

**PROFILE:
KOKO TAYLOR**

MODERN RECORDING & MUSIC

47947

\$1.95

NOVEMBER 1982
VOL. 8 NO. 2

RECORDING WITH
**WARREN
ZEVON**

RECORDING TECHNIQUES,
PART VIII

PORTS:

Trans-Nova
Amplifier

evox B710
Cassette Recorder

s SVP-100
Cassette Deck

b "Effectron"

D. POMEROY
193 BALTIMORE ST
BROOKLYN

61-1G23R-53
010034486

IP
P2402600
IMR Y
MAY83

NY 11201



NEW PRODUCTS
RECORD REVIEWS



The new advanced-design MQ-Series mixers.

RIGHT ON THE MONEY.

Introducing the MQ-Series. A new line of highly affordable mixers that refuse to compromise with audio performance. Or with your needs.

You get the tonal flexibility of a 4-band EQ on each channel and the added flexibility of per-channel echo and foldback

sends. Plus a pair of master-program 9-band graphic equalizers. And direct interface flexibility with per-channel dual input switching.

There's also the dependability and service convenience of a modular layout with each channel's components mounted on a separate internal printed

circuit board. The MQ-Series. Right on the money, right down the line.

Visit your Yamaha dealer or write us for more information. Yamaha, Box 6600, Buena Park, CA 90622. In Canada, Yamaha Canada Music Ltd., 135 Milner Ave., Scarb., Ont. M1S 3R1.

Combo Products

THE WAY IT WILL BE.

 **YAMAHA**

CIRCLE 55 ON READER SERVICE CARD

MODERN RECORDING & MUSIC

NOVEMBER 1982

VOL. 9 NO. 2

THE FEATURES

RECORDING TECHNIQUES— PART VIII

By Bruce Bartlett

28

We hope you've been saving these articles; if not, you're going to be proficient in only a couple of recording areas. Mr. Bartlett strolls us through the mixing console step by step.

RECORDING WITH WARREN ZEVON

By Vicki Greenleaf and
Stan Hyman

38

From werewolves to envoys Warren Zevon has long been rock's excitable boy. His bouts with the bottle are over now, and his musical direction seems steadier and more purposeful. MR&M joins Warren for his latest—*The Envoy*.

PROFILE: KOKO TAYLOR

BY Jeff Tamarkin

46

One of the very few blues female singers still in the business today, Koko Taylor is one of the best at her trade. Koko has been an inspiration for many of today's singers, and she continues to carry the blues torch.

COMING NEXT ISSUE!

*A Session with Kim Carnes
More Recording Techniques
Profiles, record reviews
and lots more!*

THE STAPLES

LETTERS TO THE EDITOR

2

TALKBACK

The technical Q & A scene

8

THE PRODUCT SCENE

By Norman Eisenberg

The notable and the new, with a comment on microcassettes as a promising format.

16

MUSICAL NEWSICALS

By Fred Ridder

New products—guitars, basses, effects—for the musician

20

AMBIENT SOUND

By Len Feldman

Back to recording basics this month, as we review frequency response, MOL, 0-dB level and other parameters of recording.

50

NOTES

By Craig Anderton

DeltaLab "Effectron"

54

LAB REPORT

By Norman Eisenberg
and Len Feldman

Acoustat TNT-200 Power Amplifier
Studer-Revox B710 MK II Recorder
Technics SV-P100 Digital Recorder

58

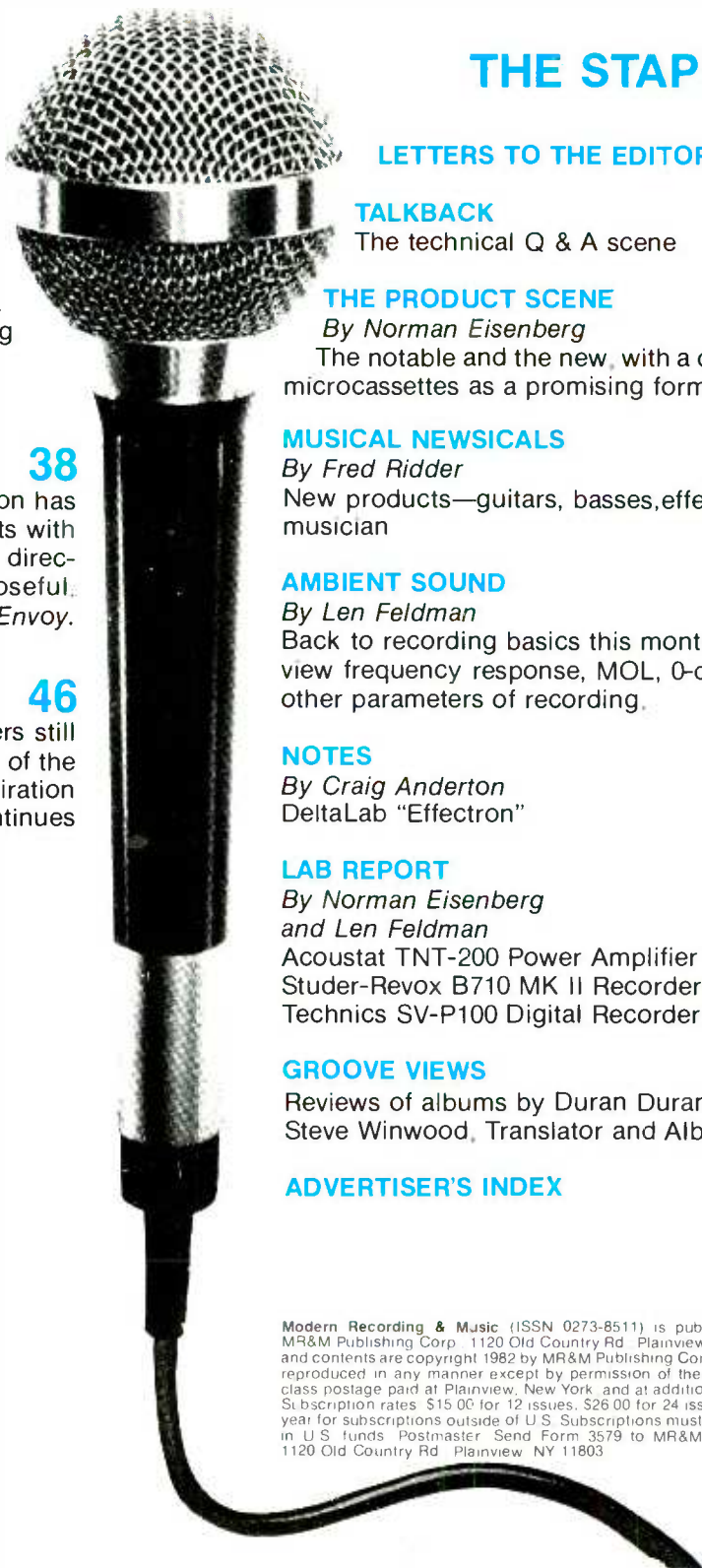
GROOVE VIEWS

Reviews of albums by Duran Duran,
Steve Winwood, Translator and Alberta Hunter.

72

ADVERTISER'S INDEX

80



Cover Photo: Randes St. Nicholas
Koko Taylor, Larry Rossman

Modern Recording & Music (ISSN 0273-8511) is published monthly by MR&M Publishing Corp., 1120 Old Country Rd., Plainview, NY 11803. Design and contents are copyright 1982 by MR&M Publishing Corp. and must not be reproduced in any manner except by permission of the publisher. Second class postage paid at Plainview, New York, and at additional mailing offices. Subscription rates: \$15.00 for 12 issues, \$26.00 for 24 issues. Add \$3.00 per year for subscriptions outside of U.S. Subscriptions must be paid in advance in U.S. funds. Postmaster: Send Form 3579 to MR&M Publishing Corp., 1120 Old Country Rd., Plainview, NY 11803.

PAMELA HIGHTON
Managing Editor

RICKI ZIDE
Assistant Editor

GENE SCARAMELLINO
Assistant Editor

**NORMAN EISENBERG
LEONARD FELDMAN
JIM FORD
JOHN MURPHY
BRIAN ROTH**
Technical Editors

**CRAIG ANDERTON
ROBERT ANGUS
NAT HENTOFF
DAVID MOYSSIADIS
FRED RIDDER
PETER WEISS**
Contributing Editors

**ELLEN ZOE GOLDEN
ROBERT HENSCHEN
JOE KLEE
ALLAN KOZINN
STEVE ROW
RUSSELL SHAW
JEFF TAMARKIN**
Music Reviewers

KAREN COHN
Advertising/Production

DAVID KRAMER
Layout and Design

SPARTAN PHOTOTYPE CO.
Typographers

JOHN MITCHELL
Circulation Manager

H. G. LaTORRE
Editorial Consultant/
Music Advertising Representative

LARRY ZIDE
Publisher

Editorial and Executive Offices
MR&M Publishing Corp
1120 Old Country Road
Plainview, NY 11803
516 433-6530

Editorial contributions should be addressed to The
Editor, Modern Recording & Music, 1120 Old Country
Road, Plainview, NY 11803. Unsolicited manuscripts
will be treated with care and must be accompanied
by return postage.

