

Profile:
Rick Derringer

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MODERN RECORDING

SERVING TODAY'S MUSIC / RECORDING- CONSCIOUS SOCIETY

VOL. 5 NO. 6
MARCH 1980

A Session with **Al DiMeola**

**THE ELECTRIC
PRIMER
—Part V**

LAB REPORTS:

Nikko Alpha VI
Power Amplifier
TEAC X10-R Open-Reel
Tape Deck
Toshiba PCM Mk II Digital
Recording Processor

HANDS-ON REPORT:

Master Room XL-305
Reverberation System

**NEW PRODUCTS
RECORD REVIEWS**



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152 BALTIC ST
BRCKRLYN

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Expression through time delay.

Time delay has become increasingly important to musicians and engineers as a way to color musical sounds and create spatial illusions. MXR's Flanger/Doubler and Digital Delay have proven to be effective tools for the musically creative professional who requires a wide range of performance possibilities from a precise and cost effective time delay unit.

Both the MXR Flanger/Doubler and Digital Delay offer a flexible system of controls which provide ultimate freedom for creative expression. They feature frequency sweep and width controls, a mix control (between the dry and the delayed signals), a regeneration control for additional intensity and multiple repeats on doubling and echoes, and a delay bypass jack which enables the user to employ a footswitch to bypass the unit entirely for instantaneous cut-offs of time delay effects. Both units represent an expandable system, and can be easily ganged together or interfaced with other instruments and recording gear.

The MXR Flanger/Doubler provides a manual control over delay time, and rear panel connections offering full remote delay time adjustments and a VCA output suitable for stereo ganging of two units. The MXR Flanger/Doubler can switch easily between flanging and doubling modes, and two LED indicators are provided for easy visual monitoring of sweep speed and range.

The Flanger/Doubler is capable of producing infinite varieties of flanging, hard reverberation, vibrato, and numerous doubling effects including subtle chorus sounds. It offers a time delay range of .25 to 5 milliseconds in the flanging mode and 17.5 to 70 milliseconds in the doubling mode.

The MXR Digital Delay offers a continuous range of delay times from .08 to 320 milliseconds. This range of delay times is expandable with three optional memory cards, in 320 millisecond increments to 1280 milliseconds, with full bandwidth (20Hz to 20kHz) capability to 160 milliseconds. The Digital Delay features push button controls for varying delay ranges. A level control regulates the input signal to prevent overloading of the unit's circuitry, and LEDs monitor the input level and indicate whether the effect is in or out.

At fixed delay times the Digital Delay is perfectly suited for "traditional" delay applications such as "slap echo," discrete echoes, and synchronization of speakers in PA applications. By adjusting sweep frequency, mix, regeneration, and level controls, the Digital Delay offers additional effects which include doubling flanging, pitch alteration (vibrato, pitch bending), frequency modulating, and infinite (non-deteriorating) repeat hold.

The MXR Flanger/Doubler and Digital Delay are designed for use in the studio and on stage, with line or instrument levels. They're reliable, delivering a clean signal consistently, with a dynamic range exceeding 80 dB. And as with all MXR Pro Group products, optional road cases are available. For the serious artist, the MXR Flanger/Doubler and Digital Delay are the versatile tools which provide the key that will unlock his creative musical imagination.

MXR Innovations, Inc., 247 N. Goodman Street,
Rochester, New York 14607, (716) 442-5320





Studiomaster is Expanding

We have never been ones to sit around and watch others progress. Instead, we prefer to be the leaders. And in our field, that is how many regard us. So we apply our energy to expansion . . . growth in every phase of the development of our products.

Our mixers are expandable. *Studiomaster* was first with the add-on module concept in affordable professional grade mixers. Whether you elect our 12X2b or 16X4 units, neither will ever limit your group or studio to its original capacity. By our four-channel-at-a-time expander modules, a 12X2 can become a 24X2 in minutes. A 16X4 will change into a 20X4 almost immediately, and without the hassle of dangling cables that can cause shorting or transporting difficulty.

Our features are expanding. As pioneers in the more-feature-per-dollar area, *Studiomaster* was the first to offer 5 way equalization on an affordable mixer. We still are. Our 16X4 mixer was the first studio quality desk that allowed the operator to have a separate stage (or studio) mix for the performers while still sending an independent, unaffected mix to the tape recorder. No competition yet. And now, our mixers come with direct in/out channel patching as standard equipment, just one example of our expanded features.

Our product line is expanding. *Studiomaster* now has a 16X8

mixing console designed for 8 track studios and live performance. We offer the professional touring band the most affordable 20X8 monitor mixer available. And we now manufacture three and five way stereo crossovers which solve the complex speaker system problems of large concert arenas. We even make the coolest running, smoothest sounding 225 watt/channel amplifier around, too. Did we say we're expanding?

The only thing that really hasn't kept pace with our other phases of expansion is our price tag. It has escalated only a fraction in two years . . . and that only to justify the extras we offer. So we are still the most affordable 16X4 mixer that money can buy in our performance category.

Maybe you should consider expanding your studio's or group's ability to create. Give us a call at (800) 854-6219 nationally or (714) 528-3360 in California. We will give you the name of the *Studiomaster* dealer closest to you. If you visit him this month for a *Studiomaster* demonstration, you can receive a *Studiomaster* T-shirt free from us. Visit him soon to see the continually expanding possibilities of *Studiomaster* products.

For more information about Studiomaster products, please write to Craig Bullington, National Sales Manager, Studiomaster, Box 55, Atwood, California, 92601.

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Silence. The Step Beyond.

Even more important than what an effect adds to your performance is what it doesn't add. Noise—pops, clicks, and hiss can make a good effect virtually unusable in a performance. That's where BOSS effects are different, and it's a difference you'll notice from the moment you turn them on.

You see, all the different effects on the market share the same noisy problem—they all use the same kind of mechanical footswitch, and no matter who makes it, it still has the same problem—it makes an audible "click." That can be a pain in the studio where you have live mikes, but even worse is that a mechanical switch is prone to make popping noises in the signal when it's engaged, and that's a real problem no matter where you are.

BOSS effects have been designed differently. We incorporate what is called F.E.T. switching. This means that there are no mechanical contacts in the signal system, so it won't make an audible click—and it can't make a pop. The switching is done totally electronically and cleanly.

But that's only the beginning of the beauty of BOSS pedals. You'll find a host of other features the competition has yet to catch up with. Features like battery eliminator jacks on every pedal, skid pads that work, and a unique design that allows you to change the battery without exposing the circuit board. And, back on the subject of silence, you'll find BOSS pedals to be the quietest pedals on the market with signal to noise ratio consistently better than 80 dB.

You'll find a BOSS pedal to fit any need—from phasers to flangers, to equalizers to compressors to the new CE-2 Chorus Ensemble, a compact version of our legendary CE-1.

None of the BOSS pedals make noise. No clicks, no pops, no hiss. And that's pretty important. Cause if you're serious about your music you know that what you leave out is as important as what you put in.

BOSS products are designed and manufactured by Roland, 2401 Saybrook Ave., Los Angeles, CA 90040. (213) 685-5141.

 **BOSS**

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MODERN RECORDING

MARCH 1980
VOL. 5 NO. 6

SERVING TODAY'S MUSIC/RECORDING-CONSCIOUS SOCIETY

THE FEATURES

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—Part V
By Peter Weiss
This month we continue with magnetism as it applies in electricity, and with some principles on current flow. Stay tuned for more on the basics of electricity as it applies to audio.
- A SESSION WITH AL DIMEOLA** 46
By Don Ketteler
Since his beginnings with Return to Forever, Al DiMeola has become one of the most respected young guitarists in music. The recording of his latest album shows he will continue to stay on top.
- PROFILE: RICK DERRINGER** 52
By Jeff Tamarkin
Rick Derringer has been with us for so long it seems hard to believe he's only in his early thirties. And he has utilized his time since the days of "Hang On Sloop" very well. Read the interesting comments by Derringer, he's got something to say.

COMING NEXT ISSUE!
A Session with Journey
The Electric Primer
—Part VI

Cover Photo: Doug Hanewinkel
Derringer Photos: Steve Namm
Primer Illustrations: Peter Weiss

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EILEEN NOFI
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West Coast
Advertising Representative

MYLES GROSSMAN
Associate Publisher
Advertising Director

Editorial and Executive Offices
Modern Recording
14 Vanderventer Ave.
Port Washington, N.Y. 11050
516-883-5705

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LETTERS TO THE EDITOR

Super-discs, Efficiency, and Power: Some Comments

In response to Norman Eisenberg's request for feedback ("Product Scene," December '79) as to the question of whether super sets are required to play "super-discs," this is an area of discussion that concerns us at Sheffield Lab greatly, as we are not only instigators of modern audiophile recordings, but we are also propagators of records that have wide dynamic range.

On occasion, I will meet a Sheffield Lab customer who will tell me how much he enjoys our products but he will apologetically state that his system is relatively modest, possibly between \$1,000-\$2,000. I always inquire as to specifically what equipment is in his system. I will often find that he has selected a speaker system with an efficiency in the neighborhood of 93 dB with one watt at one meter. His amplifier will often be in the 70-150 watt range. He will often express the hope that one day he will be able to afford an esoteric speaker and "really be able to enjoy my Sheffield records to their fullest."

While many of the esoteric audiophile speakers claim accuracies of frequency and imaging abilities, many of them also have efficiencies a full ten decibels under his affordable, prosaic system. What he would find is that it would require (if his amplifier is now 70 watts) a full 700 watts for him to enjoy the same dynamic range he now has. Another factor is that many of these esoteric speaker designs will not tolerate anything close to this (700 watts) kind of power. There is no question in my mind that the dynamic range that can be retrieved cleanly from a Sheffield Lab record with today's phono cartridge easily exceeds the abilities of 99% of home speaker/amplifier combinations.

The truth of the matter is that while most home sets cannot handle the full dynamic range of many "super-discs," people with middle of the road systems with fairly efficient speakers are doing a better job of approaching the dynamic range of the record than their rich counterparts. There is a market and a need for a truly high efficiency speaker system that is also accurate. The two are not mutually exclusive and I have heard some remarkably natural, high efficiency speaker systems hand-built by audio enthusiasts. While these systems are large and expensive, they can deliver the high dynamic range that the phonograph medium is capable of delivering. Hopefully, speakers of this nature will be offered for sale as their high efficiency (104 dB at one watt at one meter) and accuracy bring home the complete promise of optimum home reproduction.

— Doug Sax
President
Sheffield Lab
and the Mastering Lab
Hollywood, Ca.

Norm Eisenberg is right in what he said about the super-disc problem. I noticed the problem several years ago when I got some super master tapes and played them on my "then" system.

I think in the long run, these discs have been and will be a great thing for the audio industry. I've had to upgrade my

Altec's Create-Your-Own-Mixer Mixing Console



Nobody but you could ever know exactly how you want to use a mixing console. So instead of manufacturing a cut and dried mixer which defines your system's limits, or giving you a plug-in module approach which might fit one job but not the next, Altec Lansing created the 1690 Mixing Console to give you options rather than boundaries.

No longer do you have to struggle to fit your needs into the circuitry of someone else's idea of a perfect mixing console. A mere flick of the mode switch on any of the 1690's eight input channels lets you select the channel circuitry best suited for your musical or commercial sound reinforcement, recording/overdub or mixdown applications.

If your needs change in an hour, no matter. Just flick the switch and turn the 1690 into a whole new mixer.

PA/REC/MIX Mode Switch



And, two or more 1690's linked together can give you twice the flexibility and twice the performance.

We have written a comprehensive technical letter to explain in more detail just how simply you can turn your ideal system designs into reality.

So go ahead, design your ideal system. With your ideas combined with our technology, you can easily "create-your-own-mixer" on Altec Lansing's 1690 Mixing Console. Another innovative product from the company that speaks with the Voice of Experience—with 43 years manufacturing quality audio products for America and for the world.

For further information write Altec Lansing, 1515 South Manchester Avenue, Anaheim, California 92803 or check the yellow pages under "Sound Systems" for the name of your nearest Altec Sound Contractor.

1515 So. Manchester Ave., Anaheim, Calif. 92803 • 714/774-2900

ALTEC CORPORATION

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systems at every level, just as Norm suggested—"Back to Square One."

—Harry E. Maynard
Contributing Editor
Audio Video
Westport, Ct.

In the Affirmative

Just dropped a line to say what a nice job you've done on the Yes article (November 1979 issue). I'm sure many Yes fans appreciated the technical info provided in such depth. I was very pleased to see such a high calibre band on the cover of an equally high calibre magazine. Very well done.

Thank you—

—Sue Smith
Lima, Ohio

Would You Believe Spontaneous Generation?

In many of the "Lab Reports" by Norm Eisenberg and Len Feldman, they include pictures of a spectrum analyzer display. These pictures usually demonstrate the operation of graphic or parametric equalizers (ex. pages 79, 80, 81 of Nov. 1979 issue) or the overall

record/playback response of tape recorders (ex. Page 83, Nov. 1979 issue). It appears a Tektronix or similar spectrum analyzer is being used. Can you please tell me what they use for an input signal to the units being tested to get the output displayed? Do they use a tracking generator similar to that found on the Hewlett Packard 8556A spectrum analyzer module or do they sync an external sweep generator?

Love your mag! Loved the article on the do-it-yourself limiter! And please keep-em coming!

—R.P. Soulodre
Winnipeg, Manitoba

Toward Solid Conclusions

Thanks for a very diversely informative publication, however when Messrs. Feldman and Eisenberg present their Lab Report to your readers they fail to list their testing apparatus and method of testing the equipment under scrutiny. In reading these lab reports, one cannot come to a solid conclusion because all the data is not presented to the reader.

I therefore suggest that they include this necessary information in their next

reports for the benefit of your readers, otherwise they would be defeating the whole purpose of a laboratory report.

—S.A. Viezner
Asst. General Manager
PRENCO, Ltd.
Toronto, Ontario

Although we did spell out a description of the test equipment used in our laboratory tests of audio products as well as the procedure in an early issue of *Modern Recording*, I agree that it's time to repeat this information.

Most of the bench measurements are made with the aid of a Sound Technology model 1700B Distortion Measurement System. This unit provides audio test frequencies from 10 Hz to 100 kHz at a residual distortion level of around 0.002% or less. It measures both harmonic and SMPTE-IM distortion. In my lab, I have the unit hooked up to a Sound Technology model 1200A test panel which provides for easy switching, introduces A, B or C weighting filters when required, and also interfaces with my general purpose Hewlett-Packard 1200A dual-trace oscilloscope on which I observe input and/or output waveforms.

The Sound Workshop 1280 Recording Console at home at home.

Sometimes ideas can come at 3 A.M., and it's nice to be able to put them down on tape. Many creative recording people already know this. It's no wonder that the Sound Workshop 1280 has found its way into hundreds of home recording studios around the world.

Its compact size and flexibility make it perfect for home music production. And its superior sonic quality makes it the best performing board in its class. For a demonstration or more information see your professional audio dealer, or contact us.

**BRINGING THE
TECHNOLOGY
WITHIN EVERYONE'S
REACH.**
CH. Sound Workshop

Sound Workshop Professional Audio Products, Inc.
1324 Motor Parkway, Hauppauge, New York 11787
(516) 582-6210 Telex 649230



TDK's new improvement has nothing to do with the sound. It's the package.



Each TDK package is now designed to catch your eye as never before. Clean, modern lines. Bright new colors. Bolder designations in front. Full tape description in back, including sound characteristics, formulation, bias and a frequency response chart to let you know precisely what you're buying without having to hunt for a salesman.

And don't expect the improvements to stop there. Inside there are complete recording and cassette care tips. Invaluable for preserving the life of each cassette, even though each TDK cassette is protected by a full lifetime warranty.* There's also a convenient, tear-out index card to help you build a perfect reference system.

Once inside, TDK couldn't stop improving. There's now a wider cassette window.

Through it you'll be able to watch two red double hub clamps registering tape direction as they turn. Just when the improvements seem to end, TDK tape technology begins. TDK SA's cobalt adsorbed gamma ferric formulation continues to set the high bias standard around the world. TDK AD, the tape with the hot high end, is now Acoustic Dynamic. You'll see it in brand new blue and silver colors. TDK D, another member of TDK's dynamic series, makes many premium normal bias cassettes sound ordinary and overpriced.

That's all we have to report for now. But there will be more to come. Part of TDK's philosophy is: when every improvement has been made, improve again.



Supplier to the U.S. Olympic Team

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TDK
The machine for your machine

*In the unlikely event that any TDK cassette ever fails to perform due to a defect in materials or workmanship, simply return it to your local dealer or to TDK for a free replacement.



PROFESSIONAL EXCELLENCE

R321 CROSSOVER

Value is the watchword for the eighties. And these professional NEI sound instruments stack up with the best for excellence. Yet our prices will pleasantly surprise you. Check the specs, then compare costs against our R321 Crossover.

- Stereo 2 way or Mono 3 way.
- 18 dB per octave Butterworth filters.
- Continuously variable frequency.
- Lo/Hi frequency level controls.
- HF phase reversal switch.
- Balanced in and out.



STUDIO PERFORMANCE

341 PARAMETRIC EQ

Slim and trim in size and price. Both the R321 and 341 feature 19" rack mounting in but 1-3/4" of space. Here's the scoop on our model 341.

- 4 bands of equalization.
- Frequency, Bandwidth and Gain control on each band.
- Peak indicator on each band.
- In/out switch on each band.
- Balanced in and out.

VALUE UNLIMITED

in affordable professional equipment



NEPTUNE ELECTRONICS, INC.

934 N.E. 25th Avenue
Portland, Oregon 97232
Telephone (503) 232-4445

Auxiliary signal sources include those from an IEC Function Generator, a BPI model 3000A (which duplicates many but not all of the functions of the Sound Technology 1700B and has a digital readout of voltages) and a new BPI Model 6000 IM distortion analyzer. This last-named piece of equipment reads CCIR IM Distortion and provides several two-tone signals (9 & 10 kHz, 14 & 15 kHz and 19 & 20 kHz) in addition to the SMPTE IM test signal.

Paralleling all of this is a Tektronix model 5L4N spectrum analyzer module mounted in a Tektronix model 5100 Mainframe oscilloscope. The latter is a storage 'scope, allowing easy photography of both 'scope presentation and spectrum analysis results. The spectrum analyzer can be made to function linearly or logarithmically in frequency and is an ideal tool for analyzing the content of distortion as well as its amplitude. Wow-and-flutter is measured using a McAdam model 1500 Analyzer which contains the required 3000 Hz or 3150 Hz test tones as well as a metering system for measuring speed deviation as well as wow-and-flutter for all tape or turntable products.

When frequency counting is necessary, we use a Heath-Schlumberger model SM-4110 which can read to well above 110 MHz. The camera used to photograph 'scope and spectrum analyzer photos, as well as interiors and some exteriors of products is a Polaroid model 195 and the film generally used is Type 665, which has the advantage of yielding both positive prints and permanent negatives, should duplicate prints be necessary.

Additional equipment includes precision analog AC-VTVMs, such as those made by Ballantine and RCA, a UREI model 565 Filter Set (which can be set for any low-pass, high-pass or band-pass region within the audio range), and a Dolby CCIR/ARM Active Noise Weighting filter set.

Our lab also is equipped with an IVIE model IE-30A 1/3-octave real-time analyzer, useful in making acoustic measurements and in evaluating and setting up graphic equalizers. Many of the calculations required in the course of our lab measurements are programmed into a Hewlett-Packard model HP-19C programmable calculator, equipped with a printer.

Now, with regard to our measurement procedure. Frankly, to describe the various tests and how they are performed would require an answer which

would run the length of a textbook. In general terms, we try to abide by the standards of measurements developed by the Institute of High Fidelity and, for those products where such standards have not been formalized, we generally try to follow most commonly used procedures as developed by the audio industry over the years. In a few instances, we have developed our own tests and procedures for making them, where we feel that additional useful information can be derived for the benefit of the reader.

Finally, for all listening tests, we use what is probably the most accurate test equipment of all—our own two ears!

—Leonard Feldman
Technical Editor
Modern Recording

Between them, of course, Len Feldman and Norm Eisenberg have at least four ears. . . .

We hope you understand that incorporating this list of test equipment in each published "Lab Report" would be impossible. But we will repeat it from time to time, and update as necessary.

What Gives

For the last few months, I've been entertaining the idea of buying several new mics for my recording needs. Several years ago, I purchased an Electro-Voice 635A dynamic. I've used it in front of bass guitar amps and other high pressure applications always with no distortion and overall good quality.

I've noticed the ads in your magazine for E-V's "new" line of pro mics. From the pictures I've seen, except for the price, the E-V PL-5 microphone looks suspiciously similar to the old 635A. If I didn't know better, I'd say E-V was playing the old shell game with model numbers. What gives? Is there actually a difference in the two mics? Does the difference justify the price jump?

—Gary Palamara
Howell, N.J.

E-V's Greg Silsby tells us candidly that the PL (Pro-Line) series was established in response to demand for a collection of those mics specifically appropriate to musicians' needs. The PL-5 and the 635A are the same electronically, but the PL-5 has a darker, non-reflecting finish and is not packaged in a cardboard box with some tissue paper, but comes with a vinyl carrying pouch much more suited to the musician's needs. E-V, also

con·stant di·rec·tiv·i·ty



The characteristic of a horn that directs all of the frequencies where you want them to go.

Most horns offer some control of the sound pattern they produce. The problem is that frequencies at the center of the pattern are different from those at the edges.

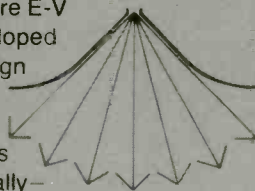
Unless you use HR Constant Directivity horns, that's the problem you'll have. To the audience this means unintelligible, too bright, too dull, and sometimes just plain bad sound at many seats.

These patented¹ HR Constant Directivity horns from Electro-Voice provide full-range frequency coverage and effectiveness of pattern control

unheard of before E-V engineers developed this unique design concept.

Demand for the "white horns" has grown dramatically — almost completely by word-of-mouth. Once a sound engineer, musician or facility owner hears the difference HR Constant Directivity makes, a new demand is created.

Ask someone who has used or heard them, or buy a pair and try them yourself. You'll probably hear that HR horns are so clearly superior that other choices are obsolete.



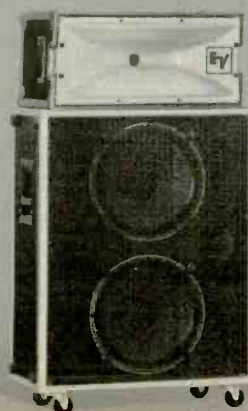
Write to Electro-Voice for more information. We'll send you a complete set of Engineering Data Sheets and a paper comparing the today performance of HR constant directivity horns with yesterday's promises. Include \$1 with your request, and we will put you on the mailing list for the E-V "PA Bible," a down-to-earth series of papers on the selection and application of professional PA products and concepts!

¹U.S. Patent Number 4071112

E-V Electro-Voice
a gulton company

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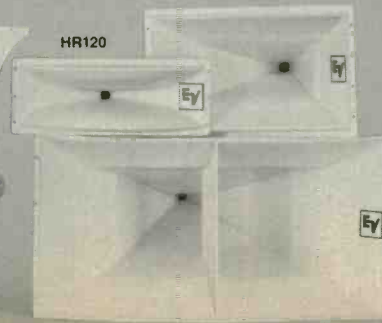
LF215

RC90
(includes case)



HR9040A

HR120



HR4020A

HR40

HR6040A



RC60 (includes case)

recognizing that musicians prefer a choice of cables, does not include a cable with the PL-5, whereas one is included with the 635A to keep the broadcasting market happy.

The approximately six-dollar difference in price, we are told, reflects music dealers' requests to Electro-Voice that list prices be established for such a line so that their market has breathing space. The current 635A price (it has gone up since you bought yours) might actually be higher than what you could pay for a PL-5; the two are really priced just about the same.

Press by Number?

You're the best magazine since *Popular Science!* Personal preference, of course.

Regarding "Letters to the Editor," November '79: I agree with Tom Roberts about "Some Serious Skipping" on new record albums. With all the time (and money) spent to record albums with 60 to 65 dB signal-to-noise ratios common to the best pressings, it hurts when you spend good money on your favorite artist to find a "shallow print."

I would like to argue with any PR reps on the logic they support mass merchandising. I believe all albums should be

serialized, as are some direct-to-disc albums. Not only would it create a selling point, as "litho prints of limited editions," but you could easily see which subcontractor did the pressing. One must remember pop albums sometimes must be produced by subcontractors to meet demands in short order.

—Rod Baxter
Seattle, Wa.

Stage Monitor Systems

In the November '78 issue of *Modern Recording*, L.A. Krause wrote a fine article on monitor systems. I've been anxiously awaiting another installment on design requirements for concert applications. Could I have missed an issue, or is this article forthcoming?

—J. Orlandino
Melrose Park, Ill.

Yup, sad to say, you did. L.A. wrote a sequel on stage monitors that was printed in our January 1979 issue. Many of our "Live" sound reinforcement Cover articles, though, have a good deal of information on the practical aspects of stage monitoring: That same (popular; now out of print) January issue boasted a piece entitled, "Meat Loaf 'Live' and Recorded," for instance.

Concert sound articles that are still available from our Back Issue Dept. include those on Bruce Springsteen (December 1978), the J. Geils Band (August 1979), Yes (November 1979), George Benson (December 1979) and The Bee Gees (February 1980).

On the Index

It has occurred to me that since so many people write asking about a specific article or review, you should print a yearly index to your timely magazine.

I know that I find myself constantly looking through back issues for information and have started my own index with such headings as "Signal Processors," "Amplification," "Equalizers," "Speakers," etc. I also have a list of producers and engineers to use as a reference for techniques.

You may also consider publishing certain articles separately for reference material using these or similar headings.

I would also appreciate seeing articles on the "paintbrushes of audio," microphones. I feel these all-important tools are being slightly overlooked in your magazine. With so many new companies and types of mics coming out, along with a great catalogue of older, proven mics, the home and semi-pro recordist must

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The Eumig FL-1000: The world's only computer-compatible cassette deck; your best interface with the world of music.

Capturing the full richness of music on a cassette requires an extraordinary cassette deck. It takes extraordinarily wide frequency response. Incredibly smooth tape motion. And an undistorted dynamic range at least as great as that of your musical source. It takes the Eumig FL-1000.

You need the ability to use the latest metal-particle tapes, of course. And separate record and playback head elements that permit each to be designed specifically for its function and that let you monitor the actual recording as it is being made. You need the kind of innovative engineering that produced the exclusive Eumig Opto-Electronic capstan drive, which automatically corrects motor speed 15,000 times every second. And the fast, easy-to-use Computest® system to optimize record bias and Dolby* calibration for individual brands within each tape type. And you need extraordinary technical performance: a full-range 20-20,000Hz (± 3 dB) frequency response; a 0.035% (WRMS) wow/flutter rating; and a 70dB signal-to-noise ratio.

Thanks to its built-in microprocessor you can "punch in" the number of any location on the tape, at any time, and the FL-1000 will immediately advance or rewind to that exact spot, indicated on a 4-digit electronic readout so precise it can be used for automated broadcast stations. (Yes, the Eumig FL-1000 is a genuinely professional deck.)

A peak-reading fluorescent display shows the exact, instantaneous signal level being fed to the tape, and is equipped with switchable peak-hold, 6-dB attenuator, and 2-position

dimmer functions. Mic/line and line/line mixing facilities, with master attenuator and cross-fader provisions are included, as are switchable reverb, mic. sensitivity, limiter, MPX filter, and timer-activation controls.

Above and beyond all these attractive features, however, the Eumig FL-1000 is the world's first — and only — cassette deck capable of directly interfacing with any of the popular 8-bit home microcomputers. Thanks to its digital read-write capabilities, the FL-1000 can index all the selections on a cassette for instant readout on your monitor screen and for automatic selection sequence. With another program you can sort all the recordings in your collection by artist, by title, or however you choose, to instantly identify the cassette you want and direct the FL-1000 to play any selection on it. And with such a computer you can completely program — as the professionals are already doing — the operations of up to 16 FL-1000's! The possibilities are endless.

See your Eumig dealer today for an introduction to the FL-1000. It will be the beginning of a very beautiful musical relationship.

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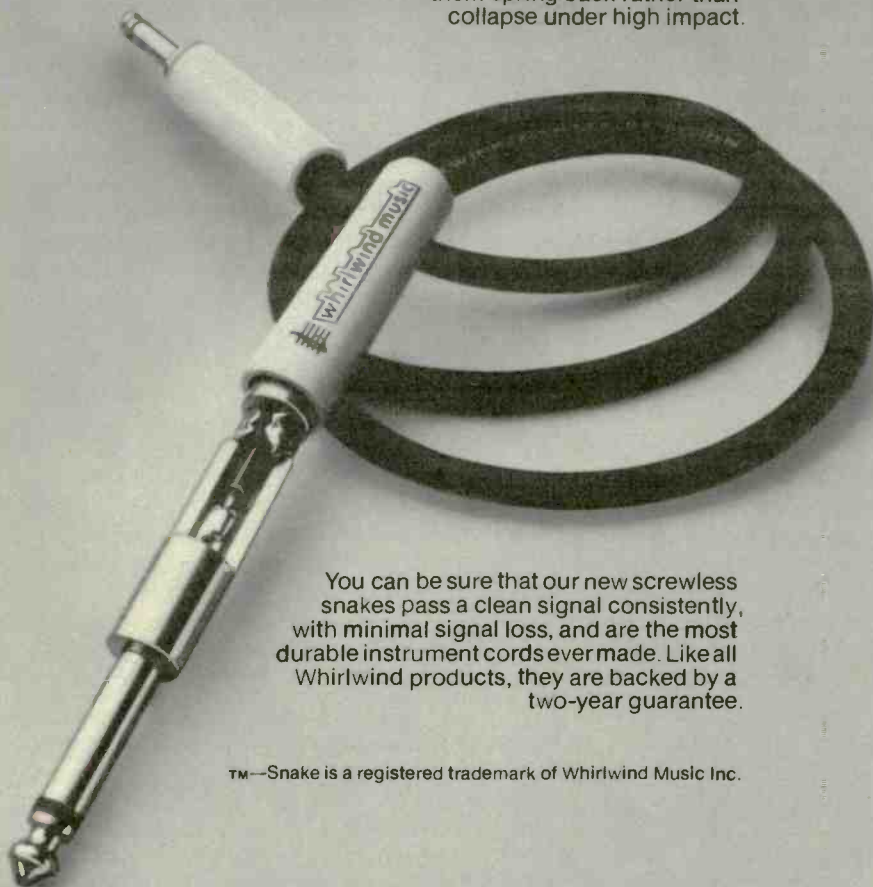
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You can be sure that our new screwless snakes pass a clean signal consistently, with minimal signal loss, and are the most durable instrument cords ever made. Like all Whirlwind products, they are backed by a two-year guarantee.

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know what makes these mics tick and why they're so popular in specific situations. I realize this is often purely a matter of taste, but I know that I do not have access to all the various models and types of mics for experimentation.

If I've missed articles of this nature, it only punctuates need for an annual index.

—Bruce Erickson
San Francisco, Ca.

This rings a bell. Seems last year at about this time somebody was asking the same question. Now, we're not all geared up yet, so please don't scribble out checks, but we are planning on at least a sort of index—that is, a catalogue of the more popular (out of print) articles that a good bulk of our readers have never seen. Bruce, you may or may not have missed our August '78 "Miking" issue, which included one of the articles penned for us by engineer Bruce Swedien. If so, you've punctuated yourself into living proof.

Watch for our reprint series offer, due within the next few months.

Made in U.S.A.

We carried an item in "Musical Newsicals" this past December (P. 31) which incorrectly stated that Kelsey (Dallas Music Industries USA) mixing consoles are made in England. Not so. The word, direct from the manufacturer's mouth, is that all Kelsey products have been made in the U.S.A. for the past four years. So, those of you who queried, the "Made in U.S.A." imprint is legit. Our apologies for the misleading presumption.

No Such Sellout

Having previously read the likes of *Rolling Stone*, which is endlessly discussing aesthetics of contemporary musical philosophy, I was very satisfied to read a magazine which is informative on the aspects of music production and recording. I don't dispute the right of heavy artistic review to exist, but what I've been looking for has been something more practical in a music magazine, and I have found it in *MR*.

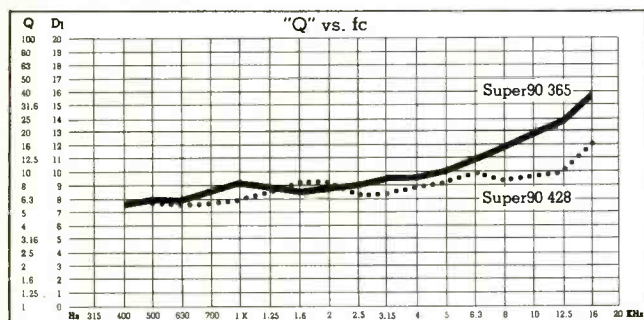
The Benson item in the December '79 issue was particularly informative, and I was pleased to read the article and not find any words about "commercial sell-out" and the happiness of his family. Keep us all learning about this great business, and I'll be happy. Many thanks,

—Malcolm Swann
Edmonton, Alberta

THE RADICAL RADIAL

In response to the demands of the sound professional we present a totally new kind of radial horn—the **Community Super90**.

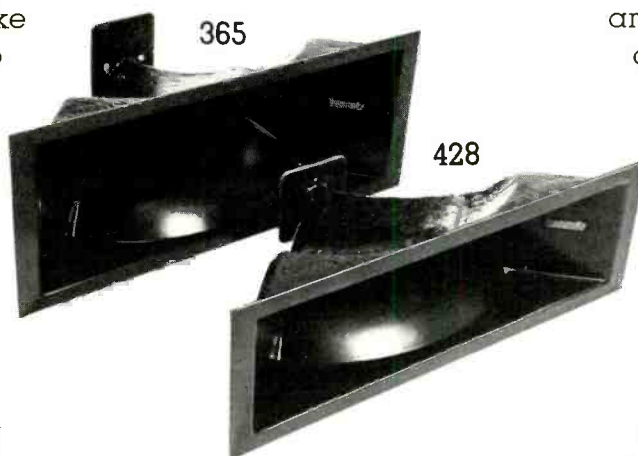
OUR BEST YET. This horn is by far the most well behaved ninety degree radial horn we've made—and we've designed a few winners. Super90's are highly efficient; exhibiting smooth axial directivity with no vanes, obstructions or diffraction effects in the critical throat area. The result? A smoother, cleaner sound, but with a new dimension added.



A NEW DIMENSION? Yes. It's flat. The front of this superb horn doesn't curve back in the familiar arc, it's flat, with straight, rectangular sides that make box mounting a snap and set-ups a breeze.

It's compact—measuring at least 7" less in depth from driver mount to the front of the horn.

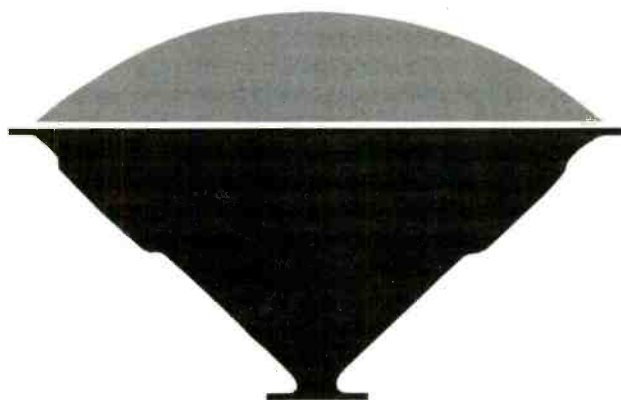
It's stronger—greater structural rigidity means even less resonance than that of our standard radial designs.



Community

We have two **Community Super90** horn designs available—the **Super90/365** (flare rate 365Hz, operating range from 600Hz and up, for 2" exit compression drivers) and the **Super90/428** (flare rate 428Hz, operating range 800Hz and up) which accepts 1" exit loudspeakers.

THE REGULAR RADIAL



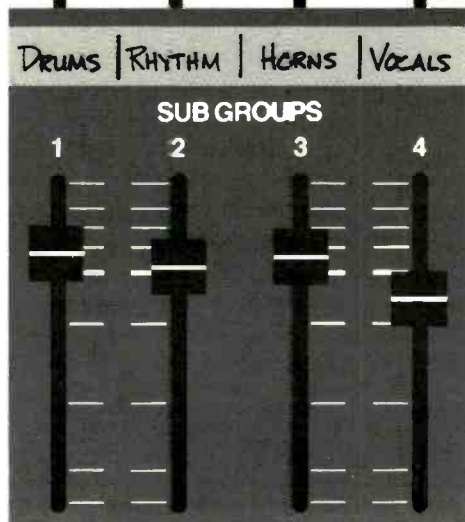
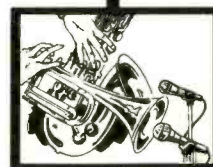
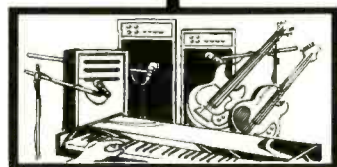
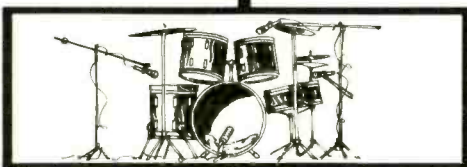
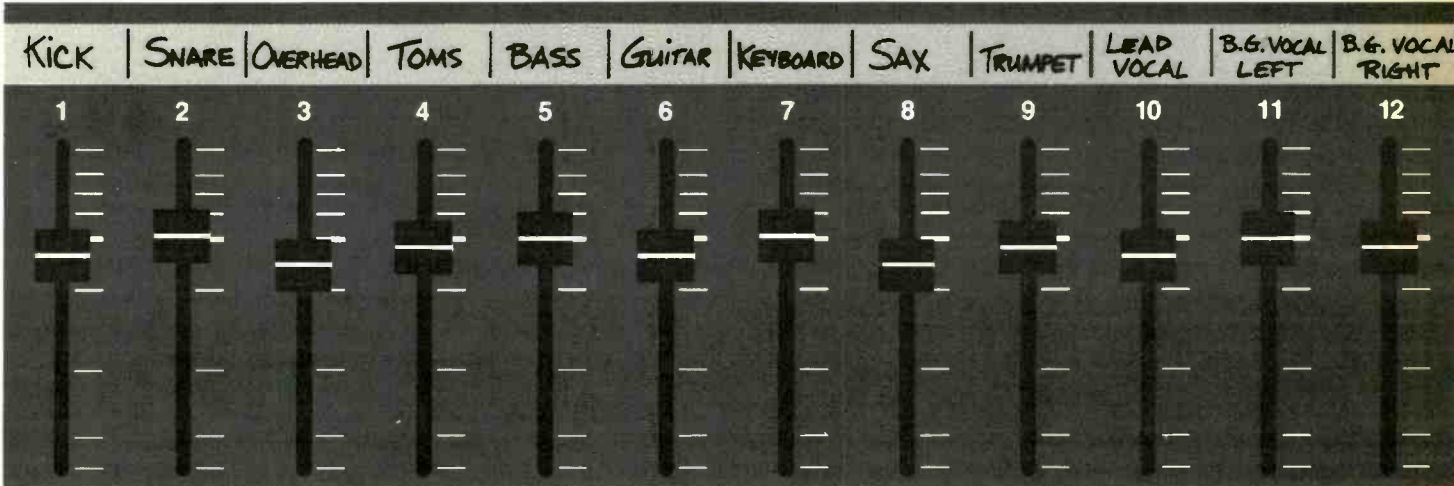
THE RADICAL RADIAL

Community Super90's are the correct choice wherever a predictable, compact 90° radial is needed. Flush-mounted system installation is greatly simplified with the use of Super90's. In tour applications these horns are easily mounted in multiples and are the ideal solution for quick, hassle-free set-ups.

