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SERVING TODAY'S MUSIC/RECORDING-CONSCIOUS SOCIETY

VOL. 3 NO. 7
APR L 1978

*A Session with
Joe Cocker*

**Profile:
An Interview
with
Jean-Luc Ponty**

**Lab Reports
New Products
Record Reviews**



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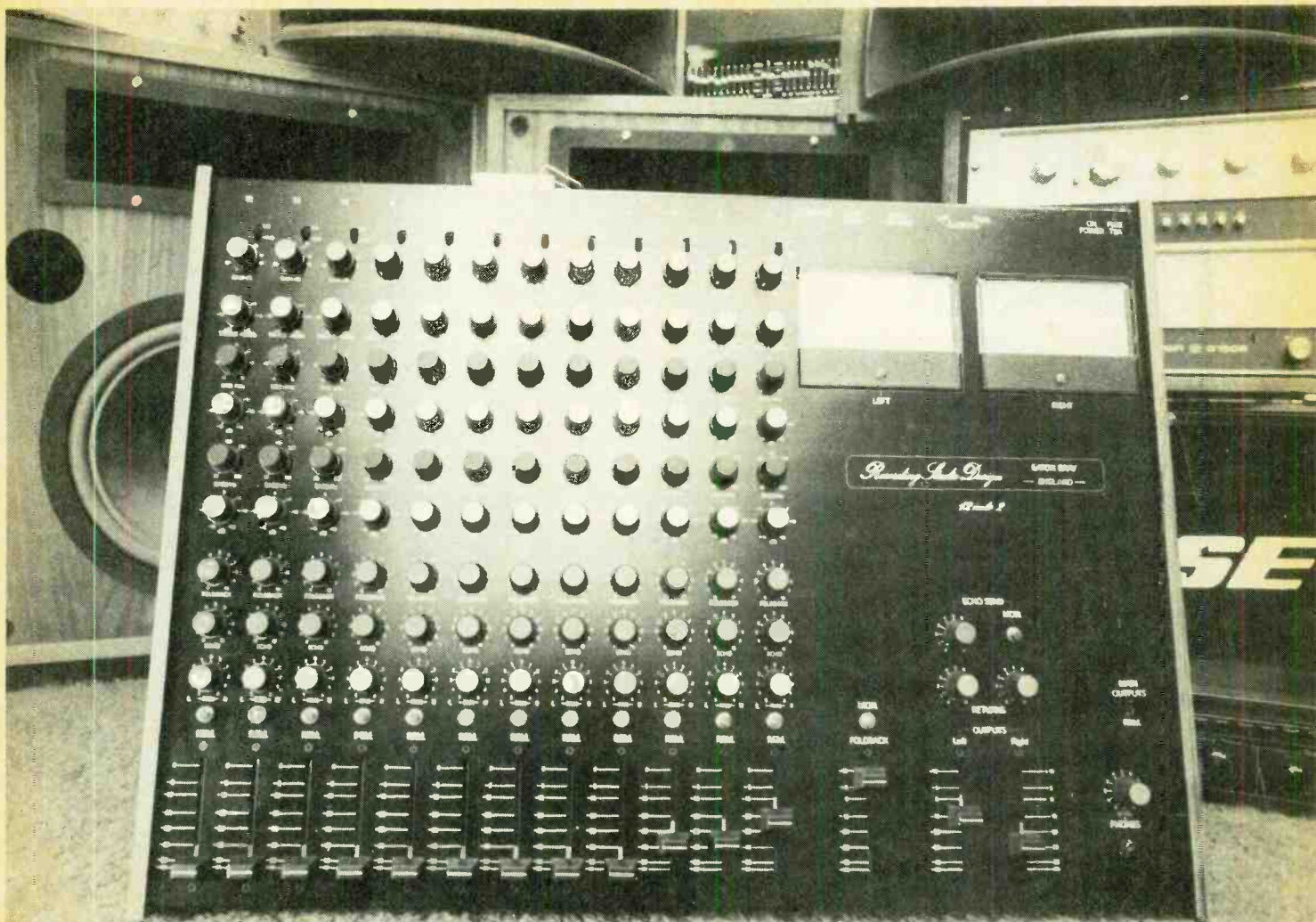
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MODERN RECORDING

SERVING TODAY'S MUSIC/RECORDING-CONSCIOUS SOCIETY

APRIL 1978
VOL. 3 NO. 7

THE FEATURES

CONFESSIONS OF AN AUDIO ADDICT

By James F. Rupert

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The author of this piece is an MR reader who has a few secrets to reveal about his ventures into the wonderful world of recording. Mr. Rupert's tale of woe and the advice he offers are the perfect way to say it's April!

A SESSION WITH JOE COCKER

By Jon Marlowe

42

Cocker's latest effort features some of the most well-known session musicians in the recording field. Add to that the production of Allen Toussaint and you will undoubtedly have one of the premier albums of the year

BUILDING A DIRECT BOX

By Peter Weiss

48

The first in a series of construction articles aimed at helping you get the sound you want at a minimum cost. Written in a non-technical and straightforward style, this is one of those rare articles that won't leave you more confused than you were at the start.

PROFILE: AN INTERVIEW WITH JEAN-LUC PONTY

By Gil Podolinsky

54

From avant-garde jazz to rock to avant-garde rock, Jean-Luc Ponty has brought the violin into full view. Ponty is a musician who has learned by doing, and this interview proves that he is a knowledgeable musician in the recording business.

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—What, When and Why

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Cover photo by Bill Johnson

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Advertising Director

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Publisher

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

COWAN PUBLISHING CORP.
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Editorial contributions should be addressed to
The Editor, Modern Recording, 14 Vanderventer
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LETTERS TO THE EDITOR

Avoiding The East Mobeetie Blues

I have just finished reading your very fine February 1978 issue and must compliment you on the very fine comprehensive toolkit article ("Inside a Soundman's Toolkit," by Brian Roth and Jim Ford, page 60). While anyone using the collection that was suggested would be well-equipped for practically any contingency, I humbly offer a few additional suggestions.

The first would be one of the many battery-powered, fast-charging portable soldering irons. I have found this type indispensable for quickie repair jobs. It can do several jobs while you would ordinarily be searching for an AC outlet, fumbling with the extension cord and waiting for the iron to heat up. If you intend to keep on using the electric one you currently have, make sure you have the aforementioned extension cord!

A box of no. 16-22 AWG crimp-on terminal connectors such as Stacon A18-6F is nice to have. These install in seconds and provide peace of mind for those last minute strip-and-screw connections.

A small box of common electronic hardware, i.e. 4-40, 6-32, 8-32, etc., nuts, bolts and washers is also advisable. It is extra handy if you carry the wire strippers that also double as small bolt cutters. However, make sure these items are carried in a secure container, as they will be the first to fall out of your toolkit anytime you open it.

A pair of 6" lineman's pliers and a really big brute of a screwdriver will take care of those few really heavy-duty jobs your other tools can't handle.

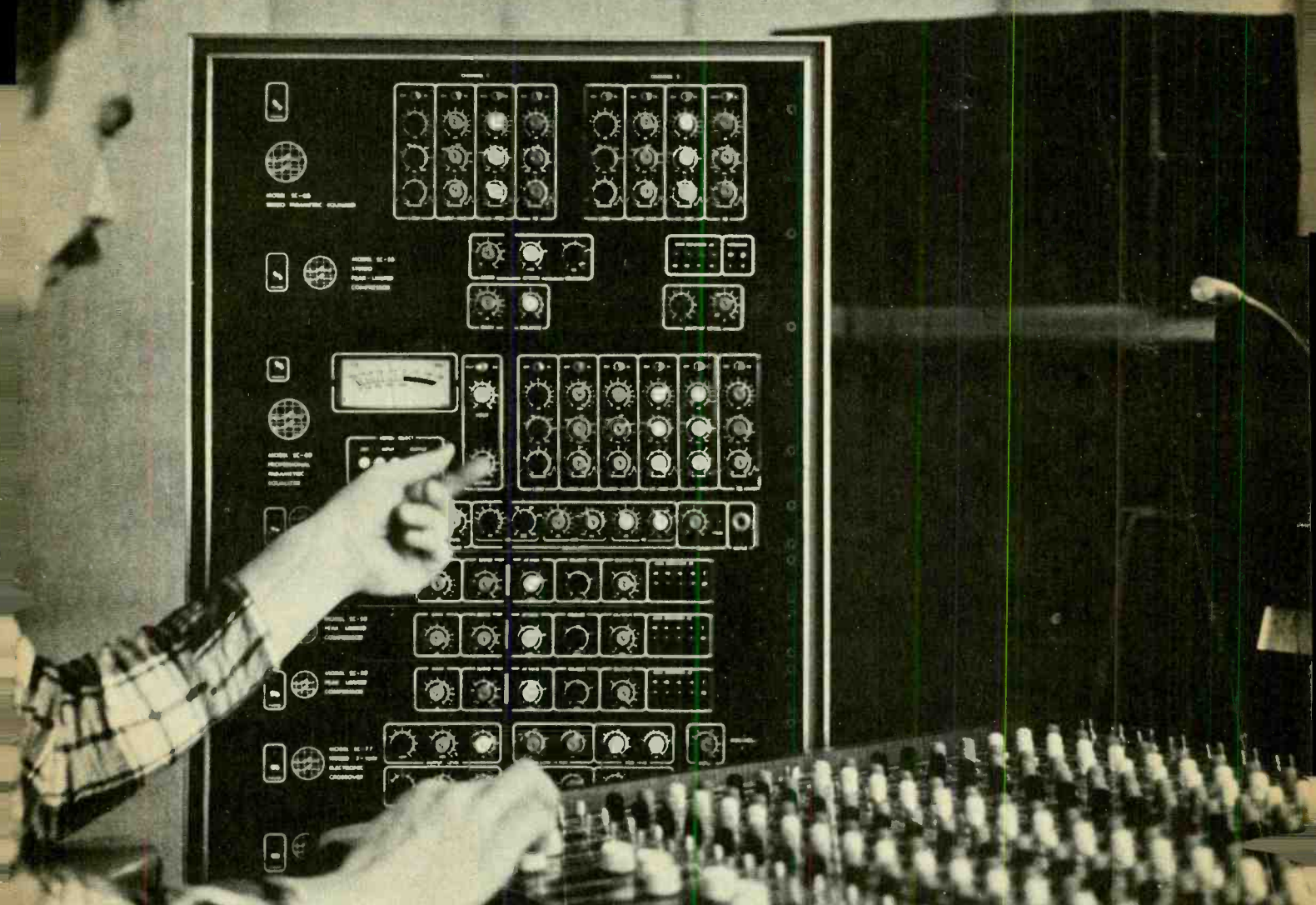
And, last but not least, let's not forget that "toolkit in a pocket," the electricians' knife with standard and screwdriver blades.

Also, the Led Zeppelin/Showco article in the same issue was excellent (Gil Podolinsky's "Led Zeppelin 'Live'—The Showco Must Go On," page 42). I found it most informative. Keep up the good work.

—Keith Arnett
Sound Engineer
McCarter Theatre Co.
Princeton, N.J.

Brian Roth and Jim Ford were very happy that someone paid attention to their request and took the time to jot down a few more hints on how soundmen can best "stock up." As Brian admitted, it was virtually impossible to mention all the elective pieces that are nice to have on hand. He agreed with all your suggestions and noted that he had almost included a few of them himself. The only point he might take issue with (and this was very minor) was that he has never endorsed battery-operated soldering irons because the original ones often couldn't hold a charge long enough to complete certain jobs. He added, however, that one of their installers now uses one and recommends it very highly. Brian went on to say that the list of optional items is practically endless and they tried to keep it simple but relevant.

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Untested

In reading over the Lab Reports in all the *Modern Recording* magazines that I have, I haven't been able to find a report on the Peavey CS-800 power amp. Has it been the subject of a test, perhaps in an issue that I missed? I would greatly appreciate any and all information that you could send me concerning this piece.

—Donald E. Boring
Dalton, Ga.

The Peavey CS-800 has never been Lab Tested, but the CS series was described briefly in the May 1977 Musical News-icles column on page 28. For a more in-depth look at the CS-800 in particular, write directly to Peavey Electronics Corp., 711 A Street, Meridian, Mississippi 39301 or take advantage of MR's Reader Service Card.

Choosing A Crossover Network

In the Winter 1978 *Modern Recording's Buyer's Guide*, there appeared the three-part "P.A. Primer" by Jim Ford and Brian Roth. As this was the first time I had seen the piece, it was of great interest to me.

In the article, they talked about the merits of using low-level electronic crossovers for frequency division. Your magazine, however, gave no list of manufacturers, prices, etc., for these components as you did with other parts of the P.A. system, and I wondered if you could supply me with this information at this time.

I am building a musical instrument sound reinforcement system with a crossover in the 800-1,000 Hz range and would prefer to use a low-level network if possible.

Your help in this matter will be greatly appreciated, as is the fine subject matter covered in your magazine.

—Dana F. Baxter, Jr.
Winter Haven, Fl.

Brian Roth was happy to accommodate your request for information and started off by telling us that there were far too many fine electronic crossover frequency dividing networks manufactured for him to mention them all here, but he did suggest the following. Among the pieces Brian mentioned was the Crown VFX2A (price \$399, the Yamaha F1030 (\$495) and the JBL electronic frequency dividing networks with 12 dB per octave filter slopes—single channel, model number 5233 (\$225) and dual channel, model number 5234 (\$264).

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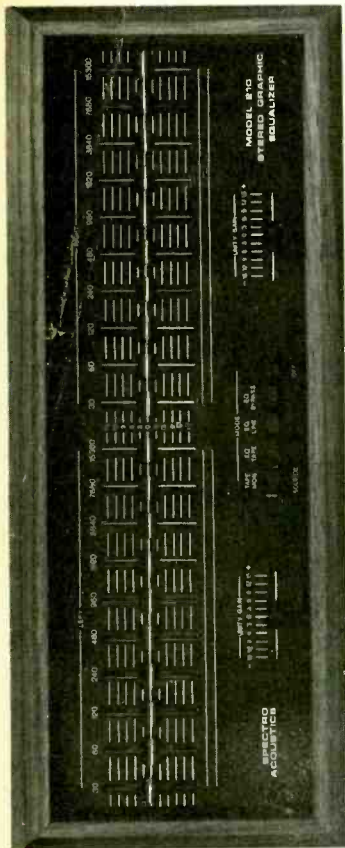
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This system requires plug-in crossover cards which retail for \$12 per channel. Urei also manufactures dividing networks for different frequency ranges—the 518L and 518H (\$141) for 18 dB per octave filter slopes and the 521L and 521H (\$126) for 12 dB per octave filter slopes. Circuit cards for these units are \$14 per channel and the housing goes for \$160. Urei also makes the 521P which has an optional rack mounting kit. He also asked us to advise you to confer with a knowledgeable audio dealer before deciding on a unit or making any purchases—it's always a wise move and is in some cases an absolute necessity.

Serious Soundman

I am writing this letter after just finishing the December 1977 issue of *MR*. I play in a professional band and I am very interested in anything that pertains to sound reinforcement. I was very pleased with the Frampton article (see "Frampton 'Live'—Sound Reinforcement Indoors," December 1977, page 44).

Being so interested in sound reinforcement, I read as many articles on this subject as possible, including lab reports on new equipment that has become available. Recently, I have become confused by the "good" results earned by what I thought was poor equipment.

I would very much like to see an article on power amplifiers and mixing boards. In it, I would like to see comparisons of pieces by power ratings (by this I mean take a number of 250 watts RMS in to 8 ohms and pick the best one). I'd like to see mixing boards compared by the number of inputs, mono vs. stereo, etc.

Maybe other readers are interested, as I am, in knowing if industry standards like Crown, JBL, and Altec are all they are cracked up to be. (I sure hope they are, since they're what I'm using right now.)

—Guy T. Wesselkamper
The Grand Slam Band
Cincinnati, Oh.

One thing that you must keep in mind is that there are as many reasons for buying a board or amp as there are pieces of equipment. It's impossible for us to determine what would be the best piece for you without knowing your music, the kinds of places you play in, the size of the band, the amount of usage it would get, etc. A piece of equipment of this importance serves a

*unique purpose for everyone. We suggest that you continue to do what you have been doing—educating yourself to all the different varieties of equipment available to you. Two features of *MR* which will prove to be of assistance are our monthly Lab Reports and Hands-On Reports. Also, the new (1978) Buyer's Guide can provide a quick comparison service for you. For a comprehensive overview of PA particulars, see Brian Roth and Jim Ford's "PA Primer" printed in its entirety in the Guide as well.*

Getting The Right Start

We are starting a band and need information regarding PA systems and amplifiers for drums and guitars and the approximate cost. We also need some information on what mics are best for these instruments.

—Karen Mattsson
Nova Scotia, Canada

Hard as it might seem to you now to get everything together, you're lucky in that there's such a vast number of equipment pieces to choose from. To attempt to tell you about all of them here would be all but impossible due to some very real space limitations. However, we shall refer you to the first and second annual Modern Recording's Buyer's Guides. In the first edition (which is still available), of special interest to you will be Larry Zide's article on microphones and Rob Lewis' piece on PA and Stage Monitors. For the latest in product information (complete down to the price and the manufacturer's address), as well as the "PA Primer" (an invaluable piece for a soundperson) we suggest the second guide which is hot off the presses, so to speak. It's available by filling out the order form which appears in the back of each issue. Between these two volumes you should be able to establish a good working knowledge of sound reinforcement as well as decide what your equipment needs are and how you can best fill them.

School Days

While reading the October 1977 issue of *Modern Recording* I noted that you informed a reader that there were no degree programs in Music Engineering at the present time in the United States (see Letters to the Editor, "Info On Engineering," October 1977, page 8). A correction is in order. There is such a degree program in music recording and

A clean master tape is the number one goal of any recordist (studio or home). So, if you're serious about your standards of recording, here are two microphone pairs that will give you the clarity and smoothness of sound that distinguish AKG microphones, and all great recordings. They're available separately or in our economical "Stereo Pair" combinations as shown. Both pairs are compatible with today's state-of-the-art cassette and open reel recording systems and are available in high (10,000 ohms or more) or low (25 to 1,000 ohms) impedance versions. Mating cables have XLR connectors and 1/4" phone plugs.

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Bass response gradually rolls off to reduce interference from low-frequency and sub-audible rumble, vibrations, handling noise and feedback. The

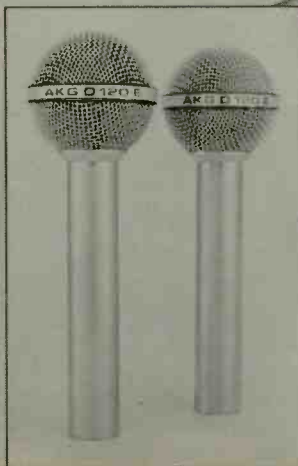
reasonably priced D-190E brings studio-controlled quality to your on-location home recordings.

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sound reinforcement alive and well at the University of Miami in Coral Gables, Florida. The four-year program includes music theory, principle instrument study, music literature and history, piano, electrical engineering, calculus, music merchandising and also courses in sound synthesis and acoustics. The final semester usually includes an internship with a professional recording studio or an additional semester of study. Advanced courses in sound reinforcement and audio recording are taught in the 16-track professional recording studio in the Maurice Gusman Concert Hall.

This is the first program of its type in the nation and the curriculum was designed in cooperation with sixteen nationally-known experts in the audio industry. The program is in its second year of operation and has seventy-one degree majors enrolled. Any further inquiries should be directed to Bill Porter, Director of Recording Services, School of Music Box 248165, University of Miami, Coral Gables, Florida 33124.

—Bill Porter
 Director of Recording Services
 University of Miami
 Coral Gables, Fl.

We're not guilty! What we stated in our reply to Mr. Morales was that we did not know of any such degree program currently being offered in the U.S.—we never presumed to comment on the actual existence of such a degree. Nonetheless, we are very happy to hear of your fine course of study. We're sure that we'll be seeing more of these programs in the future due to the rapidly increasing interest in the recording field.

The Surgeon General of Record Pressing?

Thank you for the article "A Producer's and Consumer's Guide To Better Record Pressings" (see December 1977, page 56). I think it should be printed on the back of every album cover, like the Surgeon General's warning on cigarette packs.

As a consumer, I check out my albums for defects before I even leave the store. The only thing not easily noticeable is the record being off-center, and I would say that at least two out of three times, I exchange the record on the spot.

Here's an interesting story. I am originally from Pennsylvania. About a year ago, I bought the album *Olias of Sun-*

hallow by Jon Anderson (Atlantic SD 18180). It was defective — off-center and non-fills at the beginning. I exchanged it and the new copy had the same problems.

After going through about twenty copies over a period of two months, and from five different stores, I gave up. Six months later I moved to Los Angeles and bought a copy there. It was off-center and had non-fills at the beginning.

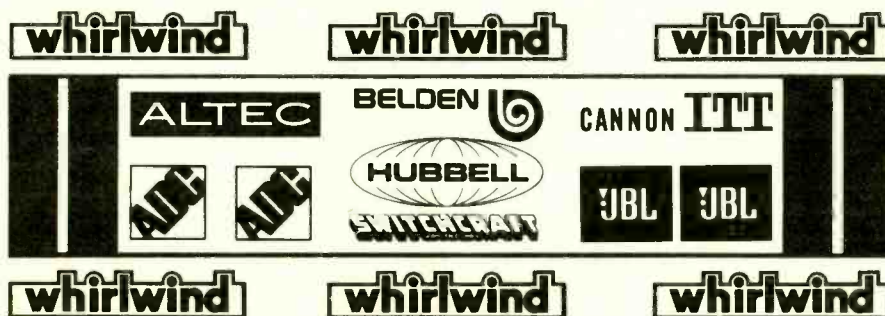
According to your article, a reputable company wouldn't let that happen. I rest my case.

—Sam Shabrin
 Hollywood, Ca.

[We forwarded your letter to David Moysiadis. The following is his reply.]

Obviously the producer of that record hadn't read my article. But I never said that anyone could guarantee perfection all the time, I just said that your chances of *not* getting a problem are greater with a reputable firm—that's how they get to be reputable. In fact the whole point of the article was that these things are almost certain to occur. The idea was how to *minimize*, not eliminate, the possibility, and then what

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Introducing Technics new professional portable cassette decks. Our top-of-the-line RS-686DS speaks for itself. Its 6 lbs., 7 3/8 oz. say it's portable. Its 3 heads say it's professional. And all the other features say it will give you recordings of professional caliber.

Features like a unique anti-rolling mechanism for unprecedented portable transport stability. A frequency generator servo motor that immediately counteracts any variation in rotational speed. Separate bias and equalization. Even Dolby.*

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The RS-686DS and RS-646DS. Professional specifications. Plus the flexibility of recording sound wherever it may take you.

TRACK SYSTEM: 4-track 2-channel record/playback. MOTOR: FG servo-controlled DC motor (RS-686DS). DC electronic speed control motor (RS-646DS). FREQ. RESP. ± 3 dB: RS-686DS: CrO₂ tape, 50-16,000 Hz; Normal Tape, 50-14,000 Hz. RS-646DS: CrO₂ and Normal Tape, 50-14,000 Hz. WOW AND FLUTTER (WRMS): 0.07% (686). 0.10% (646). S/N RATIO (Dolby): 66 dB (686). 65 dB (646). DIMENSIONS: 3"H x 9 1/2"W x 7 7/8"D (686). 4 1/4"H x 14 1/2"W x 11"D (646).

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*Dolby is a trademark of Dolby Laboratories, Inc.

Technics Professional Series
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The 2900 Parametric Preamplifier offers our new flexible parametric tone control system, full dubbing and tape EQ. New phono and line circuitry results in unparalleled clarity and definition with distortion of less than 0.01% THD & IM.

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to do when you run into the inevitable. Let me repeat myself, "Mistakes do happen..." no one is perfect, and with the magnitude of complex processes inherent in the making of today's records, it is almost miraculous if nothing does go wrong even going top shelf all the way. I will say, however, that any reputable company (Atlantic included) will stand behind their product. (Frank Tabino at Atlantic has assured me that he will make good on your record after examining it.) But only fools and liars will say everything they do is perfect.

I do find it difficult to see how you could have run into the identical problem clear across the country with an Atlantic pressing, (they're competitively fussy about their records). Not that it can't happen but the odds are against it. I'm glad to see someone complaining though. It's too bad that the other twenty people who bought the records you rejected didn't complain—just to keep the industry on its toes. Perhaps you should apply for a job as Quality Control director at the nearest pressing plant.

—David Moyssiadis
Frankford-Wayne Mastering Labs
Philadelphia, Pa.

Our Apologies

We wish to correct an error that appeared in our March 1978 cover story, "A Session With Lou Rawls" by Stan Soocher. On page 42, the title of Lou's latest album should have read When You Hear Lou, You've Heard It All. Our apologies to Lou and the fine folks at Philadelphia International Records for this inaccuracy.

—Ed.

The Mic's The Message

Mr. W.J. Dickerson asked some very pertinent questions about microphones in his Talkback question which appeared in the October 1977 issue (see "Omni vs. Directional Mics," page 16). I would like to elaborate on the response from Jim Ford of Ford Audio and Acoustics since it is not totally accurate.

Electro-Voice directional microphones are no less rugged than our omni-directional microphones. Ruggedness has been a hallmark of our products for 50 years, and selection is not made on this basis under any circumstances.

Mr. Ford tells about cardioids being used because of proximity effect and he is correct if the cardioid microphone is designed to provide this effect or if it is

inherent in the design because the manufacturer does not know how to eliminate it. Electro-Voice manufactures a series of cardioid microphones which provide proximity effect. Electro-Voice also manufactures a series of cardioid microphones using the patented continuously variable-D principal which eliminates proximity effect while providing the benefits of a cardioid microphone. Additionally, the Electro-Voice design provides for a uniformity of response over the entire useable pattern of sound distribution.

I suspect Mr. Ford is familiar with these facts but in an effort to respond in a concise fashion did not go into detail. However, if your readers accept his response as totally accurate it would deny users the application of a cardioid under cases where it is precisely the right instrument and proximity effect, if not desired, need not be tolerated.

—Lawrence LeKashman
Vice President of Marketing
Electro-Voice, Inc.
Buchanan, Mi.

[The following is Mr. Ford's reply.]

Our Hands-On Report in the May 1977 issue of *MR* which dealt with common sound-reinforcement microphones (page 62), the Talkback in the October 1977 issue and this statement by Mr. LeKashman are all basically correct. I believe that a second reading of this series will give the reader the best summary for making conclusions concerning the selection of microphones for concert sound reinforcement.

The statements about omni-directional microphones being more rugged than cardioid microphones was made by Mr. Dickerson and I agreed with him. However, the original information about the specific point was taken by Mr. Dickerson from the famous book on microphones by Lou Burroughs, *Microphones: Design and Application*. (I believe it is chapter 16 and I also believe that Mr. Burroughs was a long-time member of the Electro-Voice organization.)

Concerning the uses of cardioid mics with or without proximity effect, I agree with you and stated in the reply to Mr. Dickerson that "microphone selection and use is a matter of particular and individual situations and should be evaluated separately by each engineer. After the technical specifications have been checked, listen to the microphone and let your ears be the final judge." The point of the article was "microphones for concert sound reinforce-

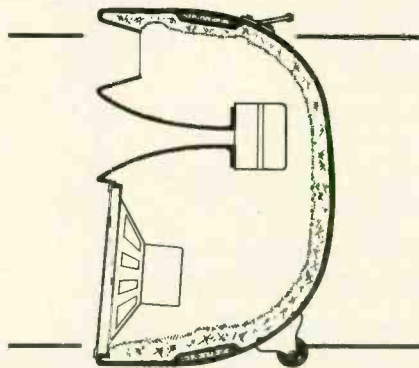


At first glance our cabinets look a little different. Which is understandable. They are.

It's quite plain that these are not your usual assortment of little flake-board boxes with holes. These are functioning enclosures whose dimensions, determined by the laws of physics, have been precisely stated in hand-laminated fiberglass.

All of our enclosures are of a solid round-backed design which frees them from the standing waves and out of phase diaphragmatic panels which plague "the boxes". Our design not only cuts down on unwanted resonances but also creates unparalleled durability and the strength to survive extensive touring and triumph over playful roadies. The GGM, our dual

driver ported bass enclosure, fills a variety of functions. As the bottom end of a PA stack it makes a dynamite low frequency cabinet. Pre-amped and powered it becomes a bass guitar cabinet the likes of which you've never heard. The PBL,



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	HF DRIVER	LF DRIVER
NC 12	1" - 1 3/8"	12"
PBL	1" - 1 3/8" - 2" - 2.8"	15"
GGM	n.a.	TWO 15"

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ment," and I still feel the average performer will pick the cardioid with proximity boost. I would be interested to know if you could take a survey of people that have purchased Electro-Voice mics and find out what their applications were. Two mics that I feel would illustrate my point in a comparison would be the Electro-Voice DS-35 (cardioid with proximity) and the Electro-Voice RE-16 (cardioid without proximity). I believe that the concert sound reinforcement people will choose the DS-35 and the radio and T.V. people will choose the RE-16.

Thanks for your letter and comment. Hopefully discussions like this will help the users choose the best microphones for their individual needs.

—James A. Ford
Contributing Editor
Modern Recording Magazine

A Lamb Of A Reader

I am a new subscriber to your magazine and I am already deeply indebted to you. I've been a home recording enthusiast for about ten years and have always had questions—now, at last, I'm getting the answers.

I have recently acquired my first mixer—a 4-in/2-out stereo mixer which was built by Lamb Laboratories. Since it is a used one, I did not receive an owner's/operator's manual which I need to familiarize myself with its various functions. All I know is that it was manufactured in England. Could you help me out with this?

—John Tippin
Wichita, Ks.

Lamb Laboratories has two outlets here in the United States and you're midway between the two of them! You can contact either of the following addresses for the information you need, Lamb Laboratories, Inc., 155 Michael Drive, Syosset, New York 11791 (telephone 516-364-1900) or 3637 Cahuenga Blvd. West, Hollywood, California 90068 (telephone 213-876-1200).

Just For The Record

We would like to correct an inaccuracy that appeared in our December 1977 issue. On page 54 of "Frampton 'Live'—Sound Reinforcement Indoors" by Gil Podolinsky, it was stated that Dave Thoener of the Record Plant in New York had engineered all of the albums by J. Geils to date. In fact, Bill Szymczyk is responsible for the bulk of their work. Dave was solo engineer on

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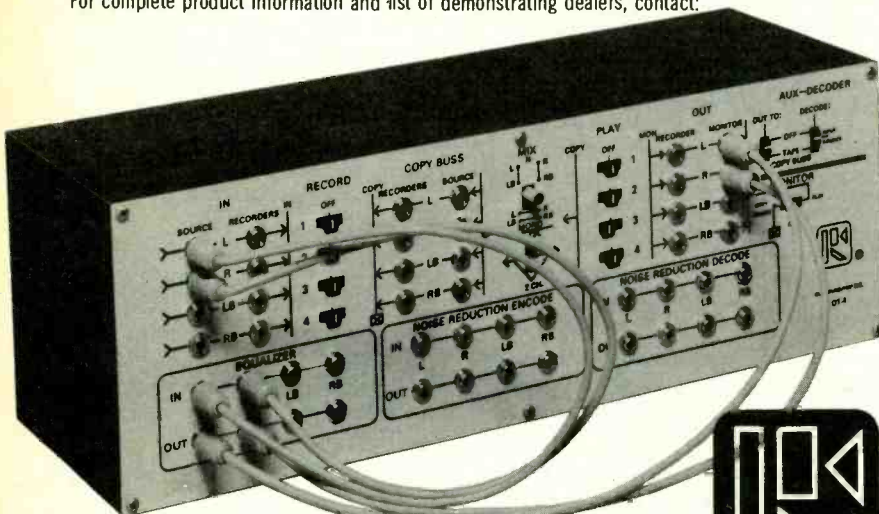
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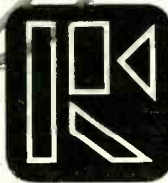
Use for recording, playback, dubbing and mixing down from tapes at the flip of a switch. Patch cords (12 furnished) permit convenient sound-on-sound, sound-with-sound, channel interchanging, and insertion of equalization, noise reduction, etc., anywhere in the audio chain and in any desired sequence.

The QT-1 is obsolescence-proof and provides professional studio type flexibility and convenience at an audiophile price of \$249.95.

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their latest effort, *Monkey Island*, and *Hot Line* was a collaboration with Dave, Bill and Allen Blazek sharing the accolades.

We regret this misrepresentation and hope this sets the record straight. —Ed.

Searching For Symetrix

I would like more information on Symetrix's new Signal Gate which I saw described in Norman Eisenberg's February 1978 Product Scene column on page 36. However, I have not been able to find an address or phone number for them so that I could register my request. Do you know where I might get in touch with them?

—Jerry Greenberg
Unicorn Sound Studio
Montreal, Canada

Symetrix Professional Audio Products is located at 109 Bell Street, Seattle, Washington 98121, telephone number 206-682-3076. Dane Butcher, sales manager at Symetrix, or someone in his office could probably process your request for information very easily.

A Bit of Confusion

I read with interest the comments made by Michael Morrow regarding Transient Intermodulation Distortion in the September 1977 issue (see "TIM Pleases Reader," Letters To The Editor, page 4). I have been using Marantz tube equipment for lo these last 16 years and they are still going strong and most beautifully.

However, I do believe that Mr. Morrow may have made a slight error as to the model number of the Marantz amplifier that he mentions. I have two Model 8B amplifiers and a Model 7 preamp. He refers to the Model 7 amplifier as having an extremely good rating for TIM. Could it be that he meant the Model 8B?

At any rate, let me add my name to the list of people who thoroughly enjoy your mag! I have been a producer of audio-visual programs for some twenty years now, and a subscriber to *Modern Recording* since its inception and have learned something new with every issue. Keep it up!

—Robert Hyskell
President
Studio 3
Manhattan Beach, Ca.

We were unable to reach Mr. Morrow in regard to this matter, so we placed a call to Superscope/Marantz in Chatsworth, California where Al Fisher of the Products Division told us something interest-

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In the past three years the semi-professional recording market has been buried with an avalanche of products. These products have been brought into the market to allow the budget studio to compete with the high overhead pro operations. However, none of the manufacturers of these devices have placed any emphasis on integrating these products into a professional working environment. As a result, the small studio owner is forced to place a substantial investment in the most unprofessional surroundings.

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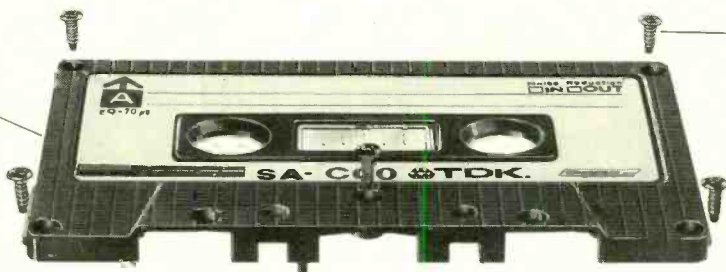
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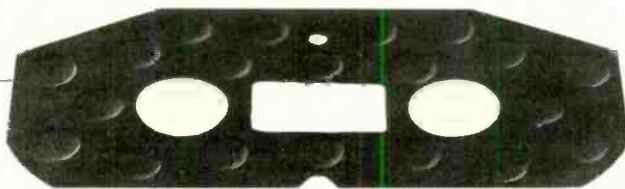
Which explains why we get so finicky about details. Consider:

Precision Molded Cassette Shells—are made by continuously monitored injection molding that virtually assures a mirror-image parallel match. That's insurance against signal overlap or channel loss in record or playback from A to B sides. Further insurance: high impact styrene that resists temperature extremes and sudden stress.



Five-Screw Assembly—for practically guaranteed warp-free mating of the cassette halves. Then nothing—no dust or tape snags—can come between the tape and a perfect performance.

An Ingenious Bubble Surface Liner Sheet—commands the tape to follow a consistent running angle with gentle, fingertip-embossed cushions. Costly lubricants forestall drag, shedding, friction, edgewear, and annoying squeal. Checks channel loss and dropouts.



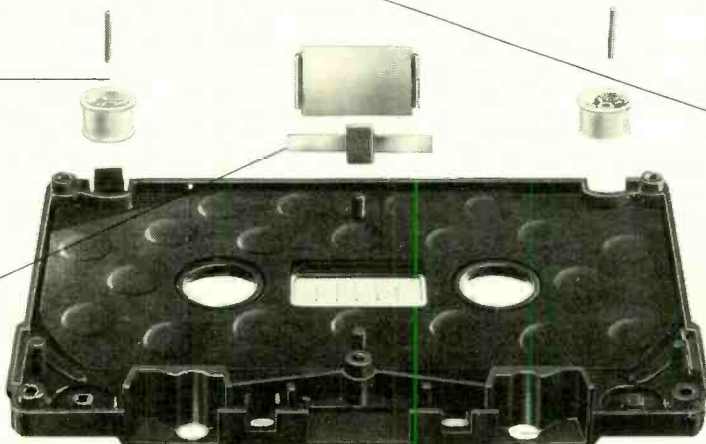
Perfectly Circular Hubs and Double Clamp System—insures there is no deviation from circularity that could result in tape tension variation producing wow and flutter and dropouts. The clamp wedges the tape to the hub with a curvature impeccably matched to the hub's perimeter.