LETTERS TO THE EDITOR

The Right Picture

In reference to the error that was made in the August 1982 issue of MR&M in regard to the Tascam 34 recorder, we are now printing the CORRECT photograph of the unit that appeared in that Lab Reports column. We had mistakenly printed a photograph of the Teac A-3440. We apologize to our readers, and to Teac Corporation for this error. We've already made a partial apology in our Letters to the Editor column in the October 1982 issue. There we corrected the price. The unit has a retail price of \$1700.00. We hope that all is clarified now. The only correction we did not make in the October issue was to print the photograph of the Tascam 34. Any further questions readers may have should be directed to Teac.

*Teac Corporation of America
7733 Telegraph Road
Montebello, California
90640*

Or, you can phone them at (213) 726-0303.

So here at last is that snazzy unit, the Tascam 34 recorder!





Only technology this advanced can achieve music reproduction this pure. The Technics Digital Cassette Recorder.

No tape hiss. No wow and flutter. Not even head contact distortion. With the digital technology in the Technics SV-P100 Cassette Recorder, they no longer exist.

Utilizing the Pulse Code Modulation (PCM) digital process, the SV-P100 instantaneously translates musical notes into an exact numerical code, stores them on any standard VHS cassette, then "translates" them back into music on playback. Duplicate tapes are exactly the same as the original. Thus, every recording and every copy is a "master."

The revolutionary size of the Technics SV-P100 Cassette Recorder (17" x 11" x 10") is the result of state-of-the-art semiconductor technology. The built-in videotape transport mechanism brings the convenience normally associated with conventional front-loading cassette decks to a digital application. Tape loading is

completely automatic. And, frequently used controls are conveniently grouped on a slanted panel with LED's to confirm operating status.

Despite its compact size, the SV-P100 Recorder offers performance beyond even professional open-reel decks. Since the digital signal is recorded on the video track, the space usually available for audio can therefore be used for editing "jump" and "search" marks. The unit employs the EIAJ standard for PCM recording. And, in addition, editing and purely digital dubbing are easily accomplished with any videotape deck employing the NTSC format.

The Technics SV-P100 Digital Cassette Recorder is currently available at selected audio dealers. To say that it must be heard to be appreciated is an incredible understatement.

Technics
The science of sound.

CIRCLE 12 ON READER SERVICE CARD

Teac Recording

I would like to obtain more information on Teac recording. I have a model 2 mixer, and I am just getting started in recording techniques. Could you direct me to any information on Teac recording that you're aware of?

—Dennis Grant
Albany, NY

We suggest that you write to Drew Daniels at Teac. He could advise you as to where to obtain the information you need. His address is:

*Drew Daniels
Teac Corporation of America
7733 Telegraph Road
Montebello, California 90640*

The phone number at Teac is (213) 726-0303. You can also try TAB Books Inc., Blue Ridge Summit, Pa. 17214. Also, try Modern Recording Techniques by Robert E. Runstein, published by Howard W. Sams & Co., Inc., Indianapolis, Indiana 46268.

The Other Green Berets

We just received the following cheering note from the Hammock Troop of Girl Scouts.

Thank you for the copies of your magazine. The girls have read the articles in them and learned a lot from them. They feel that they are now ready to visit a recording studio to get the answers that they need.

Thank you once again for your time. Everything is greatly appreciated.

—M. R. Guthrie
Troop Leader
Hammock Troop 989
R.F.D. 1, Box 173-T
St. Augustine, FL

Edcor

I am interested in getting some information on the Edcor MA 125 mixer amplifier. Could you give me an address for Edcor?

—Braye Boardman
Augusta, GA

You can write to Edcor at:

*16782 Hale Avenue
Irvine, California
92714*

Or phone them at: (714) 556-2740, or at (800) 854-0259.

They will probably be able to send you all the data you need.

Portastudio

I have searched all over New York for the specs on the new Tascam 244 Portastudio (revised model of the Teac 144). If anyone can obtain them, send me a copy or let me know where I can get them. Also, I would like to know how it compares to the Fostex model 250.

—Gary Leunis
Flushing, NY

*Bill Morhoff
Teac Corporation of America
7733 Telegraph Rd.
Montebello, California 90640
Their phone number is: (213) 726-0303
The address of Foster is:*

*Fostex Corporation of America
15431 Blackburn Ave.
Norwalk, California 90650
Their phone number is: (213) 921-1112*

Getting It Published

I would appreciate any help you can give me pertaining to how to go about publishing original words and music. The collection of songs that I have has already been copyrighted.

—Carol A. Kornhauser
Cleveland, OH

We published a letter in the December, 1980 issue of Modern Recording & Music, on page 4, in the Letters to the Editor column, entitled "The Hunt for a Seller of Songs." In it we gave quite a bit of information on finding an appropriate publisher. We refer you to that issue of the magazine. That letter also refers to a graphic which appeared in August, 1980 issue of MR&M, showing the connections between songwriter, publisher, performing rights organization, performers, and radio stations, among other things. Take a look at that also.

The Monitor Question

We received the following letter from Bruce Bartlett in response to a letter we printed in the July, 1982 issue of Modern Recording and Music.

In your July, 1982, issue, Mr. Bill Thompson wrote a letter asking several questions about control-room monitoring. Monitor systems will be covered in Part II of my recording techniques series. In the meantime, here are some brief answers to his questions.

Thank you for your kind comments about the series. Regarding monitor-speaker choice, the latest medium-sized models of major manufacturers are worth checking into. It's also helpful to use single-driver mini-monitors to simulate the inexpensive car radios and compact stereos that the majority of consumers listen to.

Switching monitors during a session doesn't keep you objective, rather it shows different viewpoints of the same musical program. Try to make a compromise mix that sounds good on both systems. For example, make sure that bass instruments are recorded with enough harmonics to be audible on the smaller speakers.

There are many ways to position the monitors. Big monitor speakers can be (1) flush-mounted in the control-room above the window, (2) hung from the ceiling with chains, (3) mounted on a platform at ear height, (4) surrounded by thick absorbent material which covers the front half of the room, or (5) placed on top of the console over the meters (to reduce the influence of room acoustics). The closer the speaker is to the walls, ceilings, and corners, the more bass you'll hear. Place the speakers as far apart as you're sitting from them, aim them toward you, and sit exactly equidistant from them. Align the drivers vertically for sharpest imaging.

Good headphones can provide a reference standard sound quality free of room-acoustics problems. You can equalize your speakers to sound like them. Or better yet, adjust the room-acoustics treatment and speaker placement instead of using EQ.

Listening to familiar records before a session is an excellent way to put yourself in the ballpark of a commercial spectral balance. But listen to several records since they differ widely.

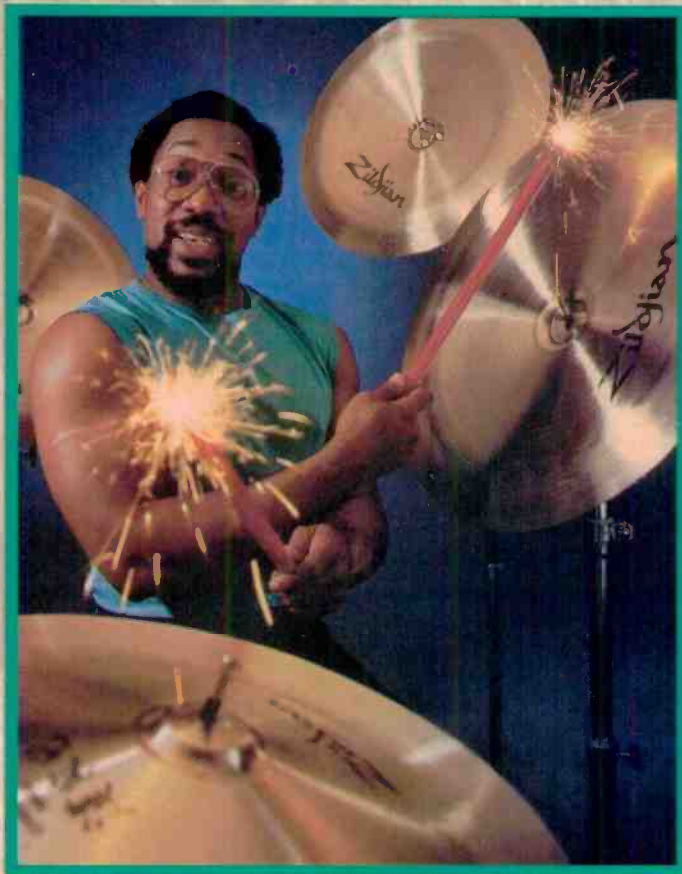
WHEN BILLY COBHAM PLAYS HIS ZILDJIAN, HE'S PLAYING WITH DYNAMITE.