Community Super90's provide you with the best of both worlds—radial horn performance superbly coupled with the packaging convenience of a straight horn.

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Sub Group Mixing



with TAPCO C-12



The TAPCO C-12's unique Sub Group mixing capabilities bring increased control in mixing. For example, when using a number of microphones on drums, with conventional mixing consoles, each microphone level is first adjusted for the proper musical balance (mix). Then, if the level of the entire drum mix is to be increased or decreased, all drum faders must be moved up or down in direct proportion to each other. This will often result in the loss of the proper drum balance or mix. When Sub Group mixing with the C-12, each of the drum mics would be assigned to a Sub Group. Now the level of the drum mix can be increased or decreased with a single fader. Because the C-12 has 4 sub groups, each section of the band (drums, rhythm, horns, and vocals) could be assigned to its own sub group fader.

The C-12 Mixing System can easily be expanded to 20, 28, or even more inputs with the addition of the C-8E Expander. The C-12 is a professional mixing system that is tailored to meet the needs of performing musicians and recording engineers. This uniquely designed mixing system boasts a list of outstanding features, some of which include: Sub Group Mixing • Extensive Front Panel Patching • 3 knob EQ with fixed high and low frequencies and sweepable mid-range • Monitor Buss • Effects • Aux Buss • Two Effects returns with level controls and Pan pots • Overload LED indicators on each input • Pan pot and Gain Trim control on each input • Stereo Headphone jack with internal headphone amplifier and automatic solo • Illuminated Vu meters with meter switching • +48V Phantom power • Mic Level XLR inputs (Transformer balanced) and line level inputs 1/4" phone (Unbalanced).

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TALK BACK

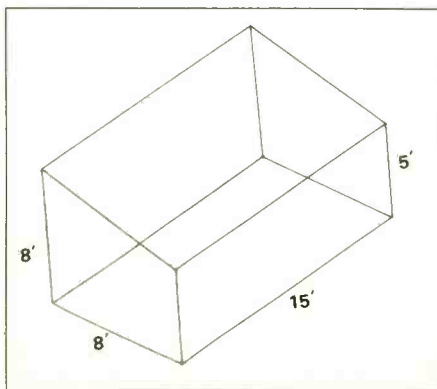
"Talkback" questions are answered by professional engineers, many of whose names you have probably seen listed on the credits of major pop albums. Their techniques are their own and might very well differ from another's. Thus, an answer in "Talkback" is certainly not necessarily the last word.

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 reader's technical forum.

Control Room Catch-22?

I am presently remodeling a room in my home to be used as a mixdown/control room and, of course, I want to get the best sound possible considering my modest resources. Since the room is small, I understand that standing waves and poor, uneven bass response are the major problems with which I'll be dealing.

Since standing waves are dissipated through the use of non-parallel wall surfaces and basstraps, how am I to deal with rolled-off bass response caused by the smallness of the room when I must further attenuate low frequencies to eliminate standing waves? To make



matters worse, by building such basstraps and sloping the walls in to avoid parallelism, I'll also be reducing the volume of my already too small room!

It is possible to get a "decent" bass sound or is this Catch-22? How much will room equalization help? Would a shorter room reverberation time lessen the problem? Give me a hint!

The room is 8 feet by 15 feet and its ceiling slopes from 8 feet to 5 feet across the shorter walls (see illustration).

—Michael S. Loomis
Tahoe City, Ca.

Let's answer your questions in order. How do you compensate for the size of a room with respect to low-frequency response?

The lowest frequency capable of being reproduced adequately in an enclosed space, is determined by the diagonal dimension of the space. To compute the lowest frequency that a room is capable of supporting, the following equations are used:

$$(1) f_o = \frac{564}{dd} \text{ where: } 564 = \text{constant} \quad dd = \text{room diagonal (ft.)}$$

$$(2) dd = (\text{length})^2 + (\text{width})^2 + (\text{height})^2$$

Solving this equation using the dimensions you provided; 15 ft. long x 8 ft. wide x 8 ft. high (using the longest diagonal), yields approximately 30 Hz.

The lowest frequency your room will support is approximately 30 Hz. This, however, is only the tip of the iceberg. Anomalies in the response of your room with respect to resonant modes may alter the perceived low frequency response. The axial resonant modes (i.e., length, width, height) are determined by the following equation:

$$f_o = \frac{1128}{2L} \quad \text{or} \quad f_o = \frac{564}{d}$$

Where: f_o = resonant frequency (fundamental)

1128 = speed of sound at 70° F. (ft./sec.)

$2L$ = twice the room dimension

or

564 = 1/2 speed of sound at 70°F.

d = room dimension

It should be noted the volume of air in an enclosed space is an incredibly complex vibratory system, but fortunately for our purposes, the majority of coloration can be attributed to axial modes.

Let's look at your room now.

$$f_o = \frac{564}{d} \text{ (using length of 15 ft.)}$$

$$f_o = \frac{564}{15}$$

$$f_o = 37.6 \text{ Hz}$$

This represents the fundamental of one of three axial modes within the room. Each harmonic of this frequency will also resonate, therefore, you must look at these as well. Above 300 Hz the resonant frequencies are so closely spaced they can be eliminated from this discussion.

If any two axes share a resonant frequency (common mode resonance), that frequency will be emphasized. If a resonance mode is separated by more than about 20 Hz from its closest neighbor, it will tend to stand out. By studying the axial modes you can identify any problematic resonances and implement corrective measures, such as trapping. Certain styles of trapping require large volumes of air to be effective at low frequencies. This of course, will affect your room size significantly. Membranes can provide some help in this area using a minimum of space. One alternate solution for a problematic room might be near field monitoring.

This will minimize the room's effect on your monitoring environment. The distance between the monitor speakers and the mixing location would be a matter for experimentation in order to provide the proper imaging without frequency dependent shifting. Obviously your choice of monitor speakers would be critical. Again, I might suggest some experimentation in this area. You may also try referencing your mixdown on small, band-limited speaker systems. These allow you to approximate the response of car radios, background systems and inexpensive home systems. This is the way it will eventually reach the listener.

How do I eliminate standing waves?

Although you have the right idea on how to eliminate standing waves by building nonparallel walls and ceilings, I feel you are overestimating this technique's effect on your room's volume. Michael Rettinger has discovered that, "a wall slant of 1 ft. in 10 ft. on the part of one wall, or a slant of 1 ft. in 20 ft. on the part of each of the two opposing walls is sufficient to avoid a flutter condition." It can be seen then that your room's volume and diagonal dimension would be only slightly reduced. For your particular room, the amount of slant necessary would be approximately 9" for each of the 15 ft. walls, 5" for each of the 8 ft. walls.

How much will room equalization help?

Room equalization has been the subject of many articles and debates. Let it suffice to say that equalization can compensate for deficiencies in the speaker system not for room/acoustic problems. *Acoustic solutions for acoustic problems.*

Would a shorter room reverberation time lessen the problem?

Reverb time (T 60) is defined as the time it takes a sound to decay to one millionth of its initial sound pressure level (SPL) after the source stops. Reverberation time should increase proportional to room volume. It has been suggested by authorities such as Michael Rettinger and F. Alton Everest that, for recording studios, T 60 should remain constant with frequency, at a time of about .4 seconds for an enclosure of about 4,000 cu. ft. A T 60 much longer than this can cause imaging problems and a blurring of impulsive sounds. A T 60 much shorter will tend to make music sound dull and lifeless.

A complete analysis of absorption coefficients for wall finish treatments would be the most exacting way to proceed. For low budgets we suggest a 70%

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absorbent to 30% reflective proportion of wall treatment to yield satisfactory results. Assuming the floor is carpeted and using a soft treatment for the ceiling, the walls will be approximately 2/3 soft to 1/3 hard. The distribution of treatment must be made symmetrical with respect to the axis of the room front to back. This gives both monitor speakers equal treatment to "look-at."

Conclusion:

You must decide whether the lack of 10 Hz bandwidth at the bottom end of your monitoring system is worth the cost of relocating to a room of larger size. You must also evaluate the budget to ascertain if the added cost of acoustic treatments are viable. I hope this information will help you and I wish you luck in your venture.

Sources and recommended reading:

Acoustic Design and Noise Control by Michael Rettinger, published by Chemical Publishing Co., Inc.

"Control Room Acoustics," by Michael Rettinger, *dB, The Sound Engineering Magazine*, Vol. 8, No. 8, 10, 12; Vol. 9 No. 2; Vol. 10, No. 4 and 6., Sagamore Publishing Co., Plainview, N.Y.

Acoustic Techniques for Home and

Studio by F. Alton Everest, published by Tab Books, P.O. Box 40, Blue Ridge Summit, Pennsylvania 17214.

"Building Your Own Recording Studio for Under \$500," by Jeff Cooper, *Modern Recording Magazine*, Dec/Jan 1976, Vol. 1, 2, pp. 28-35, Cowan Publishing Corp., Port Washington, N.Y.

Thanks also to Tom Smylie of Toronto, Ontario.

—John A. Carey
Express Sound Co.
Costa Mesa, Ca.

More Than Meets the Eye

Although the Lab Report on the Crown PSA-2 amplifier in the September 1979 issue was excellent, I have one question to ask as a result: What makes the PSA-2 a more professional amp than the SA-2?

In Len Feldman's individual comment, he states: "Crown has also made a consumer version (emphasis mine) of the amp, known as the SA-2. Operating specs are the same and the "computer" protection circuits are included. In addition, the consumer version features power output indicating LED displays..."

If both amps are the same, except for the front panel display, why do you label

one "professional" and one "consumer?" In the planning of a small recording studio, I would think the LED display would come in handy during the mastering process if the board wasn't equipped with LED meters.

I would very much appreciate you setting me straight on this situation, as I am still considering several purchases for my studio, and I would like to be sure that I am getting the best piece of equipment for both my needs and my money.
—Colin G. Heade
Portland, Or.

The difference between the PSA-2 and the SA-2 is primarily in the PSA-2 input module. In the SA-2, the input is a standard pin jack with a 25 K ohm (unbalanced) input impedance. The PSA-2 has two inputs: the standard 1/4-inch phone jack with a 25 K ohm (unbalanced) input impedance and a balanced input which incorporated into the PSA-2 input module. The balanced input forms a 20 K ohm bridge together with an XLR input and has an additional 0-10 dB of gain which is useful when additional sensitivity is needed. Also on the PSA-2 input module are switchable high- and low-pass three-pole Butterworth filters, factory set for

When it comes to De-Essers, less is more.

The Orban 526A single-channel Dynamic Sibilance Controller is a *simple*, economical dedicated de-esser — without the complexity and compromises of multi-function processors. It sets up *fast* to produce sibilance levels that sound natural and right. Features include mic/line input, fully balanced input and output, LED level meter, GAIN control, compact size, and more. Special level-tracking circuitry assures consistent control with varying input levels. And our control technique doesn't emphasize residual IM when de-essing occurs.

De-essing doesn't have to be complex, expensive, and time consuming. At \$399* the 526A does it *fast* and *right* in recording studios, cinema, broadcast, and cassette duplication.

The 526A De-esser is available at your Orban pro-audio dealer.

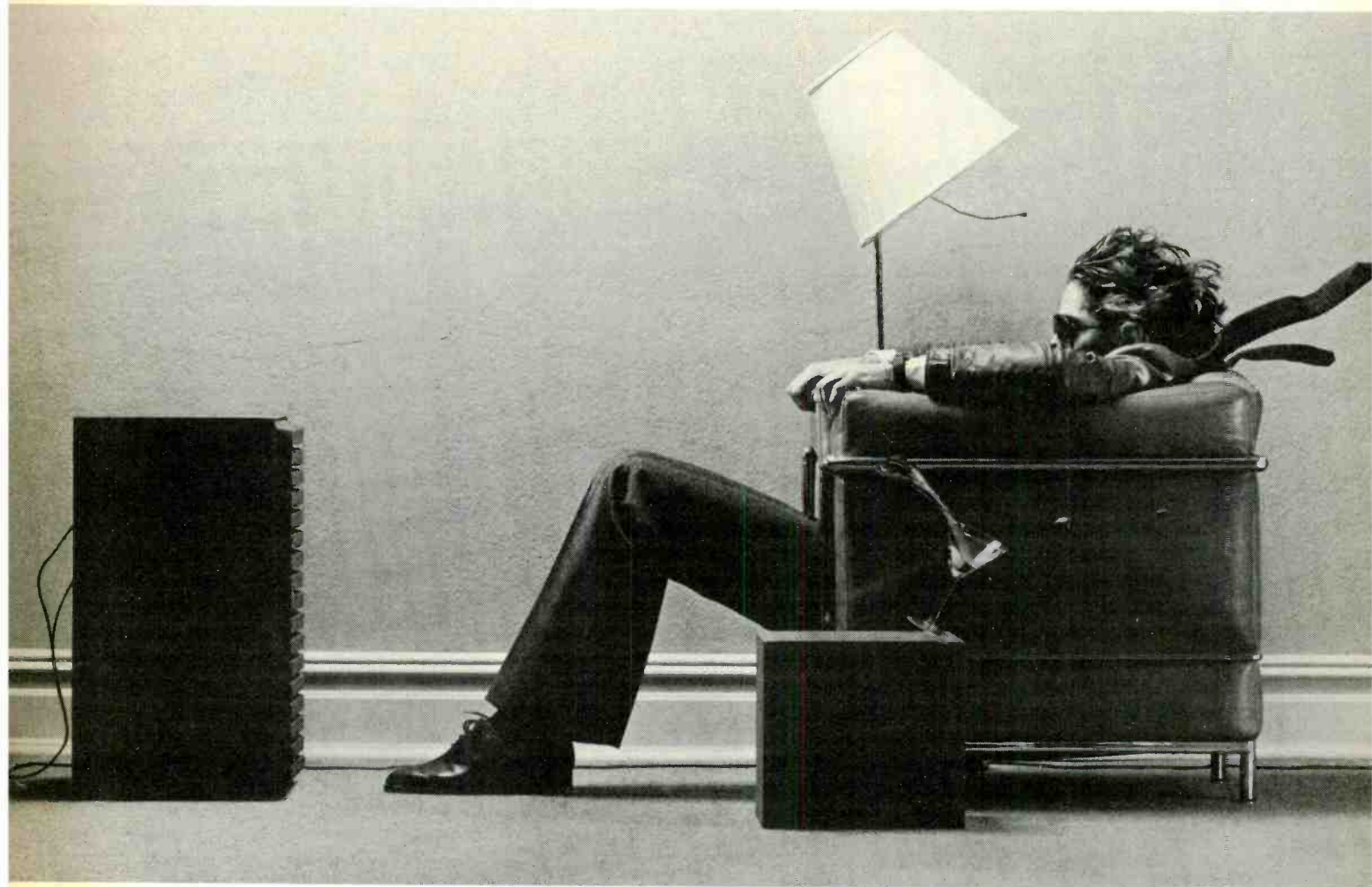
*suggested list



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AFTER 500 PLAYS OUR HIGH FIDELITY TAPE STILL DELIVERS HIGH FIDELITY.



If your old favorites don't sound as good as they used to, the problem could be your recording tape.

Some tapes show their age more than others. And when a tape ages prematurely, the music on it does too.

What can happen is, the oxide particles that are bound onto tape loosen and fall off, taking some of your music with them.

At Maxell, we've developed a binding process that helps to prevent this. When oxide particles are bound onto our tape, they stay put. And so does your music.

So even after a Maxell recording is 500 plays old, you'll swear it's not a play over five.

maxell
IT'S WORTH IT.

50-15 K (other roll-off points are available with monitor circuit modifications). These filters help prevent load damage at subsonic and ultra-high signal frequencies. In addition, there is a 50 Hz-20 kHz wide-spectrum test tone generator which is slide switch activated. This tests the system from the input of the amplifier through the load. It aids in troubleshooting system problems.

Another useful tool on the PSA-2 input module is the "automatic gain control" circuitry. This circuit helps provide clean sound without overloading. The "AGC" circuitry is actually a variable threshold compressor that keeps the output signal below the selected level even though the input may increase. The level at which the circuit is activated (threshold) is determined by the AGC threshold control, accessible from the

rear panel. AGC is limited to 13 dB of compression to reduce the possibility of regeneration in "live" sound reinforcement systems.

The area of difference besides the input module is the display. The PSA-2 uses a set of seven LEDs to indicate power, stand-by (2), signal presence (2), and IOC activation, (2). The SA-2 replaces the signal presence indicators with two LED strings which register both instantaneous peak and peak hold information, thus providing a dynamic range as well as absolute level indication. The PSA-2 can be outfitted with the SA-2 display. This option is called the PSA-2D and costs an additional \$200.

—Dennis Badke

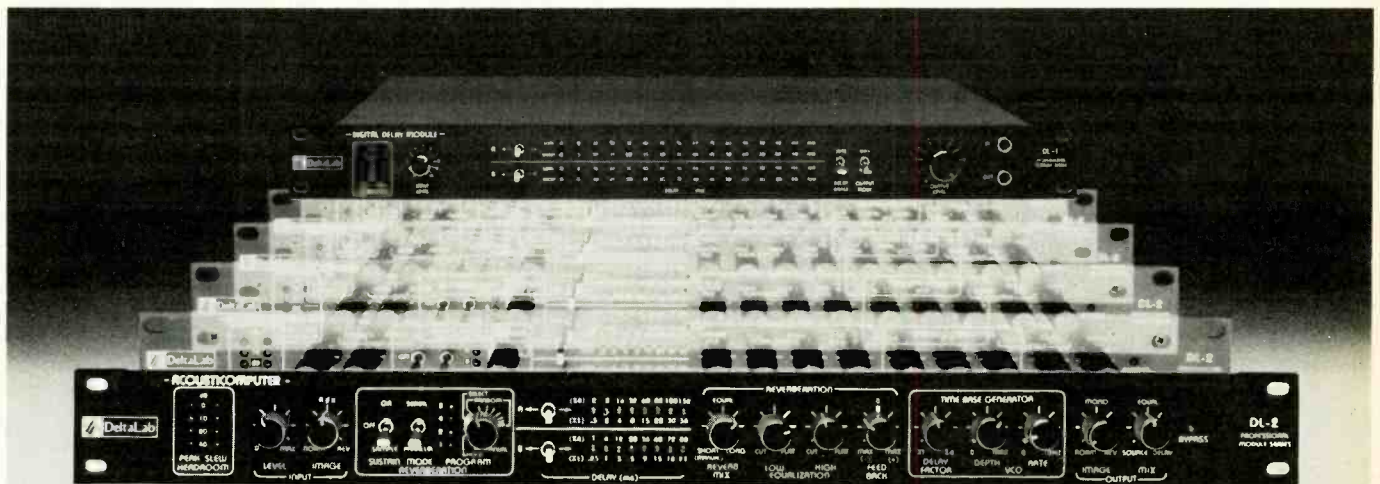
Sales Training Coordinator
Crown Intl.
Elkhart, Ind.

Poltergeist—Things That Go Pop in the Night

The subject that I would like to discuss is static electricity as it relates to interference in the recording process. Can it be generated on the tape and cause problems? If so, how does it happen and how can it be eliminated? Can it have effects as it exists as a free entity in the air? Hope you can give me a clue because I think it is generating clicking sounds on my tapes.

—Michael R. Dearth
Toledo, Ohio

What I assume you mean by static are the clicks and pops, the "static-like" sounds that you may be hearing on your tape recorder. These may well be static electricity, but they might also be



How's THIS for an encore?

Modern Recording called our DL-1 Delay "probably the best we have encountered" . . . a tough act to follow.* Now after more than a year in development DeltaLab introduces its encore - the ACOUSTICOMPUTER® - a combination digital-delay and special-effects processor designed for use both on-stage and in the studio, providing well-known functions (echo, doubling, chorusing, vibrato, flanging, etc.) plus new effects not available in any other device.

- Pre-reverb delay with two independent delay channels, variable from 0.25ms to 152ms with LED display.
- Delay up to 240ms in serial (mono) mode.
- Built in VCO with external control input at rear.
- Same no-compromise sound quality as in our DL-1 Digital Delay: Full 20-15 kHz bandwidth at all delay lengths with 90 dB dynamic range.
- Computer-synthesized acoustic space with 16 selectable reverb programs plus a new special effect in which the ACOUSTICOMPUTER scans the 16 programs.
- Two channels in and out. Built in reverb mixing and stereo imaging controls.
- Foot-switch controlled bypass.

It's impossible to describe in this space everything the ACOUSTICOMPUTER does; you'll have to experiment with it yourself. By carefully minimizing the number of separate controls and grouping them logically, we've made it easy for non-engineers to operate the ACOUSTICOMPUTER.

For further information call or write Phil Markham at DeltaLab Research, Inc., 25 Drum Hill Road, Chelmsford, MA 01824 Tel. (617) 458-2545.

*See Modern Recording "Hands On Report," Sept. 1978.



DeltaLab Research, Inc. 27 Industrial Avenue, Chelmsford, Mass. 01824

Available at Quality Dealers

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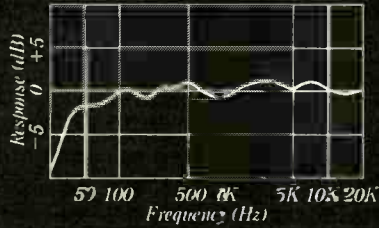
WHY JBL FLATTENS THE COMPETITION.

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Flat frequency response. It means accuracy. Naturalness. Reality.

JBL gives it to you without the bigger box that you'd expect along with it, since the 4313 only measures about 23" by 14" x 10".

This new, compact professional monitor produces deep, distortion-free bass. And does it with a newly developed 10" driver. Its massive magnet structure and voice coil are equivalent to most 12" or 15" speakers. Yet it delivers heavy-duty power handling and



*In-axis frequency response
4313 monitor.*

a smoother transition to the mid-range than most larger-cone speakers.

The 4313's edge-wound voice coil midrange accurately reproduces strong, natural vocals and powerful transients.

Up top, a dome radiator provides high acoustic output with extreme clarity and wide disper-

sion. A large 1" voice coil gives it the ruggedness needed in professional use.

Working together, these precision-matched speakers offer superb stereo imaging, powerful sound levels and wide dynamic range.

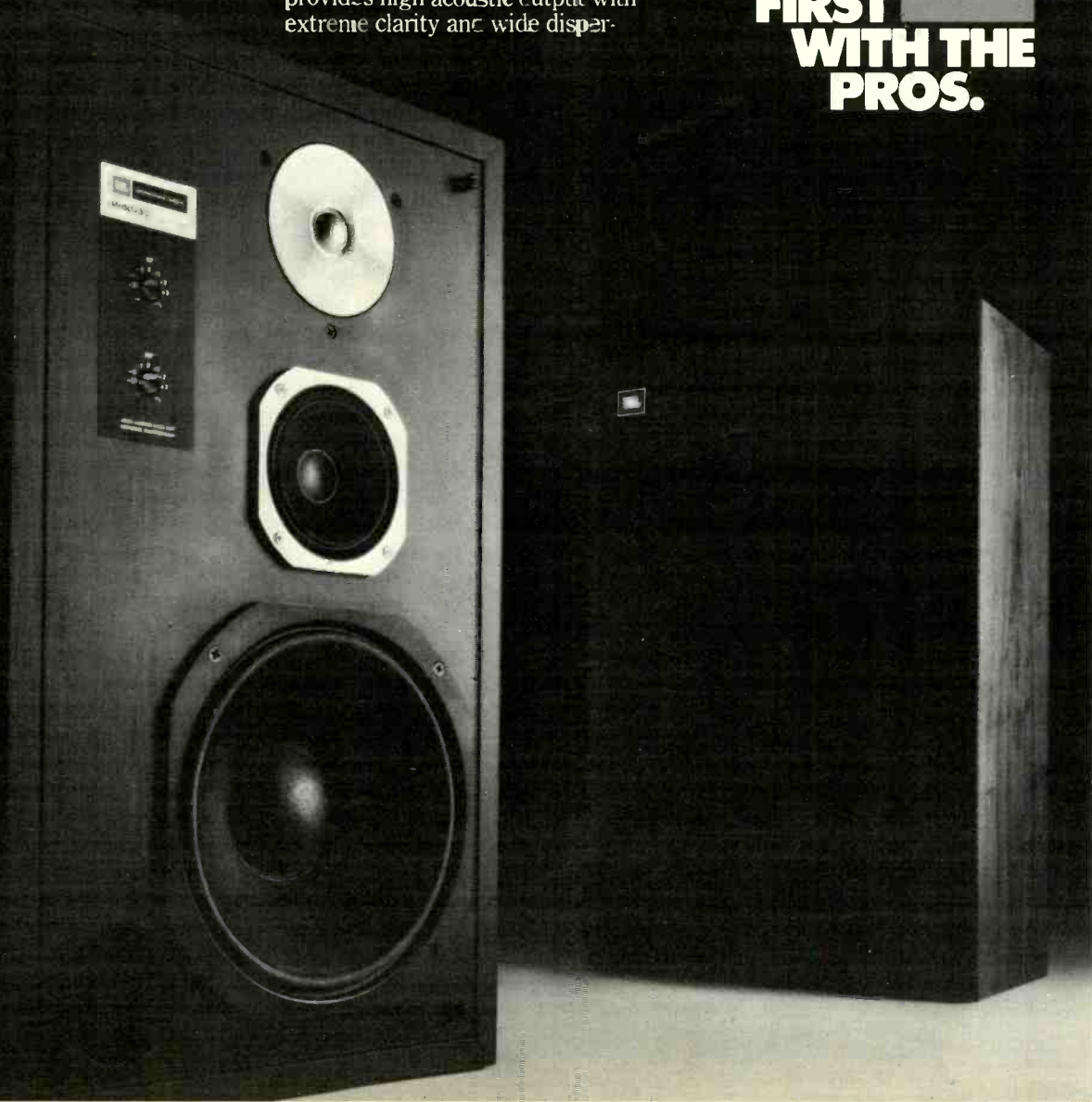
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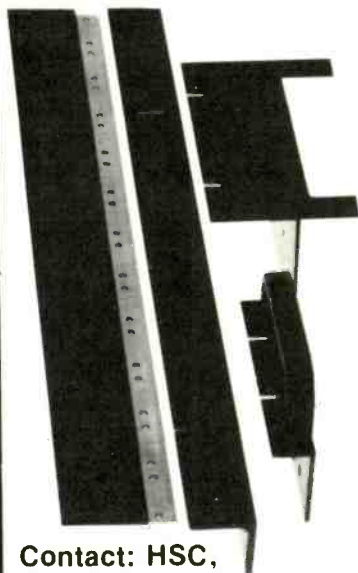
CIRCLE 140 ON READER SERVICE CARD

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something of quite a different nature. On some tape decks, primarily open reel decks, there can be an auto-reversing mechanism that enables the tape to play in both directions. Some of these require electrical sensing posts to change the direction of the tape that can sometimes short out. We have seen on some back-treated tapes that if the heads of the tape recorder aren't properly grounded, there will be an "arcing" effect between the coating of the back treatment coming from the auto-reversing sensing post and arcing to the playback head, resulting in a static-electricity sounding type of phenomenon. It has no effect on the recording, but of course, is very annoying on playback, especially during quiet passages. Depending upon the recorder involved, modifications can and have been made to correct this problem.

As for the tape itself, there are varying degrees of static that one kind of tape can have versus another. The result in terms of the recording are negligible; they are more troublesome in terms of handling—it won't handle as well, if it's on a reel of any kind, it won't stay, it will fall off the reel, but essentially it will not have any effect on the recording on the tape.

If we're talking about reel-to-reel applications, the best way to eliminate static is to stick to back-treated tapes. Back-treatment is usually conductive for most of the products that are on the market. Another solution might be to keep the humidity up where the tape is being used, because static is generally only a problem in very low humidity environments. Some professional pre-recorded tape manufacturers or duplicators deliberately humidify their operation areas to minimize static. Their problems, however, are usually not electrical but handling problems, similar to those described above.

—Del Eilers

Technical Services Supervisor
3M Corp.
St. Paul, Minn.

A Cache of Colorful Noise

I understand that "white" noise is equal power per unit bandwidth, and that "pink" noise is equal power per octave. Could you please describe the type of filter (low-pass, high-pass or band-pass) used to get pink noise, specifically the 3 dB down point? I have read that this filter rolls off at 3 dB per octave. Does a spectrum analyzer which is divided into

octaves use the same type of noise source as one which is divided into, say, one-third octaves?

—Jay Cunningham
Durham, N.C.

You are correct: a pink noise filter rolls off at 3 dB per octave. Pink noise (equal power per octave) is derived from white noise (equal power per Hertz).

Each time we rise an octave in the audio spectrum, we double the number of Hertz contained within that octave. If, for example, we examine the octave between 500 Hz and 1000 Hz, we see that it contains 500 Hertz. If we look at the next higher octave, 1000 Hz to 2000 Hz, we see it contains 1000 Hertz, or twice as many as the previous octave.

If we consider white noise as equal energy per Hertz, it is easy to see that each successive octave doubles in energy, since it contains twice as many Hertz as the previous octave. A doubling in power is equivalent to an increase of 3 dB. It follows then, that if we observe white noise with a real-time spectrum analyzer, we will see a rising slope of 3 dB per octave.

Pink noise, by contrast, appears "flat" on a real-time spectrum analyzer. To make pink noise from white noise, we must roll off the white noise at 3 dB per octave. This is accomplished through the use of a roll-off filter. The flatness of the resulting pink noise is proportional to the number of poles on the roll-off filter—the more poles, the flatter the pink noise.

An example of a pink noise filter may be found on page 363 of the *Audio Cyclopedia*, second edition, by Howard M. Tremaine. The filter has a continuous slope of 3 dB per octave and does not exhibit a 3 dB down point. However, the response of the filter would be 3 dB down at 1 kHz when referenced to 500 Hz, and 3 dB down at 2 kHz when referenced to 1 kHz, etc.

Since pink noise is equal power per octave, dividing an octave into thirds would yield equal power in each of the individual third octaves. Pink noise, therefore, would look the same (flat) when viewed on an octave band real-time analyzer, or a 1/3-octave real-time analyzer, so the same noise generator can be used for either analyzer.

—Larry Driskill

Product Manager
Professional Audio Products
Ivive Electronics, Inc.
Orem, Utah

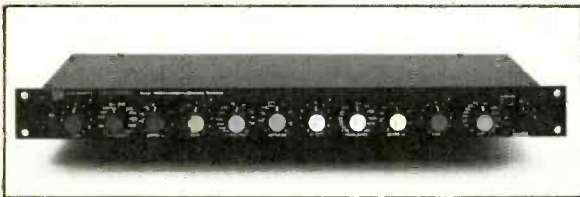




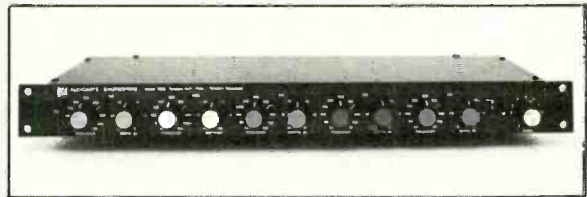
AUDIOARTS ENGINEERING 4000 Mixing System



A SYSTEMS APPROACH



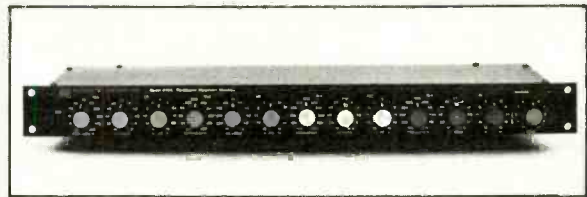
Model 1400 Parametric Electronic Crossover



Model 1500 Feedback Suppressor



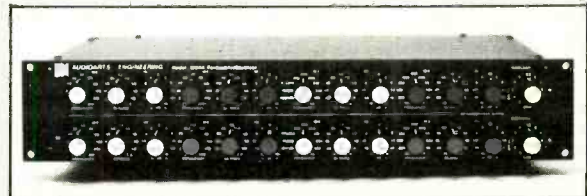
Model 2100A Tuneable Electronic Crossover



Model 4100 Parametric Equalizer - Preamp



Model 5200A Stereo Mixer/Preamplifier



Model 4200A Parametric Equalizer



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CIRCLE 47 ON READER SERVICE CARD

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THE **PRODUCT** SCENE

By Norman Eisenberg

AES Convention

Wrap-Up!

If there is one event that signals the maturity of the professional audio field it must be the convention of the Audio Engineering Society held this past November at the Waldorf Astoria Hotel in New York. Everything about this conclave has been getting better each time. More attendees, more and better exhibits, better organization and a general "feeling" throughout that is upbeat and yet serious. Upwards of 150 exhibitors were on hand to display their products and techniques with a minimum of hype and a lot of good will. Those responsible for making all the arrangements deserve thanks for making the proceedings both extremely informative and highly enjoyable.

"Product Scene" this issue is devoted to items seen at the show, or at least those we found space to include in this month's expanded department. Others, omitted because of space or insufficient information, we will try to catch up with, covering all the details, in the near future.



BARTH PRODUCTS BOW IN

Top model in the line of audio products from R. Barth KG (of Hamburg, Germany) is "Audios"—a combination sound storage memory, transposer and time delay. The device provides bivocal and stereo mode; phasing, flanging, and hyperflanging; storage of sounds for transposed playback; trivocal playback of solo voices; pinpointed memory recall via keys and pedals; vibratos; and lots more. The unit is priced at \$5600.

Also from Barth are a compressor/limiter, a musico-coder (vocoder); and various modules for different functions. All units are rack-mountable.

CIRCLE 12 ON READER SERVICE CARD

TUNABLE CROSSOVER

Furman Sound has introduced its model TX-4, a tunable 3-way/5-way electronic crossover. Four crossover points are independently tunable to any frequency from 20 Hz to 20 kHz. The crossover points may be used separately in pairs (as in a stereo tri-amped system), or together (as in a mono quad- or quint-amped system). Circuitry uses active filters providing two-pole Butterworth response.

CIRCLE 13 ON READER SERVICE CARD

AB SYSTEMS AMPLIFIER

AB Systems has announced its model 1200A stereo power amplifier, claimed to be the first totally modular power amp. In addition to independent power supplies for each channel, the output sections are completely interchangeable. And each output module has its own "whisper" fan. Power output ratings are: 300 watts per channel into 8 ohms; 500 watts into 4 ohms; 1000 watts bridged into 8 ohms.

CIRCLE 14 ON READER SERVICE CARD

HORN LOADED MONITOR

The Audicon Monitor from Audio Consultants, Inc. of Nashville, Tennessee is a multi-element reproducer using standard JBL parts. Response is stated as flat tuned from 25 Hz to 20 kHz at all levels from 70 dB/SPL to 118 dB/SPL as measured at 10 feet. Components are serviceable from the front panel which also contains all the electrical connections.

CIRCLE 28 ON READER SERVICE CARD

STUDER "STUDIO" AND OTHER ITEMS

Studer Revox America's new model 069 portable broadcast console may be housed in a suitcase with room left over for accessories, yet it is a five-input, two-output mixer with EQ, test oscillator, full talk-back, monitoring, level-metering, telephone interface and a universal power supply. Designed for on-the-spot news coverage, interviews, on-location recording and so on, the 069 is designed for control by a single mixing engineer. It can process, equalize, mix and feed to a recorder, telephone line or transmitter signals from two mics and up to three line-level sources. Weighing under 19 pounds, the 069 costs under \$4,500.

Two new recorders also have been announced by the same firm. The B67 is a two-channel, three-speed open-reel model whose controls have been designed and laid out so that, says Studer, operating the machine "becomes second nature, and the creative process can go forward unhindered." The transport is powered by three motors, and all functions are logic-controlled. The digital counter reads in real time at any tape speed. Overall weight is 75 pounds. Retail price is \$3,910.

Studer's model A80/RC is designated as a mastering recorder, whose flexible configuration is designed to accommodate present needs and also anticipate future needs for the professional recordist. Full editing facilities are built-in, including 12-inch reel capacity and full access to all test points and adjustments. The A80/RC is available with full-track mono and half-track stereo head configurations, plus Studer's "Butterfly" stereo heads which widen the recorded track for each channel, thereby improving S/N and reducing the severity of "head bumps" that can prove troublesome.

CIRCLE 29 ON READER SERVICE CARD

PCM RECORDER

Mitsubishi's X-80 series features a digital audio recorder (PCM) that is completely computer-controlled, and has available full tape-cut and electronic editing facilities. The unit automatically monitors the tape during recording, provides tape-cut editing within the music source, and allows re-use of the cut tapes. With a 10-inch reel, recording time is one hour. Dynamic range of the X-80 is spec'd as over 90 dB, with less than 0.02% distortion at peak levels. Frequency response is flat within ± 0.3 dB from 20 Hz to 20 kHz. Less than -85 dB crosstalk is listed, plus "complete freedom from wow and flutter." A console version, the X-80A, also is available. The X-80 can be used with Mitsubishi's model XE-1, an electronic editor that provides automatic editing by SMPTE code by entering the editing points in memory. Fade-in and fade-out functions, and a digital lever fader for adjusting recording levels, are provided.