Tapered, Flanged Rollers—direct the tape from the hubs and program it against any up and down movement on its path towards the heads. Stainless steel pins minimize friction and avert wow and flutter, channel loss.



Head Cleaning Leader Tape—knocks off foreign matter that might interfere with superior tape performance, and prepares the heads for...

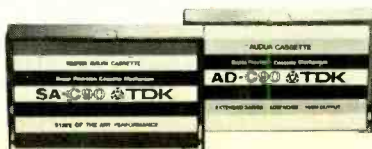
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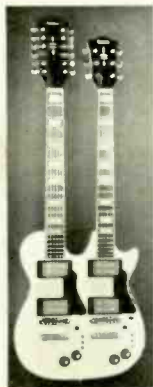
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ing. He confirmed that the 8B is indeed an amplifier, but according to him, the Model 7 isn't a preamplifier. The Model 7T is a transistorized stereo console and the 7C is a tube-powered stereo console. Sorry if this adds to the confusion, but thank you for bringing this to our attention.

More Sound Orientation

Could you please help me by giving me the addresses of *Sound Engineering* and *db* magazines? I am presently a subscriber to *Modern Recording* (which I feel is a fine magazine) but would like to subscribe to other sound-oriented publications. I haven't been able to locate addresses for either book, and thought that you, being in the same game, might be able to help.

—Paul Andrew Smith
The Ear Music Co.
Oshawa, Ontario, Canada

You can subscribe to *db* magazine by writing directly to Sagamore Publishing Co., 1120 Old Country Road, Plainview, New York 11803. However, *Sound Engineering* didn't ring a bell with us—might you have meant the British publication *Studio Sound* and *Broadcast Engineering*? Their U.S. address is P.O. Box 99569, San Francisco, Ca. 94109. Both of these publications are free to qualified subscribers, to all others they are \$6.00 and \$7.00 per year respectively. Please don't be misled, though, *Sound Engineering* might be a house organ or simply a publication that hasn't crossed our path yet, so don't stop looking for it. And let us know if you find it!

Any Clues To Carlos?

Being a relative newcomer to *Modern Recording*, I was wondering if you had ever printed an article about Walter Carlos (creator of *Switched-On Bach*)? Is he still recording? I've been trying to find some of his other works and I would appreciate any information about him you could give me.

—Marc House
Long Branch, N.J.

Since we were aware that *Switched-On Bach* was a Columbia Records release, we started our quest for this master of the synthesizer there. Unfortunately, he no longer records for them and they weren't able to tell us what label he might be recording for now. We did, however, find out the titles of other

Columbia releases of his work that are still available. They are *The Well-Tempered Synthesizer*, *Sonic Seasonings*, *Clockwork Orange*, *By Request and Bach*. We weren't able to find out if he is actively engaged in a creative project at this time, so, Walter, if you're reading this, drop us a line!

International Info

I would like you to send me some more information on the Thompson Vocal Eliminator by LT Sound that I see advertised in your magazine. I am very anxious to acquire one and would appreciate learning how I could arrange to have one shipped over here. I have included the dollar requested in the advertisement. Thank you for your cooperation.

—John Sleenhamp
Rotterdam, Netherlands

We spoke with Peggy Poindexter at LT Sound in Decatur, Georgia, and she will be most happy to forward the brochure and demo record to you directly. If you should then decide to purchase the *Vocal Eliminator* (the dollar you enclosed for the info is deductible from the price of the unit), she will then inform you of the postage rates for surface and air mail. If you wish the piece sent to you via air, you must also add on the difference of these two rates for they normally ship surface mail overseas.

Thrilling Review

I was just overjoyed to see the review of Max Webster, *High Class In Borrowed Shoes* (November 1977, page 71) by Russell Shaw—in such a prestigious magazine, too!

I fully agree with Shaw's opinion of Max's album. I only wish you could see them "live" because they are even better than on vinyl. What freaks me out is that you have the guts to review a group that is relatively unknown in the United States. Even in Canada (where Max is known) they don't get the support that they deserve because the journalists are afraid to go out on a limb. Considering this situation, a review in a publication such as *Modern Recording* is especially gratifying.

One more thing, I must take this opportunity to mention Max's lyrics. Not since the Beatles has a group written such varied songs.

Thanks for a real thrill for a real Max Webster fan.

—R. Edwin
Toronto Canada

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Introducing dbx professional four-track tape noise reduction for under \$500.

You've just settled on a TEAC, Tascam, Otari or Dokorder four-track tape deck for that studio you always wanted to have. You've chosen the mikes, the carpenter is almost finished (or maybe you even built it yourself). Your console's ready to be wired into place.

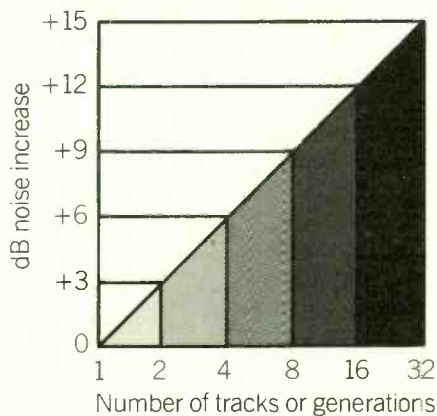
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Additive Noise Chart



system. But the best part is, it will give your tape deck an extra 10 dB of headroom, and reduce tape noise by 30 dB. That means no audible noise whatsoever will be added to your tracks. And, because dbx tape noise reduction operates by linear compression/expansion, you

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All you need do is press the playback buttons to hear noise-free, full dynamic range reproduction of your music.

The new dbx 155 also has user-changeable modular circuit boards, so in the unlikely event that one processor fails, the other channels remain operational. You can even keep a spare on hand.

Visit your dbx professional dealer now, for a demonstration of our new 155 tape noise reduction system. Discover how you can put an end to tape hiss, without putting an end to your bankroll.

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ferrite. And they're Sony's own formula—we don't buy them, we use our heads and make them.

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Another reason the K7II is the logical choice: our logic controlled feathertouch push-buttons actually go from fast-forward, to rewind, to play, without going

through the stop position.

The K7II also speaks for itself with Dolby Noise Reduction System.[™] Large, professionally calibrated VU meters. Three LED's for peak level indication.

There's also bias and equalization switches for standard, Ferri-Chrome and Chromium Dioxide tapes. In fact, with nine possible combinations, any tape possibility of the future can be accommodated.

Along with the K7II, Sony offers a complete line of cassette decks, including the K4 and K3.

So if you're intrigued by quality that speaks for itself, get down to your Sony dealer and check these new cassette decks.

Before they're all spoken for.

Sony quality that doesn't speak at all.



But it won't be silent for long. Because the moment you record on one of our blank tapes, that quality will make itself heard.

Witness our Ferri-Chrome cassette.

Everybody knows that ferric-oxide tapes are ideal for reproducing the low frequencies. And that chromium dioxide is ideal for the high frequencies.

As usual, Sony wouldn't settle for anything but the best of both.

And as usual, Sony's engineers solved the problem. With a process that allows a coating of chromium dioxide to be applied

over a coating of ferric-oxide.

Our two coats are leaving other brands of tape out in the cold. Because Ferri-Chrome boasts shockingly low distortion and startling dynamic range.

Now one reason Sony's tape engineering is so advanced, is that we're the only people in the world who make tape, tape heads, and tape recorders. We learn a lot that way. And we share it by talking to ourselves, before we talk to you.

Of course, in addition to Ferri-Chrome, Sony makes a complete line: Chrome, Hi-Fidelity, Low Noise, Elcaset and Microcassette.

Sony's been making tape for 30 years.

So when it comes to answering the tough questions about the manufacture of tape, no one fills in the blanks like Sony.

SONY
AUDIO

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CIRCLE 57 ON READER SERVICE CARD

Confessions of an Audio Addict

By James F. Rupert

Dear Sirs:

I write this letter of introduction for two reasons. The first is to assure you that I am not some lunatic nit-picker who has found a miniscule mistake on page 53 of your Sept. issue, and secondly to let you know from which section of woodwork I have indeed crawled.

Enclosed is an article (which may be of use to your readers) I am submitting for your approval and publication. It is written thoroughly tongue in cheek, but hopefully there are a few pearls of wisdom, born of my experiences, which might steer a would be studio builder clear of the mistakes I made in getting started.

If there are any parts you wish to use, please feel free to whip out the blue [It's a red pen, James.—Ed.] pencil and delete anything you find unnecessary. I feel there is so much a young person needs to know before he enters into such an expensive and demanding hobby (vocation?) that a brief hiatus from statistics needs to be taken and if not this article, an article of this type would be very welcome.

Hoping to hear from you soon may I remain

Yours,
James F. Rupert

Since my name is not exactly legendary in recording circles around the country, let me start off by destroying any credibility I might have by stating unequivocally that I am not an expert of any sort on recording. Up until a relatively short time ago I believed a dB to be some sort of radio which truckers used to scout speed traps. This has not stopped me however from building not one, but several personal basement recording studios, including a special display/demonstration studio for a Midwestern stereo chain store operation.

Now, for all of you who are thinking, "This guy must be some independently wealthy madman," let me set the record straight. I am the farthest thing from independently wealthy. (Look around and try to find one home studio nut that is!) The purpose of this

article is not to preach, but to plead. Namely, *don't* do it the way I did it! For those of you out there with an unlimited bankroll, a cast iron nervous system and a firm hairline, you need not read any farther. Let me stress up front that the best way to build a studio is to put the entire project in the hands of a professional who can start you up from the ground floor the right way. Yet for those of us who live in the real world of trying to stretch the dollar to the limits of the Snake River Canyon, this method is just not economically feasible.

Throughout this magazine you have undoubtedly seen advertisements for several different books and periodicals that proclaim to guide you through the full galaxy of recording procedures. All in their own way are excellent in outlining the methods and equipment the professionals use. Yet, in spite of them, in the letters column every month are inquiries from innumerable "Basement Builders" (which, incidentally, from now on will herein be referred to as "BBs" so as to not confuse them with those radios the truckers use.) Every time I read one of these letters my own thoughts drift back to the time in 1972 when I saw my first home-made studio (a reconverted coal bin) in a friend's basement. The fellow who built it, who preferred to be known as the Chief Engineer, Technician, Arranger, Artist, Recordist and Producer (CHETAARP for short) proudly switched his magical machinery into motion and *presto!* The worst recording ever roared into life—CHETAARP's sister singing "Goodnite Irene" in about eighteen different keys. When asked for my opinion, I inquired as diplomatically as possible whether he'd ever considered using the room as a coal bin again.

After a brief discussion as to the nature of my parentage, I left, firm in the resolve that I could record better with one ear tied behind my back. In short, the bug was planted.

I started by finding the owner of a small local studio who said he might consider selling me some of his extra equipment since he wanted to, in his words, "Help me out." Right there I should have smelled the cheese in Den-

mark, but after considerable dickering I purchased a complete four-channel four-track setup complete with mixers and playback amps for the low, low today-only price of \$1200. Armed with a pickup truck full of equipment (and a free stag film he threw in because he wanted to "help me out,") I raced home to begin work on the definitive recording of the middle-American spirit.

As it turned out, both playback amps blew out in the first two months and the mixers were so ancient I think the last time they were used was to record the shot heard round the world. Even the stag film turned out to feature a young lady who closely resembled my cousin Veronica—who was now working as a shift foreman in the Omaha stockyards. After four months of assembling, re-assembling, re-biasing, rewiring and \$180 in service shop bills, I was still turning out tapes just to the left of CHETAARP's sister's version of "Goodnite Irene." I was starting to feel as useless as a one-legged man in a butt-kicking contest.

After consulting with my friendly studio owner, he divined the problem must be in the studio's acoustics and said he'd "help me out" by selling me a manual on acoustics for only \$10. By this time the hook was in my mouth, to say nothing of the ten spot out of my pocket, and I returned home this time with visions of the day next year when I would be giving my acceptance speech at the Grammy awards. Two days later I was forcing my wife to read paragraphs aloud just to assure me the book really was written in English. After the agonizing experience of wading through these pages for a week I knew all about overtones, harmonics, standing waves and dynamic ranges, but I had no idea how to improve the acoustics of my basement.

Nevertheless I took to task to seal every joint and crack in the room. Following this I carpeted the floors and walls, insulated between the wall and ceiling joists and covered the insulation with the thickest acoustical paneling I could find. The result? I had one of the quietest rooms in the Northern Hemisphere. Also, it was second only in acoustical deadness to Lin-

coln's coffin, which is under 44 tons of concrete in Illinois. Have you ever listened to your voice with a pillow placed over each ear? If you have you can get a relative idea of how my recordings sounded then.

By now I was ready to take a trip down to my friend at the studio and "help him out" with a baseball bat. Fortunately (at least for him) my wife had been adding up the total dollar output of the studio project and had reserved the bat for me. Still I was totally perplexed! I'd done everything I'd heard was supposed to be done in a studio, but still CHETAARP's sister's organized screaming outclassed me.

Now Bbers, the key word above is "heard." There is enough misinformation being passed around by uneducated experts to sink the entire continent of Asia. And there is no end to these well meaning but oftentimes overbearing experts. After a careful study of mankind I've come to the conclusion that man has three basic desires: the desire for food, the desire for shelter and the desire to twiddle knobs. It seems that anyone who has ever owned or worked with an open-reel recorder automatically feels it's his divine right, nay *obligation*, to dispense his opinion to you as if filled with the holy spirit of Len Feldman himself. At cocktail parties I've learned to avoid three subjects—Religion, Politics and Multi-track recording.

With a multitude such as this ready to spring upon you with cosmic rules of what you should do, let me further confuse the subject with a few DOs and DON'Ts.

(1) Never be afraid to go to a professional consulting firm for advice. A consulting firm can recommend the best way to stretch the dollars you have available to you in the most efficient manner. Believe it or not, no matter how limited your budget a truly professional organization will do everything it can to stay within it.

(2) Before you pick up a hammer have a carefully thought out studio plan down on paper. Individual studio acoustics are up to you, but the laws that govern these acoustics are only flexible. They are not in the long run breakable. A friend of mine once boasted he converted his basement into a studio over the span of only a single weekend. The result was tapes that sounded at best like they were recorded in Carlsbad Caverns. As much time should go into the planning

of studio construction as goes into equipment selection. For those of you on a really limited budget, don't overlook that living room of yours. Pre-existing shag carpeting and window drapes go a long way toward cutting down on echo and standing waves for those who can't afford remodeling some other part of the house.

(3) Pick your microphones with the care of a polka dancer in a mine field. Even the best of tape recorders won't compensate for a poor signal being sent to it. Great sound reinforcement mics are not necessarily great recording mics. The same mic that you want to caress tenderly on stage may make you want to swat flies with it in the studio. No amount of equalization anywhere in the signal path will give a bad mic the professional recording sound you want. Any engineer that says "we'll fix it in the mix," should get a pimple on the tongue.

(4) Choose your equipment from someone who will stand behind it if it ever breaks down. That power amp you thought you were getting such a great deal on can have a million theoretical watts per channel, but it's not doing you any good if for servicing it's been sent hundreds of miles away for an indefinite period of time. In a professional recording business situation you need your equipment *now*, not next month. Lost time is lost money when you are unable to fulfill a commitment because of equipment breakdown. Ask your dealer about his repair facilities. Ask him about any possible equivalent gear loaner program in case of necessary servicing on anything you purchase from him. If you are special ordering equipment through your dealer, ask him about availability of special accessories in the future. Most importantly, ask all such questions *before* you lay down any pictures of dead presidents, and get all dealer promises in writing. After you've kissed the money goodbye is no time to find out the dealer has kissed you off also.

(5) Don't dive into your studio venture without checking all local laws and regulations. By this I mean if you are using your studio as a side income, what are the laws in your city concerning home businesses? In the community I live in there are noise ordinances with \$100 fines for exceeding police measured decibel limits. Is your studio to be insulated well enough to pass such regulations? Take it from the voice of experience, nothing shuts

down a studio quicker than a power failure or a subpoena.

(6) Never use a new machine until it has been thoroughly checked for the proper bias needed for the tape you want to use. This varies with individual philosophy, hence the need for personalizing the biasing that's just right for you. Also the need becomes apparent for a service shop or technician that knows what they are doing with tape equipment. Don't be ashamed to admit you need some technical help. I know of very few recording producers that know how to realign a four- or eight-track head.

(7) Never lose sight of the fact that no matter how hard you are striving to be a professional, we are all (at least temporarily) amateurs. Once you let this sudden new array of glowing switches and hypnotic meters go to your head, your ears become closed doors to learning anything from anybody. Learning is, perhaps fortunately, an experimental process. And the only real way to learn is to make mistakes. After accidentally erasing part of your master tape for the first time, I guarantee you'll treat that monster in front of you with a great deal more of the respect it was intended to have.

These are just a few of the umpteen rules to live by in starting your studio. Let me assure you I have broken every one of them. Still, I feel they are valid enough to be heeded. I have purposely tried to present a view which was free of an overabundance of a language I like to call "Technicaleese," for I've read too many articles on recording that upon finishing I could only sum up with "Huh?" A working knowledge of the language of the medium so many of us are trying to enter is important, but let's not put the cart before the horse.

So for those of you out there who are still mad enough to take a crack at the whole thing, my best wishes go out to you. I can think of no more personally rewarding experience than hearing a well-made master tape recording and saying to your friends, "That's mine!" Even if it is just your sister murdering "Goodnite Irene."

And if any of you are looking for some great used equipment, I know a swell guy who can "help you out." Just be sure and bring your checkbook and a Louisville Slugger.



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.

Changing Tape Deck Speed

My partner and I have a little problem: he owns a TEAC 3340-S and I own the TEAC A-7300. As you well know, his tape speed is 15 ips and mine is 7½ ips. I read in an old issue of *MR* about someone who changed the speed of his tape deck from 7½ to 15 ips (on a TEAC machine) and I was wondering what I would need to change the tape speed of my A-7300 to 15 ips. I would also like to know the approximate cost of doing this.

—Lance Banner
Phoenix, Az.

It is possible to change the speed of the quarter-track stereo A-7300 to 15 and 7½ ips by changing the capstan motor. In addition, recalibration of bias and equalization is required because of the faster speeds; and the Uniform Wind feature on your quarter-track unit is not functional with the higher speed motor so leave that switch OFF. As far as charges are concerned, it will require a few hours of labor if done by a technician at a service facility. Also, the motor costs \$100.00 and the service manual costs \$7.00. Add \$1.00 for

shipping and handling and send this amount to the attention of the parts department here in Montebello and we will forward the motor and manual to you.

—Roy Kamin
Consumer Relations Mgr.
TEAC Corp. of America
Montebello, Ca.

How Measurements Are Made

In the February 1978 issue, on page 71 of the Lab Reports, your technical staff ran signal-to-noise checks on the Sansui SC-5100 cassette recorder.

Your lab measurement showed 57 dB signal-to-noise, without Dolby and 65 dB with Dolby. I have several questions concerning relative noise measurements used by the industry and your reviewers in measuring noise from cassettes.

At what level are the measurements made? Does the industry or your lab in particular record a very high level and then electronically erase and then play back to measure noise, as is done with professional reel-to-reel decks?

Does either the industry or your reviewers measure noise relative to dBm (600 ohm standard) or use dB exclusively, relative to high impedance output?

I have a ten-year-old Ampex vacuum tube ½-track reel-to-reel which runs at 7½ ips and has a noise figure of -58 dB unweighted. Though I can record 0 VU to 15 kHz one cannot really go this high in cassettes. My question is which recorder would really be quieter—considering higher recording levels obtainable with reel-to-reel decks? (Understanding that when recording a 500 Hz tone on a reel-to-reel deck, it is generally standard procedure to increase the recording +6 dBm over 0 VU or +10 dB over 0 VU. So, instead of, in my case, -48 dBm, we really have a noise of -58 dB, after erasure of the 10 dB tone so as to obtain the overall noise measurement.)

Are signal-to-noise figures published in your magazine and other magazines

weighted or unweighted? (In some cases it is not marked and it is impossible for a reader to know.)

—Jon Haterius
Eugene, Or.

All of our signal-to-noise measurements, whether made of professional open-reel tape decks or home cassette decks are made the same way. First we determine the recording level required to produce 3% total harmonic distortion (at 1 kHz) during playback. This is then our maximum recording level. A short length of recording is made at this level and then signal input is removed completely and a further length of "no signal" recording is made. We then play back the recording, using the reproduced 1 kHz signal as a "0 dB" reference. When the signal stops, we measure downward from that point in dB.

As you can see from the above, we are referencing a mid-frequency signal to obtain the starting reference point below which noise is measured. I agree with you that an open reel deck can often record "straight out" to 15 kHz at 0 dB record level and that a cassette deck can never do that because of tape saturation at high frequencies, but this does not change the legitimacy of our signal-to-noise approach. The theory here is that while we may approach 0 dB record levels (and even higher) on a cassette deck, the energy distribution of ordinary music is such that the high-frequency content will be lower and will therefore *not* cause tape saturation. Of course, when you start talking about electronic or synthesized music, this theory often breaks down.

As for weighted and unweighted measurements, it is our practice to give *unweighted* measurements in test reports unless we specify otherwise. If a manufacturer offers a weighted published specification, we may sometimes offer both weighted and unweighted measured results to enable the reader to compare our results with those claimed by the manufacturer. Where

we do use weighting, we always specify that fact in the table of "Vital Statistics" and, in most cases, an "A" weighting network is used.

—Leonard Feldman
Audio Editorial Board
Modern Recording Magazine

Direct Miking Your Drums

I am a percussionist interested in direct miking my kit (a la Barcus-Berry, etc.). I would like to know cost, availability of equipment, and some insights on application.

—Peter Barnes
Fruitland Famine Band
Seattle, Wa.

Barcus-Berry offers a variety of transducers and related accessories which are applicable to percussion instruments. The Model No. 1391-1 transducer is suggested for use with snare drums, congas, bongos, etc., while the No. 1391-2 is recommended for toms and other medium sized drums; the No. 1391-3 is for bass drums and tympani. Each of these transducers is designed for attachment directly to the drum head and the sensors are affixed by means of a soft, non-hardening adhesive. It is generally good practice to first apply a strip of masking tape to the drum head and then affix the sensor to the tape; this is particularly important when attaching the transducer to plastic heads as it assures firm and proper adherence. The Model 1390 transducer is recommended for cymbals, woodblock, triangles, etc. In addition to the aforementioned transducers which are available as standard catalogue items, the Barcus-Berry plant at Huntington Beach, California is also equipped to provide custom transducer system installations on mallet percussion instruments such as vibes and marimbas.

Once the choice of appropriate transducer has been made, a tabulation of these will indicate the number of input channels required for mixing. Barcus-Berry offers several compact, self-powered mixers in both 4- and 6-channel models which are well suited for this type of application. The Model No. 1336-1, for example, provides six inputs. Each channel has its own bass, treble and reverb controls, as well as individual LED overload indicators. Other features include a variable monitor output jack, LED overload indicator on output, low cut filter switch (-6 dB at 70 Hz), and effects "send" and "receive" jacks. This mixing unit measures 3 $\frac{3}{4}$ "x12 $\frac{1}{2}$ "

You have to wait for something really good!



While other manufacturers have been busy selling their studio condenser microphones, the engineers at Beyer have been doing something far more important—perfecting them!

Before a product leaves the Beyer factory, it has to be perfect.

No bugs. No flaws.

The Beyer studio condenser microphones are designed to give an exacting reproduction of even the slightest variations, boasting a transient response second to none.

And with 50 years experience manufacturing microphones, Beyer knows the importance of versatility.

For this reason, the Beyer 48V phantom condenser microphones have one pre-amplifier/shaft and four interchangeable heads: 2 omni's and 2 cardioids.

The choice is yours.

If you think you're ready to work with the best, stop by your local Beyer Dealer and ask for a presentation.

BEYER DYNAMIC

A Div. of Hammond Industries Inc.

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Syosset, New York 11791
(516) 364-1900

x9¼" and weighs 5 pounds. Coupling jacks are included whereby these units can be combined to furnish a total of 12, 18 or 24 input channels with a choice of either mono or stereo output configurations. A mixer such as the Barcus-Berry 1336-1 is the essential nucleus of any high-performance, multi-component transducer system.

While there is increasing interest in the use of transducers with percussion instruments for sound reinforcement, it should also be noted that substantial advantages can be realized by applying this technology in the studio for direct-feed recording. When so utilized in the studio, Barcus-Berry transducers have consistently demonstrated their ability to provide unequalled isolation, freedom from distortion, dynamic linearity and transient response. These characteristics, together with such further advantages as improved signal-to-noise and lack of ambient interference contribute to greater control for the engineer and an overall improvement in definition of the recorded sound.

—John Berry

President

Barcus-Berry

Huntington Beach, Ca.

More Magic

[The following unsolicited reply was prompted by the Talkback question on page 21 in our February 1978 issue entitled "Help For The Harp."]

I just read the Talkback column in the February 1978 issue and would like to take this opportunity to offer some additional information on the question entitled "Help For The Harp" from Jeff Elias. Jeff was interested in getting a sound similar to that of Magic Dick of the J. Geils Band. I am familiar with the equipment that Magic Dick uses to get his honky, fat sound, so I will pass this info along to you hoping that Jeff can benefit from it.

The type of mic that Magic Dick uses is a cheap, ol' Shure Model 520 Green Bullet dispatcher mic or an Astatic dispatcher mic model. Mostly he uses the Green Bullet. The "Bullet" was intended for use with the voice so it has a very limited frequency range—100 to 9000 Hz—so it is practically all mid-range, which makes it very good for that Magic Dick blues sound. The Green Bullet is then patched into a couple of Twin Reverbs which he uses for moni-

tors on stage. I'm not sure whether or not he uses a line out off the amp for a PA feed. In the studio he uses the same Green Bullet through a Fender Champ.

Using Shure 565s or 545s or an MXR graphic equalizer is unnecessary for the harp. They'll only serve to make it too clean and plain sounding. Also, there is no reason to have an overdrive system on the amp, because playing hard through a Green Bullet will produce its own particular "sweet" distortion, with plenty of midrange punch. Keep it simple and keep it cheap and you will get that desired blues sound. The only problem you might have is finding a Green Bullet mic because Shure just stopped making them. All the harp players are really upset about that!

Glad to help out.

—Tim Kelley
Enfield, Ct.

Dave Thoener of the Record Plant Recording Studios in New York City (who engineered Monkey Island and collaborated on Hot Line as well as having worked on the road with Geils), confirmed what Tim has written and had some details of his own to add.

The strong, silent type.



Just one glance at the Yamaha P-2200 power amp tells you the whole story. The case, the handles, the whole exterior relate a single, powerful message—rock-solid reliability, stability and high performance. The P-2200 is no hi-fi retread. It's designed for a wide variety of professional applications.

Strong! With 200 watts of continuous average sine wave power into 8 ohms, you've got plenty of punch to handle the high peaks essential to clean studio monitoring, as well as all-night cooking in "live" concert reinforcement or disco sound systems. (You can easily

convert it into a monaural super amp and/or 70-volt line output capability for distribution systems.)

Silent! With a 110dB S/N ratio and .05% THD from 20Hz to 20kHz, the P-2200 satisfies even the most critical ears.

How pro can you go? The P-2200's dB-calibrated input attenuators and 50dB peak reading meters are flush mounted. Inputs to each channel have XLR connectors with a parallel phone jack, plus a phase reversing switch. Speaker connectors are five-way binding posts that take wire or "banana" plugs.

There's not enough room to give you all the facts here, so send this ad along with six dollars. (Please, certified check or money order only. No cash or personal checks.) We'll send you the P-2200 operation manual filled with facts. Or better yet, see your Yamaha dealer.



Musical Instrument Combo Division
6600 Orangethorpe Avenue,
Buena Park, CA 90620.
Write: P.O. Box 6600, Buena Park, CA 90622

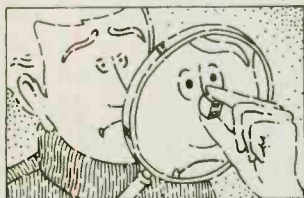
CIRCLE 80 ON READER SERVICE CARD

ARE YOU BLAMING YOUR TAPE RECORDER FOR PROBLEMS CAUSED BY YOUR TAPES?

Every day people all over the country go into hi fi dealers with complaints about their tape recorders.

When in reality what they should be complaining about is their tapes.

Because the fact is, a lot of the problems that plague tape recorders can be attributed to bad tape.



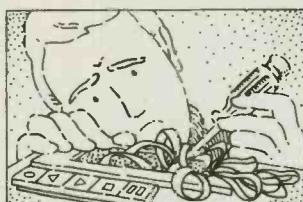
HEAD WEAR IS CAUSED BY YOUR RECORDER. OR IS IT?

If you have to clean your tape heads more than usual, for example, it could be your tape doesn't have a special nonabrasive head cleaner.

Maxell has one.

If your recorder jams, it can be any number of things. Maxell does something to prevent all of them.

We make our cassette shells of high impact polystyrene. And then so they won't crack



JAMMING IS CAUSED BY YOUR RECORDER. OR IS IT?

even after years of use, we finish them to tolerances as much as 60% higher than industry standards.

Inside, we use free rolling Delrin rollers so the tape doesn't stick.

And finally, we screw instead of weld everything together because screws make

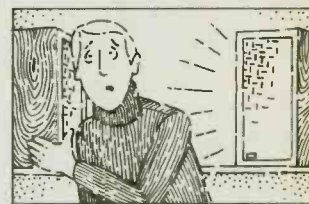
for stronger cassettes.

If your recorder frequently suffers lapses in sound, it could be the tape is of inferior quality. And nobody's bothered testing the tape for dropouts before it leaves the factory.



DROPOUTS ARE CAUSED BY YOUR RECORDER. OR ARE THEY?

Maxell tape is made of only the finest polyesters. And then every



POOR TRACKING IS CAUSED BY YOUR RECORDER. OR IS IT?

step of the way it's checked for even the slightest inconsistencies.

So if you're having problems with your recorder, try a Maxell cassette, 8-track or reel-to-reel tape.

You might find there's really nothing wrong with your tape recorder, just with your tape.



MAXELL. THE TAPE THAT'S TOO GOOD FOR MOST EQUIPMENT.

Maxell Corporation of America, 130 West Commercial Ave., Moonachie, New Jersey 07074

WHY QSC?

Think about it . . . why pay for a "high-end" piece of audio gear that is over-engineered and over-priced for your application? The QSC Audio Products line aims directly at the person who needs high quality engineering and design incorporated into a useful and practical product at a reasonable price. With three rugged power amplifiers, two electronic cross-overs, and the compact Audio-Rack, the QSC line stands up strong against models costing substantially more.



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"Think about it . . ."

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Please write or call us for additional information.

CIRCLE 78 ON READER SERVICE CARD

Magic Dick only uses the Shure Green Bullet on his electric Hohner Marine Band harps. He then sends this through an Echoplex tape delay device and then a graphic equalizer before it goes to the board EQ. In this way, Dave informs us, Dick gives the engineer a sound closer to what he originally wanted. For acoustic passages, such as those in "You're The Only One" (a Stevie Wonder-ish tune), Dick uses a chromatic acoustic harp miked by a Neumann KM 861.

Pursuing Phantom Powering

I would like a brief explanation of phantom powering of microphones—how it works, does it affect the quality of the audio (and, if so, to what extent), and whether it would work in a system consisting of a TEAC Model 2 mixer, Shure transformers and AKG C505E electret condenser mics?

—Mark Jansen
Ames, Ia.

Condenser microphones require two types of life-lines, a balanced microphone cable *taking* the audio signal to its destination (a mixer) and a line *bringing* "power" to operate the mic's internal electronics and capsule. Originally, this power was brought to the mic on a separate power supply cable. How-



THE CAT "SRM" SYNTHESIZER NOW WITH 2 NOTE MEMORY.

There are many synthesizers with 2 voice capability, but the CAT "SRM" has a unique 2 note memory system. What is the difference between 2 voice capability and 2 note memory? Well, if you've tried certain 2 note synthesizers, you know how frustrating it can be when you let go of the two notes and both oscillators jump to the last note released. Not the CAT "SRM".

Our keyboard circuitry incorporates a special 2 note memory system which memorizes both the highest and lowest notes depressed to let you sustain intervals even after lifting your hand off of the keyboard. Now you can play the cleanest 2 note polyphonic lines you'll ever need.

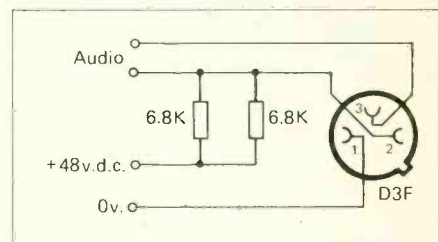
An LFO delay is also available on the "SRM" this means you can get delayed vibratos, delayed filter sweeps and even delayed pulse width modulation - without touching the panel during a performance. An LFO monitor lets you see the LFO speed with a solid state lamp that flashes at the LFO frequency setting. All waveshapes on both VCO 1 and VCO 2 has its own volume control affording you complex timbres and various modulation effects. These mixable waveshapes offer you STUDIO VERSATILITY in a compact synthesizer.

Only by mixing waveshapes can we offer you our 4 note sequencer patch, where you can actually get 4 sequenced notes whose frequency spacing, rhythm and tempo can all be varied. All these features and more make the CAT "SRM" one of the most versatile synthesizers in its class and for HUNDREDS of dollars less than many other 2 oscillator synthesizers. For a complete demonstration contact an Octave dealer or write to us for a complete catalog. Octave Electronics, 32-73 Steinway St., L.I.C., New York 11103, (212) 278-7422.

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CIRCLE 77 ON READER SERVICE CARD



ever, to avoid having separate cables and power supplies for different condensers, a system was developed where the power could be brought to the mic through the existing microphone lines. The beauty of this system is that standard mic lines can be used and the audio will not "see" or "hear" this phantom.

In answer to your other questions, a properly designed phantom power source will not affect the quality of your audio. Your present system would work with many of the available phantom power supplies, however, with your equipment I would recommend that phantom powering take a low priority because your dollars could be better spent elsewhere. This brings up the subject of *when* you should invest in phantom powering. Your decision

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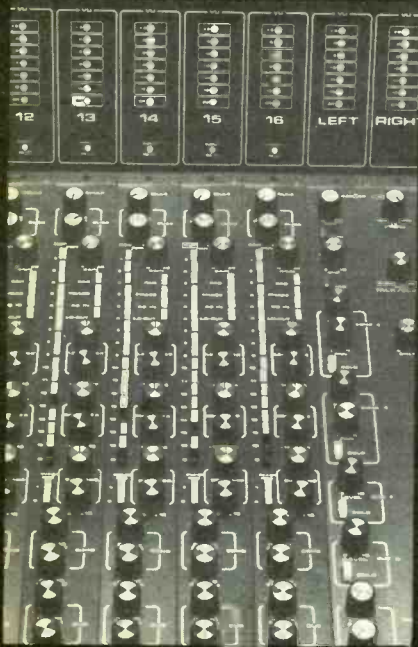
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should be based on many factors which should include having a full-function recording mixer, multi-track tape recorder and a good selection of regular condenser microphones. Until that time, electrets with their batteries will do a good job.

Before we leave the subject of phantom powering, we should note that in most cases phantom powering is a simple addition. However, some inconsistencies among manufacturers should be brought to the attention of anyone considering this addition. Most electret condensers are not made to be phantom powered and batteries should be used. Condenser mics must be matched to their supply for the proper amount of current draw and voltage. Requirements will vary depending on the number of mics and/or the make of the mics to be used.

Most consoles can be phantom powered in one of two ways. The first is with add-on units which just plug in-line with no modifications. These units are available from AKG and Neumann among others, starting at about \$60.00 for two mics to about \$160.00 for six mics. The second way is to retrofit your console by installing a "power" cube and matching resistors for inputs enabling all mic inputs to have phantom power available. This retrofit must be done by professionals.

You should also remember the user should *always* consult his professional audio dealer or the manufacturer to insure proper match of all his components. With some homework and a couple of phone calls, phantom powering is not a difficult task. The benefits of condenser mics will far outweigh any reservations you may have when you are ready.

—Steve Krampf

The Express Sound Co., Inc.
Costa Mesa, Ca.

Trumpet Troubles

I have a question concerning the miking of brass instruments, particularly the trumpet. I am a soundman for a well-established disco showband here in Vancouver and find that in our own recordings (on a TEAC 3340), as well as in "live" reproduction, it is most difficult to get a good trumpet sound. Having tried various mics (Shure SM57, 58, 565, and the 588, as well as several Sony condenser mics), the common problem remains overdriving. I've tried using the mics differently—varying the distance and the angle as well as using two mics

set several inches apart—but satisfactory results were not obtained.

Could it be the mic? In studios around here they use the Neumann mics on brass, but these are too expensive for us. In nearly all the "live" concerts I've seen recently, they have used the Sennheiser MD 421U and 441U on the horns. Are these good choices? Which one might be better? Are there other mics available that can handle the high levels of the trumpet as well?

