range, etc.

The two systems were designed for different applications. The Type I system was designed for use with tape machines which have flat wide band frequency response (generally within ±1 dB, 30 Hz to 20 kHz) and typically are used at speeds of 15 ips or greater. The pre- and de-emphasis circuitry which reduces modulation noise was engineered to take advantage of the headroom available when using high-speed record equalizations. The Type II system was developed to provide dbx noise reduction for use with storage and transmission media having a more restricted bandwidth and less available headroom. These include cart machines, telephone lines, STL's, cassette machines and vinyl phonograph records. The highpass filter in the signal path in the dbx Type II system is slightly more restrictive, rolling off 1 dB at 24 Hz. In addition, the RMS detection circuitry in dbx Type II units is sensitive only up to 10 kHz, so high frequency losses on the tape or in the transmission lines will not create encode/decode mistracking. The frequency response of dbx Type II processing does not restrict the bandwidth of the audio signal itself.

Changes in the RMS pre-emphasis curve also distinguish the systems. The differences in the detector characteristics between dbx Type I and II are tailored to better the medium for which each system is intended.

dbx Type II systems equipped with a dbx Disc switch introduce a further low end roll off (−3 dB @ 21 Hz) in the Disc

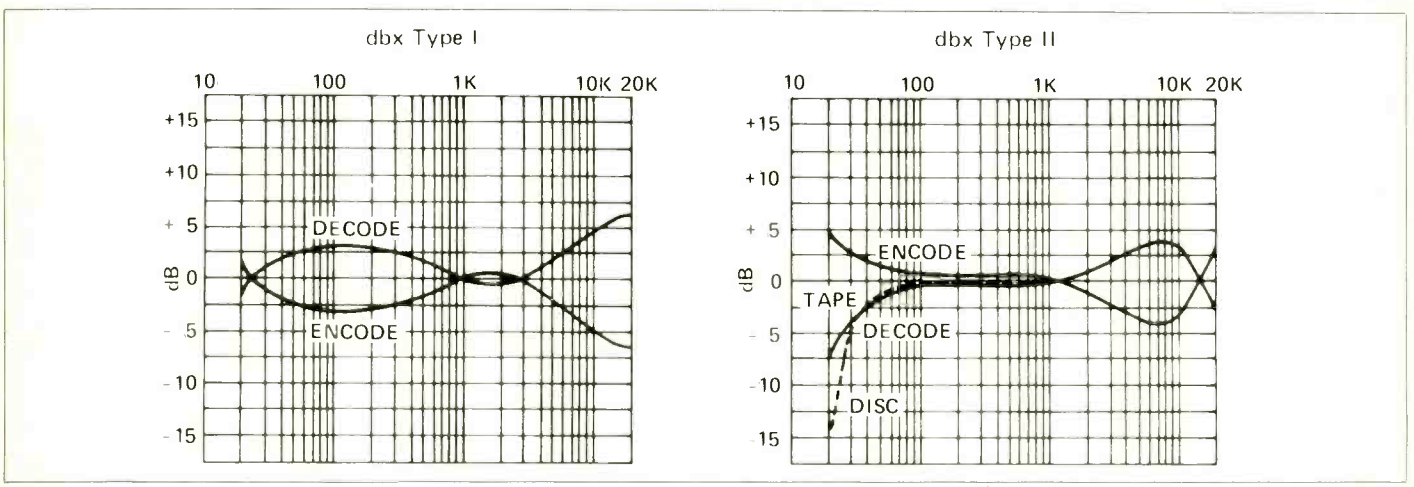


Fig. 1: Comparison of dbx Type I and Type II processing: *Note:* Encode curve's vertical scale is corrected for the 2:1 compression factor.

mode. This has been provided to permit decoding of special dbx encoded phonograph records. The roll off prevents the RMS detector from mistracking due to record warp or turntable rumble.

The original dbx Type I noise reduction (dbx models 216, 177, and 187) was developed for use in professional recording studios. In response to the demands of consumers and small studios, dbx introduced a variety of affordable Type I units—the 150 series, including the model 150. Tascam reel-to-reel machines equipped with the dbx tape noise reduction system also use Type I. These units utilize the same signal processing as the other Type I professional recording studio models, and tapes made with one system may be decoded with the other. Multiple channel tape machines also require multiple channel noise reduction systems, regardless of type.

Broadcasters recognized the potential for improved signal quality which could be obtained if they were to use dbx processing. However, broadcast cartridges and telephone transmission lines do not offer the excellent frequency response available in professional recorders and better hi-fi tape machines; the low end and high end of the frequency spectrum often fall off considerably. This poor frequency response can cause mistracking of the dbx Type I system. Therefore, the dbx Type II system was developed, represented by dbx consumer models in the 120 and 220 series, including the model 224, the professional 140 series, and the 941/942 play/record modules. All dbx equipped cassette recorders manufactured under licensing arrangements also use the dbx Type II system.

—Harold C. Cohen
Customer Relations
dbx, Inc.
Newton, Mass.

A Ring for A Single Coil

I am considering adding a single coil pickup between the two standard pickups on my Ibanez Artist. I want a mounting ring to cover the hole. Are there commercial plastic mounting rings available for single coil pickups? If not, could you put me in contact with someone who could make me one?

—Bruce E. McElyea
Wichita Falls, Texas

We got in touch with Tom Mulhern of Guitar Player. He doesn't know of any

commercially available mounting rings. He suggested calling DiMarzio or Seymour Duncan, but be advised that the ones they sell are expensive. He also suggested buying another double pick-up—one fake, the other a working pick-up. That way, at least, things would be fairly uniform. "You could always putty up the hole," he said. Just kidding!

Head, Shoulders, Knees and Toes

In the July 1980 issue, Craig Anderton wrote an article, "Footswitching Your Teac 3340." Being a musician with only two hands, this article was of great interest to me. My problem is that I own a Teac 3440, and the connector for the remote control is entirely different than the one illustrated in the article.

Is it possible for my 3440 to be set up with this punch-in/out footswitch? If so, could I talk your magazine into providing me with a schematic for the connector that is used on the 3440? If only the pin coding on the connector is different, then that is really all the information that I require. Your help would be most appreciated, as is every issue that I find in my mailbox. Keep up the good work; we "do-it-yourselfers" depend on it!

—Jeffrey King
Chicago, Ill.

In the December, 1980 issue of Modern Recording and Music, *we responded to three questions regarding the Teac 3440. You may want to check out that issue.*

We got in touch with Craig Anderton as well as with Teac Corporation of America, and at that time Craig gave us the following advice. he explained that Teac offers a footswitch, comparably priced to the one for the 3340, for the machine you have, as well as for other Teac machines. At that writing the list price was under $35. Craig felt that at that low price, you might as well make the purchase, and not bother trying to do it yourself.

The High Cost of Efficiency

Is there anything I can do to my Teac 2340 reel-to-reel that would enable me to use the new "EE" (extra efficiency) tapes?

—Shellie Mayrant
Oxon Hill, Md.

In a word, no. The "EE" formula tapes use a cassette tape oxide of the gamma ferric type as the names TDK-SA, and Maxell SLII suggest. These oxide formulations require 60% more bias current than conventional ferric oxide types, and the bias amplifier circuits of most older tape decks just can't supply the necessary current into the old style higher impedance heads. It may be possible for a bored engineering student to devise an amplifier stage that could be inserted into the circuit to boost the current for "EE" tape use, but the cost would probably be more than a newer deck that is already set up with new style heads and higher bias current.

One thing you might keep in mind is the high cost of "EE" tape. The shelf costs around these parts is more than twice the cost of the same length tape for Ampex 456 or Scotch 226. And at 19 cm/s, there is no significant advantage in using "EE" tape—only at 9.5 cm/s is there a real advantage in high frequency response and playing time.

—Drew Daniels
Applications Engineer
Teac/Tascam Production Products

MAXELL IS PLEASED TO PRESENT AN EVEN HIGHER PERFORMANCE TAPE.

If you're familiar with Maxell UD-XL tapes you probably find it hard to believe that any tape could give you higher performance.

But hearing is believing. And while we can't play our newest tape for you right here on this page, we can replay the comments of Audio Video Magazine.

"Those who thought it was impossible to improve on Maxell's UD-XL II were mistaken. The 1981 tape of the year award goes to Maxell XL II-S."

How does high bias XL II-S and our normal bias equivalent XL I-S give you such high performance? By engineering smaller and more uniformly shaped epitaxial oxide particles we were able to pack more into a given area of tape. Resulting in a higher maximum output level, improved signal-to-noise ratio and better frequency response.

To keep the particles from rubbing off on your recording heads Maxell XL-S also has an improved binder system. And to eliminate tape deformation, XL-S comes with our unique Quin-Lok Clamp/Hub Assembly to hold the leader firmly in place.

Of course, Maxell XL II-S and XL I-S carry a little higher price tag than lesser cassettes.

We think you'll find it a small price to pay for higher performance.

IT'S WORTH IT.

Maxell Corporation of America, 60 Oxford Drive, Moonachie, N.J. 07074

CIRCLE 79 ON READER SERVICE CARD

SOUND IN ACTION

The action of EV Microphones

The action of EV mikes begins with your action. Whether you're in concert, in the recording studio or on a club date, EV has you covered.

Take our PL-Series. It is the choice of top entertainers everywhere in the world, including leading vocalists like Crystal Gayle, Rod Stewart, as well as groups like Journey, Kansas, and The Marshall Tucker Band. In short, name your action—whether it's Pop, Rock, Country, Classical, Rhythm or Blues—EV has your mike.

And all EV microphones are products of EV's state-of-the-art technology. Technology that includes breakthroughs like Acoustalloy® diaphragms—so shockproof that the U.S Government put EV mikes into the new M60 tanks, and so rugged that they can take just about any kind of treatment a performer can dish out.

How much more action could you ask for? Just ask EV.

The action of EV Electronics

The action of EVelectronics is to handle all the action you can hand them, whether you're working "live" on location or recording anything on two tracks to 44 tracks. And EV electronics is designed to both "go" with you and to "grow" with you.

From portable powered mixers to expandable systems complete with signal processing gear, you'll find examples of EV genius in action, including the EV/Tapco mixing system format that you can get into with as little as 6 channels, and grow to 44.

There's also a line-up of heavy-duty power amps in the EV/Tapco family, with outputs ranging from 61 to 355 watts/channel to put high energy into any action.

EV Electronics: They mix technology with genius to give you all the action you need for all your sound.

The action of EV Speaker Systems

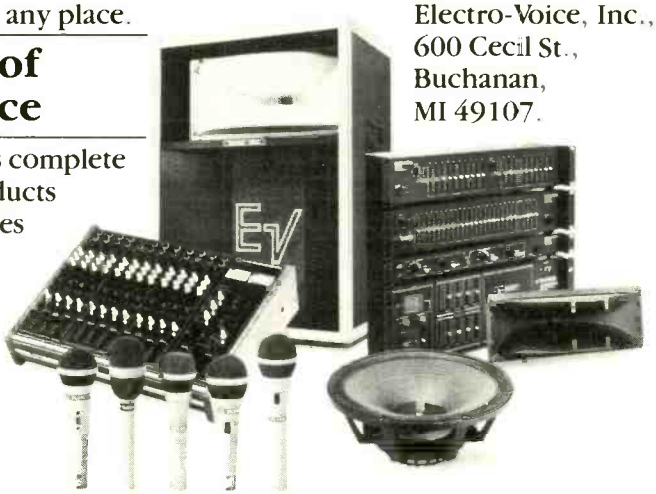
The action of EV Speaker Systems is to make your audience *feel* your action every moment you're "on," and to put out your sound, your message, your voice, loud and clear, with unflagging clarity and energy.

EV fills the bill every time with systems that range from our SH15-2 that's twice as efficient as most other systems of its size, to our HR TL Series of Professional Sound Systems that lets you and your audience hear notes that they have never heard before. And our EVM drivers are the preferred choice in top-of-the-line instrument amp systems. True wide-range response, coupled with EV's patented Constant Directivity™ horn design are just two of the reasons why EV high-performance systems have been used in such diverse locations as Yankee Stadium, the Las Vegas Convention Center, the Montreaux Jazz Festival, Brigham Young University Concert Hall, and at the Universities of Texas and Michigan Centers for the Performing Arts.

So perform your art. EV Speaker Systems will put your sound in action anytime, in any place.

The action of Electro-Voice

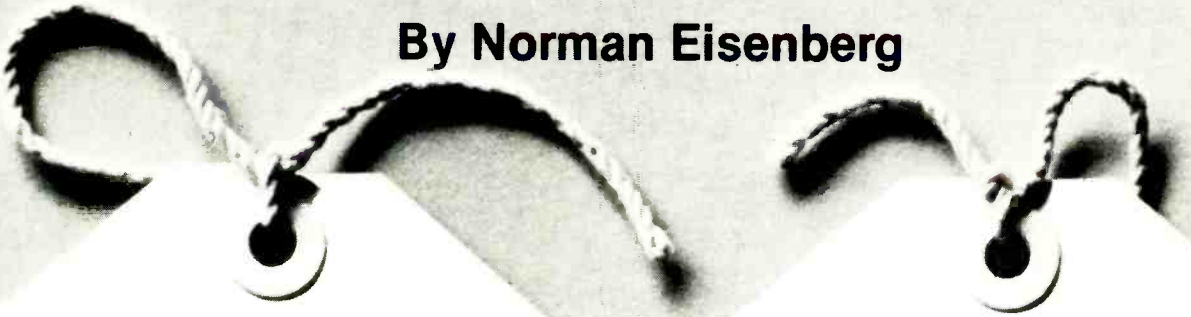
The action of EV's complete line of sound products never stops. Besides PA's in clubs and concert halls, you'll find them all, ranging from microphones, signal processors, amplifiers and speaker systems to equalizers, drivers and monitors in virtually all U.S. recording studios and most radio and TV stations. You'll also find EV products in churches, schools, businesses, sports arenas, even aboard Skylab. In short, nearly anywhere there's sound in action, EV is in action. If you'd like more information, write: Bob Pabst, President, Electro-Voice, Inc., 600 Cecil St., Buchanan, MI 49107.



EV Electro-Voice®
SOUND IN ACTION

THE PRODUCT SCENE

By Norman Eisenberg



YAMAHA DEBUTS PRODUCER SERIES

Designed as miniaturized, affordable sound equipment for musicians are the compact, portable and battery-powered components in the new Producer Series line from Yamaha Combo Products. First entries in the new line include a micro monophonic synthesizer (the model CS01, $250); a mic/line stereo portable mixer (the MM10, $110); open-air stereo headphones (the MH10, $30); and the mic/line stereo headphone amplifier (MA10, $125).

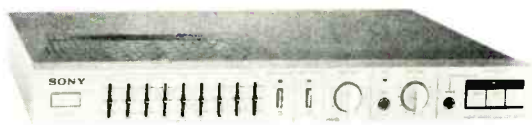
CIRCLE 1 ON READER SERVICE CARD

REVOX UPDATES B77

Updating of the Revox B77 *(see MR&M report, November 1979)* has been announced by Studer Revox America, Inc. The new or MK II version incorporates a variable speed control (as much as two musical halftones above or below the fixed speed). For easier editing, the front record head shield remains in its down or open position when the edit switch is engaged, regardless of transport operating mode. Finally, the MK II's improved transport logic control utilizes four separate starting pulses for smooth tape acceleration at any tape speed and with any size of reel. Price of the Revox B77 MK II is $1799.

CIRCLE 2 ON READER SERVICE CARD

SONY'S HYBRID EQUALIZER



Calling it a hybrid equalizer, Sony has introduced its model SEH-310. The new combination device incorporates a graphic equalizer, an echo reverb system, a stereo image enhancer and a microphone mixing input. The EQ section provides up to 10 dB of boost or cut on nine center frequencies from 63 Hz to 16 kHz. Each band operates on two stereo channels simultaneously. The echo/reverb system is handled by its own controls as are the image option and the mic mixer. Inputs and output enable interfacing the SEH-310 with a wide variety of other equipment, including more than one tape recorder. The mixing facility, in addition to its obvious use in recording, also allows voice-along with playback of tapes and discs. Price is $250.

CIRCLE 3 ON READER SERVICE CARD

CROWN ISSUES BROCHURE ON BDP-2

Crown has produced a new 6-page colored brochure on its model BDP-2 Audio Micro-Computer. The BDP-2 is a multi-purpose device which, Crown says, "can almost be your entire test instrument inventory." It has applications in sound reinforcement, equipment and component evaluation, recording studios, broadcasting, acoustic environment testing and audio retailing. Aimed at the audio pro, the BDP-2 has selectable functions chosen by twelve keys on either side of a multi-color CRT on which readouts are displayed.

CIRCLE 4 ON READER SERVICE CARD

MIXING CONSOLES FROM AUDIO-TECHNICA

Audio-Technica has announced its entry into mixing consoles with the ATC820 and the ATC1220, eight- and twelve-channel stereo consoles priced, respectively, at $1495 and $1995. Both consoles feature phantom-power availability through all mic channels. Each channel has its own high-, mid- and low-frequency EQ. The program output is equipped with a dual-channel graphic equalizer; the monitor output has a mono graphic EQ. Transformer-balanced inputs and outputs are intended to reduce extraneous noise pickup. Other features include filters to eliminate "p-popping"; a talkback system for the board operator to communicate via the stage monitor; peak level meters; line as well as mic inputs; direct outputs; effects and monitor buses; built-in headphone amplification; stacking inputs.

CIRCLE 5 ON READER SERVICE CARD

TOP DUAL HAS DOLBY C, TWO SPEEDS

Dual's top-of-the-line cassette deck, the 844, includes Dolby B and C. Separate record and play heads permit full source/tape monitoring, and level controls provide for line/mic mixing. The deck operates at both 1 7/8 and 3 3/4 ips speeds. Response at 1 7/8 ips is rated as 20 Hz to 20 kHz, ±3 dB; the faster speed extends the high end to 24 kHz while also lowering distortion from 0.03 percent to 0.025 percent. Six positions of bias and EQ are provided. The deck has a four-digit counter; automatic program finder; a two-motor, twin-capstan drive system; and micro-computer controls with full logic that permit unrestricted mode-to-mode operation. Meters are equalized and show the full recorded signal including the high-frequency boost (record EQ) added by the deck. The 844 may be operated by an external timer, and by an optional remote-control accessory. Price is $700.

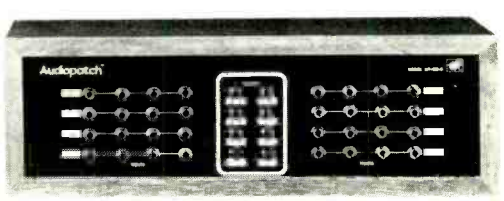
CIRCLE 6 ON READER SERVICE CARD

Ampex calls its new UNISYN the most versatile synchronizer for audio and video post-production on the market. Designed with a universal interface, it is a modular system that can be expanded by adding one synchronizer for each controlled transport to support any post-production requirement. Up to sixteen transports can be locked in sync, and the device can interface with audio and video recorders directly, using NTSC, PAL, SECAM or film standards in any combination. UNISYN—said to be the first synchronizer to provide wide-range, continuously variable speed lock—can lock a slave recorder to a master recorder even when the master speed varies dynamically from one-fourth to two times the play speed. To save time in post-production, each slave recorder can locate and synchronize ten separate segments in one continuous pass of tape on the master recorder. Versatility is enhanced by the eight optically isolated time code controlled outputs which are assignable to ten events. A choice of time code or machine-tach pulse cueing is provided. UNISYN's digital serial communication port permits interconnection to all standard mini and microcomputers. The synchronizer also interfaces with the Ampex ACE editing system. Two versions are available: control panel for manual control and digital interface for integration into post-production editing systems. The control panel can be remoted with a 20-meter cable. Price of UNISYN is $6450.

CIRCLE 7 ON READER SERVICE CARD

PATCH PANELS

Stereo Sentry has expanded its line of patch panels to five different models. Both single and double panel units are available, as well as a choice of phono-pin, 1/4-inch mono, or 1/4-inch stereo patching jacks. Prices range from $112.90 to $210.50 and include a solid wood cabinet. Rack-mountable units also are available.



CIRCLE 8 ON READER SERVICE CARD

ACOUSTAT'S MOS-FET AMPLIFIER

Described by the manufacturer as "the first production amplifier to employ 100% MOS-FET circuitry..." is the Trans-Nova[tm] Twin-200 power amplifier from Acoustat Corp. of Fort Lauderdale, Florida. The "TNT-200" (short for *T*rans-resistance *N*odal *V*oltage *A*mplifier), produces 200 watts per channel into 8 ohms, and utilizes a new error correction system known as Complement Feedback, which "effectively relieves the output stage of having to produce errors at its output, without the phase shift or TIM normally associated with large amounts of negative feedback." The overall design of the TNT-200 is said to be very simple—no junction aberrations, pure MOS-FET signal path, separate power supply for left and right channels, high power, low heat dissipation and a small 18" x 4" 14" frame. The amp (stainless steel structure) retails for $995.

CIRCLE 9 ON READER SERVICE CARD

BASF ANNOUNCES "EE" OPEN REEL TAPE

For those open-reel recorders that have the selectable bias and EQ for the new "EE" (extra efficiency) open-reel tapes, BASF has introduced its version of that tape. Developed jointly with Studer/Revox, the new tape is designated as BASF EE LPR 35 Cr. Described as pure chromium-dioxide, the tape is said to offer audio performance at 3 3/4 ips speed that was formerly available only at 7 1/2 ips. The S/N improvement at 10 kHz is claimed to be 10 dB. The 1-mil tape is available on 7-inch and on 10 1/2-inch metal reels (1800 and 3600 feet, and priced at $19 and $50, respectively). Recorders that can handle EE open-reel tape are made by Akai, Tandberg and TEAC.

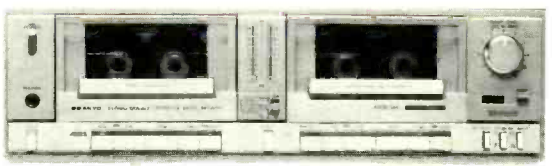
CIRCLE 10 ON READER SERVICE CARD

TEAC CLEANING KIT

Teac continues to try making life for the recordist easier by announcing a new tape head cleaning kit—the QP-001 Cleanmatic Head Cleaner Kit. The liquid cleaning system is created to eliminate oxide deposit build-up. The liquid cleans all tape heads—Erase, Record and Playback—as well as capstan shafts and pinch rollers. Suggested retail price for the kit is $7.95.

CIRCLE 11 ON READER SERVICE CARD

DOUBLE CASSETTE DECK FROM SANYO



A two-section cassette deck, the model RDW50, has been announced by Sanyo. The separate record/play and playback-only sections allow the one to copy a tape being played on the other. Features include Dolby-B, tape selection including metal, LED peak-reading meters, record mute and automatic music-select system. With metal tape response is rated as ±3 dB, 30 Hz to 16 kHz. S/N is stated as 60 dB; wow-and-flutter as 0.06 percent WRMS. Price is $220.

CIRCLE 12 ON READER SERVICE CARD

16-BAND EQUALIZER

From Polyfusion Electronics, Inc. comes news of the Pro-Graph model PEQ-1, a sixteen-band programmable graphic equalizer capable of storing sixty-four response curves in its memory. Each curve is created or manipulated via step-up/step-down buttons under each frequency band. The variable intensity display uses a matrix of 240 LEDs, said to be easily visible from across the room. Balanced and unbalanced inputs and outputs are provided. The device has two computer I/O ports that allow it to be remotely controlled by an optional PRC-1 Remcon unit, an automated mixing board, a computer or by other Pro-Graphs in a "daisy chain" arrangement. Price is $1495.

CIRCLE 13 ON READER SERVICE CARD

CERTRON ADDS HIGH BIAS TAPE

Aimed at the premium audiophile, music and recording studio markets is Ferex II, a new high-bias tape (cobalt-modified ferrite) from Certron Corp. Performance claimed for the tape include maximum output levels, flat frequency response and noise reduction of nearly 5 dB at high frequencies. C-60 and C-90 sizes will be available.

CIRCLE 14 ON READER SERVICE CARD

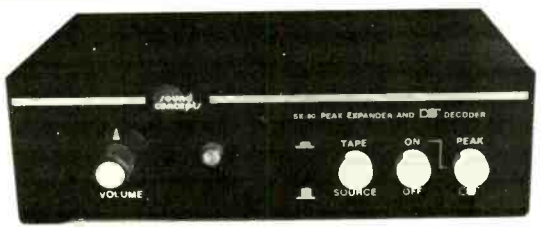
WHO'S WHO IN ROCK

Filled with over 13,000 alphabetical entires, is a new book by William York (Charles Scribner's Sons/$14.95 paperback; $29.95 hardcover). The book lists "the essential facts about the recording career of every individual and group in the history of rock music. *Who's Who in Rock* uses as its style that of the short-entry biographical note, and primarily conversationalists from the 1960s onward, although numerous entries on influential artists from other periods do appear. A typical entry includes the name, instrument(s) played, group memberships and years, recording sessions played, date of birth and chronological discography. The book's publisher also states that "every rock group that has recorded an album released by a major label [and some not so major] and every individual who has performed on a rock album—either as a solo performer, as a member of a rock band or as a session artist"—is included.

CIRCLE 15 ON READER SERVICE CARD

EXPANDER IN KIT FORM

The SX-80K is a new kit version of the Sound Concepts SX-80 CX decoder and peak expander. The price of $76 includes a CBS calibration record (cost of the factory-assembled version is $119). Four hours is the time it takes to build the kit, says the company, which adds that it plans to announce other audio kits in the near future.



CIRCLE 16 ON READER SERVICE CARD

CAR STEREO—UNEXPECTED LESSON?

Looking at statistics released by the Electronic Industries Associates, and snooping around generally it occurs to me that an awful lot of music is being listened to these days in an environment once thought absurd for serious or high-quality sound. That environment is your car, or van, or boat, or private plane, or whatever. In fact, "car stereo" has become in recent years a whole new industry within an industry. U.S. production and imports rose from 4.2 million units in 1970 to 16.36 million in 1980, and industry sources project for 1982 a rise of 5 to 15 percent over that. A new kind of retail outlet has come into being—the car sound specialist of which it is estimated there are about 3,000 who sell and install, plus another 3,000 who do not sell but who will install a system.

It's not only quantity here, but quality. We're not talking any more about the "car radio" but about all-out audio components including equalizers, subwoofers, high-powered amps, time-delay units, a dbx add-on or even a circuit chip that manufacturer can build into a tuner/cassette unit to give it dbx capability.

How come? For one thing, it has been discovered—including by some former skeptics like myself—that a good stereo system correctly installed in a car provides a great listening experience with a dramatic flavor that rivals listening at home. The headphone effect, created by the proximity of speakers in the front door panels, contributes to this effect. So do the rear speakers that lend added spatiality to the sound. Wrapped in this kind of sonic luxury you begin to enjoy driving all over again. Some nuts I know just sit in a car without going anywhere—it's become their preferred listening room.

In a way, this confirms something I have always advocated for sound-reinforcement and "live"-performance systems—the use of surround speakers driven by "medium' powered amps instead of the brute force approach using only up-front speakers driven by monster amps. With the possible use too of careful time-delay and good voicing through equalization, this kind of setup can prove more satisfying to an audience, and without spilling over into unwanted areas. Could be that this area of sound work might learn something from what appears at first to be an unlikely source, the less-than-500-cubic feet enclosed space of a car. I would advise producers and installers to keep an open mind (and open ears) on this subject.

MUSICAL NEWSICALS

SYNTHESIZERS AND ACCESSORIES

The Emulator digital polyphonic keyboard instrument from E-mu Systems has been updated and improved in several significant respects. The Emulator is a unique instrument in

that a real sound is recorded digitally in the unit and then played back at its original pitch or at altered pitch controllable via the unit's keyboard. A single trumpet note recorded in the Emulator, for example, can be played back at any pitch over a two-octave range centered on the original pitch, and in fact can be played back with eight-note polyphony to sound like a whole horn section playing in harmony. The most significant of the revisions to the Emulator is the addition of a real-time, polyphonic, multi-track sequencer which makes it possible to build up a complex musical composition in a manner similar to multi-track recording except that the entire sequence is stored digitally and may be stored on floppy diskettes for long-term storage along with Emulator sounds. The sequencer is now installed as standard equipment on the Emulator, and may be easily retrofitted to existing units. Other hardware revisions to the system include the provision of a foot pedal which duplicates the Mod wheel to make two-hand playing more flexible, and two footswitches, one of which plays the corresponding note in the top half of the keyboard whenever a key is depressed in the lower half of the keyboard. On the software side, the Emulator now has a User Multi-Sample program available which allows four shorter samples with half-octave pitch ranges to be recorded in each half of the keyboard for more realistic reproduction of sounds with significant fixed-resonance characteristics such as the human voice; previously this multi-sample mode was only available on factory recorded diskettes. The other software addition available to users of the Emulator is a Personal Computer Interface via RS-232 serial port allowing the Emulator to be controlled by an external computer.

CIRCLE 20 ON READER SERVICE CARD

Syntauri Corporation has announced a new software system for its line of computer-based digital synthesizers. The company's alphaSyntauri synthesizer systems are all based around the same architecture of a keyboard and an audio processing unit which interface to an Apple II personal computer with at least one disk drive to accept the system's software and to store programs and sequences. The new software is titled DRAW WAVES, and it enables the synthesist to design and create new waveforms which go far beyond the limits of conventional sine/square/sawtooth wave generators. With the DRAW WAVES software, the operator uses graphical means to specify the waveshape, which the Apple II computer then analyzes, digitizes and stores for later use. The DRAW WAVES software becomes particularly powerful when the synthesist uses the ANALYZER program (standard with all alphaSyntauri systems) to analyze his arbitrary waveform in a fourier fashion, the computer giving a readout of the exact proportions of all the harmonics of the given fundamental frequency. Both of these programs run in conjunction with the latest version of the alphaSyntauri operating system known as alphaPlus, which provides a wide range of functions and capabilities including: the ability to re-temper the keyboard; to use the computer's analog paddle controller as a polyphonic pitch bend; to initiate keyboard velocity-controlled amplitude and/or timbre modulation; to use any waveform in memory as a vibrato waveform; plus having a new group of preset sounds and a 2300 note sequencer.