CIRCLE 30 ON READER SERVICE CARD

MXR PITCH TRANSPOSER

Designed to create "live" instrumental and vocal harmonies, the Pitch Transposer from MXR has four presets that allow an artist to predetermine the interval to be processed. Transposed intervals can be present anywhere from an octave below to an octave above the original pitch. Activation may be via touch-sensitive controls or foot-switch. A micro-computer-based display option shows the created harmonic interval in terms of a pitch ratio, or as a musical interval in half steps. LEDs show which of the four presets has been chosen.

The device also has a mix control enabling its use in one input of a mixing console, or with musical instrument amplifiers. A regeneration feature may be used for creating additional pitches which can result in the effect of several voices or of instrumental chords.



CIRCLE 31 ON READER SERVICE CARD

MODULAR SOUND SYSTEM

Vertical slide-in modules comprise the 5000 system offered by Ivie Electronics. Included are: the 5101 power module; the 5202 two-way crossover; the 5203 three-way crossover; the 5303 1/3-octave equalizer; the 5306 notch filter; the 5606 "six by two" mixer; and the 5805/5806 amplifier combination, the latter unit serving as a low-impedance "slave" or companion amplifier to the 5805.

All modules are of similar dimensions and may be set up in various combinations. Features highlighted by Ivie include the use of a universal main-frame; independent power supplies; key lock system security; LED status indicators; remote control; audio test points; elimination of ground loops; and easy maintenance.

CIRCLE 32 ON READER SERVICE CARD

TIME COMPRESSION SYSTEM

A time compression system, designed to increase or decrease the speed of recorded voice and music without a loss of definition or of bandwidth has been introduced by Integrated Sound Systems. The new ISS process enables a 30-second commercial, for instance, to be reprocessed to 20 seconds without producing the high-pitched "chipmunk" effect that normally occurs when a recording is played faster. The ratio, says ISS, is flexible and its limits have not yet been fully explored. The technique, it is pointed out, also may be used to permit time justification of passages that are over or under required time lengths without the need for costly editing or retakes. Feature material can be "reprocessed" to fit specific time slots without affecting the impact or normal flow of the material.

CIRCLE 33 ON READER SERVICE CARD

SOUND PROCESSORS FROM FRANCE

The Parisian firm of Publison Audio Professional has announced six audio products. The DHM 89B2 is designated as a "stereo digital audio computer." Its effects capabilities include dual delay, dual echo, pitch shifting, automatic arpeggio, reversed sound and a memorized mode. The model DHM 83B has similar functions but its delay is twice as short, and is quasi-stereo (two outputs for one input).

Publison also has the model CL 20C compressor/limiter; the ECL 20A dual compressor/limiter/expander/noise gate; the "Fullmost" which enhances the brightness of program material by phase manipulation rather than by frequency alteration; and the "Loft," an analog delay-line flanger.

CIRCLE 34 ON READER SERVICE CARD

ELECTROSTATIC SPEAKER WITH AMP

"The Monitor" from Acoustat Corp. is a full-range direct-drive electrostatic speaker system with an integral self-contained servo-charge driving amplifier. The speaker is rated to produce over 110 dB/SPL before amplifier clipping occurs or THD exceeds 1 percent. The amplifier is contained in the pedestal of the speaker.

CIRCLE 35 ON READER SERVICE CARD

DUPONT CHALLENGES METAL TAPE

In a paper entitled "Chromium Dioxide vs. Metal-Alloy Cassettes," Du Pont states that "Just as CrO₂ itself, though magnetically superior to ferric oxides, was not a suitable material for the higher speeds of open-reel recording, so metal-alloy particles offer insufficient advantages at 1 7/8 ips." The paper then describes tests and their results that led to this conclusion.

CIRCLE 15 ON READER SERVICE CARD

NEW MIC ACCESSORY

For studio and location work, Brewer Instruments has introduced its "Tensimount" described as a simple but sturdy and unobtrusive device that serves as a universal microphone mounting and isolation system. It accepts any mic up to 1 3/8 inches in diameter, providing better than 20 dB of mechanical isolation. Tensimount enables a mic to fit a standard three-quarter inch mic clamp so that it is possible to standardize all stands, and allow instantaneous switching of microphones without altering stand setups. Price is \$10.

CIRCLE 16 ON READER SERVICE CARD

AUDIOARTS MIXING SYSTEM

A professional mixing system intended for serious recording and sound-reinforcement applications, the 4000 Audioarts is made up of different plug-in modules and mainframes. Configurations include 12 to 32 input channels, subgroups for mixdown and reinforcement and direct output patch option for 8-track and 16-track recording. The five modules are designated as input, subgroup, output, control and monitor. In "live" recording, simultaneous 4-track, 2-track and stereo reinforcement is possible.



CIRCLE 17 ON READER SERVICE CARD

BGW POWER AMP

The BGW 600 is a stereo power amp rated for 175 watts (minimum sine wave continuous average power output) per channel, with both channels driving 8-ohm loads over the 20 Hz to 20 kHz band. Maximum THD is spec'd at no more than 0.1 percent. Driving 4-ohm loads, power output per channel is upped to 250 watts. In mono use, the power rating for an 8-ohm load is 500 watts. BGW advises that the model 600 is actually the first in a series of economical basic amps that incorporate the quality and ruggedness of previous BGW units but whose appearance and convenience features have been modified without impairing audio performance.

CIRCLE 18 ON READER SERVICE CARD

TEAC CABLES

Among other items, TEAC is offering a low capacitance coaxial cable for phono cartridge hookups. Says TEAC, the new cable provides better response due to its very low C, which is also responsible for passing a wider bandwidth. The "velocity of propagation" is said to be fast enough to assure lower phase shift, improved square-wave and transient response. Shields and connectors of this "Low Cap" Audio Cable are claimed to be stronger.

CIRCLE 19 ON READER SERVICE CARD

MINIMODULATOR

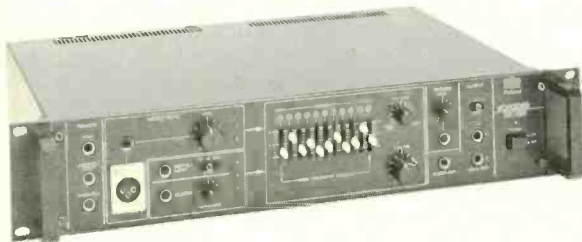
Marshall Electronic has announced its Minimodulator, a delay line signal processor. All control circuitry is digital, which—Marshall explains—allowed them to expand the device's versatility while making it simpler and faster to operate. To add features, Marshall expanded the unit's "internal intelligence" rather than adding new controls. This enables the unit to set up complex patches immediately with critical level matches at the touch of a single key pad. Effects are entirely analog. This, says the manufacturer, makes for smooth sound and freedom from quantising error and extremely limited sweep ranges "that plague all digital units." The combination of digital program control and analog sound effects gives you "the best of both worlds" in signal processing.

CIRCLE 20 ON READER SERVICE CARD

ROLAND EXPANDS PRODUCT LINE

Roland has added several products to its rack series. One is a stereo flanger, model SBF-325, that produces a myriad of time-delay effects, ranging from classic flanging to chorus and doubling. A second channel permits stereo panning in all time-delay modes. LEDs monitor each mode and also show sweep rate and overload status. Listing for \$495, the SBF-325 provides complete flexibility over sweep width and depth, as well as manual delay control and full regeneration capability.

Roland's new Vocoder, model SVC-350, accomplishes vocal synthesis through a series of eleven "voice character analysis filters." All filters are active and control an envelope follower that reacts to the volume of an individual frequency. This information then is used to shape the frequencies of the carrier (musical) signal. List price is \$995.



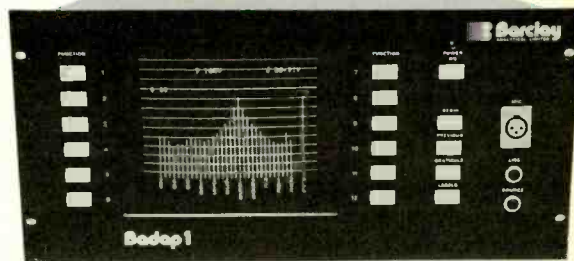
The model SPH-323 is a new phaser from Roland that is described as "probably the most flexible phase shifter package ever offered to the trade." In addition to total manual and external control over all phase-shift parameters, the SPH-323 features a dual LFO for unique multi-modulation effects. Price of this new model is \$450.

Roland's "Dimension D" (model no. SDD-320), which can process both mono and stereo signals, is credited with creating a unique psychoacoustic effect (dubbed "Ro-Phex") through its different spatial modes. This device may be used with virtually any instrument and is said to be especially effective with voice tracks. Price is \$495.



CIRCLE 21 ON READER SERVICE CARD

MULTI-PURPOSE AUDIO COMPUTER



Barclay Analytical Limited has announced its "Badap 1 Audio Micro Computer," a programmable audio test instrument. A true computer system, it can measure third-octave response, room reverb time, wow and flutter, critical distance, and more. Suggested applications include room equalization, spectrum analysis, disc/tape monitoring, sound system design, room acoustical treatment, multi-channel monitoring, and more. A multicolored display highlights the unit's front panel, together with operating controls and signal connectors. Existing software for use with the device include programs for real-time analysis, reverb time, acoustic distance measurements, chromatic spectral decay, stereo analyzer and input multiplexer accessories. Future programs include over twenty functions including distortion measurements, weighting curves, digital logic analysis, tape recorder analysis, etc. Price of the Badap 1 is \$5495.

CIRCLE 22 ON READER SERVICE CARD

BRITISH AUDIO ENTRIES

Rank Strand Electric, a division of Rank Audio Visual (of Brentford, Middlesex, England) offers modular mixing systems in consoles, with a variety of inputs, outputs and functions. Up to 32 input channels and 6 group output channels are provided in "System 1" while in "System 2" the options and features are expanded. Strand's new model SS500 also has a power amplifier rated for mono and stereo service, and for loads down to 2.5 ohms. The RMS power output into 5 ohms mono is 900 watts. Its lowest power rating is 8 ohms stereo, 200 watts per channel. Strand also offers monitor speakers, and an intercom system designed especially for use in theatres or studios.

CIRCLE 23 ON READER SERVICE CARD

DBX VOLTAGE CONTROLLED AMPLIFIER

The model 2001 VCA from dbx is described as a low-distortion, low-noise, high-bandwidth Voltage Controlled Amplifier with distortion so low as to be almost nonmeasurable regardless of gain or of input and output levels. An all-discrete design, the new amp boasts a minimum gain-bandwidth product of 50 MHz, resulting in full audio bandwidth at 60 dB of gain, with "complete freedom from slew-rate-related problems." Gain versus control voltage characteristics are an exponential function (20 dB/volt) allowing the user to accurately and conveniently program the amplifier's gain directly in dB. A "current in, current out" device, the amplifier can be optimized to fit the needs of the user by choosing suitable input and output resistors.

CIRCLE 24 ON READER SERVICE CARD

SHOWCO SHOWS PRODUCTS

Showco has introduced its model 2510 four-way master control and frequency dividing network designed primarily to drive Showco's 9000 series professional P.A. systems), and several additional electronic crossovers. The master panel of the 2510 is designed to provide precise metering and level control of the drive lines of any four-way sound system. Either single-ended or balanced input signals are accepted. Balanced outputs are available at coded XLR connectors with an associated quarter-inch single-ended output. Crossover frequencies may be specified by the user when ordered.

Showco's series S-2505 and S-2506 crossovers include twelve models featuring two, three or four-way operation in mono or in stereo, with or without front-panel channel gain controls.



CIRCLE 25 ON READER SERVICE CARD

DIGITAL DELAY LINE



Designed for applications in sound-reinforcement and in studios where just one delay is needed, the DL-3 from DeltaLab Research is a one in/one out unit providing delays from 4 to 120 msec. Delay is set by switches in 4-msec steps. Suggested uses include P.A. systems in churches, synagogues, theatres, school auditoriums, and so on; improving stage presence for "live" performers; delayed feedback for on-stage foldback speakers to reduce feedback at high levels; pre-reverb delay (delayed echo send) to improve the subjective performance of spring reverb units; and special effects such as vocal doubling and thickening, slapback echoes, Haas-effect image localization and enhanced spatial ambience. Price is \$775.

DeltaLab also has announced a Memory Module for interfacing with its model DL-2 "Acousticomputer" and its model DL-4 "Time Line." The module can expand the total memory capacity of either unit to more than two seconds of delay without reducing bandwidth.

CIRCLE 26 ON READER SERVICE CARD

DOUBLE RIBBON MICROPHONE

From Beyer there's now a unique double-ribbon microphone, the model M-160, which boasts a true hypercardioid pattern and a frequency response from 40 Hz to 18 kHz. The two aluminum ribbons used as the signal-generating elements are less than 1/12,000th of an inch in thickness. Because they are much shorter than the elements used in most ribbon mics, and due to the special forming process used in its manufacture, the M-160 is claimed to be highly immune to the overload and mechanical shock problems associated with ribbon mics. Price is \$334.

Beyer's model M260 is also a ribbon mic priced at \$189. The Beyer M500 ribbon mic costs \$199.

In dynamic (moving-coil) mics, Beyer offers the unidirectional M400 at \$119, the M69 hypercardioid at \$150 and the M88 at \$299. Beyer also has announced a line of matching transformers to solve interface problems both in the studio and on the road. A catalog is available.

CIRCLE 27 ON READER SERVICE CARD



MUSICAL

NEWSICALS

MICROPHONES AND ACCESSORIES

New from Audio-Technica U.S. are two microphone accessories: a "clothespin" shock mount for microphones and a table-top mic stand. The stand is the AT-8601, which is formed of a high-resilience, rubber-like sound damping material to minimize pickup of sound transmitted through the stand. The stand has a positive, screw-lock swivel, and attaches to the mic clip with a metal screw. The AT-8410A is a microphone shock mount designed to isolate the mic from stand-borne vibration. Such vibration can be a particular problem in some applications such as miking a drum kit on a plywood drum riser for example. This new Audio-Technica shock mount uses a clothespin-type clamp which can accommodate most any cylindrical or tapered shape microphone. The clothespin assembly in turn is suspended by elastic members within an outer ring and stand adapter. As shock mounts go, this A-T model is fairly compact at 5¼" high, 4" long, and 3¼" in diameter at its widest.

CIRCLE 2 ON READER SERVICE CARD

Sennheiser Electronics Corporation has announced a new dynamic microphone model, the MD-431, which they refer to as the Profipower (*professional fidelity with powerful sound*). The MD-431 is a super-cardioid design to help reduce feedback in "live" performance situations, and like other Sennheiser mics this model maintains its directional characteristics closely throughout its frequency range for maximum rejection of off-axis sound. Since the MD-431 was designed specifically for soloist use on stage, much attention was paid to eliminating handling noise; a special temperature-independent inner suspension was designed to isolate the mic capsule within the double metal housing, and a low-cut filter was

built in to suppress low-frequency handling noise without compromising the 40 Hz–16 kHz frequency response. A highly effective pop screen was designed into the mic along with a triple stainless steel screen to protect the capsule from damage should the mic be dropped. Another feature of the MD-431 is a magnetically-actuated



reed switch to turn the mic on and off; the switch may be fixed in the "on" position or it may be removed entirely in a simple operation if desired. The mic has nearly flat response and will handle very high sound pressure levels making it suitable for miking instruments, drums and amplifiers as well as its primary vocal application.

CIRCLE 3 ON READER SERVICE CARD

A unique approach to microphone stands is embodied in the latest product from Zephyr Manufacturing. The Z-80 mic stand is a unique slanted design which allows guitarists and vocalists room to move without interference from the base or upright of their mic stand without the inconvenience and instability of a boom stand. An added benefit for guitarists is the extra floor space for accessory pedals. The base is specially designed for stability with any microphone, and includes a cast-in carrying handle. The upright is finished in black chrome and is extra long to put the height adjustment collar at a more convenient height than conventional stands.

CIRCLE 4 ON READER SERVICE CARD

MUSICAL INSTRUMENT AMPLIFIERS AND SPEAKERS

The Mouse is the name of a new portable practice amplifier from Lectrosonics Inc., a leader in the field of portable, battery-powered P.A. systems. Unlike the various battery-powered practice amps currently available, The Mouse uses a rechargeable power pack, eliminating the constant cost of replacement batteries. The Mouse features a powerful 8-inch speaker driven by 5 watts RMS for clear sound at any volume up to performance levels. The electronics of the unit include a tone control—a feature seldom found on a practice amp. The input impedance of The Mouse is 10 Megohms for excellent results with any instrument including an acoustic guitar pickup without a preamp.

CIRCLE 5 ON READER SERVICE CARD

MIXING CONSOLES

Musimatic Inc. has announced a new 18-channel stereo mixer, the MMX-1800A. This new model features mic-line switches, LED clipping indicators, three-band EQ, and recording outputs on each input channel. Other features adding to the unit's versatility are a four-band monitor equalizer, a separate headphone section, built-in Hammond spring reverb and a talkback mic. The MMX-1800A comes complete with integrated road case.

CIRCLE 6 ON READER SERVICE CARD

The highly versatile Kelsey line of mixers has been well-known for some ten years, and news comes from Dallas Music Industries USA of one of the latest Kelsey models, the 4/2 Mixer. The Kelsey 4/2 is a modular panel design, with input channels available in modules of four. Various configurations are available ranging from eight inputs up to 32. All Kelsey 4/2 series

mixers come complete with a heavy duty SMF road case with lift-off lid and power supply compartment for the separate power supply.

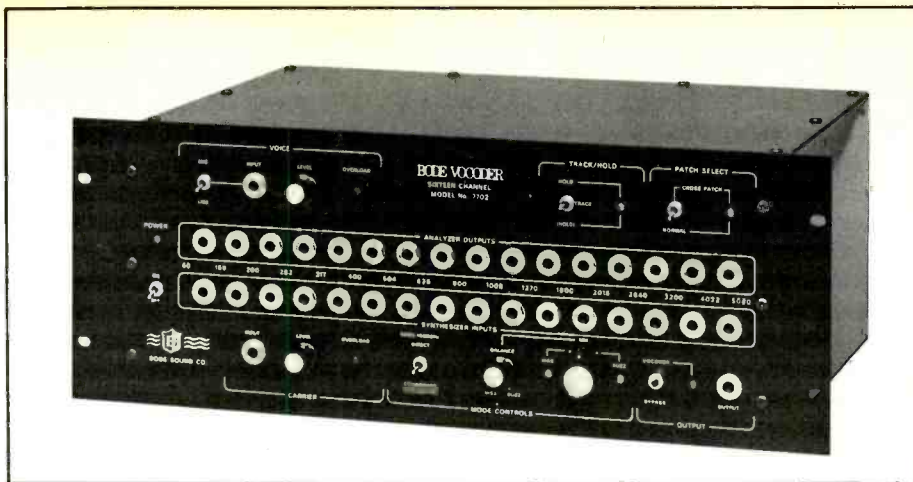
CIRCLE 7 ON READER SERVICE CARD

Fender Musical Instruments entered the P.A. mixer market a short time ago with their M-12 Live Performance Mixer, and they have now added a 12-channel expander to raise the capabilities of that unit to 24 inputs. Like the M-12, each channel of the expander accepts a mic or line input, has an insert patch point, and is independently assignable to the two sub-master and four master buses. Both submasters and all four masters have built-in limiters with fast attack and slow release characteristics; a threshold control and LED indicator are provided for each limiter. A 5-band equalizer is also provided on each of the expander's four master buses. Talkback facilities allow communication with "program," "cue," or with any three monitor mixes, and any channel may be soloed through headphones using "cue" without affecting program or monitor outputs.

CIRCLE 8 ON READER SERVICE CARD

SYNTHESIZER EQUIPMENT

Bode Sound Co. has introduced a new, sophisticated vocoder, the model 7702. This unit is a laboratory-quality device with sixteen analyzer and synthesizer channels covering the basic vocoding frequency range from 50 to 5,080 Hz, plus a patented high frequency section operating in the so-called non-pitched range from 5,080 Hz to 15 kHz, which virtually duplicates the performance of another six vocoding channels according to the unit's designer. The 7702 features a fast response time of only 6 milliseconds, making it possible to process various percussive sounds such as drums or plucked strings as well as voice signals. The unit accepts voice (or program) inputs at either microphone or line level, and has overload indicators on both the voice/program and carrier inputs. The sixteen sets of analyzer outputs and synthesizer inputs are accessible via front panel phone jacks to allow cross-patching for scrambling effects; a panel switch (or plug-in foot switch) bypasses the patch points for instant return to normal vocoder operation. Additional features of the unit include direct or consonant-



controlled operation in the high frequency range, a sample & hold mode to hold a particular vowel's sound spectrum, a hiss/mix/buzz selector switch to allow monitoring of unvoiced (hiss) or voiced (buzz) sounds alone or the combined vocoder sound which is controlled with a balance control, and a bypass switch to feed the voice input directly to the output without vocoder processing.

CIRCLE 9 ON READER SERVICE CARD

An interesting performance-oriented vocoder is among the recent additions to the Roland product line. The new unit is called the Roland Vocoder Plus, and it combines a vocoder with a polyphonic keyboard instrument having both Human Voice and String voices. The unit uses a 49-note split keyboard with high strings, female chorus and male chorus voices independently selectable for the upper half of the keyboard, and low strings and two male choruses selectable for the lower half of the keyboard. The string and vocal voices each have attack time controls while the release time is common to both voices and the vocoder section. Like any other vocoder, the vocoder section of this new Roland unit analyzes the spectrum of a spoken or sung voice input and uses this information to modify another carrier input so that it resembles the voice input. In the case of the Vocoder Plus, there are ten analyzer bands to process the voiced or vowel sounds and one analyzer to handle the unvoiced consonant sounds, but the unique feature of the unit is that the carrier signal is the combined output of the String and Chorus keyboard voices. This means that the single voice input fed into the Vocoder Plus becomes a literal chorus of voices or an orchestra of singing

strings. The three voices of the Vocoder Plus (strings, chorus and vocoder) can be used alone or mixed as desired using the balance control, plus there is an ensemble effect and a vibrato effect available for the chorus and vocoder voices.

CIRCLE 10 ON READER SERVICE CARD

MUSICAL INSTRUMENT ACCESSORIES

With the escalating prices for musical instruments and electronic equipment these days, most musicians have come to realize the value of good quality road cases for their equipment. Star Case Manufacturing Company, Inc. offers a full line of cases in both standard configurations and custom designs which incorporate several unique design features for improved protection of equipment and greater durability. Many case manufacturers build their cases with plain aluminum angle riveted to the various side panels forming the corners; Star Cases use a special extruded aluminum channel molding. The side panels are fitted into the channels in the molding, bonded in place with special waterproof adhesives and riveted from the inside to form a very strong corner with aluminum inside and out. Star also uses a special, extra-deep valance molding for more positive alignment of covers and lids and much greater strength when the cases are closed. Both this valance extrusion and the corner channel are made from anodized aluminum for lasting good looks and protection against corrosion. Full-length, zinc-plated piano hinges of a special design to fit the extra-deep valance are used on all cases with hinged lids, and zinc-plated steel shoulder clamps are used on all corners of the open edges of

cases and covers to protect the valance from damage and to reinforce the hinge. Besides sizes for instruments and amps, Star makes 19-inch equipment racks in both self-racking and double protected, rack plus case styles, and custom-designed cases for any application.

CIRCLE 37 ON READER SERVICE CARD

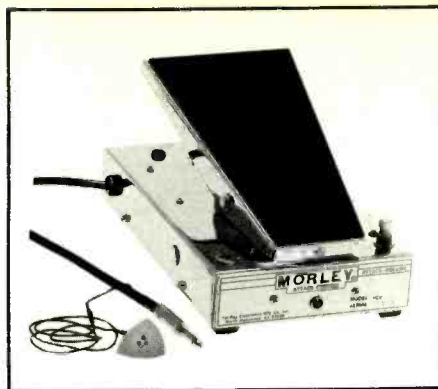
A recent addition to the MXR Musical Products Group is the Stereo Chorus, a sophisticated device offering vibrato and chorus effects and stereo simulation in a single package. The unit is basically an advanced analog delay line and three independent controls are provided for manual control of delay time (from 9ms to 27ms), the rate at which the delay is swept



(variable from .08 Hz to 8 Hz) and the width of the sweep. One effect possible with a delay line is the "comb filter" effect caused by cancellations and reinforcements at various frequencies. The Stereo Chorus features two complimentary output channels such that the cancellation notches in one channel correspond exactly in frequency to the reinforcement peaks in the other channel, producing a variety of stereo effects. An internal switch is provided which selects instrument or line level at both input and outputs for use with music amps or with P.A. or recording consoles.

CIRCLE 38 ON READER SERVICE CARD

A unique new product from Morley is the Electro-PIK Attack Control. The Electro-PIK uses a special guitar pick which is connected to the effects pedal to trigger an envelope generator in the pedal. The speed of the note's attack is controlled by the foot pedal and ranges from a quick, sharp attack to very slow, gradual ones which simulate the sound of bowed strings and virtually eliminate the sound of the string being plucked by the pick regardless of how hard the string is plucked. The kind of effects produced



by the Electro-PIK were only possible previously with the very skillful use of a volume pedal, but with this new device a full range of bowed string and woodwind effects are available to every guitarist.

CIRCLE 39 ON READER SERVICE CARD

JMF Engineering offers two compact, battery-operated tuning devices for musical instruments. The smaller of the two units is the Mini Tuner, a five-note model designed for guitars and basses. The unit has a selector switch for tuning E, A, D, G and B, and has automatic octave ranging from E-41.2 through E-659.25. A 2½-inch meter is used to indicate correct tuning, with center scale indicating correct tuning relative to an A-440 and each meter division corresponding to a 4 percent change in pitch. Other features of the Mini Tuner include a built-in condenser mic for tuning acoustic instruments, and a switchable light for the tuning meter. The Micro Tuner is a full chromatic tuner with an expanded tuning range and an internal speaker for aural tuning as well as meter tuning. The Micro Tuner has two tuning ranges selected by a switch; the lower range covers four octaves starting at C-31.65, while the overlapping high range covers four octaves extending up to C-2217.46. In the aural tuning mode, the speaker provides an audible tuning reference which is adjustable as indicated on the meter; in the low tuning range the speaker plays the octave below middle C while in the high range it plays the octave above middle C.

CIRCLE 40 ON READER SERVICE CARD

MUSICAL INSTRUMENTS

New from Tama Drums is the specially priced Royalstar drum set. Royalstar drums are sold in complete sets of five drums plus hardware in-

cluding a 14" x 22" bass drum, 5" x 14" snare drum, 8" x 12" and 9" x 13" rack toms and a 16" x 16" floor tom. All the drums feature heavy wood shells except the snare drum which has a metal shell. On the hardware side, the Royalstar set includes a snare stand, two cymbal stands, a high-hat stand and a Hi Beat bass drum pedal. Tama Royalstar drums are available in metallic white or platina finishes.

CIRCLE 44 ON READER SERVICE CARD

A familiar name to many drummers is Camco, and it was announced recently that Camco drums will go back into production at Camco's new headquarters at 1716B Winchester Road, Cornwells Heights, Pa. 19020. Camco was known for their wood drums, and the new Camco line retains the 6-ply, all-maple construction of the old Camco drums for the sound, but uses modern machinery and techniques in manufacturing them for improved tolerances and greater consistency. The wooden shells are hand-finished with lacquer and are fitted with modern, updated hardware.

CIRCLE 46 ON READER SERVICE CARD

Ibanez has introduced a new line of moderately priced acoustic guitars which offer the same craftsmanship and many of the same features found on the more expensive Ibanez models.



The new line is called the Champion Series and features spruce tops and mahogany backs and sides. Champion Series dreadnaughts are available in natural and brown sunburst finishes.

CIRCLE 47 ON READER SERVICE CARD

If it doesn't have an ANVIL®... you don't have a case.

A lot of musical instrument and amp cases are going around these days trying to pass themselves off as ANVIL® cases. And a few dealers are adding to the confusion by using the word "anvil" to describe cases that may look like ours on the outside but don't even begin to measure up on the inside.

The fact of the matter is simple: If it doesn't have the ANVIL® on it — it doesn't have ANVIL's experience, reputation and quality construction in it.

Sturdy, dependable ANVIL® cases are the industry standard — always have been. They're designed around the delicate equipment they carry and are perfectly balanced for easy handling. They're dent-proof, scuff-proof and slippery-fingered-roadie-proof. And

they're available in just about any color you can name.

So if you want your guitar, synthesizer, cello, drums, amps and sound-reinforcement gear to get to the gig in one piece — depend on ANVIL®. We can make a strong case for just about anything.



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CIRCLE 48 ON READER SERVICE CARD

MAKE PATCHWORK PAY OFF.

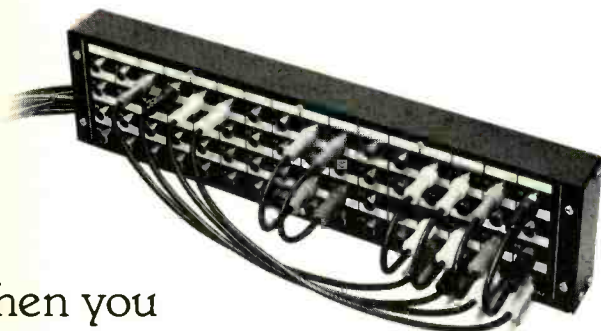


Dollar for dollar and spec for spec this is the best buy in an 8-track multi-channel recording rig. Period. The 80-8 is the most popular 8-track in the world, and the results produced on it



are a matter of record. Sometimes gold. The Model-5B with new IC's and color coded knobs. is the perfect companion mixer. Together, you'll have the most functional, economical 8-track hardware package you can buy.

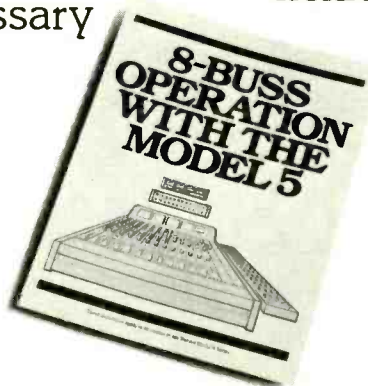
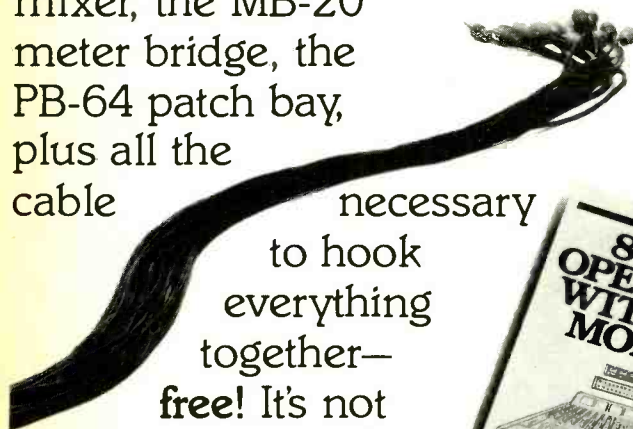
RIGHT NOW!



When you purchase an 80-8 and Model-5B, between January 1, 1980 and April 30, 1980, you get the Model-1 monitor mixer, the MB-20 meter bridge, the PB-64 patch bay, plus all the cable



necessary to hook everything together—**free!** It's not just ordinary cable, either—it's TEAC's exclusive low capacitance cable—the same high quality cable recommended for all Tascam Series systems interface.



Be sure to contact your Tascam Series dealer for details on this special limited offer. He'll show you the 8-buss operation brochure we prepared that takes you step-by-step through the most flexible, functional and economical 8-track recording system available. Now, more than ever, patchwork pays off.

**GET MORE THAN
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TASCAM SERIES

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The

ELECTRIC

Primer -Part V



**By
Peter Weiss**

After a month filled with agonizing suspense and prurient curiosity we will finally find out which parts of the human body have something to do with electric currents and magnetic fields. But first, we have to explore the relationship between electric currents and magnetism.

Historically, magnetism presented quite a puzzle to scientific minds and was considered a force field unrelated to either gravity or electricity, two other force field phenomena. The results on the relationship between magnetism and gravity are not in yet, and probably won't be for quite a few years, but, in 1820, almost by accident, Hans Christian Oersted discovered evidence that electricity and magnetism were very closely related.

During electrical experiments, Oersted happened to notice that a force was exerted between two adjacent current-carrying wires. Suspecting that this force might be related to magnetism, Oersted placed a compass near a current-carrying wire. Oersted's intuition proved to be correct, because

the compass needle was deflected from its normal northward-pointing position (the exact deflection depending on the relative positions of compass and wire). These observations led to the conclusion that the electric current in the wire produced a magnetic field. Oersted followed up on his discovery

and as a result we have a set of rules by which we can define the relationships between electric currents and magnetic fields.

Fig. 1 illustrates the behavior of compass needles near a (direct) current-carrying wire. The arrowheads represent the ends of the compass needles that normally point in the general direction of geographic North.¹ The direction of "electron flow" is represented by the outlined arrow, while the direction of "conventional flow" is indicated by the solid arrow (see Part IV; February 1980). In Fig. 2, we've eliminated the compass needles and have replaced them with a "lines of force" representation.² As in Part IV, the small arrows in Fig. 2 represent the direction of the magnetic field, which is defined as going from north magnetic pole to south magnetic pole. Although there are no actual magnetic poles present, the north-south direction assigned to the field lines is based on the alignment of the compass needles in Fig. 1.

Well, we've finally come to the part about body parts. It turns out that if you place a right hand as shown in Fig. 3, with the thumb pointing in the direction of conventional current flow, the fingers will point in the direction of the associated magnetic field. We at *MR* specifically do *not* recommend that anybody go around grasping current-carrying wires. Doing so is an excellent way to turn into a smoking greasy spot on the floor. The right-hand rule described above is meant to be demonstrated on *imaginary* wires. The rule works in reverse, of course. That is, if the magnetic field direction (fingers), is known, application of the right-hand rule will indicate the direction of conventional current flow (thumb).

¹ The end of the compass needle that points towards the North Pole is a magnetic north pole. This means that what we refer to as the Earth's North Magnetic Pole, which is near the geographic North Pole, is actually, magnetically a south pole. We don't know if this adds to, or clears up any confusion, but there it is.

² The concept of magnetic lines of force is meant to be an aid in the visualization of the magnetic field and the effects associated with it. In reality, a magnetic field exists continuously through a region of space and is not confined to "lines." Another use of the "lines of force" concept is in depicting the relative strengths of magnetic fields or of different portions of the same field. Where lines are shown densely packed (as near the poles of a bar magnet) the field is stronger. In Figs. 6, 7, 8, 9, 11 and 12 the field lines between the north and south magnetic poles are uniformly distributed.

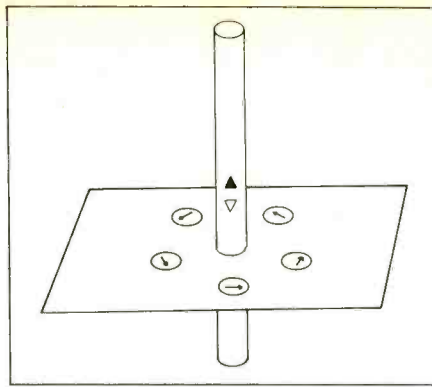


Figure 1

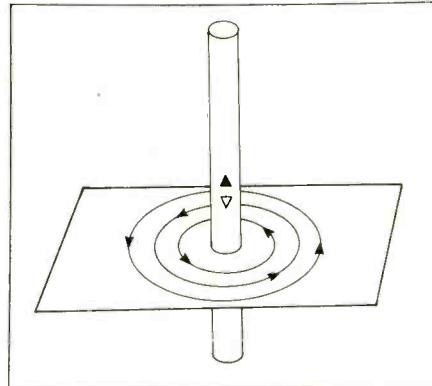


Figure 2

Starry-Eyed and Attracting

So far, we have looked at only one side of the relationship between electricity and magnetism. But, as with all lasting relationships, this one is a two-way relationship. Magnetic fields, under the right conditions, can produce electric voltages and currents. The right conditions include the presence of a conductor and a magnetic field that is changing in intensity and/or direction. The change in the magnetic field must occur as "seen" from the conductor, so any relative motion of the conductor through a stationary field is enough to cause an electric potential to exist between the two ends of the conductor. If the conductor is part of a complete circuit, a current will flow. Of course, the conductor can be stationary, and the field can be in motion, as when a bar magnet is moved past a piece of wire. Any motion of the conductor and field with respect to each other will produce the electrical effects just described. The process of creating a voltage in an isolated conductor, or a current in a conductor that is part of a complete circuit, by means of changes in a magnetic field, is known as *induction*. The resulting voltages or currents are

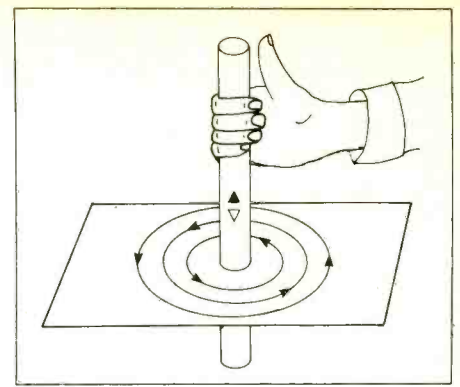


Figure 3

called *induced* voltages (actually, "induced EMF" is the preferred term) and induced currents.

Fig. 4 illustrates Right-Hand Rule #2. This version relates the direction of a (stationary) magnetic field (index finger), the direction of motion of a conductor that is part of a complete circuit (thumb), and the direction (conventional) of the induced current flow (middle finger). The polarity of the induced EMF is also shown. As before, this rule is meant to be applied to imaginary situations. However, there is a warning that goes with this rule: Do *not* practice this right-hand rule in crowded bars or other social situations, as such an act or gesture can easily be misinterpreted and *not* convincingly explained to an offended party.