Might it be the mixer? Again, I've tried using several kinds including Tapco, Yamaha, Altec and Shure, as well as recording directly onto the TEAC. The results all differed slightly, but on all of them the problem of overdriving is still apparent. Are there in-line pads available that might cure this problem?

Could it be the EQ? I find that with equalization I can remedy the problem somewhat, but being limited on the mixers to three or four bands of EQ, I can't solve it completely. The best results I've received to date was using a ten-band graphic equalizer along with the board EQ, but I'd like to know if it's really necessary to go to these lengths to get a quality sound.

I'm a devoted fan of *Modern Recording* and find that I'm always learning something new and interesting. I'm sure any information or advice that you could give me would be tremendously helpful. Thanks for your time!

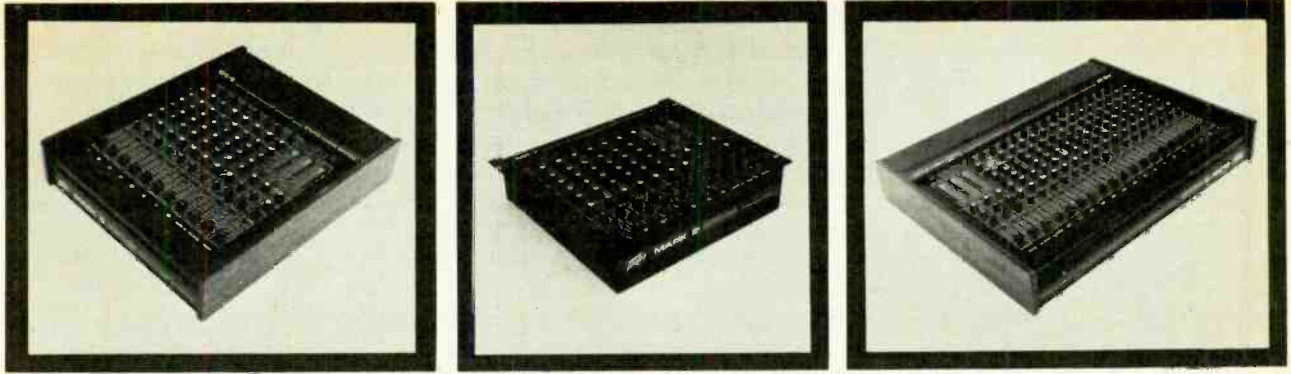
—Marty Hasselbach

Vancouver, British Columbia,
Canada

The microphones that you are using are not the cause of your overdrive problem. All the mics that you mention are quite suitable for your purposes. The Sennheisers you list are all good choices, however, I feel that the 441U would be best for the work that you do.

Your problem might lie in the mixer. You are correct to suggest in-line pads to solve your overdrive problem. I generally record brass with at least a 20 dB pad in-line from mic to preamp. It is unnecessary to go to EQ to get a good brass sound. A good mic choice and a clean preamp with headroom upwards of +18 dB through +22 dB is needed.

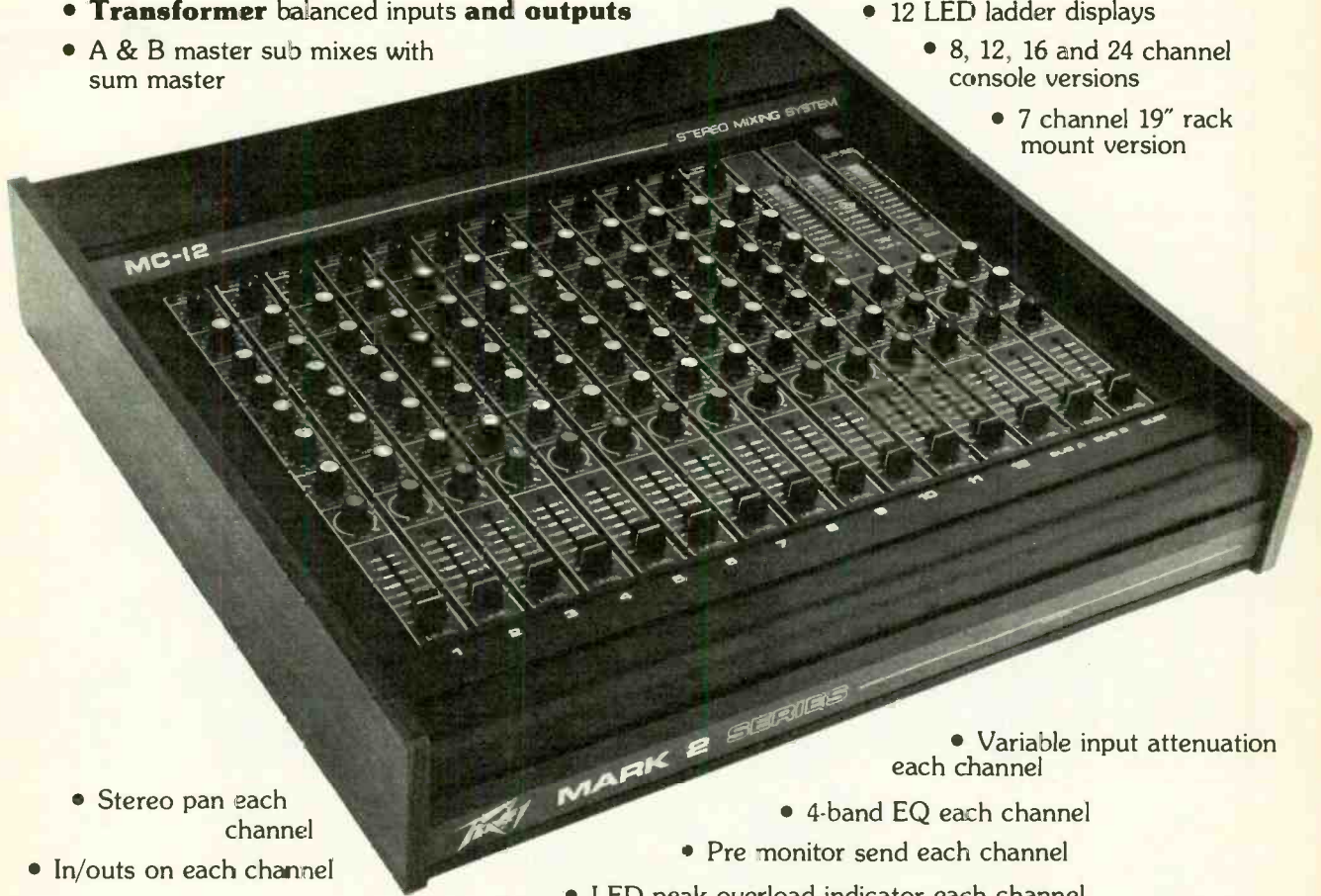
The recording of brass often sounds pinched and lacks warmth. The fault generally lies in not having enough headroom at the input stage of the mixer. In addition, I suggest that you do not crowd the horns near the mics. There should be a minimum of a one to two foot distance from mic to horns, whether you use one mic for two



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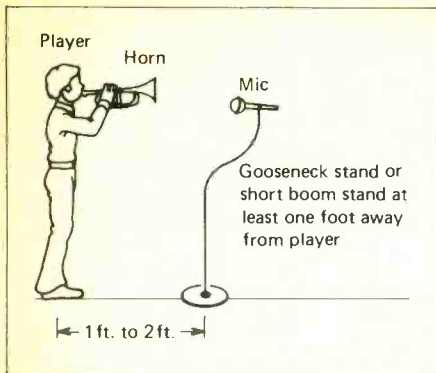
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brass or individual mics. Sometimes a windscreen is helpful. The true sound of a brass instrument does not develop until two to three feet beyond the instrument. Therefore, there should always be enough air left around the horns.

—Phil Ramone
Producer
Phil Ramone, Inc.
New York, New York

A Mixer For Developing Drums

I am involved in doing "live" sound reinforcement for a band. They have developed to the point that I now need to build a small sub-mixer for the drum mix.

Ideally, I would want a passive, 4-in/1-out mixer for high-Z and/or low-Z mics. My main mixer has enough gain that the loss of a few dB through a passive circuit could be compensated for. What type of circuit would you suggest I use?

—Scott C. Herschler
DeKalb, Il.

Ideally, you might want a passive mic mixer for your added inputs since you have enough gain. However, adequate gain is not really the deciding factor. The real question is whether you have signal-to-noise *to spare*? I seriously doubt it, even without knowing what mixer you are using. The solution is, instead of adding four mic inputs to your present set up, to purchase a commercially-built mixer. The cost of the parts, an enclosure, the time of building and the degradation of performance preclude any advantages in building the device yourself.

Sound Workshop does not market such a device, but the series of mixers by Shure does come to my mind. Their M68FC offers exactly what you need: 4-in/1-out, low- and high-impedance inputs and outputs. The output is also

available as a mic level or line level. It is my experience that it is not cost effective to build *one of anything* if it is commercially available.

—Michael Tapes
President
Sound Workshop Professional
Audio Products, Inc.
Roslyn, N.Y.

Creative Uses Of Mono Delay Units

I have a question concerning digital delay units and their usage. I read the Lab Report in the October 1977 issue of *Modern Recording* in which the Lexicon Model 92 digital delay system was featured. I was impressed by its performance, but noted that it was a mono unit. In what cases would it be most pertinent to have a mono versus a stereo unit?

—Douglas R. Brown
Greenwood, In.

For most applications of digital delay, a mono unit is entirely satisfactory. A mono unit has one input and a number of outputs which we call taps. (The Lexicon Model 92 has two outputs,

Most \$1200. delay units can't match the performance of the \$299.95 New Morley Electrostatic Delay Line. Here's proof:



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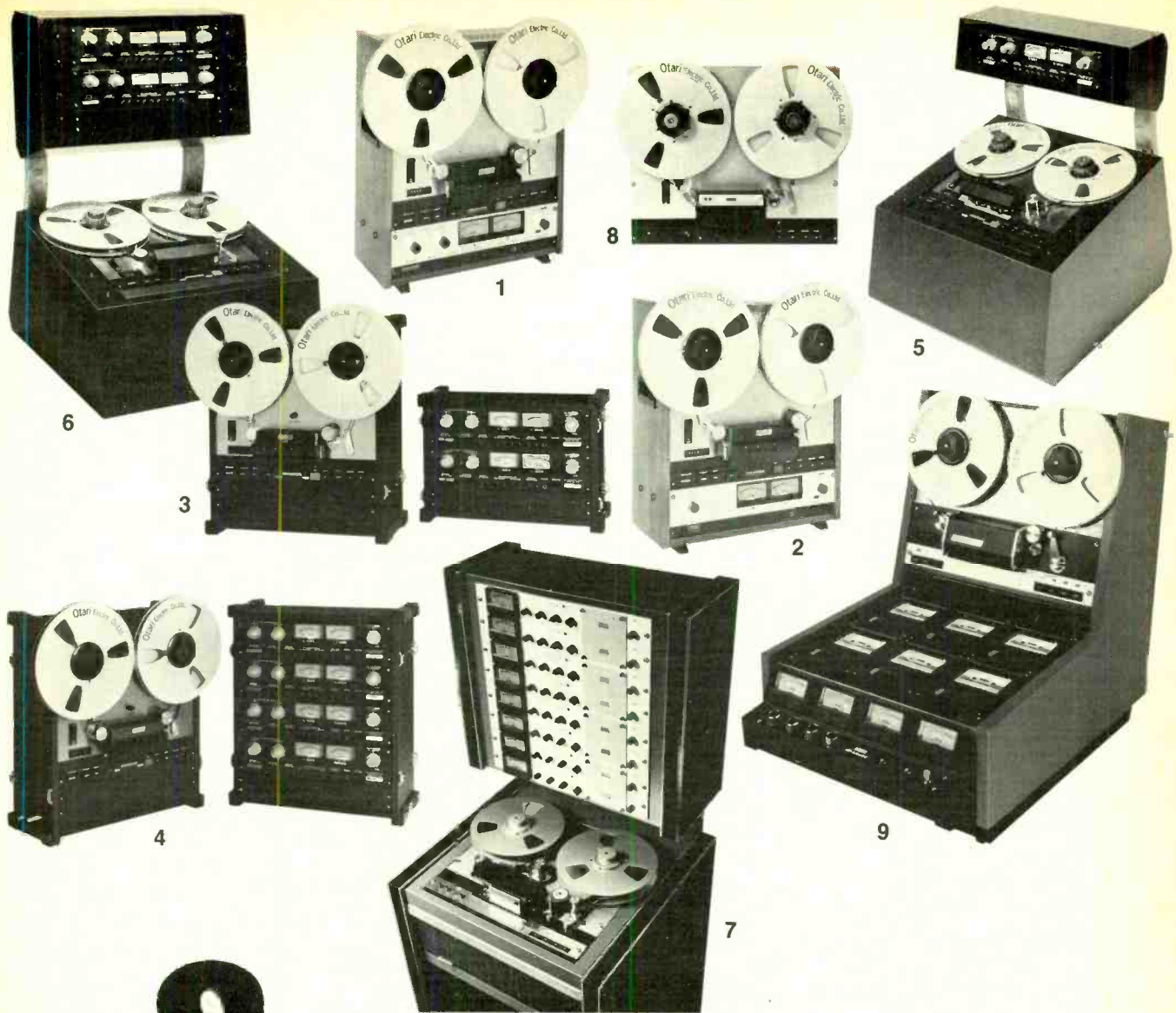
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while the Lexicon Delta-T 102B can have up to five outputs.) A stereo machine consists of two totally independent delay lines with each one clocked separately.

For studio uses, the delay line is used with a mixer. The delayed signal (or signals) is mixed with the original (dry) signal to produce the effects we will discuss. Perhaps the most intuitive use of digital delay is for slap echo. This is similar to the effect that occurs when you shout into a canyon and you hear your voice "return" a short time later. You can achieve this by mixing a longish delay (60-200 ms) with the dry signal. This requires a mono delay line with one tap.

Some other uses involve the fact that the human ear can't distinguish two signals that are less than 20-30 ms apart in time (they merge the sounds and there is a noticeable thickening when this occurs). Thus, the mono delay line can be used for doubling, i.e. making one voice (or instrument) sound like two by mixing the dry signal with a short delay.

In a concert hall or auditorium, the sound you hear consists of first the direct sound from the stage, followed by a few "early reflections" from the walls and ceilings, followed by a rapid

build-up and slow decay of reflections, collectively known as reverberation. Experiments have shown that the perception of the size of the hall is related to the time it takes the early reflections to reach the listener. A delay line can be used to simulate the early reflections and thus add ambience to a dry track. This requires medium delay times (20-100 ms). In addition, one of the delay taps can be used to feed a reverb unit (delayed echo send) to fully simulate the concert hall.

A mono delay line can be used for sound placement in a stereo field due to the Haas Effect. This says that if you hear a sound and then a delayed version of the sound, the ear will localize the sound in the direction of earliest arrival. Thus, delays panned left and right can help place an image in a stereo (or quad) field.

Mixing delay results in a comb filter effect. Simply put, for a mix of a delayed and a dry signal, certain frequencies will reinforce and certain frequencies will cancel. If the delay is small (.1 to 10 ms) the cancellation will occur in the audio range. This is perceived as a "tunnelling" effect, as if you were speaking through a cardboard tube. If the delay is now slowly varied, the cancellation

frequency will slowly change. This is flanging, and is heard as a "swishing" or "seashore" type sound. The deepest flanging is available from a stereo unit, where one delay is held constant and the other is varied from a value less than to a value greater than the first delay. This requires independent clocking of the two delay lines and is one case where a stereo unit out-performs a mono unit.

A delayed rear channel can add a feeling of spaciousness to stereo music by simulating reflections off walls and ceilings. This stems from the fact that the spacial information in a stereo recording is present as what is different from left to right (anything that is the same is placed directly center in the stereo field) Adding one rear channel that is the difference of the two channels slightly delayed (7-20 ms) will create an extra dimension in a listening room.

—David Dunetz
Engineer
Lexicon, Inc.
Waltham, Ma.



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The Luxman 5T50

The Laboratory Reference Series tuner.

A very remarkable component—by itself or as part of a complete LRS system.

Although the LUX Laboratory Reference Series was conceived—and introduced—as a completely new concept in systems, we believe you'll find the LRS tuner alone merits special consideration.

At a glance, the 5T50 is strikingly clean and elegant. The tuning display itself is digital, supplemented by what might be considered an advanced touch of nostalgia for the dial of old. One linear dial is calibrated in 1 MHz increments, and another provides for 200 kHz indication. However, instead of a pointer, LED's traverse the dials, giving linear readout of tuned stations.

Electronic tuning and memory.

Tuning is accomplished electronically, by a touch on either of two buttons. Station selection can be switched to either manual or automatic scanning mode, and tuning speed can be adjusted from slow to rapid. A further tuning option is provided through the tuner's C-MOS IC memory system, which stores seven stations in digital code. A touch of the appropriate button provides instant reception, with the station exactly center-tuned.

Tuning accuracy within 0.003 per cent.

Tuning is always exact, no matter how you select the FM station. Using a quartz crystal frequency synthesizer instead of a tuning capacitor and coil assembly, the 5T50 gives a degree of accuracy (within 0.003 per cent) and stability that cannot be found in conventional tuners. The station is received center-tuned and it remains that way—just as accurate and as stable as the FM transmitter frequency itself—which, for reasons of precision, is also referenced to a crystal.

But the utmost in design and performance doesn't stop here. From front end to output terminals, the 5T50 utilizes the best circuitry. For example, dual-gate MOSFET's in the RF amp and mixer. And a buffer circuit—which helps achieve outstanding image, IF and spurious response rejection—follows the crystal oscillator. In the IF section, a ceramic filter plus two pairs of 4-pole block filters provide for excellent

selectivity without sacrificing low distortion characteristics. A double-tuned quadrature detector also keeps distortion low, at the same time protecting against signal overload. And to assure excellent stereo separation (45 dB at 1kHz and at least 40 dB at high and low frequencies), the multiplex section employs a Phase-Locked-Loop circuit.

Special tuning refinements.

To help you take advantage of this advanced internal design—which includes a Dolby* decoding circuit for Dolbyized FM broadcasts—we've included a number of advanced external features. So tuner operation is just as precise as performance. For example, a multipath check button lets you detect multipath distortion audibly—no need for an oscilloscope. There's also an antenna attenuator for adjustment if signals are too strong in your reception area. For quick level adjustment when recording Dolbyized broadcasts, a 400-Hz test tone button is provided. The tuner output level is adjustable, along with interstation muting threshold. A digital display provides easy-to-read signal strength indication. And if incoming signals are weak, there's a high blend noise filter to assure low-noise stereo FM.

Other LRS components.

Of course, only you know if you're considering a new tuner at this time, or an entirely new system. If the latter, we'll simply advise you that the LRS system has carried the separates concept to "an extreme." That is, the preamplifiers have no tone controls—these are provided by the LRS graphic equalizer or separate tone control unit. The power amplifiers are available with or without meters—supplemented by a separate LED peak indicator. And if low distortion is important to you, the total harmonic and IM distortion of the LRS power amplifiers at rated power is no more than 0.008 per cent. That's double-0 eight.

However, if a superb tuner is really all that interests you at this time, that's fine. Chances are you'll see and hear it as part of the complete LRS system—where it will look and sound the most impressive. Suggested price: \$1,495.

*Dolby is a trademark of Dolby Laboratories, Inc.

LUX Audio of America, Ltd.

200 Aerial Way, Syosset, New York 11791 • In Canada: White Electronics Development Corp., Ontario

THE **PRODUCT** SCENE

By Norman Eisenberg

REMOTE CONTROL EDITING CASSETTE



Claimed to be another in its long list of "equipment firsts" is a wireless remote control cassette deck from Fisher. The new model CR 4025 may be used for recording "from . . . armchair" while editing out commercial and unwanted selections. No details were available at presstime except the price of \$249.95.

CIRCLE 1 ON READER SERVICE CARD

PHASE TESTER

Keith Monks (Audio) Ltd. announces the "Phaserite," a two-piece product (consisting of a sender and a receiver) for testing phase relationships in sound systems. Its purpose, generally, is to avoid cancellation of signals, reduce unwanted distortions and minimize uneven frequency response and other deleterious effects. The Phaserite facilitates the phase-testing of a microphone, speaker, amplifier, cable, filter, etc. in order that phase relationship may be determined and maintained throughout the complete sound system. Portable and compact, the Phaserite operates on batteries. Both units weigh a little more than 2½ pounds.

CIRCLE 2 ON READER SERVICE CARD

SUPER CARDIOID MICROPHONE

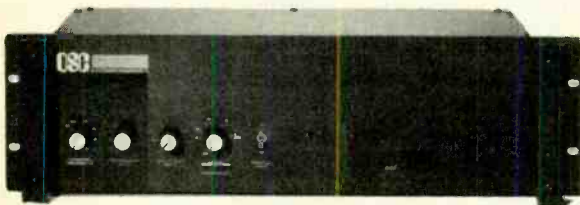


Intended to solve acoustical problems said to be "dominating most recording and P.A. work outside of an ideal studio environment" is the new Sennheiser model MD 402U microphone. Its supercardioid characteristic is claimed to reject up to 90 percent of undesired noise and reflected sound at a 120-degree incidence angle. The result, says the manufacturer, is that hollowness, background noise, and other "plagues such as acoustical feedback are eliminated to a large extent." Since the MD 402U still should be placed as close as possible to the sound source, the mic's frequency response pattern has been adjusted deliberately for close miking. At a distance of two inches, for instance, the low-end rolloff is very gentle and is spec'd as down by about 8 dB at 40 Hz as compared to 200 Hz and above. The new mic has a balanced 200-ohm output and a standard XLR connector. Price for the new Sennheiser is \$79.50.

CIRCLE 3 ON READER SERVICE CARD

IMPROVED ELECTRONIC CROSSOVER

From Quilter Sound Co. there's word of a new version of the QSC electronic crossover whose model number now moves from 1.0 to 1.1. The device combines an electronic crossover with a high-frequency amplifier in one package. The crossover section uses what is said to be an exclusive QSC circuit with a fully active high-pass filter and constant phase complementary low-pass driver. This circuit has a



12 dB/octave slope and a Bessel filter response rather than the common Butterworth curves. Its advantage is explained as optimum phase response, and perfect high-low frequency matching without the amplitude and phase errors of other types. The power amp circuit has a slew rate of 8 V/usec. It delivers 70 watts RMS into 4 ohms with rated THD of 0.25 percent, and IM of 0.25 percent.

CIRCLE 4 ON READER SERVICE CARD

LIGHTWEIGHT "BI-AMP"

Weighing only 24 pounds, the model 710 from AB Systems of Folsom, California provides two independently powered amplifier channels rated at 125 watts into 8 ohms, or 200 watts into 2 or 4 ohms for low frequencies; and 65 watts into 8 ohms or 100 watts into 2 or 4 ohms for high frequencies. The unit includes an electronic crossover featuring selectable 6, 12 or 18 dB/octave slopes at any frequency from 50 Hz to 16 kHz via a small plug-in card module. It is supplied with a crossover card assigned to the 12 dB/octave slope at 800 Hz. Input connection is via a 1/4-inch phone jack with a parallel jack provided for multiple amplifier connections. Direct outputs to both woofer and horn drivers are via dual 5-way binding posts. Front panel controls permit overall system level adjustment, as well as LF/HF balance up to ± 10 dB. The unit is fitted with an input transformer socket for optional balanced-line operation. Rated THD is no more than 0.25 percent. Price is \$658; additional crossover cards cost \$30 each.

CIRCLE 5 ON READER SERVICE CARD

FREQUENCY RESPONSE RECORDER

Introduced by Leader Instruments Corp. of Plainview, N.Y. is the model LFR-5600, designed to measure and graphically chart frequency response, wow and flutter, drift, voltage and temperature parameters of audio equipment. The new device consists of two basic sections: an audio sweep oscillator and a pen recorder. The oscillator may be used separately for direct frequency readout on an oscilloscope. In addition, the chart section can also serve as a direct current reader to 10 mV/cm.

The design format includes automatic start circuitry, said to simplify tape-recorder response measurements; standard signal frequencies of 1 kHz and 333 Hz for open-reel or cassette checkouts; selectable 25-dB, 50-dB or linear scales; higher sensitivity measurement capability via 20-dB and 40-dB attenuation readings; use of external signals for response checks; and a slow speed range of 1/10 cm which permits long-term drift measurements. The meter for the Leader device may also be used as a sweep frequency indicator to facilitate easy voltage calibration.

Applications suggested for the LFR-5600 include measuring amplifier frequency response and S/N ratio; direct observation of low-frequency response for speaker systems and amplifiers; tape recorder frequency response and signal-to-noise ratios; phono cartridge frequency response; filter design tests; wow, flutter, and drift measurements of reel-to-reel and cassette recorders. The LFR-5600 is priced under \$3000.

CIRCLE 6 ON READER SERVICE CARD

HEADPHONE AMPLIFIER

Designed to serve as a compact, reliable, low-cost amplifier for driving headphones, the new Symetrix HA-10 offers not less than 10 watts on each of two channels into 4-ohms. The front panel of the rack-mountable HA-10 has separate mono outputs per channel and a combined 1 plus 2 (stereo) output. The rear panel contains ten jacks, including for each channel two mixing inputs, two parallel inputs and one mono output that will power headphones or small, high-efficiency speakers. While the inputs are designed for line-level signals, the HA-10 has gain enough to produce near-full output from low-level sources such as electric guitars or microphones. Price is \$119.

CIRCLE 7 ON READER SERVICE CARD

SPEAKER MATCHING DEVICE



From Pro Sound of Gardena, California there's word of its model PS-812, a device offered for testing speaker impedance and phase by way of allowing the user to match speaker and amplifier for best sound and to prevent accidental damage to equipment due to overload, shorts or incorrect phasing. Compact, requiring no technical knowledge, and calibration-free, the PS-812 is said to work with all types and sizes of speakers and is priced at \$36.

CIRCLE 8 ON READER SERVICE CARD

AMPLIFIER INCLUDES 20-BAND EQ

Soundcraftsmen has announced its "Amp-Qualizer" model EA5003, which is a combination class H integrated amplifier and twenty-band octave equalizer. In addition to its use in stereo playback systems, the EA5003 also can be operated as a separate left channel/right channel combination high power amp/equalizer for P.A. and monitor systems. Actually, technical specs for the Amp-Qualizer combine those of Soundcraftsmen's MA5002 Vari-portionable amplifier with those of the model 20-12 equalizer. The EQ section incorporates two 10-active panels with ± 12 dB/octave range, with 10 dB range zero-gain controls in each channel. The amplifier employs the firm's exclusive (patent-pending) 250-watt per channel analog logic design. Price, with walnut side panels, is \$849. Panels may be removed for rack-mounting.



CIRCLE 9 ON READER SERVICE CARD

NAKAMICHI UPDATES ITS MODEL 1000

Nakamichi's model 1000 cassette recorder is now available in a Mark II version. The original 1000 which appeared in the spring of 1973 set a new high for cassette performance and soon became a recognized "standard" for the cassette format. The refinements in the Nakamichi 1000-II are said to be "subtle but important." Among its characteristics and features are: three heads, the play head being Crystalloy, and the record and erase heads being crystal ferrite; IC logic control circuitry; two motors; a closed-loop double-capstan drive system; user-adjustable azimuth; touch-command controls; phase-corrected playback circuitry; Dolby noise-reduction and DNL; wide-scale peak-reading meters; independent bias and EQ switches; etc. Price is up to \$1450.

CIRCLE 10 ON READER SERVICE CARD

AUDIO & DESIGN SHOWS NEW ITEMS



Audio & Design Recording Ltd., a British company whose products are distributed in the U.S. by Audio & Design Recording, Inc., has announced several new products, headed by a stereo compressor/limiter known as the Gemini Compact and specifically aimed at the self-op recording artist and semi-pro user. It may be used for stereo or for dual mono compression-limiting and is suitable for use in systems having levels of between -10 and $+10$ dBm. Limiter ratios are 20:1 and those for the compressor are 1.5:1 and 3:1.

A&D also is offering three new "Scamp" items, including the S11 ADT/Flanger (ADT with 0-40 msec variable delay and feedback for echo or flanger with envelope follower, positive/negative flanging or straight phasing and speed controls/osc.). This unit also incorporates a noise-reduction system and limiter for improved clip level. Another new "Scamp" item is the model S08 distribution amplifier; a third one is the S23 Autopan. The company finally offers its E950-RS paragraphic equalizer, the F760 series Compex Limiter and Vocal Stresser.

CIRCLE 11 ON READER SERVICE CARD

FREE MIC GUIDE

To the list of better publications from manufacturers we can add a new booklet released by Audio-Technica entitled "A Brief Guide to Microphones." Its fifteen pages contain well-written and illustrated explanations of the basic microphone types, plus important characteristics. The booklet is available free at A-T dealers or by writing to the manufacturer.

CIRCLE 12 ON READER SERVICE CARD

MULTI-TRACK MASTER RECORDER

Telefunken's M 15A multi-track master recorder—available in 8, 16, 24 and 32-track configurations—features clocked CMOS logic with Hall effect push-buttons and solid-state switching. The indirect capstan drive system incorporates a brushless DC motor whose speed is referenced to a quartz crystal oscillator. The easy-threading tape path is said to offer outstanding stability thanks to a rugged deck



casting that supports precision-aligned heads and guides. A unique mechanical servo system provides constant tape tension in all operating modes while also affording editing flexibility the manufacturer claims is not possible with electronic servo machines. Fast-wind speeds are continuously variable, while a slip-free LED timer counts in minutes and seconds on both sides of zero. The machines are available in speed combinations of 7½ and 15 ips, or 15 and 30 ips. Tape capacity is up to 11½ inches (equivalent to 3300 feet of standard tape). U.S. distributor is Gotham Audio of N.Y.

CIRCLE 13 ON READER SERVICE CARD

MULTITRACK RECORDER

Offered as "MCI's answer to the industry's need for a low cost—but high quality—multitrack system" is the new JH-110/8 recorder. Using the same JH-110 transport found in previous professional models, and featuring the same speed-control electronics and tape-handling, the new recorder uses a one-inch configuration for an 8-track tape system. According to MCI, updated circuitry has improved the specifications, and virtually eliminates punch-in and punch-out noise during editing. The reproduce circuits now have phase correction. An automatic monitor goes on in the record mode; the monitor switches from CUE (sync) mode to INPUT mode automatically. Overdubbing and editing are thus claimed to have been made much simpler.

CIRCLE 14 ON READER SERVICE CARD

THIS, THAT AND THE OTHER THING

Audio-Technica continues to foster the direct-to-disc recording idea with a recent release titled *Michael Murray at the Great Organ at Methuen* under the Telarc label (Telarc 5036). Selling for \$14.95, the disc was pressed in Germany from a master was cut directly during the performance.

JVC is promoting its "biphonic" sound idea by incorporating it in a new line of portable cassette recorders such as the model 828. The idea of biphonic is to make available through speaker reproduction the sense of direction and distance formerly achieved only through binaural recordings heard over headphones. The biphonic processor circuitry utilizes technology based on certain phase relationships that exist between left and right stereo channels during playback. It is activated by a switch on the unit that expands the sound field. The net effect, without using auxiliary tape tracks or extra speakers, is to recreate for the listener a sense of actual distance rather than a mere change in volume level.

Advent continues to build its library of Process CR/70 program cassettes which are the first commercially recorded cassettes using both CrO₂ tape and Dolby noise-reduction to be released in the U.S. I mention them here because they're the best-sounding cassettes I have ever heard. For a catalog: Advent, 195 Albany St., Cambridge, Ma. 02139.



MUSICAL

NEWSIGALS

MIXING CONSOLES

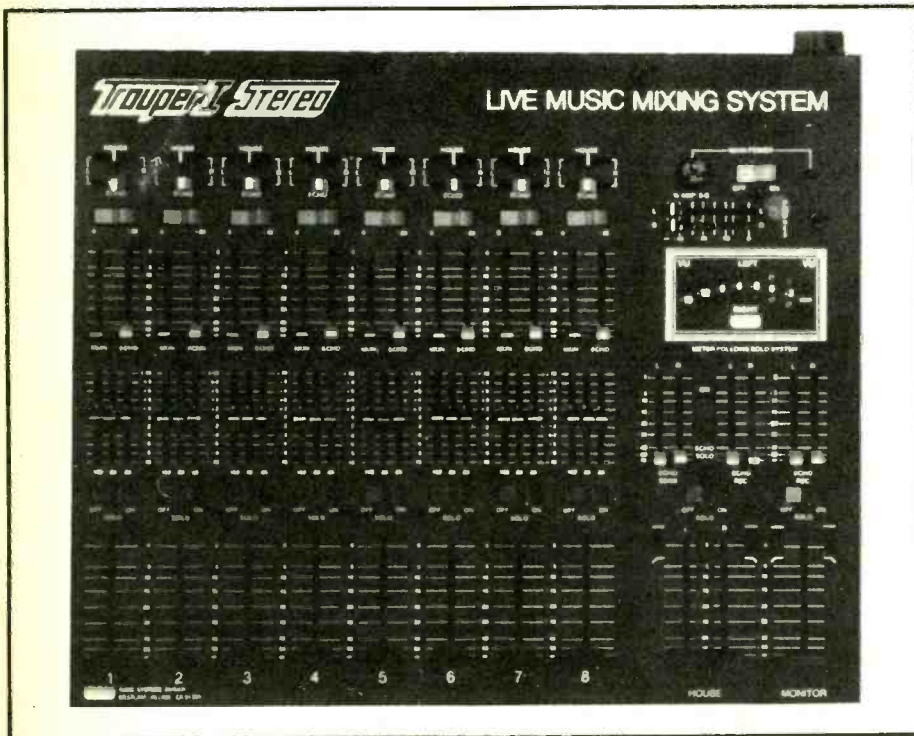
In addition to their now-familiar Trouper Series consoles, Uni-Sync, Inc. is now producing a new, stereo version of the Trouper I console and the new, low-cost Star Trouper mixer. The Trouper I Stereo adds two panpots, one for the house mix bus and one for the echo bus, to each input channel of a Trouper I console. Standard features of both the Trouper I and the Trouper I Stereo include 3-

basic, 8-input mixer which mounts in 3½ inches of standard 19-inch rack space. Each input has a level control and high-cut and low-cut filter switches. The single output channel has a level control, filters and an eight-segment LED meter. For applications requiring more than eight inputs, an expander module with an additional ten inputs is available which interfaces directly with the basic Uni-Sync, Inc. Star Trouper mixer.

CIRCLE 21 ON READER SERVICE CARD

addition, the first two input channels have high-impedance, high-level inputs for tape players and such. To these basic features the MMX-1700 adds a 10 dB pre-transformer pad, an overload warning LED, midrange as well as bass and treble EQ, and solo and mute switches for each input. In addition, each of the 16 inputs has provision for high-level high-impedance inputs. The left and right main, monitor and solo output channels all have output sensitivity controls (gain controls), three-band EQ, rotary fader and mute switch. All connections to the MMX-1700 are on the back panel, and include two multi-pin Amphenol connectors to mate with the optional Musimatic snake cables to connect all 16 inputs and the left, right and monitor outputs at once.

CIRCLE 22 ON READER SERVICE CARD



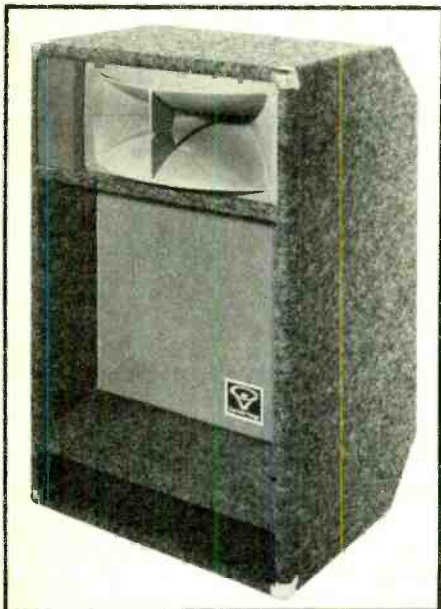
band graphic equalization, echo send, monitor send, input pad, solo switch and in/out jacks for each input channel. The basic Trouper I Stereo has eight mic or line inputs, stereo house outputs, stereo echo send and return and a single monitor output, while the Expander Module contains ten more input channels but lacks output facilities. The Star Trouper is a low-cost,

Musimatic, Inc. has several mixing consoles, including the elaborate 16-input MMX-1700 and the medium-budget, 12-input MMX-2200 (\$1148). Each of the 12 input channels of the MMX-2200 has transformer balanced low or high impedance mic inputs with 40 dB variable gain, pre-fader monitor send, post-fader effects send, bass and treble EQ, panpot and rotary fader. In

SOUND REINFORCEMENT

Cerwin-Vega has introduced two new, compact, two-way speaker systems for P.A. and disco applications. Both the V-33 and the V-35 use Cerwin-Vega's newly developed 188EM low-frequency driver, an 18-inch speaker with unusually extended midrange response. Midrange performance of this new driver is said to surpass most 12-inch and 15-inch sound reinforcement speakers, while its 18-inch diameter results in greater low-frequency capabilities. The V-33 mounts the 188EM in a bass-reflex enclosure for frequency response down to 40 Hz, while the V-35 is a bass-reflex/horn design for efficient reproduction down to 35 Hz. The extended midrange of the woofer allows Cerwin-Vega to use a 1200 Hz crossover point to improve the overall power handling capability and reduce any horn coloration in the important mid-band region. Both models use a

special high-frequency compression driver which uses a relatively small diaphragm, a sophisticated phasing plug and an integral heat sink to achieve wideband response plus high-power handling ability. In the V-33 this treble driver is coupled to a diffraction horn with a 60° by 60° coverage pattern; the V-35 has a cast aluminum radial horn which covers



45° vertically and 90° horizontally. Sensitivity of both models is high (104 dB at 1 meter from a 1 watt input) and a power handling rating of 300 watts continuous program makes peaks of over 130 dB possible at a distance of 1 meter. The plywood enclosures are covered in nearly indestructible indoor/outdoor carpeting and are fitted with carrying handles; the V-35 is also equipped with large rubber casters.