CIRCLE 21 ON READER SERVICE CARD

Syntauri Corporation has announced the introduction of two new synthesizer hardware systems, the alphaSyntauri FIVE and the alphaSyntauri PLUS FOUR. The PLUS FOUR is a cost-effective lead synthesizer which, like all alphaSyntauri systems, comprises a keyboard (four octave in this case), an audio processing unit, two footpedals and a software package, all of which is used in conjunction with an Apple II computer. The PLUS FOUR is a full eight-voice polyphonic system and has a single-track recording system or sequencer. The alphaSyntauri PLUS FOUR has a list price under $1000, plus approximately $2500 worth of 48K Apple II, disk drive and monitor. The alphaSyntauri FIVE is a more sophisticated system which includes an eight-way programmable keyboard split, a five-octave velocity sensitive

keyboard and multilayer sound-on-sound (bounce) recording with punch-in capability. Software included with the FIVE includes the alphaPLUS operating system, alpha III tutorial software, B-3 wavemaker program, Make Pulse program and ten banks of pre-programmed instrument sounds with ten sounds per bank.

CIRCLE 22 ON READER SERVICE CARD

New from SMS is the Model 430 Digital Keyboard/Sequencer, designed to be used with the company's Voice 400 synthesizer but suitable for stand-alone use with other systems with the addition of an optional power supply. The unit is a leadline sequencer with advanced pitch prioritizing allowing arpeggiating up or down while leaving the earlier notes depressed and allowing trills above or below while holding a note. The sequencer has a storage capacity of 1024 notes organized as sixteen sequences of up to sixty-four notes each, with keypad selection and footswitch initiation of sequences. Other features include a three-axis joystick for simultaneous control of pitch bend, filter frequency and modulation depth (via a top twist knob), an internal LFO with three waveshapes, portamento, "live" fine tuning, a five octave keyboard with three-position octave switch, and instant transposition over a sixteen half-step range via the keypad.

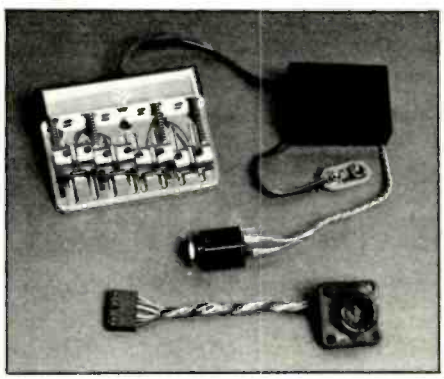
CIRCLE 23 ON READER SERVICE CARD

Another of the current generation of personal computer-based synthesizers, the Soundchaser from Passport Designs, has been expanded functionally with the addition of new software. Like most of the other computer-based systems, the Soundchaser is designed to be used with the Apple II computer and disk drive(s), and like several of the other systems, the Soundchaser generates sounds by "drawing" them using the games paddle of the Apple II. The Soundchaser also has a sequencer capable of up to 3000 notes which may be played back with one sound while a different sound is being played in real time, and of course both sequences and programmed sounds can be stored on floppy disk for later reuse. The new software available for the Soundchaser is rather unique, one of the software packages, called MUSICTUTOR, being an educational program package featuring programmed learning courses in ear training, music theory and harmony, and the other, called NOTEWRITER, being a real-time music transcriber. Using MUSICWRITER, the notes played are written on the computer's video screen in standard music notation, with sophisticated editing features to accommodate changes in tempo, key signature, phrasing, etc. The score may be printed in its entirety if the computer is equipped with a graphic printer, otherwise it is available piece by piece on the video display.

CIRCLE 24 ON READER SERVICE CARD

GUITAR PICKUPS

Zeta Systems recently introduced the 3-D Quadraphonic bass pickup, which replaces the bridge on Precision-type or Jazz-type basses with minor modification. The 3-D pickup uses a three-dimensional transducer under the saddle for each string to pick up the total vibration of the strings on an individual



basis. The bridge itself is machined from bass and features adjustments for both height and intonation. Each string is preamplified individually for reduction of IM distortion and to make possible both quadraphonic or mono outputs with adjustable balance for each string. The 3-D pickup may be used in addition to existing magnetic pickups or it may replace them entirely.

CIRCLE 25 ON READER SERVICE CARD

Seymour Duncan's line of premium guitar pickups has been expanded with the introduction of four new models. The Invader was designed to be Duncan's "gnarliest" humbucker, and it features extra turns in its coils, a big ferrite magnet and oversized socket cap screws for pole pieces to produce a big, strong magnetic field around the strings that is uniform enough that even aggressive string-benders should not have problems with the output dropping as they bend a string away from its pole piece; four-conductor wiring is provided to allow coil-splitting and/or installation of a phase switch. The Soapbar is a modern replacement for a style of pickup that dates back to 1937 in Guild, Gibson and Epiphone guitars, and was occasioned by the virtual impossibility of rewinding coils on the original bobbins as they had become brittle with age. In the case of the Soapbar pickup, the bobbin shape contributes greatly to the warm, fat sound of the pickup so that the original shape was duplicated, but wrapped with additional turns of wire for an even more powerful bass response in the Hot Soapbar version; Vintage (original sound) and Custom (super output, fuller frequency response) versions are also available. Replacement pickups for Fender Jazzmaster basses are available in Vintage, Hot and Quarter Pound (super hot) versions with the added advantage of reverse winding and reverse polarity in the bridge pickup for hum cancellation with virtually no sound change when both pickups are used. The last new model is a replacement pickup for Fender Jaguars, designed to give them a fuller sound and better sustain, and reduce hum and interference thanks to the same reversed winding/reversed polarity trick used in the Jazzmaster pickups; again, Vintage, Hot and Quarter Pound versions are offered.

CIRCLE 26 ON READER SERVICE CARD

GUITARS AND BASSES

Sierra Guitars has announced the introduction of the Excaliber Series of guitars and basses which are designed to provide the performance and playability of the exotic instruments at a price tag resembling a high quality production guitar. The line currently comprises two basses and two guitars, each of which is a neck-through-body design with a three-piece laminated hardwood neck and a double-cutaway body of select hardwood. All models have twenty-four frets with excellent access to even the top fret. All hardware is chrome-plated solid brass, including the string nut and the fully adjustable bridge. Premium-quality pickups are used and are mated to an active electronics package designed for low noise, long battery life and low output impedance making treble loss due to cable loading a thing of the past; all circuitry, including the single 9-volt battery, is located in a fully shielded cutout in the back of the body. The bass models are the 4.1, a single pickup model available with EQ,

and the 4.2, a two-pickup model with two volume controls, single tone control and optional EQ. The guitar models are the 6.1, a single pickup guitar with standard electronics only, and the 6.2 two-pickup model available with optional single equalizer circuit with cut/boost and frequency controls.

CIRCLE 27 ON READER SERVICE CARD

The Vantage line of electric guitars from Music Technology, Inc. has been expanded with the addition of the New Avenger Series. This new series of solid body electrics currently comprises three double-cutaway models which all share a number of common features. All three models have detachable hard maple necks with maple fingerboards and individual tuning machines mounted on an angled peghead. Also common to all three are a brass trapeze style tailpiece and Vantage high output, split-coil, humbucking pickups which feature a coil tap circuit for changing from a thick humbucking sound to a thin, single-coil sound. The AV-310 is a single pickup model, while the AV-325 has two pickups, each with the coil tap circuit. The two pickup model is also available as the AV-35T equipped with a tremolo arm.

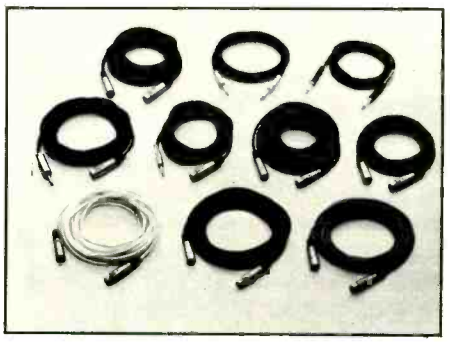
CIRCLE 28 ON READER SERVICE CARD

MUSICAL INSTRUMENT ACCESSORIES

Hoshino (U.S.A.) Inc. has announced the introduction of the Ibanez AD100 Analog Delay, which offers high performance at a reasonable price. Specifically, the AD100 has achieved an impressive −100 dBm noise figure thanks to recent improvements in analog delay technology. The unit has continuously variable delay time ranging from 10 mS to 300 mS to produce a wide range of doubling, slapback and echo effects. Controls are provided for Input Level (with LED peak Indicator), Delay Time, Repeat, Delay Level and Dry Level. Both dry and effects outputs are provided and the effect may be switched in and out via a front panel switch or optional footswitch.

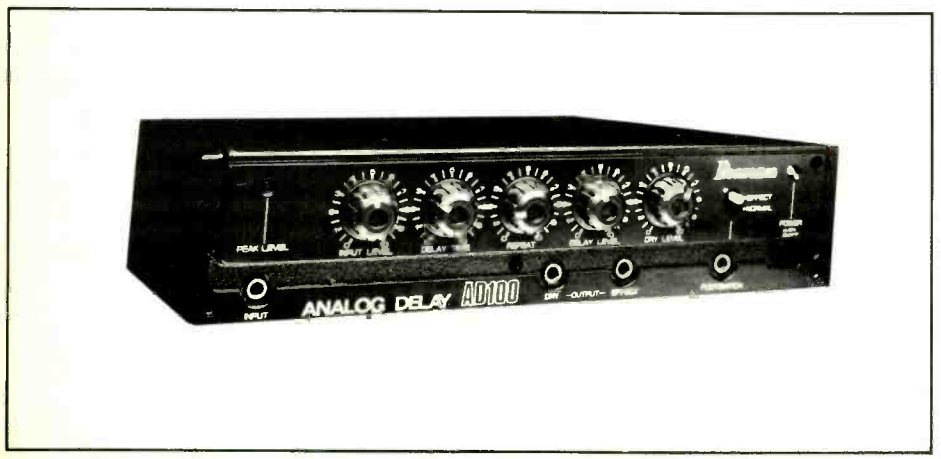
CIRCLE 29 ON READER SERVICE CARD

New from Audio-Technica is a full line of microphone cables and guitar cables. Standard mic cables with XLR-type connectors at each end (one male and one female, of course) are available in Audio-Technica's standard chocolate brown color in 10-, 18-, 25- and 50-foot lengths,



as well as a 16½-foot cable with a female XLR-type connector at one end and a male ¼-inch phone plug at the other. Colored cables to match Audio-Technica's colored mics (in black, blue, gold, green, red and white) are available in 25-foot lengths only. A 20-foot cable with a female XLR-type connector and an inline Low-High Z transformer and phone plug is also offered. On the guitar cable side, 10- and 20-foot cables are offered with either Switchcraft #280 phone plugs or #176S Miti-Plugs. The cable used in each of these assembles is a premium cable type with individually shielded conductors and a conductive vinyl jacket to reduce handling noise; all seven colors of this cable are available in bulk rolls of 100 meters (328 feet).

CIRCLE 30 ON READER SERVICE CARD



More news from Hoshino (U.S.A.) Inc. is that the Ibanez UE400 Multi-Effects unit now has stereo output capability. For the uninitiated, the UE400 is a rack-mount unit which includes a Compressor, Phaser, Chorus Flanger and Distortion [overdrive] in one package with a built-in switching system known as Insta-Patch, which allows any or all of the four effects plus a fifth, external effect to be connected in any sequence for total versatility.

CIRCLE 31 ON READER SERVICE CARD

ELECTRONIC GUITAR TUNERS

Unicord, which is the exclusive distributor for the Korg line, has announced the introduction of the new Korg Micro Six Guitar and Bass Tuner. This palm-sized unit uses a proprietary Korg Integrated Circuit to provide state of the art performance in a compact, reasonably-priced package. The Micro Six features quartz crystal accuracy to within a fraction of a cent, and since the unit uses an analog meter movement, it is easy to tune a non-concert (non A=440 Hz) tuning. Another unusual feature of the Micro Six is its extended frequency range which allows open-string tuning of basses rather than having to use the twelfth fret harmonic.

CIRCLE 32 ON READER SERVICE CARD

The TN64 Microtune is the latest offering from Ibanez. The TN64 features push-button selection of the desired note (standard 6-string guitar tuning) and an illuminated liquid crystal display (LCD) meter. The use of an LCD meter is said to extend battery life some 40% over units using mechanical meters. The TN64 has a built-in condenser mic and an A=440 Hz tone. The unit may be calibrated for any frequency from 435 to 445 Hz for non-concert tuning, and overall accuracy of the quartz reference and LCD metering is better than 1 cent.

CIRCLE 33 ON READER SERVICE CARD

St. Louis Music now offers a compact LED guitar tuner. The unit has a built-in condenser mic and may be left connected during normal playing thanks to input and output modes. The units lights an LED to indicate the note being tuned and a separate row of moving LEDs to indicate improper tuning; if the LEDs move toward toward the right, the string is sharp, if toward the left it is flat.

CIRCLE 34 ON READER SERVICE CARD

GUITAR PICKUPS

Seymour Duncan introduces a new noise cancelling design for Stratocaster, Telecaster and Jazz Bass pickups called the STACK. The new STACK series updates the famous single coil sounds by eliminating the noise. There are two versions for each model. One is the Classic version, which reproduces the vintage tonal and output qualities, and the hot version which has an increased output, a more effective sustain, and tonal response without having a muddy sound. All models can be used for studio and stage work and come with a special cover, a four conductor lead wire for optimum wiring combinations and a wiring diagram.

CIRCLE 35 ON READER SERVICE CARD

GUITAR AMPLIFIERS

A lightweight and compact guitar amplifier—the TR-50GT—is Rickenbacker, Inc.'s latest addition. A 50-watt RMS package, the TR-50GT features: effects channel, distortion, reverb, external speaker jack and a front-panel footswitch jack. Speaker options include: two 10-inch custom designed speakers (TR-50GT); one 12-inch custom designed speaker (TR-50G-112); or one 12-inch JBL speaker (TR-50G-112JBL).

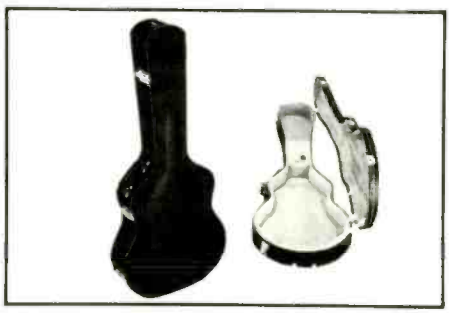
CIRCLE 36 ON READER SERVICE CARD

Pearce Engineering's G1 guitar amplifier is a solid state unit that delivers a tube-type sound. The amp offers two independent channels with full footswitching capability. Three inputs allow assignment to either channel or both. Each channel has controls for: bass, midrange, midrange center frequency (five-octave range), treble, reverb, volume and input drive. Switches are also provided for a gain boost on each channel and switchable attenuator for accomodating different instrument output levels. The G1 is available as a one-piece portable amp with a 12-inch speaker; as an "honest" 110-watt RMS power unit (mounts in 3½ inches of a standard 19-inch rack) or as a preamp with line-level outputs. Pearce informs that their amps are being used by many of today's finest rock guitarists, including Elliott Easton of the Cars.

CIRCLE 37 ON READER SERVICE CARD

GUITAR ACCESSORIES

D'Andrea Manufacturing Company Inc., has announced the introduction of its Tourline™ series of professional hardshell guitar cases. They are master-crafted with select quality Canadian hardwood. They are available in flat top and arch top. This series offers a scuff and moisture resistant luggage quality protective covering bound with reinforced saddle grade



stitching; deluxe molded, comfort balanced handle; protective steel bumpers; extra thick, long fiber plus covered foam interior side walls; a form fitting neck brace; and professional size lines accessory compartment. Each case comes with the D'Andrea Tourline™ hang tag, The Tourline™ cases are available in traditional sizes. Suggested list prices start at $99.95.

CIRCLE 38 ON READER SERVICE CARD

BASS GUITARS

Steinberger Sound has introduced the Model L-2/5 Five-String Bass. It uses stiff but lightweight graphite and glass fiber reinforcement which results in long sustain and brilliant tone. This allows the user to string the instrument in low B or high C tuning, without risking bending or warping. The bass has two low-impedance pickups, the Steinberger pivot plate and snap-on legrest for playing comfort. It will take double ball-end strings for instant changing, as well as conventional strings. These features fit the dimensions of a standard bass neck. The model shown here, the L-2/5A, is

equipped with optional Active Equalization and has the following controls: volume, pan, treble boost/cut, and bass boost/cut.

CIRCLE 39 ON READER SERVICE CARD

MICROPHONE ACCESSORIES

Nady Systems has introduced a multi-purpose wireless communicator system to be used for motion picture and broadcasting productions, lighting, sound, cueing, coordinating and direction. The system consists of three components: a miniature push-to-talk (simplex), the RT-201, which is a two-way transceiver that attaches to the body for hands-free communication between the two parties. It has a range of up to one mile and a 1 watt output. It is available for switchable operation of up to six channels. The T-201 mini-

transmitter component offers the same housing and transmitter circuitry as does the RT-201, and is available in single or dual operation only. The third component, the R-1000 is a battery-powered FM mini-receiver that is compatible with the RT-201 and the T-201, and can be used for all listen only applications. These three units make up the Nady Wireless Communicator System and can be used for all different kinds of wireless communication purposes. They are low in price and small in size, and operate in the VHF band (150-174 mHz).

CIRCLE 40 ON READER SERVICE CARD

Recording Techniques Part 4

by Bruce Bartlett

Microphone selection and placement—mic-technique—is probably the most important factor in getting a good-sounding recording. Even if your tape recorder and mixer are the best available, the final result will be poor unless you choose and place your microphones carefully. In this article, we'll cover mic-technique fundamentals and two-microphone recording; later issues will describe some techniques for individual instruments.

Microphone Selection

How do you choose an appropriate microphone for a particular instrument or musical ensemble? Is there a "correct" microphone to use in each application? Every microphone sounds different, and you should choose a microphone according to the sound you want. There is no "correct" microphone, still, there are some basic guidelines that apply in most situations.

If an accurate or natural sound is desired, the frequency response of the microphone should cover the frequency range of the instrument. For example, a trombone radiates frequencies from about 80 Hz to 8 kHz, so a microphone with a frequency response covering at least this range will pick up all the sounds a trombone can make. Similarly, an orchestra produces a very wide frequency span from about 40 Hz (bass drum and bass viol) to 15 kHz or higher (cymbals and other percussion); so, microphones that are used to record an orchestra (or other large ensembles) should have a wide, flat frequency response covering most of the audible spectrum. A frequency response from 80 Hz to 15 kHz is adequate for most instruments; a response from 40 Hz to 9 kHz covers the range of bass instruments; and a high-end response up to 10 kHz is sufficient for brass, voice and piano.

A microphone with extended bass response may pick up low-frequency noises such as boomy room reverberation and air-conditioning rumble. In some cases, it may help to use a microphone with a bass-cutoff switch or with a low-frequency response limited to the lowest frequency of the instrument to be recorded. Or, using your mixer, you can filter out low frequencies that don't affect the sound of the instrument.

Recording engineers tend to use particular types of microphones with certain groups of instruments, but there are always exceptions. Condenser microphones with a wide, flat response are frequently used on large ensembles, cymbals, snare drum, acoustic instruments and studio vocals. Dynamic (moving-coil) microphones with a flat response typically are seen on woodwinds and brass. Dynamic microphones with a "presence peak" (a boost around 5 kHz) are popular for amplified instruments, drums and stage vocals. Ribbon mics are sometimes used on brass instruments. But you can use any microphone on any instrument if the resulting sound pleases you—it's a matter of personal taste.

Cardioid microphones, which reject reverberation, feedback and leakage, should be chosen over omnidirectional microphones when pickup of these unwanted sounds is a problem. For example, cardioids are used to minimize feedback on stage and to reduce pickup of poor room acoustics. Omni mics, on the other hand, usually cost less than cardioids of comparable frequency response and have less pickup of pop, wind and handling noises.

Most cardioid microphones boost the bass when placed less than about 2' from a sound source. The closer the source, the more bass boost. This phenomenon is called *proximity effect*. It provides a full sound on drums and amplified instruments, and a warm quality for vocals. But if you don't want it, you can roll off the excess bass at the mixer or microphone, or use a cardioid microphone designed for minimum proximity effect, or use omnidirectional microphones (because they have no proximity effect). *[For more information about microphones, see* MR&M*'s May 1982 issue.]*

Microphone Placement

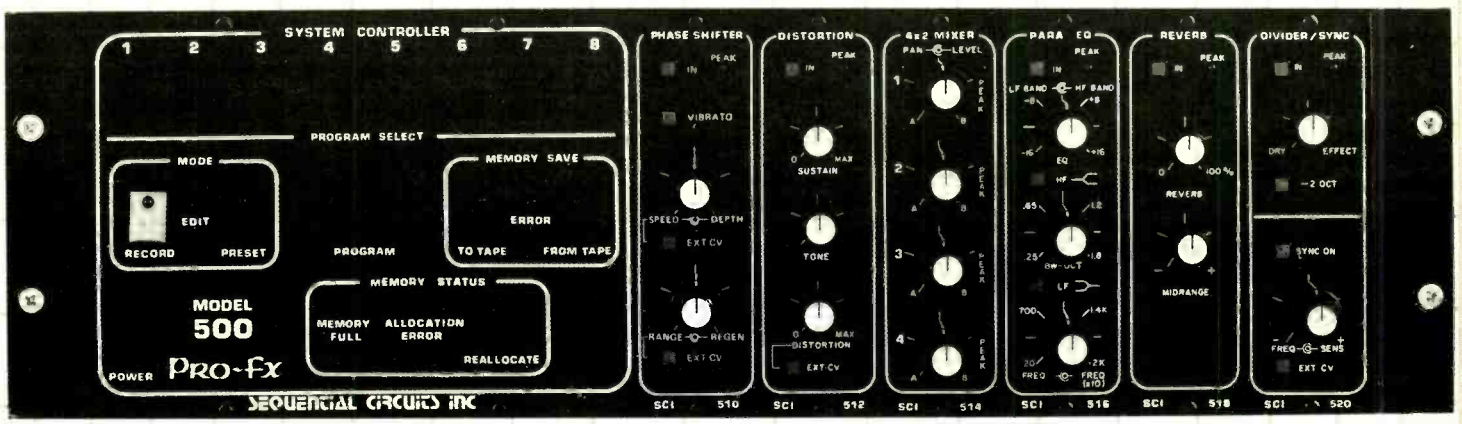
Before placing microphones for a recording session, there are at least three questions to ask yourself: (1) How many microphones should be used? (2) How far from the sound source should each microphone be placed? (3) When miking an instrument up close, what part of the instrument should be miked? The answer to each question will be discussed in detail.

• (1) **Quantity**: The number of microphones required varies with the recording situation. Use just two microphones on a performing ensemble when you want to record an overall acoustic blend of the instruments and the concert-hall ambience. Classical musical ensembles (such as orchestras, marching bands, choirs and pipe organs) usually can be recorded quite well in stereo with two microphones several feet in front of the

PROGRAMMABLE EFFECTS

The PRO-FX System from Sequential Circuits is the industry's first modular, expandable, rackmounted, completely programmable signal processing system that lets you:

- **Pick the combination of effects you want. Six are now available: Phase Shifter, Distortion/Sustain, 4 x 2 Expandable Mixer, Parametric Equalizer, Reverb, Transpose/Sync, and, coming soon, a Flanger/Doubler. Many more modules will be available in the future.**
- **Program 64 different combinations of control settings.**
- **Step through preset sequences of programs with the footswitch.**
- **Activate program changes with a synchronized tape pulse.**
- **Save sets of programs and program sequences on tape.**



The **Model 500 PRO-FX** offers the flexibility and control of full programmability with the convenience of modular rackmount design. Each module is carefully crafted for studio quality low noise and distortion specs. Every knob and switch on each module is completely programmable, which allows complex control settings to be stored and recalled instantly at the touch of a switch. You no longer have to worry about reproducing a particular effects setting in the studio or on stage. Now you can consolidate all your effects and mixing into one concise package, and have instant control over complete sound changes while playing.

Phase Shifter (Model 510) uses low-noise circuitry and a 4-stage phase shifting network. Besides speed, depth, and range controls, the regeneration knob controls the depth of the effect from very mild to intense. (External speed and range switches allow pedal or voltage control of sweep and range.

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Parametric Equalizer (Model 516) is a 2-band, fully parametric, overlapping range equalizer with switchable peaking or shelving operation; any number of these units can be placed in series to obtain as many bands as required.

Reverb (Model 518) is a very smooth reverberation unit using a 6-spring delay line and active limiting to eliminate spring side-effects. This module also has a sophisticated EQ which sets bandwidth and tone of reverb signal.

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group (details later in this article). Pop-music groups, on the other hand, usually are recorded with multiple microphones: one or more for each instrument or instrumental section. Miking every instrument lets you control the balance (relative loudness) between instruments at your mixer by adjusting the fader (volume control) for each microphone.

For greatest clarity in a multi-miked recording, use as few microphones as are necessary to get a good sound. Don't use two microphones when one will do the job. To achieve this, sometimes you can put two or more sound sources on a single microphone. For example, a vocal quartet can be covered with just one microphone on four singers, or with one microphone on every two singers. A drum set sometimes can be recorded well with just two microphones: one overhead and one in the kick drum.

A disadvantage of covering several instruments with one microphone is that the balance of the instruments cannot be readjusted after recording (during mixdown). The instruments have to be balanced acoustically in the studio for achieving a proper blend before making the recording.

Picking up several instruments equally with one microphone also requires that the microphone be placed relatively distant from the instruments. The result may be too much pickup of reverberation, noise or feedback.

• (2) **Microphone-to-Source Distance:** The closer a microphone is placed to a sound source, the less reverberation, leakage and background noises are picked up. In other words, placing a microphone a few inches from an instrument, (a) reduces the recorded ambience or room reverberation; (b) rejects the sounds of other instruments leaking into that microphone; and (c) discriminates against noises entering the recording room. In sound-reinforcement situations, close microphone placement also permits maximum loudness before feedback occurs.

Even though close miking has all these benefits, you should place the microphones only as close as necessary, not as close as possible. Miking too close can color the recorded tone quality of an instrument. Why does this occur?

Most instruments are designed to sound best at a distance (say, two or more feet away). So, a flat-response microphone placed there tends to pick up a "natural" or well-balanced timbre (tone quality). But when leakage or poor room acoustics forces you to mic in close, you emphasize the part of the instrument that the microphone is near. The tone quality picked up very close may not reflect the tone quality of the entire instrument.

For example, the sound hole of an acoustic guitar resonates strongly around 80 to 100 Hz. A microphone placed close to the sound hole "hears" and emphasizes this low-frequency resonance, producing a bassy, boomy recorded timbre that does not exist at a greater microphone distance. To make the guitar sound more natural when miked close to the sound hole, you need to roll off the excess bass on your mixer, or use a microphone with a bass rolloff in its frequency response. In general, if you mic close, you'll have to use equalization or careful microphone selection and placement in order to correct the resulting tonal imbalance.

More distant microphone placement (several feet from the source) picks up room ambience, and can be used to add a "live," "loose" feel to a recording. This technique often is used when overdubbing strings and horns, and sometimes is applied to overdubbed vocals, electric guitar solos, drums and pianos. Classical music is always recorded at a distance because concert-hall reverberation is a desirable part of the sound of classical music. You should note that the quality of a distantly miked recording greatly depends on the quality of the room reverberation.

Omnidirectional microphones pick up more reverberation than cardioids at the same miking distance. Stated another way, omnis should be placed closer to the sound source than cardioids (nearly half the distance) in order to pick up the *same* balance between direct sound and reverberation.

• (3) **Close-Miking Positions:** Musical instruments radiate different tone qualities in different directions, and they produce different tone qualities from different parts of the instrument. Thus, you can partly control the recorded tone quality simply by changing the position of the microphone relative to the instrument.