Someone once said of Billy Cobham: "He does certain things because he just doesn't know they can't be done." In the course of doing things that "can't be done" with his own Glass Menagerie group, with the likes of Bobby and The Midnights, George Duke, Stanley Clarke, and Freddie Hubbard on some 300 albums, he's been named Down Beat Drummer of the Year time and time again.

Here are some of Billy's observations:
On His Schooling.

"I graduated from Grossingers resort up in the Catskill Mountains. No, I'm just kidding. Actually, I went to the School of Music and Art in New York City, but at graduation time I got a gig at Grossingers and they had to send my diploma up there."

On Playing Cymbals Upside Down. "I first got the idea of inverting my cymbals a few years back when I was in Finland. I was at an outdoor concert and a band from Prague was playing about 500 meters away. The drummer had an old Chinese cymbal and he was playing it upside down, way up above the drum set. You could barely hear the rest of the band at that distance. You just heard this great explosive cymbal sound. Now I play one 22" China Boy High upside down and one 18" China Boy High in the regular position. The reason I play one upside down is the way it projects.



Why does Billy use our new China Boys for his crash and ride Cymbals: Explosive POWER!

It can be the loudest sound on stage. What happens with the cymbal is that when it is projected up at the room, it makes the whole room vibrate from the cymbal sound."

On China Boy Cymbals. "I started using China Boys for my crash and ride cymbals because of the explosive effect they have. When you hit them you get this 'POW'! There's an amazing amount of projection. I can get a lot of different effects from my China Boys. If I play them upside down, hitting the outer lip will give me a nice slapping solid stick sound. They also sound great with mallets, almost like small gongs. You can ride on them and get a very different

kind of ride sound. And because they cut out fast, you can get very nice short crashes."

If you're a serious drummer, chances are overwhelming that you, like Billy, are already playing Zildjians. Zildjian—a line of cymbals played by drummers on six continents—a line of cymbal-makers that spans three centuries.



For your copy of the full color Zildjian Cymbals and Accessories Catalog and Cymbal Set-Up Book of famous drummers see your Zildjian dealer or send \$4.00 to Zildjian, Dept. 12. **Avedis Zildjian Company**, Cymbal Makers Since 1623. Longwater Drive, Norwell, Mass. 02061, USA

Name _____
 Street _____
 City _____ State _____ Zip _____

Zildjian
 The only serious choice.

Monitor at about 85 dB/SPL—a typical home listening level. Use console EQ to get the sounds you want at that level. If you monitor louder, you'll hear more bass than will the typical home listener.

The "right" way to monitor is still largely a matter of subjective opinion, so get advice from several studios and monitor-speaker manufacturers. Good luck!

—Bruce Bartlett
Project Engineer
Electroacoustical Development
Shure Bros., Inc.
Evanston, IL

Where Is Russound?

I'm trying to find the address of the Russound/FMP, Inc.; maker of the ST-1 and QT-1 switching patching systems. Would you happen to have a current address on file? Secondly, I don't remember if you've done an article on Earth, Wind, and Fire. I'm trying to find a few manufacturers of an electric kalymba, or "finger piano" as such, that is used by Maurice White of that group. I'd appreciate any help you can give me.

—Dick Latta
Fargo, N.D.

Yes, we do have a current address for Russound. Here it is:

*Russound/FMP, Inc.
Box 2369
Woburn, Massachusetts
01888*

Their phone number is: (617) 935-3625. No, we never did an article on Earth, Wind, and Fire. At the time we tried to get information on the kalymba, the "person with the answers" was not available. We recommend that you try again yourself to reach Earth, Wind and Fire's management by calling (213) 473-1564. You will probably then be able to find out who does manufacture the kalymba you mention. Good luck.



Searching for Stevie

I bought my first issue of *Modern Recording & Music* two days ago, and I must say I'm totally impressed! Not only did I learn quite a lot about synthesizers and the various new products that are on the market, but I also got to read a fantastic article on my favorite performer, Stevie Nicks. After reading this story, I have nothing but praise for Stan Hyman and Vicki Greenleaf for their wonderful interview with Stevie.

In the meantime, I have a request. Will you please tell me where I can write to Stevie Nicks? I would appreciate it very much, and have enclosed a self-addressed stamped envelope so you can send it to me.

Thank you very much for your great magazine and fine articles, and also for your time!

—Diana L. Winson
Shelbyville, IL

It's nice to welcome a new reader to our midst. Thank you for the praise. If you want to reach Stevie, you should write to her care of Modern Records.

*Stevie Nicks, c/o Modern Records
2 W. 45th St., Suite 1102
New York, New York 10036
The phone number there, in case you'd rather call, is 212-840-6011.*



High Power
3" Voice Coil

Super Power
4" Voice Coil

See them. Write for your nearest dealer.

Cetec Gauss
9130 Glenoaks Blvd.
Sun Valley, CA 91352



Carvin

The Professional's Choice

Professional Groups like: Pat Benatar, Roy Clark, Heart, Jefferson Starship, Marshall Tucker, Pink Floyd, The Scorpions and Frank Zappa choose Carvin because they feel it's the best!

At Carvin you're not only buying the best, but our "Pro Net" prices are attractive because you're buying Direct from us. Send \$1 for your 1983 80 page Color Catalog. Send \$2 to RUSH by 1st Class mail, \$5 for foreign countries. For product information, Call Toll-Free 800-854-2235 (Calif. 800-542-6070) Master Charge & Visa accepted.

Direct Pro Net Prices on all Carvin Products as shown

- A R540-M Concert 90° Radial Horn — Pro Net \$269 List \$495
- B 1330-M Horn-loaded Bass System — \$239 List \$495
- C 980-M Pro Radial Horn/Bass System — \$349 List \$695
- D 750-M Pro Stage Monitor — \$169 List \$295
- E MX1202 12 Ch Stereo Recording Board — \$1195 List \$2295
- F DCA800 800W (bridged) Stereo Power Amp — \$599 List \$1095
- G DCM301 300W Monitor Amp w. 9 band EQ — \$349 List \$695
- H EQ2029 29 Band 1/3 Octave Equalizer — \$259 List \$495
- I XC1000 Stereo Electronic Crossover — \$269 List \$495
- J DC200 Koa Guitar with Gold Plating — \$570 List \$1140
- K XB112 All-Tube 1-12" "X" amp w Celestion — start at \$449
- L B215-M Dual 15" MagnaLab Bass Enclosure — \$249 List \$495
- M PB150 Bass Head w Compressor & Parametric — \$399 List \$795
- N V412-M Lead Stack w 4 12" Celestion spks — \$399 List \$795
- O X100-B British 100W "X" Amp head — \$579 List \$1195
JBL speakers optional on most models.

Write: CARVIN, Dept. MR-43, 1155 Industrial Ave., Escondo, CA 92025



1983 CATALOG
 \$1 Try Bulk Mail \$2 for 1st Class Mail
 Name _____
 Street _____
 City _____ State _____ Zip _____
MR-43

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 & Music reader's technical forum.

BORN IN THE STUDIO,



THE TOA RX-7 SERIES

Old Mic, New Hum

Recently, I bought a used AKG C414 microphone. It's about three or four years old and it's not an "EB" model. A few months before this purchase, I had bought a brand-new AKG C 414 EB.

I'm running each mic through 20 feet of cable to an AKG N 62 E power supply, then another ten feet of cable to a Shure A95UF line-matching transformer which plugs into a Teac 3440.

The problem is that there's hum on the older microphone. The new one works just fine. Is there something wrong with the older mic? Or is there a difference between the two? An audio salesman has suggested that there is more up-to-date circuitry in the newer one.

Can you suggest some sort of hum-cancellation circuit that will improve the old one? Also, would it make any difference if the mics were plugged into a mixer that has XLR connectors rather than 1/4" phone plug inputs?

—Charles Robert Shearer
Columbus, Ohio

Since the original AKG C12 large diaphragm condenser microphone was introduced, there have been continual updates leading to the present C414EB/P48. The C414E version was the second to use F.E.T. circuitry and the first to allow selection of four polar patterns on the microphone itself.

Certainly, the C414EB has more up to date circuitry than its predecessor, the C414E, but the difference in AC field interference has more to do with the method of internal shielding and grounding. These improvements can be added to both the C412 (immediate predecessor to the C414E) and the C414E to bring these microphones more in line with current AKG standards. Our recommendation is to send the microphone to the AKG service department for this low cost modification.

As to the difference between types of inputs that are available and which are most suitable, the low impedance-balanced line is definitely preferred. This is due to the fact that balanced lines are inherently less susceptible to common-mode interference i.e. AC hum fields) and that low impedance lines have little line loss even on long cable runs.