There is a question that arises out of the explanation of the relationships between electric currents and magnetic fields: If the conductor in Fig. 4 is part of a complete circuit, and the motion of the conductor through the magnetic field creates an induced current in the conductor, then doesn't the induced current also create a magnetic field? The answer is yes, and the direction of this induced field can be found from our first right-hand rule. The rule will show that the direction of the induced magnetic field will be such that it will create, through magnetic

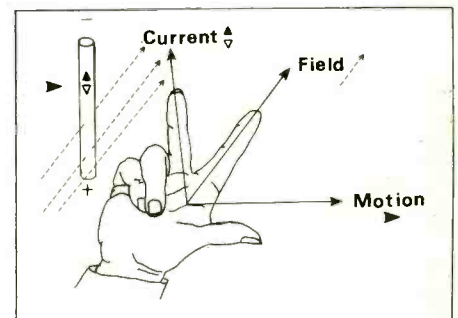


Figure 4

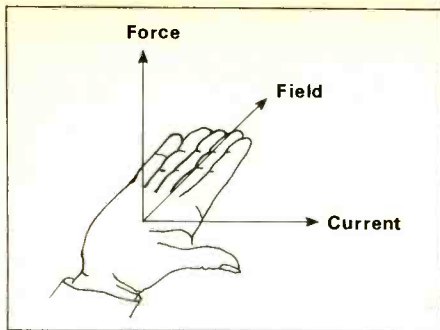


Figure 5

interaction with the stationary field, a force on the moving conductor that will tend to oppose the motion. This makes sense based on our initial discussion of magnetic attraction and repulsion in Part IV.

There is still another right-hand rule to deal with, #3, and it is shown in Fig. 5. When the fingers are extended in the direction of the magnetic field, and the thumb is pointing in the direction of conventional current flow, the direction perpendicularly away from the open palm is the direction of the resulting force. If we apply Right-Hand Rule #2 and then Right-Hand Rule #3 to the situation in Fig. 4, we will see that the resulting force is in a direction *opposing* the motion of the conductor through the field.

The direction of the induced field and the forces that result from its interaction with the stationary field are important results, and slightly different versions of the situations shown in Figs. 3 and 4 can be used to demonstrate useful applications of these

facts. Fig. 6 shows a current-carrying loop of wire in a magnetic field. Tracing the conventional current flow direction as shown by the arrows, and applying Right-Hand Rule #3, we see that two opposing forces arise— F_1 and F_2 . Nothing happens, because these forces cannot cause any rotation of the loop about the axis. If the loop starts out in the position shown in Fig. 7, however, F_1 and F_2 are still present, but now they act together to try and turn the loop in the direction shown to the position it was in in Fig. 6. The magnitude of F_1 and F_2 depends on the magnitude of the current flowing in the loop. What we have here is a means of measuring a current by measuring the force exerted on a loop of wire carrying the current. Such a force can be measured by how far it is capable of stretching a spring. When we set up a system with a current-carrying loop, a magnetic field, a spring for the twisting force to work against (the spring also serves to restore the loop to its original position when no current is present) and we attach a pointer to the loop, we have the fundamental components of a *galvanometer*, or current meter. This type of galvanometer is known as a D'Arsonval movement. There are other kinds of galvanometers, but the D'Arsonval movement is at the heart of practically every kind of meter that one is likely to encounter in audio practice; VU meters, voltmeters, ammeters, all are D'Arsonval galvanometers. Regardless of actual scale calibrations, all of these meters are actually current-measuring devices.

Rotating Loops

If a loop of current-carrying wire experiences a turning force or *torque* in a magnetic field, is it possible that turning a loop of wire in a magnetic field will cause an induced EMF at the ends of the loop? Well, if a moving conductor is in a magnetic field, we already know that an EMF will be induced and that, if there is a complete path, a current will flow. In the rotating loop set-up, we have to examine carefully the direction of current flow (we will assume the required path exists) during different portions of the rotary motion. The magnitude of the induced EMF depends on how many magnetic "lines of force" are perpendicularly cut by the loop in a unit of time. The field lines are uniformly distributed in the space between the two magnetic poles, so, assuming a fixed speed of rotation for the loop, in the direction shown in Fig. 8, the loop will cut the least number of lines per unit time when it is near the position shown in the same figure. For an instant, when the plane of the loop is perpendicular to the field lines, the loop cuts *no* lines and the induced EMF and induced current are zero. This position will be our starting point.

As the loop turns from this position at a constant rate, it begins to cut through more and more field lines during a given unit of time. The number of field lines being cut per unit time reaches a maximum when the loop is in the position shown in Fig. 9

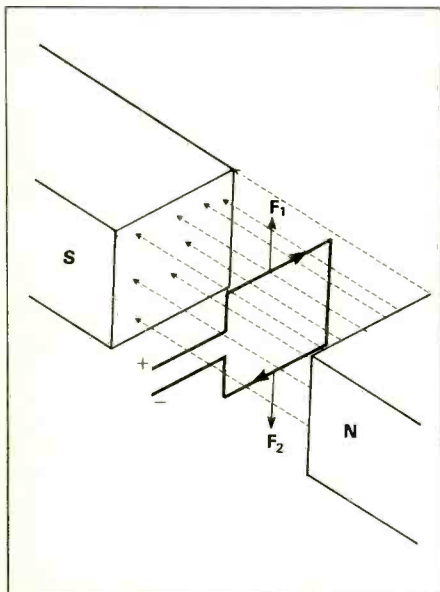


Figure 6

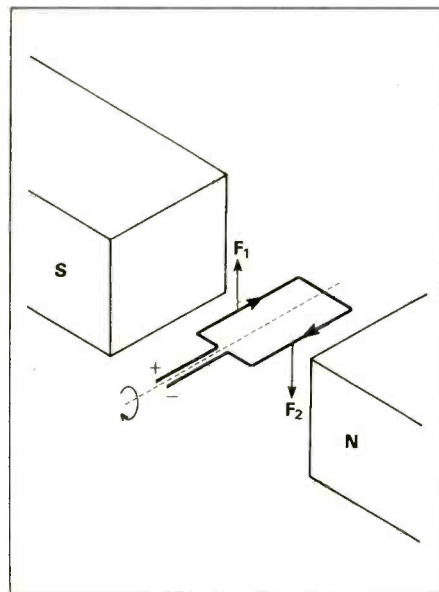


Figure 7

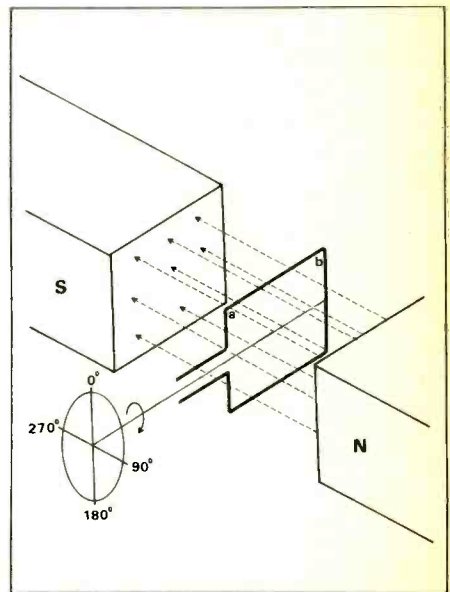


Figure 8

(the field lines are absent from the drawing for the sake of clarity). The induced EMF and current are also at a maximum. By application of Right-Hand Rule #2 we can determine the direction of conventional current flow, and as a result, the polarity of the induced EMF at the loop terminals. From the starting position to this point, the loop has gone through a rotation of 90° . If we plotted a graph of induced EMF versus angle of rotation, the result would be the curve shown in Fig. 10. Now, as the loop continues its constant rate of rotation in the same direction, it begins to cut fewer and fewer lines per unit time, and the EMF and current diminish until the loop is at the position shown in Fig. 11, 180° of rotation away from the starting point, at which instant the EMF and current are again zero. As the rotation continues, the loop begins to cut through more and more lines per unit time, reaching a maximum at 270° , the position shown in Fig. 12. However, this time, from the 180° to the 270° position, the direction of current flow is the reverse of the direction during the 0° to 180° motion. This can be verified by the application of Right-Hand Rule #2 to the side of the loop between points a and b. During the first 180° of rotation the current flows from a towards b, while from 180° around to the original position the current flows from b towards a. When the loop arrives at the original position, after 360° of rotation, the EMF and current are again zero for an instant. Further complete rotations of the loop would provide identical results, and a plot of induced EMF versus angle of rotation (from 0° to 360°) is shown in Fig. 13. Note that the "reverse" polarity portion of the rotation is plotted below the zero voltage line, and when plotted in this way, the shape of the graph that results is called a *sine curve*, after the trigonometric function of the same shape. A voltage whose value and polarity varies with time in the same way that the voltage of the rotating loop arrangement varied with rotation angle (this kind of variation is called *sinusoidal*) is called an *alternating voltage* or *alternating EMF*, because it alternates polarity. A current that flows as a result of an alternating EMF is called an alternating current, abbreviated AC. Often, alternating voltages and currents are referred to as "AC voltages" or "AC currents,"

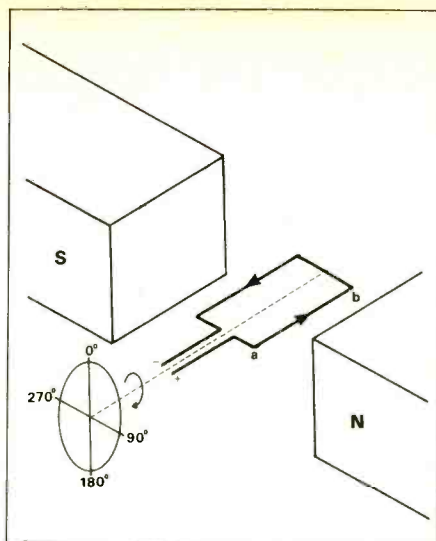


Figure 9

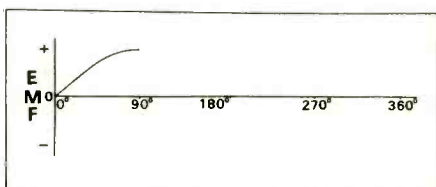


Figure 10

and although these terms are not "proper" they are widely used and accepted.

There are alternating voltages and currents that are not sinusoidal, and, in fact, the general definition of alternating voltage requires only that the polarity change with time (for currents, direction must reverse), and this change need not be sinusoidal. However, sinusoidal signals are prevalent in discussions of audio, so we will concentrate on this "shape" for the present.

In Fig. 13, the horizontal axis (which is also the zero voltage line) is labeled in degrees of rotation. Although most sinusoidal voltages and currents that we will encounter in future discussions will not necessarily be generated by rotating loops, the angular references to different parts of a complete sinusoidal cycle are very useful, so we will retain these labels.

The rotating loop arrangement that led us to the D'Arsonval meter movement can be adapted to other uses as well. If some means were provided to send an alternating current through the loop, and the loop were allowed to rotate freely, isn't it true that the electromagnetic interaction between the field set up by the current and the stationary field would

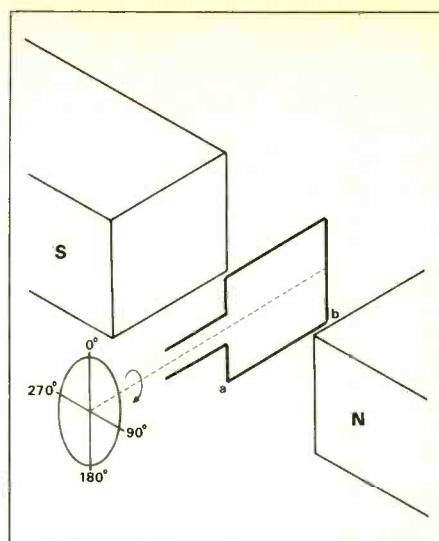


Figure 11

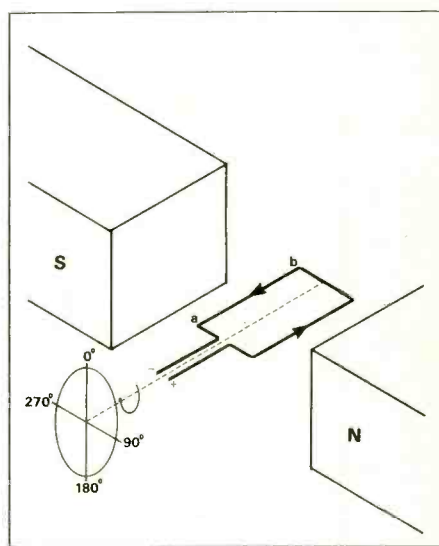


Figure 12

cause rotation of the loop? This is in fact true, and this arrangement is the basis for a simple alternating current motor. This same arrangement can be used to generate alternating current, as we discussed above. In fact, it is by very similar means that the AC supply to homes and other locations is generated by the utility companies.

Current Flow

Motors, meters and generators are important devices, but a complete study of these would require a separate series of articles. There are other important electromagnetic devices and components that are directly related to audio, and we will concentrate on these in particular.

The first of these components operates on principles already familiar to us. In Fig. 14, a direct current is

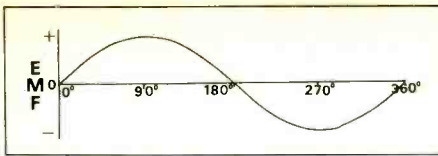


Figure 13

flowing through a wire that has been wound in the form of a coil. (Dots represent conventional current flowing *towards* the reader; x's represent conventional current flowing *away* from the reader.) We must examine the magnetic field(s) created by this current flow and determine how they interact with each other and with the conductor that makes up the coil. If we use Right-Hand Rule #1 to determine the direction of the magnetic fields created by the current in each turn of the coil, we will see that the field around one turn of the coil cuts through the adjacent turn, and in fact cuts through all the turns to some extent. Since the current flows through all turns of the coil, if we verbally examine the conditions that exist in the neighborhood of one pair of adjacent turns, these conditions can be supposed to exist throughout the coil (except at the ends, but more about that later).

Now, at the instant that the current begins to flow, the magnetic field begins to build up around each turn of the conductor. This build-up proceeds at the speed of light, but it is not instantaneous. As the field around a turn builds up it cuts through the adjacent turn, and since this build-up qualifies as a changing magnetic field, an EMF is induced in the adjacent turn. This induced EMF would cause (and does cause) a current to flow in a direction *opposite* to that of the *original current flow*. (All current directions are conventional in this discussion.) This interaction between the magnetic fields and conductors of adjacent turns, when taken along the entire length of the coil, produces a substantial total induced EMF which in turn produces a current flow that opposes the original current. These results and the relationship they express are known collectively as Lenz's Law. The property a coil of wire possesses that causes a "back-EMF" is called *self-inductance*, or sometimes just inductance.

Returning to the magnetic fields around the turns of the coil, since they are the result of a flow of direct

current, they will eventually stop the build-up process and become stationary. Once the field has stabilized, it is no longer changing with respect to the conductor, and therefore there is no more back-EMF or opposing current. When, for some reason, the current flow is stopped, the fields will collapse, but this collapse also qualifies as a changing field, and an induced EMF arises again. This time, though, the direction of the change in the field is opposite to the

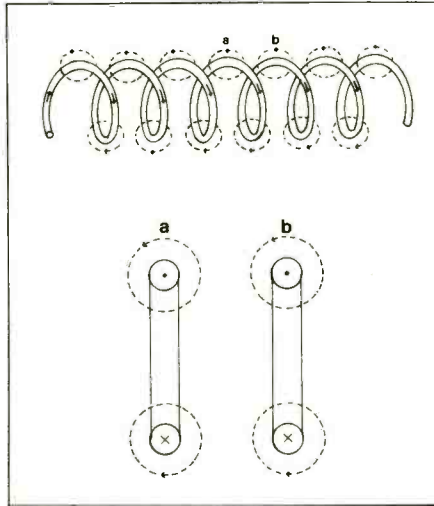


Figure 14

change during build-up, so the polarity of the induced EMF is such that it would produce a current that was in the same direction as the original current. Summed up, the electrical behavior of a coil of wire is such that it opposes any change in current. This is so because a change in current produces a change in the magnetic field, which in turn produces an EMF that opposes the change in the flow of current. Coils of wire are encountered in many audio circuits, and since most audio signals are sinusoidal in nature, we should examine how the properties of coils of wire called inductors interact with sinusoidal voltages and currents, and how inductors, resistors and capacitors interact in a circuit where AC voltages and currents are present. These will be the topics covered in Part VI.

A Return to Oersted

Before we finish up this month's piece, some clarification of the relationship between electricity and magnetism is in order. In relating Oersted's experiment and its results,

the point of view that was presented implied that magnetism and electricity are two related but distinct effects. This is sort of true, and the subject matter is much easier to approach from this angle. However, in complete truth, magnetism and electricity are actually two aspects of the same phenomenon, that which physicists call the "Electromagnetic Interaction."

Electromagnetic phenomena are present throughout the Universe, from the spaces between the stars (light waves, radio waves and cosmic rays are all forms of electromagnetic phenomena) to the spaces that exist between the particles that make up an atom. (When two sub-atomic particles interact, e.g., two electrons repelling each other, they exchange a photon, a packet of electromagnetic energy that carries both an electric field and a magnetic field.) We don't have to get grandiose in our contemplation of electromagnetism, we just need to examine those electromagnetic effects that we will encounter in electrical circuitry.

One question can be answered, though, now that we've recognized the depth of the relationship between electricity and magnetism. If magnetic fields are always the result of moving charge (they are) where does the magnetic field of a permanent magnet come from? From moving charge, of course, but here the moving charges are the electrons that orbit the nuclei of the atoms that make up the magnet. In an *unmagnetized* piece of iron, the electron orbits of individual iron atoms are oriented in random directions, and so there is no net magnetic field resulting from the motions of these electrons. When a steady magnetic field is allowed to permeate the iron, the electron orbits line up. If the steady magnetic field is around long enough, enough electron orbits will be aligned with it so that when the original steady field is slowly removed, a new "permanent" field will take its place, the result of all the aligned electrons motions.

As mentioned above, Part VI will deal with components called inductors (used in a circuit when a fixed value of inductance is required), and circuits containing inductors, capacitors and resistors in various configurations. The math that goes along with some parts of the discussion gets a little hairy, so we will try and shave it a bit in an extensive set of Math Notes.

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a session with

Al DiMeola



By Don Kettler

Working out of the comfortably refurbished CBS studio E on 52nd Street in New York City, Al DiMeola and associate producer/engineer Dave Palmer are settling in for a refreshed assault on Al's new double album, *Splendido Hotel*. Everyone is returning from what has been described as a well deserved break, and the talk skips between the new sanity diversions: Ted Nugent

pinball and bumper pool.

Since Al's last album, *Casino*, he's toured heavily in the U.S. and Europe, and dragged through some disconcerting management rearrangements. This put him at February of 1979 and his first chance to write undistracted, and to concentrate on the foundations of *Splendido Hotel*. March, April and May were spent writing and rehearsing in preparation for recording with

his band, which includes: Philippe Saisse on key's and marimba; Tim Landers, bass; Robbie Gonzalez, drums; and Eddie Colon, percussion.

All of the writing and rehearsing for *Splendido Hotel* occurred in New York with his band, except for one piece which was recorded at Return To Forever compatriot Chick Corea's. Other musical contributions on the album are from Jan Hammer and

Anthony Jackson. Chick, it turns out, plays on three of the album's songs, including the above-mentioned effort which includes a string quartet and the Columbus Boy's Choir. Speaking of the choir, Al insists, "They're second in the world only to the Vienna Boys Choir. Twenty-five totally professional and well rehearsed ten and eleven year old boys who just went right at the material with no problems."

Recording and rehearsing with his band is a departure from Al's standard operating procedure, wherein he writes charts, and then schedules musicians of his choice to come in and record them. Al reflected, "This time I wanted a chance to change parts, to listen back to things and to rearrange them after rehearsing and listening. We got to work on ideas as much as we wanted."

Another interesting potential guest on the album whom Al would play a duet with is none other than Les Paul. It turns out that Les lives near Al, and, after coming to hear Al play a couple years ago, gave him his phone number and was anxious to get together. "I nearly had a heart attack," Al remembers, "he's such a legend, and deservedly so." The story continues with Al at Les Paul's until 6:30 in the morning; DiMeola describes it as like going to Disneyland for the first time when you were a kid. So, an evening in Fantasyland spawned a possible duet for Al's album of an unnamed old standard and the interest for future collaboration. It goes without saying that the pairing com-

bines the elder statesman of guitar and multi-tracking with his 'dazzling contemporary counterpart.

From Les Paul to Les Paul—Al's 1958 sunburst guitar, that is—seems only natural and too convenient a segue for me to pass up. Al is, of course, using lots of different guitars on the project, but the mainstay for it and him for the past year-and-a-half has been the Les Paul, with support from the Fender Stratocaster.

Interesting newcomers to his axe repertoire are the Yamaha electric and Fylde acoustic. Although the Yamaha is still being explored for its own capabilities, Al feels it sounds dynamite at low levels—very clean and punchy with the sustain that the Yamaha folks are insisting is better than a Les Paul's. Early impressions lean to it being a better "live" instrument than a studio one, but continued experimentation will tell for sure.

Acoustically, *Splendido Hotel* is being recorded with Al's Ovation and a couple guitars made by a new manufacturer in the North of England, Fylde. As with the Yamaha electric, Al is always open to trying a new product. The Fylde people called, wanted him to try the guitar and he fell in love with it. "I must say I think they're the best all-wood acoustic guitars made in the world today for what I play," Al volunteers. "The sustain is incredible. They have clarity and rich harp-like highs."

Fylde's 12-string is also close to Al's heart, and Dave adds that they both record beautifully. These are rather

rave reviews for a guitar maker whose product is just appearing, particularly considering the quality and stature of some of the competition.

The Ovation still gets its share of duty, as Al uses it for the fast technical stuff, while he prefers the Fylde for chording and slower melodies. There are more acoustic surprises in store, though, so don't turn the dial.

The final acoustic accoutrement on the new album is a mandocello, a mandolin an octave down. Mandolins previously had been considered for use on DiMeola's albums, fitting particularly well with Al's mechanics, but they never sounded quite good enough. It had always worked out better to use a guitar in mandolin style. The mandolin's propensity towards thinness and tinniness was left behind with the very rich sounding and easily recordable mandocello, so look for it.



In continuing with equipment considerations, Al's amplifier choices tie in with, and complement, his guitar preferences and his style. Although amps such as the Fender Super Reverb and its clean sound have their place in Al's music, for different sounds and moods, none have the powerful, fat, chunky sound of the Marshall. As personal tastes eventually nurture personal style, it's been Al's choice of the combination of Marshall and Les Paul, and their characteristic sustain and "balls," applied to his music, that has born the style we identify with him.

As to the "supreme question" of volume, Al encapsulates: "For certain sections and pieces I like intense sound. I like to feel it in my gut. Volume is everything to a guitar player in terms of sustain."

Lest the reader misunderstand, the "volume is everything" comment is directed from a point of style, not as a result of the-louder-the-better syndrome. The last thing in mind is to make music painful. To make it hurt the ears, in Al's opinion, is wrong. The idea is to harness the power and make it work for you.

In light of this philosophy, the half-dozen amps and heads in the studio seem somewhat less ominous, but what about getting that sound, that



View of Studio E as it was arranged for the DiMeola sessions.

power, on tape? Dave and Al admit to only minor isolation problems (which are encouraged by Al's preference to record "live" as a quartet), but insist that normally one bottom is sufficient for what they are after. The quantity of equipment speaks, rather, to need for flexibility, back-up and experimentation. Dave elaborates, "Sometimes Al will use two tops tied together and we will hook up a third bottom facing away from the mic, or in another room, to take up some of the load, and, on occasion, contribute to ambience. When he's out there in the studio performing with the band at those high levels it certainly can be problematic. You need and want that sound, but as the engineer I need clean tracks to do my job. The bigger the studio, and, to some degree, its design, the less problem I have."

Elaborating on the questions of isolation and the basic recording process, Dave relates, "My approach is to get the guitar and group sound, and the feel happening for the basic tracks, then put down everything we can, including solos."

To accomplish this, Dave prefers to record with several different mics in various positions on different tracks and then pick the best, or try combinations of them, respecting the electrical and physical phasing considerations.

One reason isolation between instruments wasn't too much a problem was because the drums were in a booth, and the bass and keyboards—a Rhodes was used for basics—were recorded direct on all the basic tracks. Any acoustic guitar, or keyboard passages which included grand and tack piano as well as marimba, would then be done as overdubs.

That isolation and leakage were not significant issues was important because close miking doesn't get the sort of sound Al is looking for. Dave explains that, "Close miking and baffles give you a kind of pinched sound. It is nice to have the space in the recording environment to keep the mics on Al back away from his amps as far as possible." This technique, along with occasional room ambient mics, allow for that expansive, uninhibited sound and style that so characterizes DiMeola.

Al's musical style is not "free of charge" physically. Considering that with any amp on the market, whether it be Fender, Marshall, or Boogie,



Columbia Recording Studio engineers Michael Pinchuk and Barry Margiliff (left and center) look on as associate producer Dave Palmer mans the faders.

sustain at low levels is inherently thin, Al faces a constant ritual of self-imposed, high-powered, highly technical/mechanical studio and touring environments. With that, he feels, "I don't think I could be playing this music when I'm 35, because it's draining. It's like a runner training for the Olympics when I tour; you've got to train and work hard because it takes a lot out of you."



Whether training for the Olympics or recording an album, mental attitude as well as technical and performance

standards need to be in balance. For the artist, there reoccurs the choice between the performance track and the technical track, i.e., the one with "feeling" versus the one flawlessly played and recorded. Speaking of this, Al admits that as an artist there are few flaws he can live with. That, by and large, he is a perfectionist, to the point of distraction. In *Return To Forever*, he recalls recording albums very quickly. "If we had taken the time to get great sound quality and performance it would have taken much more time. The days of walking into the studio and just recording a tune are over. When you're doing improvisational music and instrumental music you must get A-1 solos, ones that are knockouts."

Continuing to speak of solos and per-

formance on *Splendido Hotel*, Al describes an overdubbed duet he plays with himself called "Splendido Sundance" as the best acoustic work he has ever done. The piece was written with an improvisational section in it that "takes off like a rocket—very intense and very difficult." Dave reiterates the caliber of Al's playing on this current work, his fourth album with Al, by observing, "I feel that Al is playing the best he has ever played, and relative to technique and performance you must realize that this is just not the kind of music you can play sloppily—it demands perfection."

Overdubbing certainly isn't new to recording or Al. In its use with effects and gadgets (used sparingly), Al and Dave often commit to a sink or swim proposition. Dave says, "If we were going for an effect and we were sure we wanted it, we would lay it right down on the take. We were after a sound, and when we got it we went with it." This wasn't, however, a constant practice; in spots where an effect or blend was in question, final decisions would be postponed until the mix.

On other occasions, overdubbing would be called for when basic track solos just weren't right, and often when the tune called for elaborate guitar layering. For instance, Dave remembers, "On one tune where we were using the original guitar melodies, Al doubled certain sections of the melodies, and then on top of that there would be another set of guitars doubling counterlines. To finish, he then would use acoustic guitars to embellish the melody lines." Thus witness the construction of a song and the contribution of overdubbing.



The kind and direction of the music and these techniques defies simple categorizing. As to any particular style, Al reminds me that the kind of sound people associate with Marshall amps is rock, and that he likes that sound, but doesn't play rock riffs. The sound and intensity, however, do have some basis in rock and distinguish his style. So, from Latin and Brazilian pieces, to Spanish and Mediterranean flavors, to classical

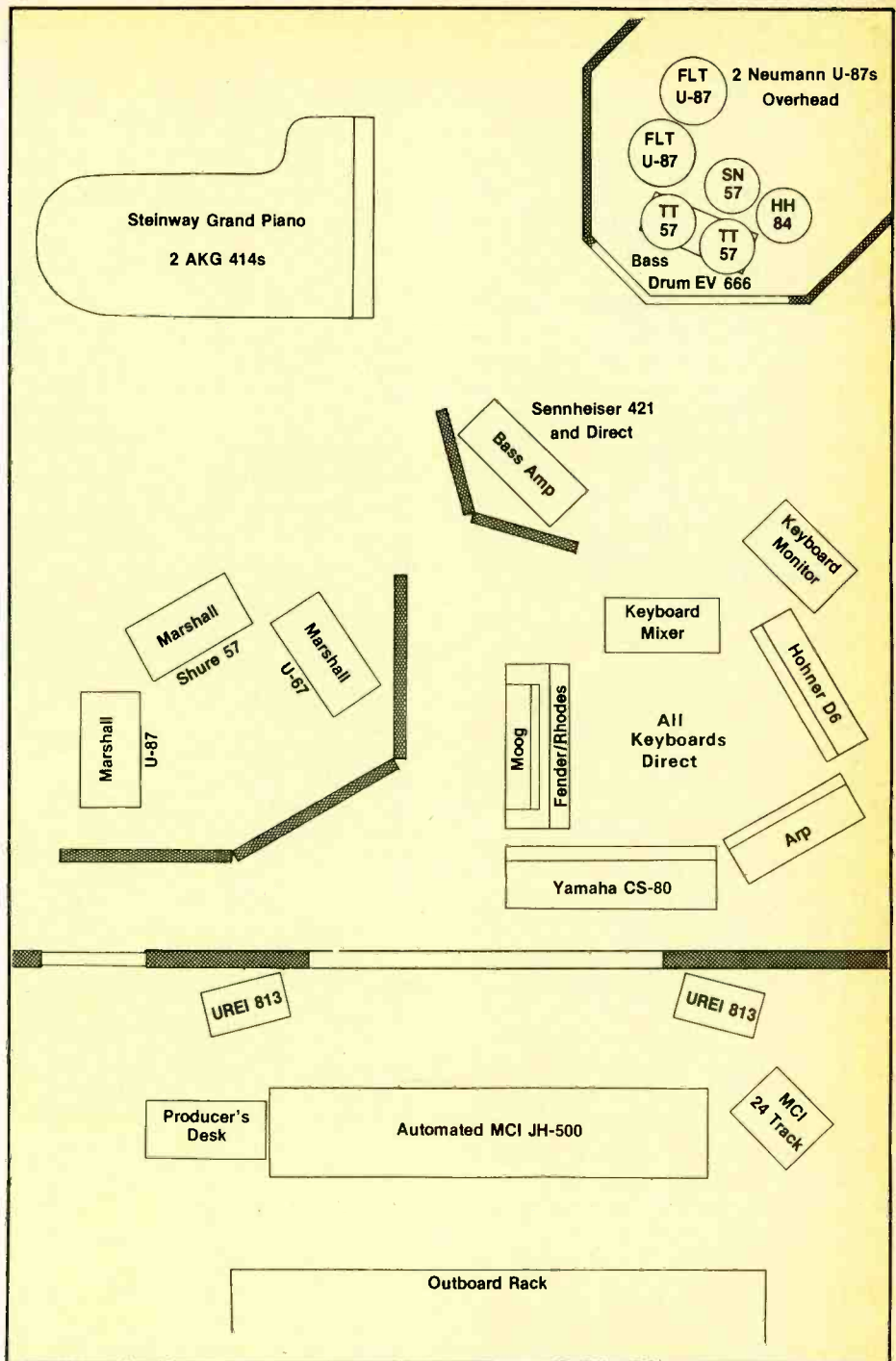


Diagram showing control room and studio set up for DiMeola sessions at CBS.

slants, "it is a guitar player's smorgasbord." And who knows, maybe a single?

Where do all of these varied styles fit into the music industry and the realities of public tastes? Al, in pondering his direction from *Casino* to *Splendido Hotel* considers its relation to the general public with, "I guess I'm just disappointed or disillusioned with the direction and taste of popular music today. Much new music seems to be mindless in the sense that it does not demand the listener's active

involvement. My music demands your attention, and if you're not listening it will irritate you. What I find about the new popular music is that most of the public needs to hear easy melodies they can sing and hum in the car. I'm not against that so much, but in terms of expanding and reaching that audience, this music could be totally alien to them. There are tunes on the album that certainly can reach them, but the meat and quality of the album is in the tunes, the compositions. After all, I'm in it for the art."

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PROFILE:

Rick Derringer

By Jeff Tamarkin



Rick Derringer was thrust into the rock and roll world at an early age, having scored his first number one record in 1965, at the age of 18, with "Hang On Sloopy" by his group, the McCoys. After a few other lesser hits, Derringer went on to join blues/rock guitarist Johnny Winter and produced the new group's first album, Johnny Winter And, in 1971. When Johnny Winter gave up touring for a while, Derringer joined Edgar Winter's White Trash and produced the group's best-

selling They Only Come Out At Night (1973). The following year, Derringer released his first solo album, All-American Boy, on Steve Paul's Blue Sky label, with which he has been associated ever since. After a few solo LPs and a few albums with his band Derringer, Rick recorded his latest album, Guitars and Women, in 1979. The guitarist/singer/songwriter/producer recently discussed his career and his thoughts about recording at Blue Sky's New York offices.

Modern Recording: Let's get some background information first. When did you first pick up a guitar, and what made you do it?

Rick Derringer: Prior to having my own guitar I first shared one with my brother for a few years. But we used that one more as a toy. I painted my name on it, and eventually we jumped on it and broke it in two. Why I got my own when I was nine, I'm not exactly sure. I've tried to figure that one out a lot of times myself.

My uncle also was a guitar player, but he was also kind of the black sheep of the family. I'm from Ohio, where it's

very pleasant, but it's also very boring. Even as a kid I think you could tell that. And my uncle, he probably passed a few bad checks here and there, and wound up in jail a couple of times—might have even been a bigamist. Wow! It sounded real exciting to me. All I knew was that people spoke about him in whispers, and I think I probably attributed all that excitement to the fact that he played the guitar. Of course, the guitar was at that time just starting to become a fad instrument.

MR: So, that must have been the mid-fifties, right?

RD: That would be . . . 1956.

MR: Had you by that time already been listening to a lot of music? You were only nine or ten years old.

RD: Yeah. In fact, I learned to sing the "Tennessee Waltz" when I was three years old. Whenever I'd go to a family function, my parents would always say, "Alright, little Ricky, sing 'Tennessee Waltz.'" But regardless, I got a guitar when I was nine and I played hours every day.

MR: When did you get your first band together?

RD: Well, shortly after I received my guitar, my brother got a set of drums

because he was starting to pound on cardboard boxes and stuff when I'd play. I guess we were the beginning of the McCoys; I was about eleven. He was about nine.

Then when I was about fourteen, my neighbor decided he wanted to play bass. This was a guy named Dennis Kelly. So, I said, "Well, if you can afford one, I'll show you how to play it." I didn't know how to play it, but the bass was also pretty exciting in those days 'cause it had come even after the electric guitar. The Ventures were real big then, so the first song I showed him was a song titled "The McCoy" from this Ventures album. When we played it as a trio we felt so much like a band, we said, "Wow, we could use this as a theme song, and we might as well call ourselves the McCoys." So, we had a theme song and a real name. We only had one song but it didn't matter.

MR: Who were your early influences on the guitar?

RD: Oh, they were definitely people like Chet Atkins and Les Paul, Merle Travis and Wes Montgomery, and because Elvis was happening, [Elvis's lead guitarist] Scotty Moore. Those guys. There weren't any Jimmy Pages or Jeff Becks or Jimi Hendrixes then. They were all great.

Les Paul invented the style we have now—the hammer technique that Jeff Beck and every guitar player does now. Not only that, he invented most of the recording techniques we have today. All of the close-mike techniques. Before Les Paul, you weren't allowed to stand closer than three feet from a mic. They used to have a little warning that came with the microphone: *Warning—the best quality is achieved by standing three to six feet from the mic.* Les Paul found that if you moved right up next to the mic you get a different kind of sound, and he really liked it. In fact, they say he recorded "How High the Moon" with a blanket over Mary Ford's head! So that would be not only the beginning of close miking, but that real dry, studio sound. Plus, he pioneered the multi-track machine, after lots of experimentation. He was into lots of overdubbing back then because he had come to New York and become quite successful. He found out that you could record onto a lacquer and get very good quality, and then play that lacquer back, and since it was good quality, he could play along with the

lacquer "live" onto a second lacquer. Then he took that one step further and put a third head on the machine that enabled him to do that similar kind of thing. That led him to the assumption that, wait, all I have to do is stack eight of these up. So Ampex built it for him and it was the first 8-track machine. Then he took that and started inventing all the echo techniques we have now. He started experimenting with speeding the tape up and slowing it down. He really invented modern recording.

MR: When you first went into a studio, though, you weren't aware of all this. So, what were your own first experiences like?

RD: Probably little home studios. And I knew nothing at all about it. All I knew was that I'd play and they'd record it. When we came to New York to record "Hang On Sloopy," which was the first real record I made, that was on 4-track. I started to look around and see what they were doing. I was about seventeen. I started to realize that they were plugging things into limiters, and I wondered, "What does that do?" And they kept talking about equalizers, so again I wondered what those did. So, that really taught me the basics.

People come in now, see 24-tracks and hear all about the mystique of the studio, and I think they're really led astray in a lot of ways because they feel like it's this magic place that can end all problems. I even hear engineers say it! "It doesn't matter what kind of guitar or amp, bring it in, I can make it sound like whatever you want." Now, frankly, that's a bunch of shit. 'Cause it don't work like that. If you want a Strat sound, play a Strat. You can make some other guitar sound like that, but the easiest way is to play one. If you want to sound like John Bonham, play Ludwig drums, put 'em in a big room and stick one mic where it sounds like John Bonham. You'll sound just as much like John Bonham as if you put twenty-four mics all over the place.

MR: Do you try to keep your setup pretty basic, then?

RD: Well, the latest album (*Guitars And Women*, on Blue Sky Records) was 24 track, dbx But, you still have to stick to all those basic things. The easiest way to record is simply to get the sounds, then find the spot where it sounds like you want it to sound, and then put a mic there.

That's the simplest way to record.

MR: So, you make adjustments until it sounds right to your ear?

RD: It all starts from out there. A lot of times I will go into the studio with other people, and they'll start telling me do this, and you gotta do this in there, and will you plug into this limiter. And I gotta go, wait a second. That should all come *after* your sound. What kind of sound do you want? Let's hear what your guitar sounds like, or drums or piano, or whatever. And then we start from there. We can enhance those, and make things easier to record. We can get more level or make the noise quieter. We can change the frequency balance of things. But we can't make no magic. That comes from the music and it comes from the musicians.

MR: I'd like to get back to your history. You went from being a kid playing with a local band directly to national stardom. How did that affect you? Did that mean you were now somebody to be reckoned with where before you were considered just another hopeful?

RD: It made me aware of the constancy of things. By that I mean some people work for twenty or thirty years to achieve some dream, but they don't really get much success until that time comes. And all during that twenty or thirty years, they build this dream up into a big giant fantasy where they won't have pimple problems any more, and they won't be sad and they won't wake up lonely. Maybe they won't even have to go to the bathroom as much, and their clothes will fit them better. Because it happened so quickly to me, it made me realize that those things don't happen. Everything is absolutely the same as it was before, and your life is the important stuff.