For example, a trumpet radiates strong highs directly out of the bell, but does not project them to the sides. Thus, a recorded trumpet sounds bright when miked on-axis to the bell and sounds more natural or mellow when miked off to one side. Similarly, the recorded tim-

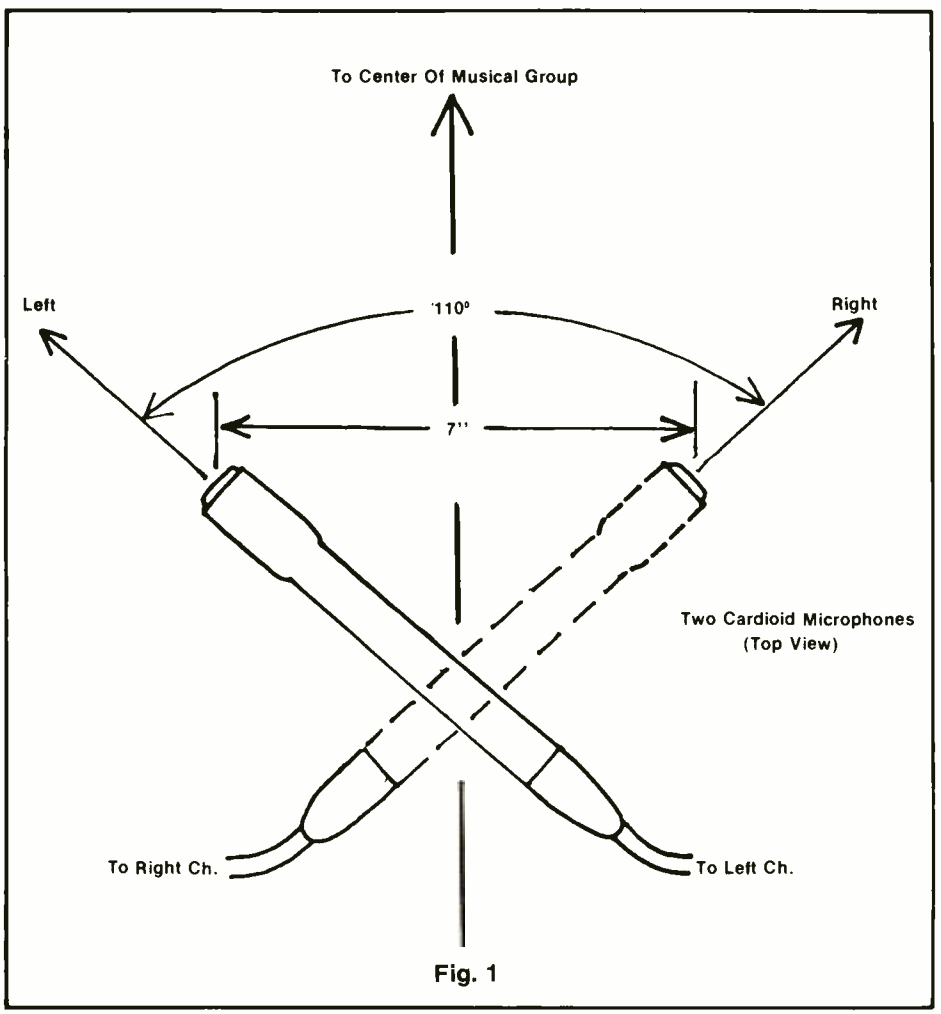

Fig. 1

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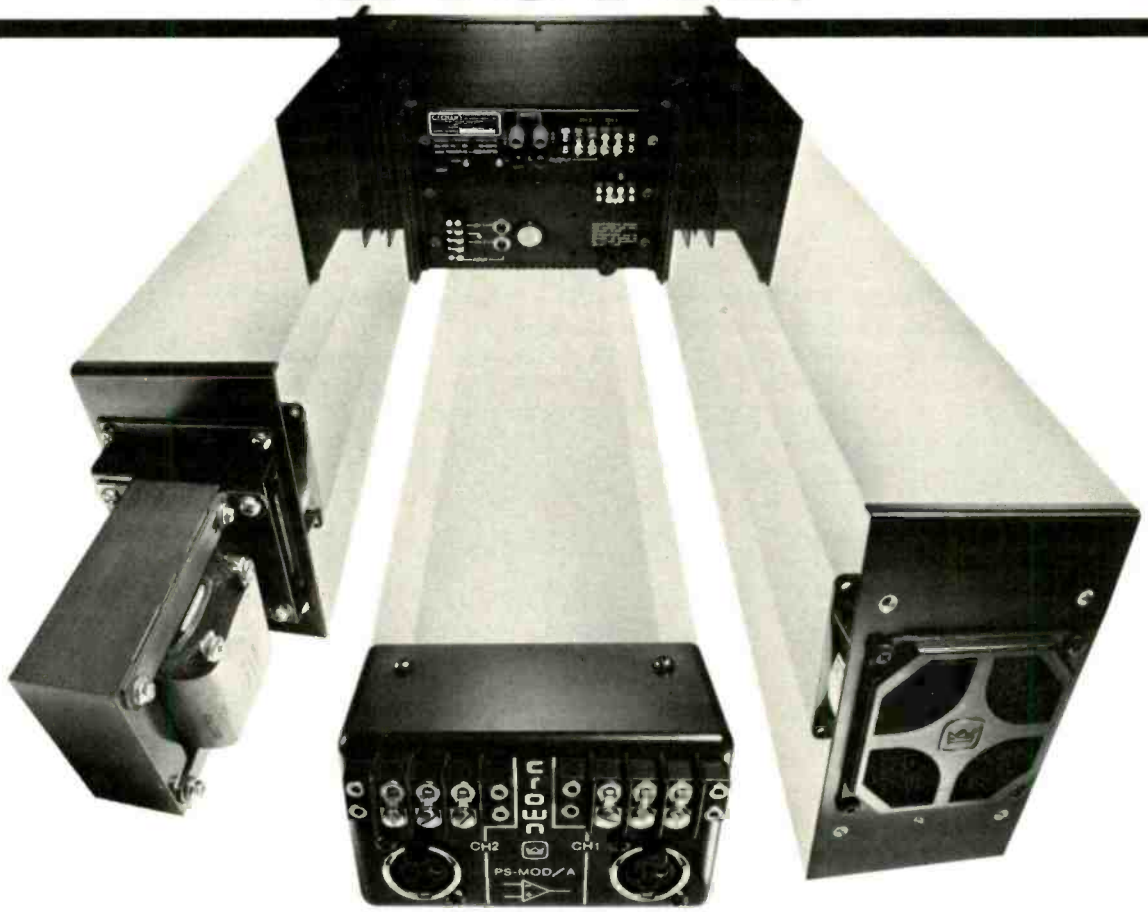

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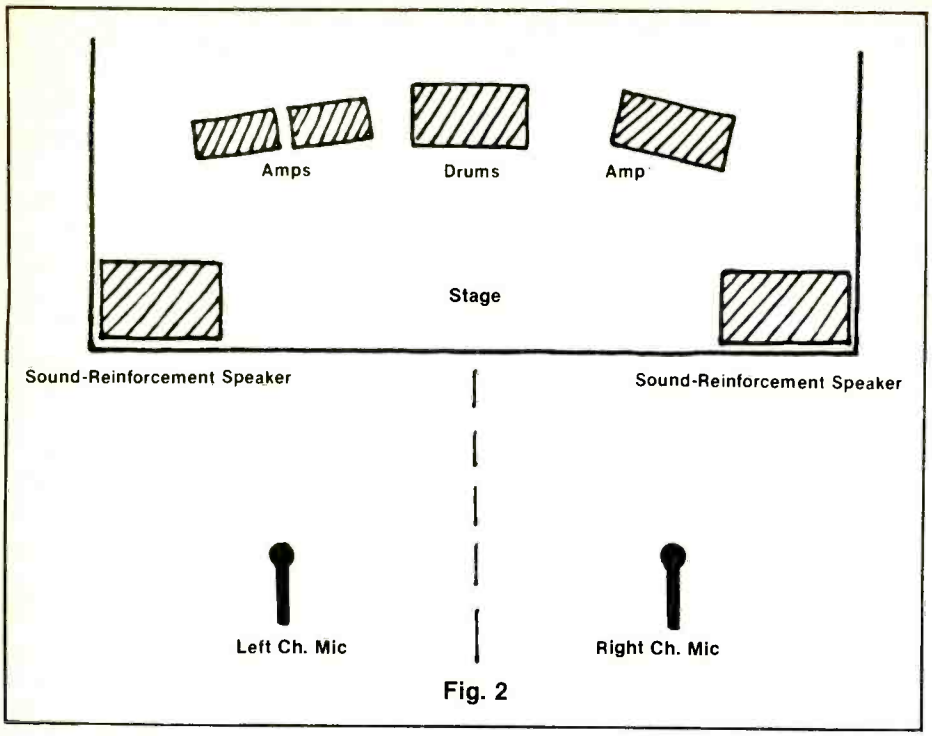


Fig. 2

bre of a piano varies widely depending on the microphone position. A foot over the middle strings sounds fairly natural; under the sound board sounds bassy and dull; and in a sound hole it tends to sound constricted.

It pays to experiment with all sorts of microphone positions until you find a sound you like. There is no "one right way" to place the microphones, because you place them to achieve your desired tonal balance. Note that microphone positioning usually is preferable to equalization as a means of tone control.

To determine a good starting microphone position, try closing one ear with your finger. Listen to the instrument with the other ear and move around until you find a spot that sounds good. Put the microphone there. Then make a recording and see if it sounds the same as what you heard "live."

On-Surface Techniques

Sometimes you're forced to place microphones near hard reflecting surfaces. Some applications where this might occur are recording drama or opera with the microphones near the stage floor, recording an instrument surrounded by reflective baffles or recording a piano with the microphone close to the lid. In these situations, delayed sound reflections from the nearby surface combine at the microphone with the direct sound from the source, resulting in phase cancellations of various frequencies. There is created a series of peaks and dips in the net frequency response called a "comb-filter effect." The recorded tone quality in this case can be quite colored; it is similar to that achieved by phasing or flanging. In fact, you can make a "poor man's flanger" simply by moving a reflective surface—say, a record jacket—toward and away from an omnidirectional microphone while recording an instrument. In order to hear the effect, say "shh" while moving your palm toward and away from your mouth.

To avoid the tonal coloration caused by microphone placement near a surface, some microphones are specially designed for on-surface mounting. They have the microphone diaphragm arranged very close to the reflecting surface so that direct and reflected sounds combine in-phase over the audible range. You can come very close to their performance by mounting a miniature condenser microphone (say, a 1 cm. diameter lavalier microphone) on the surface. Tape it to the underside of a piano lid, to a hard-surfaced baffle or to a stage floor near the footlights. Some microphone manufacturers offer special floor mounts for regular microphones.

Additional Tips

When multiple microphones are mixed to one channel, the distance *between* microphones should be at least three times the mike-to-source distance. For example, if two microphones are each placed 1' from their sound sources, the microphones should be at least 3' apart. Following this rule will prevent phase cancellations and the resulting blurred, colored sound quality.

Some microphones have off-axis coloration, a dull or colored tone quality for sources that are not directly in front of the microphone. Try to keep sound sources as on-axis as possible, especially sources that radiate strong high frequencies.

Recording with Two Microphones

Multiple miking is so common today; why discuss two-microphone recording methods? Many readers starting to get involved in "live" recording have just two microphones and a tape deck. Some musicians may have access to many microphones and a mixer, but want to record with a minimum of fuss (just two microphones out front) to see how they sound to an audience. This section will describe how you can make the best use of two microphones when you record musical performances.

• **Classical-music ensembles:** There are many musical groups that are ideally recorded in "real stereo" with just two microphones. Some of these are orchestras, marching bands, large jazz bands, choirs, pipe organs, quartets and soloists. In making a stereo recording, we place a pair of microphones several feet from the ensemble, and let the conductor, composer and musicians control the balances among the instruments *acoustically*, rather than mixing and balancing the instruments with a mixing console. [Stereo miking techniques are described in detail in the author's article in the September, 1980, issue of *MR&M*.]

One stereo microphone technique that works well in many situations is the ORTF System *(Figure 1)*. Two high-quality cardioid microphones of the same model number are used. Mount them on a "stereo bar" or "stereo microphone adapter"—a device that allows the mounting of two microphones on a single stand and holds them in the desired arrangement. Angle the microphones 110° apart (55° to the right and left of center) and space their grilles 7" apart horizontally. The angling produces intensity or level differences between channels; the spacing produces time differences between channels. Both contribute to creating the stereo image.

When recording a large ensemble, raise the microphones high on a boom stand (about 15'). This arrangement prevents overly loud pickup of the front row relative to the back row. Tilt the microphone slightly down to aim at the

orchestra. Just as a starting point, place the microphone stand about 12' in front of the front-row musicians. Plug the microphones into extension cables, then plug the cables directly into your tape deck. Monitor the sound through high-quality closed-cup headphones.

Some pickup of room reverberation (ambience) is desirable in recording classical music. You can control the amount of recorded reverb by moving the microphone stand a few feet closer to the ensemble to decrease reverberation, farther to increase it. If possible, make several recordings during a rehearsal at different microphone distances, then monitor the playback to determine the position giving the most pleasing balance between the direct sound from the ensemble and the concert-hall ambience.

Set the record levels so that the loudest part of the performance makes the meters peak around +3 VU (or 0 VU for cassette decks). Leave the levels alone as much as possible, and if you must make adjustments, do them slowly.

For quartets, duets or soloists, place the microphone pair about 2' to 10' away, 5' high. Why record a soloist in stereo? If the performer is playing a piano, this large instrument sounds more realistic if reproduced with some width. A solo classical guitar sounds more believable in stereo because the reproduced ambience spreads between the playback speakers, adding a sense of space.

• **Self-accompanied vocalist:** You may want to record a singer who accompanies himself on a piano or guitar. One way is to mic the voice and instrument separately and up close, controlling their balance with the record-level controls. For a grand piano, try a cardioid microphone about 1' over the middle strings, near the hammers, aiming away from the vocalist. Mic the guitar close to the sound hole with a clip-on guitar microphone. Place an omni microphone about 2" from the singer's mouth, with a foam "pop filter" or "windscreen" on the microphone. These are just some suggested starting methods.

• **Rock Groups:** To pick up a rock group as the audience hears it, try the ORTF arrangement about 10' to 15' in front of the stage. You may want to hang the microphones from the ceiling, just above the reach of the audience.

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

Most rock groups use loudspeakers at each end of the stage to reinforce the vocals (and sometimes certain instruments). A centrally placed stereo pair of microphones, being far from the vocal-reinforcement speakers, may not pick up the vocals adequately. To gain better control over the vocal/instrumental balance, try aiming two cardioid microphones straight ahead toward the group, spaced about 5' to 15' apart *(Figure 2)*. Place the microphones far apart (that is, close to the sound-reinforcement speakers) to increase the loudness of the vocals relative to the instruments. Do the opposite if the vocals are too loud in the recording. The stereo imaging of this arrangement is poorer than with the ORTF System, but at least some vocal/instrumental balance adjustment is possible.

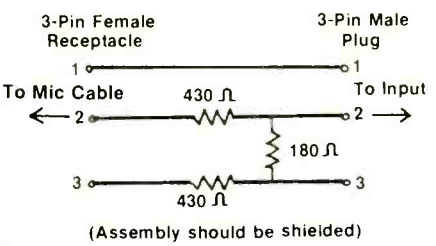
If the playback sounds distorted even though you did not exceed a normal recording level, it's likely that the microphones overloaded the microphone preamps in the tape deck. With loud sound sources such as rock groups, a microphone can put out a signal of sufficient level to clip the tape deck microphone input. Some tape decks include an "input attenuator" or "pad" to reduce the microphone signal level before it reaches the first stage of amplification, thereby preventing distortion. Others have a high-impedance microphone input, which will act as an attenuator if used with a low-impedance microphone. If your deck has no pad, you can build one as shown in *Figure 3*. You can also obtain plug-in pads from your microphone dealer.

You can make a cleaner recording at home by patching the output of the band's mixer (for vocals) into one channel of your tape deck, and picking up the instruments with a single microphone plugged into the other channel of your deck. *Figure 4* shows the setup. This is a "no fuss" way of recording a group—not to make a demo-quality tape, but just to hear how the group sounds musically.

Have the vocalists sing into the same microphones they use on stage, with their lips touching the microphone grilles. Roll off the bass on their microphones at the mixer (say, −8 dB at 100 Hz) to minimize the boomy-sounding proximity effect mentioned earlier. Also, mic other quiet instruments (such as acoustic guitar) and run them through the mixer. Then, using a patch cord, connect the "line output," "tape out," or "buss out" of the mixer to the channel-1 "aux input" or "line input" of your tape deck.

The singers need to hear themselves over the instruments while performing "live," so set up monitor sends and monitor speakers (or just use the main reinforcement speakers). You may be able to equalize the monitors separately to make a pleasing monitor tonal balance for the musicians.

Now, arrange the instruments close together as shown in *Figure 4*. Place a cardioid microphone in front of the instruments so as to include them within a 90° angle. This will help ensure good tonal reproduction for all the instruments. Plug the instruments' microphone into the channel-2 microphone input of your tape deck, using an input attenuator if necessary. Set the channel-1 record level to peak at +3 VU maximum (0 VU for cassette decks), and balance the levels of the singers



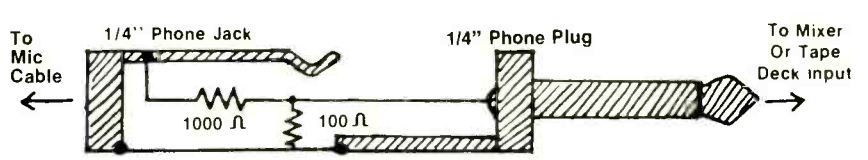


Fig. 3

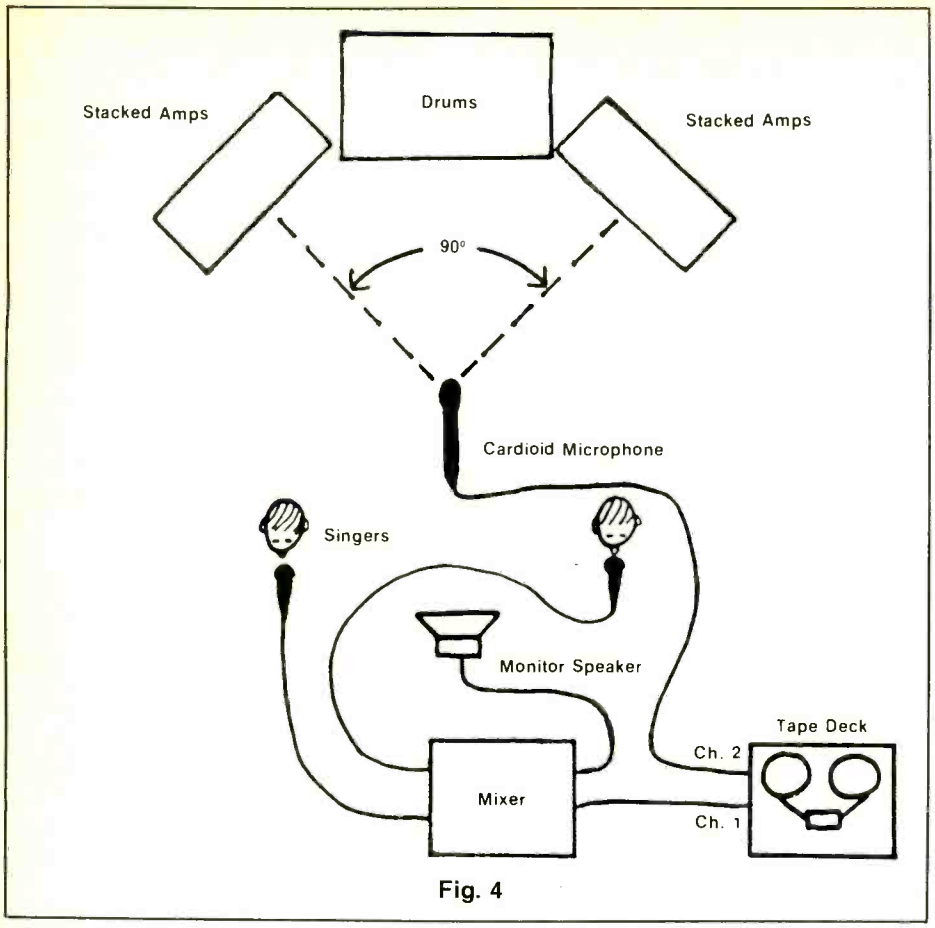


Fig. 4

using the group's mixer. Set channel 2 to peak at 0 VU (−3 VU for cassette decks). Note that some mixing consoles may put out a signal that is too strong for some tape-deck inputs. If the recording sounds distorted, reduce the console level until distortion stops (typically about 12 dB), while maintaining a normal record level.

After recording a song, play back the tape in mono (both channels mixed together). If the voices are too loud relative to the instruments, reduce the vocal record level and try again. If the instruments are too loud, reduce their record level. If any one instrument is too loud, have it played softer and then record again.

The musicians can hear the vocal harmonies clearly without instrumental accompaniment by listening just to channel 1. You may want to mix everything to one channel as you record, thereby leaving the other track open for sound-on-sound overdubs.

This is a simple method of making an adequate recording—good enough to judge the musical performance. In the next issue, we'll delve into more sophisticated methods by introducing some typical miking techniques for individual instruments.

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BILL WYMAN

by Vicki Greenleaf & Stan Hyman

Bill Wyman, one of the founding members of the Rolling Stones, is constantly in the midst of many projects. Apart from playing with the *band, his solo endeavors include a recently-released, self-titled LP and the soundtrack for the movie* Green Ice, *yet to be released in America.*

Frustrated by the musical restrictions imposed by the Stones format—which marked its 20-year anniversary with a 1981 American tour—Wyman recorded two solo albums in the mid-70s, Monkey Grip *and* Stone Alone. *However, the albums were more creative than commercial and elicited little response from listeners. With a more-updated and commercial sound in mind, Wyman again entered the studio alone prior to the Stones' tour to record the single "Je Suis Un Rock Star" to test the music market. The international success of the single encouraged him to complete production of the entire album.*

Also following the tour, a chance encounter paired Wyman with the producer of Green Ice, *who asked him to score the movie. Working in the eight-track studio in his home in the south of France, Wyman scored the movie after hearing only a 10-minute description of its plot.*

In addition, Wyman continues to update his work chronicling the history of the Stones through the use of Apple computers. Organizing a personal diary, and "trunks and trunks" of snapshots, clippings and memorabilia, he may someday publish the material. In the meantime, his literary efforts already in print include his photos of the reclusive French artist Marc Chagall in the book, Chagall Mediterranee.

Modern Recording & Music *caught up with Wyman in L.A., where he was relaxing prior to embarking on a promotional tour for his projects.*

Modern Recording & Music: Were you pleased with the group's latest album, *Tattoo You*, and your own contribution to it?

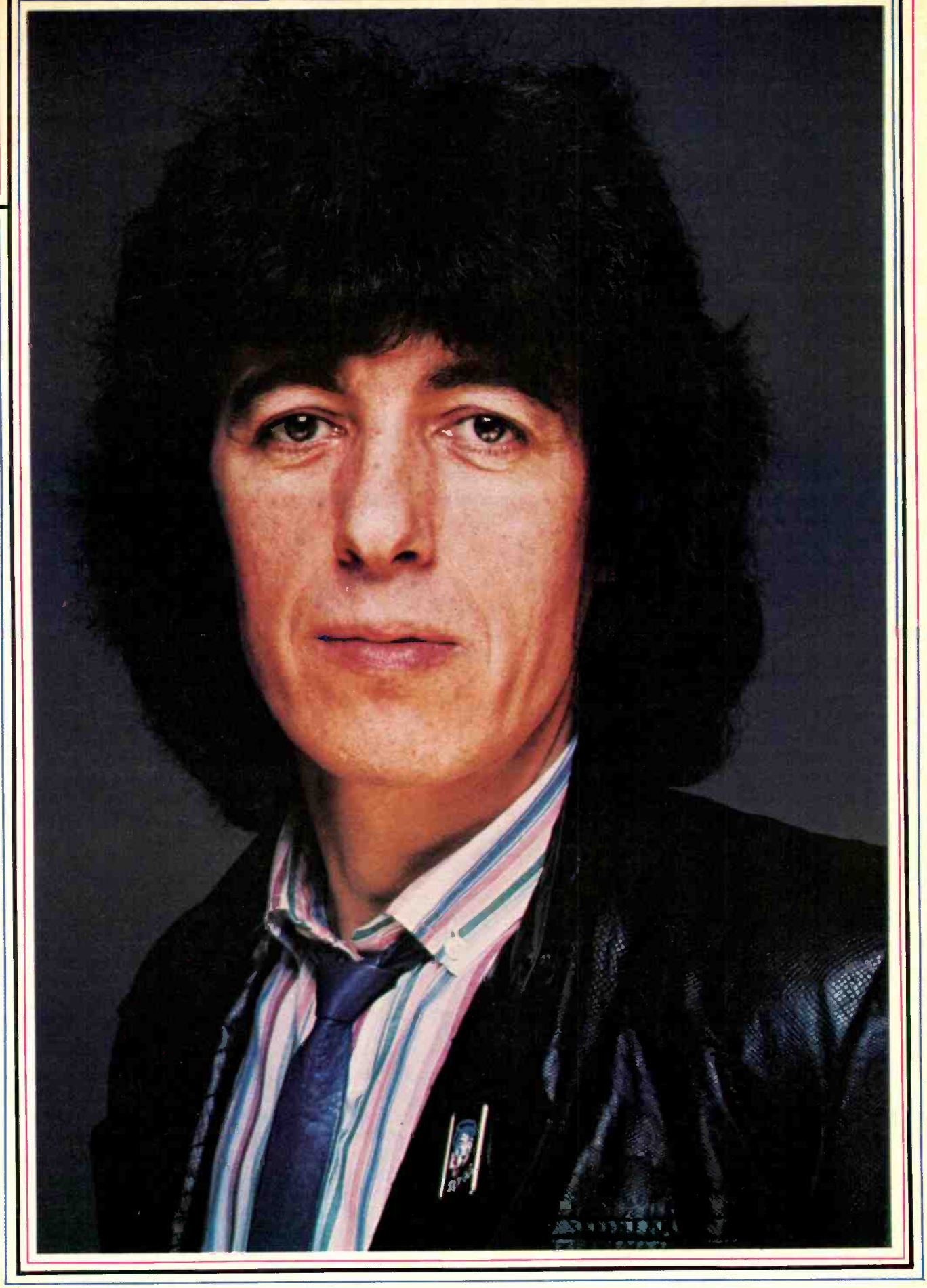
Bill Wyman: I think we've all been improving performance-wise. But I think that is due to how it was mixed, the way the songs were finished up. The last three albums in particular have been like a new step for the band. Much more energy and alive. They used much more of the bass and drums on the records than ever before. They used to bury me into the track most times. It was always the bass drum loudly carrying it. We always mixed into a kind of mono. Now there's a tendency to separate the sounds and put the rhythm section up front more. It seems to have made a better sound all around. And I'm happy with it, being one of the rhythm section. *[Laughs]* I can actually hear what I play. *[Laughs]*

MR&M: What inspired you to go back into the studio alone?

BW: The success of the single ("Je Suis Un Rock Star"), really. Even though the single wasn't a success here, it got a lot of air play. Everybody was talking to me like it was a success even though it didn't go on the charts. That's what I heard from everybody, but it didn't sell.

MR&M: Are you worried about the commerciality of your work or is it mainly a personal outlet?

BW: Never before have I worried about it. I have started to think much more in that way because to get the right results from record companies, you have to come up with the goods for them to have faith in you. You've got to be commercial. You can't just do it for fun anymore. I did that before and realized my mistake. I can still have fun doing it, but that's not the ultimate objective now. The ultimate objective now is to be successful doing it. I used to think, "Aw, it will be fun, like a hobby. We'll choose this band for the album and if it doesn't sell, it really doesn't matter, 'cause I had a good time." That's the way I used to think.



"I can still have fun making records... but now the ultimate objective is to be successful."

MR&M: When did you record the album?

BW: I did some of it just before the [Stones'] tour...about half of it. I finished the other half three or four weeks ago.

MR&M: Did anyone assist you on the album?

BW: Basically, I did it with a friend of mine. Between us, we are able to put together much of the music. At the end, we listened to it with the vocals on and everything, and then we decided if we should have drums on there instead of the rhythm machine we used. So then we would bring in a drummer to overdub drums. We would also bring in a horn section and a keyboard player to tidy up my keyboard playing. We tried to keep it to the two of us so it retained the original concept of the way it was written. I was never able to do that before. In the 70s, I had so many great musicians and singers help me that when the master was cut, it wasn't the same song. It'd gone somewhere else. It'd become a country song or too funky for my voice.

MR&M: How does the new album differ from your previous efforts, Monkey Grip and *Stone Alone*?

BW: It's much more modern; it's more today. I purposely set out to make every track of the new album as up to date as possible. It has really come together very nicely.

MR&M: Your single, "Je Suis Un Rock Star," seemed to be a mockery of the English language. Is that a fair statement?

BW: That was cockney French. That's the way English people sing it when they're on holiday. I thought it was an amusing idea to sing a song, especially a rock and roll song, like a rock star talking in French to his girl. It was very funny because of the French being so intellectual. Their humor leaves a lot to be desired, as we all know. When we released the single in France, I had this frantic telex message chase me across America on the tour. It said, "Do you know that you made three bad mistakes on the French gramatique?" Of course I know! They missed the whole point. It was a cockney-French thing, pokin' fun. I sing half a sentence in French and the rest in English. "*Voulez vous,* come live with me, *a la* south of France." It's a mixture of English and French which they call "Franglais." They didn't see the point at all and were very concerned that I said, *Je suis ooon* instead of *un* and so on and so on.

MR&M: When you released "Je Suis Un Rock Star" last fall it became a hit in Europe, Australia, Canada and Israel. Unlike most artists, you signed with A&M Records to record a single and later decided to record an album. Why?

BW: In the 50s that is what people used to do when they wanted to find out whether their music was going to be popular. They always did singles, never albums. I got very bored over the last 10 or 15 years with new artists who came out with an album and there really wasn't a good song on it. It was a waste of energy, money and efforts. So I thought, "Well, I've got this song. I think it could be a hit. I'll put it out as a single. If it happens, then I may do an album." Suddenly it took off and the record company asked when to expect the album.

MR&M: Why did you choose A&M Records instead of Rolling Stones Records as the label for your solo recording?

BW: *[Pauses and laughs]* I realized that anything I did as an individual should be worked on individually and have absolutely nothing to do with the band. It was very nice to have the Stones' organization and efficiency working for me on private projects, but I found my mistake when I did those mid-70s recordings. It became second priority to everybody who was working in our organization, as it should be. The first priority is the band. I found that if I wanted the secretary to make sure that the artwork was together and then Keith would phone up the same morning and say, "Look, my nanny's left. I need a nanny by three o'clock this afternoon," then they would obviously work on that and my project would be neglected. Not because of inefficiency, but because of priorities. I thought, "From now on, any private projects I ever do I will totally divorce from the band." I don't really want that association. I don't want it to be said, "The new single by Bill Wyman *of* the Rolling Stones." I want them to say, "The new single by Bill Wyman." I was even thinking of using a pseudonym.