CIRCLE 15 ON READER SERVICE CARD

AFP Sound Reinforcement Systems has an interesting PA system which is totally self-contained except for microphones and mixing console. The AFP 2992 is a complete three-way, bi-amplified system with built-in electronics which is contained in two hard-shell Bobadilla road cases. The bottom unit is a model 2990, and contains two 15-inch bass drivers in a bass reflex enclosure, four high-frequency ring radiators, a low-level active crossover between bass and mid/high sections for bi-amplification, a Phase Linear 400 stereo power amplifier and a high-level passive crossover between midrange and high frequency units. The top section is a model 2945 midrange unit which contains two 140 degree wooden

diffraction horns with phenolic diaphragm compression drivers. Set-up of the 2992 system is extremely simple since the only external connections necessary are an AC input and a line-level signal feed. The system comes complete with a grille cloth for the bottom unit, and both units have protective covers, handles and heavy-duty casters.

CIRCLE 17 ON READER SERVICE CARD

A well-known name in professional and semi-pro PA equipment is Community Light & Sound, who have recently published a 100-page catalog of their complete line of speaker enclosures, fiberglass horns, drivers and electronics. The catalog includes physical specs and dimensions, Architects' and Engineers' Specifications, and technical specs such as "Q," and -6 dB, -12 dB and -20 dB coverage angles. The package also includes an actual comparison test of all major sound reinforcement products conducted under identical conditions. To obtain a copy of this informative catalog, send \$3.00 to Community Light & Sound at 5701 Grays Avenue, Philadelphia, Pa. 19143.

CIRCLE 16 ON READER SERVICE CARD

MUSICAL INSTRUMENTS

For the drummer, Tama Drums has introduced a new, compact set of octave-tuned drums called Octabans. Unlike other tuned drums which vary both the diameter and depth of the



drum shells to achieve different pitches. Octabans all use 6-inch diameter heads and change only the depth. This means that a complete set of eight Octabans occupies roughly the same amount of space as a pair of 16-inch tom-toms. The shells of the Octabans are seamless castings of transparent acrylic plastic for high strength. The depths of the shells are carefully graduated to produce a diatonic scale when all the heads are tuned to the same tension. Tama Octabans are available in full sets of eight or half-sets of four drums, and either set-up includes Tama Titan stands for flexibility of set-up with excellent strength and rigidity.

CIRCLE 18 ON READER SERVICE CARD

ACCESSORIES

A 10-band graphic equalizer and a compressor/sustainer are among the latest developments at Electro-Harmonix. The graphic equalizer has ten slider-type pots to control the gain in each of ten octave bands with center frequencies from 31.2 Hz to 16 kHz. Each of the sliders has a -15 dB range for a wider range of tonal balances than are available with competitive units. A bypass footswitch is provided to switch instantly from "flat" to equalized response. The Soul Preacher Compressor/Sustainer is designed to give the guitarist a tighter sound and greater sustain without the distortion of the fuzz-tone type of sustain devices. Controls on the unit include a volume control to set the output level of the compressed signal, a threshold control to vary the amount of compression up to 40 dB, a treble boost switch to emphasize the higher frequencies by as much as 6 dB and a bypass footswitch. The unit also features a low output impedance to allow the use of long cables without losing signal, and it is powered by a single 9-volt battery or an optional AC adapter.

CIRCLE 19 ON READER SERVICE CARD

An inexpensive but very useful accessory for guitarists is the adjustable guitar nut from GOVOX, Inc. The GOVOX nut uses six Allen-head set-screws to adjust the height of each string individually. Four different sizes are available to fit most any classical, acoustic or electric guitar, and the retail price is only \$2.55.

CIRCLE 20 ON READER SERVICE CARD

A Session
With

JOE



THE JOE COCKER SESSION



By Jon Marlowe

Mr. Joe Cocker is in at Criteria Studios (located in Miami, Fla.), recording a new LP (as yet untitled) for Elektra-Asylum Records.

Cocker is getting the sound he wants for this album with a little help from the following friends:

Famed New Orleaner Allen Toussaint is producing the disc; Alex Sadkin is the engineer; and Sheila "Sam" Taylor is the assistant engineer.

The rhythm tracks come courtesy of Cocker's five member road band (The American Standard Band), as well as from a guest roster of musicians featuring such luminaries as Jim Keltner; George Terry; Bernard Purdie; Steve Gadd; Chris Parker; Dr. John; Richard Tee; Donny Hathaway; Don Grolnick; Howie Hersh; Chuck Rainey; Joey Murcia; and Cornell Dupree.

Studio Difference

What simply has been dubbed "The Joe Cocker Session" is being recorded in both studios B and C of the Criteria complex. Reason for the use of both studios, according to Alex, is "due simply to scheduling."

While a change of studio might worry other engineers, Sadkin is not at all affected when the scene shifts from studio B to C.

"The difference between the two studios is very, very minor," says Alex, "and to tell you the truth,



neither myself, Joe or Allen really notices any difference at all. Once we get inside and start really working on the session, for some reason it just doesn't really matter where we are."

The Joe Cocker Session is being recorded on MCI 24-track machines, at 30 ips on Ampex 456 tape (+3 elevated levels) with Dolby. In Studio B the MCI 528 24-track console is being used, while in Studio C a custom 24-track console—built especially for Criteria by the folks at MCI—is being employed.

Pilot Vocals & Tracks

As of this writing, only the basic rhythm tracks and pilot vocals by Cocker have been recorded.

"We haven't got around to anything else like percussion overdubs or any-

thing like that," says Alex, "but I gotta tell you, some of Joe's pilot vocals are just so good that we're seriously thinking of keeping some of them."

For this LP, Cocker and Toussaint are recording only eleven songs. Track titles are:

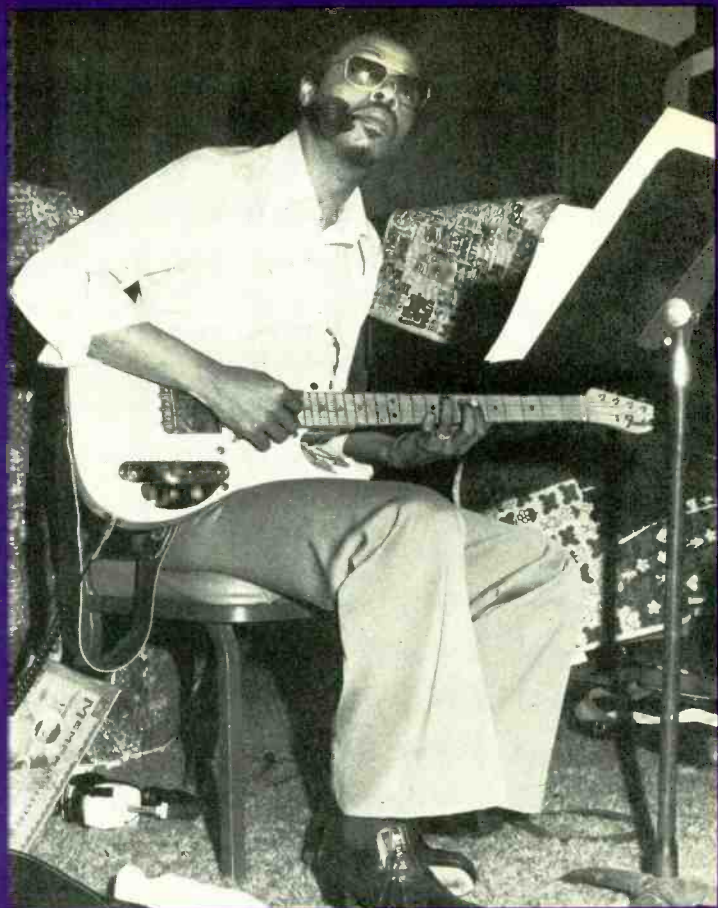
"Sweet Forgiveness," "I've Been Accused," "Fun Time," "Boogie Baby," "Can't Say No," "All Because of What You Did (Last Night)," "Lady Put The Light Out," "Wasted Years," "Watch The River Flow," "Southern Lady" and "When Love's Around."

Toussaint penned "Fun Time," "Lady Put The Light Out" and "When Love's Around."

Cocker's American Standard Band are on three of the cuts, while the star-studded cast of musicians perform on the other eight.

Surprisingly enough, the 'sound' of the album has been left totally up to Alex.

"Allen likes to work right out there in the studio," explains Sadkin, "and he's also playing piano on the sessions."



Guitarist Cornell Dupree and his Fender Telecaster.

Photos by Bill Murr Johnson



Keyboardists (left to right) "Dr. John" (Mac Rebaneck) and Richard Tee.

It's fair to say he's given me total reign of the sound, from the miking of the session to what happens in the control room."

Instrument Miking

Sadkin is using "eight or nine drum microphones, depending on the num-

ber of tom-toms the particular drummer is using."

The drum miking breaks down like this:

Bass Drum: Sennheiser 421.

Snare: Shure SM57.

Hi-Hat: Sony ECM 377.

Tom-Toms: AKG 414s.

All of the above is complimented by

the use of an ECM 377 as an overhead mic.

"The drummers—Jim Keltner; Bernard Purdie; Chris Parker; and Steve Gadd—according to Alex, "used the drum kit we had in the studio—a cross-bred set of old Camco drums coupled with some new Ludwigs and a 15-inch wooden snare drum."

A few personal touches were added by Chris Parker, who brought in a child's pie plate cymbal, and Steve Gadd, who used a broken cymbal bizarrely attached to a sizzle rivet cymbal.

Alex also relates that, "The drummers brought some of their own stuff from their sets, but once they sat behind the drums we had they were thoroughly satisfied with them, especially the snare drum."

For the bass guitar, two tracks were recorded—one direct into the board and one miking the bass amplifier with a Shure 546. Both bass tracks were slightly limited by a dbx limiter.

The guitars were miked through the amp with a Sennheiser 421, and also limited slightly.

The keyboard miking varied from studio to studio. In Studio B the Baldwin 9-foot piano was miked with an ECM 377 on the low end, and a 377 on the high end. In Studio C, the Steinway 7-foot was miked with an AKG

414 on the low end, and a Sony C500 on the high end. Meanwhile, the Hammond B-3 organ's Leslie cabinet was miked with a Neumann U87 on the bottom and two Shure 546s on the top.

Reasons for this three mic technique, according to Alex, are that, "The Leslie's revolving speaker is sometimes blowing the sound to one side. This way I'm able to pan the tracks—the top of the Leslie in stereo and also get a central mono bottom."

The Fender Rhodes piano was recorded direct in stereo on two separate tracks.

Cocker's unmistakable voice (for his pilot vocals) was miked through a Sennheiser 421, limited slightly with a United Audio Limiter at a 4:1 compression ratio. (Alex says they also plan to use the same Sennheiser for the final vocals.)

"Cocker's voice is very powerful," says Alex, "but it's not presenting any miking problems at all. We're recording him really dry. That's the way Joe likes it. All that's being done to his vocals is a little limiting. Joe really hates echo, even in his headphones.

"In fact, we're hardly even EQing at all. We're simply recording it really flat. Just a little survival EQ, that's all."

Trial and Error

The miking technique Sadkin employs is, he says, "One of trial and error refined over the years. You just come to learn the kind of sound you're looking for. For instance, I try to get attack and tone out of the bass drum, depth and brightness out of the snare, and attack and tone again out of the toms."

As for why he uses the microphones he does, Sadkin replies in very hush/hush/top classified tones.

"I'm really not going to say. If people want to know, let them go and find out. All I can tell you is I usually experiment before a session to decide what mics to use, and then, if the producer doesn't like them I'll change. But there's been no problems at all on this session. Mostly all that changes from night to night is just slight drum tunings."

With regards to miking distances, Alex relates that, "Everything was basically close-miked, trying to get the maximum separation.

"If the whole (modus operandi) of this session seems very 'easy,' it's because it is. This is one of the smoothest sessions I've ever been on.

"There's been no mess-ups; everybody's just taking their time. We've got reels and reels of tape. It's just all been very low key but very productive. Cocker's simply working in a concept of doing three- to four-minute songs.

"And as I said before, we're not doing anything extraordinary or anything like that. We're hardly touching Cocker's voice. Everything is pretty well straightahead. The most unique thing is probably that Allen is working in the studio instead of behind the glass. It's just all been extremely easy going."

Session Direction

Producer Toussaint feels the same way.

"The direction of any session is very important. People seem to forget that. They get all carried away with the elec-

tronics part of it and forget about the musical direction they're supposed to be headed in.

"Before the session, Joe and I met in New Orleans for a few days and discussed what songs he'd like to do—the keys; the tempos; and the musicians he'd like to use. So before we even came into the studio, we had a most definite idea and direction.

"You see, I date back to a time when everybody cut their records in two takes. Then specialized electronics speeded up the process, but in some ways also slowed it down. Now, things drag out more because of the greater possibilities you have. There's just too much perfection. No, I take that back. There's no such thing as too much perfection. Let me say I mean a loss of spirit. A loss of feel for the music.

"To me, after eight or nine takes, it's



Joe Cocker in a somewhat pensive mood.

all over. It's lost. I try to go for the middle ground. I love to get it in three or four takes. That hasn't really been happening here, but that's what I like to do."

Normal Approach

While others might consider Allen's working in the studio a most unique approach, Toussaint feels that, "It's very normal. At least normal for me. It might not be for Jerry Wexler, but to me, that's how I work. I have a very

(and musical feel) differences between employing both a hard working/raunchy road band and the technically-trained/ultra-perfect studio musicians, Toussaint replies, "That was the deliberate difference we were after on this album. You get a different feel and sound with session musicians than with Joe's band. Plus, we've been getting a different musical approach with almost every take we've done. We definitely wanted that deliberate experimental difference, just to see what would happen."

And as for the control Allen exerts over Cocker's vocal performances in the studio?

"Joe's lived with these songs," says Allen, "so I let him go pretty much freely. We talk about things. But we're really not far enough into the vocal overdubs for me to tell you exactly what our procedure is going to be."

Toussaint is hoping that when they're finished with the LP, that they will have come up with at least one hit single for Joe.

"Generally, as a producer, I can't help but think in terms of hit records. The Top 40. All the above-ground stations. The R&B stations.

"But don't get me wrong. I have the highest regards for the underground too. The FMs have been very faithful to Joe. Hopefully, we'll be doing something here for everybody to love."

Alive and Well

It looks like there will be.

The musical magic of Joe Cocker is still there after all these years.

As he stands in front of the Sennheiser, headphones over his ears, shaking in time to the rhythm track; arms maniacally flailing at his sides; his head flung *way* back; his mouth gurgling out the words; there's no doubt about it.

Contrary to rumor, Joe Cocker is definitely alive-and-well, and making very, very exciting music.



(Left to right) Joe Cocker, Michael Lang, Allen Toussaint and Cornell Dupree.

good engineer this time which allows me to do it.

"As a matter of fact, I don't even look at it as any new technique. It's simply easier for me to talk to a person in the studio than it is to try and talk to them through a piece of glass."

Toussaint's trust in Sadkin may be extending the usual boundaries of producer-engineer, but as Allen explains: "I've been to Criteria twice before; it's not really a foreign studio to me but it's homeground to Alex. He knows what the machines are capable of doing and so I trust Alex in a lot of areas. And the trust has proven good.

"When overdub time does roll around, we're thinking maybe of going to New Orleans to add strings, horns and percussion. Simply because I'm familiar with the people there."

In response to the definite sound



(Left to right) Producer Allen Toussaint, Chuck Rainey and Bernard Purdie.



There are certain other instruments every serious musician should know how to play.

The implements used in every art form except music both create and preserve the art. If music isn't captured at the time it's created, it's gone forever.

But the instruments used to capture music can also be used to alter, refine and improve it.

Instruments like the A-2340SX and A-3340S 4-channel tape recorders with Simul-Sync for multitrack recording and over-dubbing, as well as mastering decks like the A-610C and A-3300SX-2T for mixing down multichannel tapes to stereo.

Instruments like the Model 2A Mixing Console with an

MB-20 Meter Bridge for control of volume, tone, blend and spatial positioning. There are also microphones for every recording need along with accessories like the PB-64 Patch Bay and cables to help organize the process.

TEAC is the leader in multitrack. Less than a decade after multitrack equipment was introduced to the professional industry, TEAC introduced it to people serious about their music. Today, thousands of musicians and recordists are getting many of the important elements of the studio experience but without the studio bill. And TEAC continues its

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To find out more about the adventure of multitrack recording and to hear the quality of music that can be made on TEAC multitrack equipment, send \$2 to Dept. 35 for our "Home Made With TEAC" Album.* Or, if you can't wait to get your hands on the instruments every musician should know how to play, see your TEAC dealer now.

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BUILDING A DIRECT BOX

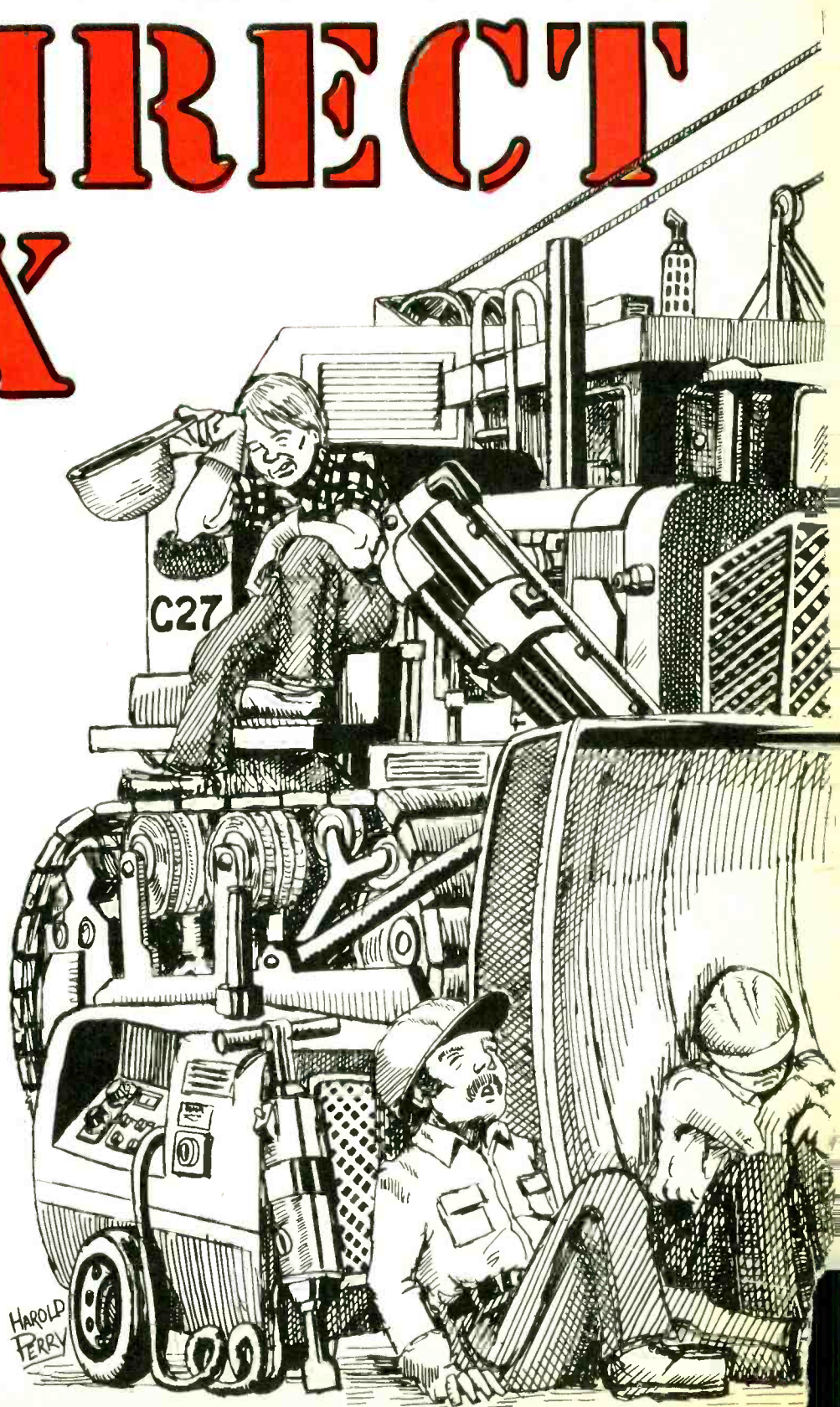
BY PETER WEISS

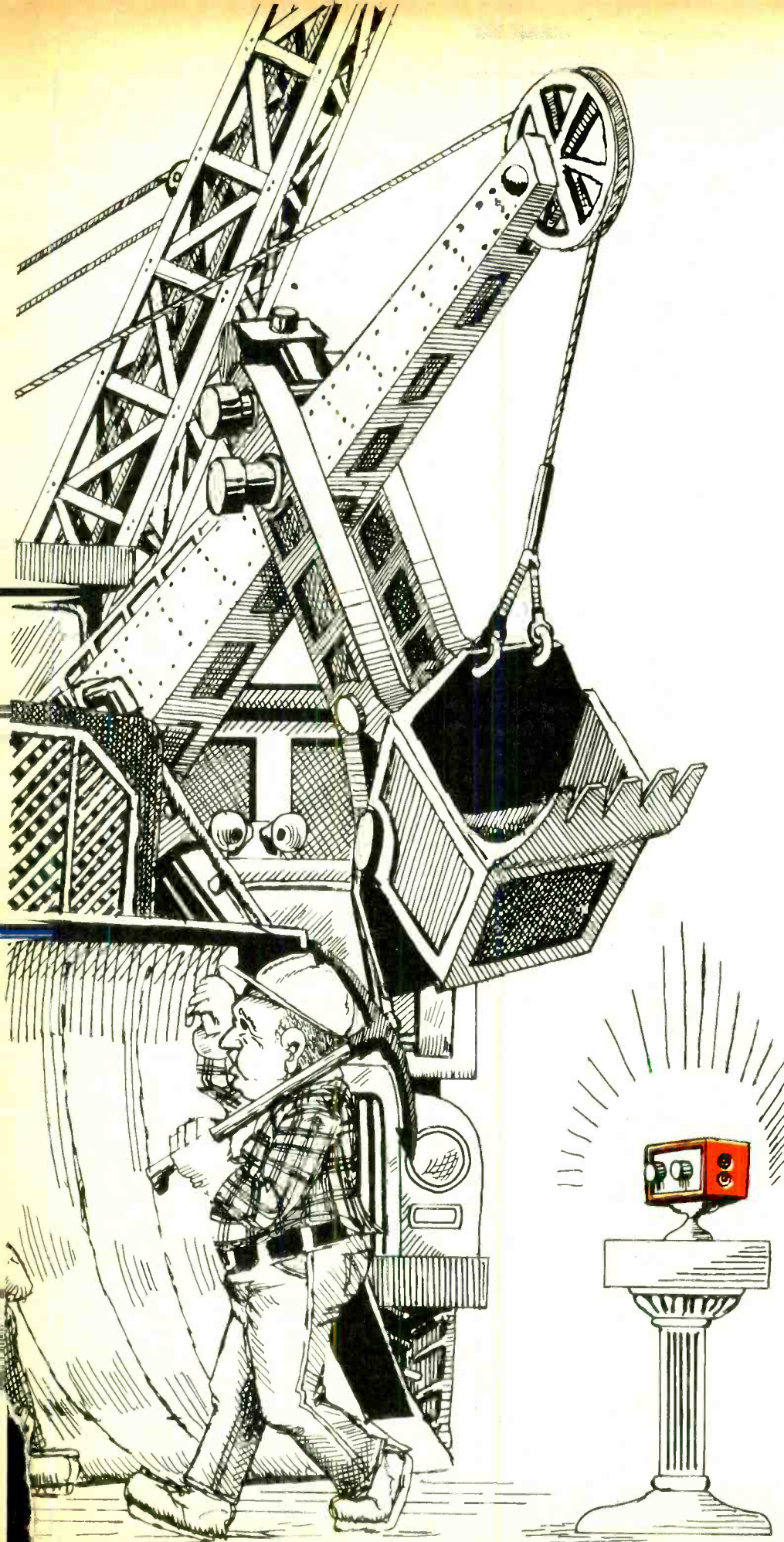
(Note: The designs of the devices in this article were derived from examples in use in several professional recording studios.)

Electrified and amplified instruments play such an important role in contemporary music recordings that special techniques for handling these instruments have evolved. Of these "techniques" (i.e., devices) the most commonly encountered is the "direct box," also known as "guitar coil" or "bridging box." We present here schematics and construction pointers for two types of this helpful device, as well as tips on applications.

General Uses

Unit 1 is designed to be used between an instrument (say, an electric guitar) and its associated amplifier. In this case, the direct box serves as a means of matching the high impedance of the guitar pick-ups (usually 15 K ohms or higher) to the low impedance of the microphone input transformer of the recording console (generally 150 ohms). In addition, the transformer provides a means of obtaining a balanced signal (3-wire) from an unbalanced source (2-wire). At the same time, the normal feed from the guitar to the guitar amp is unaffected. However, with this set-up the only control the guitarist has over the tonal quality of his instrument (as received at the con-





sole) is the application of the tone controls and pick-up switching on the guitar itself. (We are excluding fuzz tones, wah-wahs, etc. These will be discussed in the "Applications" section.) This might seem too restrictive, but such before-the-amp signals do have their uses, as we will see.

In order to allow the musician more control, Unit 2 is intended to derive its signal either from an external or auxiliary speaker jack on the guitar amp. In cases where no such jacks exist, the unit can be paralleled across the main speaker leads. Here, the transformer balances an unbalanced signal, as well as providing an impedance match by bridging the amplifier output. This unit works into a 600-ohm load, which is generally the impedance at the input to console faders or EQs. This is the point in the chain where Unit 2 is connected, as explained in the "Applications" section. With this arrangement, the musician can use all of the amp controls in addition to those on the guitar. This after-the-amp system has a somewhat wider range of applications than does Unit 1.

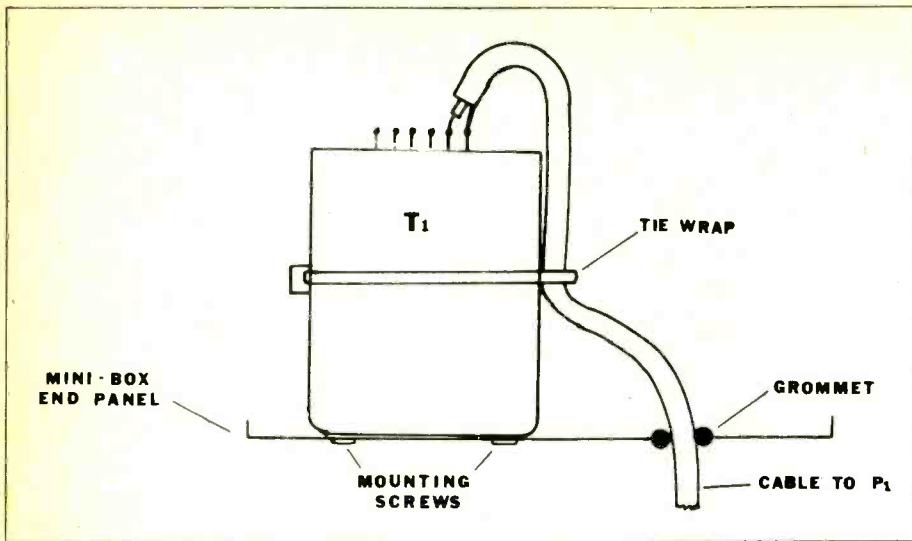
Wiring and Construction

(Please note that the parts list need not be followed item for item. Any components already on hand, even used ones, that perform pretty much the same functions as the listed items are fine.)

To the people who operate and maintain recording facilities, one of the most important aspects of any piece of equipment is its durability. Therefore, an attempt should be made to construct sturdy and long-lasting versions of Units 1 & 2. Considering the physical abuse these kinds of devices generally suffer, this advice should not be taken lightly. In situations where the same in-house instrument amplifiers are used for most recordings, it is recommended that the direct box or boxes (one each of Unit 1 & 2) be permanently fixed to the amplifier cases. This will considerably increase their longevity.

A sufficiently sturdy construction method employs two-section mini-boxes. These are available from many sources and in a variety of finishes. The size required for Units 1 & 2 is 3-in x 4-in x 5-in. This is a rather bulky size, but is necessary to accommodate the transformers while allowing sufficient maneuvering room for a soldering iron.

Wiring of the units is straightfor-



An example of a strain relief by means of a tie-wrap.

ward. However, it should be kept in mind that the input signal level to Unit 1 is not much higher than the output of a typical condenser microphone (about -40 dB). Also, the impedance of the transformer primary is 100,000 ohms. This combination is extremely susceptible to hum and noise pick-up, even on short lengths of wire. Therefore, in Unit 1, shielded cable of the type used for the male phone plug cable (one-conductor and shield) should be used between the transformer primary terminals (7 & 10) and the female phone jack. The cable for the male phone plug can be run directly to the transformer primary terminals. This cable can be provided with strain relief by means of a tie-wrap around it and the transformer shield (see drawing). The low impedance section from the transformer secondary to the 3-wire chassis connector(s) need not consist of shielded cable, but should be wired neatly with #16 stranded wire. Lengths of #12 tinned bus wire may be used from transformer terminal number 10 to the SPST switch and from the switch to the number 2 terminal(s) on the 3-wire connector(s). This same type of wire may also be used for all necessary jumpers. As noted in the schematic, the transformer terminal marked with the symbol for ground should be jumpered to terminal number 10. The bus wire to the switch is then run from this jumpered combination.

The wiring of Unit 2 is almost identical to that of Unit 1, the notable exception being the layout and numbering of the transformer terminals. Also, since signal levels here are generally much higher than in Unit 1 (about +8 dB), all internal wiring may be done

with #16 stranded wire. As before, #10 bus wire is used for the ground wiring.

Use and Applications

Both units 1 & 2 can be used for a variety of instruments. However, for purposes of keeping the discussion simple, we will consider only an electric guitar. Other applications are very similar in nature and easily derived from this one. The normal connection for Unit 1 is as follows:

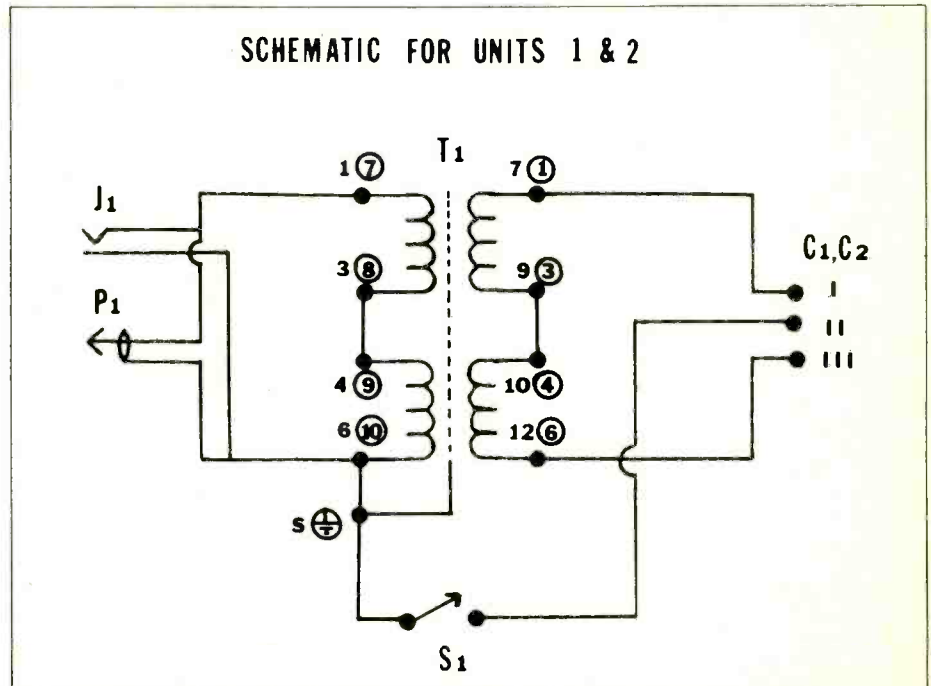
A regular guitar cord connects the guitar to the female phone jack on the

direct box, and the male phone plug is then connected to the desired input on the guitar amp. A studio microphone cable is connected to the direct box and the appropriate console microphone input. At the console, the input from the direct box is handled as if it were from a microphone.

Using a direct feed of this kind, without any other means of obtaining a signal from the instrument (i.e., placing a microphone in front of the guitar amp) is generally reserved for electric bass guitars. When recording an electric guitar, some engineers will use a direct feed *and* a microphone, recording the two signals on separate tracks (if available), to be handled separately in mixdown. This splitting of the guitar signal allows the engineer and/or producer to treat the two feeds, which already sound different from each other, with different signal-processing devices and effects.

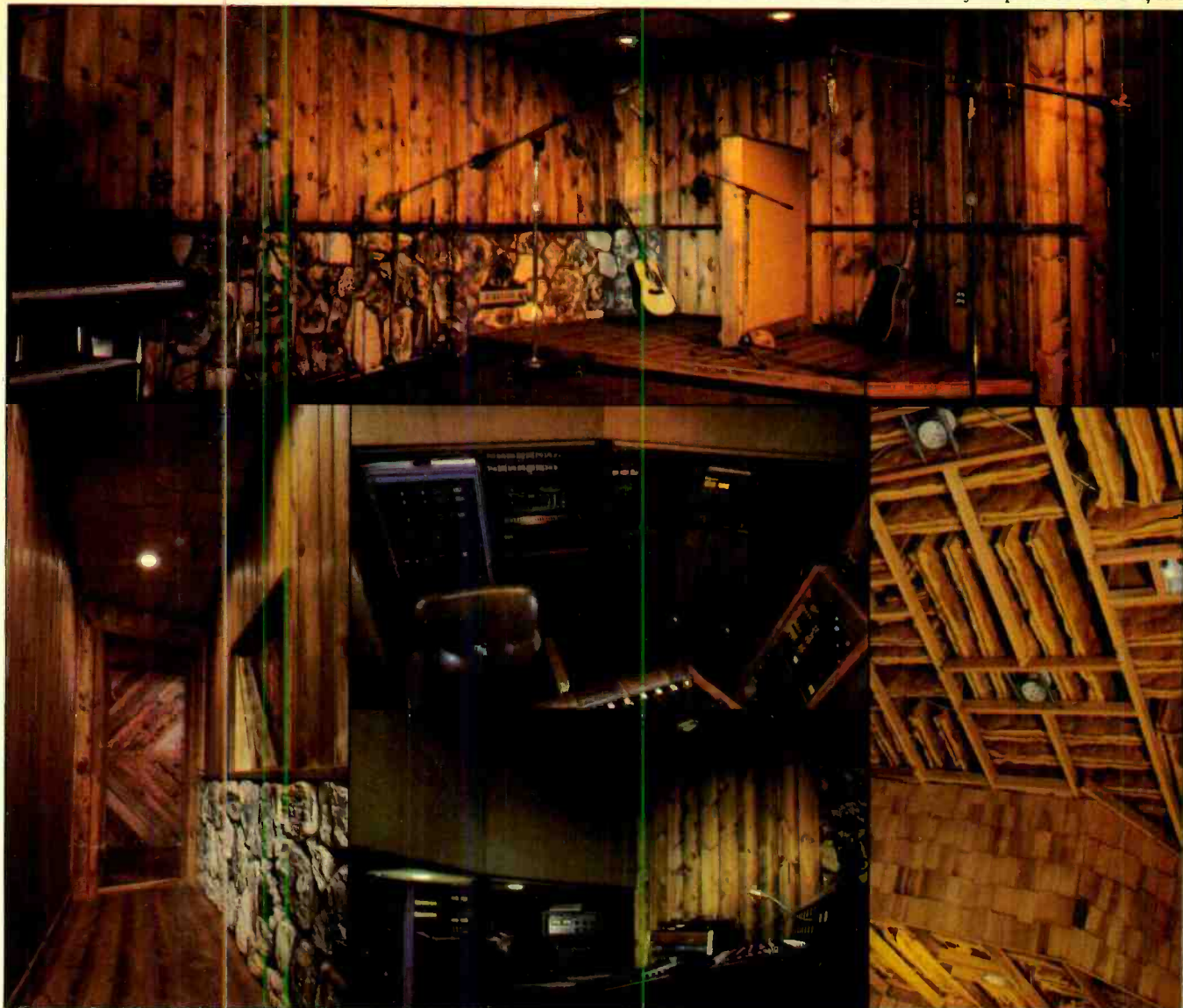
Some examples of other uses for Unit 1:

(1) Record the direct feed and microphone feed on different tracks and place them in different "locations" in the final stereo picture. This can be especially effective if the guitarist has his own special effects devices such as fuzz boxes, wah-wahs, etc. The contrast between the direct feed, which is free from these effects, and the sound of the processed, amplified guitar can



Note: Circled numbers and symbols correspond to terminals on transformer base for Unit 1. Uncircled numbers and symbols correspond to terminals on transformer base for Unit 2. Roman numerals at C₁, C₂ correspond to pin numbers on chassis connectors. If two connectors are used, they are wired in parallel. That is, like-numbered pins on the two connectors are jumped together.