Most mixer inputs that use XLR-type connectors are low impedance and balanced, although, some are unbalanced (having two pins shorted together). Others use a three circuit 1/4 inch phone-type connector and are balanced, although the majority of 1/4 inch inputs are of the unbalanced-high impedance type. Check the owner's manual to be sure which is used on your mixer.

When a balanced-low impedance input is used, a phantom-powered microphone line can be directly connected to this input. If only an unbalanced input is available, then an isolation transformer needs to be used to prevent the DC voltage (phantom power) from being shorted to ground by this input. This transformer may also be used to match impedances if necessary. Capacitors can be used to block DC voltage but they typically result in an unbalanced load. A microphone used in this manner may encounter a lessening of common-mode rejection (more AC hum).

In choosing an isolation/matching transformer, you must consider the high output voltages of condenser microphones: a C414EB/P48 can deliver up to 1 volt. Many in-line

BRED FOR THE STAGE.



*Crafted in Japan.
Proven in The States.*



TOA Electronics, Inc.
480 Carlton Court
S. San Francisco, CA 94080
(415) 588-2538
Telex: 331-332

In Canada:
TOA Electronics, Inc.
107-2-181 Street
Edmonton, Alberta T5S 1K8
(403) 489-5511
Toronto: (416) 624-2317

CONSOLES 32X8, 24X8, 16X4.

CIRCLE 15 ON READER SERVICE CARD

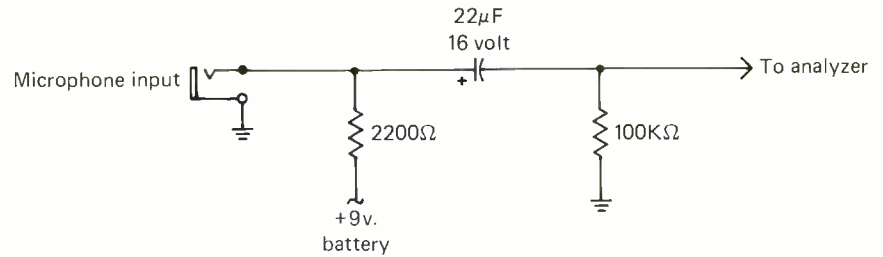
©1982 TOA Electronics

transformers are built with dynamic microphones in mind which typically deliver <0.1 volt. If the transformer is overloaded, it will first be noticed as low end distortion. Even the cleanest microphone will sound poor if this occurs. No compromises should be made in this area if you desire the best sound possible from your microphone.

—Derek Pilkington
Service Manager
AKG Acoustics, Inc.
Stamford, CT

Audio Control Cure All?

Last year I purchased an Audio Control Model C-101 Octave Equalizer with Real-Time Spectrum Analyzer and Pink Noise Generator. I was very impressed with the way it allowed me to equalize my basement studio. I now feel that octave resolution is not enough. Although my room tests "flat" on



the C-101, I think there may be peaks and dips between the octave centers.

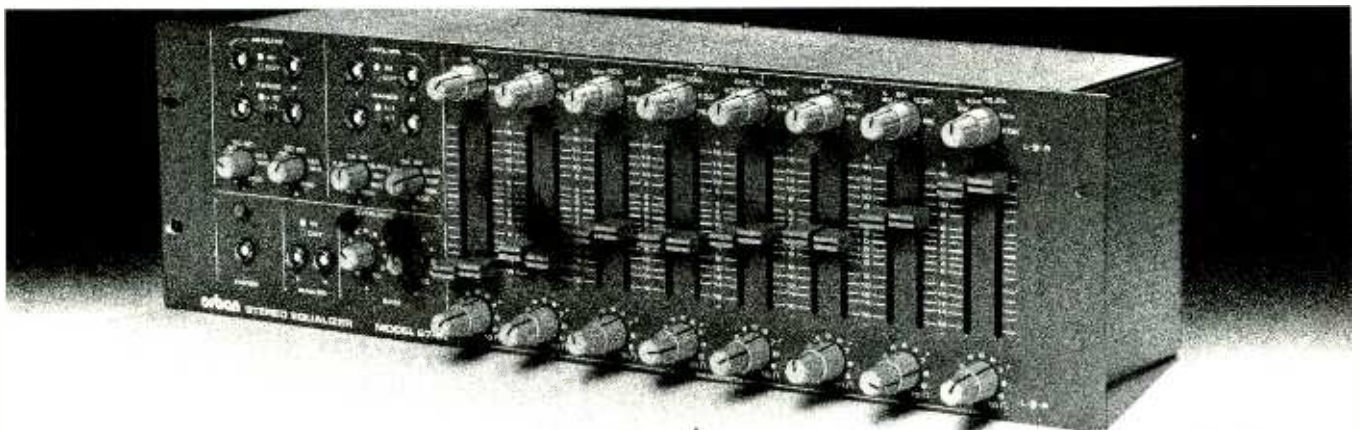
For this reason, I read the Lab Report on the Klark-Teknik DN60 Real Time Spectrum Analyzer (July 1981 issue) with great interest; however, I cannot afford the \$300. price tag.

I was wondering if there was any way that I could use the calibrated microphone and associated input stages of the Model C-101 with a Hewlett Packard 3580A spectrum analyzer (available for my use through the company I work for) to obtain greater resolution when analyzing my system.

Incidentally, I am an electronics technician, so "going into" the C-101 doesn't bother me.

—J. Coffman
Essington, Pa.

While it would be real easy to use more equalization to solve the perceived ills of your acoustic environment, first I would suggest acoustic treatment of your room. You may want to investigate LEDE (live end dead end) acoustic treatment using Sonex or at a much more reasonable cost, Owens Corning painted linear board which we use at our in-house recording studio as well as in our



The Dream Equalizer: Now mono or stereo.

When we introduced our 672A "dream equalizer" in 1979, we had an instant hit. Audio professionals loved its versatility and clean sound. Eight parametric EQ bands (with reciprocal curves) were combined with wide-range tunable 12 dB/octave highpass and lowpass filters. The result: an amazingly powerful and useful machine. A cost-saving one too, because the outputs of both filters are available to perform a full electronic crossover function.

The 672A now has a stereo twin — the new 674A, with all the power of two 672A's in a space-saving 5¼" rackmount package. Naturally, both equalizers are built to full Orban professional standards. That means industrial-quality construction and components, RFI suppression, a heavy-duty roadworthy chassis, and comprehensive backup support.

orban

Orban Associates Inc.

645 Bryant St. San Francisco, CA 94107

Telex: 17-1480, Cable: ORBANAUDIO

YOU ONLY HAVE
TO GET IT RIGHT
ONCE!



That's what multitrack is all about. And with the PORTASTUDIO you get it all, basic track, overdub, remix, in one portable package. A classic the day it was introduced. With the improved Model 244, it gets a little easier to get it, because you get more of the tools you need for 4 Track production. 4 Track simultaneous record to get it all at once. Two section sweep E.Q. to get it right after you've got it down, Stereo effects send and receive and a patch point on each input for YOUR effects so you can get in and out. A direct output from each track so you can copy or transfer to 8, 16 or 24 track and go on. A remote punch-in/out foot switch so you can get in tight. Two headphone jacks, so two can get to work without loudspeakers, and now—Full time dbx* noise reduction! We make the broadest line in the industry. TASCAM means business, multitrack, multi-image and much more. Talk to your dealer to find out how much more, and—GO GET IT!

*dbx is a trademark of dbx, Inc.,
Newton, MA.
Copyright 1982, TEAC Corporation of
America, 7733 Telegraph Rd.,
Montebello, CA 90640

TASCAM
TEAC Production Products

microphone calibration chamber. After you have accomplished an acoustic environment that lends itself to a flat acoustic response, check your speaker placement and the mid- and high-level controls of your speaker, if there are any. At this point you should consider equalization if you feel you still need it. While it is true that half- and third-octave equalization offers better resolution and less inaccuracies between bands, octave equalization and analysis does a good general job of evening out frequency response anomalies.

I would not recommend that you cut into your C-101. A better way to accomplish your goal would be to follow the accompanying diagram and power the microphone with a battery. Since the 1/4-inch capsule has a built-in preamp, problems with shielding and low signal level should not pose any problem. For your information in using the microphone, it is an omni-directional back electret design and does exhibit a slight peak at 15,500 Hz of 1.5 dB and is down about 1.5 dB at 20,000 Hz.

—Greg C. Mackie
President
Audio Control
Lynnwood, Wa.

Passive Time Alignment

Obviously the new trend in recording studio monitors is to time-align the low-frequency driver with the high-frequency driver, either passively or electronically.

I'm interested in the technique used for time-aligning in a passive crossover network. What electrical component(s) is used to achieve the time delay? Is it actually a phase adjustment? Hopefully this is not proprietary information and these questions will be answered in *MR&M*.