MR: Did people in the music industry start to take you more seriously once you had that first big hit ("Hang On Sloopy") behind you?

RD: Yeah, for sure. Then we went through a period where the McCoys were considered kind of a bubblegum group by the press, and fans, even. But because we had been working with producers and engineers and studios in the city (New York), we were able to maintain a certain level of respect within the real working business.

MR: The McCoys also received a lot of criticism when they recorded *Infinite McCoys* and *Human Ball*, which were sort of your version of the

“ If you want a Strat sound, play a Strat. You can make some other guitar sound like that, but the easiest way is to play one. ”

psychedelic sound that was happening at the time. Was that because people didn't expect the McCoys to sound like that?

RD: Right; and also because we didn't make records that were sellable. We made records that had too many different kinds of music. On one of our albums we would start with something like an instrumental that didn't even end; it faded out. It was like an intro to a song, but we figured since that was the best part of the song, we'd use it. Then we would go from that into maybe a more commercial song, and follow that with maybe a country-Hawaiian song. And then something really avant-garde. Then followed that with an old style. Then perhaps a laid-back Herbie Hancock-style jazz instrumental, followed by a song that sounded like the Beatles on acid talking about religion.

MR: That wasn't much different from what everybody else was doing, so why did the critics pick on you?

RD: It was a little different in as much as groups were doing any *one* of those different things, but they would—the way they [record companies and critics] told us in those days—put it in a “bag.” They'd always say “You guys have to be in a bag. You ain't got no bag!” We'd ask, “What is this bag we're supposed to have?” So, that was it. The music was just too wide; it had too many different kinds of styles. One person could get into one song, but usually one person couldn't get into more than one. Each person had different ones he liked, and because of that, we didn't sell very many records. But still, it [the style] was able to impress a lot of people and shock a lot of people. And it maintained a lot of credibility for us within the business, and within the recording studios.

MR: At least they knew that you were capable of doing what you wanted to do.

•••

MR: When did you first meet Steve Paul (president of Blue Sky, who also “discovered” and manages Johnny Winter) and become involved with Johnny Winter?

RD: It was during that period when we were recording those weird albums.

Part of the reason we wanted to do those weird albums was to regain some kind of musical respect. We had come to have a real interest in folk-blues: John Lee Hooker, Memphis Slim and Muddy Waters. So, we could come out and do a set of country blues, and even though the kids wouldn't know all that stuff, music hadn't evolved to the point where they couldn't get off on it.

All during “Hang On Sloopy” and “Fever,” we were working extensively—six or seven nights a week. But despite the fact that we *had* to do those hit records, we were learning all kinds of music as a band (the band had been together approximately six years at that point). When it became clear to us that people were starting to think of us just as the band that did those hits, and they considered us just another Ohio Express or Royal Guardsmen or Every Mother's Son, we started getting very discouraged; we wanted respect.

Steve offered us the possibility of working at his club, The Scene, in New York. Above all, that was a place where all the respectable, real cool players and bands could come and not only play for their own peers, but hang out and jam. We became a band that played there fairly regularly, and through that we not only got to play for all these people, but we got to see that we were respected by people like Sly Stone and Jimi Hendrix and Larry Coryell and Buddy Miles, and all the people that were supposed to be cool in those days. And we got to jam with them, which was amazing for us. Through that, we got to meet Johnny Winter, and eventually became Johnny Winter And.

MR: That must have surprised all those people who were putting down the McCoys, that you were suddenly playing with Johnny Winter.

RD: I think the rumors of it probably weren't believed. And then when we actually became Johnny Winter And, that was one of the things that made Johnny Winter And very successful. It was not only the fact that people liked them, but also that surprise thing. They just couldn't believe that those guys used to be the McCoys.

MR: What was it like playing and

recording with Johnny Winter? Was that a different experience from recording with your own band?

RD: Yeah. First of all we were allowed to play in big arenas where we were able to play at unlimited volume, which the McCoys weren't able to do. We also were able to play for audiences that gave us immediate respect. The McCoys didn't get very much.

We were able to record in different ways. Johnny was having trouble working with his producer at the time. Johnny's from Texas, and he's a real boisterous kind of character. He was working with Eddie Kramer [*see Modern Recording, January 1980 issue*], who's very British, very well-mannered and has a classical music background. Whether or not they *could* communicate, Johnny felt as if they couldn't. So, right away, since I was able to communicate with Johnny, I took over production chores. It helped me a lot because it gave me credibility in that area. And it also helped Johnny, because I did things that supposedly you weren't doing in those days. The first Johnny Winter And album I did with him we did in the studio just like a “live” record, just like we were doing it in mono. We happened to be doing it in 16 track, but we put one guitar on one side of the room, the other guitar on the other side, the drums in the middle and the bass in the back. All against the back wall, just like a stage. We miked it all and pretended we were doing a mono record, because that's the kind of stuff he liked. It's the kind of sound he wanted. And he's still into that stuff. That was a lot of fun.

MR: How would you describe a session with Johnny?

RD: He wanted things to be real spontaneous, and very “live” and very realistic. He doesn't like to do a lot of overdubbing. He doesn't like to manipulate things too much. He likes to get real authentic kinds of sounds. Beyond that, when the record's done, he likes to remember back that it was a real performance and those are real feelings on the record, that they're not studio manipulated kind of things.

MR: As his producer, did you have the freedom to do what you wanted?

RD: With Johnny, I was pretty

much working as his hands. I was the guy he could communicate with. Edgar (Winter) was the first guy, with the *White Trash* album, who really said, "OK, that sounds real good, I think I'll give you more of a free hand." That grew to the point where *They Only Come Out At Night* was the first thing that I felt was a production that I did. As you work with either of them, they begin to take more control. Or as any producer works with any artist, as they become more familiar, the artist begins to take more and more control.

MR: Would you generally go through a lot of takes . . . ?

RD: Johnny and Edgar are opposites in that respect. Johnny likes to go with early takes. He will do one take and say, "That's it. That's the best. Who could do any better than that? Is there a better rock and roll guitar player in the world?!" And you'll say, "Come on Johnny, I know that if you give it two or three, it's gonna be even better." But it's hard to talk him into that two or three. Edgar, on the other hand, will do something where everybody will say, "Did you hear what he did?" And they'll all be rolling on the floor in amazement. But Edgar will say "I know I can get exactly what I want if I keep trying." Eighty takes later, we'll all be saying, "Edgar, it's not as good as that one we all loved." Through that search for perfection, I think he'll end up with something real good, but I think he'll lose that spontaneity that we all call music.

MR: Were the Winters hard to work with in the studio?

RD: No, not especially. Edgar's harder than Johnny because of that search for perfection. I think that can get you into trouble in the studio. I think that involvement today with perfection, and that involvement with that studio mystique, that whole search, can get you in more trouble than Johnny's search for the first take.

I think part of that problem is the studio's fault, though. They've become so competitive that in order to get the business to *their* studio, they have to spread that mystique, and tell people, "We are able to make that magic. We are able to turn this knob and you will sound like Jimi Hendrix, or whatever. Through that, they've not only nurtured this feeling in the artists' minds, but also in the producers' and the engineers' that work there.

They want to do it, too. Also, of

“ I’m not a big fan of ‘live’ recording. I feel that the best way to get the feeling of a ‘live’ performance is to go and see one. ”

course, it makes more money for the studios to do two hundred takes than to do one take. If you're talking about \$200 an hour, or \$100 a reel of tape, or more, plus rental charges and extras, two hundred takes is a lot more [money] than one take. So, I think they've all contributed, whether consciously or subconsciously, to mistaken belief. That can hurt records more than help them.

• • •

MR: Are you ever *totally* satisfied with a recording that you make?

RD: No, because you're always trying to record music which has a lot more than 100 dB of dynamics. Even the electric bass has a lot more than 100 dB of dynamics. And you're trying to record real music on a medium that allows you less than that 100 dB. The actual art is an art of compromise.

MR: Do you think that "live" recordings ever capture the performance as it feels to the performer?

RD: I'm not a big fan of "live" recording. I feel that the best way [for the listener] to get the feeling of a "live" performance is to go and see one. You get not only the dynamics, but the visuals of it. You get the feeling of the audience. There's something magic that happens months ahead when you buy the ticket to the concert. There's a psychological period where you're able to build yourself into this unreal state. Then you prepare yourself by putting on your cool clothes, and by giving the guy at the door your ticket. You've actually done something real to elevate yourself again. By the time the artist comes on you've been able to elevate yourself so that, if he is able to use the energy that you've developed, he is able to actually create an experience that is unreal, and is psychologically much higher than you can present on a record. So, I'm not a big fan of "live" recording as opposed to studio recording. I think if you're going to make a record, you should utilize what's available and make the best possible recording that you can.

MR: When you go into the studio to record one of your own albums, are you

aware of exactly what you want, and does it ever come out that way?

RD: Well, in *All American Boy* (Derringer's first solo LP), I just wanted to tell people, "Here's my songs; I wrote these songs. This isn't the McCoy's or Johnny or Edgar Winter, or anybody else's idea. This is my idea of how I think my music should sound." Once again, there were more different styles than most people consider necessary on one record; that's the thing I like to do best.

This new album is the same thing again. It's called a co-production with Todd Rundgren and myself, but Todd acts more as a good editor and he really gives me a free hand to do what I want. I feel good about that. The album achieved the goals that I wanted it to achieve. The specific thing I wanted to do with this record was not only show people the songs that I liked, but I wanted to gain back some of the respect and credibility that I might have lost during the last few years of doing band stuff.

MR: How did you get involved with Todd?

RD: Todd's been a friend and neighbor for ten years. Now, he's up in Woodstock, N.Y., but for ten years he was living about a block from me (in New York). We'd been real good friends but we never had to work together where we had to criticize or discuss each other's work. So, he would always play his albums for me and I would play my albums for him, but if I had some real major thing I thought he was weird about, I wouldn't bring it up to him. So when we actually did this project, I was able to steer away from the stuff I might have been nervous about with Todd without making him [self]-conscious about it. And I was able to use the stuff I liked best from Todd without making him nervous. As a good editor, or co-producer, he was able to think, "Well, here's the stuff I didn't like about Rick," without making big discussions about it. He was able to get specifically just the things he liked best from me. Because of that, I think we were a real good team and we got real good stuff. I got the best of Todd and Todd got the best of me.

MR: Did you find that your thinking was the same as Todd's when you were making this album?

RD: Yeah, pretty much the same. Todd likes to use dbx noise reduction and he likes to record at 15 ips,

because dbx gives him an amazing amount of noise limiting, so he doesn't have to worry about hiss. I probably would record at 30 ips and not use noise reduction at all, or maybe even record digitally. But those are just little differences.

MR: How much do you get into the technicalities of recording when you're making an album? Do you like to leave things to the producer and the engineer and just play, or do you like to get behind the board and make sure everything sounds the way you want it to?

RD: Both. I like to make sure the sounds are right, and then I like to start recording. After the sounds are right, anybody can do it. All they have to do is push the buttons and start recording and stop the machine when you're done. I don't think it takes any

think there's a growing interest in the whole business, with people like Joe Jackson and Elvis Costello and all of the acts that are aware of making 16-track or 24-track modern recordings for ten to twenty grand. I don't think we have to make slick records. We can control the environment. We can control the whole recording business, and the whole recording process that's involved, and we can use it to do whatever we want. I think if I've changed at all [it's been that] I've learned a lot. It's been a constant growing process and changing process.

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MR: How many guitars do you currently own, Rick?

RD: Oh, it's always a changing number. I probably have about ten or fifteen now—less than I used to have,

“If you can capture some kind of magic, that's where the feeling comes from, not from the knobs you turn, but from the performance.”

genius to choose the best take, but it does take an awareness of what the best take is. It isn't the best sounds, or the most perfect notes; it is the best music, the most real feeling that you can capture. If you can capture some kind of magic, that's where the feeling comes from, not from the knobs you turn, but from the performance.

MR: It would seem that if you were out there in the studio playing but you were worried about what it sounded like in the control room, it would hinder your performance.

RD: It does. You have to have all that stuff taken care of in advance, and then just let them [the engineers] do it. That's why I say Todd was a good editor, because he wasn't concerned about all that stuff either. He would just come in when the takes were done. We would get the sounds together, and Todd would leave. I would record, and the engineer would be all that was left in the studio. When I felt like the take was right, I'd say, "Hey Todd, come over and let's check this out. And we wouldn't only be checking for sounds, although that would be one thing we were checking, but mainly, we'd be checking for the performance.

MR: How has your approach to recording changed over the years?

RD: Initially, it was a whole learning process for years. The studio can be whatever you want it to be. In fact, I

because I'm trying to get rid of guitars that I can't play or don't play often. Mainly I play about four guitars. I have two B.C. Rich guitars, both Mockingbirds. I play those mostly on the road. My favorite guitar is an old Explorer, a Gibson Explorer, either the first or second one [edition].

MR: You won't take that one out on the road?

RD: I used to, but now I'm afraid to. Not because it's worth a lot of money, although it is, but because it's one of only one or two. If it goes, it can't be replaced. So I can't take that out on the road. But I love the B.C. Riches because not only are they similar to the Explorer in sound and feel, but because they *can* be replaced. Also, that company makes consistently good instruments.

I also have an old Les Paul TV model from about '52 that I like to play a lot, and I have a '65 Strat that I like, and a '65 Gibson ES 355 TD. That's an old red one with double cutaway, a B.B. King kind of guitar. Beyond that, I've kind of phased out a lot of the guitars that I have. I have a '55 Danelectro three-pickup that I like to play a lot. I have a guitar that's handmade. It's made out of granite. The body is actually a piece of three-quarter-inch granite and the neck is glued solidly right into that body.

MR: That could get to be quite a burden to carry around.

RD: It's too heavy to carry, that's why you can't play it that often, but it has a good sound for slide guitar and stuff like that. I have a double-neck made by Charlie LoBue, a 6-12. It's a one-piece birch body that I like to play because it's small and I can play it. LoBue's now on the West Coast; he's a great custom guitar maker. I have a Coral electric sitar that I play once in a while for specific things, and a Fender Precision bass with a Fender Jazz bass neck. I have a Sho-Bud pedal steel that I don't get a chance to use on record much, but it's fun to play at home.

MR: Do you use the same guitars in the studio that you use on the road?

RD: Yes. On this record I primarily used the B.C. Rich, along with the white Gibson TV model and the Strat.

MR: What kinds of amps and pickups do you use when recording?

RD: Pickups, in general, right across the board, DiMarzio Super Distortion dual-sound pickups. In my Strat I even have DiMarzios that look like Strat pickups but are actually the Les Paul-style, black, single-coil, Gibson-type pickups in a Strat case. Amps, in general, I like Marshall and Fender. Music Man and Boogie are also OK, but I use Marshall and Fender.

MR: And you use the same equipment on the road?

RD: Exactly. [Fender] Twin Reverbs or Marshall hundred-watt heads. Or the new Marshall small amp with the hundred-watt head and the one twelve-inch [speaker] is also a good little amp. But I find that those are the tube amplifiers for guitars every day of the week. No transistors for guitars, it just don't work. I don't care how cool people say they are.

MR: Do you think transistorized amps will ever be developed to the point where you can do what you want through them?

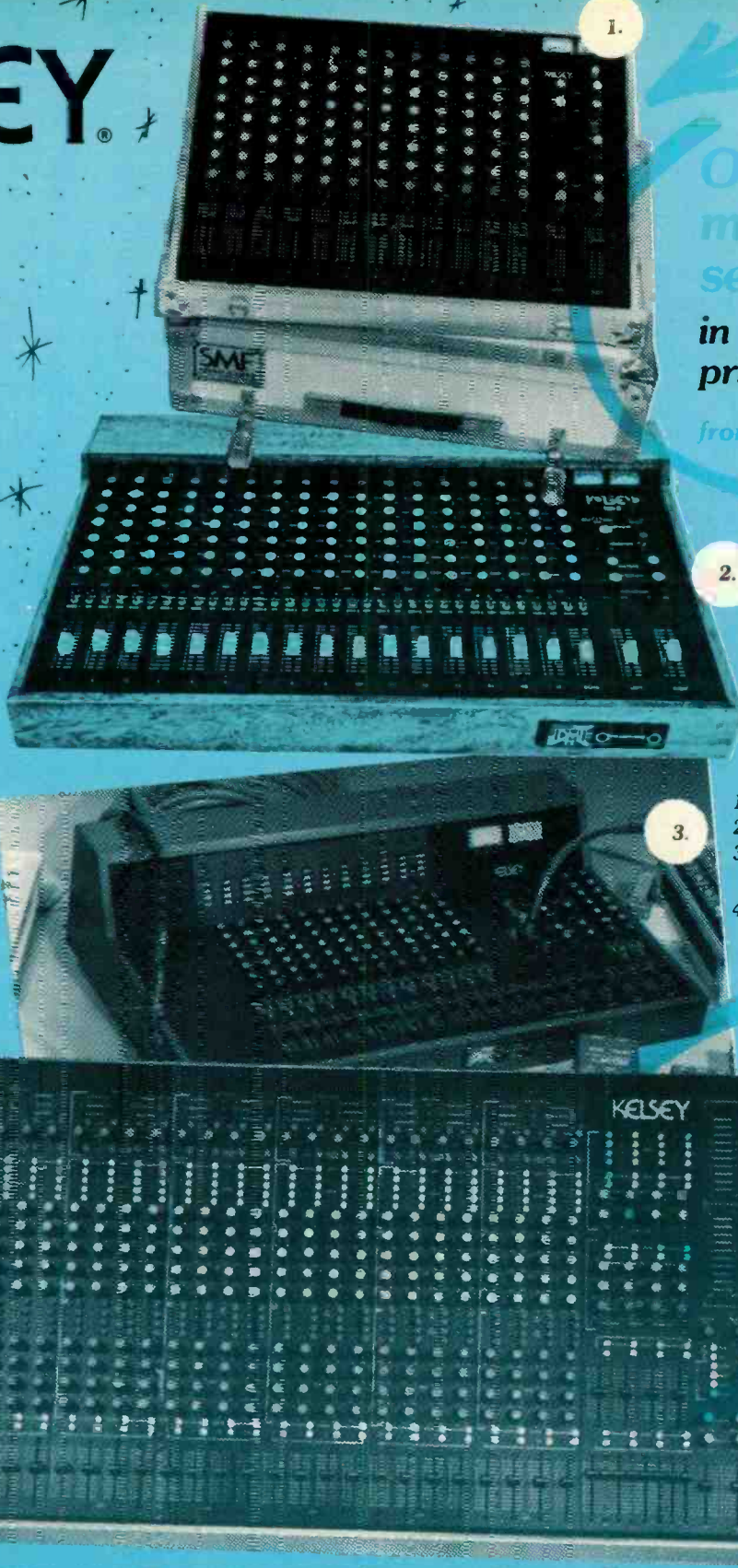
RD: I don't know. I'm sure that the electronics industry is a constantly developing thing, and maybe some day those amps will be great. But now they're still not. In my stereo I have transistor stuff, but that's not the same kind of requirements as playing a guitar. A guitar is an instrument where you use distortion. You use not only the distortion of the speakers, but preferably the distortion of the pre-amps and the amps, the tubes themselves—the hotness of the tubes, overworking that tube. There's no way to do that stuff with transistors. They have to simulate that with transistors.

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“...the (studios have) become so competitive that they spread that mystique and tell people... ‘We are able to turn this knob and you will sound like Jimi Hendrix,’ or whatever. ” 99

They have to build in overdrive phasing, and they then have to be real conscious of whether you're using first and third harmonics rather than second and fifth or fifth and seventh, or whatever the numbers are. In other words, the sounds that guitar players crave are gotten by using Gibson or Fender guitars through Marshall or Fender tube amps.

MR: Do you use any synthesizers on your guitars?

RD: I crave and look forward to the day when I can use a guitar synthesizer polyphonically and have it work great. So far, there are several synthesizers that do it fairly good—Arp and Roland probably are the most widely used of these.

I've found that most guitar synthesizers have difficulty in translating the notes at the same speed your fingers play them; you have to slow down and adjust to the synthesizer. Also, the polyphonic sections don't provide a good quality sound. I would love to be able to plug into a polyphonic guitar synthesizer and get all the sounds that you can get from a great keyboard synthesizer, but you can't yet.

•••

MR: What kind of mics do you prefer and do you use any special miking techniques in the studio?

RD: There are a lot of good mics. I use all kinds of mics. From the Neumanns down to Shure SM57s. As a matter of fact, Shure 57 is the best all-around mic in the world. You can use a Shure 57 for everything. You can use a Shure 57 mic on everything in the kit: the snare drum, the cymbals, the bass drum. You can use it on all the vocals, all the guitars, “live,” and it will not only hold up every night, and give you a good high output and a lot of sound, but also give you a good quality sound. You can take that mic in the studio and do the same thing and no one will know when they listen to that record that you didn't use Neumann mics. Some producers use 57s on the drums, and some use them on the vocals. A lot of times I use 57s on the drums and guitars myself. But, on the other hand, I also love Sennheiser mics. They make a lot of good mics. AKG makes a lot of good mics. And B&O makes a lot of good mics. Neumann makes a lot of

good mics. Sony makes good mics. There really are a lot of good mics and they really all have some good characteristics. Electro-Voice is my favorite vocal mic “live,” the DS35. It has a real flat sound and doesn't hide the top or bottom. Everything in the middle—which is the voice—is reproduced flat. The DS35 also has low feedback characteristics, which means you can get a lot of level from your monitor “live.” But it's low output—some people would like to know that.

MR: Do you have a method that you prefer for miking guitars in the studio?

RD: Guitars . . . I usually use a couple of mics. I use one close and one far away and one out in the room somewhere. I might, for instance, put a Sennheiser 421 right near the speaker, and maybe a 57 about three feet away and a Neumann U-87 out in the room somewhere. You can actually, with those three mics, before you bring the room mic up at all, just by altering the two mics that are close to the amps, you can get different phase characteristics as those volumes are altered. And that gives you a big total sweep before you even get close to the equalizers. Then you can bring in a little bit of that room [mic] if you like. A lot of times I've found that you can get great guitar sounds without equalizing at all. A good guitar, though, is limited or compressed quite a bit. A guitar is a pretty dynamic instrument, and you have to get those dynamics on the tape. So, usually you use quite a bit of limiting or compression with the electric guitar.

MR: Are there any other special miking techniques you use?

RD: No. My main thing is really hearing where it sounds like you want it to sound in the room, and actually putting the mic there. You have to use your ear, and get close to the amp and back away, and find the actual spot where you say, “Wow, that sounds just like I want it to sound on the record, right here.” Then you put a mic right there, and it's gonna “hear” it just like your ear has heard it. That's a good basic rule for anybody, whether it's drums or anything.

•••

MR: Whose idea was it to use members of Utopia to back you on the

album?

RD: Well, Todd was totally open. Whoever I wanted to use, I could use. He would always have the final say on everything. He'd let me do what I wanted, and he'd have the final say.

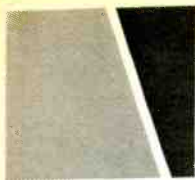
My band had been working with me on the road all during that previous winter, so they knew most of the songs that I was recording, because we had done most of them “live.” So that was why I used them on most of the songs. Where I felt like a guy like Kasim (Sulton, Utopia bassist) could add a little different feel into a song, I'd use him. Roger Powell (Utopia keyboardist) was on one or two overdubs, and that was because my keyboard player had left to go do Pat Benatar's record. Todd and Kasim and I, I felt, would be a good background singing group, so we did the background vocals, and it turned out I liked the way it sounds.

MR: Were the background vocals altered at all? There are some points where it sounds almost like female vocals, but the credits don't list any women.

RD: We didn't alter the pitch at all. All we did was record them well. We recorded all three of us doing the background part once, and then tripled it. So it ends up being nine people. We put those through a Harmonizer and doubled each of those, “live,” while we do it. So that ends up being eighteen voices from the three of us. That's the only thing we did to manipulate the voices, but we didn't manipulate pitch. It's just us singing.

MR: What was it like working at the Bearsville studio?

RD: I found the studio very enjoyable, slicker sounding than I expected, no real problems. The studio is a good studio. Bearsville has good equipment, good engineers working there, and it was very calm. There's not much going on in Woodstock or Bearsville to take your attention away from recording. So all you really concentrate on is your music and recording. On the other hand, I came from the Midwest, and one of the reasons I began to play music was to get out. And one of the reasons I've lived in New York for the last fourteen years is because I like the excitement and energy of the city. It was kind of boring to me to be in



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Woodstock for six weeks. I prefer a city environment, but the studio (Bearsville) is great.

I don't have any studio anywhere that I really love. I feel like they're all pretty much on the same plane. And like I said, this mystique about one being great and one being not so good is really not true. You can spend way over \$200 an hour for A&M, in Hollywood, which is [a relatively high] cost studio. Or you can pay not very much less in New York for A&R. Or you can

go to places like Power Station or Sun Dragon or RPM, which are 24-track studios in New York which are much less expensive, and probably end up with the same results from all of them.

MR: Do you have a studio at home?

RD: No. Dan Hartman has 24-track with Dolby noise equipment and it's built right into his house. Every room has a patchbay so you can record in any room of the house without any extra trouble. Because he is a friend, and on the same label and everything,

whenever I want to do something like a demo, or I need to experiment, I can go out to Dan's house. So I really don't have a necessity.

I always wanted to have my own mix room. To me, you can record anywhere, but the thing that makes or breaks you is when it comes time to mix. You have to work on a speaker that sounds like the speakers you are using in your house. At this point I've gotten used to working on a Westlake monitor so much that I can work on just about any Westlake monitor and come up with a sound that's about what I want to come up with. But that's the difference. It's not *exactly* what you want to come up with. It's those people . . . like Bill Szymczyk, who has his own studio—Bayshore in Florida—which is like his living room, he gets to work in it so much, that get exactly the sound they want out of it. That's the reason I'd like to have a mix room. I'd like to be able to control the mixdown process exactly. I'd like to have it like my living room. I'd like to have a room in my house where, when I'm not working, that's where I hang out and watch TV. Where my friends get high and listen to records. And in the back of my room there's a board and a machine and the outboard equipment, and I can bring tapes in whenever I want to and mix them right through that stereo that everybody listens to.

...

MR: There are two songs on *Guitars and Women* by Rick Nielsen of Cheap Trick. How did you come to record these?

RD: Rick's presented songs for the last three or four records. And because of the producers I was working with, or whatever, we weren't able to use them. This album I was specifically trying to do stuff that wasn't trendy. My main objective was to gain respect. We wanted to win back a reason to continue being Rick Derringer and to continue having a career, and to continue letting Blue Sky make my records, rather than have them say, "You blew it. You're not going to make records for us any more." So we figured if we didn't do things that are trendy, we would have to limit ourselves to doing things that were personal, or had special meaning or we really liked. So because of that I wrote no reggae songs, no country songs, no typical Rick Derringer rock songs, no

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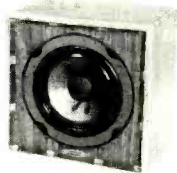
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punk songs and no disco songs. We ended up with a lot of good songs, but we had no real rock songs. So Rick presented six songs to me and he and [vocalist] Robin [Zander] came up to the studio and sang and played, actually kind of auditioned them for us. And I'm happy they did, because it supplied that spice—the salt and pepper for the album.

MR: Do you know if Cheap Trick has plans to record those cuts?

RD: They recorded "It Must Be Love" for *Dream Police*, and after we did ours—before either record came out—Rick told us that if we weren't going to use "It Must Be Love," they were going to put it on their album. That was one of the things that helped us make up our minds to use it. We felt if they had that much confidence in it, it must be good. So, we used it and I'm happy we did. When people saw that combination of Todd and Rick and Rick Nielsen, it went right on the air in a lot of places.

MR: How long did it take to record the album?

RD: It took approximately six weeks to do the whole recording and mixing process.

MR: What do you think you would like to do next?

RD: I'd like to continue as a solo artist and see how far I can take that for awhile, again. Beyond that, I feel like the music business is a great career, and it involves so many different possibilities that there's never any reason to get bummed out if I'm not able to sell records as Rick Derringer, as a commercial entity. I'd like to do an instrumental album, and an all country and western album. I'd like to produce Les Paul. But there's no rush to do any of those things.

MR: You're 32 now. Can you see yourself still making rock and roll records when you're fifty?

RD: I will be in it as long as I like it. It has changed a little bit now, with this album; because the kind of rock and roll band we were, I became a little disenchanted with. So, we changed. Now I have an all-new band, and I feel like the album was a pretty fruitful project and it came across as I planned it. I feel in order to let people see that thing properly now it entails not doing the same thing I did last year.

My new band includes Benjy King, a piano player rather than another guitar player; Jimmy Wilcox, my new drummer; and Donny Kisselbach, my

new bass player. The reason I got them is because they're a little different caliber of player, and they're all good singers. The rock band I had in the past was a high energy schizoid band, lacking in good background vocals. Now, we are a little classier, a stronger groove. Instead of two guitars, we have guitar and piano, and everybody sings. So we can recreate the vocals from the record and add background vocals to a lot of the old songs that people want to hear.

We'll be starting out the set with songs such as "Let Me In" from the first Derringer album, and "It Ain't Funny But It Sure Is Fun," from my previous record and "Teenage Love Affair" from *All-American Boy*. Then I'd probably do a few songs from this record: "Something Warm," "Guitars And Women," "Man In The Middle," "It Must Be Love." I'd probably do "Uncomplicated," "Beyond The Universe," "Rock 'N' Roll Hoochie Coo," "Still Alive And Well" and "Hang On Sloopy" this year. We haven't done that in years.

MR: Will you be playing in theaters or clubs?

MR: We will do mostly clubs. I want to be a headliner. With my band, until last year, I was doing mostly support stuff in order to get the big audiences and to let people see me. One promoter once told me, "You know Rick, you're getting to be the best support act in the United States." I thought, "Wow." That was an amazing, revolutionary idea to me, because I didn't even know people thought like that. I didn't know it was possible to become that, and I don't want to be that. I want to be the headliner, not the best support act in the world. So at that point I changed my philosophy and said, "I don't care if we have to do clubs for years; I will only do headliners." Now I've widened that philosophy to say that in limited situations I will do support again, or co-headliners. We might be picking up some Cheap Trick dates. But in general, I want to be the headliner. There's nothing wrong with little places. The audience is paying to see you.

MR: And what about future recording plans?

RD: Not now. I just want to play on the road for a while and continue writing for the next album. But I will continue. My initial instinct is to say that this new return to being a solo artist will continue as long as possible.

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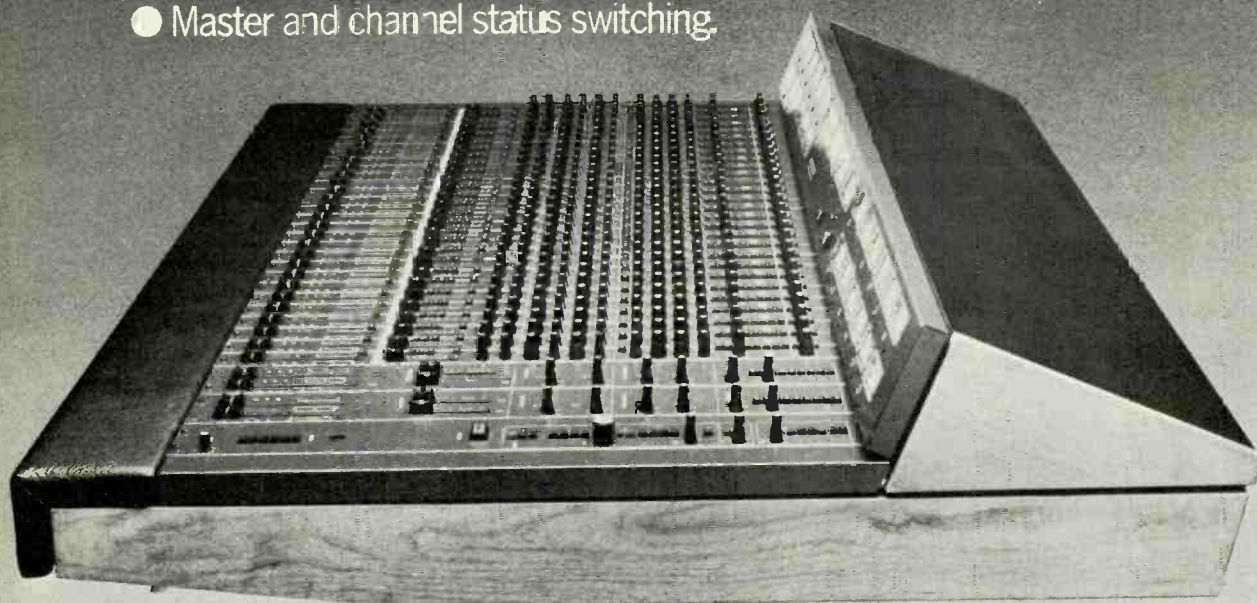
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Ambient Sound

BY LEN FELDMAN

AES Convention—A Glimpse at Audio's Future

I used to think that the best way to get the jump on what was going to happen in the world of audio over the next six months or so was to attend the Audio Fairs which take place in Japan around October of each year. Since so much of what is happening in audio technology originates in Japan, many of the products which are shown at these fairs arrive in this country anywhere from six months to a year later. I have discovered, however, that to really zero in on the trends, the thing to do is to attend the Audio Engineering Society conventions. The most recent of these took place in early November, 1979, in New York City, and, as usual, the famed Waldorf-Astoria Hotel on Park Avenue was transformed into an audio engineer's delight, as the main ballroom and several other floors were converted to house the products of some 150 separate exhibitors.

The exhibits at an A.E.S. are a strange mixture of professional, semi-professional and even consumer equipment. For the recording studio engineer or technician, there are plenty of elaborate mixing consoles, some of which are so large that a single operator might have to use roller skates to get at every control module in a reasonable amount of time. For the audio researcher and laboratory type, there is plenty of new audio test equipment to tempt the prospective buyer. As for myself, I gazed longingly at Sound Technology's new tape deck analyzer/tester which, if it had a place in my own lab, could probably cut down on the time it takes me to put a deck through a test by at least fifty percent, if not more, and would yield far more accuracy than I am presently able to obtain.

For the sound reinforcement people (and that includes Disco installers and operators) there was plenty to see, from new loudspeaker systems, to microphones, to sound processors including time delay units, flangers, pitch modifiers, you name it. All of the products in all categories, however, are essentially here *now*, or if not immediately available, certainly will be in the next few months. So, while it's always nice to see new products "in the flesh" it wouldn't have been necessary for me to spend three full days at A.E.S. if

all I wanted to see were new products. Chances are that those same products will be shown in advertisements placed by manufacturers in this or other publications, and if I'm serious about purchasing a new audio product, I'll want to talk to an impartial dealer rather than to a manufacturer's representative who obviously has an axe to grind. Furthermore, the crowds at the exhibit areas are generally quite heavy and you can hardly expect an exhibitor to spend more than a few minutes with any single visitor.

Digital and More Digital

The part of the A.E.S. convention that provided me with the greatest degree of insight into what's coming in the next year or two was not the exhibit section at all. Rather, it was way at the other end of the Waldorf's lobby, where, for four full days, engineers from many companies were presenting papers, some of them extremely technical, detailing their most recent research endeavors and product developments. There were nine sessions in all. Two of them were devoted to transducer developments; one dealt with recorded audio product manufacturing; another, signal processing and instrumentation; a full session was devoted to distortion in audio systems (and I'll bet you thought we didn't have any left!); another on sound reinforcement and architectural acoustics. Two full sessions were devoted to digital recording and digital techniques, while the final session dealt with acoustical and medical impact (environmental audio) and electronic music. In all, there were seventy papers presented during the four days of the convention!

I won't claim to have sat through even half of them, but from those which I did hear it was very clear to me that the big news ahead is digital, digital and more digital. The preponderance of papers devoted to home digital audio equipment were undoubtedly the result of the fact that the EIAJ (Electronic Industries Association of Japan) had recently agreed upon standards that should apply to digital audio processors that interface with home video recorders, such as those

which employ the Beta and VHS formats. At the moment, just about all of the major Japanese audio manufacturers have either shown prototypes or even pre-production models of audio processors of this kind. The prices generally hover around the \$4000 mark for these processors, assuming you could buy them off the shelf (which, at the moment, you cannot do). Speaking with representatives of some of the companies who have digital audio processors on display I got the impression that we were likely to see some important breakthroughs, both in technology and in pricing, at the forthcoming Winter CES show which will be held in Las Vegas right after the start of the year. (It goes without saying that as soon as I know more about this, I'll be reporting on it in this column.)

The chief thing about the new EIAJ digital-audio processing standards seems to be the fact that there are three different levels of error-correction possibilities. As most readers probably realize, when you deal with analog audio recording on tape, minor dropouts in the tape simply come out as brief interruptions in continuity of signal. In most instances, the gaps are so short that the ear does not even perceive them as discontinuities in the audio signals. In the case of digital audio recording on tape, where we are dealing only with a stream of pulses used to represent number-values of an equivalent audio signal, a missing pulse or two (or more) can change the coded number or numbers so significantly that amplitudes can be completely misrepresented during playback. This, in turn, can be thought of as a severe form of distortion—something which is supposed to be almost nil in digital audio recording.

So, to take care of such coding errors, the EIAJ standards makes provision for three degrees of correction, known in the parlance of digital work as P-correction, Q-correction and CRC correction. The more sophisticated designs will make the most effective use of these error-correction possibilities while those aiming to come up with less expensive systems will evidently employ less in the way of error correction circuitry. So, one of the things that I learned while attending all of these papers is that, contrary to my earlier belief, the passage or approval of format standards for home PCM processors does *not* mean that all of these processors are going to have identical performance characteristics. There will still be room for differences in error-correction capability and, on the front panel, differences in convenience features, controls, etc., just as we have always known them in analog audio equipment.

Of Giants and Revolutions

If I had to single out a single company that seems to be more actively engaged in digital audio research than any other, it would be Mitsubishi, that multi-faceted giant corporation in Japan that is involved in everything from steel production to consumer goods manufacturing. The first paper delivered by engineers from this company dealt with a new PCM audio disc pickup which employs a laser diode chip attached

directly to it along with a newly designed micro-lens that weighs a mere 0.1 grams. In the area of digital audio tape recording, Mitsubishi presented a two-channel PCM recorder for professional use that employs a stationary head (unlike the home units which depend upon the fast-rotating head of a VCR for achieving needed recording density and bandwidth). The pro unit shown and discussed in a technical paper has both electronic and tape-cut editing along with its digital recording quality and is small enough to be used as a desk-top recorder.