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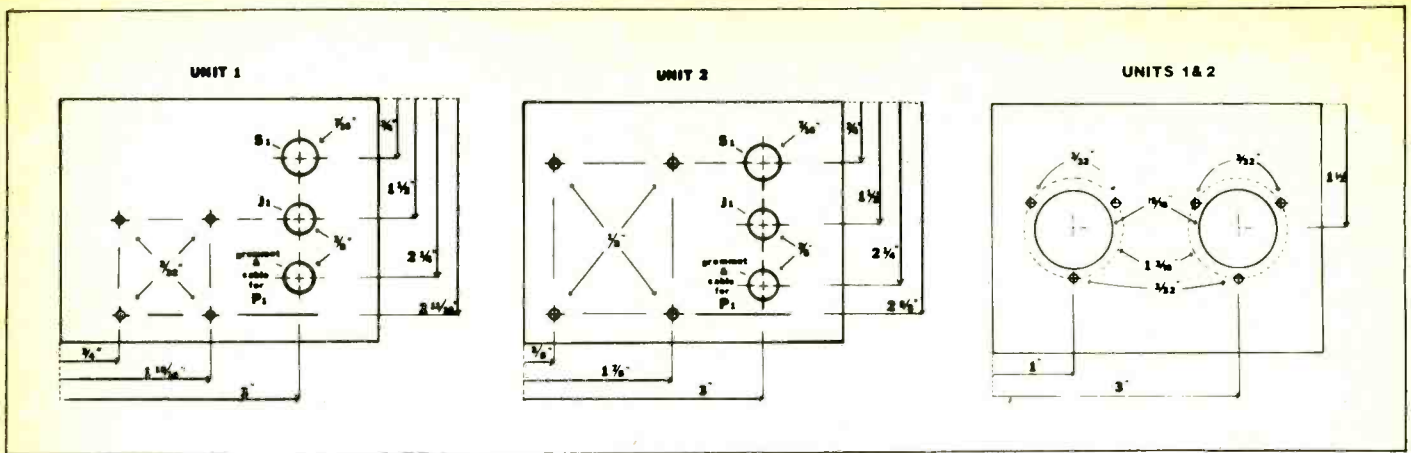
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Holes shown are to be drilled in one 3" x 4" end panel of mini-box. Opposite end of the mini-box for each unit is punched and drilled to accept the XLP-3 chassis connector.

be used to achieve a variety of tonal differences. For this set-up, the guitarist's own special effects devices should be treated as part of the guitar amp. That is, the phone plug from the direct box should be connected to the input of the first special-effects device in the chain.

(2) Record the guitar amp signal only, using the direct feed to drive an echo device. Return the echo to the guitar track.

(3) If two versions of Unit 1 are available, try the following technique, which has been used successfully to obtain a very clean sound from a 200-watt guitar amp playing at full volume. (This approach must be reserved for overdubbing or sel-synching.) An additional accessory required for this procedure is an adapter cord with the appropriate XLP or XLR connector to connect with Unit 1 on one end, and a patch cord tip on the other. In the control room, which is where the guitarist will play, connect the guitar to one direct box, and this direct box, by means of the patch-adapter, to a

microphone line coming in from the studio. By microphone line, we mean the wires running from the microphone wall connectors in the studio to the patch bay in the control room. The microphone line in this case is just being used as a long extension cable that doesn't have to go through any doors. At the studio end, connect the appropriate microphone cable to the second direct box. This direct box is then plugged into the guitar amp. A microphone is placed as desired in front of the amp, and handled in the normal manner at the console. This set-up allows the solo guitarist to be in the control-room while playing and to hear his contribution in a better perspective than would be available with headphones. Also, there are no feedback problems between guitar and amp. Of course, where feedback is part of the desired sound, this method is not suitable.

Unit 2

Applications of Unit 2 are similar in nature to those of Unit 1, except that

the contrast between the direct feed—which is now coming from the output of the guitar amp—and the feed from a microphone placed in front of the amp will not be so great. In connecting Unit 2 to an amp with an external or auxiliary speaker jack, simply connect the male phone plug to the jack and a microphone cable from the direct box to the desired microphone input. If the amplifier has no external speaker jack, proceed as follows:

With the amp turned off, disconnect the main speaker lead (which should have a phone plug on it) and connect it to the female phone jack on the direct box. Connect the male phone plug from the direct box to the speaker cabinet of the amplifier and a microphone cable from the direct box to a microphone input. With Unit 2 it is extremely important to patch around the microphone pre-amplifier associated with the chosen microphone input. Levels from Unit 2 are equivalent to line level, not microphone level. A handy accessory for Unit 2 is an adapter consisting of some sort of two-wire cable with a cable-type female phone jack on one end and two alligator clips on the other. This adapter allows the unit to be used in situations where the connection between amplifier head and speaker cabinet is not readily accessible.

As a final note, an interesting application of a pair of Unit 2s with the alligator clip adapters involves a Fender-Rhodes electric piano. The tremolo on this instrument sweeps the signal back and forth between two speakers in the same cabinet. Attaching one Unit 2 to each speaker with the clips and then recording the two signals on separate tracks will provide creatively stimulating effects.

PARTS LIST

T ₁ -	UTC Model A-27 with Model A-33 shield (for Unit 1 only).	Four -	4-40 x 3/8" pan-head machine screws (for Unit 1 only).
T ₁ -	ADC-11-4F (for Unit 2 only).	Four -	6-32 x 3/8" pan-head machine screws (for Unit 2 only).
J ₁ -	Female chassis-type phone jack	Twelve-	4-40 x 3/8" pan-head machine screws (six for each unit).
P ₁ -	Male phone plug	Twelve-	No. 4 star lock washers (six for each unit).
C ₁ -	Male XLP-3 chassis-type connector	Twelve-	4-40 Hex nuts (six for each unit).
C ₂ -	Female XLP-3 chassis-type connector (optional)	No. 16	stranded hook-up wire
S ₁ -	SPST bat-handle switch with 7/16" bushing	No. 12	tinned bus wire
One -	3" x 4" x 5" mini-box		
One -	3/16" I.D. x 3/8" O.D. rubber grommet		

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By Gil Podollnsky

Having toured or recorded with such music notables as Elton John, Frank Zappa, the Mahavishnu Orchestra and Stephane Grappelli, Jean-Luc Ponty has become the leading figure in popularizing the use of the electric violin.

Viewing himself as an electric musician, Ponty's ever-growing acceptance among the jazz-rock audience has catapulted his most recent release Enigmatic Ocean into one of the most popular jazz releases of 1977.

Jean-Luc Ponty

MR: How did you first become involved in music?

J-LP: My parents were teaching musicians. My father played the violin and my mother the piano. They each taught me how to play their respective instruments, and later my father taught me the clarinet as well for a third instrument. I grew up with the vocation, not just because my parents were musicians, but because I had it in myself to become a musician. Violin became my main instrument, although I really wanted to become a classical conductor.

I heard jazz for the first time when I was going to high school in Paris, and I really loved it. I first started playing it on the clarinet as a hobby, but then I became much more serious about it. As I grew more serious, I switched to violin because it was my main instrument and I had a much greater facility on it. Also, I could express something more original on it too, because no one was playing in a contemporary '60s type style. There were some great violinists—Stephane Grappelli and Stuffy Smith—but their styles were born much earlier. So, I left the symphony

orchestra where I was working and became a full-time jazz musician.

MR: What prompted your decision to leave?

J-LP: I left at that time because I had the opportunity to make it (a career) work. I had an album to cut, festivals and concerts to play, so I did it.

MR: What do you remember about your first venture in recording?

J-LP: I was 21 years old and knew nothing about the studio or recording. They (the record company) gave me a producer who did everything for me. I recorded the album at one of the big studios in Paris—I forget now which one it was. I only knew how to play my violin; *but*, I knew exactly what kind of sound I wanted, so I was always on the backs of the engineers, whether it was in the studio or recording for the radio. They always heard the violin in its traditional style, and I didn't want that. I wanted a "fatter" sound, so immediately I was trying to lead the ears of the engineers to get the sound I wanted.

The album was very well received for that time and got a lot of airplay, which for a jazz album is rare in

France. It came out in 1964 and won a prize (Grand Prix Du Disc, comparable to the Grammy). For the time and the type of jazz I was playing then, it was a really good album. That album established me in Europe and I played pure jazz for about the next six years, then shifted towards progressive rock. The experiences I learned from playing varied music forms presently enable me to produce my own music using everything from classical to rock.

MR: What was your next album?

J-LP: Well, I did a few albums in Paris. I played with an avant-garde jazz band and made a few records with them. Then I recorded in Germany for a label called BASF, which was MPS at the time (soon to be distributed by Capitol). What that label consisted of was two brothers who owned Saaba, a company which made radios and stereo systems in Germany. So, for their own enjoyment they would record whatever artist they liked. That's why it was great, because artists without a broad appeal could make an album. I did many records for them—two as soloist and several others as a side musician. Of all that period, *Sunday*

Walk, which was recorded in 1967, is probably the only one that stands out.

MR: How did the duet album with Stephane Grappelli come about?

J-LP: He was with a small French label at the time and they were recording him with other artists, like Duke Ellington, Gary Burton and Yehudi Menuhin; they wanted him to do one with me. I had known him for a long time. We had played together on a few French TV shows and were friends from way back. I didn't want to do the same kind of album that he was making with the others, which was basically different versions of the same songs. I wanted to do something different, something more contemporary, so I kind of let them wait. One day, a year later, I thought of some music to play with him. So, I called Paris and told them I had some music to play with Stephane; we did the sessions there in three days, including the mix.

MR: Was that standard time for you to do an album?

J-LP: For a jazz album in Europe, yes. Usually you do three days of recording and then you mix, but on this one we did two days and mixed on the third.

MR: Were you pleased with it?

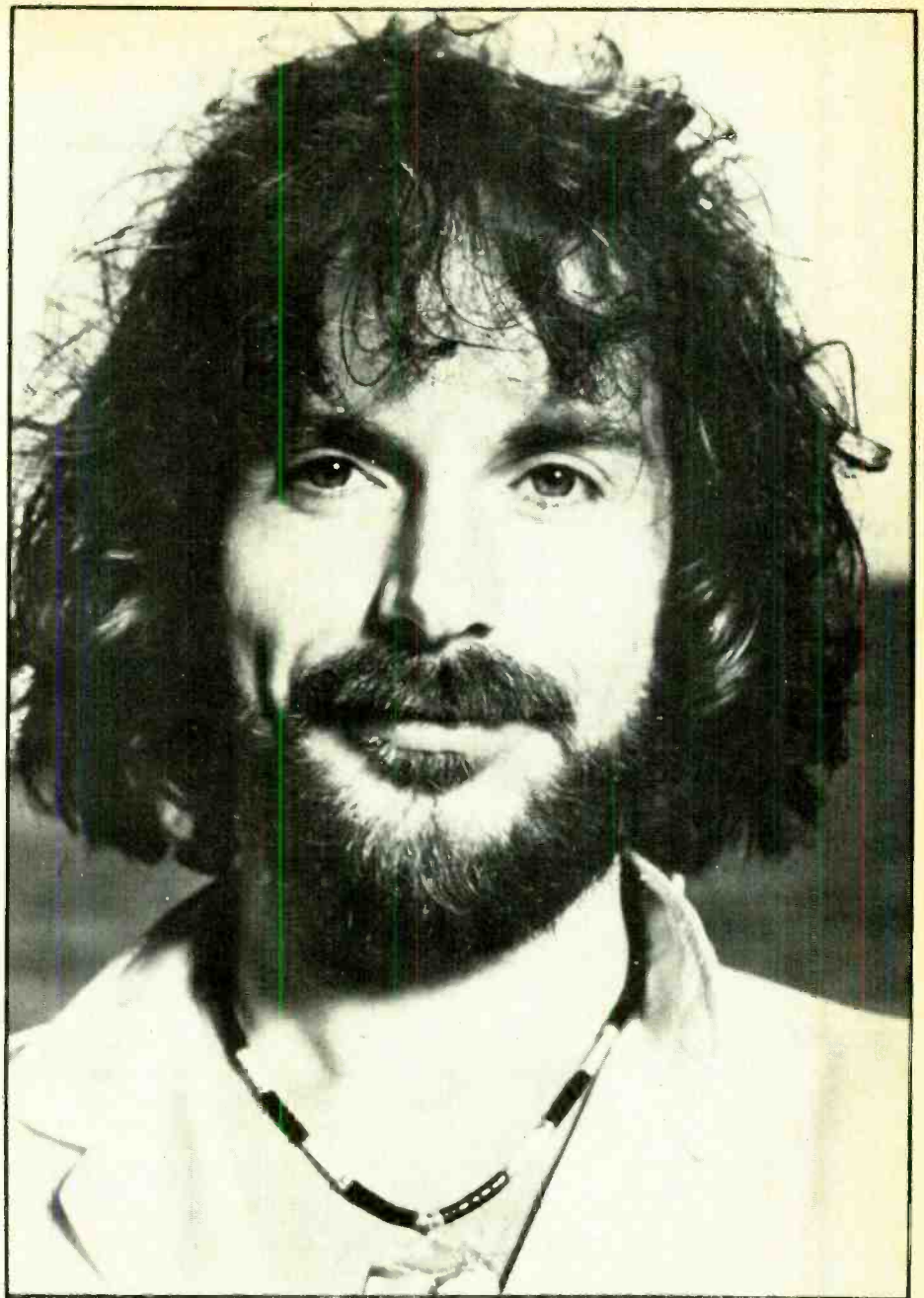
J-LP: Well, under the circumstances, it was a pretty good album, but it could have been much better if we had had a bigger budget to allow us more time. There are a few mistakes on the album, but it was extraordinary that the musicians picked up the music so fast because it was rather complex, you know. Nevertheless, it was quite interesting that Stephane played in that context for the first time. He was great because he didn't want to change anything or make it easier for himself.

MR: That was his one and only time, right?

J-LP: Right. That was ... too ... *remote* from his roots and background for him to do it again. That's why I like Stephane. Unlike so many others of his generation, or younger, he doesn't try to be hip by constantly changing to keep up with the latest style. So, he has had ups and downs because of that. By being persevering, playing the same music, people rediscover how fresh it is.

MR: Was he an influence on your playing?

J-LP: Not much of an influence because I learned to play the violin from teachers and at school. My interest in what I wanted to follow in jazz was different because it was younger. But nevertheless, Grappelli was some-



how inspiring because he has always been a great jazz violinist, and it's always inspiring to see someone that good. He was extremely encouraging, and that was very important because I didn't know whether or not what I was doing was worth doing. He really pushed me, telling me that I had something original to do on the violin and that I should do it, and that I shouldn't worry about the future. That was very, very important *and* fair from him.

MR: Had you already switched to the electric violin by that time?

J-LP: Yes, but it was not a real electric violin, but rather a regular violin with a contact mic—a De Armond—and an Ampeg Gemini I or II amp—a good tube amp. I got a good tone out of it, warm like a sax.

MR: When did you start using that set up?

J-LP: Oh, right away, 1961, as soon as I started jamming, because I couldn't compete with the volume of a jazz band. So, out of necessity I amplified my violin. I got a kick out of it, in a way, because it changed my approach. Hearing the sound in a different way changed the way I played.

When I came to California in 1969 I met John Berry of Barcus-Berry and he gave me my first, real electric violin. Then a few months after that I started plugging into electric devices like the Echoplex, wa-wa, phase shifter, etc. That was quite a transformation for me, for that's when I really became an electric violinist, an electric musician.

MR: What were you playing through tonight? [*The interview was conducted after a recent West Coast concert appearance—Ed.*]

J-LP: I have three different Barcus-Berry violins. One is a regular tuning, one is a fivestring with an added lower string for a deeper, wider range. The third is a baritone violectra. It's like a bass violin, one octave down. Each of them is plugged into different phase shifters. Different brands of shifters produce different sounds with different violins. All of them go into a Barcus-Berry mixer, but first through a Barcus-Berry preamp and from there directly into the P.A. So, one signal goes direct to the P.A. and the other to my amp on stage. I have a GMT 600 amp into which I run an MXR Digital Delay, my new toy. That's an amazing machine, really studio quality. I was using a Hohner echoplex in 1970, and I switched to the Echoplex [Guild] in 1973 which I bought in the States. I switched to the MXR because there is no distortion and the reproductive quality is just fantastic. But the thing is, it also works like a sequencer, so I can send a short phrase for rhythm or whatever and with a switch it will repeat and hold as long as I want. It's like hearing me with a few violins backing me up. There's also a pedal that changes the pitch by variation of the speed. What you hear on stage is what I use in the studio.

MR: When recording, do you go direct, mic your amps, or . . . ?

J-LP: Both. Direct and through my amp. I use two speaker cabinets with two-15s in one and four-12s in the other. When I mix, I have basically three sources to mix from as both cabinets produce different tones. I make a blend of the three, whatever sounds the best.

MR: How involved do you get in the making of your albums?

J-LP: Totally because I have a contract as a producer. Unless I can find a producer who will understand how to leave me enough freedom and yet still have enough fusion in certain decisions as a producer, like how long a piece should be, this solo is better than another, etc., and sequencing of the album, I will do it myself.

MR: When did you start producing yourself?

J-LP: Since my contract with Atlantic. No, really it began with my experience of recording that album with Grappelli. That gave me the idea that I could do it and that I was ready to do

it on my own. I had enough studio experience and had matured enough so that I could deal with my ego and not just listen to my own tracks, but to the drums, bass, etc. I also listened to the advice of those around me—friends, my wife and people who are not musicians and are outside my circle, just to see their reaction. So far, it has seemed to work.

MR: How did that session musician period of playing with Zappa, Elton John and McLaughlin evolve?

J-LP: In 1972 I was living in Paris and touring Europe with my own band, playing very avant-garde jazz like on the *Open Strings* album on BASF, and Elton John was recording *Honky Chateau* just outside of Paris in a castle that had been converted into a recording studio. He had heard of me, inquired if I was in town and would come to play on the album.

The ironic side of the story is that I'd never heard of him. I was involved in my own circle of avant-garde musicians and didn't listen to what was happening in pop music. I didn't care. A friend of mine told me that he was very talented so I went with my violin and had a great time. Although it was very pop for me compared to what I was doing at the time, I really enjoyed it a lot.

What really struck me was how professional it was from a technical point of view in terms of recording. Ken Scott was the engineer and it was very relaxing in a way because they had all the time they wanted, had all the money to rent the place for as long as necessary. Although it didn't take that long (it was done in just two weeks), we really stayed a month altogether. That was new to me, having the time to first play around and then go into the studio and seriously work, but still with an air of fun. They were doing one or two songs a day maximum, usually working at night. I was really impressed with the technical perfection. That also gave me the idea that if the same amount of technical perfection and financial backing were used on the kinds of projects I was doing, how much I could accomplish. That's what I'm doing now with Atlantic. I can spend one or two weeks in a studio to get that color of sound that I hear.

MR: Did you write your own parts on the Elton album?

J-LP: Yes, he would come with the lyrics from Bernie (Taupin) and the music and play it for everyone; then

everyone would write their own part.

MR: Did you find that you really had to tone down?

J-LP: Not yet, not as much as later.

MR: What happened next?

J-LP: Well, a year later I moved to L.A. because I wanted to change musical environments. In a way it has to do with Elton. It [the Elton John session] was really an extreme change for me, but I realized that I had enjoyed it. I wasn't enjoying as much the pure experimentation form that I was doing before. It was becoming so intellectual that it was losing emotion. So for that and other reasons—like I had already played with the best musicians in Europe—I needed new stimulation, etc. These facts led me to decide that I had to move to the States. I toured with Zappa for eight months. That was my first gig in the States.

MR: Playing with Zappa must have been strange.

J-LP: Yeah, well, you know, ah, you know [Laugh *finally* escapes], but not for the reason you think. Again it was very professional. Then I stopped playing with him and started writing and rehearsing my own music with a couple of musicians in Los Angeles. I put a demo tape together and was ready to go looking for a contract and put a band on the road, when John McLaughlin called me to say that he was restructuring a new band and would I be interested.

MR: How did you know John?

J-LP: We had met a long time ago in 1969 and had talked many times about the possibility of playing together. So, it finally happened in 1974. I thought about it for a while, was excited to play with John so I did that for a year.

MR: Did any albums come out of that union?

J-LP: Yes, two.

MR: Any with Zappa?

J-LP: Yes, but with Zappa you record stuff and one song comes out one year, two the next, etc. We were often in the studio with Zappa doing different sessions for different albums at the same time. He's recorded so many times on the road that he could release ten albums.

MR: Did you learn anything studiowise from recording with Zappa?

J-LP: [*Long pause.*] Yeah, a little I didn't really look over his shoulder to see what he was doing, but what I learned from that was that he was doing everything himself, even engineering sometimes. I realized that he knew



LIVE MUSIC

A JOURNAL PUBLISHED BY UNI-SYNE, INC., THE PROFESSIONAL PRODUCTS DIVISION OF BSR.

Deciding on a Mixer

The variety of mixing systems on the market makes it difficult to judge which is best for you. Features blend together forming a mirage of switches, controls and pots; all looking alike. Therefore, we've come up with the *sound artist's guide to mixing buys*. It will give you independence when it comes to buying a mixer. The following is an abbreviated version of the *guide*, which you can send for free of charge. We hope it serves you well and would appreciate hearing from you.

The Sound Artist's Guide to Mixing Buys

What is a sound artist? We've come to realize the existence of a new category of performer. This is the person who creates, through the use of various tools a sound that appeals to the audience; therefore the sound artist. How well the information communicates is left to the talented ears of this individual, and the manner in which these tools are utilized. The sound artist, with today's technology, has become an instrumental part of the performance.



Mixer is the Basic Tool

The basic tool of the sound artist is the mixing board; with it he can create a myriad of sounds from his fingertips. It not only has to sound good, be reliable and versatile, as well as having excellent specifications, but has to have just the right touch. For the person mixing relies upon his hands as much as he does his ears.

DESIGNED ON THE ROAD

It is for this reason that Uni-Sync, in designing the Trouper Series is extremely innovative in the choice of front panel controls. Michael V. Ragsdale, president of Uni-Sync as well as chief designer of the Trouper Series, has built, serviced and most of all, operated sound systems prior to forming Uni-Sync. The Trouper Series was designed on the road, the true proving ground of sound

reinforcement equipment, from a practical viewpoint. For example, the use of slide faders as opposed to rotary pots was an extremely important decision based on ease of operation as well as visual and tactile indication of position. Rotary pots are hard to read under the dimly lit conditions of sound reinforcement, whereas a slide pot gives instantaneous recognition.



Live or Recording

One of the most important decisions to make is where your mixer will see the most use. Is it for a "Home Studio" or to be run live. Live boards have different gain and level structures. In a studio, you are dealing with a controlled environment, but live sound is just that; live and wide open. To handle that kind of sound you need to have a mixer that has been specifically designed for that purpose. This is the Trouper Series, designed and built for the road or permanent installation for mixing live sound... it is a live music mixing system.



Inputs You Can't Grow Out Of

Next on our list of important decisions, is to determine how many and what type of inputs you need. Mixers come in various configurations, application determines the

need. The Trouper I, for example, has on each channel: low Z balanced and high Z inputs, and an in/out jack. This allows for maximum flexibility.

Now, how many inputs do you need? Most mixers come in fixed quantities; for example, six, twelve, or sixteen. Once you grow out of it, you have to buy a new board. Not so with the Trouper Series. The basic mixer is an eight input/output control module that is expandable through the addition of a ten input expander module, that simply plugs in. You never grow out of a Trouper.

Build Yourself a Custom Board

If you had the freedom or ability to build a mixing board perfectly suited for your needs, what would you put in it, how big would it be? The Trouper Series gives you this freedom at an affordable price. Our mixers are big boards in little packages, giving you the opportunity to custom design a system that is tailored for your specific needs. You build what you want, not what someone else thinks you need.



Dollars Per Input

An excellent way of determining the value of the mixing board being considered, is to divide the cost of the board by its total number of inputs. This gives you an objective analysis of the mixer, and by comparing and contrasting features per dollars, you can arrive at a decision. For instance, the mixer at \$100 per input may have

far greater features than the one at \$85, and would be a more valuable purchase.



Mono or Stereo

The Mono/Stereo issue is one of the most controversial at hand today in the retail sales of mixers. Most installations and gigs are best handled in Mono. But many groups today, want the added flexibility of a Stereo board. We are presently introducing the Trouper I Stereo, which is probably the most flexible and versatile mixer on the market for its price. At \$898 (suggested price), each channel features a house pan pot along with an echo pan pot enabling you to pan the echo to or away from the house signal. A little imagination can create some very interesting effects.

The choice for Mono or Stereo is based on budget and application. Practically speaking, Mono will satisfy most of your needs.

Send For Your Free Guide

That's the abbreviated version. If you'd like the complete guide fill out the attached coupon and send it in to us right away. You may want to get some of the other Trouper Series goodies like T-shirts or director's chairs for a comfortable place to mix from. We're looking forward to hearing from you.

Thanks,
Larry Jaffe
Marketing Manager

Dear Larry,

I'm interested in what you have to say. Why don't you send me a copy of SOUND ARTIST'S GUIDE TO MIXING BUYS. While you're at it send the goodies I've checked off.

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a lot about recording technique. I didn't know that much about studio technique in the control room, but now I do know enough to let the engineer do it in the first place. I do know how to get certain sounds, what to tell the engineer to do to get certain effects.

MR: Were you writing your own parts when you were playing with Zappa and McLaughlin?

J-LP: The only thing I did in those two bands was to do my own solos, my own improvisations. Everything else was written out by them. I learned more recording the two Mahavishnu albums with Ken Scott because I was more involved with the music in the band and we were recording every day. So when I was not playing I'd be in the control room with Ken.

MR: Up to this point, were you recording "live" or track by track?

J-LP: All the jazz recordings in Europe were done "live." They had to be to do them in three days. It's very rare that I will overdub a solo, leave a space for it and do it later. I like to capture . . . the *communication* which is important in improvisation.

Now, if someone's solo is bad, then he can do it again. Seventy-eight percent is "live," and then I will add probably keyboard parts in order to add a few colors and reinforce the orchestration. Also, we'll overdub a bass line or some guitars for the fullness of sound you get "live," which can only be obtained in a studio through the process of overdubbing.

MR: Do you record in the same studio from album to album?

J-LP: Not very much. I vary it a bit. It's always in L.A. because I like going there between tours to catch the sun. And since I have to make an album any time I'm not touring—while at the same time being the only time I can spend at home—I choose L.A. Needless to say, there are some good studios in L.A.

The first album was recorded and mixed at Paramount Studios, the second one, *Aurora*, was recorded at Cherokee and mixed at Paramount, the third was recorded at Kendun and again mixed at Paramount. I will always mix at Paramount because they have an excellent mix room. The last one again was done at Kendun . . . for most of it.

MR: Do you always use the same engineer?

J-LP: Yes, for the last four albums it's been Larry Hirsch.

MR: I noticed tonight a lot of unison and octave writing. Chick Corea told me that he was forced into writing that way due to the volume of the music when played "live." That any subtleties would be lost, and therefore he purposely limited his writing. Does any of that hold true for you?

J-LP: No, I don't think like that. It all depends upon the acoustics in a hall, at the better halls the people will hear the different counterpoints or voices. On this last album (*Enigmatic Ocean*) I had more counterpoint than I had ever had previously. There is a lot of orchestration or different movements or voicings. I just hope that people can hear all that. Obviously, if you get crazy with the volume there is no definition, but it *is* possible to control. I really write mostly in voicings.

Now that I have two guitars and keyboards, I have many lines that I play in unison with the guitar because violin and guitar complement each other, so therefore I can have like two violins together. It's stronger to play a line. Sometimes when a line goes very, very high, and fast, it would be so acrobatic that I have the guitar play the lower octave. It's another effect that's very strong, too.

MR: When you record, do you write/record knowing that you have to be able to play it "live"?

J-LP: No, but we play the same in both instances.

MR: Which of your albums stand out for you?

J-LP: The two last ones. *Imaginary Voyage*, especially for the composing—there was a special mood on that album; and *Enigmatic Ocean* I'm proud of on all aspects.

MR: Any of your recordings you'd like to have disappear?

J-LP: Yeah. *Live At Montreux '72*.

MR: After thirteen years, how do you view recording?

J-LP: Recording for me has been a process of doing a lot of recording, a good deal of it in a session approach, then getting to know myself and knowing what I hear and want. It has been very rare that I have been wrong in a decision regarding the "sound" of something. Then, the next step is getting that confidence to be able to get what you want out of an engineer.

MR: Are you interested in getting into engineering?

J-LP: No, not at all. I have enough to do with playing, composing, producing and leading a band. The violin is

such a crazy instrument that I have to practice a lot.

MR: What made you decide to add the second guitarist?

J-LP: I needed one more voice in the band because the material was getting more orchestrated. After thinking of other instruments I again chose the guitar because it blends so well with the violin. I really enjoy playing a unison line with the guitar. It's like having that (guitar) sound at the same time as my violin sound. I really enjoyed doing that with (Alan) Holdsworth on the last album because he has such a "fat" sound. That's one reason. The other is that the guitar is so versatile. What I was doing before would be to overdub a rhythm guitar behind the lead guitar or violin, but once we were on stage we couldn't do that. To blend acoustic instruments, or amplified acoustic instruments in an electric band is a very delicate procedure.

MR: In closing, what made you decide to go with Atlantic rather than with a jazz-oriented label like say, ECM?

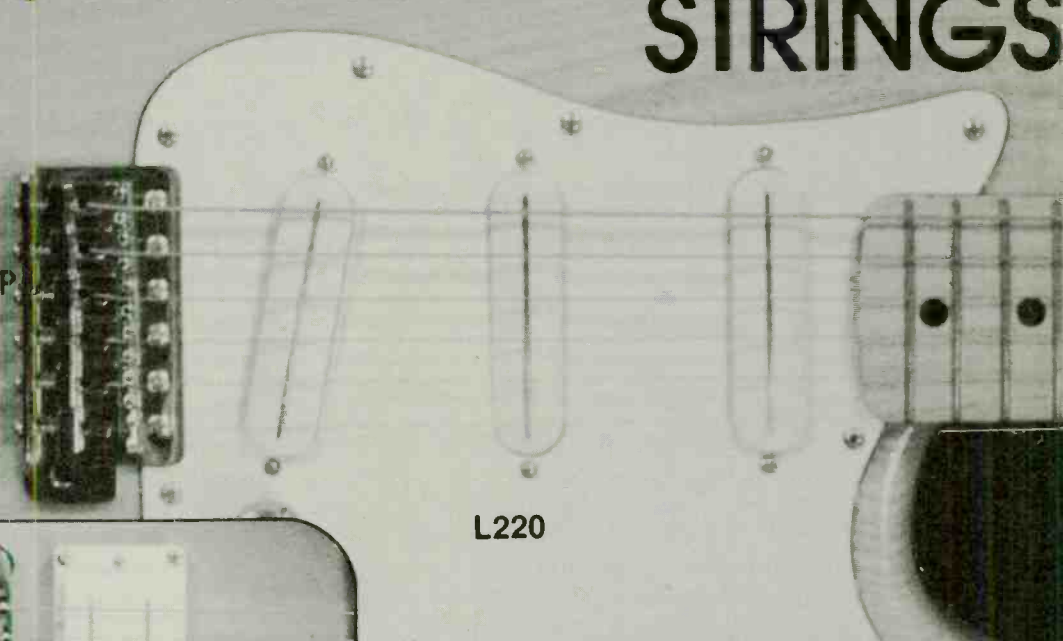
J-LP: Atlantic was the most enthusiastic, enthusiasm I could feel. I know I can go to specific people at Atlantic and talk to them about my music and know they'd be enthusiastic. I could have gone to other labels for maybe more money, but I'm not sure they would have cared about me as a person, as an artist. So, I signed with Atlantic in '75.

ECM had approached me to do a duet album with Chick Corea, but there are a lot of things about ECM that I don't like. First of all, I would enjoy doing one or two pieces as a piano duet, or with Chick Corea in particular, but not a whole album. Secondly, the image, or approach, they have as a label doesn't interest me. Basically they do duet albums. Pat Metheny opened for us on part of a tour and I listened to his album to see whether he'd be compatible. I couldn't believe how poorly the drums and bass were recorded. ECM doesn't allow any overdubs. I know I'd have no freedom as an artist and that I wouldn't be able to produce (be the producer). It's a very acoustic-oriented label with most of their artists being European. Jack DeJohnette is the only black musician they have. There is no overlapping of musical styles; it's all avant-garde jazz, and I've already done that.

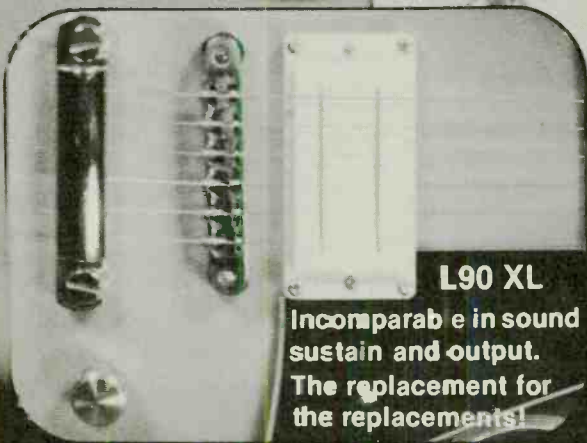


Bill Lawrence PICKUPS & STRINGS

PERFECTION IN
DESIGN &
CRAFTSMANSHIP

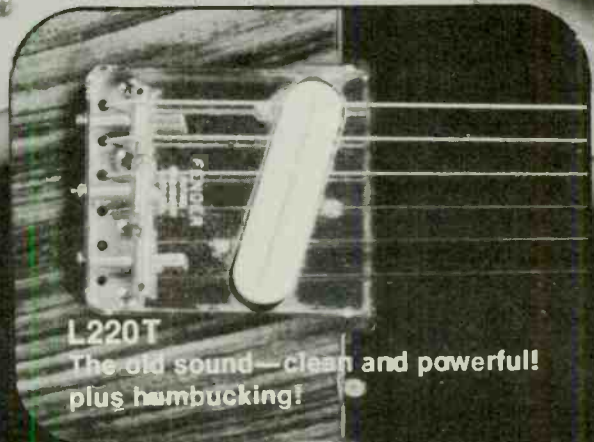


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Ambient Sound

BY LEN FELDMAN

Understanding Tape Bias

If you own a professional tape deck, you have probably adjusted its bias on a number of occasions without really thinking too much about just what those adjustments really do. Every time a knowledgeable recording engineer cracks open a new batch of tape (even if it's the same basic type of tape from the same manufacturer as the last batch), he or she will take the trouble to re-bias a tape machine. The usual procedure is to feed in a mid-frequency tone to the line inputs and to monitor recorded output while adjusting bias current. Normally, you adjust bias current, increasing it until the recorded output reaches a peak value and then *add* a bit more current until you see a dip in output of around a ½ dB or so. Using this method, you might be led to believe that about the only thing that bias affects is recorded output, or, to put it another way, tape sensitivity. Actually, changing the bias current applied to the recording head of any tape deck has a profound effect on just about every performance parameter of that deck. Specifically, variations in bias cause variations in harmonic distortion levels, frequency response, signal-to-noise ratio *and* tape sensitivity. Furthermore, high-frequency signal-to-noise ratios vary somewhat differently with changing bias current than do low-frequency signal-to-noise characteristics and so do high- and low-frequency tape sensitivity.

It's pretty clear from all this that errors in optimization of bias can have a very profound effect on your recordings.

If you are the owner of a home tape deck (either open-reel or cassette) you are probably wondering how you can possibly get optimum recording results from a variety of tapes if, indeed, your machine has two, or perhaps three fixed bias settings. The truth is that you can't. Despite the fact that owner's manuals of such machines list a variety of brands and types of tapes that can be used with the machine and suggest corresponding bias-switch settings for each, those fixed bias settings are, at best, only a rough approximation of correct average bias current for the tapes listed. Normally, the manufacturer of every tape deck trims the bias current value (by means of internal potentiometers to which you do not have access) to match the characteristics of a given tape. Sometimes, the manu-

facturer will be willing to disclose which tape was used, but more often than not, consumer tape deck manufacturers are reluctant to name one brand for fear of offending other tape software manufacturers.