—T. Young
Waterbury, Ct.

Yes, it's possible to use a passive high level network to provide the delay required for time alignment of monitors. As you have guessed, time delay is a manipulation of phase, for phase is really just the measure of time related to the period of a given frequency.

The two most common networks for passive delay are the all-pass network and the low-pass network. An all-pass network, as the name implies, passes all frequencies with no change of amplitude—only an inversion of phase between lows and highs.

A fourth order Bessel all-pass can give .8 ms delay (11 inches) up to 1 kHz as an example, but would require 16 parts.

A low-pass network (high cut) will create delay also. The lower and the steeper the cutoff, the greater the delay.

This is basically no different than the low section of a passive crossover. A 12 dB per octave 500 Hz crossover will have roughly .8 ms delay for the woofer section. A 20 kHz cutoff of the same slope for tweeter delay would add only .02 ms or a little over 1/4" effective displacement.

The problem that arises is that it is easy to delay the woofer but it requires a very complicated network to delay the tweeter. Unfortunately, woofer delay is useful in combining woofers and long horns only. For shorter horns and any direct radiator system, passive delay becomes impractical. The acoustic center of the

ACCURACY... by Soundcraftsmen

MADE IN USA

In an Analyzer/Equalizer It's what separates the Precision Instruments from the Electronic Toys!



AE2000 AUTO-SCAN-ALYZER—WORLD'S MOST ACCURATE (0.1dB) REAL-TIME ANALYZER-EQ The First and Only analyzer with Two independent real-time analysis systems...

Like others, the Soundcraftsmen AE2000 utilizes a Full Frequency Spectrum Display System for broad (2dB) adjustments. But it is the **ONLY DUAL-SYSTEM ANALYZER!** It also includes our EXCLUSIVE Differential/Comparator® System which is accurate to within **0.1dB. TEN TIMES AS ACCURATE AS ANY OTHER SYSTEM!** No other Analyzer/Equalizer **AT ANY PRICE** can equal **THE 0.1dB READOUT ACCURACY** of the Differential/Comparator® System. The AE2000 employs a superb 10-band precision-coil octave equalizer (no "artificial" IC's), identical to the DC2215, which

is generally considered to be the ultimate in octave equalizers. The Differential/Comparator® system assures TRUE UNITY-GAIN within 0.1dB, regardless of the EQ curve selected. This guarantees maximum headroom for wide-dynamic-range material, highest gain, lowest noise, without overloading. With the AE2000 the peaks and valleys found in every listening environment can be effectively "neutralized" quickly and easily to realize the full potential of your sound system. (At **\$699.00 RETAIL**, it's \$250.00 below the AS1000 Analyzer and the DC2215 Equalizer separately!)

SOUNDCRAFTSMEN INC., 2200 So. Ritchey, Santa Ana, CA 92705 ORDER DESK PHONE: (714) 556-6193

“Now You Can Afford to Delay...”

by DeltaLab

The EFFECTRON features the finest and most natural sounding digital delay effects available today at unheard of prices. Visit your local dealer and check it out.

ADM 256*

\$499

Suggest retail



A real technological
breakthrough unmatched by anyone!!!
At last . . . you can afford to own a High Performance Digital Delay!

For Further Information Contact:



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

DeltaLab Research, Inc.
27 Industrial Ave.
Cheimsford, MA 01824

... the affordable dream



The Furman Sound SG-10

When the engineers at FURMAN SOUND set out to design a graphic equalizer they decided to leave it up to you which frequencies need to be boosted or cut. Or whether you need 10 bands on one channel or two channels with 5 bands each. More than just another graphic, it's like 10 bands of 2 knob E.Q. with enough extra features to handle whatever world your music winds up in. Now you decide, could you ever settle for just a graphic?

For complete information write

FURMAN SOUND, INC.
30 Fich Street
Greenbrae, CA 94904
(415) 927-1225

CIRCLE 19 ON READER SERVICE CARD



Revox PR99. Not just another pretty faceplate.

Before you buy a compact audio recorder, be sure to compare what you're getting on the *inside*. Look at the chassis, the headblock, the motors, the switches, the PC boards, and the wiring. When you do, you'll notice a difference between the PR99 and everything else in its price range. The PR99 looks better because it must adhere to stricter standards of quality. Standards that have made Studer Revox the world's most respected name in audio recording.

PR99 features • Balanced and floating line in and line out • Calibrate/uncalibrate switches • Servo controlled capstan motor • Edit mode switch • Tape dump • Self sync • Optional remote control and vari-speed • Cabinet, console, and rack mount versions

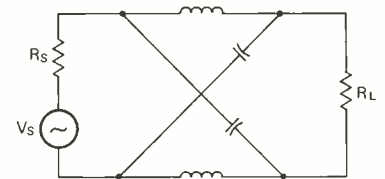
STUDER REVOX
AMERICA, INC.

STUDER REVOX OF AMERICA, INC. • 1425 Elm Hill Pike • Nashville, TN 37210 • (615) 254-5651

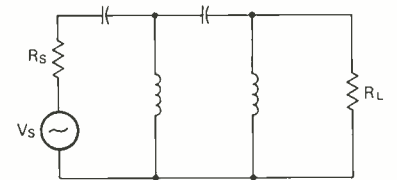
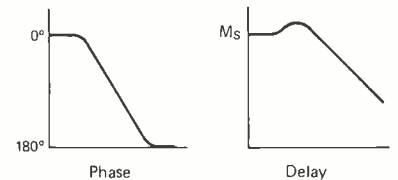
CIRCLE 20 ON READER SERVICE CARD

woofer will already be farthest back and physical displacement is required. Even flat diaphragm woofers will have excessive delay, first, due to their own acoustic rolloff and, secondly, from the delay of their crossover.

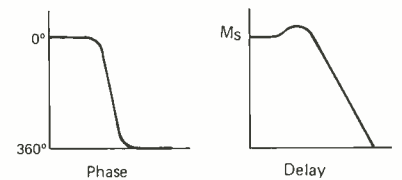
Delay between woofer and tweeter of non-aligned systems will be in the range of .6 ms for small two-way systems to 1 ms for a typical 12"



All pass delay circuit



Low pass delay circuit



three-way system. Fortunately, delays of this magnitude have been proven to be, if not totally inaudible, then at least very low on the list of typical speaker aberrations.

—David L. Smith
Transducer Engineer
James B. Lansing Sound, Inc.
Northridge, CA



MODERN RECORDING & MUSIC

*The magazine for people
who create music*



**MODERN
RECORDING
& MUSIC**

Subscribe Now!

1120 Old Country Road
Plainview, NY 11803

- \$26.00 for 24 issues—save \$20.80
- \$15 for 12 issues—save \$8.40
(\$1.95 to subscribers)

Charge to my Mastercharge Visa acct
My account number is _____ Exp Date ____/____/____

Signature _____

Payment enclosed (Put form in envelope)

\$ _____

Signature _____

Name _____

Address _____

City _____

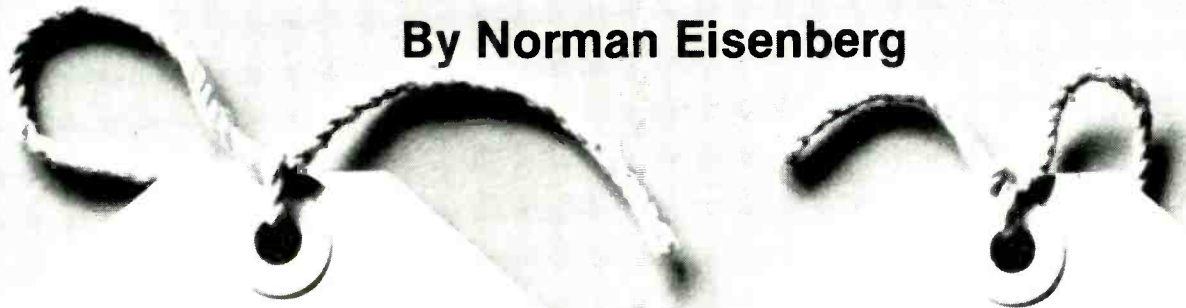
State _____

Zip _____

Outside U.S. add \$3.00; U.S. funds ONLY 207c

THE **PRODUCT** SCENE

By Norman Eisenberg



UPDATE ON DBX



From dbx, Inc. there's word of three new items. The model 1BX Series Two is an improved and restyled version of dbx's 1BX single-band dynamic range expander. Downscaled in size (1¾-inch rack space) to match the rest of the dbx signal processing line, the Series Two features soft-lock switching, twelve LEDs to monitor dynamic range and a bypass switch. Price is \$249, or \$50 less than the original 1BX.