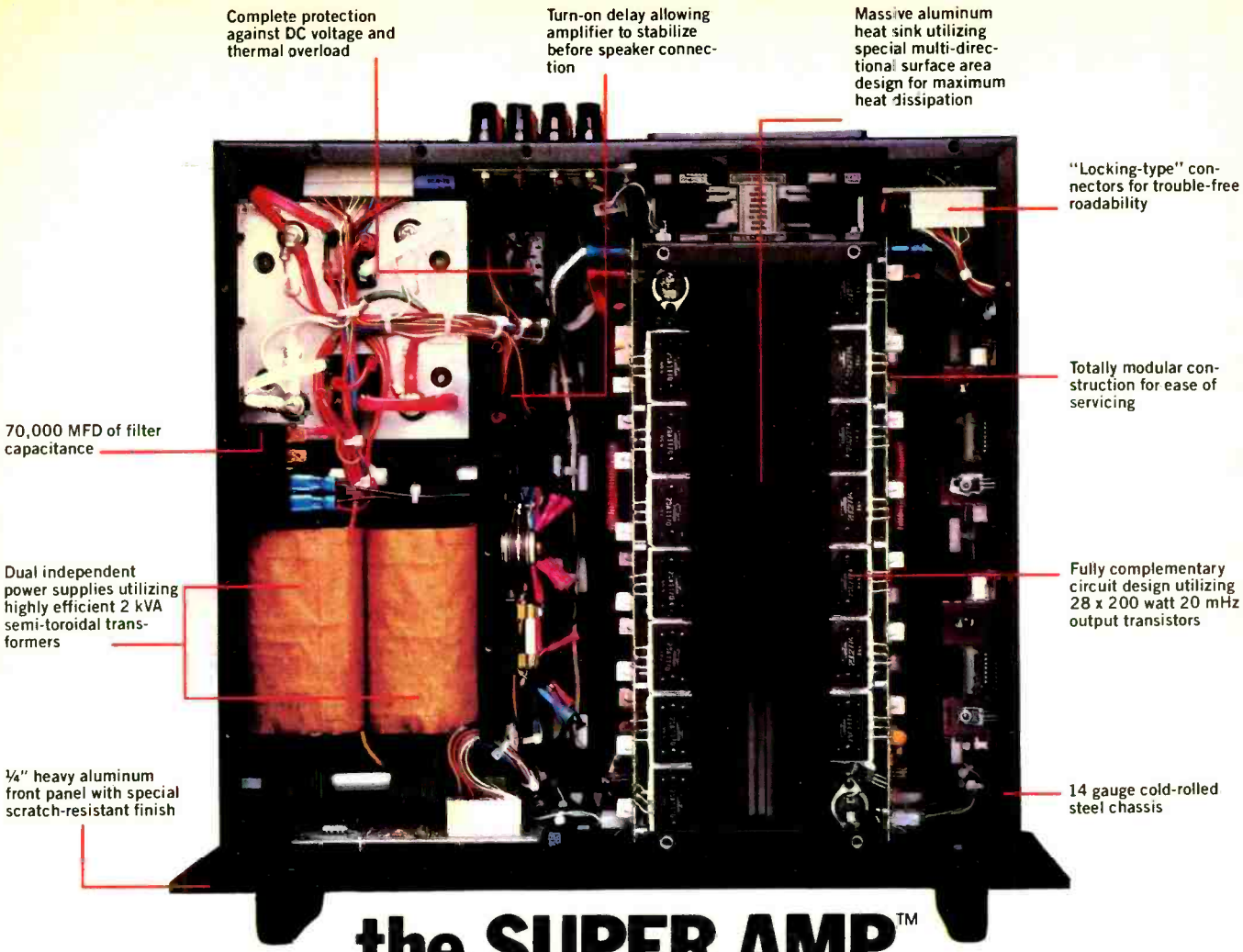
MR&M: You wrote the score for the movie *Green Ice*, an adventure film starring Ryan O'Neal and Omar Sharif. What prompted you to write a soundtrack?

BW: Well, I was a little bit frustrated about not being able to write the right kind of music for the band over the years. I tried doing solo records, which were semi-successful, but nothing more than that. So I thought maybe I should try and write descriptive music—because I had a lot of music inside me and no outlet. It was the wrong kind of music for the things I was involved with, like the band. I was at dinner in London with some people, and this guy said, "I hear you write music." So I said, "Well, you know...a little." So we made an appointment. I had been working on three or four ideas and had compiled a couple of cassettes. I played them to him and he said, "I love them. They're very original and different. Would you like a job?" So I asked him, "Well, what is it?" And he told me that he was a producer and that he wanted me to do the music for this movie. The most I'd hoped for at such an early stage was maybe a couple of commercials or something like that. But suddenly, it's thrown at me. So I grabbed it with both hands.

MR&M: How did you approach putting it together? How long did it take?

BW: From instigation, it probably took about four months. That of course includes breaks in between. I had to orchestrate some pieces, so I had to get together with an orchestrator. I like string pieces. I had a piece of music and an idea of the way the strings should go, the way the flutes should play and the way the acoustic guitar pieces should go. I asked him to embellish it a little, but not to go off on a tangent of his own. I wanted him to stick right to my demo idea and he did exactly that. So, it really wasn't difficult for me.

MR&M: It's been well-publicized that you're keeping a diary of your life, which



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includes your experiences with the Stones. What sort of information do you think people would be interested in reading about when it comes to the band?

BW: People ask me for information on what happened in 1966 for a book [they're writing]. Or, how many Ready-Steady-Go shows we did on English television over the years. And when did we do that show in Australia and was so and so on piano. People are always referred to me because I kept diaries. I would spend hours and hours searching out information and putting it together just to send off to people.

MR&M: What about questions regarding the early days of the band when Brian (Jones) and Mick Taylor were members?

BW: He (Brian) was the founder of the Rolling Stones. And he was the leader of the band before the media changed that around. We're called the Rolling Stones. We always have been and always will be. The media always called us Mick Jagger and the Rolling Stones, especially in America. Brian didn't like being put aside. He was the most popular member of the group in the early years, as far as fans, letters and girls were concerned. That changed a bit and he found he was slowly being elbowed out. It was unintentional, but it just kind of happened. Then he started to deteriorate musically, which was a shame. He was great. Brian was very innovative with instruments. He was the first person that ever played a bottle-neck guitar in England. He played harmonica while playing the guitar, which nobody did in those days. I know George Harrison did with the Beatles, but he was trained. Brian just picked it up and used it—the flute or anything. It just gave another color to the music. But he just deteriorated musically. And he found it difficult to live with the way the band was being elevated.

MR&M: And Mick Taylor?

BW: Mick was probably the best musician the band ever had, the most brilliant. He could learn a song in five minutes. It takes the rest of us a little longer. What he used to bring out on the guitar was extraordinary. He really contributed something during his five years with the band. I don't know who else could have done that.

MR&M: Why did he leave the band?

BW: Frustration, I think. From not being able to contribute writing-wise—which can be a frustration in this band. It's the frustration that gave me problems in the 70s.

MR&M: As far as decision making, are they made by the group or by certain members?

BW: It's a group decision and often involves people that are not in the group, like Ian Stewart, the keyboard player. And if we're making tour decisions, the back-up musicians also get an equal vote. It's a very equitable system.

MR&M: Are there any major ego conflicts among the band? Are you able to work them out?

BW: Well, I work mine out. You'll have to ask the rest of them about theirs. *[Laughs]*

MR&M: We understand that you might publish the material from your diary some day. Are there any anecdotes that you might be able to share that will probably appear in publication?

BW: Oh, absolutely. But I'm not telling you. I'm saving it for the book. *[Laughs]*

MR&M: Not even one?

BW: Here's one. It's not really funny, but it does say something. It happened on tour when we were in San Francisco. The TV people were interviewing kids outside waiting overnight for the show. There were two guys who were probably 17 and they were asked, "Are you Stones fans?" They said, "Yeah man, we're Stones fans." And one of them said, "I'm a Stones fan from *way* back." So the TV guy said, "What do you mean, *way* back? How far back? What was the first album that turned you on to the Rolling Stones?" And he said, "Oh the *Some Girls* album," which was in 1976. It was probably our 28th album!

MR&M: How do you manage to find the time for all your projects? We know you live in the Mediterranean, where many of your neighbors—David Niven, Roger Moore, James Baldwin—are also highly-regarded artists. Is there a creative mystique about the Riviera area?

BW: Riviera area. *[Laughs]* That's a good one, actually. I wonder what it looks like? I think it's a very creative atmosphere. The food's good, the weather's nice. You always feel good there. Especially if you keep to yourself and want to relax after an arduous month or two of work. Like after a tour of recording. The unfortunate thing about it is it's also a bit non-creative in the way that you lose contact with the rest of the world. It's very difficult to keep up to date, especially with things like music. But apart from that, I find it very, very creative and obviously a lot of other people do because they do live there and do lots of their best work there.

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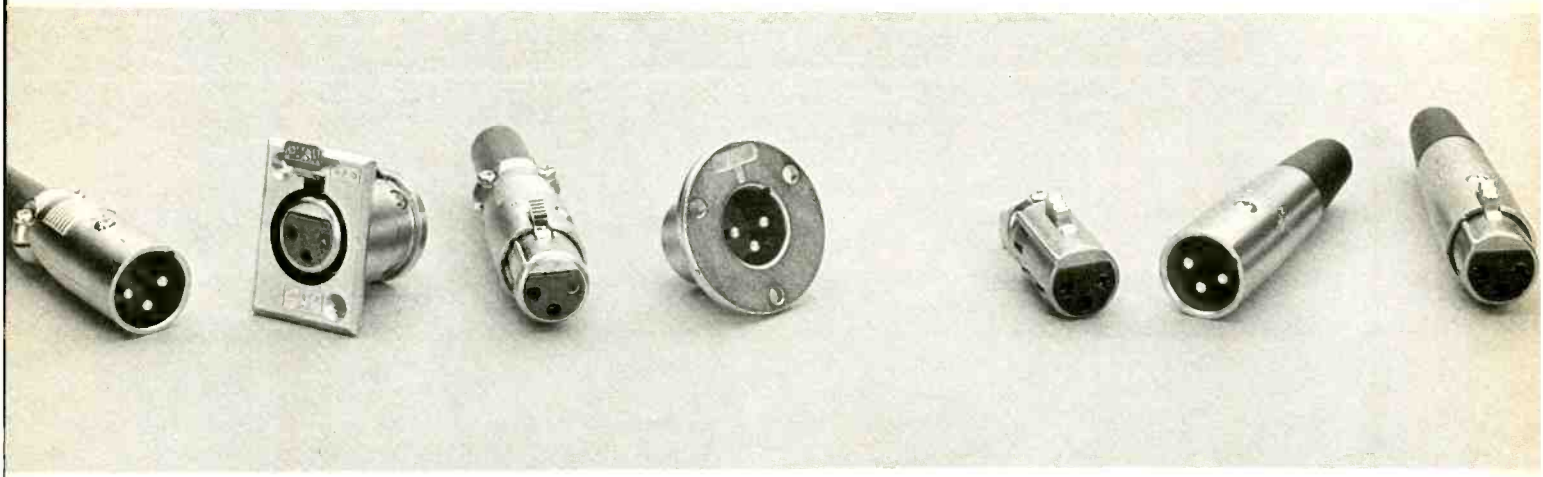

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Studio Notebook #8

By James F. Rupert

To the average person, the term "Business Organization" conjures up the image of smoke-filled board rooms, slick leather briefcases and button-down collar shirts. It's the process whereby businesses are either kept rolling smoothly, shuttled onto new tracks or shot down the dumper. Tense, penetrating intellects housed in charcoal-grey suits maneuvering their enterprise between the rocky extremes of bold recklessness and hesitant over-caution. Amend the term to "Small Business Organization" however and the picture changes to whether Pop gets the company Studebaker to go play poker or Mom dibs it for bingo.

It's been stated that anyone can organize a small business. Thousands of eraserheads do it every year. Doing it right is another story. Over the next few installments we will be taking a look at the hard realities of organizing your potential studio as a business and not just as an enthusiastic hobby. Much of the topics to be explored will be the foundation that will build up to the ultimate question, "How do I raise money for the studio?" (By far the most popular question I've been asked to date about this series of articles.) If your answer to this riddle is that you plan on throwing yourself humbly at the tootsies of your friendly neighborhood banker, that same man with the money is going to want to know if you've handled a few things before you've come to see him.

One of the first things he is going to be curious about is what type of business structure you have. Your answer should be one of three: (1) Individual Proprietorship; (2) Partnership; or (3) Corporation. As the name implies, an individual proprietorship is a company solely owned by one person. A partnership is two or more people who by mutual agreement are engaged in a common undertaking or firm. A corporation could be looked at as an artificial legal entity. A corporation issues stock or "shares" in the firm that can be bought by many people. It can then be said that many people own the firm through the stock they have purchased even though the company is generally run by a board of directors made up of individuals elected by the stockholders.

Proprietorships and partnerships are heavily dependent on their owners as a rule for management and stability. That is, when the owner of a sole proprietorship dies, the business usually dies with him or her. This type of business is personality oriented. They succeed or fail because of the character and qualifications of the person running them. If Joe Schmoe the intrepid proprietor at the donut hole factory down the street is a real gunner, chances are he's going to be out moving a lot of holes. Yet suppose that he takes a friend's advice seriously, takes a flying jump at a rolling donut hole and falls and breaks his clavicle. What's going to happen to Joe's holes then? His business is cut to the quick, but Joe can't worry about his quick since he's nursing his clavicle. The same circumstances hold true for partnerships. In a corporate system every owner of stock could break something of theirs and chances are that it would still be business as usual.

Let's take it a step farther. Suppose Joe drops a donut hole in front of his factory and a nearsighted postman falls in it and breaks his clavicle. Joe could be stuck with a whopping lawsuit. Mr. Schmoe also faces losing more than his business investments. Since he is an individual proprietor, Joe must realize that if he is sued the plaintiff could also have a legal claim on his personal assets. He could lose his savings; he could lose his home; he could even lose his private collection of antique donut holes! If Joe had a partner, his partner would also be responsible even though he didn't have anything to do with the accident. Any acts within the scope of the business by one partner are binding on all other partners.

When a corporation is sued it is just that—not the stockholders, not the corporate officers, not the board of directors, but the corporation that is sued. The corporation can also sue someone itself under the same terms. It is not individuals vs. individuals, but rather company vs. whomever.

If a corporation bellies up and crawls into bankruptcy court, the stockholders lose only the money they bought their stock with, not personal claims or damages. Investors in any corporation are legally liable only to the extent of their investment in the company. In a proprietorship or partnership, the extent of liability of any owner or partner is unlimited.

Another thing to consider is a partner's responsibility for all company indebtedness. Joe's partner may have made an incredibly stupid purchase of unnecessary new donut hole punch presses, but Joe will find himself equally responsible for paying for the unnecessary equipment. All business partners reading this article should not necessarily now be steeling themselves to take it in the "Hole" as Joe is doing with his mythical side-kick. But you all should consider these possibilities when forming your own companies. That best-friend-real-pal-kemosabe-bud you've known

for twenty years that you're just sure wouldn't ever screw you over could be facing you from the other side of a courtroom someday. God forbid it should happen to you, but it unfortunately does happen every day.

If it sounds to this point that a corporation has every advantage over proprietorships and partnerships, let me definitely state, "Maybe not!" Many businesspeople are perfectly happy never to incorporate for a number of reasons. First off, by the time you pay a lawyer to handle all of the details, including the printing of stock (yes, those sheets of paper really do have to exist), you will be out several hundred dollars. This is not to say that only corporations have to write that tear-stained check to an attorney. Partnerships had better have a clear and iron-clad contract as to all parties' responsibilities and obligations in writing, as well. You might be comforted by the thought that such a contract should be mucho cheaper than drawing up articles of incorporation.

In addition, a partnership or proprietorship will be much cheaper to run than a corporation. A Mom and Pop business only has to keep a basic set of books of the most simple information necessary for tax purposes. Corporations are accountable to everybody. The officers, the directors, the stockholders, the State Government, the Federal Government, Everybody! This spells much higher costs within the company for bookkeeping and accounting and many more people looking over your shoulder while you're doing it. However, within a certain taxable profit range, corporate taxes are also somewhat lower than the personal taxes the proprietor or partner would pay on the same amount (although I doubt this would be a huge consideration).

This makes freedom a lot more free in the smaller organization. If a corporation turns a thousand dollar profit after taxes, this goes to pay a small dividend to the stockholders to make their stock worth more. If there are ten thousand stockholders this amounts to ten cents a head. The sole proprietor can slide that grand into his pocket and howl at the moon if he wishes. Our friend Joe and his partner don't have to call for a company vote on any major decision, nor do they have to present their case to a board of directors. They are not ruled by committee and directly control their own business destiny. This can be worth a lot to all you "ramblin' kinds of guys" out there.

Do not think that a bank welcomes small business corporations with open checkbooks. It's a sad fact that if they consider your company at all for a loan, the corporate officers might still be required to smack their John Hancocks down as personal guarantees for the loan. If the corporation poops out, you still could be responsible for paying back the money since you had to guarantee reimbursement personally to get it in the first place. In other words, you could be right back in the same boat as Mr. or Ms. Sole Proprietor. Maybe even worse. Joe Schmoe is gambling on his own abilities and perseverence. A corporate officer is gambling on everyone else in the corporation pulling his own weight.

If you are a musician as well as a studio businessman, any losses from the studio in the early going could be used to offset any profit from band jobs. This can really help the proprietor or partner. Remember in their case they only file a personal tax form, not one for themselves and one for the business. A corporation has to file one for the business as well as personal tax forms from officers and stockholders. There are hundreds of other tax situations that can work to the good of the independent business man or the good of the corporation (or to the good of either) that space will not permit now. For the umpteenth time, my advice will remain to hit your local library for fine-tuned details for your own situations. I will remind you that corporate profits are taxed twice. Once from the corporation's tax returns and then again on stockholder's personal tax returns after the dividends have been paid to them. (The Feds have been raking in tax dollars for a long time and they've got this down to an art!)

"Do not think that a bank welcomes small business corporations with open checkbooks."

I've tried to strike a delicate overall balance in this article so as not to make one form of company organization stand out as the best choice for you. As with everything else only you can determine that. Whichever you end up choosing make sure you do it right and seek the necessary legal counsel to cover all foreseeable angles. For a corporate charter try to be as broad in covering the company's activities as possible. Don't just limit yourself to recording. List jingle production, tape duplication, music publication, entertainment booking, musical album photography, band promotion, remote on-site recording, album graphics, music composition and anything else you can think of. Simply because you are not involved in these activities initially is no reason to assume you will not work into them eventually. End your list of company activities with the phrase, "...and any other legal enterprise." This opens up the world to you and your business.

As for me I'll be spending my time with Joe Schmoe on the golf course. The last time we went he dropped his sample case on the middle of the course and we ended up getting thrown out. The management later apologized and said we were welcome to come back anytime we felt like shooting a couple of hundred holes. We'd have gone sooner if it wasn't for Joe's slow-healing clavicle.

See you next time.

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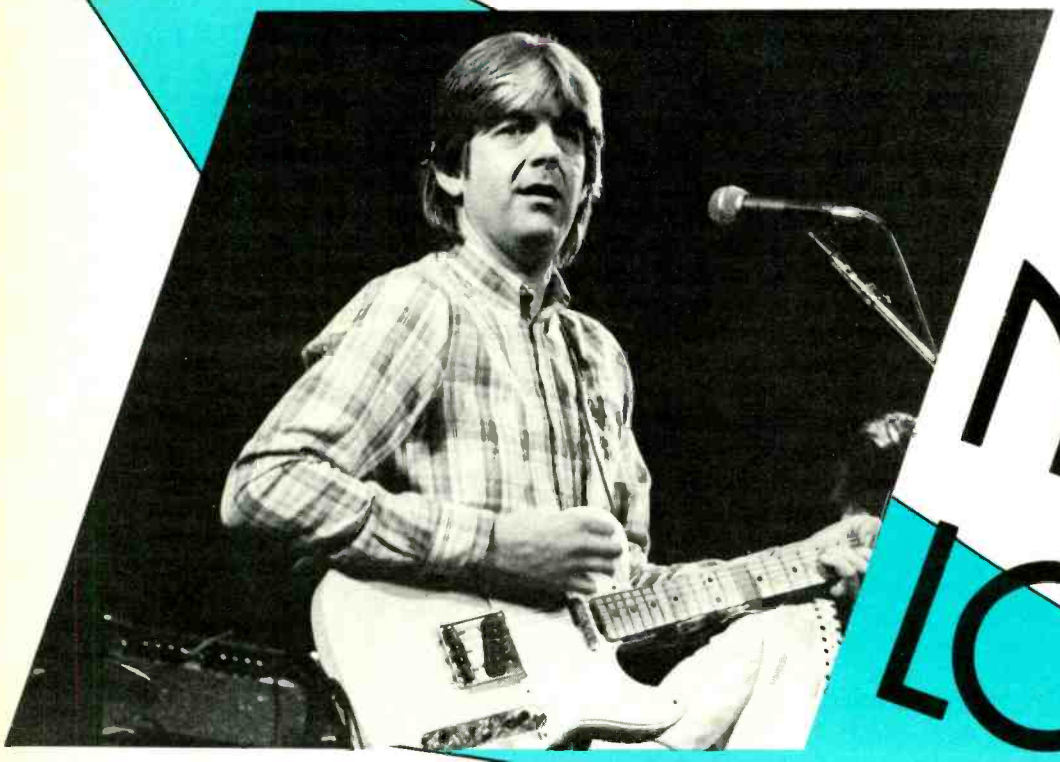

NICK LOWE

by Jeff Tamarkin

Usually, when a popular rock band breaks up, it issues forth a statement to the effect that "the split was amicable," so as not to give fans the impression that the band members grew to dislike each other. "We split to pursue different musical directions" is another common comment.

Rockpile didn't fake it when they broke up in 1981. From the start, the reason given was that guitarist/vocalist Dave Edmunds had had a major disagreement with manager Jake Riviera, and that Nick Lowe, the bassist/vocalist who shared the leadership with Edmunds, had sided with the manager. None of that "We're still great friends" baloney for Rockpile.

The reason Rockpile, one of the great—and perhaps only—pure rock and roll bands of the 70s didn't give a snowjob to the press and fans was most probably because they didn't know how to be anything but honest...like their music. Rockpile was never a frilly, slick, rehearsed outfit. If anything, they embodied the opposite traits—rawness, looseness and even a good-spirited sloppiness.

From the start, Rockpile was an informal group, given to covering rock and roll, R&B and country tunes of the 50s and early 60s with the same reckless abandon practiced by the originators of that music...before big business and high-tech production overtook the spirit of the music itself. As Nick Lowe says about the group in the following interview, Rockpile rarely even rehearsed; in fact, the band didn't really have a formal christening—it just sort of grew from various Lowe and Edmunds solo projects until suddenly everyone—the band included—seemed to realize Rockpile had a life of its own.

And so it was that that slow evolution ultimately caused the death of Rockpile. After a handful of Lowe and Edmunds solo albums (all actually Rockpile LPs in every sense except title), the group finally released an LP under its own name, only to break up immediately after its release and the tour in support of it. As Lowe says, Rockpile wanted to be like the "Beatles in reverse," to get all of the solo albums out of the way first and then become a group.

In the wake of Rockpile, both Nick Lowe and Dave Edmunds have released solo albums reflecting and refining their distinct yet complementary interests: Edmunds has continued in his 50s revivalist vein [his latest effort is titled D.E. 7*; Columbia Records], while Lowe has put together his latest exercise in pure pop,* Nick The Knife *(Columbia).*

In the following interview, Lowe discusses his solo album, his theories on pop-rock and the art of ripping off others' riffs with style. He also talks about his much-heralded production work with such luminaries as Elvis Costello (Lowe produced almost all of the "Big E" 's LPs), Carlene Carter (his wife), the Damned, Graham Parker and others. He relates the history of the pre-punk pub-rock scene in England, with which he was greatly involved, and how he and a few cronies started the independent record company revival by forming Stiff Records, only to get tired of it after it had a hit record. Modern Recording & Music*'s Jeff Tamarkin was a willing audience for these tales of highs and...Lowes.*

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Modern Recording & Music: Your current tour consists mostly of one-nighters. How do you feel about keeping such a hectic pace at this stage of your career?

Nick Lowe: I can take about four or five hundred miles, but after that I come off the bus vibrating.

MR&M: After spending years as an opening act in the U.S., Rockpile finally reached headlining status on its last tour. How does it feel to be opening act again, this time for the Cars?

NL: I love being the opening act, because you can never lose. If you go down badly, you can say the audience is a bunch of idiots, they only came for the Cars anyway. If you come out ahead, you can say, 'Hey hey, we blew 'em off the stage!' Also, you can get to the bar earlier. I don't know if that's the correct attitude to have. They've [the audiences] been very good to us, though. But even if I did get to the stage where I could draw the number of people these places [20,000 seat arenas] hold, I don't think I'd want to play them. There's nothing worse than coming to these places to see somebody, and especially having to sit down.

MR&M: Does your approach to playing change when you perform in the larger halls?

NL: Oh yeah. You have to jump around and wave your arms a lot more, sort of do a Bruce Springsteen thing. Except we have to knock it off in 40 minutes and he does four hours. Also, in clubs you can afford to relax more and talk to the punters a little bit. I've played clubs all my life so I'm not really used to the big places.

MR&M: Another difference between headlining and opening is that when you open, it's possible that half the audience doesn't even know who you are, while if you headline they're there to see you.

NL: That can be a challenge, though. The Cars are so incredibly popular, and I've done three or four tours in the U.S. with bigger acts [Blondie, Van Morrison and Elvis Costello, among them], but I've never heard anything like the reaction these guys get. Taking that into consideration, we do very well. I think there was only one place they started throwing things at us. I told 'em to stop it and they did, so they couldn't have been too mad about it. We always have a joke where we say, "If you keep throwing things we'll leave the stage," and then they throw a barrage of things at us. It reminded me of the [punk] thing back in England when they used to throw things.

MR&M: Who are the members of your band for this tour?

NL: I have Martin Belmont on guitar, formerly of the Rumour. Paul Carrack is on keyboards; he's formerly with Squeeze and did the song "How Long" with Ace in the 70s. He also did "Tempted" with Squeeze and is doing that with us. The drummer is a bloke called Bobby Irwin, who was with a band called the Sinceros. I did a lot of session stuff with him in the early days of Stiff Records. The bass player is James Eller, who's the youngest member. It's essentially the group that was playing with my wife, Carlene [Carter, the country-rock singer, step-daughter of Johnny Cash, etc.].

MR&M: Why did you switch from bass to guitar?

NL: I didn't want to do anything that could be vaguely compared to Rockpile, if I could help it. I mean, obviously it was no chore for me to play in Rockpile. It was great; I love that sort of music. I wanted to do some songs that Rockpile never did, and some of them were too difficult to play bass to and sing at the same time. Also, James was in the band already, and I play guitar the same way I play bass.

"The people that liked Rockpile liked the fact that we were scruffy and unrehearsed."

MR&M: Did you play guitar before playing the bass? A lot of bassists begin with guitar and switch later.

NL: Yeah. I'd never win any awards for my playing. I learned the chords and then I never really learned anything after that.

MR&M: In Rockpile, you shared the billing with Dave Edmunds, but now you're the front man. Do you find it difficult to be the leader and the sole focus of attention?

NL: Yeah, at first I did, because I was a fish out of water playing guitar. Also, in Rockpile, it was mostly Dave's group and he used to sing most of the stuff. Now I do most of the singing. But now I'm used to it and there's no problem.

MR&M: I've seen two different names for the band: the Chaps and Noise To Go. Which one is correct?

NL: At first we needed a name in a hurry, so Jake [Riviera, Lowe's manager] said, "Just call it the 'Chaps.'" I thought Nick Lowe and Noise To Go rolled off the tongue better. But it doesn't really matter. It could be Led Zeppelin.

MR&M: Sorry, but I think that's taken. How would you compare this band's "live" show to Rockpile's?

NL: It's not so much heads down and let's go. Rockpile was sort of "take off and moving through the gears." With this band we do some lower key things as well. Not that much, because I don't think it's good for an opening act; you want to keep it snappy.

MR&M: This is the first time you've played with a keyboardist, right?

NL: Yes. I never really liked them because I don't like the way they look, especially when they're surrounded by those bloody banks of wires and lights; I think it looks horrible. I also don't like monitors in front of the stage; the audience can't see people's feet on stage and they should be able to. But having keyboards helps. It's not as important for us to be in tune as it is with an all-guitar band. Paul's great; he has a piano and a Hammond organ.

MR&M: If you're not tired of talking about it yet, can you tell us why Rockpile split up, especially considering the band had finally released an album under its own name after all those solo projects.

NL: Sure. The thing with Rockpile was that we were formed overnight. I've rehearsed more for this tour than Rockpile did the whole time they were together in five years. We hated rehearsing. We had an initial rehearsal and then everything else we learned at the soundcheck or on the bus. The people that liked Rockpile liked the fact that we were scruffy and unrehearsed. Also, I think it came across that we were having fun, that we were very good friends. Then that started to go. Some groups can carry on pulling the wool over people's eyes, especially when there're dollar signs all around, but with a group that has a good time as part of its act, it shows. We did the last tour and maybe people didn't notice, but we noticed. That happens to every group, and you have to make a decision whether to pack it in or work at it. Other groups can work at it and get a new lease on life. But we

weren't committed enough to it. It seemed to people that Rockpile had just started out, that we'd just done the album, but actually we'd done seven, with the solo albums and other projects. I thought that Dave didn't really have the balls to say, "Hey fellas, it's not really happening. Let's knock it on the head; we've had a good time." So he engineered this silly argument with Jake, and that annoyed me. I thought, why did he have to go and do this? I thought we were all mates. He's probably got a completely different version of it. I was always more volatile than he was and I'd say what was on my mind, so I believe me. So I said, "Hey we've had a great time, let's go do something else." It was easier for me because I've got a few other irons in the fire. But Terry and Billy [Williams and Bremner, respectively, drummer and second guitarist of Rockpile] it hurt more. But that was over a year ago so I'm not exactly burning up with rage right now. Dave's doing his thing and I'm doing mine.

MR&M: Are things ironed out between you?

NL: No, we just don't see each other. The funny thing is that while I don't harbor any animosity towards him, I don't miss him at all. It's kind of strange after all that time.

MR&M: Kind of like a divorce...

NL: Yeah, it's sad, really. But I think it was the manly thing to do [break up] rather than grind away at it and become a shadow of your former self. We were all far too proud to ever let that happen. We used to take it lightly—"Hey, we just have three chords and we hammer it out"—but we were extremely proud. We were about the only gruop that was playing straight-ahead rock and roll that wasn't like a cabaret thing: "Hey, remember those good ol' 50s."

MR&M: It took the band a long time to build a reputation in the U.S. as Rockpile. You and Dave were both known, but it wasn't till the end that Rockpile itself became known as a band.

NL: Yeah, but then it's even better that we broke up, because people say, "What!" It's better than if we just went on and burned up like a little squid. We probably scored more attention by breaking up than if we carried on.

MR&M: What do you think of the Rockpile album *[Seconds Of Pleasure]* in retrospect? A lot of people were disappointed with it when it finally came out.