Actually, that shouldn't worry you too much. Even if you were able to find out what tape was used as a standard for calibrating the bias of your machine, there's no guarantee that the adjustment made at the factory would necessarily meet your own recording objectives. Since bias does affect almost every performance parameter of a tape deck, the manufacturer of the deck may be striving for one degree of excellence while you may prefer another. Here's an example.

If you are a high-frequency freak (and like nothing better than to be able to prove that your deck has a record/play response extending to beyond 20 kHz) it is a fairly simple matter to "back off" a bit on the bias current in order to achieve "flat" or even a rising amplitude response as you approach the high frequency end of the spectrum. In doing so, however, you will introduce higher levels of distortion as well as poorer signal-to-noise ratios. If you underbias significantly in an attempt to extend high-frequency response you will also decrease output sensitivity of a given recording tape at both the low and high frequency ends of the audio spectrum.

Now, suppose you are willing to give up high-frequency response—even to a degree beyond that proposed by the tape deck or tape manufacturer and decide to over-bias the machine considerably. You might suppose that the aforementioned degradations in performance would be eliminated. Well, you'd be wrong, because overbiasing of a tape deck begins to degrade performance as well. Besides causing "bias erasure" of high frequencies, as already suggested, overbiasing also results in reduced tape sensitivity to both low and high frequency recorded signals as well as a reduction in signal-to-noise ratios at low and high frequencies. So, there is really a relatively narrow range of suitable bias current for each type of tape when used with a given type of tape deck.

Lack of Standardization

If you do own an open-reel tape deck which allows for user vernier adjustment of bias, you can overcome

the vagaries of different tapes and their bias requirements by simply adjusting bias each time you use a new batch of tape. But what about home-type open-reel decks and cassette decks which offer a limited selection of bias current values?

If you've been following the history of tape recording you may already realize that, particularly in the case of cassette tape, a great deal of chaos exists in this area of bias requirements. Originally, when Philips company of the Netherlands invented the cassette format, bias settings for the compact-cassette system were standardized based upon a German Standard (DIN) reference tape (iron oxide). The tape used was BASF type QP 12 LH, batch C521 V, according to a recent paper circulated by that company explaining their new tape formulations. Today's European iron oxide bias setting is based upon a different DIN reference tape, BASF's TP 18 LH Super, batch 308S (high density iron oxide tape) which requires a somewhat lower bias setting.

Meanwhile, a number of tape manufacturers both here and in Japan have developed different tape formulations which require higher bias. These tapes are not to be confused with Chromium Dioxide formulations which require the highest bias current of all. They are still basically ferric oxide tapes, but their main difference compared with the old DIN standard tapes from Europe is in the coercive force of the magnetic coating. This difference in coercive force requires a higher bias current for optimum compromising of the parameters named earlier (distortion, frequency response and signal-to-noise ratios). Because many of these tapes originate in Japan, it is no surprise to find that Japanese manufacturers of cassette deck equipment tend to adjust their machines for the higher bias settings. It would be one thing if all of these Japanese tapes required the same (or nearly the same) bias, but the fact is that the most popular of them may require a bias spread of as much as 5 dB. Testing the performance of such tapes on a fixed-bias machine is pretty much of a hit and miss proposition.

CrO₂ and CrO₂ Substitutes

When the Dupont Company developed Chromium Dioxide tape some years ago, that type of tape gave promise of better performance in just about every respect, compared with then available ferric oxide formulations. The Chrome formulations did, however, require even higher bias currents than did the high-output, low-noise ferric tapes from Japan and elsewhere. It was at that point that makers of cassette tape decks began incorporating dual-position bias switches, since the difference between ferric bias requirements and chrome bias was so great that no "compromise" value could be arrived at which would yield reasonably acceptable results from both types of tapes. After the initial flurry of excitement regarding chrome tapes, word began to spread (no one knows exactly who started it) that CrO₂ tape, despite its other

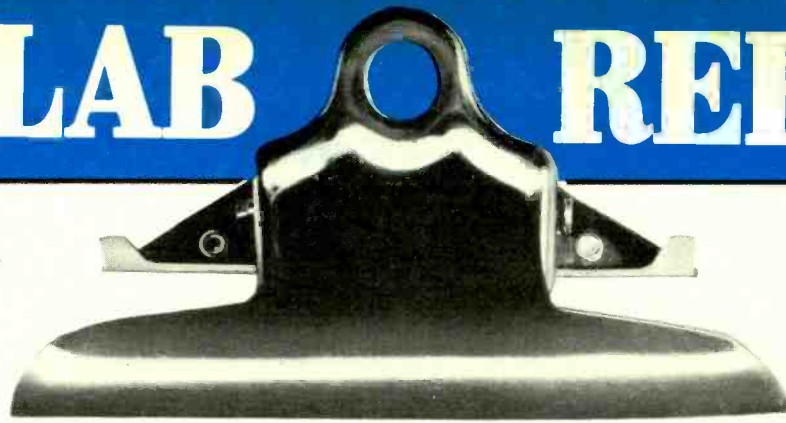
virtues, caused more rapid head wear than did the ferric oxide coatings. Careful studies have since shown that the "wear scare" was unjustified, but in the interim, many Far Eastern manufacturers set about producing a variety of cobalt-doped ferric oxide chromium-substitute formulations which were intended to offer "the best of both worlds." These cobalt-doped formulations also required ultra-high bias current and users were and are told to use the "CrO₂" bias settings on their cassette decks when employing one of these substitute-for-chrome tapes. The interesting aspect of this development is the fact that while true CrO₂ tape falls within very close bias requirement tolerances regardless of whose brand it happens to be, the same is *not* true of the cobalt-doped CrO₂ substitutes. For example, optimum bias for TDK-SA tape falls just a bit lower than the standard for true CrO₂ tape. Given only two switch settings on most machines, however, the user has no choice but to operate these tapes with the bias switch set for CrO₂.

Why No Standards?

If you have followed this discussion up to this point you may well be wondering why the industry has not come up with a set of standards for biasing tapes, or why all tapes of all manufacturers don't require identical bias current. The truth is that many tape makers guard their processes and formulations quite carefully and do not wish to exchange technology with their competitors—a condition that would be necessary if true standards were to be established in this area. While standards are fairly easy to establish for purely electronic devices, tape combines chemical, magnetic, electronic and mechanical technologies all of which interact and govern ultimate performance of the tape.

If you read last month's test report of the Technics model RS-9900US cassette deck you may remember how that company solved the problem of varying bias requirements. Not only did they offer three separate bias settings, but they also provided vernier adjustments of several dB about each fixed setting and a means whereby each variety of tape could be adjusted for best performance by the user. Why don't more manufacturers solve the problem this way? Simply because manufacturers of lower-cost cassette decks cannot afford the extra luxury of continuous bias adjustment, while other makers of higher priced units feel that such extra adjustments put in the hands of inexperienced audiophiles might lead to more misadjustments than to correct and optimum bias settings. They may have a point. But, for the moment, that means that if you do own a deck which sports only two or three switched bias positions your only recourse is to determine which tape the manufacturer used in setting up each of those three fixed bias current values and which performance parameters were favored in those initial calibrations. Getting the manufacturer of your deck to disclose such inside information may not be easy, so good luck!





NORMAN EISENBERG AND LEN FELDMAN

Audioarts Engineering Model 1500 Tuneable Notch Filter



General Description: A notch filter, in general, is a filter circuit designed to sharply reduce or attenuate a specific frequency band with relatively steep cutoff at both ends of that band. Its characteristic graphic representation resembles a deep ravine between an otherwise level stretch of terrain. The model 1500 from Audioarts Engineering is a tuneable notch filter that may be thought of as a device which is to a conventional notch filter what a parametric equalizer is to a conventional graphic equalizer. That is to say, while the Q or "steepness" of the notch has been held to a fixed 1/6-octave (in keeping with the device's main purpose as a feedback suppressor in P.A. or sound-reinforcement work), there actually are five filter sections provided, and each has a continuously tuneable "center" frequency, and each also has a variable notch depth control which can vary the amount of attenuation from zero to -16 dB.

A look at the unit's front panel can explain much of its workings. The five pairs of filter controls are color-coded for quick reference. Each frequency knob is tuneable from 52 Hz to 730 Hz "as is," or in multiples of ten by means of an auxiliary "10X" button associated with each tuning knob, so that the full tuning range is from 52 Hz to 7.3 kHz. Next to each tuning knob is its respective depth control, marked from 0 to -16 dB. A final knob, at the right end, handles overall gain. There also are two buttons for power, and for the "in" or "out" condition of the device. LED indicators are used to show when the "10X" option is used, and there also is an LED to indicate overload.

The rear of the model 1500 contains a ¼-inch phone jack for balanced input (20 K ohms), and a ¼-inch phone jack for unbalanced output. The unit's power cord is fitted with a three-prong (grounding) plug. The 1500 fits standard rack-mounts and will take up one normal rack space, being only 1¾ inches high.

Suggested applications of the model 1500 include sound-reinforcement and stage-monitoring where speaker-microphone proximity might cause feedback; general applications in selective noise and hum rejection, such as in a recording studio and for "live" P.A. work. Attenuation of such annoyances as A.C. hum, electric instrument noise, etc., are among the notch filter's uses.

Test Results: In MR's tests, the published specs for the Model 1500 were generally verified or exceeded. Especially noteworthy was its superbly low distortion (well below the level specified), and its very linear frequency response (wider by at least an octave than that specified). These two characteristics, combined with an excellent S/N ratio, become very important in a device of this type since they assure that, other than the deliberate filtering introduced by the operator, the unit will contribute nothing of its own to degrade the sound.

The 'scope photo, made in our lab, in Fig. 1 shows the action of a single notch filter tuned to about 1 kHz. In this photo, each vertical division on the face of the 'scope tube has been calibrated to equal 2 dB, and *not* the 10-dB span commonly used in other report photos,

so that the unit's response could be examined in even greater detail.

In our next test, we adjusted the center frequencies of two of the available notch controls to 125 Hz and to approximately 5 kHz, and set each depth control for maximum. The results are shown in the 'scope photo of Fig. 2. Again, the scale is 2 dB per vertical box.

Finally, we arbitrarily set all five notch controls for varying degrees of notching at five different frequencies. Fig. 3 shows the response at the device's output when frequencies were swept from 20 Hz to 20 kHz. Despite the proximity of adjacent notches, it should be noted that outside of the band-spread of each filter, the response is attenuated by no more than 1 dB. This indicates almost no undesirable interaction between the separate, but closely spaced, filters in this particular pattern of filtering action.

Our conclusions are that the model 1500 not only will do its intended job superbly, but it will not "muddy up" the sound of any sound-reinforcement system

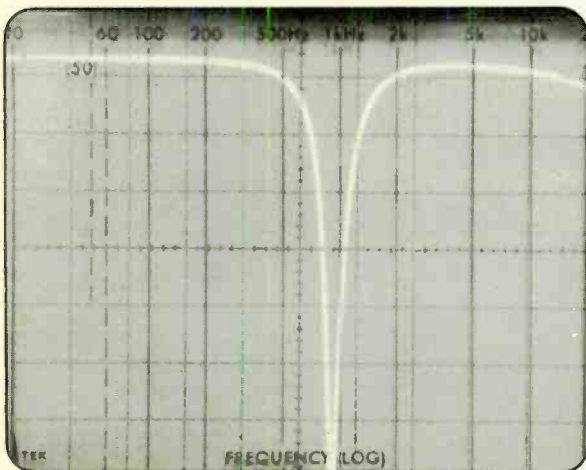


Fig. 1: Audioarts 1500: Notch set for 1 kHz and maximum dip. Vertical scale is 2 dB per division.

since its own response and distortion characteristics (see the "Vital Statistics" table) are far better than those found in most P.A. installations.

General Info: Dimensions are 19 inches wide; 9 inches deep; 1¾ inches high. Black metal case; front panel black with colored knobs and very legible white markings. Price: "under \$340." Owner's instructions, minimal but adequate.

Individual Comment by L.F.: About the only things I expect from a tuneable notch filter are that it not introduce distortion into the signal path, have flat frequency response (exclusive of any notches introduced), have adequate depth and number of available notches and be easy to use in the field. The Audioarts Engineering Model 1500 meets every one of those requirements and then some, so you are not going to hear any criticism from me simply for the sake of criticism.

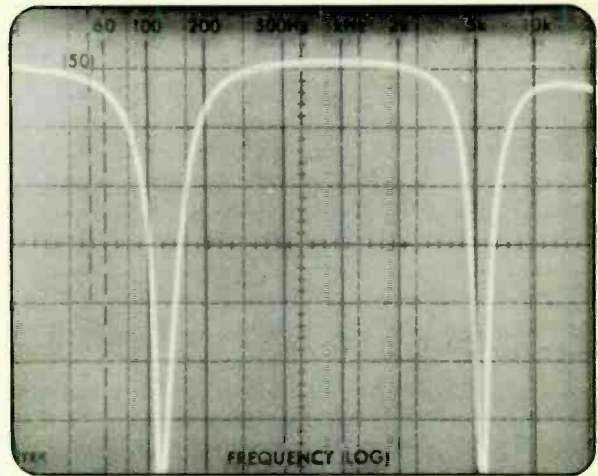


Fig. 2: Audioarts 1500: In this frequency sweep, notches have been adjusted to attenuate center frequencies of 125 Hz and 5 kHz.

The unit is supplied with the Q of the notches fixed at 1/6-octave. Removal of such a narrow band of frequencies for the purpose of removing feedback (and thereby permitting much greater levels of sound-reinforcement before the howls and squeals begin) really is effective and the "removal" proves to be quite inaudible as far as reproduction quality and apparent overall frequency response are concerned; and so while Audioarts Engineering states in its literature that other bandwidths of notching are available, it seems to me that the 1/6-octave choice is an optimum one.

Our lab tests confirm the general excellence of this device and, while my own experience with P.A. systems has not been extensive, I have attended enough sound-reinforced events where attempts to increase gain have resulted in a deafening, nerve-racking howl and squeal. In my book, any device that can alleviate that problem as easily as does the model 1500 gets my vote of approval.

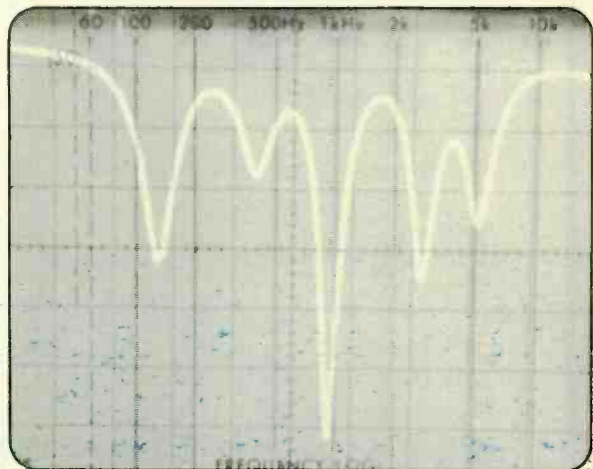


Fig. 3: Audioarts 1500: Five separate notches can be set up at desired frequencies and for varying degrees of attenuation, as required.

Individual Comment by N.E.: It should be pointed out that the model 1500 enables five different noise-peaks to be tuned out, which not only permits higher sound levels but also contributes to clarity of

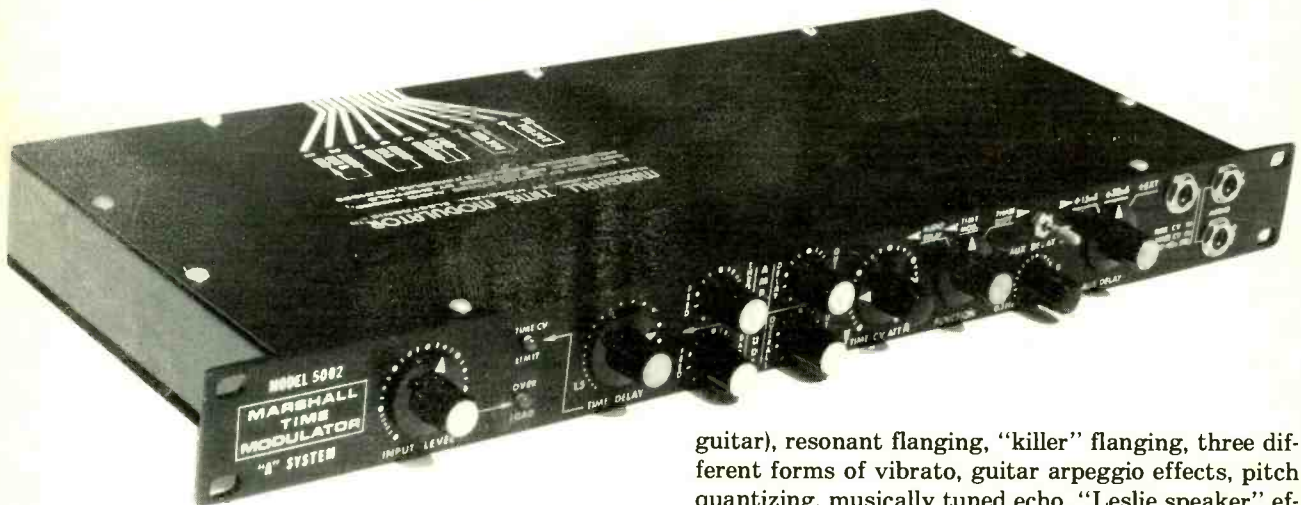
sound by reducing or eliminating pesky sonic disturbances that often mask the overall "message." Also to the device's credit are its compactness, extremely light weight, rugged construction and quiet high-performance circuitry.

AUDIOARTS ENGINEERING MODEL 1500 TUNEABLE NOTCH FILTER: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Gain	+ 6 dB maximum	+ 5.5 dB
Input impedance	20 K ohm, balanced	confirmed
Notch range	52 Hz to 7.3 kHz	50 Hz to 7.5 kHz
Notch bandwidth	1/6 octave	confirmed
Frequency response	± 0.5 dB, 20 Hz to 20 kHz	± 0.5 dB, 16 Hz to 40 kHz
Signal-to-noise	105 dB	100 dB re: 0 dB input
Harmonic distortion	0.07%	0.003% at 1 kHz 0.007% at 20 Hz 0.020% at 20 kHz (all at + 10 dB input)
Maximum input	+ 20 dB balanced	confirmed
Maximum output	+ 20 dB into 600 ohms (unbalanced)	+ 22 dB
Terminations	¼ -inch phone RTS	confirmed
Power requirements	117 VAC, 10 watts	8 watts

CIRCLE 23 ON READER SERVICE CARD

Marshall Model 5002 Time Modulator



General Description: The Marshall 5002 "Time Modulator" is an extraordinarily versatile and complex signal processor. Essentially an analog delay line for professional use, it is voltage-controlled and time-sweepable; its controls provide for an enormous variety of special effects that normally might require many more separate units.

By setting the controls on the front panel of the 5002 the operator can achieve effects setups that would be similar to those obtained from patching together various separate devices. Among these are: vibrato for electric guitar, positive flanging, "cardboard tube" echo, double-tracking for voice, triple tracking (set for

guitar), resonant flanging, "killer" flanging, three different forms of vibrato, guitar arpeggio effects, pitch quantizing, musically tuned echo, "Leslie speaker" effects, and even an effect that sounds like a talking computer (not unlike the sounds that R2D2 made famous in *Star Wars*). Since all controls are continuously variable, some experimentation is called for which can produce variations and permutations of these effects.

The device is entirely analog, so that quantizing noise—often associated with digital delay units—is nonexistent. Delay time is a function of the control voltage, so that delay can be changed noiselessly even while the unit is in use. The voltage-controlled sweep-range offers more than 5½ octaves of range which corresponds to a 55:1 delta-T without having to change any taps. All summed functions, such as flanging, echo

and resonant effects, are mixed inside a complete dbx loop (encode and decode). It is this loop, among other things, that provides the unit with flange-notch depths well in excess of 80 dB.

All operating controls, as well as input and output connectors, are on the front panel. The full range of controls is too complicated to describe in the usual manner, but they are shown on the accompanying block diagram of the unit in their relative positions in the overall circuitry. This diagram, plus the internal photo we took of the device can convey some idea of the complexity of the circuitry employed.

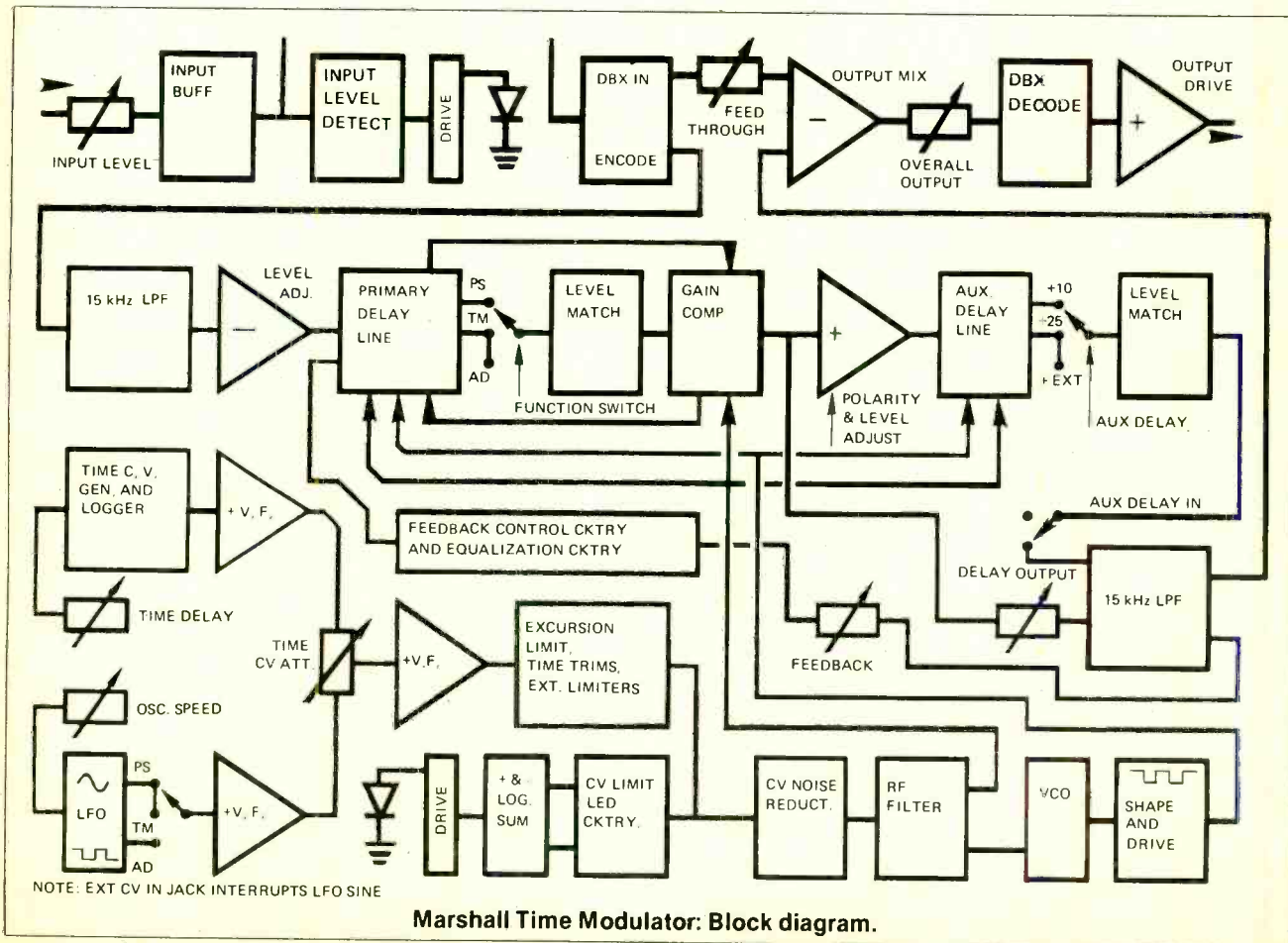
The Marshall device operates on a bipolar voltage power supply, requiring inputs of positive and negative low voltage (19 to 24 volts DC) which are supplied by an external unit that should be purchased with the main unit. The terminals for this voltage, plus grounding terminals, and additional audio in and out terminals (that are paralleled to the front panel jacks) are all located on the rear panel.

Test Results: In addition to unprecedented versatility the Marshall model 5002 is an excellent-performing device, and in our tests it either met or exceeded its published specifications without exception. Its very versatility, of course, lends some complexity to its operation, but the owner's manual is quite thorough and it contains, in addition to detailed explanations, il-

lustrations of the front panel showing various control settings for obtaining various effects. In our necessarily limited use-tests of the device we created enough musical effects to demonstrate to our satisfaction its high order of excellence. Some of these effects were virtually "beyond belief." The double-tracking and triple-tracking capability of the 5002, as well as its degree of flanging and phasing, just have to be heard to be appreciated. We also were impressed with the general electronic superiority of this instrument such as its incredible dynamic range and super-quiet operation. This last virtue is of course related to their decision to keep all AC power voltages out of the unit, which accounts for the external power supply.

General Info: Dimensions are 17 inches wide; 1.75 inches high; 7 inches deep. (May be rack mounted.) Price is \$1495; power supply about \$30 extra.

Individual Comment by L.F.: As MR readers probably know by now, I am fairly skeptical about "electronic" music processing devices. My skepticism arises from having tested a variety of reverb, delay, and even digital signal processing units that are supposed to create unusual musical effects (either in the recording studio or when used by a performer in real time), but which invariably end up adding noise, hum

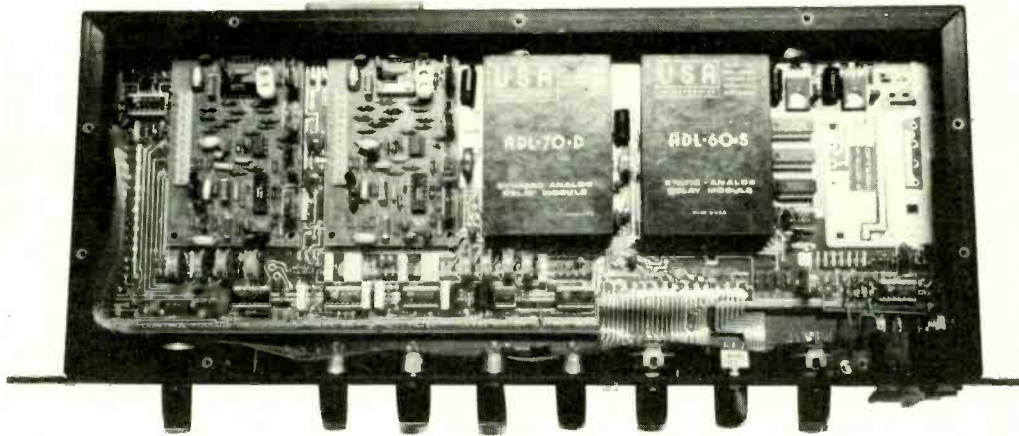


and a variety of unrelated sonic "glitches" to the final performance. Well, my experience with the Marshall Time Modulator has changed that attitude. Not only does it have an incredible dynamic range and an inaudible noise level, but it can create effects that normally require six or more separate "black boxes," a "rats nest" of cabling and three engineers to manipulate controls. In view of this, the price of \$1495 may prove a bargain.

In case you're wondering why the device does not have a built-in power supply I can tell you (after talking with Steve St. Croix, who designed it) that they

who runs a console for "live" performances, I can only urge you to listen to the Marshall Time Modulator wherever you can (and that may not be easy until the company catches up on its orders). If you have had any experience with other delay-type products, you will instantly recognize the superiority of design inherent in this unit. If this is your first experience with special-effects signal processors, you may fall in love with the model 5002 for its own sake.

Individual Comment by N.E.: In "putting it all together" in one incredibly versatile and superbly per-



Marshall Time Modulator: Internal view.

simply did not want to give up the few dB of S/N ratio that would have been lost—mostly through induced hum rather than actual random noise—if they had tried to cram the power transformer and its associated parts into the amazingly compact unit itself. Since the model 5002 does run super-quiet, I fully agree with their decision.

Actually it is hard or impossible to describe in words what this device can do in terms of aural effects. If you are a performer, a recording engineer or a sound-man

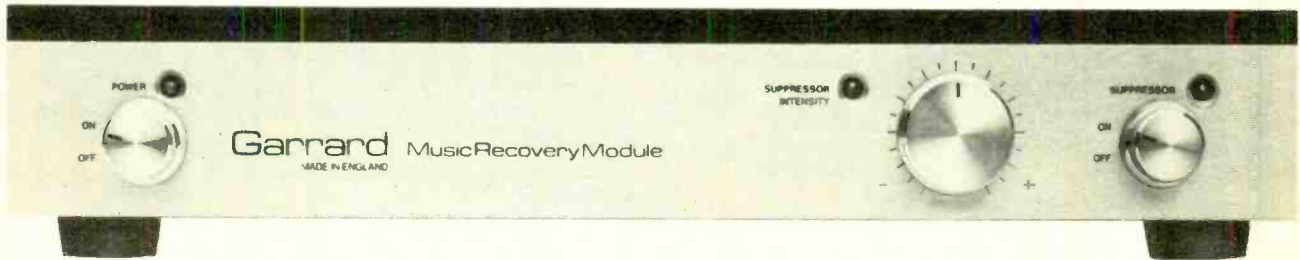
forming unit, Marshall has come up with a product of prime interest to the practicing sound technician. Its applications in recording, performing, etc., are fairly obvious. I could also suggest its possible interest to the non-pro but creative home sound buff since the device can be interfaced with already-recorded sources to shape and modify them for dubbing onto tape. In this sense, the model 5002 spans an awesome applications gamut from a serious and splendid professional tool to a marvelous "adult toy."

MARSHALL MODEL 5002 TIME MODULATOR: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Max time before overdrive	50 milliseconds	confirmed
Frequency response	30 Hz to 15 kHz	20 Hz to 16 kHz
Input impedance	30 K ohms, balanced	confirmed
Output impedance	1 ohm (drives 600 ohms)	confirmed
Nominal input level	+ 4 dBm	reference
Output drive	+ 18 dBm	+ 20 dBm
Doppler/vibrato range	exceeds 4 octaves	confirmed
Flange notch cancel depth	80 dB	86 dB
Dynamic range @ mean average delay	90 dB	95 dB
Control voltage input impedance	.100 K ohms	confirmed
Control voltage range	± 10 V	confirmed
Gain, for each parameter	above unity, variable	confirmed
Power requirements	Bipolar, ± 24 VDC	confirmed

CIRCLE 24 ON READER SERVICE CARD

Garrard MRM-101 Music Recovery Module



General Description: "MRM"—which stands for "music recovery module"—designates a rather unusual audio product, actually an RIAA-equalized stereo phono preamp combined with a disc "pop-and-click" eliminator. The device is intended for hookup to the signal cables from a turntable (using a standard magnetic phono pickup) for its input, while the output of the MRM-101 may be fed into a suitable "high-level" input on a normal amplifier (the "aux" jacks will do on most units). The preamp-equalizing function is for disc playback only; the device is not suited for other types of signals.

The pop-and-click suppressor in the MRM-101 is a "scratch-detection" circuit designed to recognize the waveform of a scratch and distinguish it from musical peaks. Both audio channels of the device are individually delayed by a few milliseconds without limiting the audio frequency range of the signal path. During this time delay, the scratch-detection circuit "decides" to remove the scratch. A special network isolates the signal for enough time to enable the scratch noise to pass out of the channel delay lines, after which the signal paths to the output terminals are restored. The duration of the signal interruption is too short to be detected by the listener, and so only the reduction or elimination of the noise itself is noted.

The MRM-101 sports three front-panel controls and their associated indicators. One handles power off/on. Another adjusts the device's sensitivity, or the threshold at which it goes into action. In normal use, at correct settings, the lamp associated with this control will come on intermittently. The third control may be used to switch the suppressor section in or out of the sound path. Signal jacks and power cord are at the rear. The jacks are standard hi-fi pin jacks for magnetic phono in, and for high-level out.

Test Results: The action of the noise suppressor lends itself to evaluation in terms of listening, to be sure, but in addition to extensive listening tests with scratched discs, we attempted to create a test signal that would closely approximate what the MRM-101 "sees" when a scratch on a record is encountered. We succeeded in our "creation" only partially, but enough

to illustrate and document the action of the suppressor circuitry. Figs. 1 and 2 show this. In Fig. 1, the upper trace is an input signal consisting of periodic step-step-functions (square wave, single cycle). With the suppressor turned off, the output appears as shown in the lower trace of Fig. 1—with quite a horrible, if altered, step function coming through.

Next, the suppressor feature was turned on, and the device carefully adjusted. With the same input signal applied as before (see Fig. 2), the output—though still showing some feed-through of the pulse—does look considerably better. Without doubt, had we been able to more nearly duplicate a true scratch waveform, the pictured results certainly would have been even more impressive.

In any event, we are satisfied that the MRM-101 does its intended job effectively. We did find, however, that it is important to set up the suppressor control very carefully, and that different control positions are required for different degrees of record scratch. Final setting of this control can be done only by careful listening, and by switching back and forth between the

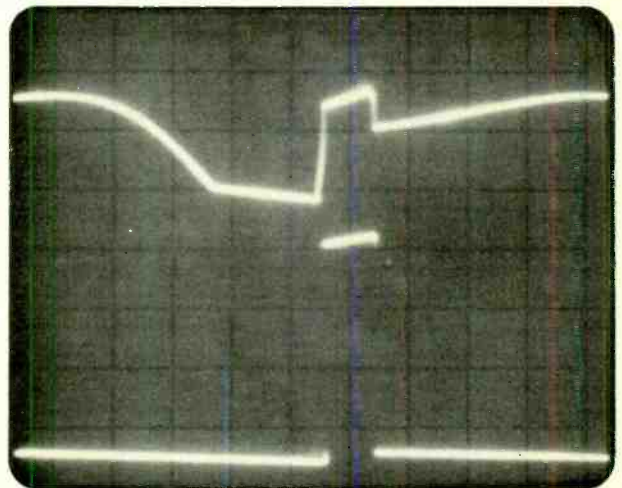


Fig. 1: Garrard MRM-101: Test signal designed to approximate record scratch (upper trace) comes through loud and clear with suppressor feature turned off (lower trace).

bypassed and suppressed modes if the user wants to be sure not to sacrifice musical content or fidelity in return for pop-and-click reduction. We measured some 33 mV as an input signal for overloading the MRM-101, so the highest-output cartridges might not be the best types to use in a system employing this device. As a straight phono preamp, by the way, the MRM-101 functions excellently, with good RIAA EQ, dynamic range, low distortion, and both channels balanced to within 0.75 dB at mid-band.

General Info: Dimensions are 14 $\frac{1}{8}$ inches wide; 8 inches high; 11 $\frac{1}{4}$ inches deep. Weight is 8.6 pounds. Suggested retail price is \$200.

Individual Comment by L.F.: The only other device I have tested that removes clicks and pops from phono discs that have been scratched or otherwise damaged is the SAE model 5000. The Garrard MRM-101, of course, differs from the SAE device in that it is a total preamp-equalizer whose output must be connected directly into the high-level ("auxiliary") inputs of a preamp, integrated amp or receiver. This approach offers advantages and disadvantages. On the plus side, interface between a turntable/cartridge system and the phono inputs can be optimized by correct cable lengths and placement of the MRM-101. I have long felt that the place for a disc preamp-equalizer is near, or even inside, the turntable housing itself, so that cable capacitance can be carefully controlled for optimum pickup cartridge response (rather than be determined by how far away the rest of the electronics is with respect to the record player). Though I am certain that this was not the primary objective of Garrard in designing this product, the benefits of their having done it the way they have still exist.

On the negative side, though—since the unit is only connected into the phono signal path (unlike the SAE unit which is interposed in the signal chain via the tape out/tape in jacks)—its very effective impulse-noise

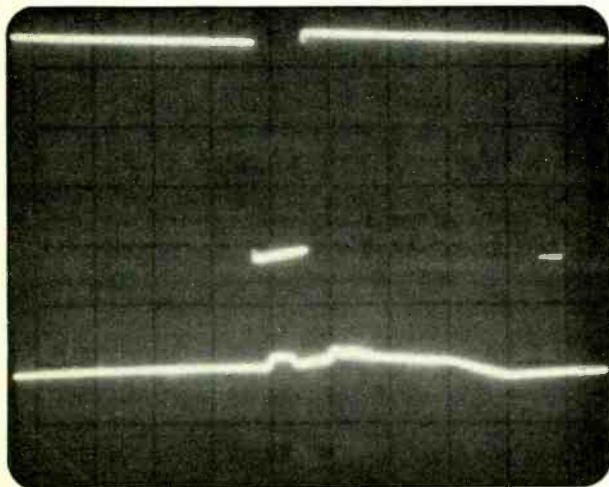
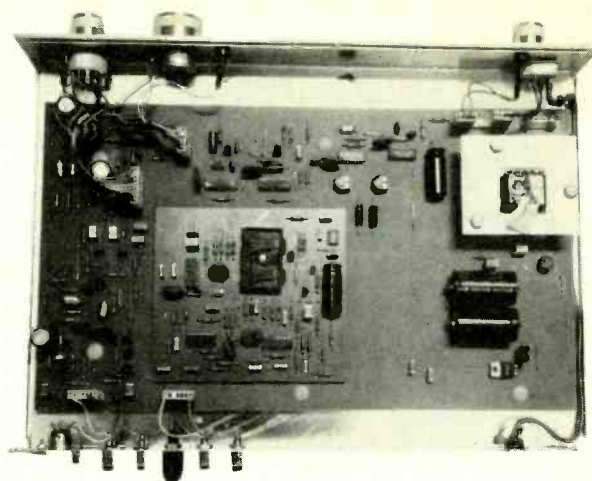


Fig. 2: Garrard MRM-101: With suppressor circuit on, output (lower trace) shows only slight evidence of "click/pop" present in input signal (upper trace).