The model 120 is a subharmonic synthesizer designed to recreate the subharmonics of "live" music that may be lost in recording. The model 120 samples low-frequency fundamentals in the music and reproduces them a full octave lower. Features include a four-LED display, bypass switch, and outputs for subwoofer hookup. Price is \$249.

The model 200 is a program route selector that can accommodate three sound processors, an encode/decode tape noise reduction system and three tape decks. It may be connected through a single tape loop on a preamp, integrated amp or receiver. Price is \$129.

CIRCLE 46 ON READER SERVICE CARD

FILTER MEMORY BANK

Described as a programmable tone-color modifier, the Filter Memory Bank from J. L. Cooper Electronics of Los Angeles combines a microprocessor with fourteen filter sections, each with its own voltage-controlled amplifier (VCA). These fourteen VCAs are under control of the microprocessor which in turn is controlled by sliders and switches on the front panel. In addition, an output mixer section—also under microprocessor control—sets the mix of filtered and unfiltered sound and the volume. The bandpass filters also have a hi/lo "Q" control. The device is offered as an add-on for use with virtually any sound source, including synthesizer, guitar or microphone. In manual mode, the unit performs much like a normal graphic equalizer except that the attenuation of a band may be virtually full and the "Q" may be set higher. Once the sliders are adjusted as desired, the settings may be stored and then recalled. Up to 48 settings—thirty-two user and sixteen factory patches—may be engaged. The device may be optionally expanded to two-channel operation with a different "patch" on each channel. Price of the standard unit is \$995; the stereo option costs an additional \$250; a rack-mount option costs \$225.

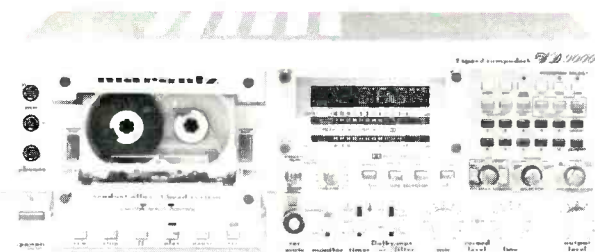
CIRCLE 47 ON READER SERVICE CARD

EXPANDER MIXER LINE

From Allen and Heath Brenell USA Ltd. comes word of three new lines of mixers. One is the 21 series, available in 6, 12 and 18-input formats. Another is an updated version of the company's 42 series, now known as the Mk II series and available in an 8 and 24-input format, as well as three models of 16 inputs. The third group is the 82 series, designed for multi-track recording or sound reinforcement. Features include ten mix buses in addition to three auxiliary buses. In addition, each input channel has direct outputs and patch points. Available input configurations are 14, 16 and 24 inputs. Prices were not available at presstime.

CIRCLE 48 ON READER SERVICE CARD

TWO SPEED CASSETTE DECK



Top model in the Marantz "Solid Gold" series of cassette recorders is the SD9000G which operates at two speeds— $3\frac{3}{4}$ ips in addition to the standard 1 $\frac{1}{2}$ ips. A three-head deck, the SD9000G has a four-position tape EQ/bias selector plus a bias fine-adjust control. A two-motor transport is controlled via feather-touch buttons. The built-in microprocessor permits programming playback and recording automatically for up to nineteen selections. Also built-in is a digital clock and timer. Mic and line may be mixed in recording. The "gold" designation refers not only to the unit's finish but to the fact that input and output jacks are of 24-karat gold-plate. Price is \$650.

CIRCLE 49 ON READER SERVICE CARD

MAGNETIC FIELD AMP UPS POWER AGAIN

The newest version of the Carver magnetic field amplifier—the model M-1.5—is rated at 350 watts/channel into 8 ohms (20 Hz to 20 kHz with less than 0.1 percent THD) as per FTC regulations, but also is said to provide 600 watts per channel "long-time-period reserve power" at 8 ohms. Other specs include clipping continuous power per channel of 550 watts at 4 ohms; 430 watts at 8 ohms; 240 watts at 16 ohms. Dynamic headroom, each channel, is listed as 750 watts at 4 ohms and at 8 ohms, with 380 watts available at 16 ohms. As compared with the original Carver magnetic field amp (the M-400 reported in *MR&M*, November 1980), the new model looks more conventional being 19 inches wide and slotted for rack-mount. Weight, for an amp of this power rating, is still low being only 16 pounds. The M-1.5 has power display and both infrasonic and ultrasonic filters. Price is \$899.

CIRCLE 50 ON READER SERVICE CARD

CYBERNET ANNOUNCES CASSETTE DECKS



Three cassette decks have been announced by Cybernet International, Inc. of Warren, N.J. Top of the line is the model D-801 (about \$590) which includes Dolby B and C; a three-position bias/EQ selector with fine-bias adjustment and a built-in 400-Hz calibration tone for R/P level adjustment. The transport uses three motors with double capstan direct-drive and electromagnetic braking. A combined R/P head is used. Controls are soft-touch, and a three-function digital counter shows elapsed time, time remaining countdown and "stopwatch." Generally similar features are listed for the D-601 deck (\$520) which uses a single capstan drive and a conventional counter. The model DD-701 (\$425) is Cybernet's entry in the "double deck" class with one unit serving as playback, and the other for record and playback. Copying from deck 1 to deck 2 is facilitated by simultaneous instant start of both decks at either normal speed or twice normal speed. Also featured are adjustable echo effect, up to three-line mixing, external processing capability in dubbing mode, and several automatic options.

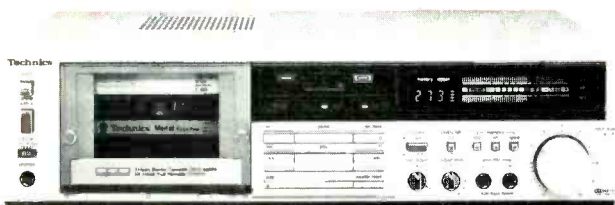
CIRCLE 51 ON READER SERVICE CARD

LOW COST SWITCHING CENTER

The Program Control Center, announced by Powercom Corp. of Troy, N.Y., is a compact audio signal routing box to facilitate patching and switching of various audio sources for recording and/or listening. Ten inputs and four outputs are provided. Inputs may be used as outputs, and mixing is possible. A mode switch permits mono signals to be routed through stereo amplifiers, and a level switch may be used to reduce input signals from a volt range to a millivolt range for recorders with automatic level control and for amplifiers with sensitive preamp inputs. The unit is shipped prepaid for \$29.95.

CIRCLE 52 ON READER SERVICE CARD

VARIETY HIGHLIGHTS TECHNICS CASSETTE LINE



Technics has announced new cassette recorders of varying features and capability. Three-head configurations are found in the RS-M263 and RS-M273, the latter with micro-processor feather-touch transport controls, a remote-control option and somewhat higher specs. Both use Dolby-B. The dbx noise-reduction system, including the option for dbx disc playback, is found in three other Technics decks. Of these, the RS-M275X also has Dolby B and Dolby C noise reduction. This deck adjusts automatically to normal, CrO₂ or metal tape. Both the RS-M255X and the RS-M228X have Dolby B in addition to dbx, the former deck offering somewhat higher overall specs.

CIRCLE 53 ON READER SERVICE CARD

SWEEP GRAPHIC EQUALIZER

Said to bridge the gap between graphic and parametric style equalizers is the new Furman SG-10 described as a "sweep" graphic EQ. It provides ten bands of 15 dB boost/cut graphic equalization, with each band's center frequency being continuously variable over a four-octave range. The SG-10 also features "stereo/split" circuitry which enables the operator to instantly change from 10-band mono operation to five-band stereo operation. Also included are integral instruments preamps that allow direct connection between low-level sources (guitars, bass, passive keyboards, high-Z microphones, etc.) and power amplifiers. The unit features overload indicators that monitor all critical points; bypass switches with LED status indicators; low-cut filters for each channel; low-level outputs for driving instrument amplifiers. Balanced inputs and outputs are available as an option. Price is \$495.

CIRCLE 54 ON READER SERVICE CARD

COMBINATION FILTER



Infrasonic and ultrasonic filtering are provided in the model 4100b filter announced by Ace Audio Co. of East Northport, N.Y. The infrasonic section cuts signals below 20 Hz at an 18-dB-per-octave rate, while the ultrasonic section handles unwanted noise above 20 kHz at 12 dB/octave. The low filtering is designed to cope with record warps, off-center spindle holes, turntable rumble, tone-arm mass/stylus compliance resonances, floor vibration and feedback. The result is claimed to be tighter and cleaner bass. The high filtering removes slewing distortion, radio interference, tape hiss and other noises above the normal audio range. This filtering is intended to prevent damage to tweeters from high-amplitude ultrasonic signals. The 4100b may be interfaced between preamp and power amp, into a tape-monitor loop, into an external processor loop or in series with an equalizer or noise-reducer that already is patched into a tape-monitor loop. Price is \$108.50.