NL: We couldn't record as Rockpile up until then because of contractual reasons. So our theory was that we'd be like the Beatles in reverse. I never liked any of their solo stuff after they were the Beatles. So we thought we'd get all of our solo stuff out of the way and then when we come together as Rockpile it'd be really good. But when we actually came down to doing it, the fact was that there was no one actually in the chair, either Dave or myself; there was no one to lead it. So that led to a mish-mash of things. I think it's a really good record, but our expectations of it were so much higher.

MR&M: How long did it take after the breakup before you began assembling songs for the *Nick The Knife* album?

NL: I had a few songs knocking about. I started recording it before Rockpile broke up, whenever there was some free time. It took a year to record, but in actual studio time it was probably about two or three weeks. I did most of it on my own or with just Bobby. I wasn't using the band yet, although they do play on a couple of tracks. I just borrowed a drummer and fiddled about until something came out. As a result, there wasn't any continuity. If you do it sensibly, and book three weeks of studio time, or three months, you come out with an album with a thread running through it. With me, I just kept doing it until someone said, "Okay, you can stop now." But I'm not nearly as interested in making my own records as I am in making records with other people. I'm involved with the other people I work with, so it's not like I'm making an album and then bye-bye. I'm just lazy about my own stuff; it's a chore for me.

MR&M: Do you have any system you use for writing? Any set methods?

NL: No, I have no idea how I write. I don't ever have a time when I say, "Don't disturb me; I'm going to be writing all day." Somebody will say something or I'll hear a beat and I'll just remember it when I'm walking down the street or going to do my laundry. Then the next time I get a guitar I'll plunk it out and see if it works. Some songs just seem to appear; I can't remember writing them. I feel as if I've got a day job and I just do this in the evening, like it's a hobby.

MR&M: In a lot of your songs you borrow riffs or rhythms from older songs, say a Motown song or whatever. Is that consciously done or do you think you just happen to have all these bits floating around in your head and they come out in your songs?

NL: Sometimes I do it consciously and other times I do it by accident. But unfortunately, because I so cheerfully admit to pinching things, people tend to look at my stuff much more closely. But everyone pinches things from all over. Sometimes I do an obvious thing to make a point. There's a difference between, say, that guy that blatantly rips off Michael McDonald, and the Beatles singing, *"Oh, the Ukraine girls really knock me out"* and doing an obvious Beach Boys thing. I hope that the things I do are more like the obvious Beatles thing.

MR&M: Do you feel like you're carrying on and updating a tradition when you do that? When the Beatles and Stones started out, they'd take an old Muddy Waters or Chuck Berry thing and do it their way. Is that what you're doing?

NL: No, I don't think I think it out that hard. I love all that music so much that I just get off on playing it. I'd rather write my own version of it. It's almost like a fan, really.

MR&M: Critics have often used terms like "disposable pop" or "throwaway" when discussing your music. It's not in a negative sense that they use those terms, but does it bother you when they call your music disposable? How seriously do you take your own music?

NL: No, it doesn't bother me in the slightest. I don't take it very seriously at all. Like I said, I feel that I do it for a hobby. I'm glad that I make a living at it, but I honestly can't work it out.

MR&M: What kind of music do you listen to? Do you collect records?

NL: No, I hardly ever listen to music; I'd rather go watch boxing. I have hardly any records. I manage to listen to a lot of records because my friends are fanatics. I go around to their houses and they say, "You've got to listen to this." But I'd rather go to the theatre or a boxing match or watch horse racing.

MR&M: Do you have any particularly important influences?

NL: No, I was a Forces brat, so I was raised on Forces radio—my dad was in the Air Force. It was very odd to hear any rock and roll on British Forces radio. There was a guy named Lonnie Donegan, who played skiffle, and he did old Leadbelly stuff, Negro spirituals. I guess like most people when the Beatles came along that did it for me; I became a lifelong Beatles fan. It was through reading articles about them, when they talked about Chuck Berry and Martha and the Vandellas, that I found out about a lot of other people. Then, when I was about 16, they had the Mod move-

ment in England. I was a Mod. Mods liked Tamla-Motown; it was all word-of-mouth. You were cool if you knew all these records. They were never hits, but in your hometown they'd be hits.

MR&M: Do you think your perspective on American music would've been different if you'd grown up in the U.S.?

NL: Yes, I do. But I don't think you're as encouraged to be an individual in America as you are in England. The thing that surprises people like me, who like indigenous American music—R&B, country, rock and roll—is not only how little you hear it over here, but how little people know about it. It's a shame. People who are household names in England, like Gene Vincent, Eddie Cochran, if you mention them here, you get back a blank stare. But when you hear it over here, what a thrill.

MR&M: When did you start writing your own material? Was it early in your career?

NL: I suppose it was shortly after I started smoking pot, which must've been around '67 or '68. I thought, well, I can have a go at this. My first attempts were absolutely shocking, really frightful. I suppose I got used to doing it.

MR&M: What do you recall about the pub-rock scene in Britain, and about your years in the Brinsley Schwarz band?

NL: Oh, that was terrific. It was the forerunner of the punk thing. It was a lot of people who didn't know each other coming together in London to revolt against what was going on in the music business—the bloated excess. We wanted to get back to playing R&B for an audience who was mad for it. Everyone was rediscovering drink at that time, as well, and thinking that it wasn't so bad after all. You got to hear all these people—someone would say, "Have you heard that guy from South London who plays great slide guitar like James Burton?" We'd find out where that slide player was playing and go introduce ourselves: "Hi, I'm Nick and these are my mates Elvis and Graham." It was a big movement. For the first time you could be original in a pub. You could have someone like an Ian Dury or a Graham Parker, and they wouldn't have to do the top 10, or Irish country & western. It was exciting, and out of that came the punk thing, which was younger and got at adults' noses much more.

MR&M: Did you feel a part of the punk scene?

NL: Oh yeah, I did, but I loathed it at first. I went to see the Sex Pistols and I said, "Gosh, this is crap!" But at the same time there was something in the air which was really exciting. I met the Damned and I didn't like them either. But to me music is always the second or third most important thing when it comes to making records, and I started to get interested when friends of mine who liked the same traditional stuff that I did, started getting really annoyed with me, saying, "What are you doing hanging around with all those little snots?" So I thought, *you bloody snobs!* It was that whole snob attitude that we were trying to get away from. Suddenly I became totally enamored with the Damned and said, "Okay chaps, let's go do an album." They were the same as any other group, they were just younger and inexperienced. We had a terrific time doing that album. I've always liked people like that; I think they make better records because they're slightly out-of-sync with the rest of the world. Unfortunately there's all too few of them in this business. It's supposed to be the wild business of rock and roll. That's nonsense; they're boring, self-centered twerps, most of them.

MR&M: How did you become involved with Stiff Records?

NL: Jake and I started Stiff, really. I was sleeping on his couch at the time, after the Brinsleys broke up. He was trying to get me a deal, but the record companies came up with ridiculous offers. So Jake thought, "Well, sod this, let's go start our own label." Everyone said we couldn't do it, that the majors had it all sewn up. Jake is a bit of a genius when it comes to doing stuff he's set his heart on. So we did it and for awhile it was tremendous fun. But then when we had a hit single—top 20, I still think of a hit as top 20. I don't go for that, "It's just come in at 82." I say, "Tell me when it's top 20." Anyway, when we had a hit single, which was Elvis' [Costello] "Watching The Detectives," some of the fun went out of it. We accomplished what we'd set out to do, and then it was just another record company.

MR&M: How did you become involved as a producer?

NL: Again, with Stiff. I never wanted to be a producer. I had no interest in that. But when Stiff started, I was literally the only person in the company who'd ever been in a recording studio. So suddenly I was the house producer. Then I started getting interested in it: "What would it sound like to slam a door and put it on a tape loop?" We could use that as a drum track, a slammed door with some echo." People said "You can't do that." And I said, "Well, why not? If you can make something repeat, and

"I'm not nearly as interested in making my own records as I am in making them with other people."

you've got a door over there..." I started getting interested in the fact that no one was taking any risks, and that anyone could do it.

MR&M: How did you get involved with producing Elvis Costello? And did you know what you wanted to do with him in the studio?

NL: I'd met him ages before he recorded. It was in the Cavern club in Liverpool, as a matter of fact. I ran into him on the day that "So It Goes" [Lowe's first Stiff single—in fact, *the* first Stiff single] came out. He was getting off at the tube [subway] station and had his guitar with him. He was having trouble finding a record company. So I told him to try Stiff, and he said, "Well, I've just been up there to get a copy of 'So It Goes" and I left a copy of my tape with them." I went up there and Jake was listening to it, and he was really excited. He was saying, "There's a song on here that Edmunds would do great. It's called 'Mystery Dance.' " I thought that was a good idea too, then Jake said, "Well, sod this, this guy can do the whole thing by himself." I was pretty skeptical; I thought it was all a bit too chordy. So anyway, we went in to start recording, and it was then that I changed my mind and thought, this guy is really hot. "Alison" [on the first Costello album] is just the rough mix. I heard that and said, "Well, we can't get it any better." After that, I was a stone fan of his.

MR&M: How have your ideas about producing Elvis changed over the years? He's really evolved from album to album.

NL: He's very keen on changing each time. After the first album, I said, "Okay, that's it," because I only really like doing one thing with somebody. So I said to him that he should try it with somebody else for the second album and he said alright. Then he phoned me and said, 'I've just put the Attractions [Costello's band] together and I don't know them very well. You know them from before, so could you just do this album? You could be like the catalyst." So I said, alright, that makes sense. So we did that, and I said, "Okay, that's two, who are you gonna get for the third one?" He said, "Well, we really want to change completely for this one, and we can't really be bothered getting someone who isn't on to what we're doing. So can you do just this one?" So I did that one and then he said, "Well, I want to do a soul album and you know about that Stax stuff, so can you do this one?" It went on like that; it was just laughable. It wasn't that I didn't want to work with him, but I thought it was for his own good [to get a new producer] or he'd wind up with a lot of rules. And the first rule of recording is that there are no rules. I did one more after that and then he went to Nashville for the *Almost Blue* album.

MR&M: How do you change your approach to production from one artist to another? For instance, do you have a different way of working with Elvis than you do with, say, Graham Parker or Carlene Carter?

NL: You have to treat each one differently. Some people like to have their ego stroked; some people like to be made fun of; some like to be bullied, believe it or not, actually shouted at. It gets them going; if you make them get uptight it gets them going. They don't like it, but it's the best way to get them to work. I generally work only with people I like. I can't work with someone if I don't like them. Of course, if I had to pay the rent, all these artsy-fartsy theories would go right out the window. Don't get me wrong; I'm an absolute horror when it comes to that. At the moment, fortunately, I only have to work with people I like, so I can get away with more murder than I'd be able to with people I didn't know.

MR&M: You've earned the nickname [no pun intended] "Basher" because you supposedly like to go into the studio and bash 'em out. Does this method still hold true for you?

NL: Not especially. I do like to get them [recordings] done quickly. Sometimes it does work out better if we say, "Okay, it's not working, let's go to sleep on it."

MR&M: Working in the studio with your wife, Carlene, did you find that the personal relationship with her got in the way of the working relationship at all?

NL: Yeah, it did to start with. After I did the first album, I started on the second but then I found I just couldn't do it. I did the third album because she did it with Rockpile, so obviously I was the catalyst. But yes, sometimes there's a problem that you have to take home. Nothing major, though.

MR&M: You also produced one track with Johnny Cash. How did that come about?

NL: He came over to spend Christmas day with Carlene and me. I have a studio and he wanted to do one of my songs ["Without Love," which can be found on Cash's *Rockabilly Blues* album]. So I rounded up some people who were glad to get away from what they were doing. I didn't think it was much good, but he went mad for it. There's talk of us doing an album together, which would be good fun.

MR&M: Do you get involved with the engineering when you record or produce?

NL: No, not at all. I like to get an engineer who understands my language, so I can say, "Can you make the guitar go *KRANG*" and he won't make it go *KRUNG*. If they start saying, "Oh, do you mean 5 dB of this and 2 dB of this?" I just have to say, "Don't ask me, just make it go *KRANG*!" If I get a guy who understands, I'll just leave him alone. I don't like when they start getting all silly about the drums and start taping things [dampening or muffling the drums] and all that.

MR&M: Would you ever consider an outside producer on your records?

NL: That's funny, someone else asked me that today. I would, but obviously I'm fussy about certain things. If I did get someone else I think it would be someone odd, like an actor, or someone who doesn't really know a thing about it, but whom I respected, more than a Jack Douglas or a Ted Templeman.

MR&M: What's in the future for you?

NL: I'm going to be producing the Fabulous Thunderbirds in Austin, Texas. I'm also going to finish up Paul Carrack's solo album. I have to mix it.

MR&M: Do you see your current band being a permanent or temporary stituation?

NL: Well, I can't see touring with anybody else, but when we're not in use I don't know what we'll do.

MR&M: But it's not a Rockpile situation, is it?

NL: Oh no. No, no, no.

Ambient Sound

By Len Feldman

The Home Recording Rights Coalition

If you have been following the debate and the judicial and legislative actions surrounding the October, 1981 court decision regarding video taping for private, non-commercial use, you may have become hopelessly confused by all the rhetoric that's been heard on TV and radio and published in the general press. On the other hand, if your interests, like ours, are primarily directed at *audio* recording, you may have assumed that whatever laws govern home video taping will not be applicable to, or have an effect upon, home audio taping. In that latter case you'd be dead wrong. The so-called "exemption" from the copyright act which allows home audio recording of otherwise copyrighted material for private use is now being challenged just as is the right to video tape a TV program off-the-air for private use. But let's back off for a moment and see just where matters stand.

Last year, two movie companies—Universal and Walt Disney—succeeded in getting a court to reverse a lower court decision and to declare that home taping, even for non-commercial purposes, breaks the copyright laws. While the original law suit was directed against only one company (Sony), one of its distributors, its advertising agency and a "test case" user of a Betamax recorder, Universal has since filed a second case to bring in some forty other defendants including all of the major marketers of video recorders and their advertising agencies. Sony, meanwhile, has petitioned the Supreme Court to review the lower court decision. Even if the Supreme Court decides to consider the case (they may not), it would be some time in 1983 before a final decision were actually reached.

The Implied "Exemption" for Audio Taping

The so-called "exemption" from the copyright laws for home audio taping is derived from legislative debate surrounding enactment of the Sound Recording Act of 1971. This Act granted a limited copyright to producers and performers of published sound recordings, supplementing the existing protection extended only to the composers of music. The hearings and floor debate on the Act indicate that issues of individual privacy, enforcement and non-commercial use were of concern to Congress when they discussed the problems raised by home recording. Congress received testimony that the extent of home taping would make copyright controls impossible to enforce, and that attempts at enforcement would then require undesirable invasions of the privacy of American homes.

After the recent court decision which declared video taping of copyrighted programs to be illegal, even if done for private, non-commercial home viewing, copyright holders in the *audio* industry were prompted to take another look at home *audio* recording. Since one of the solutions to the video recording problem (according to some) was the imposition of royalties at the hardware or software manufacturing level, recording companies saw this as a possible means of "getting in on the act" and opening up the question of royalties for blank audio tape once again—even in the face of the "implied" exemption.

Now, I realize that the readership of this publication is likely to be divided on this entire issue. The serious home recordists whom we number among our readers will no doubt side with the Home Recording Rights Coalition, a group of retailers, distributors, manufacturers, trade associations and consumers that is fighting in Congress to make sure that consumers' right to tape is protected. On the other hand, those professionals who read this magazine (employees of recording companies, performing artists, composers, etc.) may well feel that copyright holders of recorded audio material have a stronger case than do the movie studios which are fighting the battle against home video recording. For, while the arguments in favor of royalty-free video recording are centered about the fact that very few people record TV shows for the purpose of creating a video tape library (mostly, VCR use is for so-called "time shifting"—being able to view a given show, once, at a more convenient time), in the case of audio, taped music libraries *are*, in fact, created by home recordists.

Surveys of consumers with audio tape equipment do not, however, support the argument that the "audio exemption" has had a detrimental effect on the commercial interests of audio copyright holders. Frequent taping of records or radio broadcasts is not all that common among households with tape recorders and the effect of home taping on purchases of records and prerecorded tapes is still unclear.

1979 U.S. Copyright Royalty Tribunal study of home audio taping found the frequency of music taping among all those owning equipment to be "rather low," with less than half of the respondents having taped anything during the past year. Only 44% of those who taped music did so at least once a week, and only 7% taped more than 10 hours of music in an average month. Apparently, a very small group of enthusiasts does most of the total home taping. Furthermore, listeners were equally divided between those who said their purchases of commercially recorded music had *increased* since they began taping (40%) and those who said purchases had declined (also 40%). The probable explanation is that about half of those who taped a record instead of buying it used money they had saved to purchase a record that was not available to tape, or simply to further increase their record collections.

There are issues in this matter which are common to both audio and video recording. For example, it is questionable whether a copyright holder of any artistic work, audio or visual, can expect to extract additional royalties from that work after royalties have already been paid either by the broadcaster (in the case of a program received over the air) or by the producer of the recording (in the case of records or commercially recorded tapes). Once a signal arrives in your home, or has been purchased in the form of a recording on which required royalties have already been paid, shouldn't you, the consumer, have the right to do with it as you will, so long as you don't use it for further *commercial* gain? And wouldn't an attempt to "police" home recording in any form be an unacceptable invasion of privacy? That's the position taken by The Home Recording Rights Coalition. Whether you agree with it or not, let me present some of the interesting legislative background which surrounds the issues that are involved.

Shortly after the court decision in 1981, legislation was introduced in both houses of Congress which would exempt private noncommercial taping from the Copyright law. In the House, bills were sponsored by Congressman Parris (R-VA) (H.R. 4808, which has over 100 co-sponsors to date) and by Congressman Foley (D-WA) (H.R. 5250). In the Senate, Senators DeConcini (D-AZ) and D'Amato (R-NY) have sponsored a Bill, S. 1758, which has fourteen co-sponsors to date. A first hearing was held on S. 1758 before the Senate Judiciary Committee in late November of last year. Witnesses supporting the bill including EIA/CEG Spokesman Jack Wayman, representatives of Sony, Hofstra Law School and NARDA.

Legislation was introduced in both the Senate and House in December, 1981 which would exempt individuals from liability for home taping, but would impose a *royalty tax* on the sale of video *and* audio cassette recorders and video *and* audio blank tape and would also limit the right of a retailer to *rent prerecorded tapes* without permission from the copyright owners. This additional legislation was presented in the form of amendments to the earlier named bills by Senator Mathias (R-MD) in the Senate and Representative Edwards (D-CA) in the House.

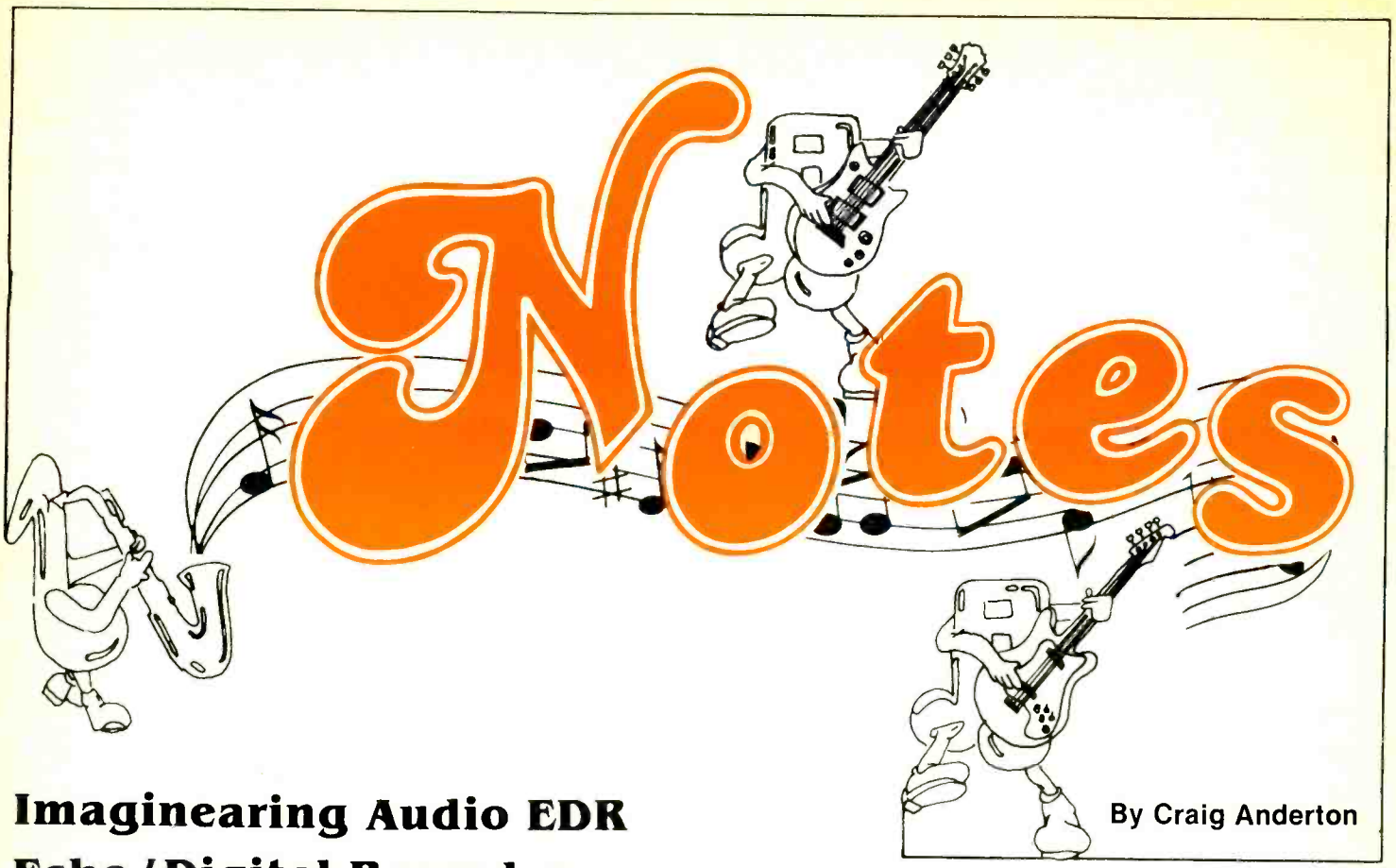
Additional hearings were scheduled for April 12 through April 14, with a second hearing before the Senate Judiciary Committee scheduled for April 21, 1982 for the purpose of further considering legislation introduced by Senators Mathias, DeConcini and D'Amato. The House Judiciary Subcommittee will hold another one-day hearing sometime during the month of June, 1982 to consider the views of various government agencies on this legislation.

What You Can Do

By the time you read this, most of the above-mentioned hearings will have already taken place, but it is unlikely that action on the various pieces of legislation will have taken place in the House and Senate. As a reader of *Modern Recording & Music*, you have a stake in the outcome of these matters. If you believe, as I do, that the right to tape at home for non-commercial purposes should be preserved, your voice needs to be heard. When consumers talk, Congress listens. It has been estimated that each letter or mailgram received by a Congressman or Senator is regarded as representing the views of at least 600 constituents. The Home Recording Rights Coalition is clearly an organization devoted to lobbying for passage of the two bills (H.R. 4808 and S. 1758) *without* the amendments tacked on to them later. If you want to write to your Senators and Congressmen about this important issue, no special words are needed; telling your members in Congress what *you* think, in your own words, is the most effective letter of all. If you support home taping, oppose a royalty tax and want to keep tape rental prices low, write your Senators at: **United States Senate, Washington, DC 20510** urging them to support S. 1758 *without* amendment. Write your Congressmen at: **U.S. House of Representatives, Washington, D.C. 20515** urging them to support H.R.4808 *without* amendment.

If you want more information about this matter, you can contact the Home Recording Rights Coalition, 1015 15th Street, N.W., Suite 1025, Washington, DC 20005. The phone number of the Home Recording Rights Coalition is (202) 466-3003.

As I said earlier in this column, I'm certain that there will be some readers of this publication who, for reasons which they consider to be valid, will disagree with the views I have expressed here. I would suggest that instead of writing to me, telling me why I am wrong, that *they too* write to their Congressmen and Senators expressing their views.



Imaginearing Audio EDR Echo / Digital Recorder

By Craig Anderton

First, a word about this month's review. Just before finishing it up, *Modern Recording & Music* had no luck in contacting Imaginearing Audio. [*There seems to be the great possibility that Imaginearing Audio has gone into receivership or bankruptcy, and if not, they should contact us*—Ed.] However, the editor still wanted to publish the review, which I thought was a correct decision. After all, not all of the people who read "Notes" actually go out and buy the piece of equipment we discuss. Many readers read this column for the educational value, namely, finding out what's current in the world of signal processing, how different controls are used, applications that also might apply to similar pieces of equipment and so on. In the case of the Echo Digital Recorder, I feel that this product is the precursor of many related products we'll see introduced during the years ahead. So, don't think of this "Notes" as a review of a [possibly] obsolete product, think of it as a preview of similar products to come.

WHAT is IT? The Echo Digital Recorder combines two main functions: Digital delay, with delay time variable from 0.0012 seconds to 16.777 seconds (or even 24 seconds at greatly reduced fidelity); and digital recorder, with recording time up to 16.777 seconds (or 24 seconds with the same results mentioned above). As one friend said, 16.777 seconds isn't a delay, it's a postponement! But those long echo times have more uses than you might think.

What makes the EDR different from other delay lines is that it totally embraces computer technology; in fact, it looks more like a computer than a piece of musical equipment. That is perhaps one of the reasons for its being in limbo, since I feel you have to be fairly conversant with computer thinking in order to deal with the EDR, and many musicians aren't really willing to take that extra step—even for highly intriguing end results.

KEYS and CONTROLS: There are three calculator-style keypads and a number of controls. The four controls to the left of the keypads set input level (or sensitivity, with associated LED bar graph meter); output level; mix of dry and delayed sounds; and regeneration. These are all standard controls which are found on just about any delay line. There's also an input level switch to select between high and low gain, but there is one problem: The EDR doesn't have quite enough level to drive a +4 studio, so break out a preamp if your studio happens to subscribe to that particular standard of electrical reality.

The three keypads sit below a five-digital numeric display, just like a big calculator. The left most keypad has twelve buttons: 0-9, decimal point and clear. In the delay mode, you enter the desired delay time with this keypad. Note that there is no dial to twist, so if you want a particular amount of delay,

you need to estimate what it is and then enter this number in the keyboard rather than turn a knob and "listen until it sounds right."

The middle eight keys are function keys in that they select different EDR functions. The ET key enters the echo time you just selected with the left keypad into the machine's memory. Anytime you want to change the delay, you punch in a new set of numbers (which show up on the display) and hit the ET button.

The X (factor) key lets you modify the Echo Time. For example, if you enter "0.5" with the keypad and hit the X key, the echo time will be halved; enter 0.333, and the echo time will be one-third as long as it was originally.

The BPM key converts the display from seconds to beats per minute. For example, if the display shows an echo time of 0.500 seconds, hitting the BPM button changes the reading to 120 bpm. If you want to enter echo times in terms of beats per minute instead of seconds, you can do that as well.

The PHASE key simply reverses the phase of the delayed signal. This is most important at short delays, since it allows you to do tricks such as positive and negative flanging.

There are four other function keys: ECHO, HOLD, R HOLD and REVERSE. ECHO selects the normal echo unit mode we all know and love, where the original sound is delayed by the amount shown on the display, and then appears at the output (usually mixed in with the dry sound). R ECHO is a reverse echo function, where the original sound is still delayed by the amount shown on the display, but this time the echoed sound plays back in reverse—just like reverse tape sounds. This is an impressive feature. The HOLD control will sample-and-hold the piece of sound that appeared just before you hit the hold button; the duration of the held segment equals the time shown on the display. R HOLD holds a piece of sound in a similar fashion, but plays it back in reverse. Incidentally, there is also a pair of flashing LEDs which pulse in time with the echo.

The remaining buttons on the right look suspiciously like a tape transport control section—and as you might suspect, these control the digital recorder section. The EDR is like a personal digital recorder with no moving parts, in that it can store sound, play it back (forward or reverse), speed it up, slow it down and perform other tricks. The main difference between a regular digital recorder and the EDR is that the conventional digital recorder stores information on tape, while the EDR stores it in computer-like memory. Due to the cost of memory (it takes more memory to store more sound), the amount of sound an EDR can hold with reasonable fidelity is limited to a maximum of 16.777 seconds, which isn't much. Still, this is enough storage to be useful, as we'll see. No doubt future devices of this ilk will take advantage of the coming generations of high density, low cost memory chips to increase both recording time and fidelity.

To record a sound, you simply punch the RECORD key when you want to start recording and the STOP key when you want to stop. If you run out of memory, you'll go into stop mode automatically, and the display will register 16.777 seconds. After recording, you have four options: single play forward once; single play in reverse once; continuous forward play; and continuous backwards play. You may think of the last two modes as tape loop emulators if you like.

The other digital recorder button—A REC—gives a count-

"The idea of mating computer technology, memory technology, digital recording and digital delay is irresistible."

down before the EDR starts recording. Thus, you can have it count down (and watch the action on the display) 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1, at which point the machine goes into record.

One of the best features of the digital recorder is that you can use it to set echo times which are synchro-sonic (rhythmically synchronized) to a piece of music. For example, suppose you want an echo on every quarter note. You punch RECORD on the digital recorder at the beginning of a measure and press STOP at the end of the measure. The readout now displays the length of one measure of music. Next, hit ET to enter the display time as the echo time, then enter 0.25 and the factor key. This cuts the echo time by one-quarter, thus giving an echo that occurs precisely every quarter note. You can also use the factor key to alter the length of a piece of music recorded in the digital recorder. However, while there is some commonality between the digital recorder and echo sections, you cannot use both sections simultaneously.

There are two more controls, VCO and VCO ON/OFF. In the VCO OFF mode, the clock which determines the delay time is fixed (I believe it runs around 50 kHz or so), and the display is calibrated to this delay time. In the VCO ON mode, you can vary the clock over a 2:1 range using the front panel VCO control, or by feeding a standard 0 to +10V synthesizer-type control voltage into a control voltage jack. The VCO ON option allows you to fine-tune a delay time, or speed up or slow down tracks recorded using the digital recorder. This is also the control that gives longer recording times if desired (the slower the VCO, the longer the delay; remember, though, that the fidelity suffers at slow clock speeds). Also note that the display is not necessarily accurate when the VCO is on.