The same company also showed and discussed their version of a PCM Digital Audio Processor for use with home VTRs. The format was, of course, based upon the EIAJ standard referred to earlier and uses an error-correcting code that can be decoded in more than one way, enabling the production of models in different price categories and of varying complexity.

While much emphasis was placed upon digital audio tape recording, the digital audio disc was not totally ignored at A.E.S. Teldec, a division of Telefunken in Germany, demonstrated a mini-digital audio disc that measured about 5¼ inches in diameter and is played by means of a capacitance pickup. Here are some eye-opening statistics regarding this disc's characteristics. Playing time would be 60 minutes per side, and 4-channel transmission is possible. Grooves in the disc are spaced 0.065 mils apart, which adds up to around 600 lines per millimeter. Because number of revolutions varies (depending upon how far in along the radius the stylus is), velocity of the stylus along the groove remains constant at 6.2 feet per second!

As for performance, digital quantization is 14-bit linear for an achievable signal-to-noise ratio of 86 dB. Sampling rate is proposed at 48 kHz, or more than enough to keep response totally flat to beyond 20 kHz. This newly proposed disc uses practically the same methods and materials used today in the manufacture of conventional records, so that little additional investment on the part of record manufacturers would be involved. Since, unlike the optical discs proposed so far, the surface of the disc must be maintained in mint condition, the discs would be supplied in a sort of cassette retainer and would be exposed only when the cassette is inserted into the related player mechanism.

Not to be outdone, however, Philips of the Netherlands who showed their mini-optical digital audio disc a few months before, presented a paper which describes the error-control system of that disc system. Design of the error-correction system was based on measured statistics of actual disc errors.

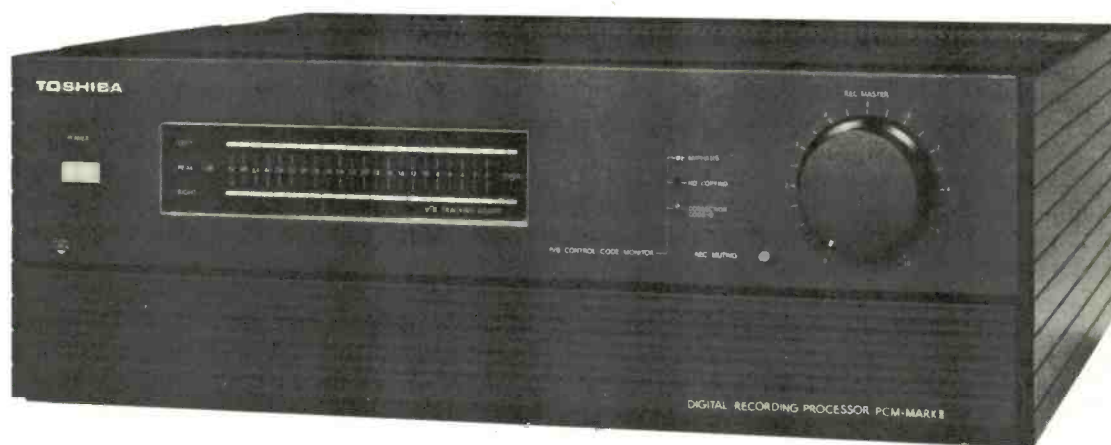
So, with Philips touting their optical (laser) audio disc, Teldec proposing a capacitive digital disc system and a host of other manufacturers maintaining that the various video disc systems should be adapted to audio as well, the situation seems no closer to standardization than it was before the well attended A.E.S. convention. It appears as though we will be much further into digital tape recording (both in home and professional units) before we even begin to launch the digital disc revolution everyone keeps talking about.





NORMAN EISENBERG AND LEN FELDMAN

Toshiba Digital Recording Processor, Model PCM-Mark II



General Description: Toshiba's Model PCM-Mark II is a digital audio processor for use with video cassette recorders of either the Beta or VHS format. It converts analogue audio signals into digital form to be recorded on the VCR. The digital tape thus made can be played back through the PCM-Mark II which then converts the digital information into analogue audio. The tape to be used is, of course, video cassette tape. The PCM-Mark II also makes it possible to mix a new analogue signal with an already recorded digital signal; this application requires the use of a second VCR. It also is possible to copy directly a digital signal from one VCR to another VCR without analogue conversion, using the Toshiba processor.

A fluorescent bar display of signal strength dominates the unit's front panel. There are two rows of indicators, one for each channel. Calibration runs from -52 dB to 0 dB, with an unmarked "over" area. The metering can be switched to show fluctuating peak levels, or to hold a peak signal, or to show tracking which refers to the synchronizing of the signal on the tape with the device's internal encoder.

To the left of the meter is the unit's power off/on switch. To the right are three LEDs designated as a

group by the legend "P/B (playback) Control Code Monitor." The three indicators show "Emphasis," "No Copying," and "Correction Code-Q." The "Emphasis" indicator refers to the use of the PCM standard 50-microsecond time-constant. If a tape that was recorded with that standard is played, the light comes on. The "No Copying" LED actually is in anticipation of commercially recorded ("prerecorded") digital tapes; its lighting up means that such a tape cannot be dubbed onto another VCR. The intent obviously is to avoid copyright violations. The "Correction Code-Q" indicator flashes when dropouts on the tape are being corrected; it shows that the built-in error detection and correction system is functioning.

Near this group are a record-mute button and indicator, which work in the usual way, except that in this system the "muting" is absolute silence—the system lays down a series of "0 0 0 0 . . ." on the tape. The large knob at the right is a master input level control.

The lower portion of the front panel has a swing-down cover behind which are several more features and controls. At the left are a headphone output jack and its own level control. Next are left- and right-channel microphone jacks followed by one knob for balanc-

ing the mic channels, and another knob for overall mic level. The record-emphasis switch is next, followed by a mode switch. There are three modes: Mix, as described above; Normal; and Copy, described above.

The next switch is an attenuator that permits adjusting signal levels in three steps (0, -6 and -12) if required when mixing. The switch after that is the selector for the metering display (Hold, Peak and Tracking). The output level adjustment comes next, and a pair of line recording level controls complete the front panel picture.

The rear of the PCM-Mark II contains line-in jacks; two sets of line-out jacks (one with fixed level, the other with variable level as per the front-panel control); the copy and mix output; and the video in and out jacks for interfacing with the VCR. There also are two unswitched AC convenience outlets, a system grounding post and the unit's AC power cord.

As a "second generation" digital processor, the PCM-Mark II includes certain features based on the recently approved standards endorsed by the Electronic Industries Association of Japan (EIAJ). One of these, already mentioned, is the facility for mixing a previously recorded audio program that is still in digital (coded pulse) form with a new analogues signal introduced via the line or the mic inputs. The mix may then be digitally recorded on a second VCR. In effect, this facility creates a form of editing and of multi-track (or track plus track) capability that will not degrade sound quality in the least, since all signals on the new recording would be entirely digital. The same applies, of course, to making copies on a second VCR.

The ability to mix line and mic signals with respect to the one VCR also is an improvement over first-generation digital processors. The absolute silence introduced by the record-mute button represents another contribution. When this button is pressed, the 14-bit code that is employed in normal descriptions of signal amplitude is reduced to a code of fourteen zeros, which in digital "language" means utter silence.

The new EIAJ Standards provide for various forms of error detection and correction. Manufacturers are free to use any or all of these schemes. The PCM-Mark II incorporates all of them. The specific error-correction codes are known as P and Q codes plus CRCC (Cyclic Redundancy Check Code). This system results in the processor's ability to correct completely for as many as a "two word" dropout in a single horizontal line of the equivalent video signal. Should a third error occur (because of dropouts), instead of filling in the previous "word" as some earlier processors did, the new model actually takes an average between the previous and the succeeding "bit word" and fills that in, thus resulting in greater accuracy of approximation of the missing third "word."

There is yet another important difference between this unit and earlier models. In digital systems, various degrees of compression are used on the encoding side, with complementary degrees of expansion during decoding. In most early units of this type, a 12-bit system is augmented by three polygonal lines, or levels of compression. In this way, the 12-bit system (which has only 4,096 discrete "numbers" or levels of signal amplitude) can be used to represent signals of up to 16,384 discrete levels of amplitude (equivalent to a 14-bit system). Toshiba claims to be the only developer of a PCM audio processor that uses *five* polygonal lines to augment the 12-bit basic amplitude code. By so doing, they are able to maintain higher signal resolution over the important input range between the -85 dB and -6 dB record level, since the arbitrary compression ratio in that range is not as steep as it would be with a three-polygonal line augmentation.

Test Results: The tape deck used in conjunction with the Toshiba PCM-Mark II for these tests was a JVC Model 4100; it seems fairly certain however that any VCR system would have done as well.

As may be seen by a glance at our "Vital Statistics" table, the Toshiba unit not only met or exceeded its specifications, but the specs themselves are unprecedented for a tape-recording system—with such performance characteristics as response within 2 dB from DC to 20 kHz, a dynamic range of no less than 85 dB, THD below 0.03%, and wow-and-flutter literally unmeasurable.

Some interesting points come to light when using the PCM-Mark II to record digitally. For one thing, "0 dB" record level here is absolute maximum. There is no such thing as "headroom above zero dB" in a digital system. That should not trouble anyone since we are dealing here with a dynamic range down to -85 dB! Frequency cut-off above 20 kHz is very sharp (as can be seen from the frequency plot of Fig. 1) simply

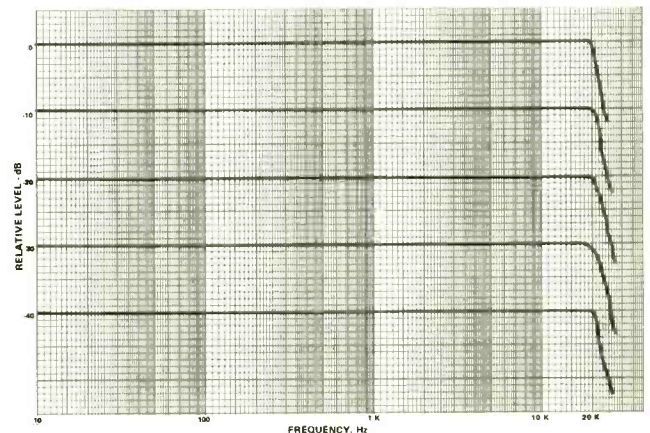
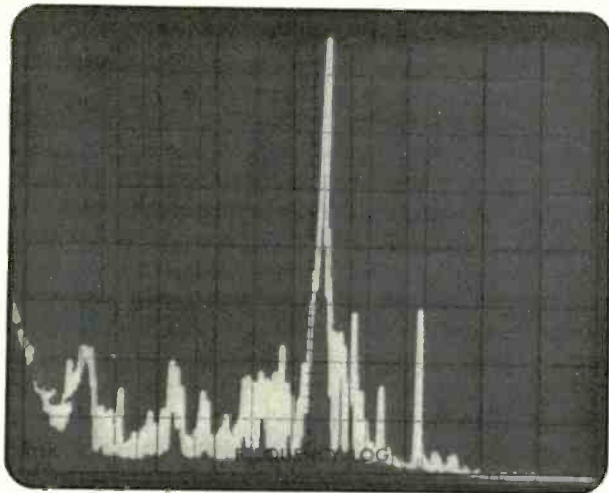
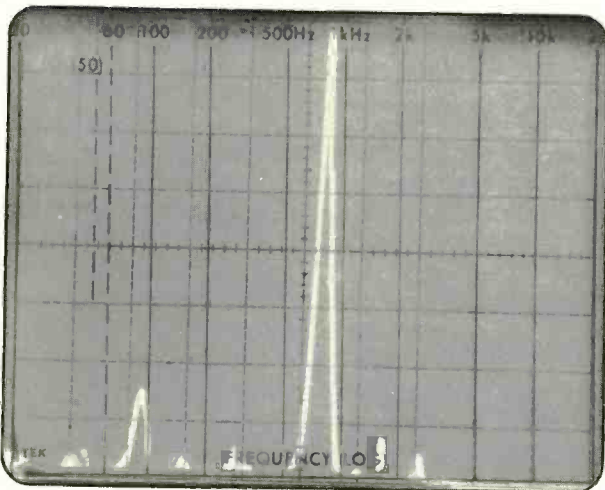


Fig. 1: Toshiba PCM-Mark II: Record/play response.



(A)



(B)

Fig. 2: Toshiba PCM-Mark II: Spectrum analysis during playback of 1 kHz signal from reel-to-reel deck (A) compared with playback from PCM digital system using the PCM-Mark II (B).

because the sampling rate of 44,056 kHz does not permit digitization of frequencies much higher than 20 kHz. But note, as shown in the frequency-response plots, that there is no such thing as high-frequency tape saturation to be concerned with any longer. It just does not exist in the world of digital audio, and the response at 0 dB record level is identical to that at -30 dB, or at -10 dB or indeed at any other level.

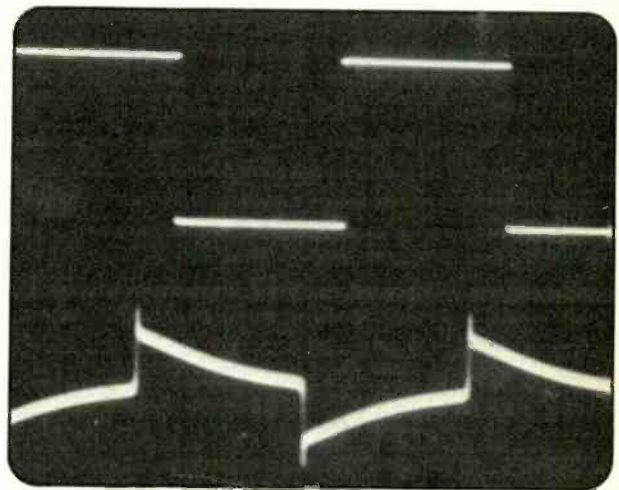
Figs. 2 (A and B) are spectrum analyzer sweeps of a played-back 1-kHz signal. Fig. 2A shows the results obtained from a top-quality open-reel analogue tape deck operating at 15 ips. Fig. 2B shows the same input signal played through the PCM-Mark II/VCR combination. In each photo, the center spike is the desired fundamental, while the lower-amplitude spikes to the right are distortion components.

In Figs. 3 (A and B) the same comparison is made for a 100-Hz square-wave. Fig. 3A represents the perform-

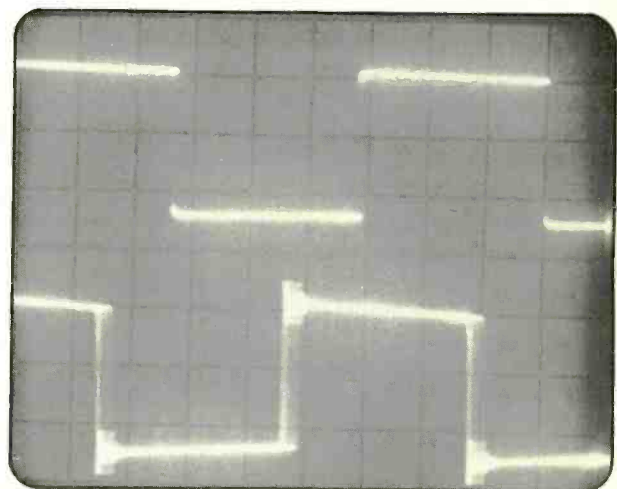
ance of the open-reel deck, while Fig. 3B shows the same signal via the PCM/VCR combination.

Fig. 4 is a 'scope photo of the long-term storage of musical material recovered from a decoded dbx wide-dynamic range disc, over a period of twenty minutes. The total vertical scale is equivalent to 80 dB of dynamic range, and as the test results show, we have musical range over the time period observed that goes off-scale at the top of the screen, and hits the bottom of the screen too, indicating a total dynamic range in excess of 80 dB.

Finally, more for our (and your) amusement than for anything else we shot the photo shown in Fig. 5. If you connect the video output of a VCR to a TV set and play back a digitally recorded audio signal, this is the sort of pattern you will see on the TV screen. The tiny dark and light spots are the visual representation of the millions of "bits" per second that are recorded onto the



(A)



(B)

Fig. 3: Toshiba PCM-Mark II: Lower trace is playback of 100 Hz square-wave from (A) reel-to-reel analogue tape deck and (B) from PCM-Mark II system. Upper trace is input in both cases.

tape in ever-changing patterns. The six dark vertical lines at the left of the screen are clear demarcations of where one "word" ends and the next bit-word begins in each horizontal line. The larger areas at the right are the additional codes recorded for the error-correction system discussed earlier.

General Info: Dimensions are 17.75 inches wide; 6.7 inches high; 15.35 inches deep. Weight is 50 pounds. Price: "approximately \$5,000."

Individual Comment by L.F.: The age of digital audio recording via a home video tape recorder hasn't really begun yet, and already we have a "second-generation" digital audio processor. For those of you who did not read my Ambient Sound column last month, let me repeat more strongly than before that as far as I am concerned, a digital audio processor of the sort that I talked about last month (Sony's PCM-1) or of the type we have just finished testing (Toshiba's PCM-Mark II) is the answer to every serious tape-recorder's dreams.

The device contains no tape transport of its own, but

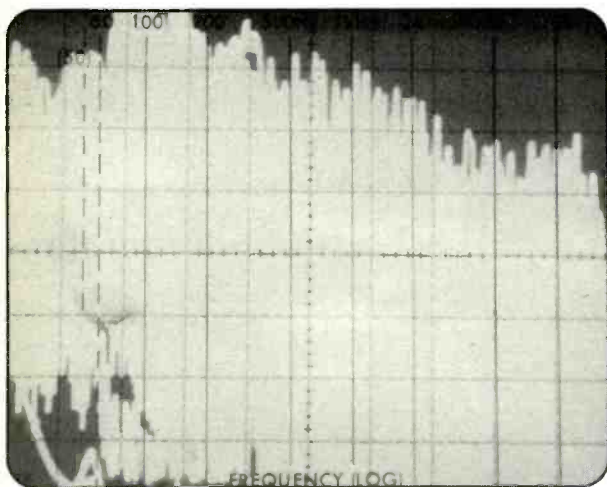


Fig. 4: Toshiba PCM-Mark II: Long term spectrum analysis during playback of wide-dynamic range recorded material supports 85 dB claim for Toshiba PCM-Mark II/VCR combination.

must be hooked up—via supplied coaxial cables—to the video input and output jacks on *any* currently available VCR deck (and that means either Beta or VHS format). Then, using regular video tape of the appropriate format, you can make audio recordings in digital form via this processor.

And what recordings they are! I urge readers to check out our Vital Statistics table very carefully this time, keeping in mind that we are not talking about an amplifier or preamplifier, but about a tape-recording system whose technology is available *now*. Once you digest those specs, you will probably agree with me that the days of the reel-to-reel mastering deck as we

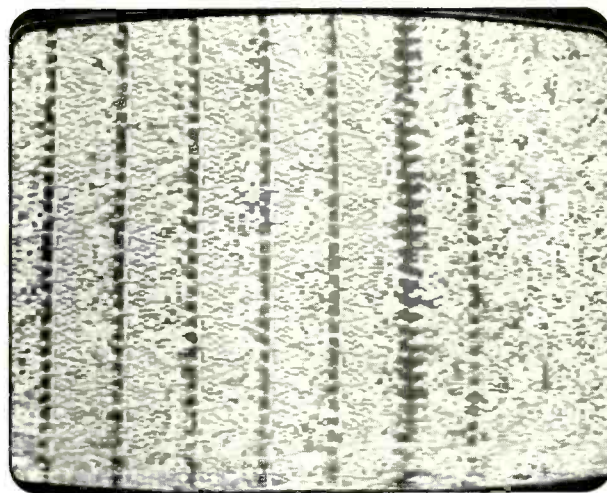


Fig. 5: Toshiba PCM-Mark II: What you would see if you played a PCM digital tape through your TV set.

know it, for both studio and home use, are numbered.

Aside from superb response and extremely low distortion and so on, the Toshiba includes features that permit input mixing as well as (with the aid of a second VCR) mixing of digital and analogue signals which constitutes actually a form of editing and of multi-track. The built-in error correction system also is highly sophisticated, as explained above. In terms of reproduced sound, all this means is that you will not hear any of the minute pops and clicks that I mentioned in my previous column. The same high-quality TDK tape was used in both instances, so I can only conclude that the electronic error correction system in this later unit from Toshiba must be orders of magnitude better than the less sophisticated error-correction system used in Sony's very earliest PCM-1. In all fairness, I should point out that Sony has now replaced the PCM-1 with a model called the PCM-10, which also conforms to the new EIAJ Standards.

There is nothing to criticize in terms of the fidelity or dynamic range of reproduced music as heard during playback from the PCM-Mark II. We are all going to have to look to our amps and speakers for proper reproduction of 85 dB of available dynamic range.

I do have a minor criticism of this, and of all other PCM audio processors I have seen (all two of them!). In order to monitor the input signal while recording—either via headphones connected to the processor, or via the peak-reading LED meters—it is necessary to have the tape in motion on the associated VTR. I am not quite sure why this is so, but it is certainly a nuisance if you are trying to cue up something to be recorded and want to have the recording begin at a very specific point in the tape.

Still, quite frankly, if I had \$5,000 burning a hole in my pocket right now, I'd be willing to live with that minor annoyance and would happily dispose of *all* my analogue tape deck equipment just to own this recording system of the future.

Individual Comment by N.E.: One is reminded of the statements that were typically heard when stereo first was introduced ("We have heard the future, and it works . . ."). Here we have a digital record and reproduce system that, while it is undeniably high-priced vis-a-vis analogue equipment, certainly is much lower-priced than the out-of-sight digital open-reel systems that are more and more finding their way into major recording studios. What may be doubly appealing about this format is the very need to own a video cassette recorder with which to use it, since once the VCR is included in the system as the tape-transport for mating with the digital audio processor, that same VCR can of course also serve its original intended purpose of recording and playing video programs, apart from any necessary interest in audio as such. Whether this equipment/software constellation will "take over" in the under \$10,000 class or preempt any continued expansion in the open-reel analogue tape recorder field remains to be seen, but on the basis of the performance we have observed from the Toshiba unit linked with the JVC VCR, the new setup certainly looms as a serious contender.

Len has mentioned the peculiarity of the need to run the tape in order to set pre-recording levels by monitoring the signal via headphones or on the meters. I would like to mention some other points on which we do not yet have all the answers. One is the arrangement on the Toshiba processor of the mic controls. There are two knobs—one for balancing left and right mics; the other for setting overall mic level. Why not, if you are going to supply two controls, simply let one handle the left channel and the other the right channel? For that matter, why not provide separate output channel level controls instead of one control for both channels? There also is some vagueness in the option for using or not using the unit's built-in recording emphasis feature; I think we need a clearer statement as to the pros and cons of using or not using it. (In our use tests, we could discern no audible differences with

it on or off.)

Anyway, given the flat frequency response of digital, along with its enormous dynamic range, very low distortion, non-measurable wow and flutter and no-noise editing, you do have a superb "sound machine" that is limited only by the source coming in (for recording), and by the associated equipment it uses for playback. In regard to the former, it may be of more than passing importance to underscore the fact that we found the recent dbx-encoded analogue discs just about the match—for quietness and dynamic range—of the digital processor. This says a lot for the dbx discs, and it also suggests "reversing the process" for making commercial discs. That is to say, given a master recording done in digital sound, the dbx cutting method may be just the way to make analogue discs that come astonishingly close to the dynamic-range capability inherent in the digital tape master. If this is indeed so, then it could mean that the future of digital sound—at least for the next few years—will rest largely in the area of tape (open-reel and VCR) while discs themselves could be significantly improved within the context of conventional analogue sound. If this does happen within the next two or so years, you can say you saw it here first.

As for associated equipment, it must, as Len suggests, become generally better. I think, though, that the upgrading is largely in the area of transducers. We are going to need better isolated motors and transmission systems in our turntables. We are going to be paying more attention to speaker performance along such lines as power-handling capability, efficiency, dynamic range and robustness of construction. We are also going to need the kind of microphones that can do justice to the capability of digital recording systems. As for amplifiers and preamps as such, they are as a class so far ahead of their counterparts of even a few years ago (in terms of response, distortion and S/N) that they seem the least needful of any major design effort to suit them for the coming world of digital sound.

TOSHIBA DIGITAL RECORDING PROCESSOR MODEL PCM-MARK II: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Frequency response (R/P)	± 1.0 dB, DC to 20 kHz	+ 0, - 2 dB, DC to 20 kHz
Dynamic range	85 dB	85 dB
Harmonic distortion	0.03%	0.028%
Wow and flutter	Unmeasurable	Unmeasurable
Line input sensitivity (for 0 dB)	300 mV	200 mV
Mic-In Level (for 0 dB)	3.0 mV	2.0 mV
Line output level (for 0 dB)	3.0 V	3.5 V
Headphone out (8 ohms)	5.0 V max	5.0 V
Line input impedance	50 K ohms	Confirmed
Mic input impedance	10 K ohms	Confirmed
Video input impedance	75 ohms	Confirmed
Standard video in and out level	1.0 V p-p	(Reference)

CIRCLE 150 ON READER SERVICE CARD

Nikko Alpha VI Power Amplifier



General Description: The Nikko Alpha VI is a stereo power amplifier conservatively rated for 300 watts power output per channel into 8-ohm loads; 340 watts per channel into 4-ohm loads; or 650 watts in mono operation.

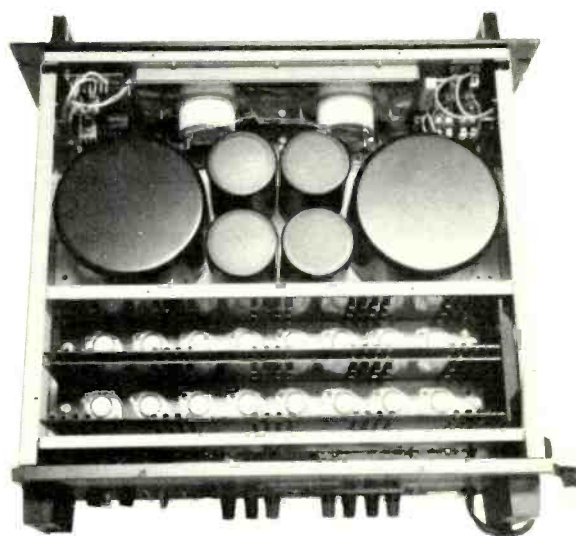
The front panel features two peak power output meters (one for each channel) calibrated in both decibels and watts. Also on the panel are the unit's AC power off/on switch; protect and hi-temp indicators; speaker system selectors; and a headphone output jack. Inputs at the rear are pin-jacks, with a switch providing for "direct" or "normal"—the latter position routing the signal through input level adjustments found just above the input jacks. The speaker connectors are five-way binding posts, with associated provisions for connecting speakers of different impedances, as well as for the bridged monophonic mode. The amplifier is slotted for rack-mounting.

An internal view of the carefully laid-out chassis is shown in the accompanying photo, while the Alpha VI's basic circuitry is shown in the block diagram. The first stage uses a dual-FET differential amplifier. This is followed by a current-mirror push-pull differential pre-driver, and the output stage which consists of a four-stage parallel push-pull complementary circuit whose transistors are connected in a Darlington configuration.

The power supply features two independent toroidally-wound power transformers. In addition to the four large storage capacitors there are mylar capacitors connected in parallel to the FET's load of the protection detector circuit and to the output capacitors of the power supply circuitry in order to maintain a very low regulator impedance over a wide frequency range. Four types of protection circuitry are used: rush-current protection, speaker protection, out-

put power transistor protection and overheat or thermal protection. Finally, a built-in fan provides forced-air cooling.

Test Results: The Alpha VI easily went beyond specs in *MR's* lab tests, as a glance at the "Vital Statistics" table will show. It shaped up as a very high-powered, wideband amplifier with super-low distortion. No problems were encountered when running the unit up to and beyond its rated limits and in its various modes. The cooling fan ran very quietly, the meters showed accurate readouts, and the amplifier in general performed like the high-quality powerhouse it purports to be.



Nikko Alpha VI: Internal view.

General Info: Dimensions are 19 inches wide; 7¼ inches high; 18 ⅞ inches deep. Weight is 60.5 pounds. Price is \$1400.

Individual Comment by L.F.: No doubt about it—the Nikko Alpha VI is a powerhouse of an amplifier, and if you require 300 watts-plus of power per channel in stereo, or in excess of 650 watts of power for a monophonic system, this amplifier certainly is worth considering. Aside from the circuit features described above, I was impressed by the manner in which Nikko presented this rugged amplifier to the buyer. We've all seen examples of manufacturers packing in so-called individualized "performance certificates" that purport to tell you the exact measured performance of the individual unit you have purchased. While the implication here is that every unit was individually measured and the results recorded, I often have been amused to find these sheets "filled in" by type-set numbers or by blue colored numbers designed to look as though they had been handwritten, when in fact they were printed en masse. The signatures inserted at the bottom of these

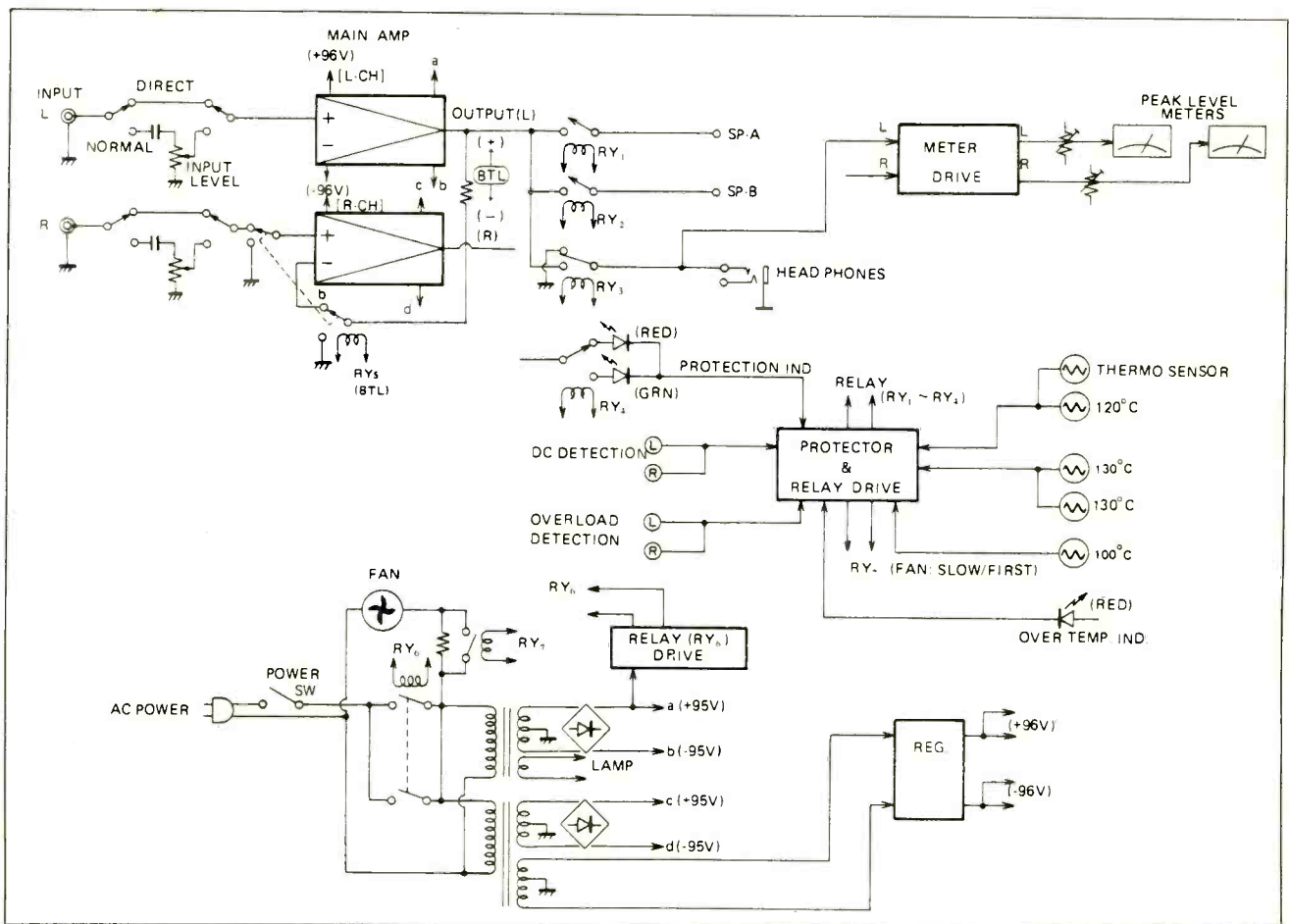


Nikko Alpha VI: Rear panel view.

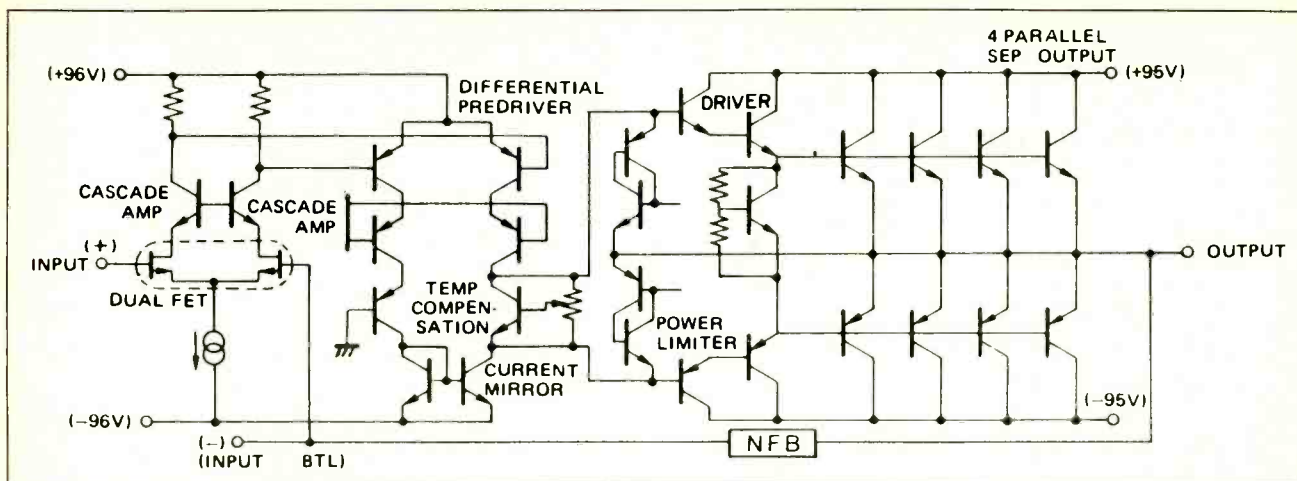
"certificates" are often equally phony.

None of the above applies to the Performance Certificate supplied with our test sample of the Alpha VI. How do I know? For one thing, our own test results are so close to those listed in the supplied certificate that the differences could only be accounted for by slight differences in test equipment and/or meter calibration. When my meters read a harmonic distortion level (at rated output) of 0.0045% while Nikko reports a THD level of 0.0048% you know that neither one of us is faking it!

So much for the paperwork trappings. The amplifier itself is a superb performer in every respect (see the Vital Statistics). The purist audiophile may take issue



Nikko Alpha VI: Block diagram of the unit.



Nikko Alpha VI: Basic circuitry of the power amplifier.

with the relatively low slew rate of 15 volts per microsecond we measured, but every other measured spec either exceeded claims or was excellent in its own right. While Nikko seems to have built this unit with the super-audiophile in mind, my own feeling is that it will find more application in sound reinforcement [and studio] work. As I have been saying for some time, wideband, low-distortion amplifiers need not be restricted to "hi fi only" use.

Individual Comment by N.E.: The by-now old question of whether an amplifier of a certain quality and performance level is intended primarily for the fussy stereo enthusiast or for the professional sound

worker or performer comes up again with the Nikko Alpha VI. Our measurements of this unit, followed by listening tests, certainly confirm its authoritatively clean and effortless sound reproduction. The front panel speaker switches and the stereo headphone jack are handy extras, not often found on power amplifiers. The unit is sized and slotted for standard rack-mount installation. I imagine if they had provided more "professional" inputs at the rear, there would be little question as to the pro qualification of this amplifier. The unit's cost and its weight also would indicate that if this product is primarily aimed at the home audiophile it must be a relatively limited number of them with the basic combination of big budgets and strong backs.

NIKKO ALPHA VI POWER AMPLIFIER: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Continuous power for rated THD (per channel) 8 ohms	300 watts	378 watts
4 ohms	340 watts	370 watts
FTC rated power (20 Hz to 20 kHz)	300 watts	331 watts
THD at rated output, 1 kHz, 8 ohms	0.0048%	0.0045%
4 ohms	NA	0.0085%
THD at rated output, 20 Hz, 8 ohms	0.008%	0.005%
THD at rated output, 20 kHz, 8 ohms	0.008%	0.0057%
IM distortion, rated output, SMPTE	0.01%	0.0075%
IM distortion, rated output, CCIF	NA	0.0017%
IM distortion, rated output, IHF	NA	unmeasurable
Frequency response at 1 watt for -1 dB, normal direct	20 Hz to 200 kHz	16 Hz to 260 kHz
	0 to 100 kHz	DC to 240 kHz
S/N ratio re: 1 W, "A" wtd, IHF	NA	82.5 dB
S/N ratio re: rated output, "A" wtd	120 dB	122 dB
Dynamic headroom, IHF	NA	1.76 dB
Damping factor at 50 Hz	150	150
IHF input sensitivity	NA	0.056 volt
Input sensitivity re: rated output	1 volt	0.97 volt
Slew rate (volts/microsecond)	NA	15
Power consumption, idling; max	NA; 1000 watts	272 watts; 1285 watts

CIRCLE 146 ON READER SERVICE CARD

Teac X-10R Open-Reel Tape Recorder



General Description: The Teac X-10R is an open-reel tape deck capable of automatic reverse of both record and playback. A total of six heads are used—separate erase, record and play in both directions of tape travel. The configuration is quarter-track, two-channel stereo. Tape speeds are $7\frac{1}{2}$ and $3\frac{3}{4}$ inches per second. The deck handles $10\frac{1}{2}$ -inch and 7-inch diameter reels, the former requiring the standard NAB hub adapters (supplied). The X-10R may be rack-mounted (EIA rack mount kits are available as optional extras), and it may be timer-controlled for both record and play, including automatic reverse. An optional accessory for remote control of all transport functions also is available.