CIRCLE 55 ON READER SERVICE CARD

RG DYNAMICS GOES AFTER TV SOUND

Known for its audio processors, RG Dynamics of Lincolnwood, Illinois has entered the burgeoning video field with a new device that is essentially a mono-to-stereo processor for TV audio signals (either recorded or broadcast). The RG Videosonic Stereo Phasor™, model VC-1, is designed for programmed filtering of high- and low-frequency noises unique to video; dynamic processing to peak-unlimit the large compression inherent in video signals; and to synthesize a stereo effect from mono programming. Price is \$179.

CIRCLE 56 ON READER SERVICE CARD

AIWA SHOWS 3-HEAD CASSETTE DECK



Aiwa's model AD-3800 cassette deck features a three-head configuration; dual-capstan tape transport with IC logic controls; Dolby B and Dolby C; digital display for real-time as well as standard tape position; automatic demagnetizing of the heads each time the deck's power is turned on; and—at the heart of the unit—a microprocessor controlled "DATA" (for digital automatic tape adaptation) logic system which automatically checks playback output, adjusts bias level and equalization and optimizes noise reduction performance within 16 seconds. Price of the AD-3800 is \$595.

CIRCLE 57 ON READER SERVICE CARD

ANALOG REVERB SYSTEM

The ARS-911 is a new analog reverberation system from Advanced Analog Systems, Inc. of Sunnyvale, California. Designed to enhance the spatial quality of reproduced music by simulating concert hall acoustics, the unit processes low-level input signals. A "bucket brigade" delay line is adjustable from 6 to 40 milliseconds, while the feedback delay time is adjustable from 2 to 13 milliseconds. Also included is a variable bandwidth noise-reduction filter which effectively reduces noise by 12 to 14 dB. A small power amplifier is provided which uses four VMOS power transistors to directly drive a speaker. Optimum reverb output level is 10-20 dB below the primary stereo signal source. Thus the ARS-911 can be used without external amplification with systems of up to 50 watts per channel. Available in kit form, the device is priced at \$150.

CIRCLE 58 ON READER SERVICE CARD

MICROCASSETTES— A PROMISING FORMAT

My first go-around with an updated microcassette system indicates that progress has been made in this petite format. But don't throw out your other tape equipment yet.

The device on hand is a Sony M-1000 "microcassette-corder™" which comes with a slip-on cover, short carrying strap, MDR-1 stereo headset and two "AA" battery cells. The machine measures 5½ by 2¼ by 1¾ inches, and it weighs 10 ounces. The cassette itself is 2 by 1¼ by 5/16 inches. The unit runs at either of two speeds: 2.4 cm/sec. (15/16 ips), or 1.2 cm/sec. (15/32 ips). At the faster speed—which is half the speed of a standard cassette—playing time of an HF60 cassette is up to 30 minutes per side or 60 minutes for the full cassette. At the slower speed, of course, double those times. The recorder operates on 3 volts DC which may be supplied by the two small batteries or, via adaptors, from external DC or AC sources including a car battery. The M-1000 costs \$200. An HF60 standard cassette is \$3.80; the metal cassette costs \$4.50.

The tape runs from right to left. The cassette slips into brackets under the see-through lid which is raised by pressing the eject button to its right. Next to this button are a 3-digit tape counter and reset button. Adjacent to them is a small built-in speaker. At the opposite end is a stereo "MS" type electret microphone.

On one of the longer sides of the unit are buttons for stop, forward and record. Fast-forward and rewind are shared by a two-way switch, and there's another switch for start, pause and stop, plus a battery indicator.

Along the opposite side are the volume control (for playback); the speed selector; the mini-socket for an external adaptor cord; the cover for the battery compartment. One of the shorter ends of the machine shares space with the front of the MS mic; a switch for varying the mic's coverage angle (which also serves as a selector for standard or metal tape); the mini-sockets for the mic cord and the headphone cord. Plugging in the headphone cord cuts out the built-in speaker. With the use of adaptors, the headphone output can be used to feed playback to an external sound system, and the mic input can be used for recording from other sources. Using this input cuts out the built-in mics.

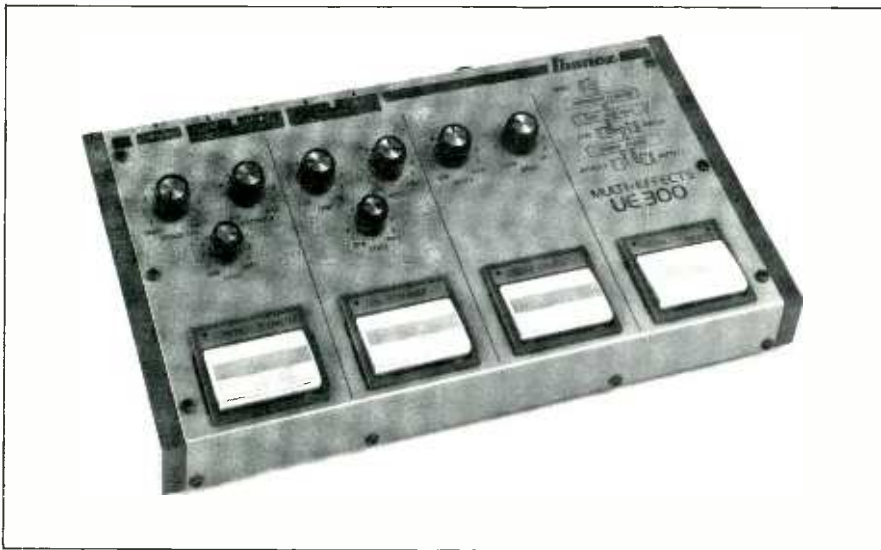
The system, in my view, is still primarily a format for talk rather than for music. At that it is noticeably better than earlier microcassette systems, and it probably will continue to be improved. Active interest in the format has been expressed by such companies as Memorex, and by Cetec Gauss which has announced high-speed duplicators for musical microcassettes.



MUSICAL

NEWSIGNALS

ELECTRONIC ACCESSORIES



Ibanez has deepened its commitment to the multi-effects design concept with the introduction of the UE300, a new "kid brother" to the company's successful UE400 and UE405 multi-effects units. The UE300 is a compact, AC powered pedal unit with three of Ibanez' most popular effects. A compressor/limiter section, using a new IC for low noise and wide dynamic range, has controls for level, threshold, and attack time. A "tube screamer" section is included to produce a warm, tube-type overdrive sound; controls are provided for drive, level, and tone. The third effect is a stereo chorus with controls for width and speed. The three effects are selected via Ibanez' Q-1 FET switch for noiseless operation, and a master effects in/out switch is also provided along with a patch loop for external effects prior to the stereo chorus and its stereo output.

CIRCLE 59 ON READER SERVICE CARD

The Boss division of Roland Corp has added two new effects devices, the VB-2 Vibrato and the OC-2 Octaver. The VB-2 Vibrato is rather



unique in that it produces a true vibrato by varying the pitch sharp and flat rather than producing a pseudo-vibrato effect which is largely tremolo. The unit has controls for rate and depth and a unique feature called Rise Time, which allows the vibrato to gradually build to a preset level over a variable period of time. This latter effect is particularly useful since the unit's FET foot-switch can be switched to conventional, alternate action on/off, or to a

momentary mode where it only engages the effect while the foot-switch is held down. The OC-2 Octaver is a basically straightforward idea accomplished with some sophisticated, high-performance circuitry. The unit features a new tracking circuit which is said to flawlessly track any musical line of single notes without glitching as some other octave dividers do. The unit produces two output tones, one an octave down and the other two octaves down from the input note, and both tones were designed to be



deep, round, and bassy rather than the more nasal square-wave outputs of competitive models. Controls are provided for the level of the direct signal and the two sub-octaves for maximum tonal control.

CIRCLE 60 ON READER SERVICE CARD

MISCELLANEOUS ACCESSORIES

Tres Amigos has expanded their line of guitar finish care products to include product for the care and feeding (and polishing and waxing) of keyboard instruments. The Keyboard Care Kit includes 4 oz. bottles

The EV SH15-2 Speaker System

The all-new EV SH15-2 horn-loaded, two-way speaker system is America's answer to the Yamaha 4115. It's loaded for full-range, high-output action. And we mean action. The SH15-2 is capable of filling the air with a solid, audience-rousing 120 dB. And with an efficiency that is unmatched by most comparably-sized systems.

The high frequency section of the SH15-2 uses an EV DH1202 driver coupled to an HR-Series Constant Directivity™ horn to give you a full 90 x 40 degree coverage pattern. This means that virtually every seat in the house is the best seat in the house. (When every seat's the best seat, it helps all the seats get filled.)

The low frequency section of the SH15-2 features a 15-inch speaker mounted in a vented horn enclosure. This offers the double advantage of wide frequency response and low distortion, plus the "blow-them-away" sound pressure levels that make your audience want to stay for all your music, for all your action.