The one remaining jack, CHROMINANCE, is designed specifically to hook into an Alphatone tuner and show how much chromatic deviation you've introduced in the clock by varying the VCO control.

PRE-FLIGHT for the EDR: This involves patching in cords (the EDR works just fine between a guitar and amp), turning the unit on and figuring out enough about the keyboard to get the sound you want. This is not as trivial as it sounds; in fact, the first time I had a demonstration of the thing I was somewhat confounded. It took several hours of sitting down

and punching buttons, with the help of an occasionally cryptic instruction manual and a demonstration from the person who invented it, before I felt like I really knew my way around the keyboard. What you really need are some computer entry chops, and then the keyboard makes complete and total sense. But for the average musician walking into a store, I can see where the keypad would present a kind of "language barrier." I would add, though, that once you get used to the keypad, it really does seem like the easiest way to interact with a machine which has this many options.

APPLYING the EDR: The first thing you'll notice when trying out the EDR is that the quality of sound is *not* studio quality. "Live," I would have few problems with the EDR; but in the studio, several problems show up. The first is reduced bandwidth, since the EDR can't handle signals above approximately 5 kHz. One good feature, though, is that the bandwidth remains constant so you get reasonable fidelity even at the 16.777 second setting. The second problem is distortion, due to the quantizing errors inherent in low cost analog-to-digital-to-analog conversion. Turning up the VCO gives better fidelity by speeding up the system clock, so most of the time I turn the VCO ON/OFF control to ON and turn the VCO knob up as far as it will go. Although this restricts the amount of recording time and the maximum delay, the tradeoff of better fidelity makes up for this limitation.

The EDR has a tremendous number of applications. Some of these include:

- *Flanging*—Select a short delay, vary the VCO control and you've got flanging. However, the limited sweep range and low bandwidth don't exactly give the world's most dramatic flanged sound.
- *Chorusing*—Set a longer delay (15 ms. or so) and vary the VCO control. This is a more successful effect since the limited sweep range is less of a problem (you don't want too much modulation when chorusing).
- *Echo*—Not only can you select echo times up to 16.777 seconds, you can also synchronize the echoes to the music using the digital recorder controls (as mentioned above), and do reverse echo. This is one of the most potent features of the EDR.
- *"Frippertronics"*—Guitarist Robert Fripp has popularized the "musique concrete" technique of tape looping by creating a specific form of music designed for this technique. The result is a dreamy, almost meditative type of music where a musician plays a riff which is stored electronically and made to reoccur every few seconds, with the volume level decaying slightly with each repeat. The EDR lets you set up these long echoes without tape machines, and that alone justifies its existence as far as I'm concerned...in fact, one of my favorite EDR pastimes is to head into the studio with an E-Bow and Telecaster. I set the echo for about 5 seconds, play a tonic on the guitar, keep that sustaining for the 5 seconds, then let the EDR repeat the tonic almost endlessly while I add a 5th, 4th or other harmony (which ends up repeating as well). Then I let this background echo on by itself, and play a single note guitar line over it. Sometimes I cut the guitar into the loop as well and play harmonies against particular lines. This is all great fun, and the effect is so soothing you can cool yourself out real fast during psychic emergencies! There's something about long, evocative echoes that seems to imply a particular musical form.
- *Practicing*—I needed to check out an effect I wanted to add to a particular drum track. The only problem was that this effect required lots of minor adjustments, and I didn't want to run the tape back and forth, accumulating wear. So, I recorded a segment of the drum sound on to the EDR's digital recorder, put it into the continuous play mode and fooled around with the effect to my heart's content. The EDR is also great for practicing harmony lines and solos—record the chord progression against which you play your solo, and then start practicing. Being able to speed up and slow down the track also lets you change key signatures, although of course the tempo of the recorded segment changes as well.
- *Tape loops using the digital recorder*—One avant-garde way to generate a rhythm track is to take a segment of sound, say, a printing press, record it on tape, and splice a particular segment of that sound into a tape loop. This loop plays over and over again, thus giving a sense of rhythm. One trick I did with the EDR was record an industrial noise into the digital recorder, shorten it to just under a second of sound using the factor key, put it into continuous play mode, and speed it up to give a slightly crisper sound. I then alternated playing it in forward and reverse; the effect was neat, highly percussive and a lot of fun. The limited bandwidth is a problem, but that's something that you just have to resign yourself to and work around.

OVERALL EVALUATION: Yes, the fidelity isn't too good. Yes, the keypad is cumbersome to learn. But the premise behind the unit was flawless: The idea of mating computer technology, memory technology, digital recording and digital delay is irresistible. The fact that Imagineering Audio delivered the unit for $2000 list is even more amazing, although, perhaps, that's a moot point now.

The EDR is a tremendously handy device around the studio. It's a creative tool, or tool for creativity if you prefer, and I appreciate being able to do something new and different such as solid-state "tape" looping. However, if you could only afford one studio delay line the EDR would not be it—the fidelity just isn't there. (*Side note:* I.A. had planned on coming out with a 10 kHz bandwidth version later this year.) However, in my studio I use the [AD/A] STD-1 *[see "Notes" in the May 1982 issue]* for high fidelity short delays and the EDR for long delays with...well adequate fidelity. The combination works quite well for me.

If this review has made you hungry for an EDR (for example, if I were Robert Fripp, I'd starting scouring the country *now* for two of them before they disappear completely!), what can I say? You may be able to find one in a music store somewhere. I was lucky; I'm getting to keep my review unit because I cut a demo cassette on the EDR for I. A. just before they went incognito. But, don't worry. Unless I'm way off base, there will be more—and better—echo/digital recorders in the years ahead as computer technology matures. The price may even come down, and the fidelity will surely improve. Perhaps the EDR was ahead of its time, but you could just as easily say that the technology wasn't *quite* good enough or inexpensive enough to put a product like this out right now and expect it to keep a company alfloat. In any event, I don't think we've seen the last of the long delay devices—not by a long shot.

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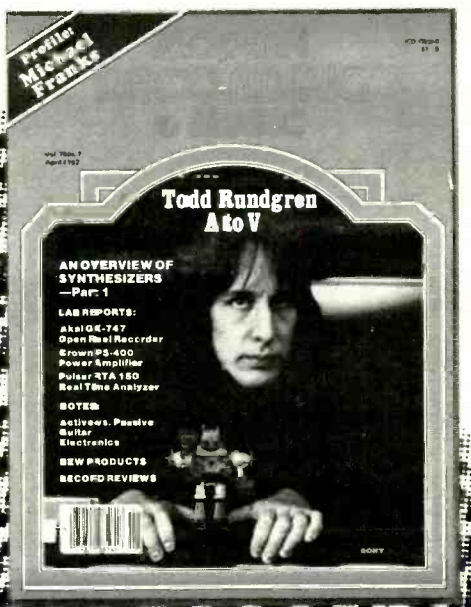

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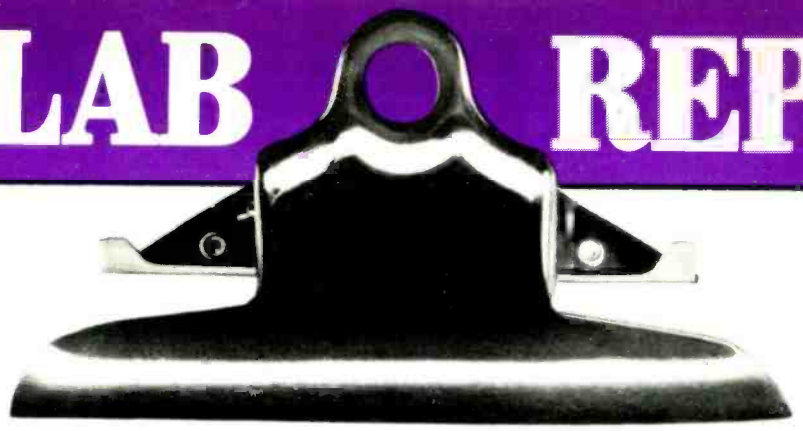
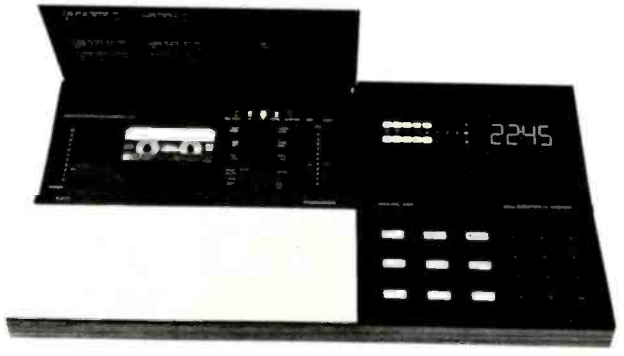


NORMAN EISENBERG AND LEN FELDMAN

Bang & Olufsen "Beocord" 9000 Cassette Recorder



General Description: Although stylistically very similar to the earlier model 8000 *(see report in MR&M, May 1981)*, the new model 9000 incorporates many improvements, including important circuit developments and added functions.

The deck's built-in microprocessor automatically optimizes bias, equalization and recording sensitivity for all tape formulations. The calibration process includes a measurement of distortion: 3rd-harmonic distortion is measured at 333 Hz, and the recording level for 5% 3rd-harmonic distortion is defined. This level is then used for adjusting the sensitivity of the deck's peak-reading program signal meters. As a result, when the recording level during any taping corresponds to a distortion level of about 2 percent (at 333 Hz), the "zero dB" LEDs on the meters light up. Should distortion exceed 5 percent, the "+5 dB" LEDs come on. B & O claims that this machine is the first to include distortion measurements in the calibration process and to the best of our knowledge the claim is correct.

The model 9000 includes Dolby HX Professional Dolby B and Dolby C noise reduction. The first of these is actually an improvement over the original Dolby HX. Developed in cooperation with Dolby Labs, it handles bias and EQ dynamically and permits higher level high-frequency signals to be recorded before distortion rises. The recording of low-frequency information also is improved insofar as the "beating" effect of simultaneous high-amplitude signals is eliminated. Dolby HX remains on constantly when recording, regardless of whether Dolby B or C has been selected. Claimed to improve the signal-taking capability of non-metal tapes so that they approach the capability of metal tape, Dolby HX is compatible for playback on other cassette decks that do not include it.

The automatic calibration system in the 9000 also compensates for any instability or anomalies in the tape—for instance, calibration is made after the start of a tape rather than at its very beginning where, B & O explains, there can be a high risk of dropouts and level fluctuation. The calibration process also adjusts for Dolby tracking. When identifying what type of tape has been inserted for recording, the computer will—irrespective of the detecting slots on a cassette—determine which EQ and bias setting will yield optimum performance and adjust the recording circuits accordingly. On playback, the EQ is determined by the slots in the cassettes, except for FeCr tapes which have no detection slots and therefore require manual selection on the panel. Calibrated settings for all four tape classes (Fe, Cr, FeCr and metal) can be stored in the 9000's memory. The actual calibration process for any new tape takes under 10 seconds.

The combined record/play head of the 9000 has two separate sections for record and playback. This head is adjustable for azimuth, but it does not function as two discrete heads. That is to say, it may be used at any given time for either record or play, and so off-the-tape monitoring while recording is ruled out.

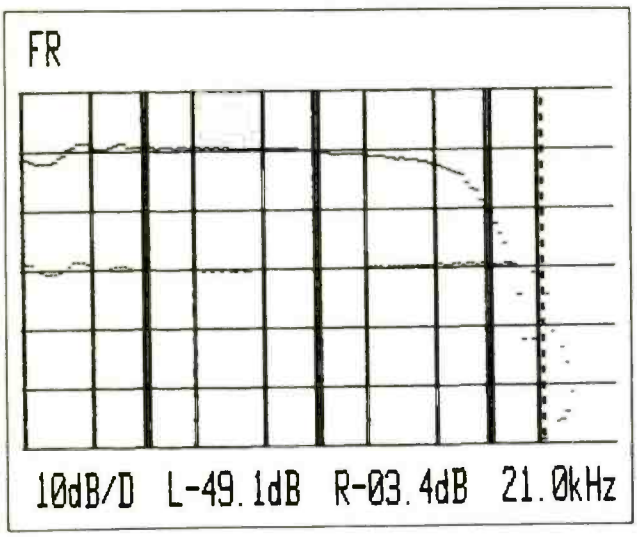


Fig. 1: B&O 9000: Frequency response, record/play, using normal bias tape (Maxell UD-XL-IS.)

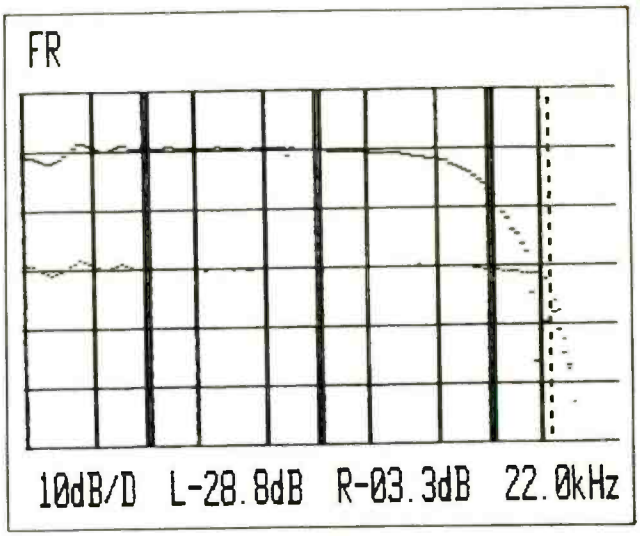


Fig. 2: B&O 9000: Record/play frequency response (Sony UCX-S high-bias tape).

Associated with the deck's microprocessor is a built-in digital clock and timer, with an elaborate readout display which shows real time in minutes and seconds, in both record and playback, of lapsed tape time during recording or playback, as well as remaining tape time during recording. This system also can be used to set time of day which may be recalled whenever desired; for automatic search of recorded material; for preset unattended recording or playback; for memory of a specific spot on a tape and automatic wind to that spot. In addition to the numbers shown on the display, the system also uses special symbols and legends that indicate various functions, including an error readout in the event you have asked the computer to do the wrong thing. In addition to displaying the available time for recording on a given tape, the display also flashes a "tape end" warning about five minutes before the end of the tape. In the event of power cut or removal of the machine's AC line cord from its socket, a small battery in the deck (a quartz watch type) supplies the energy for holding tape calibration data; the clock-timer, however, will be interrupted and will have to be reset when power is restored to the deck.

Like the earlier model, the 9000 is styled in the unique B & O look. A double-angled top panel in a rosewood surround sits on the chassis. The upper left portion is covered by a swing-up brushed aluminum lid that matches the large area just below it. The upper right portion contains the signal meters and the readout display. The area below that contains the main control section.

With the upper left door opened, the cassette compartment and related controls and features are accessible. At the left is a headphone slider volume control, numbered from 0 to 10. The cassette platform tilts upward to accept or reject a cassette. To its right are two vertical rows of buttons, including timer start, time set, record open (this must be pressed to prepare the deck for recording); a three-position Dolby switch (off, B, C); timer stop; tape end; tape type (for manual selection); store (for entering tape calibration data into the memory); and, lastly record calibration.

Above these buttons are five indicators. One shows the "record open" condition; three show tape types (whether automatically or manually set); the last is a NO STORE indicator that will come on should you attempt to enter into the memory a recording calibration for a given tape whose characteristics vary significantly from those of the generic tape type selected. In that event, the recording calibration procedure will be carried out for that tape, and the appropriate indicator light will come on.

Two more sliders handle recording levels separately on left and right channels. The remaining controls in this area are the two sliders for recording level adjustment separately on each channel.

The signal meters on the display panel at the right contain, for each channel, a horizontal row of segmented "bar graphs" with green illumination from −20 to 0, and red illumination from here to +5. To its right is the digital-and-symbol readout for timed functions. Below are printed legends that come on as appropriate for recording calibration, record, tape end and also for time calibration.

Nine large buttons and twelve smaller buttons comprise the control section. In the former group are the transport controls for record, playback, fast-forward, rewind and stop, plus buttons for "return" (this will replay a tape from where playback was last started, or it will rewind a tape when in the recording mode to the beginning of that recording); for the memory functions; and for "standby" (this stops everything and puts the deck in

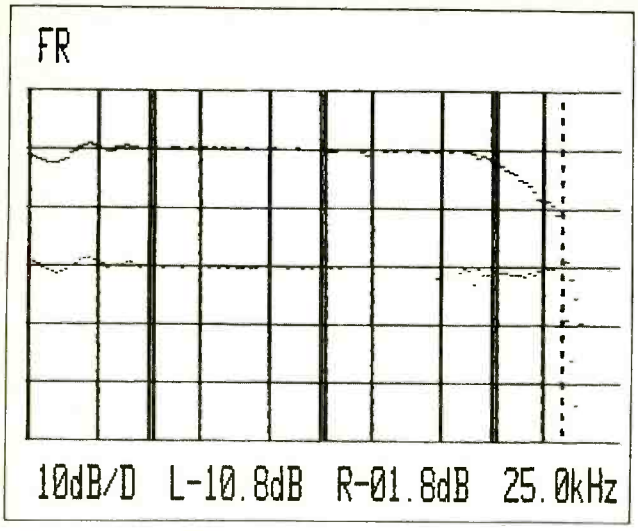


Fig. 3: B&O 9000: Record/play frequency response using metal tape (Fuji metal).

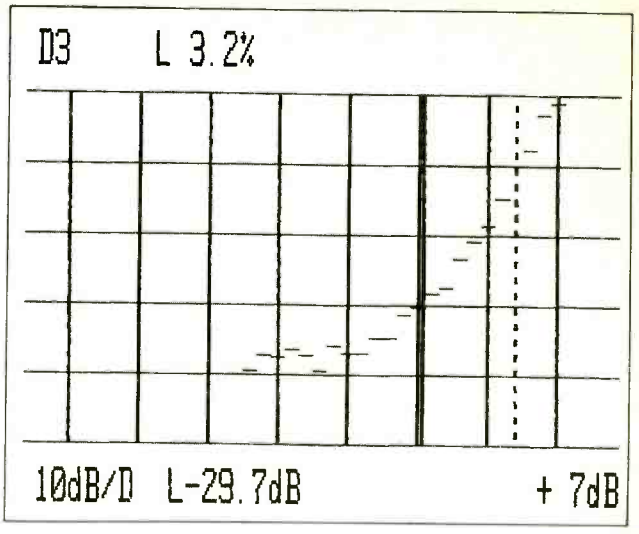


Fig. 5: B&O 9000: Third-order vs. record level, using high-bias tape (Sony UCX-S).

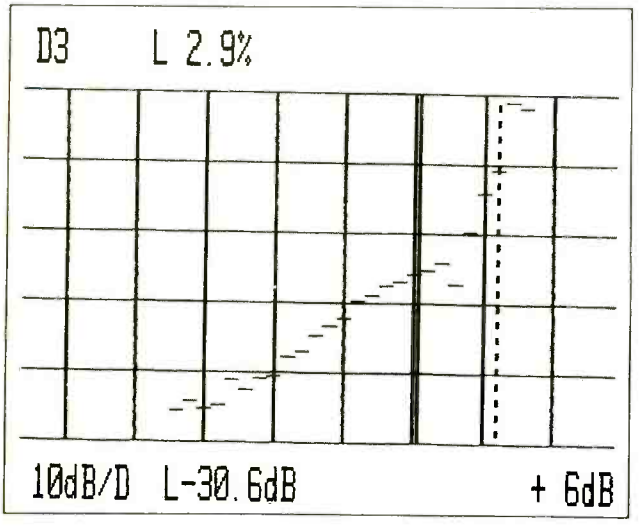


Fig. 4: B&O 9000: Distortion vs. record level, using normal bias tape (Maxell UD-XL-IS).

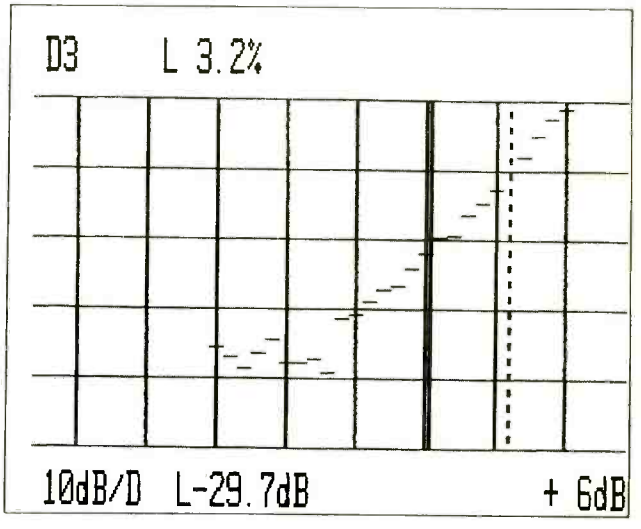


Fig. 6: B&O 9000: Third-order distortion vs. record level, using Fuji metal tape.

readiness for your next instructions; it also serves as the off/on switch but without affecting previously programmed timer instructions or the availability of their readout on the display.

The 12-button group contains buttons numbered from 0 through 9 plus a CE button to cancel a program, and a GO button to activate a program that has been fed into the computer.

Line-level signals are fed to and taken from the deck via a DIN socket at the rear. An adaptor cable that fits this socket and terminates in four standard U.S. phono plugs for insertion into pin-jacks, is supplied with the recorder. Microphone signals may be fed to the deck via connectors at the front, under the wooden trim piece. One of these is a 1/4-inch jack for a mono mic. The other is a DIN socket which will accept stereo microphones. If two mono mics are used, their jack plugs must go through an adaptor into the DIN socket; if a stereo mic with its own DIN plug is used, it plugs directly into the DIN socket. The DIN socket here also can be used as an input for copying from another recorder with the use of yet another special cable. Next to these inputs is a three-position switch that selects the input to be used—"aux" for tape copying; "mic" for microphone; and "amplif" for the line-level connections at the rear. Next to this switch is the headphone output jack. When line-level hookups are used, an additional switch, located on the underside of the deck, also must be moved to "line" position (its other setting is for DIN level). Also found on the underside of the unit are recessed output level adjustments and a multiplex-filter switch.

The Beocord 9000 is designed for horizontal placement on some kind of surface; it cannot be rack-mounted.

Test Results: As expected, the model 9000 outperformed the earlier 9000 in our tests. A pleasant surprise

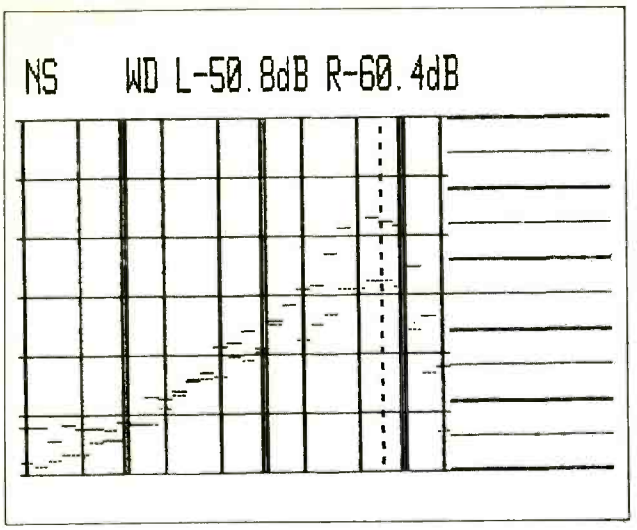


Fig. 7A: B&O 9000: S/N measurements using normal-bias tape. "L" figure at top of display is S/N without Dolby. "R" figure is S/N with Dolby-B. To obtain actual S/N referenced to 3% distortion record level, add to the numbers shown here the recording headroom figures normal-bias tape (+6 dB).

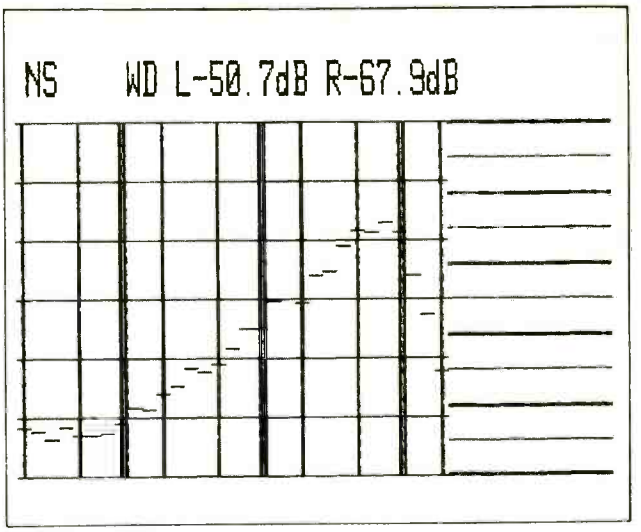


Fig. 7B: B&O 9000: S/N using normal-bias tape. "L" figure at top of display is S/N without Dolby. "R" figure is S/N with Dolby-C. To obtain actual S/N referenced to 3% distortion record level, add to numbers shown here the recording headroom figure for normal-bias tape (+6 dB).

was the excellent frequency response measured for all three tape types we used: normal-bias (Maxell UD-XL-IS); high bias (Sony UCX-S); and metal (Fuji Metal).

Figures 1, 2 and *3*—derived directly from our Sound Technology 1500A Tape Tester—show the 0-dB and the −20 dB record/play frequency response for the three tapes. As usual, sweeps run from 20 Hz to 20 kHz. In each figure the dotted line cursor has been set, as nearly as possible, to the −3 dB high-end rolloff point in the response curve (indicated by the "R" notation, e.g., −3.4 dB at 21 kHz for the Maxell sample, etc.). All three tapes made the 20-Hz to 20-kHz range with room to spare, and the metal tape sample went beyond 25 kHz.

Plots of third-order harmonic distortion versus record level for the three tape types are shown in *Figures 4, 5* and *6*. We should note that on the model 9000 deck, the "zero dB reference" level is 250 nWb/m. This is approximately 2 dB higher than Dolby level (200 nWb/m) and corresponds to a newly suggested reference level for use in cassette deck measurements. Thus, the +6 dB headroom figure (as for the normal-bias sample, *Fig. 4*) actually would be at least a +8 dB headroom figure for other decks which use 200 nWb/m as "0 dB." It would be even more for many decks whose "0 dB" reference level is as low as 165 or 145 nWb/m. The 9000, in other words, has very ample headroom for all tape types.

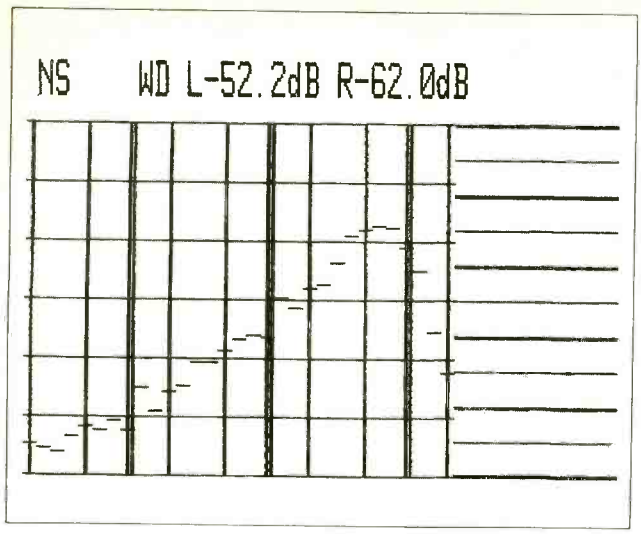
Signal-to-noise characteristics using our three tape samples are depicted in *Figures 7, 8* and *9*—each of which is divided into two parts. In *Fig. 7A*, for example, we have plotted the S/N (using CCIR/ARM weighting) of the normal-bias sample first without noise reduction, and then (as if for the opposite channel for ease of use of the tester) with Dolby B turned on. In *Fig. 7B*, we again plot the S/N first with no noise reduction, and then with Dolby-C activated. *Figures 8A* and *8B* show the same test results for high-bias tape. *Figures 9A* and *9B* do the same for the metal tape.

Note that *all* of the S/N measurements shown at the tops of these displays are referenced to 0-dB record level. Thus, to arrive at the S/N ratios referred to maximum record level (the 3-percent distortion point), it is necessary to add the appropriate number of dB to each figure, as listed for that particular tape's headroom in the table of "Vital Statistics." For example, to obtain the actual S/N for the normal-bias sample, we note that it has a +6 dB headroom figure. Accordingly, for the "no Dolby" S/N figure we add 6 dB to the 50.7 dB (shown in *Fig. 7B*) to obtain the final value of 56.7 dB, as shown in the "Vital Statistics" table. The same procedure would be followed for the other S/N displays (*Figs. 8* and *9*) to arrive at the overall S/N ratios for the other tape samples with and without Dolby B and Dolby C noise reduction.

Figure 10 is a plot of wow-and-flutter, which reads 0.037 percent. The dotted line cursor here has been set to read the value of the wow-component located at 4 Hz (in this display, sweep frequency analysis extends from 0.5 Hz to 200 Hz, the range of significant wow-and-flutter frequencies).

General Info: Dimensions are 20 7/8 inches wide; 5 1/8 inches high; 11.8 inches deep. Weight is 17.16 lbs. Price: $1800.