The Teac X-10R has special connectors for interfacing with Teac's dbx unit model DX-2A; this unit also may be rack-mounted with an accessory kit. Input level controls on the Teac (line and mic) permit mic/line mixing. Tape drive is handled by a dual-capstan closed-loop system, with electrical braking. The "soft touch" transport keys permit fast-buttoning, including the option for "punch in" recording (overdubbing) in which it is possible to go directly into the record mode during playback. Other operational options include standby condition, "real time" pause and two-way cue monitoring during fast-wind.

The four-digit tape counter, reset button, and the timer switches are placed between the tape turntables just over the head assembly. The tape path follows a symmetrical route past tension arms, inertia rollers and pinch rollers. A sensing post, found on the left inertia roller, activates the auto-reverse feature when sensing foil (which may be attached to the recording tape) makes contact with it. The pinch rollers pull back very slightly in the "pause" mode so that the tape still has contact with the head. The pinch rollers retract

fully, so that the tape is clear of the heads, in the stop or in the fast-wind modes, and of course when power to the deck is cut off.

The row of transport buttons, below and to the right of the head assembly, includes functions for fast-wind in either direction, normal speed in either direction, stop, record, pause and record-mute. To the left of the buttons is another row of controls for power off/on; reel-size selection (7-inch or $10\frac{1}{2}$ -inch); the speed selector ($3\frac{3}{4}$ or $7\frac{1}{2}$ ips); the auto reverse switch; a pitch (fine-speed) adjustment with a range of ± 6 percent; and the cue lever which enables monitoring of sound during either fast-forward or rewind if, of course, the monitor switch is moved to the "Tape" position.

The left- and right-channel microphone inputs are on the left end of the tape amplifier section. To their right

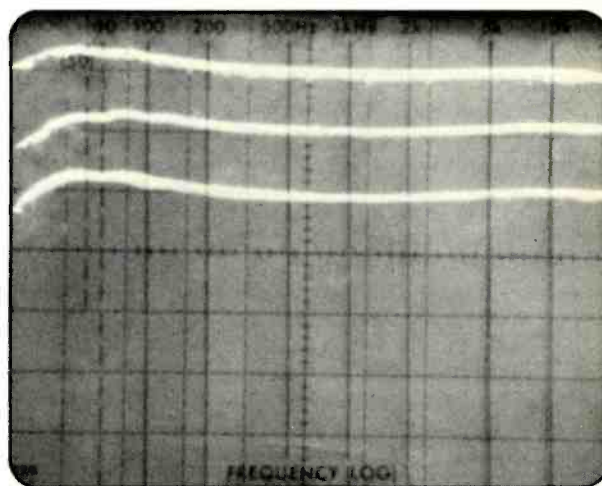


Fig. 1: Teac X-10R: Response at 0 dB, -10 dB and -20 dB (record/play) at $7\frac{1}{2}$ ips tape speed.

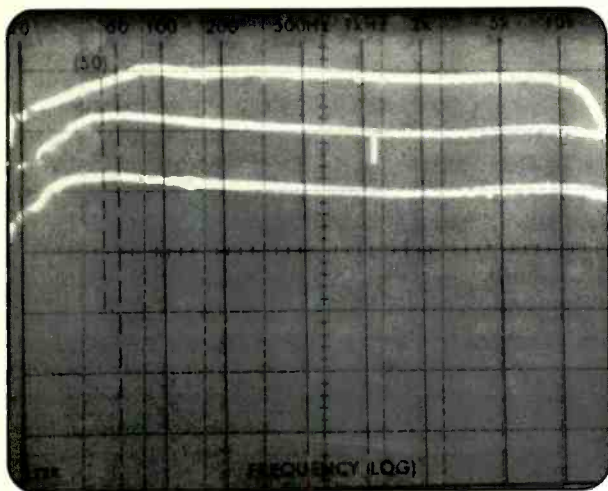


Fig. 2: Teac X-10R: Frequency response measured as in Fig. 1, but at 3¾ ips tape speed.

are a pair of VU meters calibrated from -20 to +3. Level controls and associated switches are grouped to the right of the meters. Mic input, line input and output controls all are dual-concentric types permitting separate or simultaneous adjustment on each channel. The record-mode button is under the mic-level knobs. Bias and EQ switches are found below the line-level controls. The tape-source monitor switch is just below the output level controls. To its right is the stereo headphone output jack. Signals from this jack may be controlled by the output-level knobs.

At the rear are the connectors for the dbx unit, the remote-control accessory, the normal line-in and line-out hookups and the deck's AC cord.

Test Results: In all tested characteristics, the Teac X-10R did as well as, or better than, manufacturer's specifications. Especially notable was the deck's response (we used Maxell UD, 2500 feet on a 10½-inch reel as our reference tape). Record/play response at the -10 dB record level and at the 7½ ips speed extended from 22 Hz to 29 kHz for the -3 dB points. Plots of response, done in real time on our spectrum analyzer, are shown in the 'scope photo of Fig. 1, where the sweep is from 20 Hz to 20 kHz, and the vertical sensitivity is 10 dB per division. Sweeps were made at 0 dB, -10 dB and -20 dB record levels.

The same kind of sweep measurements were made at the lower speed of 3¾ ips. The results were plotted at the same levels and in the same manner, and are shown in Fig. 2. This time, for the -3 dB rolloff points, the response went from 20 Hz to 20 kHz at the -20 dB level, again exceeding Teac's claim. As is to be expected of course, the effects of high-frequency tape saturation become evident at the higher two record levels when operating at the slower tape speed.

Fig. 3 displays the third-order distortion component observed during playback of a 1-kHz recorded signal (center spike). Here we can see that the third-order

component is down some 59 dB below the fundamental, or the equivalent to a third-order distortion of only 0.13 percent. These results were obtained for a zero-dB record level at the 7½ ips speed. The figure of 0.45 percent THD reported in our "Vital Statistics" table included distortion and noise components which explains the higher figure.

Fig. 4 shows two-tone IM distortion measurements (9 kHz and 10 kHz). The major IM products are 38 dB below the two desired tones, which is the equivalent to an IM distortion of 1.78 percent. Teac has no IM spec but needless to say, the IM figure as well as the THD figure are both commendably low. Other performance characteristics all were uniformly excellent, including extremely low wow-and-flutter, and very good signal-to-noise ratio.

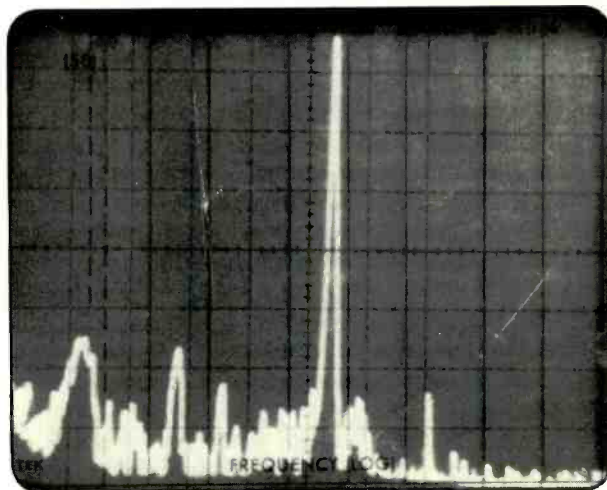


Fig. 3: Teac X-10R: Center spike is 1 kHz recorded tone as analyzed during tape playback. Peak at right is third-order distortion component.

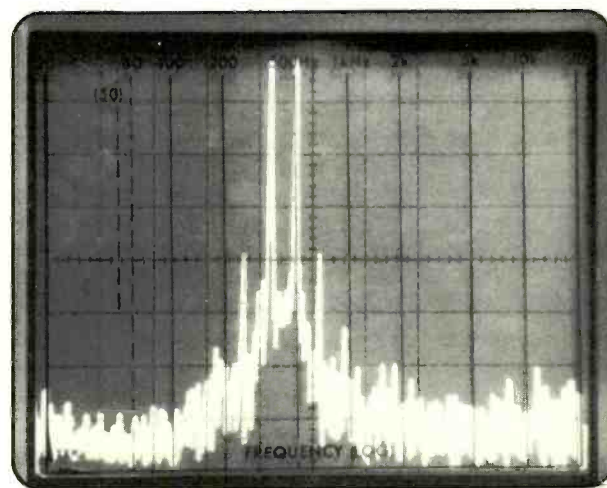


Fig. 4: Teac X-10R: In two-tone IM distortion measurement (9 kHz & 10 kHz) major IM products are 38 dB below two desired tones. This is equivalent to IM distortion percentage of 1.78%.

General Info: Dimensions are 17 inches wide; 17 $\frac{1}{16}$ inches high; 8 $\frac{1}{4}$ inches deep. Weight is 44 $\frac{1}{16}$ pounds. Price is \$1300. Supplied with empty reel; reel adapters; patch cords; splicing tape; sensing tape.

Individual Comment by L.F.: I had no problems with the Teac X-10R as regards its performance. What puzzles me is the recorder's intended market. Some of its features suggest that it ought to perform well as a "semi-pro" unit. For example, it has a dual-capstan, closed-loop transport; electrical braking that proved to be positive and reliable; two-way cue monitoring; punch-in recording (overdubbing); and more, all of which suggest semi-pro or even pro use.

But then again, its top speed is only 7 $\frac{1}{2}$ ips; its auto-reverse and bi-directional record and play facilities suggest home hi-fi applications, as does the quarter-track configuration. There is, in fact, a version of this machine—the model X-10, that sells for \$300 less and lacks the auto-reverse feature and the associated six heads. There also is a model X-7R that accepts only the 7-inch reel size and lacks a few of the features of the X-10R.

Now, mind you, there's nothing wrong with a good home-type open-reel tape deck. I own a couple myself. It's just that I can't make up my mind about this X-10R and its place in the scheme of things. Teac makes much of the fact that it is possible to connect an optional dbx encode/decode unit (their model DX-2A) directly to the deck via circuit-interrupt points on the rear panel (interconnected by jumper plugs visible at the left end of the panel in the photo). In fact, such connection would be possible even if the connection points had not been provided, since the deck has to be connected to some preamplifier, integrated amplifier or stereo receiver, any of which would have the means for incorporating the dbx unit, I believe.

Exclusive of its frills and features, I suppose the best thing about the X-10R is its basic performance, which—as our test results show—really is good.



Teac X-10R: Input and output line terminals at rear are sloped for easy access.

Individual Comment by N.E.: The Teac X-10R suggests a design effort to take the quarter-track two-channel stereo format and do as much with it as seems feasible with the top speed of 7 $\frac{1}{2}$ ips. In the changing world of tape-recording it is hard to say whether this particular model would appeal more to the home stereo enthusiast or to the tape recording "activist"—semi pro or even full pro. But the product exists, and its high-scoring performance does merit serious consideration within its "personality" or specific format and options. The bidirectional recording feature, using a 10 $\frac{1}{2}$ -inch reel at the slow speed (whose response is quite respectable to say the least) lends this deck a really long-running facility for taping hours and hours of material, and of course for playing it too. The other decks in this product "family" which presumably offer the same high level of audio performance but without the options and some of the features of the X-10R would probably be more within the visible realm of the home stereo enthusiast.

TEAC X-10R OPEN-REEL TAPE DECK: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Tape speeds	7 $\frac{1}{2}$; 3 $\frac{3}{4}$ ips	Confirmed
Reel capacity	10 $\frac{1}{2}$; 7 inches	Confirmed
Wow/flutter, 7 $\frac{1}{2}$; 3 $\frac{3}{4}$ ips	0.03%; 0.04%	0.02%; 0.025%
THD at 0 VU	0.8%	0.45%
IM, SMPTE	NA	1.5%
Frequency response, 7 $\frac{1}{2}$ ips	± 3 dB, 40 Hz to 20 kHz	± 3 dB, 22 Hz to 29 kHz (– 10 VU)
3 $\frac{3}{4}$ ips	± 3 dB, 40 Hz to 16 kHz	± 3 dB, 20 Hz to 20 kHz (– 20 VU)
Best S/N ratio (std tape)	63 dB	66.5 dB (re: 3% THD, "A" wtd)
Rewind time, 1800-ft tape	100 sec.	45 sec; 71 sec. (small reel; large reel, 2500 ft)
Mic input sensitivity	0.25 mV	0.2 mV
Line input sensitivity	60 mV	60 mV
Line output level	0.45 V	0.45 V
Headphone output level	NA	49 mV (8 ohms)
Erase ratio	NA	75 dB
Number of heads	6	Confirmed
Number of motors	3	Confirmed

CIRCLE 148 ON READER SERVICE CARD



THE 'OVER EASY' COMPRESSOR/LIMITER.

YOU'LL SWEAR IT ISN'T THERE.

Until now the recording engineer had to settle for a compressor/limiter that was somehow... limiting. Most compressor limiters utilize a threshold above which compression kicks in, suddenly and audibly. The engineer has to use this device quite sparingly to preserve the "naturalness" of the music he's recording.

The dbx Model 165 is a compressor/limiter that is nothing short of revolutionary. "Over Easy"TM compression allows the signal level to pass through the threshold and gradually adds the desired amount of gain change over the range of several dB. The result is compression that doesn't sound "compressed." Engineers who have used it have checked to make sure it was really connected.

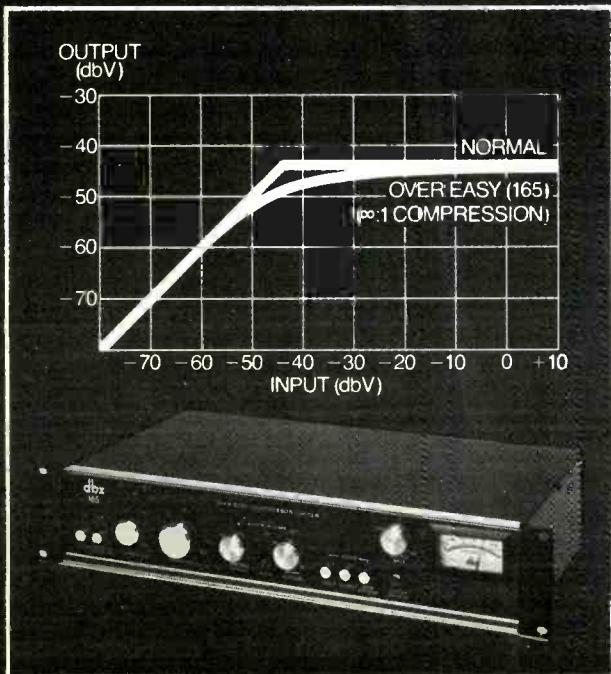
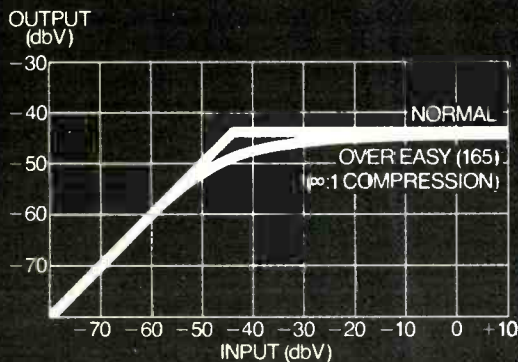
The 165 incorporates other exclusive dbx design features such as true RMS level detection and feed forward gain control. A separate input is provided to the level detector. Because attack can be completed before the signal arrives at the gain control stage, this input allows the creation of special effects.

The 165 is the most flexible compressor/limiter in the dbx line. It is strappable for true stereo operation. (A master/slave switch is located conveniently on the front panel). It has manual attack and release rate controls that can be switched on for special effects. Despite all its features, it occupies only 3½" of rack space.

In the hands of a good engineer, dbx's new 165 is more than the most natural-sounding compressor/limiter you can buy; it is an integral part of the creative recording process. dbx, Incorporated, 71 Chapel Street, Newton, MA 02195, 617-964-3210.

dbx

Making Good Sound Better



CIRCLE 92 ON READER SERVICE CARD

Master-Room XL-305 Reverberation System

By John Murphy and Jim Ford

The Master-Room XL-305 reverberation system by MICMIX Audio Products, Inc. is said to be the product of years of research and analysis of "live" reverb chambers. The unit's reverberation quality is claimed to be comparable to a "live" chamber, and, specifically, the ability to handle demanding transient material without ringing or breakup is claimed.

The XL-305 is packaged as two independent channels in a self-contained rack mount chassis. Each channel is provided with a four-band E.Q. section which, according to the manufacturer, can be set to simulate the acoustics of a concert hall, an acoustic chamber or a plate reverb. The unit employs an electro-mechanical spring matrix as the reverberation generator and uses two sets of LEDs to indicate input signal level. The price of the XL-305 is \$1,195.

General Description: The front panel of the XL-305 is neatly separated into two groups of controls, one group for each of the two channels. The controls are few enough and straightforward enough that the unit's operation can be quickly and easily learned. First there is an input level control which is adjusted to establish an optimum signal level at the input to the reverb generator. At the right of the input level control is an output mix control which pans the output signal between the direct (input) signal and the chamber output. In studio applications this control would usually be set all the way to "chamber" and the output of the reverb returned to the recording console through an echo return. This way the reverb can be "folded back" into the direct signal in any proportion desired. In situations where the reverb unit is placed directly in the signal chain (e.g., some stage applica-



tions) the output mix control would be used to add the desired amount of reverberation to the dry signal.

Directly below the input level and output mix controls for each channel are four more rotary controls labeled "Chamber Equalization." These control the four-band EQ section which has a reciprocal peak/dip filter characteristic and center frequencies of 150, 600, 2 K and 6 kHz. Each EQ section provides up to 12 dB of boost or cut. The owner's manual provides three



sets of EQ control settings said to simulate the reverberation of a concert hall, an acoustic reverb chamber or a plate reverberator.

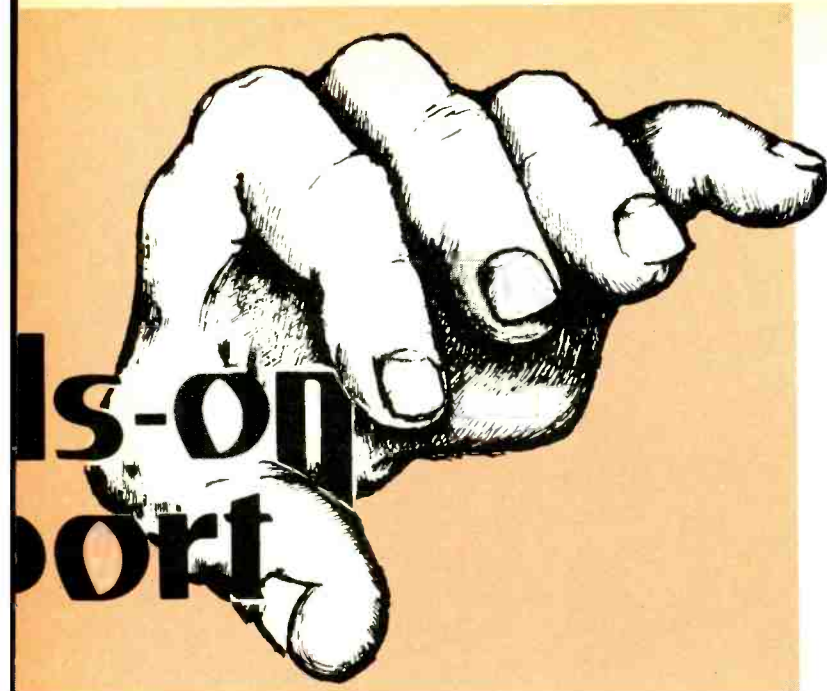
A power on/off switch and pilot lamp are located at the far left of the front panel. Beneath the power switch there is a push button switch which when engaged provides a mono chamber drive to both channels from either the left, the right or both inputs. This allows for stereo reverberation from monaural sources.

In the center of the front panel between the two channels are a pair of chamber drive level indicators. Each indicator consists of a vertical column of three LEDs labeled -6, 0 and +6 dB. Directly below the level indicators are two access holes which allow for screwdriver adjustment of a pair of output level controls.

At the far right side is a group of four phone jacks arranged vertically which provide auxiliary input and output connections. These auxiliary jacks defeat the rear panel connections whenever a plug is inserted. The inputs can be used as either balanced or unbalanced depending on whether a two- or three-conductor phone plug is used. The outputs are unbalanced and can drive a 600-ohm load to greater than 18 dBm. A pushbutton to the left of the jacks provides a mono chamber return when engaged.

The main input/output connections are provided on terminal blocks on the rear panel of the unit. As an option, the XL-305 can be purchased with the rear panel connections transformer-coupled. The rear panel also contains a line fuseholder, line voltage selector (120 or 240 VAC), and line cord connector.

The XL-305 has some nice features which provide flexibility and facilitate interconnecting and operating the unit, but one should keep in mind that the most



important characteristic of a reverb, ultimately, is the way it sounds.

Listening Tests: In order to give the XL-305 a thorough listening test we made arrangements with Cornerstone Recording Co. (located in Oklahoma City) to audition it with some master multi-track tapes. The unit was patched into the console and A/B comparisons were made with another spring-type reverb (one widely accepted for studio use), a digital reverb and a standard plate reverb. We listened to a wide variety of material including solo vocal tracks, solo piano and solo snare drum tracks.

The Master-Room XL-305 provided an excellent reverb sound on all program material. We were especially pleased with the way it handled transients (such as solo snare pops), there wasn't a trace of the flutter, ringing or breakup commonly heard from less sophisticated spring reverbs. We also noted that the chamber EQ provides for a wide variety of reverb colorations.

In comparison with the other units the XL-305 had a significantly better reverb quality than the digital unit and sounded at least as good as the other spring unit, maybe even a little more neutral in color. The XL-305 sounded quite different from the plate when the EQ controls on the former were set flat; the plate sounding brilliant in comparison. In order to compare it more closely to the plate we adjusted the EQ on the XL-305 to try to match the tonal balance of the plate, this requiring substantial cuts at 150 and 600 Hz and near maximum boost at 2 K and 6 kHz. Even so, the plate still sounded a little brighter. This did bring the tonal balance of the two systems close enough to allow comparisons of other qualities and resulted in a preference for the greater diffusion of the plate. The XL-305

was close though. Now, considering that a plate reverb would typically cost about five times the price of the XL-305, there can be no doubt that this is an outstanding reverb unit!

Back at the shop we performed our usual listening tests and observed no degradation of audio quality when the unit (direct output only) was switched into the signal chain of our reference listening system. Like any electro-mechanical reverb the chassis is somewhat microphonic and acoustic feedback may result when the unit is located near the monitor speakers at high listening levels with lots of reverb. However, this should rarely be a problem in normal use.

Lab Test: We brought the XL-305 to the lab and performed the usual battery of tests—the results of which are given in the “Lab Test Summary.” The unit should be compatible with the signal levels of just about any system since it will accommodate input signal levels ranging from -20 dBV to $+22$ dBV. With the output level control at maximum the 0 VU output level is $+4$ dBV, and the output will go to $+22$ dBV before clipping occurs.

Noise at the output is pretty low, being about 80 dB below 0 VU for the direct output and about 65 dB below 0 VU for the chamber output. Distortion through the direct signal path was measured as about 0.01% at 0 VU with a bandwidth from 13 Hz to 45 kHz. Considering the $+22$ dBV output level at clipping and the 45 kHz bandwidth, the unit's minimum slew rate limit was calculated to be 3.9 volts per microsecond. How much the true slew rate limit exceeds this figure depends on how much the power bandwidth actually exceeds the small signal bandwidth. Based on this calculated minimum slew rate, the slew rate ratio (defined here as the slew rate limit divided by the peak output voltage swing) at 0 VU is at least 2.24 volts per microsecond per peak volt of output signal. This is well in excess of the “Jung criteria” (0.5 volts per microsecond per peak volt out) for freedom from slewing induced distortion. The slew rate ratio remains in excess of 0.5 for output levels up to at least $+17$ dBV. This constitutes excellent slewing performance.

The only testing we did on the actual chamber output was to measure the 60 dB reverb time (3.5 seconds) and look at the response of the chamber to wideband pink noise. This test revealed a flat amplitude response through the midrange with the frequency extremes rolled off. At the low frequency end, the chamber response was down 3 dB at about 150 Hz and con-

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GROOVE VIEWS

Reviewed By:
ROBERT HENSCHEN
NAT HENTOFF
JOE KLEE
STEVE ROW
STAN SOOCHER
JEFF TAMARKIN

POPULAR

EAGLES: *The Long Run*. [Bill Szymczyk, producer; Bill Szymczyk and Ed "Radar" Mashal, engineers; recorded at Bayshore Recording Studio, Coconut Grove, Fla.; One Step Up, Love 'n' Comfort Recording Studio, Britannia Recording Studio, The Record Plant, Los Angeles, Ca.; mixed by Bill Szymczyk at Bayshore Recording Studio.] Asylum 5E-508.

Performance: **Running in place**
Recording: **True grit**

The New York City Marathon is the largest of its kind in the world and this past October, 11,553 runners entered the 26 miles-plus race in which the winner finished in a little over two hours and eleven minutes while a new women's world record was also set. *The Long Run* took five Eagles two-and-a-half years to record ten songs written by eight songwriters, including Bob Seger and J.D. Souther. The critical factor in both cases is endurance, only the Eagles haven't set any records with their new release.

Originally a country rock band of smoothly-layered guitars and vocal harmonies, the Eagles have established themselves as prime purveyors of the clean lyrical line which, through its simplicity and insight, has elevated their songs into the realm of pop commandments. *Eagles*, their debut, dealt with the experience of youth as freedom; *Desperado* portrayed the outsider as hero; *On The Border* defined the line between the in-and-smug and the out-and-daring; *One Of These Nights* embraced

loneliness; and *Hotel California* courted decadence.

The Long Run, however, replaces the cynic who retained an admirable amount of naivete with the misanthrope who wallows in life's hopelessness. According to "The Disco Strangler," he's "the fiddler in your darkest night/He's the melody without a cure." True, "Victim of Love" and "Life In the Fast Lane" from *Hotel California* are just as indicting. But their mood is balanced by spiraling orchestras on other cuts. On *The Long Run*, a song as pretty as "I Can't Tell You Why," sung by new bassist Timothy B. Schmit and resembling his Poco ballad "I Can See Everything," leaves the basic questions of a troubled love affair unanswered.



EAGLES: Pop commandments

Musically, *The Long Run* is a return to electric rock guitar roots. The orchestras have given way to increased slide guitar work from Joe Walsh that approaches the raw power of Duane Allman on "In The City" (a remake of the tune from the soundtrack of *The Warriors*) The Eagles haven't included as much r&b-flavored material on an album since *On The Border*, but the buoyancy of that title cut and "Good Day In Hell" are missing here. The oppression of "King Of Hollywood," "Those Shoes," and "Teenage Jail" are saved only by the Animal House humor of "The Greeks Don't Want No Freaks," a throwback to '60s party songs like the Premiers "Farmer John," and the rousing abandonment of "Heartache Tonight."

Producer Bill Szymczyk's sinuous guitar mixes bear repeated listening, but the band admits on "Sad Cafe": "We thought we could change this world. . . . But things in this life change very slowly if they ever change at all/There's no use in asking why/It just turned out that way." The question, then, isn't how many millions *The Long Run* will sell, but whether or not its artistic outcome will result in an out-of-breath Eagles on their next studio effort. S.S.

THE ROCHESES: *The Roches*. [Robert Fripp, producer; Ed Sprigg, engineer; Jon Smith, assistant engineer; recorded at The Hit Factory, New York, N.Y., September-November 1978.] Warner Bros. BSK 3298.

Performance: **Uncannily good**
Recording: **A masterpiece**

The Roches became the rock critics' darlings during the summer of 1979, but

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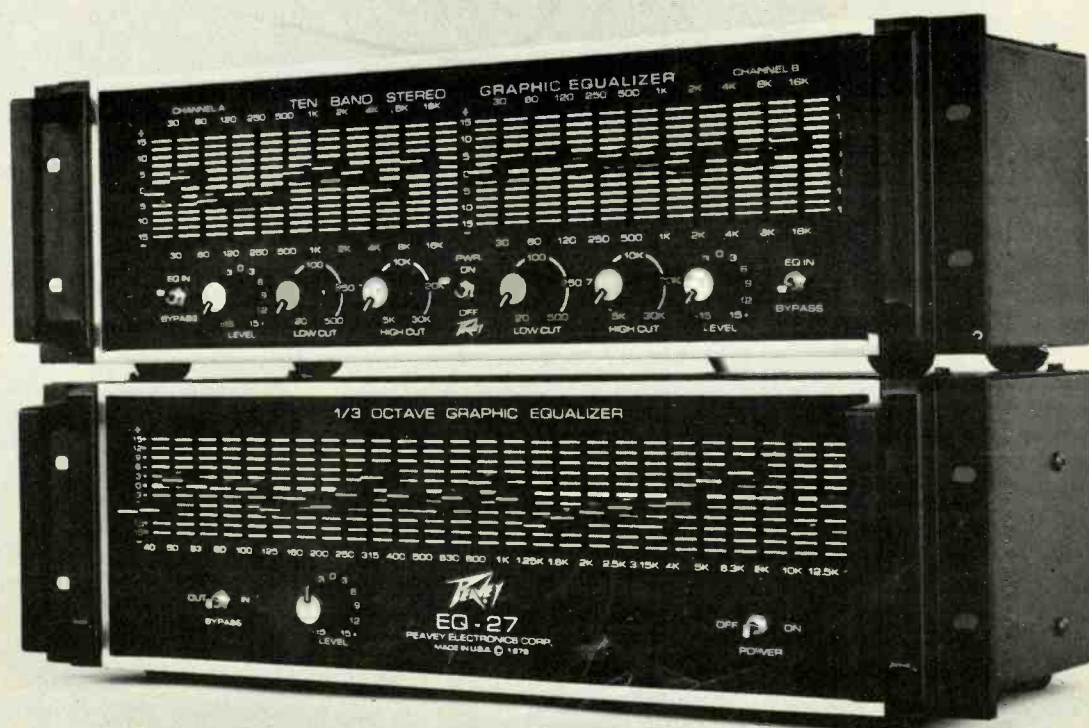
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believe me, they deserve it. This is such a fine album—material, recording and performance included—that it really spoils the listener for some other recordings that may have their own merits. These three sisters, under the skilled guidance of Robert Fripp, have really delivered the goods.

This isn't just gushing, either. The material is a combination of offbeat, sophisticated, emotional ideas and thoughts resulting in some of the most intelligent and witty songs that have been written in years. The best songs of Randy Newman come to mind in searching for comparisons. The recording is just flawless. Fripp has called this "audio verite," and what it means is a simple, uncluttered, "live"-in-the-studio sound with very little overdubbing unless absolutely necessary. The performances are, at times, awesome. Although we are concerned with only three female singers, the vocal range is the same as if you were hearing a mixed trio.

Maggie Roche has an alto voice that could rival that of a baritone; Suzy has a wide-ranging mezzo-soprano, and Terry has a floating soprano. Together they do strange and wondrous things to music, coming up with harmonic blends that both startle and please, surprise and soothe, the rock-ravaged ear.

The women look New Wave, but they produce pure music. From the opening autobiographical "We" ("Sometimes our voices give out/But not our ages and our phone numbers") to the whimsical "Mr. Sellack," the Roches know exactly what they are doing, and they force the listener to accept them on their own terms. No single kind of song dominates the 10 tracks here, either in melody or rhythm. There is a certain amount of foolishness in "Damned Old Dog," for example, complete with its hounddog kind of howl midway through, but this is countered by the magnificent vocal work on "Hammond Song" and "Quitting Time, for example."

The lyrics are not the usual folk-style, with rhyming couplets or quatrains, either. "The Train" is a first-person account of a passenger fantasizing about a fellow passenger, told without rhyme but still possessing a simple song-like quality. The same is true of "Runs in the Family," in which only one four-line segment rhymes. But one is so overwhelmed by all the other elements of the material and recording that the lack of rhymes is hardly noticed.

The accompaniment is spare, mostly guitars, with only occasional use of bass

Some To Remember, Lest We Forget

The finish of another musical year—not to mention a decade—always prompts a lengthy look back by the media, and the obligatory "Best of" and "Worst of" lists are the usual results. Always a bit different, we posed the selection of the most *overlooked* albums of 1979 to our highly esteemed Music Editors: those releases that they felt did not receive either the critical or public acclaim they deserved. The Messrs. Henschen, Klee, Row and Tamarkin did just that. The following lists, then, are not necessarily their favorite releases of the past year, but those they felt were not given their just due. Perhaps they'll serve as food for thought for those of you who voted a straight "Top 100 Album Picks" ticket for the close of 1979. If you were, however, on the more eclectic side of the listening fence, so to speak, you just might find one or two of your "unsung heros" presented for notice below.

We are sure there are other works or other artists that you might feel should have been included (yes, even we might have overlooked one of the overlooked albums of 1979!). As Joe Klee wrote on submitting his list, "... I'm sure I'll think of another ten just as soon as I finish typing this!" We do not present this, then, as the definitive item, but hopefully, since hindsight is always 20/20, we have managed to include some whose presence here you'll agree is deserved.

And so, without further ado, we present a last glance at the most overlooked/underrated albums of 1979.

—P.H.



ENRICO CARUSO: *The Complete Enrico Caruso*. RCA Arm1 2766/2767/3373/3374.

The first four volumes of what will be as complete as possible a collection of recordings made by the *voce d'oro* of the early 1900's, rebalanced to something resembling an accurate sound picture of the voice.

MARTY GROSZ & DICK WELLSTOOD: *Take Me To The Land Of Jazz*. Aviva 6001.

Marty and Dick may be giants in New York where they live and where they do most of their work, but they're not well enough known nationwide. Neither is the Aviva label, but tunes like "Tain't

No Sin To Take Off Your Skin And Dance Around In Your Bones" and their instrumental version of "Sleep" may just remedy both these situations. All it takes is one disc jockey to find out and the ball could start rolling.

LUCIANO PAVAROTTI: *Hits From Lincoln Center*. London OS26577.

This one was allowed to escape almost unnoticed since it was largely made up of re-issued material matching that which Signor Pavarotti sang on his historic TV recital from Lincoln Center. There are, however, some new tracks, one of which is a splendidly sung version of Leoncavallo's "Mattinata".

ART FARMER & JIM HALL: *Big Blues*. CTI 7083.

These guys are so quiet that they seem to get lost in the fast shuffle of the disco beat and the fusion of jazz with other music. It's too bad.

WILD BILL DAVISON: *That's A Plenty*. Commodore FL 14939.

CBS Columbia has reissued a lot of the old material from the vaults of Commodore Records and the unissued second takes as well... and the only thing that beats Wild Bill playing "Panama" is two takes of Wild Bill playing "Panama." Condon's here too. So's Pee Wee Russell and the whole rest of the gang.

HEIKKE SARMANTO: *New Hope Jazz Mass*. Finlandia FA 201 LP2.

It's difficult for a non-name to crash the inner circles of the jazz elite. It's even more difficult when he comes from someplace other than the U.S.A. Chauvinism aside, Heikke Sarmanto has managed to fuse the elements of jazz and liturgical music into a beautiful whole.

ALBERTA HUNTER: *Remember My Name*. CBS 35553.

Alberta's still going stronger than ever at eighty plus. She's recorded here with a redhot band including the likes of Doc Cheatham on trumpet. Buy it and hear what the real blues sounds like.

BELA DAVIDOVICH: *Chopin Preludes, Opus 28*. Phillips 9500666.

ROBIN McCABE: *Mussorgsky, Pictures At An Exhibition* and Stravinsky, *Firebird Suite*. Vanguard VSD 71264.

Two females who play the piano too well to have been kept such a deep secret from the world. Davidovich is the

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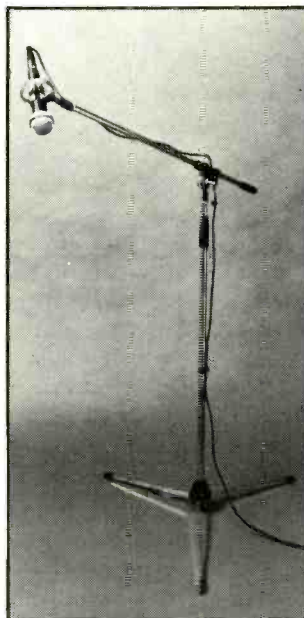
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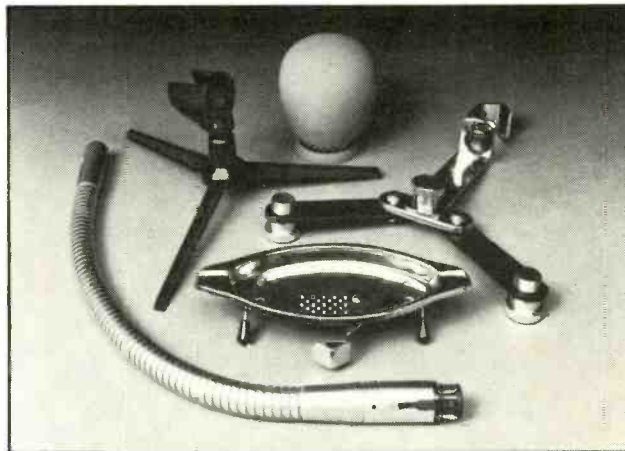
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JOHANN STRAUSS: *Waltzes, arranged by Arnold Schonberg, Alban Berg and Anton Webern.* The Boston Symphony Chamber Players. DGG 2530 977.

A new look at some old music. The three pillars of the turn of the century modernism give the Waltz King his due, deepening the textures and harmonies without destroying the melodies and the charm.

Joe Klee



LINTON KWESI JOHNSON: *Forces of Victory.* Mango MLPS-9566.

British-based Jamaican poet has recorded the most powerful and innovative reggae in years. Lyrics that are felt and a production that takes the genre to new heights.

GRAHAM PARKER AND THE RUMOUR: *Squeezing Out Sparks.* Arista AB-4223.

Easily one of the best rock and roll bands on the scene today and the public still has not found out. Not a bad cut on the record.

LOUISE GOFFIN: *Kid Blue.* Asylum 6E-203.

Probably a victim of prejudice because Carole King is her mother, Goffin's debut nonetheless showed that the young woman exhibits a flair for writing and singing contemporary rock as well as many artists twice her age. An artist to watch for in the '80s.

THE ROCHES: *The Roches.* Warner Brothers BSK-3298.

Actually, the Roches received plenty of critical kudos, but the masses passed them by. That's too bad because they're the first 'folk' act since the early '70s to do anything new with the form—and they're funny, too.