Garrard MRM-101: Internal view.

reduction can be applied only to disc playback and not, for example, to cleaning up the pops and ticks sometimes heard from records broadcast by FM stations. Too, there is the matter of equipment redundancy which will exist if you already own preamp-EQ circuitry in an existing preamp-control unit, integrated amplifier or receiver (as most of us do). That's a relatively minor matter, however, especially if you also own a fair number of records that have been scratched or nicked. I spent considerable time listening to the way the MRM-101 was able to reproduce music from damaged discs. To be sure, not every form of scratch disappeared entirely. The device does a much more remarkable job with heavy scratches (the kind that come when a heavy-handed operator inadvertently lets the arm and stylus slide across a disc) than it does with minor ticks and abrasions, although the latter are reduced significantly. The owner of a large collection of damaged records probably will not find the price of the MRM-101 out of line. At about \$6 a disc (assuming you could replace all of your damaged ones, and that some had not gone out of print), the cost of the MRM-101 is about equal to that of 33 $\frac{1}{3}$ new discs. I wonder if there's a hidden meaning in that numerical coincidence

Individual Comment by N.E.: As far as can be determined, the MRM-101 does a good job at removing record-surface noise as does the SAE device. It also includes a phono preamp that is more than competent, judging it by today's normal hi-fi standards. This dual function, of course, does raise the question of equipment redundancy for those who already own standard phono preamp facilities, whether as a separate preamp-control unit or built into an integrated amplifier or receiver. On the other hand, this consideration would not concern those who plan to use the MRM-101 in a disc-playback-only setup. The cleaned-up signal from the MRM-101 could be fed, for instance, into a line amp or a mixer and thus suggests applications for disco, P.A. and dubbing applications.

In a somewhat more long-range perspective, a device such as the MRM-101 also raises a question that has

long intrigued sound buffs—and that is, whether the “preamp-control” unit as such really is needed in a playback system. With a unit like the MRM-101, you have your phono EQ and preamplification, plus record-noise reduction. Tape recorders typically have their own electronics. Tuners similarly provide their own de-emphasis and the first stage of audio amplification. All of these signals can be fed directly into a high-level in-

put or even directly into a power amp. All that is needed, really, is a switch (or patch cords) to select what you want to hear, and a level adjustment. (Tone controls as such have never appealed to the serious audiophile and, in any event, their functions have been superceded among aficionados by graphic equalizers.) So, once again, the old question is raised: Is the “preamp” really necessary?

GARRARD MRM-101 MUSIC RECOVERY MODULE: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Input level range	0.7 to 2.0 mV/cm/sec cartridges	33 mV input for overload
Input impedance	47 K ohms	confirmed
Frequency response (incl RIAA)	± 1.5 dB, 20 Hz to 20 kHz	± 0.8 dB, 30 Hz to 15 kHz
Dynamic range (incl suppressor)	80 dB	76 dB
Nominal output	300 mV	reference voltage
THD at nominal output, 1 kHz	0.01%, direct 0.10%, via suppressor	0.003% 0.085%
Channel balance, 1 kHz	better than 2 dB	0.75 dB
Output for 1% THD, 1 kHz	8 volts, direct 2.5 volts, via suppressor	10 volts 2 volts
Output impedance	3.3 K ohms	confirmed
Rated load impedance	10 K ohms	reference
Power requirements	120 VAC, 50/60 Hz, 7 VA	5 VA

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CIRCLE 93 ON READER SERVICE CARD

Community Light & Sound PBL

By Jim Ford and Brian Roth

The CL&S PBL is a mid-sized, two-way speaker system [described by the manufacturer as a "full-range cabinet"] and it would generally be used for: (a) stage monitors for a large rock band or, (b) the main speaker system for a small club band. There are many other possible uses, but they will be discussed later.

Before continuing, we want to make several comments concerning the stage monitor systems that are being used by the smallest "garage band" to the largest "super group." Stage monitors are usually divided into two styles: floor monitors and side-fill monitors. A complete stage monitor system with all the necessary equipment would probably include mic snakes, mic splitters, monitor mixer, equalizers, notch filters, limiters, electronic crossovers, power amplifiers and the speakers themselves. A typical set up for a large touring band would include from four to ten floor monitors and from two to four side-fill monitors. The average monitor mixing console will provide two to four independent monitor mixes, but for the larger groups as many as eight separate mixes may be required. Most floor monitors are bi-amped and most side-fill monitors are four-way. As for power amplifiers, we recently saw a stage monitor system that had fourteen 600-watt amplifiers on just one side of the stage.

Obviously, we have been describing a very large, complicated, and expensive monitor system, and we are sure the average reader is now saying: "That is larger than the entire main sound system for our band." Well, you're right! There are only a few of these large monitor systems, and they are on the road touring with the "super groups." The question is why have monitor systems grown to their present size, complexity and importance to the performers.

Today, it is common knowledge that a concert sound reinforcement company bidding on a contract to do the sound for a major group better have a dynamite monitor system. Many sound companies say that if the stage monitor system sounds great for the performers then they [the performers] don't care what the audience hears. (We sometimes wonder if anybody cares what the audience hears.) One sound company told us that they had won many rental contracts simply because their stage monitor system was larger and louder than their competitors. Definitely this part of sound reinforcement is very important, so let's try to simplify, decide what the purpose is, and finally, state some simple concepts.

The general purposes of stage monitors are to provide to each performer a sound mix that is: accurate (at the sound volume desired by the performer); suffi-

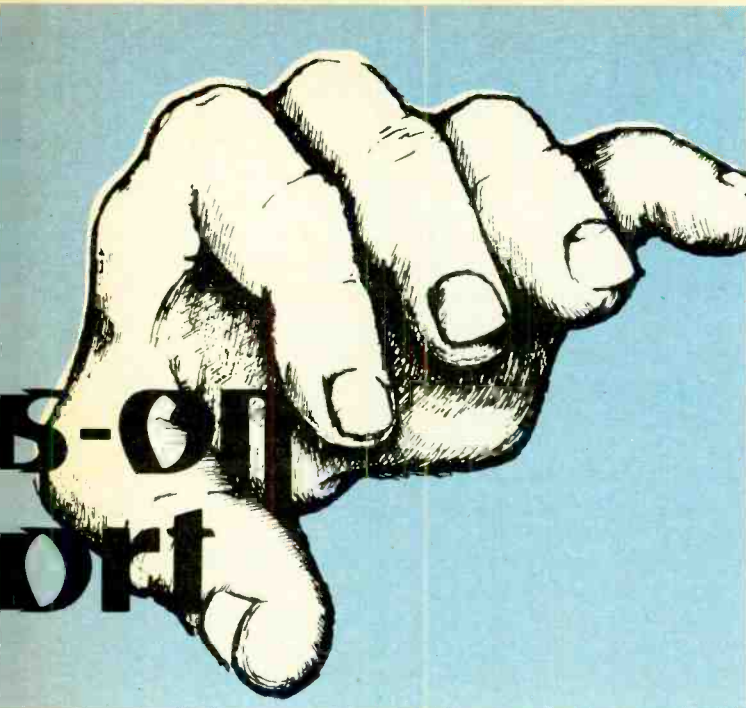


cient to help the band with tempo and timing; sufficient to help the band stay on pitch with vocals and instruments; sufficient to help the band blend and balance their vocals and instruments; and sufficient in quality to excite the performers so that they will be able to present a fabulous musical experience for the audience.

In simple terms, they must be loud, sound great and help with pitch, tempo and blend.

Let's divide the problems into categories: Quality and Response, Coverage, Volume Before Feedback, Loudness.

Quality and Response: Basically, the higher the quality of speaker components and speaker enclosure the better the unit will sound. A single full-range speaker is the easiest way to start, but usually quality will be defined in terms of lows and highs. A two-way system helps the problem, and a good choice would be a 12-inch or 15-inch bass woofer and a high-frequency horn or horn/lens combination. Further improvement will result from adding a tweeter. If all of these components can be balanced into a full-range linear system the sound should be good. Several floor monitor manufacturers have built units that have a frequency response that only goes as low and high as necessary to reproduce vocals, and we feel that this is a good approach. This type of response may be the best under actual on-stage use, but in an A-B comparison test a customer tends to choose the monitor that is more full range because it sounds better (all other things being equal). Due to the fact that low frequencies are more directional than high frequencies, the overall bass level across the stage increases as the number of monitors used is increased. One observation has been that a single monitor that seemed to be a little deficient on bass actually performed well on stage when there were three or four units being used simultaneously.



Coverage: There are two areas of thought concerning the coverage area and pattern of monitors. One idea is that the monitor should have a reasonably wide angle of coverage so that the performer can move around and so that several performers can use one monitor.

The second idea is to make the monitor directional so that a certain area for the performer will be very controlled, accurate and loud. The directional pattern of the bass section is very difficult to control and about the best that can be done is to use multiple speakers to form some type of a column or array that exhibits the coverage pattern that is desired. Usually this is only done in the side-fill monitors, and the floor monitors most often used are composed of one 12-inch or 15-inch woofer or two 12-inch or 15-inch woofers.

The high end is a different matter and the designer can use a cone speaker, a horn/driver combination or a horn/lens/driver combination. The high frequencies are going to be directional by nature, and using a horn will definitely put the highs where you aim them. If a wider pattern is desired, use an acoustical lens. We feel that a floor monitor should have smooth coverage through a pattern of 90° in the horizontal and vertical (approximately). For side-fill monitors a vertical angle of 40° would do fine. Also, we feel that floor monitors using lens/horn combinations do a better job than monitors using horns only.

Volume Before Feedback: This is indeed a most complicated item. The performers are always asking for higher volumes from the monitors and their happiness seems to depend on whether they think the monitors are loud enough. There are several "techniques" for attempting to solve this problem:

a) Use a graphic equalizer to pull down undesirable feedback frequencies.

b) Use a notch filter set to pull down undesirable feedback frequencies.

c) Use highly directional microphones.

d) Use highly directional monitors.

e) Use differential microphones.

f) Eliminate as many mics as possible and use direct boxes.

The major problem, however, is due to the complicated positioning and use of the components that make the monitor system work (or not work). First, because the monitors are usually closer than ten feet, the performer and mic are mostly receiving direct sound from the monitor. Any peaks in the frequency response will be a potential feedback point. Any lobing in the directional pattern of the monitor will cause the feedback threshold (and frequency) to change as the mic is moved through the area. Secondly, the rear of the microphone is pointed at monitor. Of course we use directional microphones that are not as sensitive to sound at the rear of the mic and this is a great help. But most directional mics show lobing of their pattern and frequency response at the rear of the mic. Once again this leads to an unpredictable feedback threshold. A third problem is due to the performer (who needs them?). Microphones are designed and tested without any obstacles near them, but for rock and roll they are used with some hairy face wearing a hat and sun glasses almost swallowing the windscreen. This is another reason why the feedback frequencies and threshold unpredictably shift. (*Note: We would be very interested if one of the large manufacturers like JBL, Shure, Electro-Voice, etc., would do some testing on the interactions of a floor monitor-microphone-performer combination and give us some definitive results and information.*) Our recommendations on this subject are: build or purchase the very best speakers you can—excellent speakers will help reduce feedback; equalize only as a last resort—don't buy cheap speakers and try to solve your problems with an equalizer (do not use excessive equalization—more than ± 6 dB—unless you are very experienced, over-equalized systems usually sound worse and have a good potential for "blowing up" speakers); use high quality microphones.

Volume: After testing numerous floor monitors we found that the sound levels required to reproduce a screaming rock and roll vocalist with minimum of added distortion was enormous. Reasonably high-efficiency speakers are required, and relatively high amplifier power is needed. If equalization is introduced, even higher power is necessary to achieve the desired sound levels. Bi-amped monitors produce good results, but also add to expense and complicate the set up of equipment. Our recommendations here are to use high-efficiency speaker components, and amplifier power of about 200 watts per monitor.

Review of PBL

General Description: The Community Light &

Sound PBL is a mid-sized two-way speaker system. The bass section is a bass-reflex design using a single 15-inch woofer with the highlight of the design being an exponential horn-shaped port. The port opening is approximately fifty square inches and the volume is about four cubic feet.

The high-frequency section is a straight exponential horn molded into the cabinet. The unit may be ordered to accept 1-inch, 1.4-inch and 2-inch high-frequency drivers. An optional acoustic lens that widens the horizontal coverage of the horn is available.

A pair of casters is mounted on the bottom rear of the enclosure and a spring-loaded handle is mounted on the top rear. Next to the handle are a pair of dual banana connectors for input to the speakers. An optional transport cover is offered that is held down by two thumb screws, and it covers the entire front of the speaker unit. A 16-gauge expanded steel grill cover protects the bass woofer from curious fingers or feet. The total weight is 47 pounds excluding the speakers and accessories. With speakers and accessories the weight will probably be about 90 pounds.

Community says their unit will operate and accept a variety of woofers and drivers built by different manufacturers. They offer the unit without speakers or with several speakers that they recommend. The unit may be bi-amped or used with one of two passive crossovers supplied by Community. One is an 800 Hz and the other is 1,500 Hz. They are designed to work with an 8-ohm woofer and a 16-ohm high-frequency driver.

Up to now all of this sounds great, but the big feature is in the type and style of construction used for the enclosure. Hand laminated fiberglass reinforced polyester resin is used for the front and back. The fiberglass has 1/2-inch balsa sandwich core panels and the interior of the boxes has additional bracing. The back is molded in one piece in order to lower the possibility of air leaks. Due to the style of construction the back and sides are rounded, which, according to Community, makes for a more rigid enclosure which in turn reduces diaphragmatic resonances and cancellations. The result of this construction should make the unit more linear and a little more efficient. Finally, the fiberglass is very rugged and weatherproof.

Field Test: We were quite lucky. Several days after we received the test speakers we had a couple of large sound rentals to do so we took them along. Our basic use for the test units was as side-fill monitors, but we also compared them to our standard floor monitor. The music was basic rock and roll. So this was a good test. Our monitor system is bi-amped so there was no problem with the hook up. In the test they worked very well, even appearing to be a little more efficient than the "super tuned" floor monitors. The bass was very tight and sounded good.

Later in the week we set up a disco test and compared the PBL with some of our favorites. Here again the impressive part was the bass end. It was very solid, and a close listening test made us feel that the

unit is one of reasonably low distortion. We could not detect any doubling of the bass frequencies. For disco we did feel that something would have to be done about the ultra high end. In this application we used the lens and were very pleased with the sound. This combination is ideal for small club bands or discos where the listeners are relatively close to the speakers.

After all the moving around, we did have a minor complaint. The casters and the single handle on the rear do a good job but not a great job. The cabinet is low to the ground, so it takes some work to get the box tilted back on the casters. When you have it tilted back you have to bend over to push it around and this position is not too comfortable. We would prefer the addition of a pair of spring-loaded handles, one on each side of the unit.

Another small complaint is the spacing of the dual banana jacks. It is possible to insert the banana plugs from the amplifier in various positions. Several of the positions, however, don't accomplish the object of making the speakers work. We like banana plugs, but we wish there was some simple connector that could be recessed into the cabinet that would allow only one insertion position. This connector should be a locking type, multiple pin, very rugged and capable of carrying 5 to 10 amps of current. (Now, if anybody knows who makes a connector like that, please write us! It should also be economical and available at local stores)

Lab Test: For the lab test we rolled the PBL into our 50 ft. square anechoic chamber and fired up our \$100,000 worth of acoustical test gear. Ha! Ha!

As for a documented acoustical test, we will have to give you the information Community gave us. In most cases we don't totally believe specifications given to us by manufacturers about their speakers; but in this case we feel the information is pretty accurate.

Conclusions: The PBL is a fine unit. It is well built and is based on good engineering. We think the outstanding point (besides that it sounds good) is the fiberglass construction. The fact that it is nearly indestructible makes it a perfect portable speaker system. The non-resonate quality of the construction coupled with the built-in-bass port and high-frequency horn make this two-way speaker system hard to beat in terms of performance and ease of use. The accessories are good and the acoustic lens option even makes the unit more flexible.

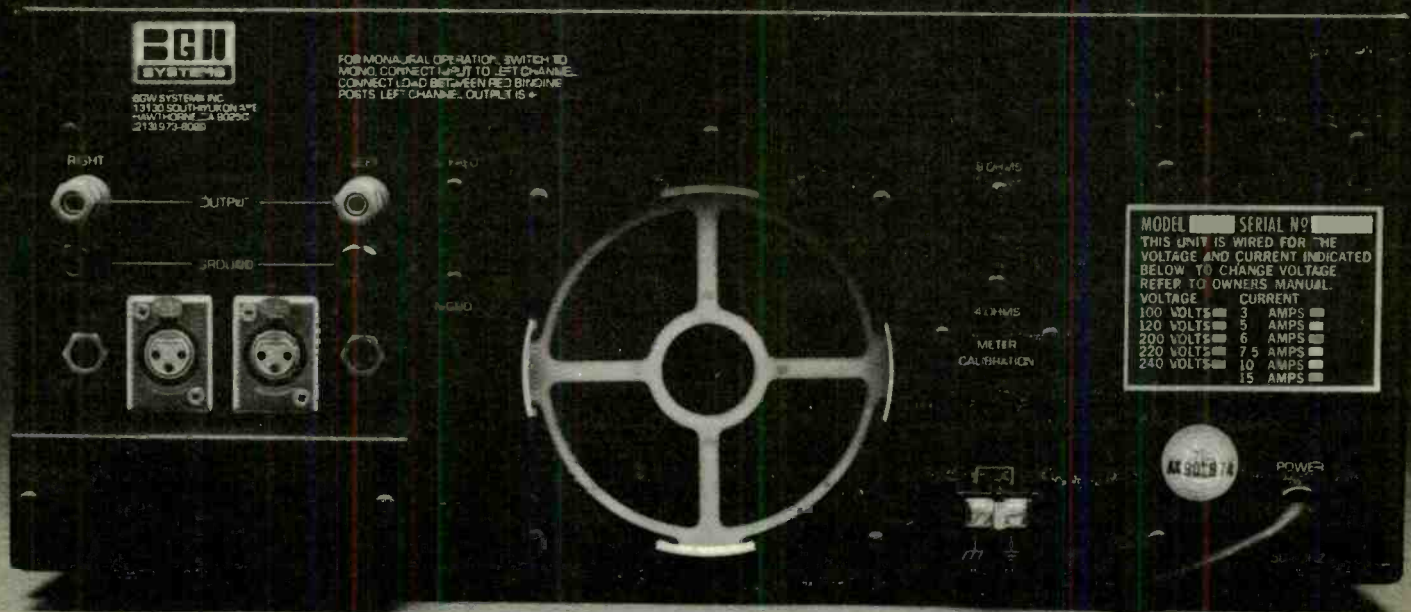
We recommend it for monitoring systems, for small club bands and for discos. With good speaker components it is a very good sounding speaker. We feel that rock and roll bands would have a hard time finding a better speaker for its size and price. The list prices vary from about \$260 to \$800 depending on the components and accessories selected.

We apologize for the use of phrases like "it sounds good" and "the bass was solid," which are not very scientific. However, the evaluation of speakers is somewhat subjective and sometimes the best final measuring tool is our "super tuned" ears.

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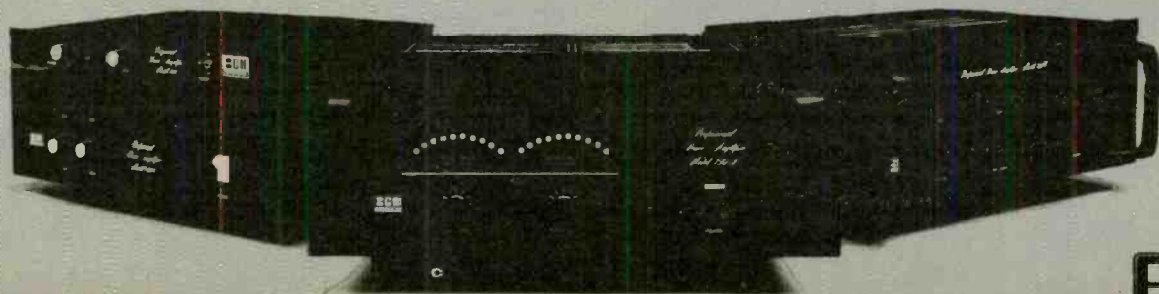
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CIRCLE 71 ON READER SERVICE CARD



Get Behind Us!

GROOVE VIEWS

Reviewed by:
SEDGWICK CLARK
NAT HENTOFF
JOE KLEE
GIL PODOLINSKY
RUSSELL SHAW
STAN SOOCHER

POPULAR

MEAT LOAF: *Bat Out Of Hell*. [Todd Rundgren, producer; Todd Rundgren, engineer; recorded at Bearsville Sound, Bearsville, N.Y.; Utopia Sound, Lake Hill, N.Y.; The Hit Factory, N.Y.C., N.Y.; House of Music, West Orange, N.J.] Epic PE 34974.

Performance: **ABC (Already Been Chewed)**

Recording: **Consistent Rundgren**

The only question I have is who is this vocalist that goes by the name of Meat Loaf? Not that he in any way has a noteworthy voice, it's just that he alternate-

ly comes close to sounding like Billy Joel or Harry Chapin. If it is Billy Joel, it's an interesting album. If it's Harry (Lord knows he could use *anything* Rundgren could do to/for him), the idea of Harry going hard rock still has me grinning. In short, this style has been done before by the two aforementioned artists, and I don't feel that the approach bears repeating.

I do, however, like Rundgren's uncredited theft of Phil Spector's production techniques in his handling of "You Took the Words Right Out of My Mouth (Hot Summer Nights)." The song opens with a spoken rap that really doesn't add anything to the track. Musically, it opens with the famous Phil Spector echoed snare and tambourine in the background. Acoustic piano is centered, bass is centered, lead guitar left, supportive lead right. Vocals break

in center. Then, a la The Ronettes, female chorus sings "oohs" and "ahhs" in full stereo. The chorus is not as tight as it should be, but then that may be Todd's intent—to copy, but not to the letter. Rundgren gets a good replica of the Wall of Sound by placing an over-driven guitar in the center as well. Incidental keyboard, percussion, hand claps, etc. are all centered. We even have the Spector break where everything stops except for the kick that goes thump, thump, thump with the tambourine accent on the fourth beat (Shirelles' "My Boyfriend Is Back," Shangri-la's "Leader of The Pack,"). Rundgren's dedication does him proud, this being one of his more consistent recent LPs. G.P.

EDDIE MONEY: *Eddie Money*. [Bruce Botnick, producer; Andy Johns, engineer; recorded at the Record Plant, Los Angeles, Ca. and CBS Recording Studios, San Francisco, Ca.] Columbia PC 34909.

Performance: **Rocked out**

Recording: **Perfect**

Eddie Money is many things; a tune-smith adept at a range of expression from the mellow and allegorical through the mindlessly rhythmic; a fine keyboard and sax player; yet above all, a vocalist boasting a rare combination of theatrical expression and technical ability.

On this effort, all these attributes shine. We're taken from the infectious throb of "Wanna Be A Rock and Roll Star" all the way to the twin guitar ballad "Save A Little Room In Your Heart For Me." With only one picker (Jimmy Lyon) credited, kudos must go



MEAT LOAF: A la Spector via Rundgren

to producer Bruce Botnick for a fine overdubbing job.

Botnick shines via a shrewd sense of programming. Creativity always wards off any possibility of self-indulgence. Better known session masters would do well to note Botnick's subtlety. He realizes that often, just the right amount of background is better than a whole lavish extravaganza. A case in point: Tom Scott (who seems to play on everybody's records these days) is worked in perfectly on the platter's only non-original composition, Smokey Robinson's classic "You Really Got A Hold On Me." He doesn't dominate the cut, as he often does when working in other artistic climes.



EDDIE MONEY: No reason to quibble

As a composer, Money needs to vary his chordal structures just a bit more, but in the light of this fine record, why quibble? R.S.

BOZ SCAGGS: *Down Two, Then Left.* [Joe Wissert, producer; Tom Perry, engineer; recorded and mixed at Hollywood Sound, Hollywood, Ca.] Columbia JC 34729.

Performance: **A bit too smug**
Recording: **Solid and sufficient**

Who would have thought while listening to the Steve Miller Band during the heydays of the Great Counterculture in the sixties that during the latter half of the seventies guitarist Boz Scaggs would be making a series of disco albums for cocktail lounges. *Down Two, Then Left*, the follow-up to the highly successful *Silk Degrees*, is the second dance album for Boz which, while bearing numerous similarities to *Silk Degrees*, provides us with very few clues about the artist's musical future. Which is to say, on *Down Two, Then Left* Boz Scaggs plays it very, very safe.

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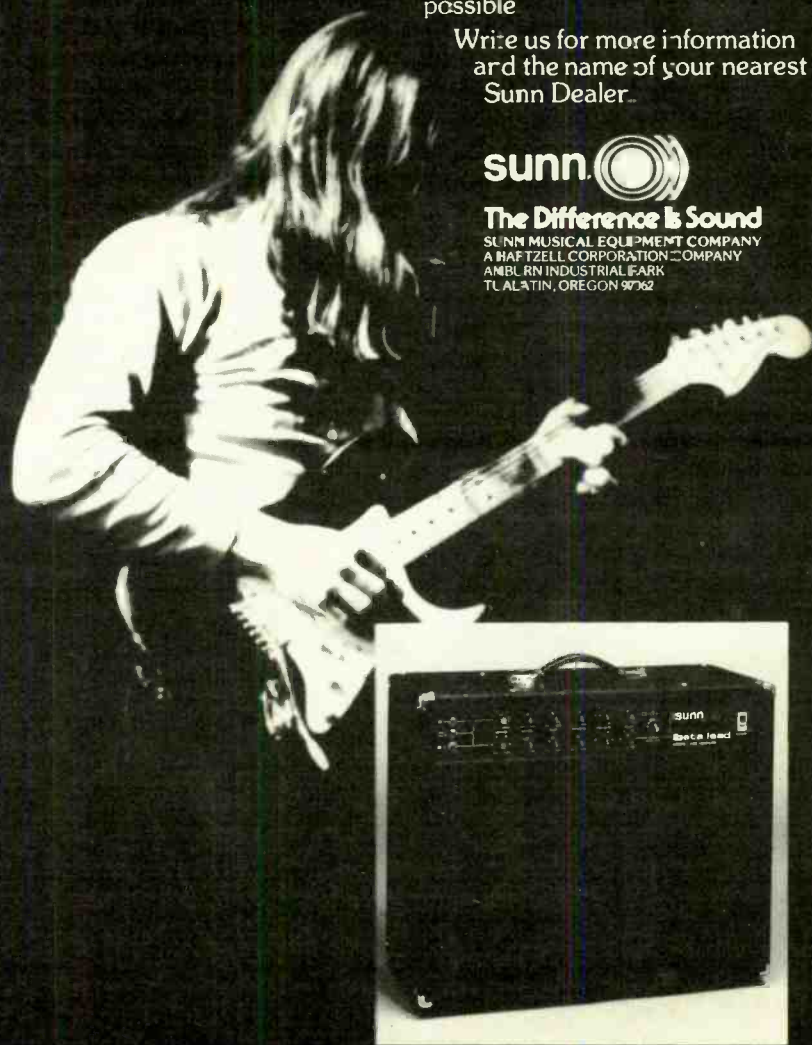
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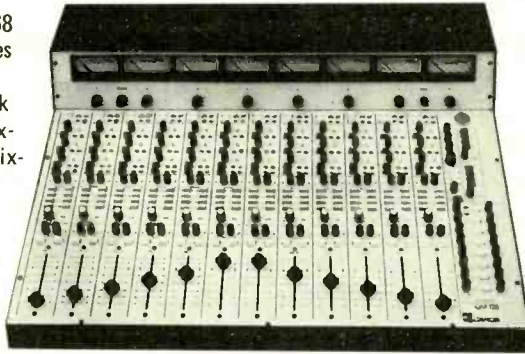
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100Hz (S)* or 300Hz (P)*
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Of course, there's more than disco present here with rock and a jazz-tinged ballad thrown in for good measure. But disco has become Boz's bread instead of his butter. Still, throughout his solo efforts with Glyn Johns, Johnny Bristol, and himself as producers, Boz exhibited inventive vocal phrasings that suggested he could expand on his musical style. His songwriting also improved along the way, resulting in the exciting strengths of *Silk Degrees*, his finest work to date. On that album producer Joe Wissert's triple-platinum touch took the promise of Scagg's earlier songs like "Dinah-Flo" and shaped it into an album where artist met technology to form the perfect union.



BOZ SCAGGS: Playing it very safe

Down Two, Then Left, unfortunately, is too much of a good thing. If it were possible, many of the songs sound like they were written after the instrumental tracks were laid down. Tunes like "A Clue" are good, but we're hearing Gamble and Huff filtered through Boz's perception of Hall and Oates. Joe Wissert's reliance on bottomy bass and drum tracks does assure us of plenty of depth for each song, and there are imaginative moments in the arrangements. Boz's vocals are mixed hot, and the mix in general is well-balanced with every instrument present no matter how small its part.

Let's just hope that on his next album Boz gives us something to get excited about. After all, if you're going to get out on the dance floor, Mr. Scaggs, then you must be prepared to dance to the music, too. S.S.

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QUEEN: Classic interpretations

QUEEN: *News Of The World*. [Queen, Mike Stone, producers; Mike Stone, engineer; no studio credited.] Elektra 6E-112.

Performance: **Strong**
Recording: **Superb, as always**

This album was received with some mixed emotions due to the odd selection of "We Are The Champions" backed with "We Will Rock You" as the single. These titles alone suggest ego at work. Couple those tracks with "Get Down, Make Love," a nice raunchy tune that never would have been allowed on *The Ed Sullivan Show*, and one becomes slightly perplexed. Upon hearing the album in its entirety, one immediately notes the exceptional grown in the band material-wise since the last LP, with the production continuing to be everything we've come to expect and appreciate from Queen.

"We Will Rock You" is produced to duplicate an African tribal chant effect. Deep drum and a large, hand clap chorus are the only accompaniment for Freddie Mercury's vocal, which is joined by a huge vocal chorus, singing the chant of "We Will Rock You." The simplicity of the track, with everything being centered, is so effective, it's brilliant. At the end, Brian May's sustaining guitar churns out a few notes and abruptly stops as the song goes straight into "We Are The Champions."

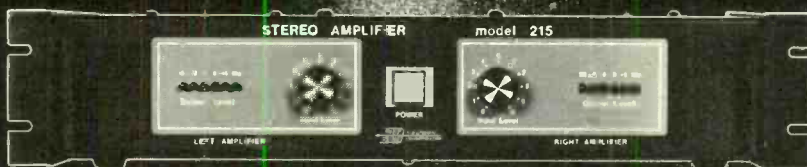
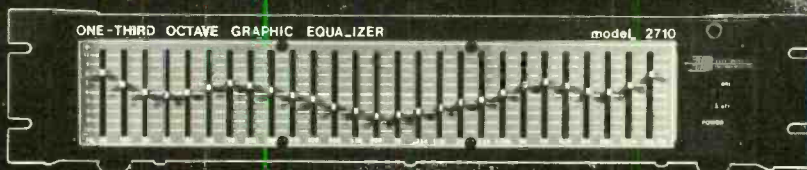
Dry acoustic piano enters after Mercury's first line, accented by selective bass notes. As the verse moves on, May's guitar, subdued to a few cleanly picked notes, leads up to Queen's famous characteristic of soft vocal interpretation, leading up to an aggressive delivery, backed by the emergence of the drums and cymbals in loud crescendo. Bass and guitar, also in the thick of it, give way to another well-known Queen sound: multi-tracked and stretched vocals. Add that to Brian May's distinctive sustaining guitar and it's another classic Queen interpretation.

As always, I'm enamored with the exact recording of the drums—crisp cymbals and deep, solid drums—truly, a wall of sound in themselves. Everything on this track is centered in full stereo, with the exception of a few piano licks late in the track. Although this LP may be a change in direction as far as material goes—and the advisability of that is questionable when you look at the success of "Bohemian Rhapsody"—their approach to the studio continues to be most impressive. I hope that the rumor of their breakup to allow Freddie Mercury a solo career is just that.

G.P.

ROLLING STONES: *Love You Live*. ["The Glimmer Twins," producers; Keith Harwood, Eddie Kramer, Ron Nevison, engineers; recorded "live" in

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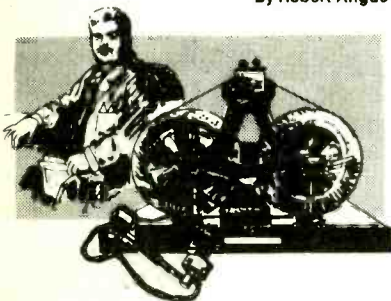
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THE ROLLING STONES: Not so hot

Paris, France and Toronto, Ontario, Canada at unspecified locations.] Rolling Stones COC 2-9001.

Performance: **Careless**
Recording: **Slack**

Most of this record is not very good. This is not to say that the Stones can't somehow capture their "live" magic on vinyl; scattered parts of "Got Live If You Want It" did just that. The main problem here is an insurmountable one—the substandard performance of Mick Jagger.

For some unknown reason, Mick slurs his vocals to near indecipherability. "It's Only Rock and Roll," and "You Gotta Move," both are set adrift by means of a ragged-sounding chorus. Jagger seemingly forgets whole passages of "Brown Sugar" and even the heirloom "Sympathy For The Devil" is devoid of the sinister rhythms which marked the original version.

Happily, the playing is usually up to snuff. At least they hit the right notes. Ron Wood gives two or three really flaming solos, but in the light of some sloppy production decisions, even this flicker of creativity is lost. "You Can't Always Get What You Want," for example, is slowed down considerably. What's more, where the studio rendition had the affirming incantations of a professional choir, here we are stuck with the Stones themselves, who on this whole project show all the harmonic abilities of a dozen cackling ducks.

Yes, the Rolling Stones Mobile Recording unit is one of the wonders

of the music world. As evidenced by its frequent rental, no finer portable facility exists. Too bad, though, that its owners can't come up with a more worthy performance to run through its board. R.S.

SEX PISTOLS: *Never Mind the Bollocks, Here's The Sex Pistols.* [Chris Thomas and Bill Price, producers; engineer not credited; studio not credited.] Warner Brothers BSK2147.

Performance: **Energized**
Recording: **Minimal**

Right from the clapping and stomping on "Holidays In The Sun" at the opening of the Sex Pistols' debut album, it is clear that punk rock is a fascist fantasy come to life. The Sex Pistols are at the forefront of the New Wave and they are to be admired for their sheer voracity. But far from being anarchists of the first order where anything goes, the Sex Pistols' heavy reliance upon power chords is actually a throwback to the early Who, Kinks and Rolling Stones, who did it much better. The predominant style of *Never Mind The Bollocks, Here's The Sex Pistols* is a poor man's version of David Bowie's "Suffragette City."

Obviously, the recording of the music is secondary to the music itself, and the lifestyle of the artists since the engineers and studios are not listed. Warner Brothers told us only that the songs were recorded "around England." The mixes are fairly simple with Johnny Rotten's

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SEX PISTOLS: Very Rotten

vocals front and center. The guitars are near center, occasionally drifting to either side with the bass also in the center. The drums are recorded in stereo, but also very close to the middle. It is the admirable tightness of the Sex Pistols and the directness of the mix that invests the music with the impact of a bullet.

The Sex Pistols' biggest English single, "God Save The Queen," is easily the highlight of the album. If you listen through the entire first side before you get to this punk classic, you will be less impressed and maybe a bit bored by the repetition of the chord structures and the monotony of the melodies. Only the daring of the lyrics lifts the songs themselves above the mediocre.

Some suggestions for getting the most out of this album: 1) If you are listening with earphones, make sure you have them secured to your ears with safety pins so they don't slide off. 2) Wear heavy boots to keep time with the music. If the record skips and you don't bother to move the needle back, then you are an anarchist. 3) If your neighbors complain that the music's too loud and you tell them to shove it, then you are a fascist. 4) If the Sex Pistols sound no different to you than James Taylor and Carly Simon singing "Mockingbird," you ears are Rotten to the core. S.S.

producers; Jay Messina, Rod O'Brien, Grey Russell, engineers; recorded at The Record Plant, New York City, N.Y.] Ram Records 2213.