Individual Comment by L.F.: Our previous review of the B & O 8000 [May 1981] suggested that at $995 the unit may have been overpriced for what it was and what it did. We criticized several things about that earlier unit, from its frequency response to the fact that for all its microprocessor-controlled features it did not include self-calibration for optimizing itself for different tape for-



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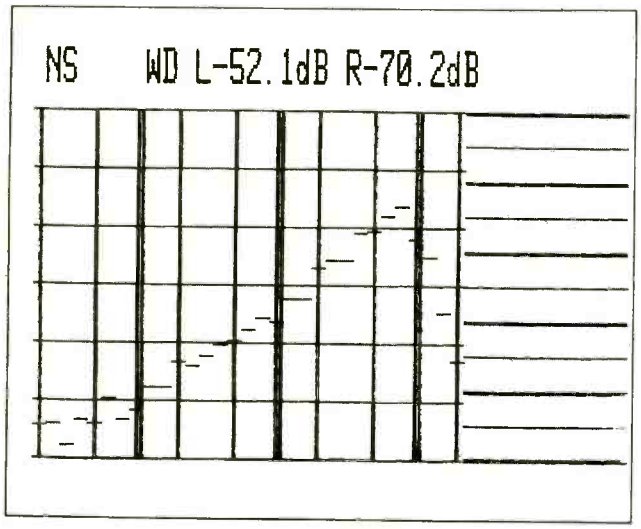
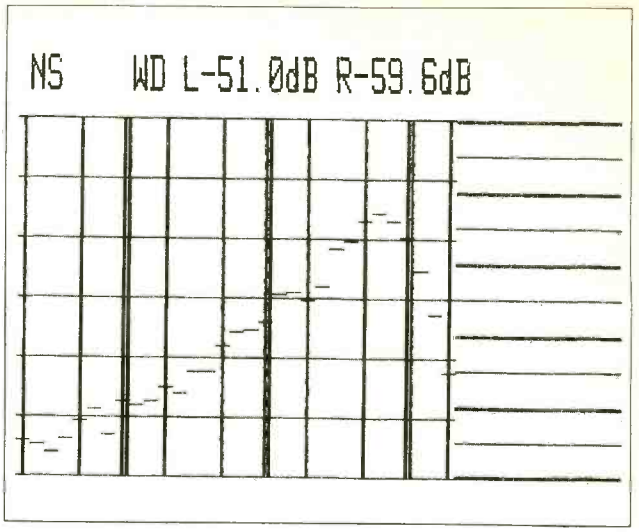


(B)

Fig. 8A and 8B: B&O 9000: S/N representations for the unit. Same as in Fig. 7A and B except using high-bias tape.



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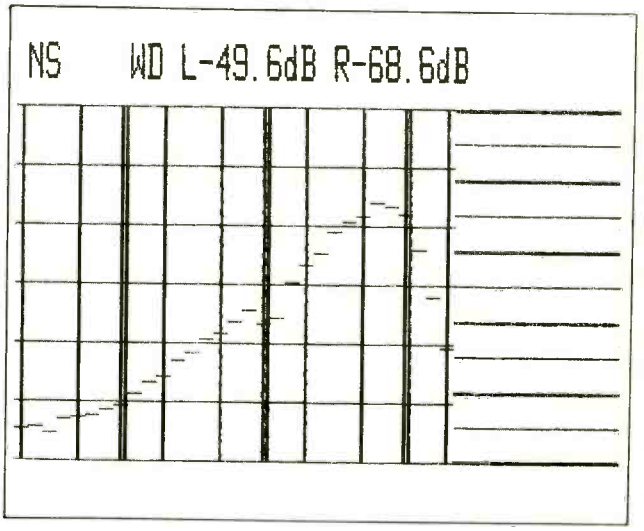

(B)

Fig. 9A and 9B: S/N representations for the unit. Same as Fig. 7A and B except using metal tape.

mulations. Well, the new model 9000 is intended to retail for around $1800 and as I write this I do not yet know how N.E. is going to feel about it, but for my part at least this newer unit is worth every penny of that price and then some.

To be sure, we are still dealing with a two-head deck, and that means no capability for tape monitoring in the usual sense. B & O engineers maintain that trying to cram three heads into a space intended for only two heads is not a good idea, and that trying to incorporate a double head (separate record and play) in a single head "package" (as many makers are doing) causes magnetic interaction between the closely spaced heads which has detrimental effect on overall performance.

Aside from this continuing difference in design philosophy between myself and the folks at B & O, it is almost as if they took to heart all of the other criticisms that we wrote concerning the predecessor model. (I'm sure that's not the case, since B & O generally wins accolades from all parts of the globe, and its designs and design philosophy have proven to be extremely successful worldwide.) In any case, performance of the new 9000 is beyond reproach, as you can see by examining the "Vital Statistics" table and the accompanying graphs and figures.

In my view, the biggest improvement in the Beocord 9000 over the earlier 8000 involve the newer model's ability to optimize bias, equalization and sensitivity for any tape formulation. This is accomplished in under 10 seconds. The second important improvement involves the incorporation of Dolby HX Professional which makes better use of a tape's dynamic range. HX Professional, developed by B & O in cooperation with Dolby

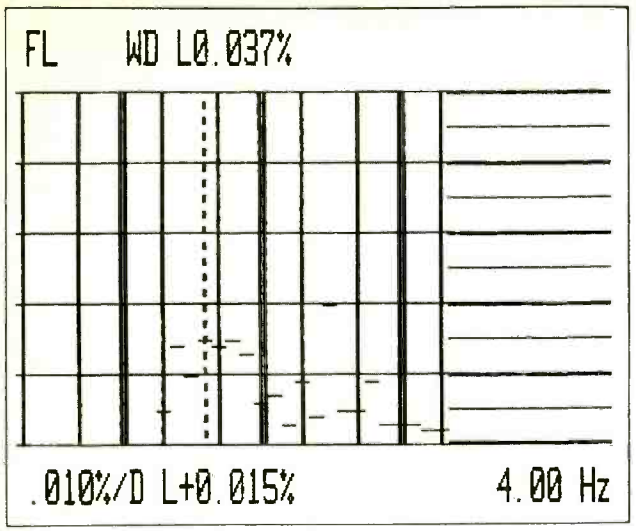

Fig. 10: B&O 9000: Wow-and-flutter overall reading (at top of display) for the 9000 was 0.037%. Reading at bottom of display (0.015%) denotes wow-and-flutter contribution at 4.0 Hz.

Laboratories, is in my opinion a far more worthwhile approach to dynamic bias and equalization changing than was the original Dolby HX proposed by Dolby Labs a couple of years ago.

The Beocord 9000 is still not a deck you can operate without having read the instruction manual booklet. That's not because it's overly complicated to operate. On the contrary, B & O always has been noted for the "friendliness" of its front panels (as they say in computer language these days). It's just that there are so *many* things that you can do with so *few* buttons that unless you follow along in the operating manual for the first few sessions, you are likely to become hopelessly confused. As in the earlier model, the digital display serves not only as an arbitrary tape counter, but it can be switched over to read actual time elapsed on tape (in real time), and it even can tell you how much time remains on a given tape. It also can be used to designate an amount of time into the tape at which playback action should begin, following a fast wind to that point, and so much more. Unattended start and stop of recording also can be programmed into the machine, using the real-time display which also doubles as an accurate clock.

As for the 9000's design and layout, anyone familiar with past B & O designs will know that when it comes to styling, layout and esthetics, that company can't be surpassed. Now that they have combined these attributes with excellent performance, it is hard to see how anyone would fail to find favor with this latest deck from the esteemed firm of Bang & Olufsen—unless you still want to quibble about the regrettable absence of that third, monitoring head!

Individual Comment by N.E.: With the 9000, B & O has improved performance generally (vis-a-vis the earlier 8000), and "stretched" its built-in computer to do even more than it did in the earlier model. Frequency response of the 9000 is very obviously better, with all the three tapes tested going beyond the 20-kHz mark. The metal tape sample made the best showing in this area, exceeding 25 kHz for the −3 dB point. All three tapes did very well in signal-to-noise characteristics, with the high-bias sample nosing out the other two. The same could be said for recording headroom and for distortion. At that, the headroom for all three samples was very generous (as compared to most decks which use a lower nWb/m level for "zero dB" reference, you can add at least 2 dB to the figures shown here for record level at 3 percent distortion). The distortion shown for metal tape is not tremendous, although the distortion for high-bias tape really is way down, and that for normal-bias tape is not much higher—apparently, the use of Dolby HX Professional here does help squeeze a little more performance from the lower-priced tapes. And even as the high-end response has been upgraded in the 9000, its low-end response, as in the earlier 8000, remains firm and solid. The deck's very low wow-and-flutter, and the alacrity with which the transport responds to all commands, and the firm but gentle way tape is handled all speak well for the 9000's mechanical design and construction.

Styling and layout of the 9000 are, as in most B & O products, unique and striking. This very styling, however, may appeal to some while not pleasing others. There are switches and controls or connectors on four sides of this unit—front, top, back and bottom. I can go along with the mpx filter switch and the line/DIN switch being on the bottom (in the U.S. at least you probably would never use the DIN position), but I am not sure I like output level controls hidden under any audio device. Neither do I like the placement of the microphone inputs or the headphone output. Located, as they are, on a recessed strip under the rosewood trim at the front, it takes some stooping and squinting to identify and use them—and with normal overhead lighting a slight shadow is cast over these connectors.

On the other hand, the topside slider control for headphone volume is a read advantage, along with the generous signal level available for headphone listening which is completely independent of the line-level output controls. I also like the sliders for recording level adjustment. On most cassette decks which strive for a "low profile" look, such sliders are virtually ruled out. On the B & O, which uses an angled horizontal layout, sliders can be used.

As between depending on a built-in computer to set bias and EQ or doing it yourself with available controls, I think it's a standoff. Again, this is a matter of personal preference rather than one of hard-and-fast technical certainty. One thing does seem sure, however, and that is that the computer in the 9000 seems to know what it's doing, judging from the test results we got in the lab and the actual use-and-listening sessions both L.F. and I conducted independently in different environments and with different program material and associated equipment. In short, the B & O 9000 may well be, at this writing, the best two-head cassette deck we have yet encountered. But I do wish it had that third head.

B & O 9000 CASSETTE RECORDER: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Frequency response, normal tape	± 1.5 dB, 20 Hz to 20 kHz	± 3 dB, 20 Hz to 21 kHz
high-bias tape	± 1.5 dB, 20 Hz to 20 kHz	± 3 dB, 20 Hz to 22 kHz
metal tape	± 3 dB, 10 Hz to 25 kHz	± 3 dB, 20 Hz to 26 kHz
3rd-order HD at 0 dB record level		
normal; high-bias; metal tape	NA; NA; NA	0.43; 0.31; 0.81%
Record level for 3% 3rd-order HD (0 dB = 250 nWb/m)		
normal; high-bias; metal tape	NA; NA; NA	+6.0; +7.0; +6.0 dB
S/N ratio, Dolby off, re 3% 3rd-order HD record level		
normal; high-bias; metal tape	56.0; 60.0; 59.0 dB	56.7; 59.2; 57.0 dB
S/N ratio, Dolby-B on, re 3% 3rd-order HD record level		
normal; high-bias; metal tape	64; 70; 68 dB	66.4; 69.0; 65.6 dB
S/N ratio, Dolby C on; re 3% 3rd-order HD record level		
normal; high-bias; metal tape	74; 80; 79 dB	73.9; 77.2; 74.6 dB
Wow-and-flutter (WRMS)	0.045%	0.037%
Speed accuracy	less than ± 1.0%	+0.37%
Mic input sensitivity for 0 dB	0.15 mV	Confirmed
Line input sensitivity for 0 dB	40	42 mV
Line output level at 0 dB	1000 mV	Confirmed
Headphone output level at 0 dB	10 V (56 ohms)	Confirmed
Fast-wind time, C-60	70 seconds	70 seconds
Bias frequency	96 kHz	Confirmed
Power consumption	50 watts	51 watts

CIRCLE 17 ON READER SERVICE CARD

HH V800 Power Amplifier

General Description: HH equipment, made in England, is distributed here by HH Electronic Inc. of Fullerton, California. The model V800 is the highest-powered in a new series of HH "MOS-FET" power amps, the term deriving of course from the fact that they all use that type of transistor in their output stages.

A two-channel unit, the V800 is rated for 4-ohm and for 8-ohm loads, and it also can be operated in bridged mono mode. Output power for rated distortion of 0.03 percent across the audio band is spec'd as 250 watts RMS per channel into 8-ohm loads; 390 watts per channel into 4-ohm loads. In mono mode the amp is designed to drive an 80-volt balanced line. The mono rated output

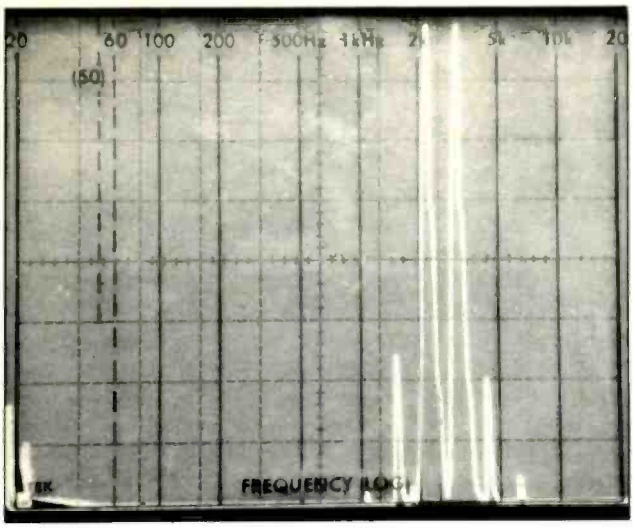

Fig. 1: HH Electronics V800: Spectrum analysis of twin-tone IM measurements made of the amplifier. Tall spikes are desired outputs. All other spikes are IM products. Vertical scale is 10 dB per division.

power is 800 watts RMS into an 8-ohm load at less than 0.03 percent THD at 1 kHz.

The amp's front panel, of standard rack-mount width, is fitted with handles. It contains two LED meters to monitor power output on each channel, two level controls and the power off/on switch. There are ten LEDS for each channel, calibrated −32, −26, −20, −15, −12, −9, −6, −3, 0 and "clip." They show peak levels, and they also adjust automatically for the load impedance connected to the amp. Two additional LEDS on the panel show the bridged mono mode and show thermal overload.

Input and output connections are at the rear. Inputs are provided for quarter-inch jacks and for both male and female XLR-type connectors. If the ¼-inch jacks are used they must be of the three-pole type—that is, tip/ring/sleeve. Three outputs also are provided; binding posts (color-coded for polarity), and female and male XLR connectors. For the bridged mono mode, the load is connected between the "hot" terminals of either stereo pair (pin 2 of the XLR connectors, or the red binding posts). In addition, it is necessary to change the setting of a mode switch located under the bottom cover which must be removed and then replaced. The AC power connector is a European type, but an adapter socket is provided. Provision is included for grounding the amp directly or in "isolated" manner with regard to AC mains in order to prevent ground loops. It also is possible to change the operating voltage from 110 to 220 volts AC.

To protect its loads, the amp incorporates a relay that will disconnect speaker systems in the event of a DC voltage appearing at the output terminals. Thermal sensors and thermal cut-outs also are employed to guard against overheating. Additionally, there is a built-in fan which comes on automatically should the temperature of the output heatsink reach 63 degrees C (about 145 degrees F). The thermal sensor and cutout system will go into operation at 90 degrees C (194 degrees F).

The input circuits are provided with an option for using special input transformers (10 K/10 K and 600 ohm) in the form of a prewired socket. As supplied, the sockets are fitted with jumper plugs.

Test Results: With one very minor exception the HH V800 amplifier met or exceeded all of its specifications in *MR&M*'s tests. The exception is hardly worth mentioning, but we do so in the interest of thoroughness: Instead of the −1 dB point in frequency response occurring at 50 kHz, we measured it at 35 kHz. That is still a generous margin above the normal 20-kHz mark and does indicate, in any event, a linear or flat responding amplifier. Far more important are the distortion measurements we obtained which are well below rated levels. The accompanying 'scope photo shows the display we obtained on the spectrum analyzer when applying to the HV 800 twin-tones at full rated output. Disregard the frequency markings at the top of the display. The two tones used were 14 kHz and 15 kHz, and the major unwanted IM products add up to an equivalent of only 0.12 percent (IHF IM distortion).

We measured a dynamic headroom figure of 0.63 dB. This may seem low to those accustomed to dynamic headroom figures of 2 or 3 dB commonly obtained when amplifier power supplies are designed with "soft" regulation characteristics. However, it should be pointed out that dynamic headroom is not a quantitative specification, but only an informational one. Some amplifier designers prefer a "stiffly" regulated power supply, and obviously that was the design choice made for this amplifier. Actually, when an amplifier has a low enough output impedance (and the HV 800 certainly does, with its rated damping factor of 300), we have never been able to discern that the choice of large or small dynamic headroom makes any difference at all in the amplifier's sound quality.

General Info: Dimensions are 19 inches wide; 7 inches high; 15 1/8 inches deep. Weight is 47.3 pounds. Price: $1250.

Joint Comment by N.E. and L.F.: Over the years, neither of us has ever been overly enthusiastic about 'home hi-fi" amplifiers from Britain. In contrast though, when it comes to professional amplifiers from the UK, we invariably find that the "conservatism" associated with our English cousins works very much in their favor. We found the HH V800 to be a superbly-crafted piece of equipment—utterly reliable and virtually indestructible. Its designers obviously believe that the fewer the number of parts in any system, the less likelihood there is of possible failure. All of the required voltage gain for the amplifier is provided by a total of five transistors (per channel), two pairs of which serve as differential amplifiers. All of the protection needed for the amp is furnished by a simple pair of zener diodes (per channel) which limit the maximum output current by clamping

the drive voltage to the MOS-FET output devices, of which there are eight per channel. Since these devices will handle full voltage and current simultaneously, no complex circuits are needed to keep these output devices within their safe operating range.

On a practical user level, there are some things we liked and some we were less than ecstatic about. We especially appreciated the low noise level of the built-in fan, one of the quietest-running we have encountered in any pro-grade amplifier. We also liked the idea of providing three alternative types of connectors so that the user doesn't have to reach for a soldering iron or search for just the "right cable" when trying to interface with the amp.

We liked the idea of the input transformer option via the prewired sockets. We wonder, however, why these sockets had to be placed inside the unit, necessitating removal of the amplifier's top cover for access. Other pro amps we have seen that contain plug-in transformers usually have these sockets mounted on the rear panel so that no disassembly at all is needed to use them. We also would prefer that the mono switch be located on the rear of the machine so that one does not have to remove the bottom cover in order to get at it.

The front-panel input level controls are precision-calibrated in dB and they had a good feel when handled. But—what struck us as a bit amateurish in execution was the LED metering displays on the front panel. Configured to resemble a pair of VU meter faces, the curved arcs of green LEDs illuminate at varying intensities, making it difficult to determine precisely what the "meter" is trying to read.

In their cover letter to us, explaining the design philosophy of the V800, HH Electronic Inc. (U.S. distributor of the HH products) encouraged us to "short the amplifier at full power for as long as you like." We did just that, and—as we expected—the V800 came through with no strain. All that happened is that after a time the amplifier got warm enough to activate its thermal protection and disconnect the load. That degree of total reliability must be equated with what may, at first glance, seem like a high price for an amplifier. We would think, however, that where quality and dependability are absolutely essential, it may be that "no price is too great," and the cost of the V800 amplifier seems very much in line.

HH V800 POWER AMPLIFIER: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Continuous power for rated THD		
(less than 0.03%), 8 ohms, 1 kHz	250 watts	265.6 watts
4 ohms, 8 kHz	390 watts	398 watts
FTC rated power (20 Hz to 20 kHz)	250 watts	253 watts
THD at rated output		
1 kHz, 8 ohms	less than 0.02%	0.0065%
1 kHz, 4 ohms	less than 0.02%	0.019%
20 Hz, 8 ohms	less than 0.03%	0.018%
20 kHz, 8 ohms	less than 0.03%	0.03%
IM distortion, rated output		
SMPTE	less than 0.03%	0.019%
CCIF	NA	0.011%
IHF	NA	0.12%
Frequency response at 1 watt		
for −1 dB	10 Hz to 50 kHz	8 Hz to 35 kHz
S/N ratio re 1 watt, "A" wtd, IHF	NA	90 dB
S/N ratio re rated output, "A" wtd	100 dB	106 dB
Dynamic headroom, IHF	NA	0.63 dB
Damping factor at 50 Hz	300	Confirmed
IHF input sensitivity	NA	52 mV
Input sensitivity re rated output	0.775 V	0.820 V
Power consumption, idling/maximum	NA/NA	120/1100 watts

dbx 228 Noise Reduction System & Expander

General Description: The model 228 by dbx combines a dynamic range expander, a Type II simultaneous encode/decode noise-reduction system, and a dbx disc decoder in one compact and effective unit. Patched into a sound system, the device may be used for both recording and playback. Front panel controls provide adjustments for the amount of expansion as well as for the relative gain of the expander, while switching facilitates "to" and "from" processing, monitoring and dubbing.

The total roster of uses for the model 228 includes recording one's own dbx-encoded tape; playback of a dbx-encoded tape or commercially recorded dbx cassette; recording a non-encoded tape; playback of such a tape; playback and expansion of a dbx-encoded tape; playback and expansion of a non-encoded tape; expanding a conventional disc, recording, broadcast or any signal from a preamplifier; playing a dbx-encoded disc. Non-encoded tapes which have been Dolbyized require Dolby decoding as usual, but the 228's own dynamic-range expansion can be applied to further reduce noise and improve dynamics. Additional expansion (beyond dbx decoding) is not recommended for playing dbx cassettes or discs.

The unit's power off/on switch and accompanying LED are at the extreme left of the front panel. Next comes the expansion control, a horizontal slider marked in numbers from 1.0 to 1.5, the latter indicating maximum expansion, or a 50 percent increase in program dynamics. The "1.0" setting, which provides no expansion, can be used as a bypass for the expander section. The percentages of expansion are printed under the slider, corresponding to the 1.0, etc. numbers.

The transition level control, which determines the expander's unity-gain point, is another slider to the right. Above unity gain level, incoming signals are expanded upward (increased gain); below unity gain level, signals are "expanded downward" (decreased gain). Centered between the two sliders is a row of twelve LEDs—six colored amber and six orange—which indicate, respectively, downward and upward expansion as selected on the transition level slider. Below the LEDs are two buttons—one marked "source" selects signals from the preamp for expansion; the other marked "tape" selects signals from a tape recorder connected to the model 224.

The noise-reduction controls include tape selector and bypass buttons with green and red LEDs, respectively. The former button is used for making or playing a tape with dbx encoding. The second button here bypasses the dbx Type II circuitry (no encoding or decoding is applied). A final button selects the decoding for playback of a dbx disc.

The rear of the device, in addition to pin-jack connectors for input and output signals, has three screwdriver level adjustments for tape record and play and for disc play. These adjustments are used for balancing the levels between dbx-encoded material and conventional program sources.

The model 228 is supplied in a black metal case which, with its four "feet," may be installed wherever desired. Alternately, brackets may be fitted at both ends for standard (19-inch) rack-mounting.

Test Results: The dbx 228 performed excellently in all of its intended functions. Separate tests were run of the unit's noise-reduction section and of its expander section. Except for the very low end of the latter which did not quite extend down to 20 Hz for the −1.0 dB response point, all published specs were met or exceeded in *MR&M*'s tests.

Fig. 1 shows a plot of frequency response through the noise-reduction section. For this display, and also in *Fig. 2*, we have expanded the vertical scale to 2 dB per division. Both figures are identical except that for *Fig. 2* we referenced the curve to "0 dB" at the 1-kHz frequency, and moved the dotted line cursor over to read the attenuation at 40 Hz (−0.9 dB) relative to the mid-frequency reference.

The action of the model 228's noise-reduction companding system is best illustrated in *Figs. 3* and *4*. In *Fig. 3* a reading and analysis of tape noise was made with the aid of our Sound Technology model 1500A Tape Tester. The upper trace shows third-octave levels of noise across the audio spectrum (20 Hz to 20 kHz) using a CCIR-ARM weighting curve. The overall noise level—with respect to "0 dB" on the tape deck's meter—was 52.5 dB. This is shown above the display for the "R" channel. The third-octave noise contribution around 1 kHz was −72.7 dB, which is shown after "R" below the display.

With the dbx system introduced into the loop, the measurements change very much for the better, as shown by the lower curve of noise distribution. The new readings, designated as "L", show that overall noise has dropped to 85.5 dB below reference, while noise in the

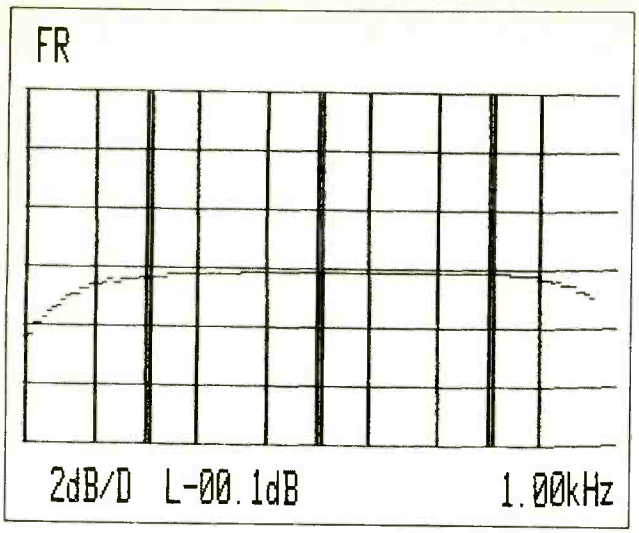

Fig. 1: dbx 228: Overall frequency response of the unit through complete noise reduction encode/decode loop. *Note:* expanded vertical scale is 2 dB per division. Sweep is from 20 Hz to 40 kHz.

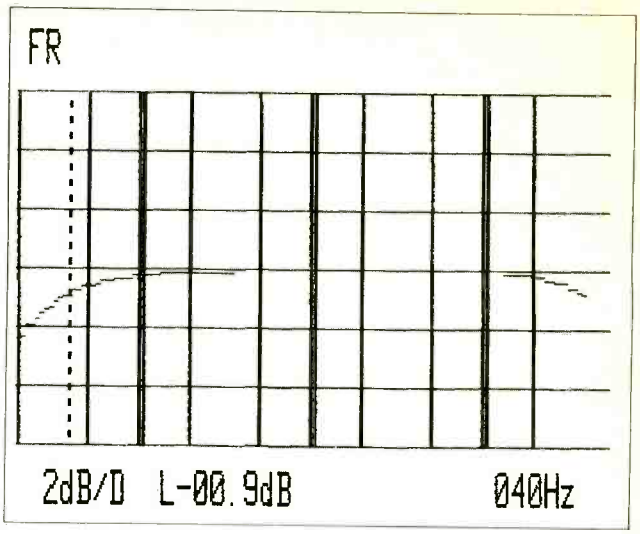

Fig. 2: dbx 228: Same as *Figure 1*, except cursor has been positioned to read response relative to 0 dB at 1 kHz.

1-kHz third-octave has dropped to −108 dB. Our plot thus shows an obvious improvement, but it doesn't take into account the fact that using the dbx system also increases the available recording headroom by about 10 dB. Thus, the overall improvement in available dynamic range comes to something like 43 dB.

Another way of studying the noise-reduction capability of the model 228 is shown in *Fig. 4*. Here we used our spectrum analyzer to sweep from 20 Hz to 20 kHz, with no weighting applied. The upper curve is the noise-versus-frequency plot with no noise reduction. The lower curve shows the same plot with dbx companding turned on. Note that noise reduction occurs for all audio frequencies, unlike the familiar noise curves produced by sliding-band systems such as Dolby, in which the two curves overlap at the low frequency end but become separated as the sweep reaches higher frequencies.

Figures 5 and *6* show tests of the 228's expander section. The frequency response curve is shown in *Fig. 5*, while the expanding action is depicted in *Fig. 6*. In examining *Fig. 6*, disregard all frequency notations at the top of the screen. The analyzer has been set to respond only to one frequency, in this instance 1 kHz. Vertical sensitivity remains 10 dB per division.

First we allowed the sweep to move slowly from left to right and, with the expansion control set to 1.0 (no expansion), we plotted 10-dB increases and decreases in input level over a span of 50 dB. The lower "staircase" pattern on the screen represents this unexpanded varying-amplitude input signal.

We then moved the expansion control to its maximum value of 1.5 and repeated the 10-dB increases at the input. The "higher staircase" represents the resultant expanded output signal. In this case, the 228's transition level control was set so that mostly downward expansion took place. Thus, the uppermost step in the display still represents about 10 dB of amplitude change, but as we go to lower-level signals the "steps" approach 15 dB in amplitude (1.5 x 10 dB = 15 dB). Note that attack time is extremely fast, whereas decay time has been set to a slower value. This combination, we found in our listening tests, provides a minimum amount of audible pumping or breathing, even when the expander is used at or near its full 1.5 ratio.

General Info: Dimensions are 17 15/16 inches wide; 1 3/4 inches high; 7 1/2 inches deep. Weight: 5.6 lbs. Standard rack-mount brackets are supplied with unit. Wood sides available as option. Price: $499.

Individual Comment by L.F.: I suspect that by now most everyone interested in recording is familiar with dbx, Inc.'s approach to wideband, linear companding for noise reduction and dynamic range expansion. Applied first to professional equipment and later in modified form to home tape recording, the 2:1/1:2 companding approach most recently has been used for a series of dbx-encoded disc recordings and some commercially recorded cassettes. Unlike sliding-band noise-reduction systems which operate primarily to reduce high-frequency tape hiss, the dbx system operates over the entire audio-frequency range and—depending on how you measure it—the system reduces tape noise by anywhere from 30 dB to as much as 45 dB, as opposed to the 20 dB now afforded by the most popular of the sliding-band noise-reduction systems.

Dbx also is noted for its single-ended dynamic range expanders. Designed to operate with unencoded program sources, these units provide downward expansion and upward expansion respectively of soft and loud musical passages. Since most of us own a good deal of commercially recorded music that can benefit from such single-sided expansion, those who wanted both dbx companding and dbx expansion circuitry had to buy and stack two separate units—until recently. Now, the dbx model

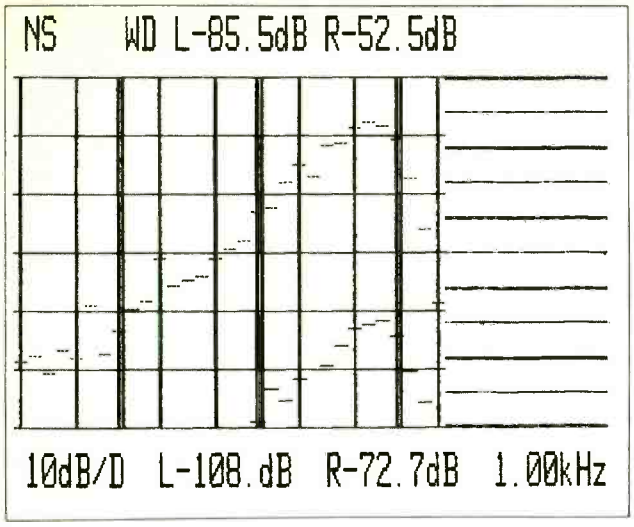

Fig. 3: dbx 228: Upper trace shows noise distribution on cassette tape and overall S/N reading of 52.5 dB with no noise reduction. With noise reduction of the 228 activated, lower trace shows same tape yielded S/N of 85.5 dB (CCIR-ARM weighted).