MADNESS: *One Step Beyond.* Stiff Import SEEZ 17.

It's not fair to include this one since it hasn't been released in the U.S. at this

writing, but this ska revival band from Britain presented a fresh twist to a dance-rock scene that was already beginning to stagnate. Could be the soul music of the '80s.

THE LAUGHING DOGS: *The Laughing Dogs.* Columbia JC-36033.

While hypes like the Knack grabbed the bucks, talented pop 'n' rollers the Laughing Dogs went by unnoticed. Well-crafted songs and accomplished musicianship but still lots of fun.

JAMES WHITE AND THE BLACKS: *Off White.* ZE ZEA 33-003.

It's unreasonable to ask the average consumer to buy a record by a group of avant-garde funksters, as this music is not always the easiest to listen to. But it's wild and makes you wanna bop.

THE JAM: *All Mod Cons.* Polydor PD-16188.

The third LP by Britain's original Mod revivalists showed them to be maturing as musicians and songwriters, and this was their best to date.

DARLING: *Put It Down To Experience.* Charisma CA12204.

This one by a British new wave quartet fronted by versatile vocalist Alice Spring simply got lost in the shuffle—too bad, 'cause it deserved a listen. A bit like XTC.

WAZMO NARIZ: *Things Aren't Right.* I.R.S. SP005.

Still new as I write this, but doubtful that anything this quirky and silly will go anywhere. Chicago's Nariz truly sings and writes like no one else. Defies description—you just have to hear him.

Jeff Tamarkin



THE RECORDS: *The Records.* Virgin VA 13130.

The Records, of course, had one of the best singles of this or any other year, "Starry Eyes," but the rest of the album gets praise for its witty lyrics, catchy melodies and instrumental skill.

BRAM TCHAIKOVSKY: *Strange Man, Changed Man.* Polydor PD 1-6211.

Tchaikovsky, a former member of the Motors, heads a power trio bearing his name and this release is remarkable for its dense melodic texture and neo-
(continued on page 90)

(no drums) and Fripp's synthesizer, which has been programmed by electronics whiz Larry Fast. In this respect, the music does sound more like traditional folk music, 60s-style, than anything else. But there are enough quirks in the singing, subject matter and backup to keep the material from falling in any specific category.

And listening a second and third time to the recording itself, one is impressed with what has been done with three voices and a minimum of instrumental backup. The voices fill the speakers or headphones with rich, clear singing, sometimes all three voices out of both channels, sometimes a voice out of each channel and one out of the middle. But at all times, the voice is the key to the song, and the voice gets all the room it needs to sing the song.

The singing is divided among all three sisters, who also have contributed individually and collectively to the songwriting, and often is shared by all three. The closest thing to this album from others that I can remember—one that made me feel so good, cut for cut, with its sheer music—is the Mimi Farina-Tom Jans album of nearly 10 years ago, in which two voices and spare guitar backup blended so well on some gorgeously-crafted material. I take my hat off to the Roches, Fripp and the gang at Warner Brothers for taking what could be, but shouldn't be, a giant risk.

This accolade, and others like it, likely won't increase record sales, but one hopes that it serves as a message to (1) the public, to realize that some extremely fine music is still being written and (2) the Roches, to keep up the good work.

S.R.

ANTHONY PHILLIPS: *Private Parts and Pieces.* [Anthony Phillips, producer; Ray Staff, engineer; recorded at Send Barns, England.] Passport/PVC PVC 7905.

Performance: **Intimate, esoteric**
Recording: **Simple, even primitive**

What to do if the record company insists you owe them some more material: put together a bunch of varied pieces that represented some fooling around during a four-year period (1972-76) and permit its release under the name, *Private Parts and Pieces—A Collection of Guitar and Piano Solos, Duets and Ensembles.*

This may or may not be the genesis of

this record, but we have it, nevertheless, and what a delightful curiosity it is! Anthony Phillips, a former member of Genesis, is an instrumental whiz on this record, even if his attention span is not too long. For we indeed have a few parts, as well as some pieces, and the total effect is that of a musical work-in-progress.

We are treated to a piece for 12-string guitar entitled "Flamingo" that Phillips says is supposed to be the first movement of a 12-string guitar concerto, for example. We have one vocal, "Seven Long Years," that Phillips has called a "love song for a vanished ballerina," a short, sweet, simple melody that is quite poignant. And we have some songs written for non-standard tuned instruments, such as "Tibetan Yak-Music," played on a 12-string with what Phillips calls "bizarre tuning," and used for a theme that develops slowly through extensive use of arpeggios.

The recordings were made apparently after Phillips left Genesis (before Genesis became a leading art-rock group), and since then he has cut at least one other album—1977's strange, wondrous, enigmatic *Wise After the Event*. This more recent release is a good indication of the folk and classical influences that helped mold Genesis, before the flamboyance was emphasized. One of the piano solos, for example, is designed to be reminiscent of, but not too derivative of, Debussy, but "Autumnal" plays out through a series of seemingly endless short runs and becomes rather tedious after a while. This cut also is one of the more primitively recorded tracks, with some odd clicking and perhaps page-turning noticeable.

Two of the tracks are beautiful, however, and are nicely recorded as well—"Field of Eternity" and "Lullaby-Old Father Theme." The latter is especially interesting as a recording, with the melody moving from one channel to another then back through the center to the original channel. The guitar arpeggios are not so prominently played as to overshadow a gem of a melody line here.

Phillips also has included a guitar duet here that should have taken the place of several of the solos on the album, because it sounds so much like the others. "Tregenna Afternoons" is a very delicately played piece with more of a melody than the other cuts. A solo acoustic guitar break precedes a passage joined by the 12-string in almost harp-like runs and arpeggios. The sound is

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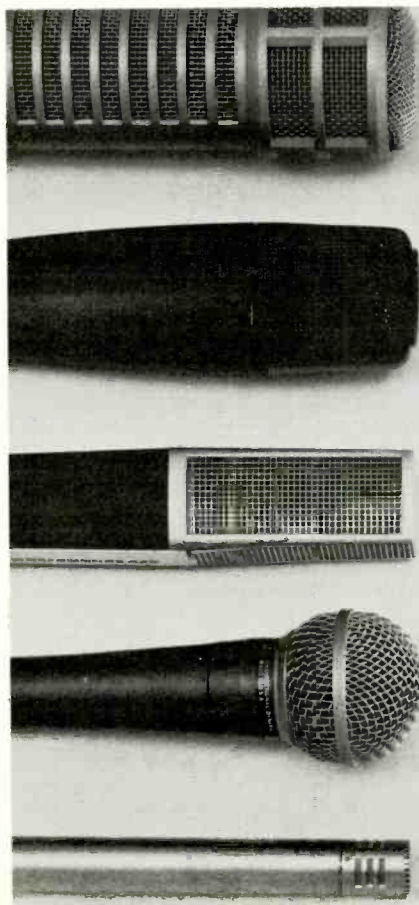
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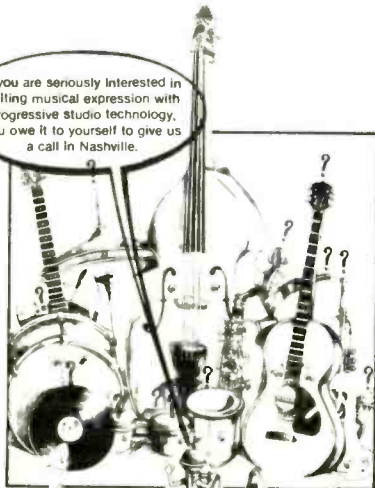
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By Nat Hentoff

What particularly distinguishes the current generation of jazz explorers, especially those who have emerged from AACM (the Association for the Advancement of Creative Music) is their deep knowledge of the whole scope of jazz. Including its antecedents. A fascinating case in point is *Air Lore* (Arista/Novus) in which the formidable post-modern trio, AIR, interprets a program made up entirely of compositions by Scott Joplin and Jelly Roll Morton.

With affectionate respect for such classics as "Buddy Bolden's Blues" and "Weeping Willow Rag," these continually resourceful musicians do not, however, treat the scores as if they were sacred relics. Henry Threadgill (tenor, alto, flute), Fred Hopkins (bass), and Steve McCall (drums, percussion) bring their astutely contemporary selves into the music and the result is true to the spirit of Joplin and Morton while also revealing how much present-day improvisers can say within these vintage forms.

There is much lyricism (for both Joplin and Morton were graceful writers) as well as wit and emotional intensity. The recording quality is not only full-bodied and warm but it also somehow heightens the sense of AIR's spaciousness of conception—its arching across decades to form a bridge between the singular musical patriarchs represented here and their loving, searching progeny.

Another influential expander of the jazz language, bassist-composer Cecil McBee, is also steeped in the jazz heritage while continually stretching the solo capacities of his instrument. Indeed, McBee is at the point

where, as one European reviewer has noted: "During the last few years bassists have explored possibilities long unimaginable on this instrument, but McBee almost entirely renews it."

In *Alternate Spaces* (India Navigation), McBee has assembled a group of musicians who have both the technical and emotional force to enter into his compositional realm which requires exceptional clarity of spirit. With him are pianist Don Pullen, multiple reed player Chico Freeman, trumpeter Joe Gardner, drummer Allen Nelson, and the formidably subtle percussionist of the Art Ensemble of Chicago, Don Moye.

The originals, all by McBee, are characterized by long, quite lovely lines which, in their unhurried way, practically demand exceptional thoughtfulness on the part of the soloists. McBee, as a player as well as a writer, creates a mood of sustained concentration out of which the music seems to flow as naturally as the seasons. An alumnus of groups led by, among others, Miles Davis, Sonny Rollins and Sam Rivers, McBee has become a wholly authoritative leader.

The engineering is clear, crisp and equal to the forceful presence of each of these players; and the resilient beauty of McBee's bass is exceptionally well captured.

AIR (HENRY THREADGILL, FRED HOPKINS, STEVE MCCALL): *Air Lore*. [Michael Cuscuna, producer; David Baker, engineer.] Arista/Novus AN 3014.

CECIL McBEE: *Alternate Spaces*. [No information on producer or engineer.] India Navigation IN 1043.

good, and the playing is great.

Among the other oddities is a track entitled "Harmonium in the Dust" (with Phillips' apologies to Peter Sellers for the title), but the title is the best thing about this brief track that just doesn't go anywhere. The organ-like chords and other musical tones from the harmonium are interesting, to be sure, but they could have been used to better advantage to fill in some of the other tracks.

This is a curio among recent solo albums, but one that is somehow satisfying. Suckers for Kottke-Fahey-Cohen-styled guitar music will feel right at home here, and the extra luxury of some piano work is included in the deal. No astounding musical sentiments being expressed, and no pretensions for a Top-40 spot anywhere, but *Private Parts and Pieces* makes for some fine listening over the final glass of wine or while reading a book in a rainstorm. S.R.



DON BYAS & BUD POWELL: A Tribute To Cannonball. [Julian "Cannonball" Adderly, producer; recorded in Paris in 1961; studio and engineer not listed.] Columbia 35755.

Performance: **Strange bandfellows make fine music**

Recording: **Paris in the '60s wasn't exactly the highest, but it'll do**

Carlos Wesley Byas, better known as Don Byas, was born in 1912. Evidence to the contrary he was not a bebop player per se. He worked with such important swing era bands as Bennie Moten, Walter Page, Lionel Hampton, Don Redman, Andy Kirk and Count Basie. But when the boppers came on the scene Don Byas was one of the older established musicians who was able to play with them. He was a man either close to or in his '40s when he began sitting in with Oscar Pettiford and Dizzy Gillespie and other musicians of the new movement. His blues based tenor saxophone style (check out Basie's "Harvard Blues" for reference) was a natural foil for Dizzy's fireworks.

Earl "Bud" Powell, only seven years Byas' junior, missed the swing era as an active influence. By the time he joined Cootie Williams' Orchestra in 1943 he

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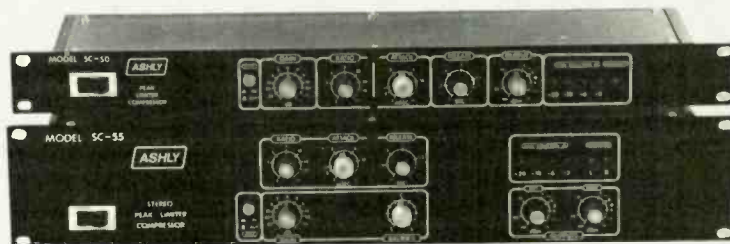
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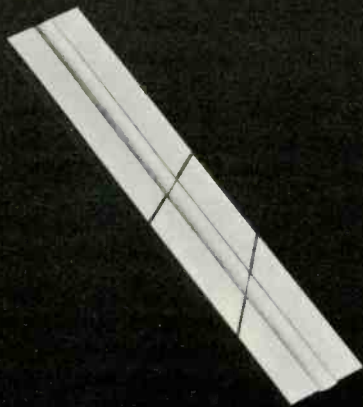
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Beatles' sound. "Girl of my Dreams" was a fine single, but there's more to the album than that.

JOE EGAN: *Out of Nowhere.* Ariola SW 50064.

This is one for those of you that can't get enough of Egan's former sidekick, Gerry Rafferty. Here, a widely varied blend of rock, blues, jazz and folk is served up with interesting arrangements and Egan's reedy voice.

MICHAEL NESMITH: *Infinite Rider on the Big Dogma.* Pacific Arts PAC 7-130.

This is a hilarious record, a send-up of rock, disco and '50s falsetto. Nesmith, the former Monkee, isn't as pop-conscious as another recent bizarre title "From a Radio Engine to the Photon Wing," but he again shows he is one of the most original artists around.

DANNY O'KEEFE: *Global Blues.* Warner Bros. BSK 3314.

A finely wrought collection of superb lyrics, skilled accompaniment and O'Keefe's growling voice. "The Jimmy Hoffa Mem. Bldg. Blues" is a comic masterpiece, which is countered nicely by more serious works, including a song with a Japanese title about the death of the whales.

PAT BENATAR: *In the Heat of the Night.* Chrysalis CHR 1236.

One of the two notable releases by women in 1979, this effort shows how far this young woman has come since the time she was a cabaret singer with a combo known as Coxton's Army in Richmond, Virginia. With Blondie's producer at the controls, she really lets her voice go, and the material is well-suited to her talents.

MARY McCASLIN: *Sunny California.* Mercury SRM 1-3772.

Sort of a woman's version of *Hotel California*, this suite of songs is vaguely connected to the theme of the California myth. With only the slightest country music accompaniment, *Sunny California* is a splendid release by a fine singer.

DOC AND MERLE WATSON: *Live & Pickin'.* United Artists US-LA 943-H.

A showcase of the not inconsiderable talents of one of our best folksingers. "Tennessee Stud," unfortunately, is not one of the eleven tracks, but there is a

fine yodeling song and two dazzling instrumental medleys.

CALDERA: *Caldera.* Capitol ST 11952.

Proof is offered here that Spyro Gyra is not the only instrumental jazz ensemble making fine music these days. Caldera is a sextet with heavy Spanish influences, and the resulting sound is an up-tempo, percussion-driven mixture of rhythm and melody.

THE CHIEFTAINS: *Chieftains 8.* Columbia JC 35726.

The Chieftains can liven up a dull year like no other group can. More jigs, reels, hornpipes and airs by the best Irish musicians around. This one even has a vocal by bodhran player Kevin Conniff.

EBERHARD WEBER: *Fluid Rustle.* ECM 1-1137.

A haunting blend of Gary Burton's vibes, Weber's bass and the voices of Bonnie Herman and Norma Winstone, this is another typically sensational production by Manfred Eicher.

ROBBEN FORD: *The Inside Story.* Elektra 6E-169.

Ford's album, rock-oriented and sounding a little like Ronnie Montrose's *Open Fire* of a couple of years back, tended to get lost behind the guitar work of one of the year's chief whizzes, Pat Metheny. Ford sings on two cuts and his voice is quite good, but it's the guitar work that really shines.

RON STEVENS AND JOY GRDNIC: *Somewhere Over the Radio.* Takoma TAK 7067.

Light years beyond George Carlin's "Wonderful WINO" routine and equal to the best of Firesign Theater, this release is what recorded humor is really all about. The "Bogus Concerts" ad and the ad for the "Jesse Jeff Westchester" album are terrific. This is 38 minutes of inspired lunacy.

Steve Row



BIM: *Thistles.* Elektra 6E-132.

An unknown Canadian with a power-packed miniature voice, this singer-songwriter fills his tunes with vivid stories and real emotion. The taut rhythm guitar of "Thistles," and the moving vocal treatment of every cut here, contain flashes of brilliance.

(continued on page 100)

was already a maverick. True, by 1961 when this recording was made and both Byas and Powell were expatriates residing in Europe, their paths had crossed many times and they had played with a lot of the same musicians.

Still I find it remarkable how well the revolutionary stylings of Powell and the swing era blowing of Byas meshed. They are backed by two other expatriates (drummer Kenny Clarke and trumpeter Idrees Sulemann) and a French bassist (Pierre Micélot). How come Cannonball Adderly just happened to be in Paris in 1961 with enough money to hire the studio and record the session is a mystery that Gary Giddens' liner notes fail to clear up. We do know that by 1961 Cannonball was already the leader of a prestigious jazz group who had made some best selling records for Riverside. We also know that in 1961 he was still under contract to Riverside. The next year he was to join Capitol Records, though still making occasional recordings for Riverside up until the time that firm went out of business. Riverside Records used to allow Cannonball to produce recordings of artists he liked and put them out on Riverside, so it is possible that this 1961 Paris date was originally planned as a Riverside release. Whether it was or not, it never came out on any label until 1979 when it showed up on Columbia's Contemporary Masters Series. While it's a pity to think that music as good as this can stay buried for over a decade, the joy of discovering a new unissued LP by such greats as Don Byas and Bud Powell who are no longer with us, is well worth the wait.

The title of the LP is, I'm sure, an afterthought. Cannonball was quite alive at the time he produced this recording and none of the tunes played here are particularly associated with Cannonball. Yet the commercial packaging of the record industry being what it is—and Cannonball having a bigger name in the marketplace than either Don Byas or Bud Powell—that's what Columbia decided to call it. It really doesn't matter what they called it. This LP under any name would swing just as mightily and be just as important.

The sound is serviceable. It's not very good. It's not very bad. It is just kind of there. They got the music in the grooves, but spectacular it's not. J.K.

JASMINE: *Jasmine*. [Allan Bellnik, producer; Bob Clifford, engineer; recorded



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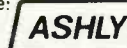


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July 1979 at Chelsea Sound Studios,
New York, N.Y.] WEST 54 WLW 8007.

Performance: Jazz men indeed
Recording: Good unspectacular serviceable sound

Generally I tend to disregard jazz groups with fancy names without even a cursory listening. I find them affected and dishonest. Every so often, however, I find the exception. Despite their name (all I can think of is a pun on the words "Jazz Man," but there must be some saner reason), here is an exceptional exception. With the driving baritone and soprano saxophone of Roger Rosenberg in the lead, this band plays admirable, if eclectic, jazz. It comes, the liner notes say, from a fusion of jazz and pop and Latin and since the liner notes point out that Jasmine met in Mongo Santamaria's band, it all makes sense.

The album is composed entirely of originals which, according to the liner notes again, the band finds more expressive of their own personalities than if they were to attempt to adapt standards to their style. At least that's a less mercenary reason than the one I got from a musician who told me that he only records his own tunes because, why should he earn royalties for some composer who's rich already? Actually, the group writes some good original material. Roger Rosenberg, in particular, has some material on here that is certainly as worthy as that written by a lot of today's jazz men and, if I must listen to unfamiliar material, I wish it were all as interesting as his "Hokus Pokus."

I'm glad that the engineers didn't give way to the temptation, when faced with a vital, churning drummer like Steve Berrios, of miking the date like it was a percussion concerto. There's a lot of overdubbing on some of the cuts. On "Hokus Pokus," Rosenberg is heard playing several instruments simultaneously, which he can't do "live," but can do on record, and does effectively.

As good a bassist as Lee Smith is, I can really live without the electric bass, particularly when it is recorded in such a manner that the pick noise and string slide intrudes on the music as they do on Smith's solo on "Tempest." There's a lot of extraneous sound on the opening of Smith's tune, "Tell Me When," but now I'm beginning to wonder if this isn't part of Steve Berrios' percussion table.

Frankly, groups like this have a regrettable tendency to splinter off into chaos with one of the players more

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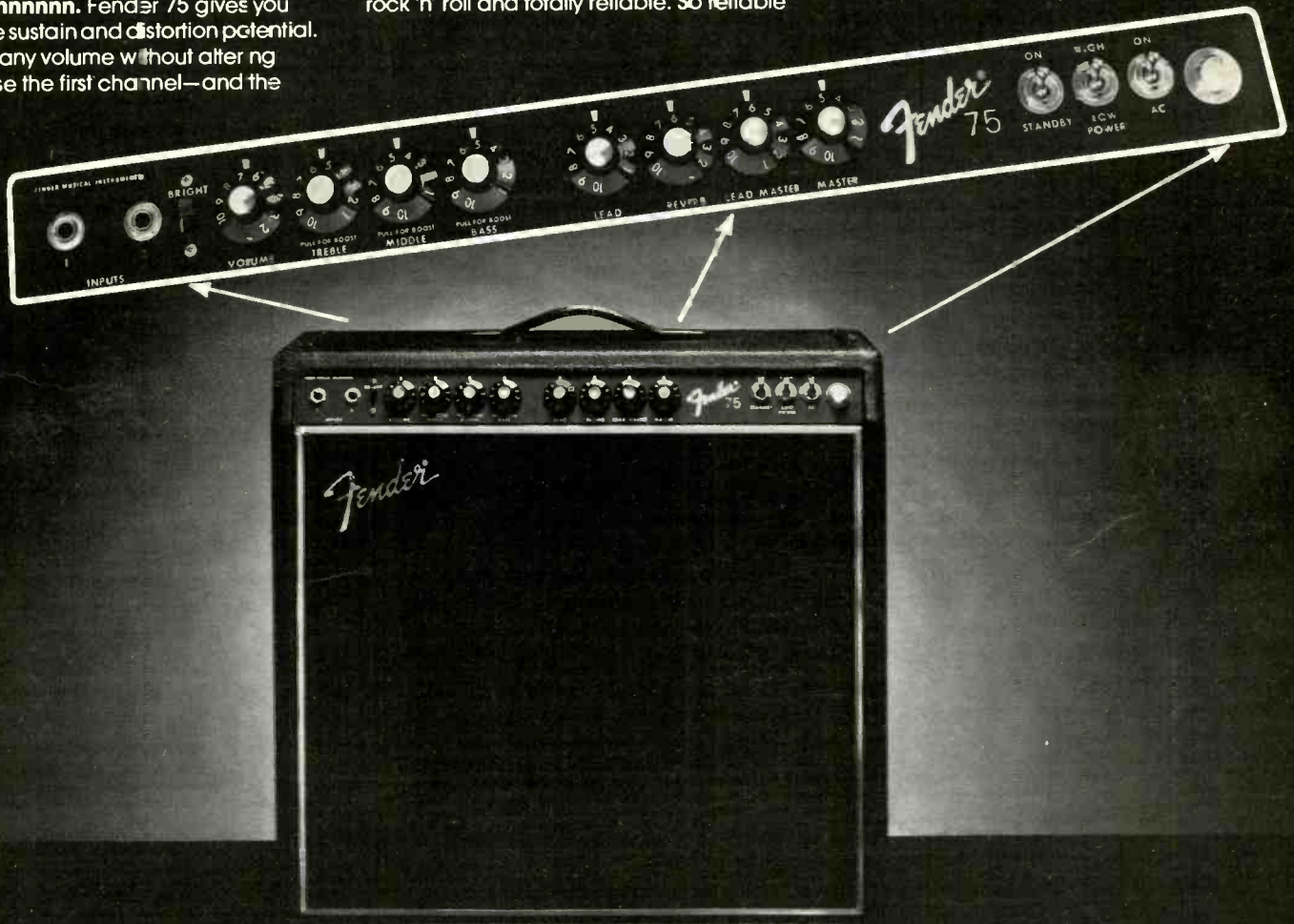
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adapted to Latin, maybe one to pop and one to jazz. Jasmine keeps remarkably straight ahead on their path with no divergent episodes and I have a feeling that their intensity and their unity of purpose *may* just make them a group that can stick around for longer than most of these bands with funny names seem to... Couldn't they have just called it the Roger Rosenberg Quartet?
J.K.

CARMEN LEGGIO: *Smile.* [Gus Statiras, producer; Fred Miller,

engineer; recorded at Downtown Sound Studio, New York, N.Y., January 26, 1977.] Progressive 7010.

Performance: **Not one of the greats—
but one of the very
goods**

Recording: **Clear, clean, well-focussed**

Carmen Leggio is one of the very good players who, unfortunately, are neglected because people are always comparing them with the great players. After all, how many Charlie Parkers,

Lester Youngs, Paul Desmonds or Coleman Hawkins does one have the right to expect to hear in one lifetime? There are a lot of guys like Carmen who don't get noticed because Bird and Prez and Bean and Desmond have so dominated the sound and style of jazz saxophone that, unless you're a giant, it's tough to get recorded—much less noticed or written about. Well, most of the giants are dead by now and it's time that we realized and said in print that the second line of players like Zoot Sims, Phil Woods, Gerard Badini and Carmen Leggio are fine players who bring no shame to the name *jazz*. Carmen is probably best noted for his work with Gene Krupa's Trio but even in that context he was unfortunate in that he replaced Charlie Ventura (a poll-winning favorite at the time) so people were always saying things like "well, he's no Charlie Ventura." Today the fickle public have even forgotten Charlie Ventura in favor of some new hero. That's why we need labels like Progressive and guys like Gus Statiras who are willing to take the calculated gamble and put out a Carmen Leggio record even though it probably won't be a best seller even in jazz terms.

The sad thing is that if the average jazz fan would take a chance on this Carmen Leggio LP even though Carmen's is not a name ranked with the giants, they'd find him an altogether enjoyable, swinging, hot player.

It certainly helps him to have players like pianist Derek Smith, bassist George Duvivier and drummer Ronnie Bedford in the band. They're as fine a swinging rhythm section as one could ask for and each, especially Derek Smith, solos inventively and tastefully as well. It does work against Carmen Leggio that he is brave enough to tackle tunes that invite comparison with the giants who made them famous such as "Broadway" (Lester Young), "Cherokee" (Charlie Parker) and "Someday My Prince Will Come" (Paul Desmond) and yet one has to admire his courage in doing this and his inventiveness in that he comes up with his own statements and not just Xerox copies of the giants.

Fred Miller has done a capable job of engineering this album for the most part, curbing his well-known tendency to overmic the drummer for all but the last two selections. Carmen Leggio's liner note commentary gives the listener some kind of insight into the player and where he's coming from.

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And one thing this album has that I wish more albums had these days is a colorful cover by the great David Stone Martin. David sure does know how to pretty up the product. J.K.

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VLADIMIR HOROWITZ. *The Horowitz Concerts 1978/79.* [John Pfeiffer, producer; Edwin Begley, engineer; recorded at various recitals during Vladimir Horowitz' 1978/79 concert tour. RCA ARL1-3433.]

Performance: **Horowitz, still sparking at 75**


Recording: **Variable from hall to hall ... from dead to "live"**

There are several amazing things about these recordings drawn from Vladimir Horowitz' most recent concert tour. The first is the dexterity and technique that he retains despite the fact that he was 74 years old when these recordings were made, 75 by the time they were issued. There are no signs of his slowing down whatsoever. Horowitz is still a model of power, strength and agility. His emotional content, however, has grown enormously. In his younger days, during the war years particularly, I frequently complained that Horowitz, for all his technique, was sadly lacking in heart and soul. During the last few seasons (I'm not sure how long it's been but certainly including the famous White House telecast), I've noticed a new poetry in Horowitz' playing without any lessening of the technical craft. A lot of this may be attributed to his recent habit of recording only in concert. He never did make much secret of his dislike of the recording studio and certainly his outstanding "live" recordings (including last year's Rachmaninoff *Third Piano Concerto* with Ormandy and the New York Philharmonic and the 1977/78 concert recording including the Liszt B Minor Sonata) have borne this out.


If, indeed, this is a more poetic, romantic version of Vladimir Horowitz his program of this year has underscored the change. Schumann's *Humoreske, Opus 20* fairly sings under the Horowitz touch. It is a fine example of the wide variety of colors and moods of this most dualistic of romantic composers. If Horowitz paints both the dark

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and light colors with broad strokes, so did Marc Chagall.

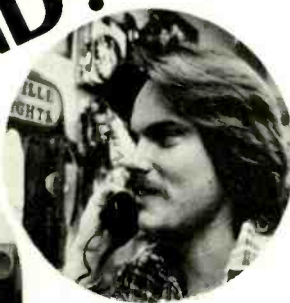
The high point of the recital, for me at least, is Liszt's *Mephisto Waltz*, which combines Franz Liszt's original piano arrangement of the piece with that by Ferruccio Busoni and adds some embellishments by Vladimir Horowitz. It lacks some of the demonic malevolence that I once heard in a concert performance by Artur Schnabel yet it certainly has a Mephistophelean flavor though perhaps a bit more playful than evil... as was Gounod's *Mephistopheles* in comparison with Boito's.

There are also short pieces by Liszt and Rachmaninoff (not world shakers but it's nice to have them and they contrast well with meat and potatoes of the Schumann *Humoreske* and the Liszt *Mephisto Waltz*). I think, however, the greatest miracle is that none of these pieces has been previously recorded by Vladimir Horowitz. At an age where other pianists might be sitting back and sticking to a repertoire that they are comfortable with, Vladimir Horowitz at 75 is still learning pieces which he hasn't played before, or at least which he hasn't recorded.

The recordings, having been made on tour in Lord knows how many concerts in how many cities, can be expected to be variable. Yet it's remarkable how well the piano sound has been matched except in the case of *Mephisto Waltz* where it is considerably brighter than the rest of the recording. John Pfeiffer did tell us that the major portion of *Mephisto Waltz* comes from a recital at Constitution Hall in Washington which may account for its unusual "live" quality. Also *Mephisto Waltz* is the only selection where the audience applause has been left intact at the end of the performance. I'm glad they did that. Vladimir Horowitz earned that applause and I'm pleased to hear that he received his due.

J.K.

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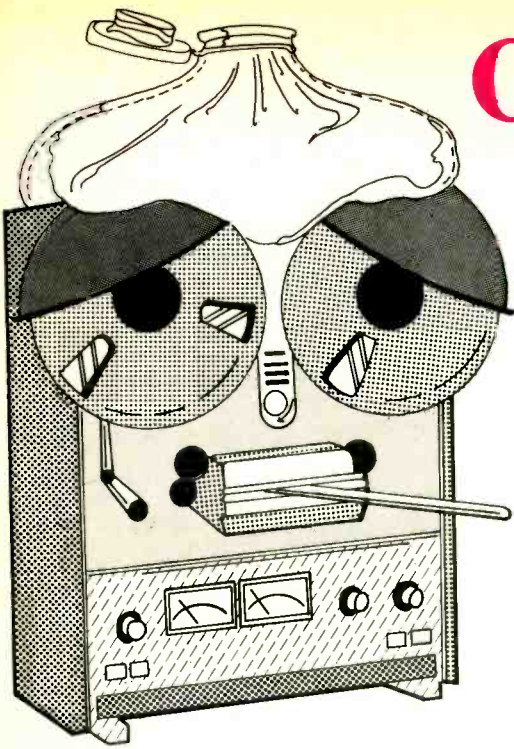
SHOWS and SOUNDTRACKS

ANDREW LLOYD WEBBER and TIM RICE: *Evita*. [Andrew Lloyd Webber & Tim Rice, producers; no engineer listed; recorded in Los Angeles, Ca. July 1979.] MCA 2-11007.

Performance: **The original Broadway cast**

Recording: **Theatrical**

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Andrew Lloyd Webber and Tim Rice use the word "opera" to describe their work, *Evita*, just as they did with their previous *Jesus Christ Superstar*. As an opera, I do not think *Evita* is a success. It is too much third person, as an almost mythical Che Guevara sits on the outside of Argentinian politics and looks at Juan and Eva Peron and those who surround them and makes his sarcastic commentary. For a real opera, what is ideally needed is the kind of first person to second person dramatic confrontation that has characterized operatic development from Monteverdi's *Orfeo* to Berg's *Lulu*. This happens only twice in *Evita*. There is a confrontation between Juan and Eva Peron when he tries to get his wife to acknowledge and admit that she is dying. There is also a confrontation between *Evita* and Che Guevara as he prepares to exit left ("Waltz for Eva and Che"). In these two moments, Rice and Webber achieve their operatic goals. Elsewhere *Evita* is people singing about people doing things rather than doing them. It is William Saroyan's or Thornton Wilder's narrator sitting outside of life looking at it through a telescope. To that extent *Jesus Christ Superstar* was more successful as an opera than *Evita*, which is more oratorio than opera.

It's hard to argue with an original cast recording, except that this is the third original cast recording. There was a British cast for the first recording in 1976 starring Julie Covington, Colin Wilkinson and Paul Jones. The opera was not produced on stage until 1978 in London by which time the cast included Elaine Page, David Essex and Joss Ackland. In 1979 the U.S. company of *Evita* opened their tour in Los Angeles with Patti LuPone, Mandy Patinkin and Bob Gunton in the leads. This is the cast that is currently on Broadway and the cast which appears on this recording. To that extent it is the definitive performance, and people I know who saw the show both in London and New York tell me that the New York cast is even better than their British counterparts.

The recording sounds to me like a studio recording although the liner notes are anything but explicit about who, what, where and when. It does have a theatre ambience but these are theatre people and it is definitely a theatrical work. However, beware of the single disc version of highlights. It's a patchy job of excerpts from the original tape complete with awkward segues and fade outs. Complete is usually better anyway. In this case certainly.

J.K.


(continued from page 90)

IRAKERE: *Irakere*. Columbia JC 35655.

The Sugar Cane Curtain came down in 1979 to show that Afro-Cuban jazz is alive and well and getting into something new, yea, even revolutionary. This eleven-piece fusion band, led by the Ellington of Cuba, Chucho Valdes, broils through a music with roots in rhythm and branches into bebop, avant garde, folk, electronics and salsa. Hot stuff for jazz fans.

ROY CLARK/GATEMOUTH BROWN: *Makin' Music*. MCA 3161.

An unlikely meeting of countrified Hee Haw picker and bluesified black grinner is made all the more fascinating by the presence of a diverse crew including: Airtio, Jim Keltner, Tony Garnier (Asleep At The Wheel), Garland (Oak Ridge Boys), and The Memphis Horns. All musicians involved show considerable affinity for a party music barrage that gets down and stays happy. These guys show that makin' music can still be a blast.

CAMEL: *Breathless*. Arista AB 4206.

It all came together for Camel on this awesome combination of great pop melodies, English wit, rock guitar, and keyboards extraordinaire. *Breathless* is one of those rare instances when serious rock eclecticism is also highly commercial. Camel's subsequent LP from later in '79 suffered from the loss of three key people: Peter Bardens, Richard Sinclair, and Mel Collins.

THE B-52'S: *The B-52's*. Warner Bros. BSK 3355.

This weird New Wave group is definitely from beyond "Planet Claire," but they're studioniks of tremendous creativity and humor. "Rock Lobster" combines eerie female vocal effects with twangy, Venture-like guitar, while other cuts rock in more or less outrageous terms as well. A fascinating new palette of studio sounds.

MARILYN SCOTT: *Dreams Of Tomorrow*. Atco SD 38-109.

Here's a jazz songbird for the Eighties. This disc is soulful, classy, moderne, commercial and uncompromising all at the same time. Ms. Scott's excellent originals have all the ingredients, and her funky set of pipes gives them the treatment they deserve.

JOHN HIATT: *Slug Line*. MCA-3088.

In the tradition of Elvis Costello and Joe Jackson, this American writes chunky, back-to-basics rock tunes with a semi-tough lyrical edge. Hiatt's *Slug Line* contains several knock out selections of pulse, parody, and great promise.

BRIAN ENO: *Ambient #1 Music For Airports*. PVC 7908.

The avant garde's answer to Muzak is henceforth called "ambient music," a kind of composition that, in Eno's words, "must be as ignorable as it is interesting." That description pegs *Airports* exactly. Calm, cool tones emit from Eno's placid keyboard imagination, perfect for meditation or subliminal grocery store use.

AVIARY: *Aviary*. Epic JE 35716.

A promising pop-rock band boasting advanced technique and plenty of changes, but a highly accessible sound with plenty of hooks. Stiff new competition for the likes of Kansas, Toto, and Fleetwood Mac. Not to be confused with another excellent new band, Aviator.

MILTON NASCIMENTO: *Journey To Dawn*. A&M SP-4719.

Brazilian poet-singer-musician extraordinaire, Milton Nascimento may be foreign to North American ears, but his music will strike a common chord. *Journey To Dawn* is not the equal of his earlier *Milton* or *Native Dancer* (with Wayne Shorter), but it's still brimming with color, imagery, melody and rhythm.

FLASH AND THE PAN: *Flash And The Pan*. Epic JE 36018.

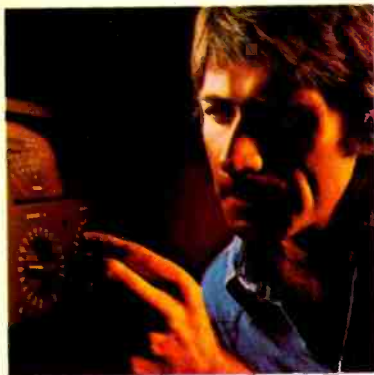
Harry Vanda and George Young had a hit called "Friday On My Mind" when they were with The Easybeats in the Sixties, and they have since acted as producers for hard rock monotony by AC/DC. But their incarnation as Flash And The Pan is totally different: electronic pop-rock that is alternatively heavy, witty and long on multi-tracking.

THE A'S: *The A's*. Arista AB 4238.

Rock energy with the intensity of teenage experience and the power of unadorned guitaristic instrumentation. The A's bring freshness to the classic rock form, shading their delivery with hints of New Wave, not indulging in phony excesses, but capturing that streetwise spirit of anger and optimism.

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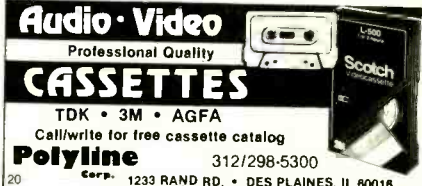
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