Performance: **Good, with only a few wincies**

Recording: **Surprisingly consistent**

This is a much more interesting, consistent and talented album than the two other albums to emanate from New York City's new-wave clubs. Granted, this is the first studio album and *CBGB's Live* and *Max's Kansas City Live* did not have the advantage of any last minute fixes-in-the-mix. Yet it remains true that these underground anthologies are useful in serving as demos for label shopping, as well as telling the rest of the country what's happening in New York. With seven bands presented here and six production teams at work, space does not allow the necessary individual critiques.

Lance, produced by Jack Douglas, gets one-third of the vinyl here with three tunes, the best of which is "Phone Call." Utilizing acoustic and electric guitars and a really nice vocal blend, this track has everything you'd want in a single: catchy hook, redundant melody and memorable lyrics. Nothing fancy is done in the recording with the bass and Hammond organ comprising the background. The drums are recorded to get that thick snare sound, and are placed in the center of the mix with slight echo. Joining it in the center are the lead and back-up vocals and guitars. All in all, it

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succeeds in capturing that mid-'60s English sound. Towards the end the Hammond is placed in the right side of the mix while an odd phone rings in the left.

Another successful outing is "Stitch In Time" by Grand Slam. Beginning with a dry, finger picked acoustic guitar that is slightly vibratoed in a strummed chord a la Led Zeppelin's "The Rain Song," only less stressed, next come what sound like Mellotrones strings, giving way to a low-keyed Rhodes in the right of the mix. As the vocal, resembling a male Esther Philips, enters, the track

he has gotten a great natural distortion out of the guitar. I like the driving bass, though I felt the drummer could have done more for the tune had he taken a Keith Moon approach, for as it is, the song could use more drive and energy from the bottom. The guitar solo has a nice pan that begins left and slowly goes right, simultaneously moving the solo as the guitarist moves to higher registers. The music's fine, it's just the lyrics that don't entice.

Considering all the people involved in this effort and the fact it's on a private label, etc., it's quite good. G.P.



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builds to a rock crescendo, then stops, with great effect, and the process is repeated, each time led into with a different instrument. Excellent lyrics, track and production.

However, on The Brats' "First Rock Star On The Moon," one facet tends to derail the entire proceedings. Going with that title you know the music has to be great to make up for such unbelievable/forgiveable lyrics. With only guitar, bass, drums and vocals to work with, the producer did a very commendable job. The separations are exact and

THE ORIGINAL ANIMALS: *Before We Were So Rudely Interrupted*. [Chas Chandler, producer; Alan O'Duffy, engineer; recorded at Goulds Farm on The Rolling Stones Mobile, England.] Jet Records (United Artists) JT-LA 790-H.

Performance: **Quite dated**
Recording: **Limited by performance**

This doesn't sound like the group that recorded "House of the Rising Sun" or "Don't Bring Me Down." In fact, there's so little energy expended on this slow



SANTANA: Afloat on the rhythm

blues album that it sounds like a musical regression for all concerned. If the intent is to avail The Animals to the younger generation, this won't do it; and if it's geared to us older folk who remember them from the first time around, don't they know we supposedly no longer buy records?

As though it were intended as another excursion down memory lane, everything is, with few exceptions, centered in the stereo mix. Take the track "Brother Bill." Drums simply consist of a snare recorded with a little top to get a thicker sound. The two note bass is very deep, almost without character, and is overbearingly loud, as in a dull thud. The backing rhythm guitar lick is done with echo in stereo until the solo where the echo disappears and the lick shifts to a higher register. The acoustic piano, which introduces the song and has an unaccompanied break in the middle, is recorded very dryly to get that slight honky-tonk effect. Centered on top of that is the vocal.

Words cannot describe how trite this recording is, but what can you expect, for with the exception of Alan Price (who supposedly left music after the first album due to doctor's orders) none of these guys has touched an instrument in ten years. My feeling is that there are many worthwhile groups

waiting to be heard, so who needs another group trying to capitalize on their past? G.P.

SANTANA: *Moonflower*. [Carlos Santana, Tom Coster, producers; Tom Vicari, Rod Thear, engineers; recorded at CBS Recording Studios, San Francisco, Ca., and "live" at Olympiahalle, Munich, Germany; The Foire des Vins, Colmar, France; The Pavillion de Paris, Paris, France; and Hammersmith Odeon, London, England.] Columbia C2 34914.

Performance: **Good all around**

Recording: **Lacks a bit of continuity**

I used to love to drop psychedelic candy to Santana, but now that I'm a supposed adult in a respectable profession, I listen to this great band in considerably less altered conditions. I still love them.

What can you say about the most propulsive rock band America has ever produced? I'll forgive them the lyrical triteness and indulgencies of some recent music. Despite its triteful inabilities, "Let The Children Play" has that percussive energy so rare in today's fusion music. The fact that it is rendered "live" makes it even more attractive, for to these ears, "live" Santana has always been the best.

Personnel has altered completely since those old Woodstock days, yet the old harbinger, "Soul Sacrifice," sounds better than ever. Some of the newer stuff sounds dynamic as well. In fact, cliché is just about absent, save an indulgent drum solo by Graham Lear on a boring piece christened, appropriately enough, "Head, Hands and Feet." We've heard those tiresome rolls often enough.

The studio sides, however, are not too fresh. Vocalist Greg Walker, a totally dispensable singer, gives us a lifeless reading of the Zombie classic, "She's Not There." Unfortunately, I predict this is going to be plucked by your local DJ and heard a lot on the radio.

Another complaint is the fact that the "live" and lab tracks are peppered randomly throughout, robbing the disc of continuity. Yet when Carlos' guitar is straining and the percussion section is pounding away, all is forgotten, and you are afloat on the rhythm. R.S.

JOHNNY PAYCHECK: *Take This Job And Shove It*. [Billy Sherrill, producer; Lou Bradley, engineer; recorded at CBS Recording Studios, Nashville, Tn.] Epic KE 35045.

Performance: **Eloquently redneck**

Recording: **Aptly relevant**



JOHNNY PAYCHECK: Honky-tonk Iliad

Make no bones about it, this stuff is real. Paycheck has a knack for choosing material full of hard luck irony, leaving the wimpy country ballads to others. We're not pulling your leg; the title of the record and the title track are real, for the protagonist complains bitterly about the working conditions in his factory. Who hasn't felt like carping about his occupational environment once in a while?

Other victims are also the object of Paycheck's rather acidic scorn; namely women. I'm hesitant to reveal some of the rather colorful punchlines, yet I'll tease you by saying that on "From Cotton To Satin" he sings of a woman left in the arms of a wealthier man, or... is he worth more? Listen and find out. On "Barstool Mountain" he contrasts the furniture with a geological structure as both offer a vision of escape.

All the material, penned by such tunesmiths as David Allan Coe, is a brilliant honky-tonk Iliad. The production of David Sherrill is suprisingly appropriate. Sherrill, who buries other singers with strings, keeps such pollutants away here, leaving the incipient rawness to reinforce the lowdown lyrical message. R.S.

THE JAM: *In The City*. [Vic Smith, Chris Parry, producer; Vic Smith, engineer; no studio mentioned.] Polydor PD-1-6110.

Performance: **Weak**
Recording: **Basic with a capital B**

How do you categorize punk rock—as a fad? It can't even be dismissed as such, for a fad is a popular craze that creates a dollar bonanza. Other than for the smallest of cult followings, punk rock/new wave is not popular and it does *not* sell well. All this inconsequential, poorly channeled energy seems to result in a very poor imitation of the early Who. It's loud with nothing to say. However, of all the punk rock groups I've endured, The Jam seems to be the best. Their lyrics are slightly more varied than the standard "I'm-angry-at-the world" strain which categorizes punk rock. Plus, these guys make an attempt at carrying a tune.

Overall, the album has that done-in-one-take feeling. The instruments, being only a rhythm section, sound as though they've been put through a compressor and delegated to the background. The

bass and guitar are very muddy and lack definition. The vocals, apparently overdubbed, are cleaner, although at times they tended to be somewhat drowned out due to poor separations.

I gave it a 64, Dick, because that's when this sound was relevant and because you can dance to it, sort of. No, I don't think I'd buy it. G.P.

BRAND X: *Live Stock*. [Brand X, producers; Jerry Smell, John Brand, Steve Short and Neil Ross, engineers; recorded at Ronnie Scotts, The Hammersmith Odeon and The Marquee Club, London, on the Manor Mobile.] Passport PB 9824.

Performance: **Spacey jazz-rock**
Recording: **"Live?"—could have sworn it was studio**

I'm very much impressed with the cleanliness of this "live" recording. It's *too* good; like, am I being taken in? The five selections here are all instrumental, which helps in terms of leakage, etc. Everything must have been taken direct with simply two ambient audience mics. The Rhodes is recorded with studio

quality, as clean and clear as I've ever heard it. The separations leave nothing to be desired. Guitarist John Goodsall doesn't constantly overdrive his amp, or use a number of effects pedals which would only add noise and hiss to the "live" system.

On "Malaga Virgin" the drums are center, percussion left, keyboards, first Rhodes then Moog, right. Bass and guitar are both centered. The drums are recorded in their full spectrum and are given full presence in the mix. The music is in the true jazz-rock vein, as in Return To Forever. I'm quite impressed by the diversity in tone produced by guitarist Goodsall. The music is interesting, entertaining and energetic.

For a "live" LP, this recording is amazing. Come on, tell me all you did was record an audience at a concert and mix that into a studio album. If not, this recording makes a lot of very good people look poor in comparison. G.P.

ELVIS COSTELLO: *My Aim Is True.*

[No producer, engineer or studio credited. Sources at Columbia say that the album was recorded and produced in England by Jake Riviera.] Columbia JC 35037.

Performance: **Nothing new**

Recording: **Average**

This guy reminds me of Graham Parker, who reminds me of Bruce Springsteen, who reminds me of Bob Dylan. Isn't lineage great? You get the point. His tunes are catchy, but there's more than that going on in the market place than what's happening here.

"Welcome To The Working Week," the first tune on the album, has an overall feel of being compressed. With nothing more than guitar, bass, drums and vocals to record, the vocal is centered and has an interesting effect thanks to the apparent use of a compressor/limiter. The drums, however, didn't fare as well, coming through flat, fat and lacking in character. At the outset, the track sounds like a throwback to the Beach Boys first efforts due to the phasing of the lead vocal and the "ooh-ahh" back up chorus. The guitar and bass play the same notes and have the same accents; the bass is muddy and the Fender Jaguar guitar cut with slight reverb. The guitar is also affected by the compressor/limiter treatment, being placed back in the mix. One minute, twenty-two seconds later the song ends with the classic Dave Clark 5 ending—a short, aborted drum roll!

On "Alison" (which sounds remarkably like a Southside Johnny and the Asbury Jukes number), vocals are centered with a nice clean lead guitar figure played left throughout the song. A vibratoed Fender Rhodes is right. Bass and drums are centered. Double track the vocal for the chorus and there you have it. Separations on this track are much more noticeable than on the preceding ones. All in all, it's not a bad album, it's just that it sounds too much like Springsteen for my ears to become enthused. G.P.

versions of these songs, as well as other originals. The similarities between him, Elvis and Lewis may be attributed to the fact, as it is stated in the liner notes, that the latter molded much of their vocal sound from the Blackwell demos submitted to them. For that reason, this recording has merit and meaning.

The recording is basic and consistent from track to track, though the somewhat low level of quality is unexcusable. The vocal is echoed and up front, guitar cleanly recorded. However, the bass is muddy and buried, with the



OTIS BLACKWELL: Historical purpose

OTIS BLACKWELL: *These Are My Songs.* [Herb Abramson, Otis Blackwell, producers; Herb Abramson, engineer; recorded at A-1 Sound Studios, N.Y.C., N.Y.] Inner City IC 1032.

Performance: **Who came first, Elvis or Otis?**

Recording: **Sloppy**

Otis Blackwell, who wrote the Presley hits "Don't Be Cruel," "All Shook Up," "Return To Sender," as well as "Great Balls of Fire" and "Breathless" for Jerry Lee Lewis, has recorded his own

acoustic piano also subdued. The drums are very strange. The high end—snare and cymbals—are clear. The rest of the toms and bass are extremely flat, with the occasional roll sounding dead.

The musicians' mistakes tend to give the impression that the album was done "live" in the studio rather than track by track. In "Don't Be Cruel," the guitar is behind the vocals, acoustic piano right, drums center with the bass left of center. Then, for two strummed chords, the guitar is punched up left, for no reason. As the song goes along, the guitarist hits an adjacent string by



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mistake in a lead figure, but the mistake is left in. Sloppy. "Return To Sender" has much the same problem. Throughout the LP, the band is one big rhythm section with no distinct separations. Here the guitar lacks definition until its solo, while the acoustic piano is buried and the bass and drums are just there—barely.

I think that it would have served the historical purpose better had they touted this record as being the original demos. These tracks sure sound like it. G.P.

Separations are quite exact on this recording. "Madacha" is a good tune to examine. The song opens with a Hohner clavinet right, guitar left, which then switch to the comping clavinet split, such that the left hand comps stereo left and the right stereo right. The lead vocal is up front and center as are the horns. Bass and drums are in full stereo. The female chorus is right of center as is the guitar, both when comping or soloing.

This LP is definitely catchy, flowing and consistent. Aside from occasional



HUMMINGBIRD: Definitely catchy

HUMMINGBIRD: *Diamond Nights*. [Hummingbird, Ian Sarnwell, producers; Steve Mitchell, Ed E. Thacker, engineers; recorded at A&M Recording Studios, Hollywood.] A&M SP 4661.

Performance: **Funky studio**
Recording: **Sharp**

Hummingbird, which is comprised of Jeff Beck alumni Bobby Trench, Max Middleton and Clive Chaman, plus session drummer Bernard Purdie and little-known guitarist Robert Ahwai, only record together and do not tour. In keeping with this, *Diamond Nights*, their third LP, is the most session-like in sound. However, Tench's vocals give them the direction that other groups (Stuff, for example) lack. Brass and strings abound on this funk album with a female chorus there for support. Guest artists Airtio Moreira and Pancho Morales also provide some enjoyable moments.

cliches like quickly panning Fender Rhodes from left to right, this is Hummingbird's best effort to date in all respects, especially as a showcase for the vocal talents of Bobby Tench. G.P.



PAT MARTINO: *Exit*. [Ed Freeman, producer; Ed Korvin, engineer; recorded at Blue Rock Studios, N.Y., N.Y.] Muse 5075.

Performance: **Less electric Martino**
Recording: **Good**

Less energetic and frantic than some of his other albums on Muse, like the



SEAWIND: Need some wind in their sails

Live! album, Martino still succeeds in playing some adventuresome jazz while not coming off sounding like an ECM-anything-goes repartee. While I don't know the contractual situation that allows him to record for both Muse and Warner Bros., I find his work on Muse infinitely more artistic and worthy of release. Being pretty much straight ahead, post-bop jazz in a quartet setting, there isn't much engineering to be done other than getting clean separations and setting the levels, for I'm sure this was a "live" recording done with no overdubs.

"Three Base Hit," a Martino original running four minutes, thirty seconds in length, opens with Martino's unembellished electric guitar playing single note runs, backed by a very present cymbal and a driving bass, muddy and lacking sufficient definition, and an acoustic piano. As Martino finishes his first solo, Gil Goldstein, a very talented pianist and a good foil for Martino, takes over as Pat drops out of the mix. He reemerges after Goldstein's solo and the mix remains unchanged from the beginning to the fade out ending.

For this type of jazz, to expect anything else from the recording would be folly. The intent here was to show that Martino has not forsaken his bop roots and can play with the best of them, in any mode. His playing and the quality of the recording have accomplished this to my satisfaction. G.P.

SEAWIND: *Window of A Child.* [Harvey Mason, Bob Wirtz, producers; Peter Chaikin, Cisco De Luna, Chris Gordon, engineers; recorded at Conway Recording Company, Hollywood, and Burbank Studios, Burbank, Ca.] CTI 7-5007.

Performance: **Predictable**
Engineering: **Clean**

Seawind strikes me as being a lame version of Lydia Pense and Cold Blood. The music presented doesn't allow for anyone concerned to reach back and kick. The performances tend to sound contrived and the amount of energy and effort expended gives the illusion that the whole thing was mailed in.

The title track is as good as any to analyse. Vibes, which give way to organ and Rhodes, are left, acoustic guitar right; bass, echoed drums and vocals center. The vibes/Rhodes tend to give a shimmering effect and a sense of movement. After a few verses the woodwinds come in, centered, and quickly give way to cushioning strings, both of which add to the sense of movement for the woodwind part moves up the scale while the strings descend. Next, vocalist Pauline Wilson sings harmony with herself while the interplay between woodwinds and strings continues. A volume-pedaled guitar break, centered, does nothing more than inform you that you've reached the middle of the song. The second half sees no change, except

for the eventual fade-out.

Lyricaly, Seawind has nothing new to say. The LP has the basic compliment of funk, safe jazz and pop. While the recording features great separations and is a clean recording overall, it's still not enough to take an average band like Seawind and put some wind in their musical sails. G.P.

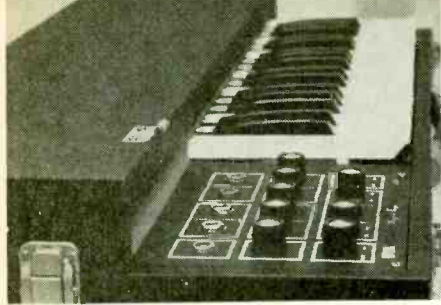
RAY BARRETTO: *Eye Of The Beholder.* [Stix Hooper, Joe Sample, Wilton Felder, producers; Lew Hahn, Rik Pekkonen, engineers; recorded at Hollywood Sound Studios, Hollywood, Ca., and Atlantic Studios, New York City, N.Y.] Atlantic SD 19140.

Performance: **Mighty mighty**
Recording: **Very appropriate**

Ray Barretto is one of the percussion giants of our time, yet unlike the playpen gimmickry of others, he also delights as a driving accompanist. I'm aware of his solo work, but here he seems to stay relatively in the background; mixed "up," for sure, but not taking any real solos.

Working with three of the Crusaders, the impression is of a fusion of sorts. And that is exactly what happens. The time-honored jazz band's tasteful sense of soul and funk (fortunately predating and avoiding disco) is transmitted onto the album.

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**LARGE finds
on small labels**

By Nat Hentoff

It's hard to get nationally known staying at home—unless home is New York or Los Angeles or maybe Chicago. That's why there has always been a need for more local labels through which hometown sounds can travel. The new Outrageous Records, Inc., for example, which covers the Boston area and perhaps, eventually, all of New England.

Of the first releases on Outrageous, the most continually absorbing—and energizing—is *Brighter Days* by Stanton Davis' Ghetto/Mysticism. Davis, though a formidable figure in Boston jazz, is virtually unknown elsewhere. Until now anyway. A trumpeter-composer-arranger who has studied at Berklee and the New England Conservatory, Davis is an original ecumenicist. He fuses acoustic with electric instruments (including synthesizers); horns with vocal ensembles as well as with cries, shouts, and other exclamations; and elements of jazz, soul, black rock, and a diversity of percussive styles (bristling conga thrusts jostling with jazz accents).

As this description might indicate, Davis delights in building multi-layered textures so that most of the performances consist of constantly intersecting waves of sound. This is high-energy improvising, but the underlying spirit is warmly lyrical, a kind of continual celebration of boundingly liberated emotions. In sum, the intent of Davis' music is to make you feel good, and that it does. Unlike some post-Coltrane jazz, it is also thoroughly danceable. The engineering keeps all the lines and colors in clear, vivid perspective—a reminder that not all the top-flight studios are in New York or Los Angeles. (Outrageous Records, distributed by Rounder Records, is at 186 Willow Ave., Somerville, Mass. 02144.)

Sometimes it also takes an out-of-the-way label to provide a forum for a musi-

cian who is based in a place like New York but isn't trendy enough to have been featured on any Big Apple record gigs. A classic case in point is *Scott Hamilton*, a new set on the Concord Jazz label from Concord, California. Although only 23, tenor saxophonist Hamilton plays in the direct lineage of Coleman Hawkins, Ben Webster, and Paul Gonsalves—big-tones, deep-swinging, melodic improvising that is the jazz equivalent of a prime steak dinner.

In this album—composed of standards, head arrangements, and sometimes no arrangements at all—Hamilton's colleagues are exactly right for his gloriously unpretentious blowing. The rhythm section (pianist Nat Pierce, bassist Monty Budwig, and drummer Jake Hanna) is clean, crisp, and totally *together*. The other horn, trumpeter Bill Berry (an alumnus of Duke Ellington's, among other bands), plays with a remarkable precision of imagination and time that complements Hamilton's bursting expansiveness.

As is the custom on Concord dates, the recorded sound is a model for jazz reproduction. You not only hear but feel the rhythm section; and rarely has a jazz piano been recorded with so much natural presence as here. The horns, too, are really in the room.

Hamilton, kind of a protege of Roy Eldridge, has been acquiring a reputation among musicians. With this record, he's going to delight a lot of lay listeners as well.

STANTON DAVIS' GHETTO/MYSTICISM: *Brighter Days*. [Phil Wilson and Stanton Davis, producers; Tom Foley, engineer.] Outrageous #2.

SCOTT HAMILTON: *Scott Hamilton*. [Carl E. Jefferson, producer; Phil Edwards, engineer.] Concord Jazz CJ-42.

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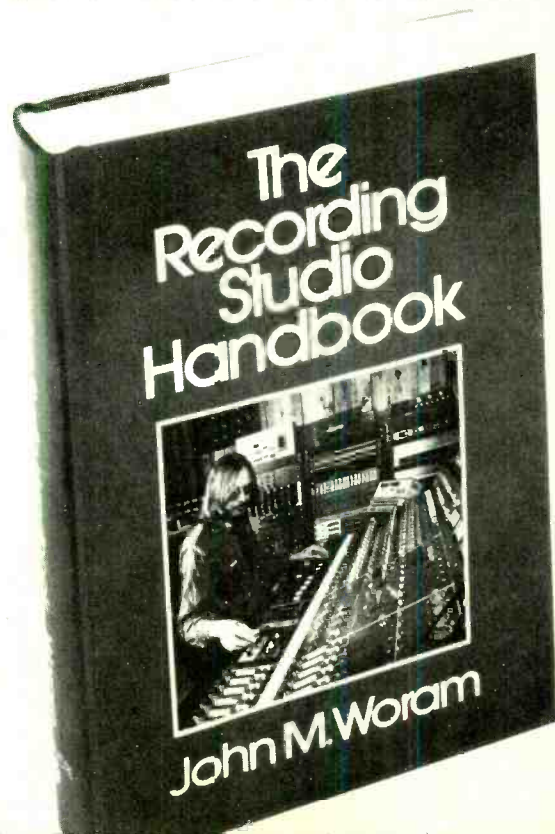
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John Woram is the former Eastern vice president of the Audio Engineering Society, and was a recording engineer at RCA and Chief Engineer at Vanguard Recording Society. He is now president of Woram Audio Associates.

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Other names contribute significantly. Pete Christlieb, a criminally underrated tenor sax player who is more emotionally apropos than many of his better known contemporaries, contributes a honking line on the danceable "Senor Funk;" a snappy "Here We Go Again" is propelled by guitarist Barry Finnerty, a heretofore anonymous performer who won't lack a reputation for long. He's one of the most skillful session players I've heard in quite a moon.

Gil Goldstein also outdoes himself. His previous works have been with the likes of John McClaughlin and Pat Martino; here, his eloquent compositional

with the big swing bands of Benny Goodman and Tommy Dorsey and the small bands at Nick's and Eddie Condon's. He recorded with Bix Beiderbecke and he jammed with Louis Armstrong and he's not finished yet.

This LP shows Freeman as a soloist with rhythm and as an ensemble partner with another horn. He works well both ways. As a balladeer he sings "I Remember You" as clearly as if he were reciting the lyrics instead of playing the tenor saxophone. The quintet sides are prime examples of the Chicago style of give and take improvised ensemble playing of which Freeman was one of the

all too seldom—Ken Kersey and Dave Bowman. It also offers yet another Bud Freeman version of "You Took Advantage Of Me" which Bud recorded in 1938 for Commodore with Jess Stacy and George Wettling (Wettling also drums on this version) and which he was to record again in 1969 with Bob Wilbur and a rhythm section for Monmouth Evergreen and in 1976 with Bucky Pizzarelli for Flying Dutchman.

J.K.

DEXTER GORDON: *Sophisticated Giant*. [Michael Cuscuna, producer; Maxine Gregg, executive producer; William Wittman and Tommy Roberts, engineers; recorded at Sound Ideas, New York, N.Y., June 21st and 22nd 1977.] Columbia JC 34989.

Performance: **Dexter's at his best. . . so is everybody else**
Recording: **Like you're there**

The best jazz recordings are collaborations, group efforts. And when you get a producer like Mike Cuscuna and artists like Dexter Gordon, Bobby Hutcherson and Slide Hampton together for an LP you've got a headstart on greatness.

Frankly, after his previous Columbia LP I was ready to write off Dexter Gordon under the category of sure-doesn't-play-the-way-he-used-to. But leave it to Dex to turn around and come out with an album of great playing against the backdrop of some lush arrangements by Slide Hampton combined with Cuscuna's sensitive production. Some time ago I called Cuscuna a producer with the ears of a musician. I'll stand by that statement today and here is one more piece of proof. It takes a brave producer to put out an album of a giant like Dexter with no gimmicks, no Beatle's tunes, no synthesizers, no freak effects, but that's just what this is. Dexter plays ballads like "Laura" as few players since the late Don Byas have been able to play them and then goes on to a bossanova like "How Insensitive" or an early R & B/jazz fusion "Red Top" in tribute to the late Gene Ammons. Then he collaborates with the new breed of player/composer, Woody Shaw, in "Moontrane" which is out there but still melodic enough to be listenable.

The recording is close up and miked tight yet clear and undistorted. It gives the impression of real presence and while that brings up the age old question of whether you'd ever want to listen to an eleven-piece jazz band in your



RAY BARRETTO: Musically beaming

and synthesizer abilities shine expressively on the sensuous "Tumbao Africano." Above all, throughout it all, there's Barretto musically beaming. R.S.

BUD FREEMAN: *The Test Of Time*. [Producer not listed; Rudy Van Gelder, engineer; recorded in New York City, July 1955.] Bethlehem BCP 6033.

Performance: **Time tested**
Recording: **Less than real**

What an apt title for an LP by a saxophonist who made his first jazz record in 1927 and is still making them half a century later. Bud Freeman truly has withstood the test of time. He played

originators.

The recording was done by Rudy Van Gelder, and recognizably so. Rudy is one of those engineers who put his stamp on just about everything he did and it came out with much the same sound and ambience as every other Rudy Van Gelder record ever made. Somehow it sounds less than "live," but that was 1955 so let's just say that things have gotten better in the past twenty-two years.

This LP is important for more than the work of Freeman. It gives us an early glimpse of Ruby Braff, a cornetist so indebted to Louis Armstrong that he should fall down and worship at Satchmo's feet. It also adds to the available recordings of two pianists who recorded

living room, the sound is rich and warm even at reduced volume. Frankly, I hope *Sophisticated Giant* is a giant seller for Columbia because nothing succeeds like success and I'd like to see records like this become the rule rather than the exception. J.K.

SYMPHONY JAZZ ENSEMBLE: *Carmen*. [Frank Proto, producer; Ric Probst, Rich Goldman, engineers; no studio credited.] QCA Records 364.

Performance: **Just OK**
Recording: **Just OK**

If you're not an avid opera buff and don't know *Carmen* well enough to make a comparison between that classic and the jazz interpretation it receives here, then this is just another jazz lab band playing another bunch of charts. Side one consists of the suite from the opera *Carmen*. For my taste, the big band, or brass jazz band, is one of the most difficult musical enclaves for which to write, or to bring alive. Seeing the title, I was curious. Hearing the album, I lost interest. There are a couple of interesting sounds that must

have been made by a synthesizer, but no credit is given as to its use on the jacket. The recording is all very clean, but no imagination was employed. Granted, there are albums released today with poor separation and an overall muddy quality, but I still tend to view a clean recording as something to be expected.

There really isn't one piece here to single out, for they were all recorded with the instruments centered. It's the usual rhythm-section-in-the-background and soloists-wait-your-turn, with instruments constantly dropping in and out. Further, I don't find any of the original pieces of leader/bassist/producer Frank Proto particularly interesting. You can hear this type of work done to perfection by any North Texas State lab band, so who needs this? Nice try, but both the individuals and the collective lack the necessary identifiable style required for a successful album. G.P.

GATO BARBIERI: *Ruby, Ruby*. [Herb Alpert, producer; Don Hahn, engineer; recorded at A&R Recording Studios, Media Sound, and A&M Recording Studios, New York City, N.Y.] A&M SP 4655.

Performance: **Inspired**
Recording: **Restrained**

When your record company president produces your album, you know you are something special. However, very few label heads can play the trumpet like Herb Alpert. This is more than just a coincidental collaboration, for Herb, via his credentials, has injected a rare aesthetic sense into this particular enterprise.

Once upon a time, Gato did nothing but play forceful, loud and sensuous music, burning all the time like a forest fire. The only problem was that by the third track, he had blown himself out, and listening for a break from this tiresome honking, the auditor was similarly exhausted.

Ruby, Ruby, however, is the second Barbieri waxing accomplished under Alpert's tutelage. The first, *Caliente*, might not have been perfect, yet it showed the rare attribute of restraint, a quality Gato never exhibited before. Now on this effort, the technique of shrewd segue is carried further. This is actually a pleasing record.

If the above comment seems snide, maybe it is. This writer has long felt



GATO BARBIERI: Enhancing his scope

that Gato is a limited saxophone player, rich in conviction, yet lacking the range of a Dexter Gordon or a Jackie McLean. If strings have to be brought in to enhance his narrow scope of emotive states, so much the better. Such accompaniment works well on "Latin Reaction" and "Blue Angel," both ballad types.

Supporting band members are also worthy. Lenny White, ex-Chick Corea drummer, sparkles particularly on the ballad "Sunride," and the guitar chord clumps of Joe Caro and David Spinozza give the aforementioned piece a dreamy, paced rhythm. R.S.

CLASSICAL

RACHMANINOFF: Piano Concerto No. 3 in D Minor, Op. 30. Lazar Berman, piano; London Symphony Orchestra, Claudio Abbado cond. [Steven Epstein, producer; Milt Cherin, Frank Abbey, Raymond Moore, Robert Auger, engineers; recorded in Henry Wood Hall, London.] Columbia XM 34540.

Performance: **Cream of the crop**
Recording: **Good**

RACHMANINOFF: Piano Concerto No. 3 in D Minor, Op. 30. Abbey Simon, piano; Saint Louis Symphony Orchestra, Leonard Slatkin cond. [Marc Aubort & Joanna Nickrenz, producers; Elite Recordings, Inc., engineering; recorded August 1976 in Powell Hall, Saint Louis, Mo.] Turnabout QTV 34682.

Performance: **Anti-romantic**
Recording: **Most natural balance**

RACHMANINOFF: Piano Concerto No. 3 in D Minor, Op. 30. Tamas Vasary, piano; London Symphony Orchestra, Yuri Ahronovitch cond. [Cord Garben, producer; Heinz Wildhagen, engineer.] Deutsche Grammophon 2530 859.

Performance: **So-so**
Recording: **Okay**

RACHMANINOFF: Piano Concerto No. 3 in D Minor, Op. 30. Earl Wild, piano; Royal Philharmonic Orchestra, Jascha Horenstein cond. [Charles Gerhardt, producer; Kenneth Wilkinson, engineer; recorded 1965 in Walthamstow Town Hall, London.] Quintessence PMC 7030.

Performance: **Insecure, but exciting**
Recording: **Very good**

All at once at the end of last year, we were deluged with Rachmaninoff Third Concerto recordings. It's a tremendously difficult work to perform: Rachmaninoff was one of the century's greatest pianists, as well as a composer, and like his Russian compatriot Prokofiev, also a noted pianist, he seemed to delight in cramming as many notes as possible into a single bar.

Each of these pianists has his own ideas about the work, but only Berman has the virtuosity and emotional identification to mold the composer's often discursive inspiration into a convincing whole. He and conductor Claudio Abbado perceive that the rambling structure must be kept taut and always moving forward, and that the frequent give-and-take between solo and orchestra be clear at all times. The sound is a very good multi-mic job with adequate depth, but I'm baffled by instances of the piano seeming to recede in perspective and presence—first in the big first movement cadenza, and ever so often in the final movement, especially nine bars after cue 42 where, even though the dynamic has decreased, the piano doesn't seem to regain size when the dynamic increases until the Scherzando section around cue 48. Different takes at unequal levels, perhaps?

The slightly abridged Simon/Slatkin collaboration on Turnabout is an improvement on their previous Rachmaninoff coupling of the Second Concerto and the Paganini Rhapsody, but one still senses that little sympathy with the idiom exists here—almost as if they believed that the slightest *espressivo* might adulterate the music. Instances of phrasing or feigned warmth always seem applied from without. The sound is typical Aubort/Nickrenz and, as such, is more natural-sounding than the other recordings, all of which balance the piano closer than one will ever hear it in the concert hall. Even Lazar Berman was drowned out—from a twelfth-row-center vantage point in Avery Fisher Hall—at the orchestra's loudest moments in a "live" concert last March with the New York Philharmonic.

DG's Vasary/Ahronovitch recording is not bad, but hardly distinguished. The conductor's horrid instincts for greasy string *portamentos* and self-indulgent *rubato* are in better harness than in the team's previous release of the First and Second concertos, but Berman and Abbado's structural grasp is missing and

the accompaniment rarely asserts itself when it should. Sound is good and the piano is not overly prominent, but DG's A&R staff has not chosen the best vehicles for Vasary's return to the studio.

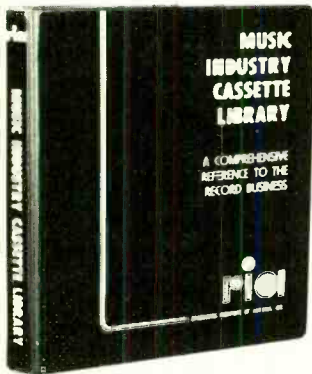
The Wild/Horenstein performance on the new budget Quintessence label has been available only through Reader's Digest since the mid-60s, gaining almost legendary status that is only partly deserved. The very opening bars betray shaky orchestral ensemble, and throughout there are minor signs of short rehearsal and recording time. Wild has all the notes in his incredible fingers, but sometimes they don't seem *quite* in the right place. Nevertheless, this is a big performance (obviously patterned after the composer's own), with fast tempos, inflated dynamics and plenty of impact in climaxes. What really disqualifies it from serious consideration is that it follows Rachmaninoff's cuts (except for a small one in the first movement) in his own 1940 recording with Ormandy and the Philadelphia, presumably made to fit the work onto 78s. Even were this not the reason, there is no *musical* excuse to perpetuate such drastic cuts, as one hearing of this disc should indicate.

Worthy alternative versions are the first Ashkenazy recording with Fistoulari (my favorite) on London and the recent RCA with Ormandy; in between is a hideously overblown complete set with Previn. Philips' slightly abridged Orozco/de Waart performance (deleted) lived too short a life, but at least that label has restored the bracing Janis/Dorati recording (the most seamlessly cut abridged performance) on its Mercury Golden Imports line. Melodiya/Angel has an exciting mid-60s performance with young Yevgeny Mogilevsky and Kiril Kondrashin, although its British EMI incarnation is sonically smoother, with a stronger bass line.

But, stop the presses! By the time this review appears, Vladimir Horowitz should have made a new recording for RCA of this work with Eugene Ormandy and the New York Philharmonic—his first concerto recording in over 25 years. His 1930 and 1951 recordings were heavily cut (the first even worse than the composer's version) and whether or not he will restore the cuts for the new recording is anyone's guess. Undoubtedly, it will have its own *raison d'être* apart from any other version, but it will have to go a long way to overcome Berman as the preferred recording. S.C.

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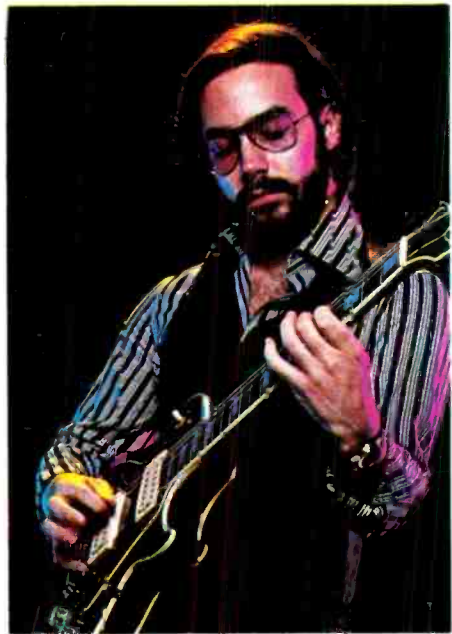
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