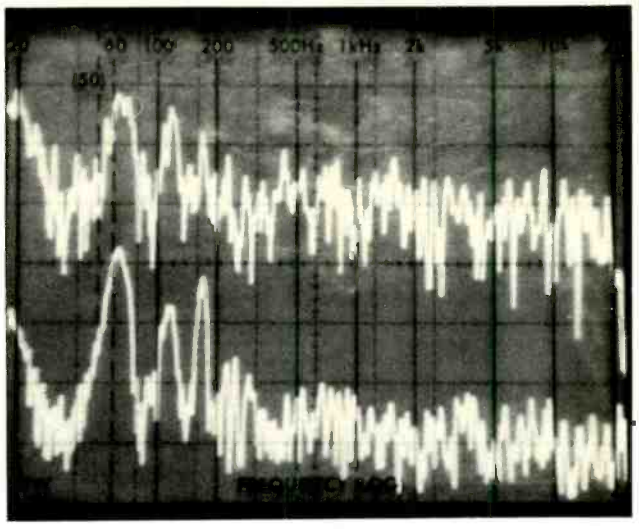

Fig. 4: dbx 228: Unweighted spectrum analysis of tape noise (20 Hz to 20 kHz) without any noise reduction (upper trace) and with companding system of the 228 (lower trace).

228 combines both circuits in a single, slim rack-mountable unit. This device, we discovered, is suitable for use with 2-head recorders and it also provides full monitoring capability for use with 3-head recorders. Since the companding EQ which dbx has standardized for tape application differs slightly from that used in dbx-disc decoding, the model 228 also incorporates a disc-decode position for owners of dbx-encoded discs (of which there are now well over one hundred available).

I have always been a fan of the dbx companding system and have used it extensively for critical cassette tape recordings that I have made in the past. I also own a good number of dbx-encoded discs which, to me, represent the closest things to digital discs of the future. I know that there are those who bemoan the fact that dbx encoded discs and tapes can sometimes produce a slight breathing or pumping effect during certain very specific kinds of musical moments. My own view has always been that it's a matter of trade-offs. I'd rather listen to music with up to 90 or 100 dB of dynamic range, and absolutely no audible background noise with an occasional side effect such as the fleeting moment of noise-breathing, than to compressed music accompanied by ever-present surface noise or tape hiss.

My greatest surprise came when I used the expander section for unencoded program playback. Here too there was not only a significant increase in dynamic range, but—because of the downward expansion characteristics of the expander circuit—the background noise present in the source material (whether tape hiss or disc surface noise) was also very much reduced, though not quite to total inaudibility. One word of caution: While level matching for the noise-reduction companding system is totally non-critical, the same cannot be said of the expander circuit. Here, the effectiveness of the expander will depend largely on how carefully you set the transition level control, and how judiciously you adjust the expansion ratio. Do not overuse this expander (there is a tendency to go for maximum every time, and that should be avoided), and you'll be amazed at how effectively it can work.

Individual Comment by N.E.: The dbx 228 offers three basic audio benefits. It can be used to recover a significant amount of dynamic range in existing "conventional" program material, 30 to 40 dB apparently, that has been previously squelched—vis-a-vis the "live" performance—in order to have fitted that performance, by signal compression, within the confines of a given format—between the noise floor and the saturation ceiling of tape, disc or broadcast. In "lowering the floor" or "raising the ceiling," dbx is not adding anything "spurious" to the material. Rather it is restoring a signal element (dynamic range) that is germane to natural sound and its high-quality reproduction.

The 228 also can be used to make new tape recordings, via its own encoding capability, that contain on the order of 40 dB or more dynamic range than would otherwise be taken down by a recorder. The encoding is, of course, a form of signal compression; on playback the "decoding" process expands that signal in complementary or reciprocal manner. The result is that you get the full original dynamic range and a significant reduction in system or format noise.

Finally, the 228 contains the circuitry for decoded playback of a dbx-encoded tape or a commercially recorded "dbx cassette" or a dbx disc.

In other words, with the model 228, dbx has got it all together in one compact, even stylish, unit. And it is very easy to like this model 228. For one thing, it's a product whose measured test results correlate very closely with what you hear. Often, we measure products and get impressive test data that bespeak classy engineering but

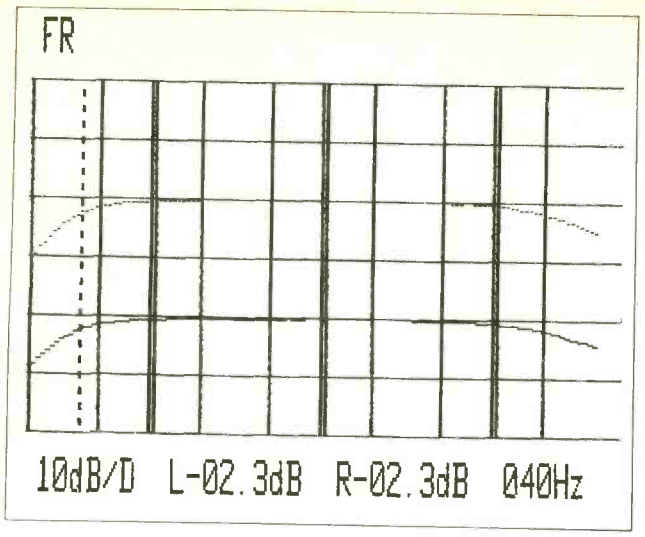

Fig. 5: dbx 228: Frequency response at two different settings of transition level control, expander section only. Sweep is from 20 Hz to 40 kHz.

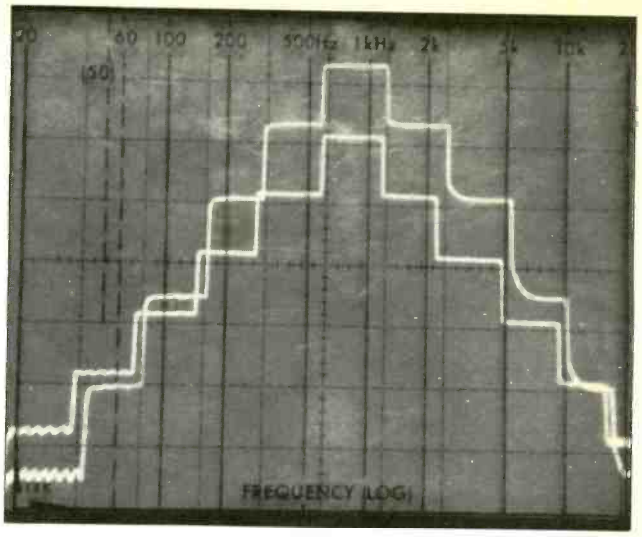

Fig. 6: dbx 228: "Inner," or lower, staircase represents input signal to expander section, increasing and decreasing in 10 dB steps. "Outer," or upper, staircase shows expanded output levels with expansion control set to maximum (1.5).

which make less of an impact in audible terms when put to actual use. With the dbx 228, the measurements—while excellent in any case—do not begin to tell the story. It's the "living sound" (to use an overused phrase, but one which really applies) that confirms the merits of the dbx approach and this unit.

The 228 also gets my high points for its human engineering. The layout of controls and their handling are obviously designed to make it easy, not difficult, to use the product. Of course, you have to learn to master the slider adjustments to to get the right amount of expansion, and this may vary from one source to another. For that matter, the audible effect will vary too, depending on relative signal levels and how much compression was used in the first place. But even when the effect is subtle, it can enhance the life-like quality of source material. Apropros of this, the better all your other sound equipment is, the greater the likelihood of your ability to perceive and appreciate what the 228 is doing.

As with so many other products these days, the dbx 228 once again raises the question: Is it pro equipment or is it home audiophile equipment? If you look at the rear, you note that the connectors are pin-jacks rather than being 1/4-inch jacks or XLR connectors. And if you are familiar with dbx products you know that their Type II units (such as this 228) are not compatible with their Type I units (which are designated as professional equipment) due to circuit differences that relate to the higher tape speeds and wider tapes used in professional open-reel "live" recording. What that means, actually, is that you would not get optimum benefit from the 228 if you were recording half-track at 15 ips or faster. For such recording, you would logically use dbx Type I noise-reduction equipment (as if you didn't already know that). If, however, you are recording quarter-track open-reel up to 7 1/2 ips, or cassette, the model 228 is eminently applicable. In terms of end results with such recording, or with playback of any source for any purpose, the term "professional" or at least "professional-grade" surely applies to the model 228.

dbx 228 NOISE REDUCTION SYSTEM & EXPANDER: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Expansion ratio	1.0 to 1.5	Confirmed
Effective noise reduction	40 dB	43 dB (33 dB + 10 dB headroom)
Dynamic range	100 dB (peak signal to wtd noise)	105 dB
Input impedance	50 k ohms	Confirmed
Input level (nominal; maximum)	300 mV; 7 V RMS	Confirmed
Output impedance	170 ohms	Confirmed
Frequency response; expander	±1.0 dB, 20 Hz to 20 kHz	±1 dB, 40 Hz to 20 kHz
Frequency response, tape NR	±0.5 dB, 40 Hz to 20 kHz	±0.5 dB, 40 Hz to 20 kHz
Equivalent input noise	−85 dBV (re 1 V, unwtd) − 87 dB	
THD, expander section	0.1% @ 1.0 expansion, 20 Hz to 20 kHz	0.07% @ 20 kHz
THD, NR section	less than 0.1%, 100 Hz to 20 kHz	0.1% @ 20 kHz
IM distortion (SMPTE)	less than 0.2%	0.06%
Power consumption	10 watts	13 watts

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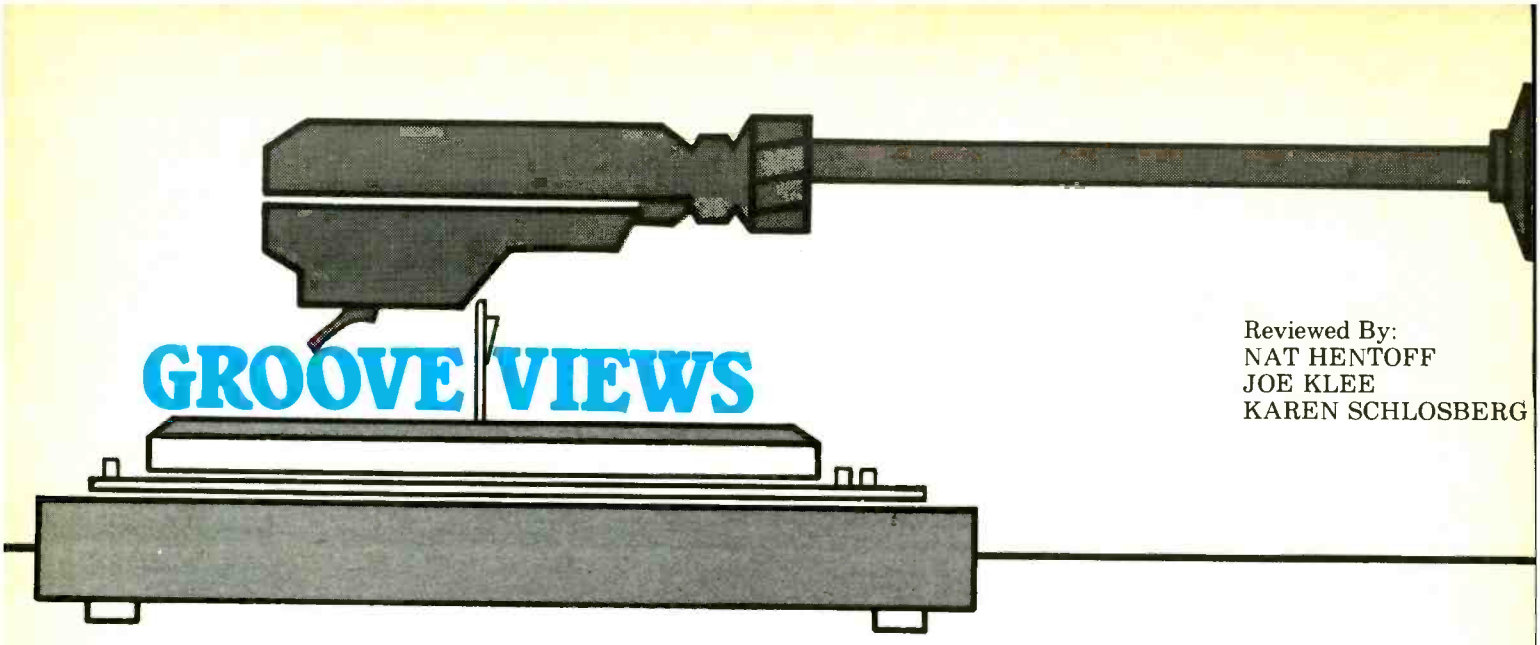

GROOVE VIEWS

Reviewed By:
NAT HENTOFF
JOE KLEE
KAREN SCHLOSBERG

POPULAR

GRAHAM PARKER: *Another Grey Area.* [Jack Douglas and Graham Parker, producers; Lee De Carlo, engineer; recorded at the Record Plant, New York, N.Y.] Arista AL 9589.

Performance: **Parker: tough, gutsy, moving**
Band: competent but faceless and lacking any punch
Recording: **Professional but dull**

Another Grey Area would be a major improvement over 1980's *The Up Escalator* if Graham Parker had had backing musicians as good as his old cohorts, The Rumour. *Another Grey Area*'s lyrics hit hard, Parker's singing is powerful, yet he sounds like he's single-handedly trying to pull the band up to his emotional level. Unfortunately, they don't rise to his challenge, and throughout the album remain only session men, technically excellent but creatively unimpressive. Their session slickness is the antithesis of Parker's raw, emotion-filled lyrics; the title *Another Grey Area* could be a visual description of the band's playing.

That may sound harsh, but Parker has set very high standards for himself with past albums like 1979's classic *Squeezing Out Sparks* and 1976's *Heat Treatment*. And even on *The Up Escalator*, The Rumour's sympathetic playing and Jimmy Iovine's production made it sound better than it was; conversely, the lifeless production and performance make *Another Grey Area* sound worse than it is. Only Parker saves it.

The key word is tension. Parker always sounds tense, as if he's on the edge of some great emotional abyss, whether it's one of love, despair or rage. The band, on the other hand, sounds relaxed, as if they're a little amused by this small, wiry Brit who's pouring his guts out. That's not the best way to illustrate Parker's songs. He's Americanized his sound too much, and that's a waste of his time and talent.

"Sometimes I act as though the world owes me a favor/Sometimes bitterness has been my only flavor..." sings Parker in "It's All Worth Nothing Alone," which could be referring to his reputation as being one of New Wave's new wave of "angry young men." Most of *Another*...'s songs can be interpreted either as reactions to the music business or reactions to love: "I'm not crying for attention/I'm screaming to be heard/Everybody's listening but you—what's the matter...Sometimes everybody has to be the center of attraction/But I never expect any satisfaction..."—"Crying For Attention."

Graham: After the Rumours have gone.

Parker's lyrics haven't been as sharp, as textured, since *Squeezing Out Sparks*. His phrasing is wonderful, whether he's coaxing in "Can't Waste A Minute," soothing in "Fear Not," sneering in "Big Fat Zero," or singing straightforwardly, with warmth and sympathy in "Temporary Beauty," the prettiest song on the album.

Ultimately the album is successful, by sheer dint of Parker's force. But he needs a band with rough edges to match the rough edges in his voice and in his lyrics (and he *doesn't* need pseudo-soulful girl back-up singers; "Another Grey Area," "You Hit The Spot" and "Fear Not" would've been much better off without them). Hopefully next time he'll find them. K.S.

HAIRCUT ONE HUNDRED: *Pelican West.* [Bob Sargeant, producer; Mark Dearnley, engineer; recorded at the Roundhouse Studios, London, England.] Arista AL 6600.

Performance: **Bright, bubbly, infectious**
Recording: **Crisp, clean and full, like a spring day**

Pelican West has got to be one of the silliest albums ever recorded. It's also

nearly irresistible, with more snap, crackle and pop than a carton full of Rice Krispies. And for a debut album it's unusually confident, with few of the identity problems that commonly affect new bands.

Haircut One Hundred are six energetic young lads from England whose brightest ambition, it's been said, is to be the next Monkees. Well, if the Monkees were starting today, chances are they'd also come up with Haircut's effervescent mixture of melodic pop, funk and Latin rhythms with just an occasional jazzy overtone. One English reviewer said that songwriter/vocalist Nick Heyward has the potential to become the McCartney of the Eighties, which is a double-edged remark, for while Heyward does write engagingly catchy tunes, he also has McCartney's penchant for irritatingly fatuous lyrics (see "Lemon Firebrigade" and "Kingsize").

Besides the lyrical flaws, the one instrumental flaw is a tendency towards a sameness in the funk-oriented songs, that had me wondering if perhaps *Pelican West* wouldn't have been tighter as an EP. The same shuffling guitar introduction appears three songs in a row on the first side—"Favourite Shirts (Boy Meets Girl)," "Lemon Firebrigade" and "Marine Boy"—which makes it hard to tell them apart (the English LP has "Favourite Shirts" as the opening song, putting the poppy "Love Plus One" second, which manages to break up that Latin-tinged triumvirate).

But Haircut's enthusiasm is so contagious that the album's drawbacks pale in comparison to the overall sound and feel of it, which is just plain joyous. Producer Bob Sargeant (the English Beat) has given each instrument space and clarity, with particularly crisp percussion, especially in "Lemon Firebrigade," "Kingsize" and "Baked Bean," which sounds delicious.

Haircut are arguably more successful in their pop songs, which could earn them a place in the long line of clever quirky English popsters, from the Beatles to XTC (whom Haircut at times sound very much like). "Love Plus One" (with its "Yellow Submarine"-like recorded voice) and "Fantastic Day" are both delightful, near-perfect pop songs with hooks that only the tone deaf could fail to be caught by. "Snow Girl" and "Surprise Me Again" (which *does* sound like a Monkees' song) run close seconds.

All the adjectives having been used up, there's only one thing left to do—put *Pelican West* on the turntable again, and again, and again... K.S.

JAZZ

JOE NEWMAN: ***In a Mellow Mood.*** [Bernard Brightman, producer; Charles Leighton, engineer; recorded in New York, N.Y., 1962.] Stash ST 219.

Performance: **Another side of Joe Newman**
Recording: **A little boxy, but par for the course in '62**

Just when you think you know what Joe Newman can do he turns around and shows you yet another facet of his talent. This isn't to say that Joe is going to be ranked up there with Armstrong and Beiderbecke and Roy Eldridge as a primal giant, but then that's a pretty rarified atmosphere up there. Joe Newman is a good, serviceable jazz musician who may not scale the heights of inspiration every time you hear him but who will never let you down either. He's always going to be at the very least an enjoyable musician to hear but some-

times—like this session in 1962—he will play with such inspiration and coming from such heretofore unknown parts of his background that he will be nudging the giants, if not actually joining them. This record shows a subtle humorous style such as one would normally associate with the playing of Rex Stewart or Clark Terry, but which represents a side of Joe Newman I'd never heard before.

It starts with a jaunty version of Frank Loesser's "The Lady's In Love With You," one of the better pop tunes of 1939. Joe Newman turns on something of the same half-valve technique that made Rex Stewart a household name (I never knew Joe could do that) and it works marvelously. There's a hip version of the Jimmie Davis hillbilly classic, "You Are My Sunshine," that makes the tune a swinger, rather than simply treating it as camp comedy the way so many jazz men tend to do with country music.

Joe Newman's not the whole story, though. This record furnishes an early listen to pianist Ross Tompkins, who a few years hence was to become very big on the New York City sideman scene. Bassist Russel George and drummer Roy Lundberg really do give more than adequate rhythmic support. It's all quite well recorded by Charles Leighton in a day before it was considered desirable to give a big airy expansive sound to a recording. If it happens to sounds a bit constricted, then that's because that was the style in those days.

There are also a couple of originals by pianist/educator/bandleader Billy Taylor. While I don't think that Duke Ellington or Fats Waller have reason to worry about their position as jazz composers being challenged, both "A Grand Night For Swinging" and "Capricious" are engaging tunes and Joe manages to imbue them with the same high spirits and good humor that he also does with the standards.

So now we know that in addition to his straight-ahead-Basie-swing-style and his Louis-Armstrong-imitations (and few come closer to the mark than fellow New Orleansian-Newman in mimicking Pops) Joe Newman can play the lively, light-hearted, fun type jazz and sound just as good as Rex and Clark at it. Some day maybe I'll even stop being amazed at the different things Joe Newman can do with his horn. On the other hand I hope that day doesn't come, because when it does I may just start taking Joe Newman for granted. J.K.

DONALD ASHWANDER: ***Particular People.*** [Producer not listed; Carl Seltzer, engineer (N.Y.) and Tom Gondoff, engineer (Texas); recorded at Seltzer Sound, New York, N.Y. and Goodnight Audio, Dallas, Texas.] Upstairs UPST 3.

Performance: **Fine vignettes of particular people, well-written, well-played, well-sung**
Recording: **New York's better than Dallas**

Who is Donald Ashwander? That's not an easy question. He's a composer and player of ragtime piano music. He's a theatre composer who is currently working with, for or around The Paper Bag Players in New York. He seems to have more than a nodding acquaintance with quote classics unquote. He has composed thirteen selections included in this album, some to his own texts, some to texts of other poets. They are all played by Donald Ashwander. All but one are sung by his niece Sharon Moore. Sharon Moore is easier to categorize than Donald Ashwander: her rock roots show through although there are influences of jazz and concert music and theatre included. Had Janis Joplin been more aware of the likes of Lotte Lenya, Joan Morris, and Edith Piaf this could well have been what she would have sounded like. The basic voice, like the basic skills, are, however, immediately identifiable as Texas-blues-rock. Donald Ashwander does not fit as comfortably into a pigeon hole as Ms. Moore does. There are selections here that I would say come out of the Kurt Weil syndrome, although Ashwander's lyrics lack the acid tartness of Weil's constant companion Bertold Brecht. There are other moments when his Schubertian mode seems to come to the fore.

Judging these pieces either as theatre music or as lieder they are still variable. Some ("Betty the Belle of Baytown," "Peggy the Pearl of Pensacola" and "Chili Billy," for example), are character sketches of the sort of Southern United States inhabitants that one encounters in the plays of Tennessee Williams. At least three, in the best sense of the Schubert lied or the Weil cabaret song, tell a story. These three, which I do not hesitate to recommend highly, are "Turkey and Myrtle, Rilla and Paul," "V Bar" and Ashwander's setting of Eugene Walter's "The Locust." The rest of the pieces fall somewhere between the impressionism of "The Sinatra Line" and the external descrip-

In general, spring reverbs don't have the best reputation in the world. Their bassy "twang" is only a rough approximation of natural room acoustics. That's a pity because it means that many people will dismiss this exceptional product as "just another spring reverb". And it's not. In this extraordinary design Craig Anderton uses double springs, but much more importantly "hot rod's" the transducers so that the muddy sound typical of most springs is replaced with the bright clarity associated with expensive studio plate systems.

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THE MELODY NEVER DIES: EDDIE JOHNSON AND ART FARMER

By Nat Hentoff

There isn't a city in the country that doesn't have a number of vintage jazz musicians who are almost unknown outside that area but who still have a lot to say. Some left full-time music early in order to support a family. Others, for various reasons, missed the big chance—maybe turning down an offer from Duke or Basie. And most have never had an album under their own name.

Take tenor saxophonist Eddie Johnson of Chicago. As a young man, he worked with Cootie Williams and Louis Jordan, but then he went into the civil service, setting aside his music for nights and weekends. Now, at 60, Johnson is greatly enjoying a musical rebirth—plenty of gigs and his first album, *Indian Summer* on the classy Chicago label, Nessa. Unlike the still ignored Eddie Johnsons all over the country, this one has come out of limbo—with a big, warm sound and deep swing. Though he's in the fused tradition of Coleman Hawkins and Ben Webster, with a touch of Lester Young, Eddie Johnson is his own man. A lyrical, relaxed, authoritative improviser, Johnson's particular strength is his melodic imagination.

His colleagues on the session are Paul Serrano, an incisive trumpeter, and a marvelously *together* rhythm section of pianist John Young, bassist Eddie de Haas, and drummer George Hughes. The recorded sound is just right—clear, spacious, with plenty of presence for all.

Another distinctive melodist, Art Farmer, came up later than Eddie Johnson and has never left the jazz life for a day job. Still, because he has insisted on remaining a melodist rather than a fleet chord-running virtuoso or an avant-gardist veering far away from the melody, Farmer is not as renowned these years as he actually ought to be.

Nonetheless, Art keeps probing and growing, and his newest set, *A Work of Art* (Concord) is one of the most wholly rewarding of his career. His rhythm section for the date is exceptionally crisp and enlivening—pianist Fred Hersch, bassist Bob Bodley, and drummer Billy Hart. But it is Farmer who dominates the proceedings on fluegelhorn. Like Eddie Johnson, his sound is warm and clear. His ideas are continually lucid, cohesive, and depend on a judicious choice of notes to make their flowing points. Neither Farmer nor Johnson, in sum, waste notes.

As musician-critic Stanley Crouch observes in the liner notes, "Unlike so many younger players, Farmer can make a complete statement with astonishing brevity." Also, Art, as Crouch emphasizes, "has developed a sound so human one often forgets his intrument is made of brass rather than a warmer material like wood." Like Eddie Johnson, Farmer has a wide and intriguing repertory—from jazz originals to pop standards.

The sound, as one has come to expect from Concord, is superbly balanced with an exciting—but not hyped-up—sense of immediacy.

EDDIE JOHNSON: ***Indian Summer.*** [Chuck Nessa, producer; F. Denby Allen, engineer.] Nessa N-22.

ART FARMER: ***A Work of Art.*** [Carl Jefferson, producer; Phil Edwards, engineer.] Concord Jazz CJ-179.

tion of "Chili Billy." "Thelma" is easily the best of the character studies. It gives the impression of being an unfinished piece just as Thelma's life goes on and on from dancehall and dancehall and trucker to trucker.

The recording was split between Seltzer Sound in New York and Goodnight Audio in Dallas. That's a dangerous way to do a record where there's only piano and voice—particularly when you have an engineer like Carl Seltzer involved. Carl is dedicated to the principle that to use more than two tracks when you don't need more than two tracks is a waste. Consequently the sides at Seltzer Sound come out very natural, very easy and uncluttered with effects (save the necessity of overdubbing the second voice in "Pedro At Baseball"). Goodnight Audio seems to be a studio with a more complex capability. The sound on the one side that I've been able to trace to the Dallas session, "Turkey and Myrtle, Rilla and Paul" is more typical of the state of the art of close piano miking as it exists in 1981.

The liner notes are by Rudi Blesh to whom I owe so much of my musical education. His "This Is Jazz" show brought me the sounds of Muggsy Spanier, Sidney Bechet and James P. Johnson over the Mutual Radio Network when I was in my formative listening years. It is good to see his intelligence on a liner cover rather than the usual press hype.

I wish I could say that everything in this album impressed me as much as the best of it did but then I've sat through the entirety of a Kurt Weil Opera and heard no greater number of good tunes, if that many. J.K.

CLASSICAL

RACHMANINOFF: *Piano Concerto No. 2 in C Minor; Rhapsody on a Theme of Paganini.* Gary Graffman, piano; The New York Philharmonic Orchestra, Leonard Bernstein, cond. [John McClure, producer; no additional recording data given.] CBS Great Performances 36722.

MENDELSSOHN: *Concerto in E Minor for Violin and Orchestra.* TCHAIKOVSKY: *Concerto in D Minor for Violin and Orchestra.* Isaac Stern, violin; The Philadelphia Orchestra, Eugene Ormandy,

cond. [Howard Scott, producer; no additional recording data given.] CBS Great Performances 36724.

Performances: **Great, indeed**
Recordings: **Dated but serviceable**

These two recordings are representative of the new CBS Great Performances series. These are reissues but not in the sense of, say, the preservation of historic 78 rpm discs by transferring them to LP, but in the sense of a budget label used as a catch-all for LP era recordings which have been replaced by newer versions in the CBS catalog.

The liner proclaims "Once-in-a-Lifetime-Performances" which I would certainly have to agree with. The liner notes also proclaim "Hand-picked by Experts"—okay, so I'll take their word for it. The liner notes also proclaim "Basic Repertory Favorites" which is certainly true. The liner notes proclaim "New Improved Sound" which, lacking the earlier LP versions for comparison, I can't vouch for, but it's ludicrous to talk about 1960's stereo being "new improved sound" in this day of digital and direct-to-disc. The sound's not bad even though the surfaces are a bit noisy compared to today's CBS digitals. The liner notes also say that "Great Performances Are A Great Buy." They certainly won't get an argument from me there. When a budget label gives its customers names like Stern, Graffman, Ormandy, Bernstein, the New York Philharmonic and the Philadelphia Orchestra they are giving their customers their money's worth and more.

Let's take the Stern recording for example. Isaac Stern has re-recorded the Tchaikovsky with Rostropovich and the National Symphony Orchestra. He has not yet re-recorded the Mendelssohn to my knowledge but it's probably planned for the near future. That's what happens when a violinist's career outlasts the repertory. He's got to do it again. Maybe this time with Zubin Mehta and the New York Philharmonic (their remake of the Brahms concerto was certainly successful enough). So here is vintage Stern at bargain prices. And with Ormandy, in his halcyon years too.

A reissue like this is even more important in the case of Gary Graffman. He hasn't re-recorded either of these works. Gary Graffman is either in retirement or semi-retirement. So the only way anyone is going to hear Gary Graffman play the Rachmaninoff Second or the Variations is on this vintage LP.

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