And if the excitement and the action get tough, the EV SH15-2 is built to take it. Like all EV speaker systems, the SH15-2 comes packaged in a rugged ¾-inch cabinet, covered in spill-proof, scratch-proof, stain-proof black vinyl trimmed with an edge-protecting aluminum frame.

Whatever your sound, whatever your music, whatever your action, catch the EV SH15-2 in action at your nearest Electro-Voice dealer. Hear for yourself how it outperforms the Yamaha 4115 and the rest of the competition as well.

And while you're there, be sure to check out EV's full family of "Sound in Action" systems and equipment, from mikes to monitors and every-

thing in between. Or write to us directly for a free copy of our brochure, "Instruments and

Sound Reinforcement Systems." Electro-Voice, Inc., 600 Cecil Street, Buchanan, MI 49107

**IT FILLS
THE AIR WITH MUSIC,
THE SEATS WITH PEOPLE,
AND THE HOUSE WITH
APPLAUSE.**

EV **Electro-Voice**[®]
SOUND IN ACTION



a gulton company

CIRCLE 22 ON READER SERVICE CARD

each of the company's Lemon Oil Cleaner and Conditioner, and Cream of Carnuba Wax Polish and an instruction book on wood care. Also available are individually packed bottles of cleaner/conditioner and wax polish, a polishing kit with two grades of rubbing compound and a special rubbing pad, and flannel polishing cloths and cotton knit wiping cloths.

CIRCLE 61 ON READER SERVICE CARD

The Masters' Music, Inc. offers an informative gizmo known as the Wheel of Harmony. The Wheel is an 8 $\frac{3}{4}$ " diameter, plastic-coated disc printed with the circle of fifths and a color-coded display of major, minor, augmented, dominant, and diminished chords in 18 keys, and a wealth of other information. The Wheel can be invaluable when learning chord structure or transposing a piece of music.

CIRCLE 62 ON READER SERVICE CARD

Roland Corporation has started publication of a new magazine entitled *Rolan Users Group*, designed to disseminate new techniques and product information to electronic musicians and hobbyists. The magazine is patterned on the current crop of computer user journals, and has included articles on interfacing electronic instruments, user programming of several Roland products, user repairs, and practical applications tips from top professionals.

CIRCLE 63 ON READER SERVICE CARD

P.A. EQUIPMENT

Great British Audio, Inc. is the US importer for several lines of British mixing boards, including the well-known Canary line. The latest from Great British Audio is the Canflex system of totally modular mixers. The Canflex is a non-main-frame design in which each module attaches to the one next to it, allowing virtually any configuration to be assembled in a building block fashion. Additionally, the mixer may be expanded at any time by simply breaking the unit at any point and inserting the appropriate modules. Two different input modules are available, a Standard module with basics EQ and two auxiliary busses, and a Pro module with sweep EQ, four aux busses, and a patch insert point; the two versions may be intermixed in any proportions. Out-

put modules are available in two- and four-out configurations, and include an echo return, masters for the auxiliary busses, headphone monitor and PFL circuitry, a derived mono signal, and VU meters; the four-output module has four tape sends, a four-input tape-return monitor mixer which also allows the four busses to be used as sub-mix busses in a P.A. application. Other modules include a four-band EQ module which can be patched into any channel or buss, and an electronic crossover module for P.A. use.

CIRCLE 64 ON READER SERVICE CARD

GUITARS

Ibanez has introduced a new series of electric solid body guitars known as the Rocket Roll II Series. Initially the series comprises two V-shaped, two-pickup models that differ in detail. Both models feature three-piece maple necks, Ibanez's premium hardware, including a Gibraltar anchored bridge, Quik-Change tail-piece, and Sure-Grip knobs, and two volume controls and a master tone control. The RR50 model has a birch and basswood body finished in fire red and trimmed out with chrome hardware, and uses a V2 pickup in the treble position for searing highs and a Super 70 pickup in the bass position. The RR400, on the other hand, has a flame maple and basswood body with cherry sunburst finish, gold-plated hardware, and a Super 58 bass position pickup to complement the V2 treble pickup.

CIRCLE 65 ON READER SERVICE CARD

WIRELESS MICROPHONES

New from Nady Systems is their Nady Pro-2 Series which comprises three models of low-cost, high-performance tunable transmitters. All three models operate in the FM broadcast bands (88-108 MHz), and are simply tuned to any open frequency in that band; since this is a broadcast band rather than a communications band there is little likelihood of interference, and open channels are usually plentiful since the lower end of the band is restricted to low-power educational and community transmissions. Reception of any of the Pro-2 transmitters is handled by a conventional FM tuner, such as the Toshiba model which Nady offers. The HT-2 is a hand-held transmitter which attaches to the back of virtually any microphone, allowing the performer his own

choice of mics, while the LT-2 is a body pack with a low impedance mic input ideally suited for use with a lavalier or miniature mic for lecturers or theater performers. The third transmitter is the GT-2 musical instrument transmitter which allows any high impedance instrument to be used wirelessly.

CIRCLE 66 ON READER SERVICE CARD

MUSICAL INSTRUMENT AMPLIFIERS

Long a leader in instrument amps—in fact one of the original pioneers—Fender has just revamped the lower end of their amp line with the introduction of eight new models. The new models generally retain the character of the original model, but with updated features including channel-switching (switch selection of either the normal channel for a clean rhythm sound or a high-gain channel for an overdriven sound) and a line-level direct output taken from the final power stage to capture the full tonality of the amp. All models retain Fender's all-tube design philosophy, but generally have upgraded power outputs from their predecessors. Packaging is designed for ruggedness and long life, using Finland birch plywood for the baffle boards, and solid $\frac{3}{4}$ " pine with lock-joint corners for the rest of the cabinet. The new model line includes the Concert series of 60 watt models with channel switching, mid-boost, reverb, a presence control, and an effects patching loop; Concert models are available in 1 x 12", 2 x 10", and 4 x 10" configurations. The Deluxe Reverb II is a 20 watt model with an emphasis on versatility for studio use; features include switch selectable channels, mid-boost, a presence control, reverb, and a single 12" speaker. Similar to the Deluxe, but simpler and at a lower price is the Princeton Reverb II, which also uses a single 12" speaker. Two Champ models are included, both with 18 watts and a single 10" speaker; the Champ 11 is a straightforward model ideal for students while the Super Champ is a compact, professional amp complete with a foot-switchable high gain circuit, reverb, mid boost, and a master volume control. Rounding out the line is the Bassman 20, which delivers 20 watts of power to a single 15" speaker in a sealed cabinet for clean, controllable bass sound at moderate volume levels.

CIRCLE 67 ON READER SERVICE CARD

In search of the ideal mixer.

In demonstrating our microphones throughout the country, we've found a serious limitation in most stage mixers. They are unable to handle wide range microphones on stage. And they just can't cut it when it comes to making demo tapes. Which means that the musicians need TWC mixers and perhaps TWC sets of microphones to get the sound they want on stage as well as on tape. It's a luxury not everyone can afford!

So, to solve your problem — and ours — we set out to create a "double threat" mixer which would be a great stage mixer yet still give you the sound and control you need while taping. A mixer designed to take full advantage of every mike you own, including phantom-powered models.

Our standards (like yours) were high. Everything had to be rugged, reliable, and very clean. With wide basic frequency response, plenty of headroom, and very low distortion and noise. And the mixer had to be very natural to use. Finally, the price had to be right. We invite you to examine the new Audio-Technica ATC32C and ATC122C stereo mixing consoles to see how well we have accomplished our goal.

Our prototypes have done a lot of traveling. Users were impressed with the features, the flexibility, and the sound. They liked the 3-band EQ on every input. And the 7-band stereo graphic program equalizers, plus another graphic equalizer for the monitor output. But most appreciated were the variable high-pass filters for each output. They permit you to use wide-range recording microphones on the stage, while exactly limiting bass response to suit acoustics and to keep from overloading your speakers. Yet during recording you can go all the way down to 20 Hz if you wish.

There's a long list of very practical features. Phantom power is available at each of the transformer-isolated mike inputs. Two 20 dB mike input pads plus an LED to warn of clipping on each input. A SOLO button to check any input with headphones without affecting the mix. "Stackable" design when 8 or 12 inputs aren't enough. Even an assignable talk-back input. And all the logical controls for the transformer balanced MONITOR, EFFECTS, SOLO, PHONES, and OUTPUT

busses. In short, very flexible, and quite complete.

With a very modest investment, you can do almost everything the single-purpose boards can do... and do it very well. And get the benefit of phantom-powered recording mikes on stage as well as during recording. The more you learn about the ATC32C and ATC122C the more impressed we think you'll be. Ask your Audio-Technica sound specialist for a hands-on tour of this brand new breed of mixer. Or write for literature. We may have the ideal answer to your mixer requirements.

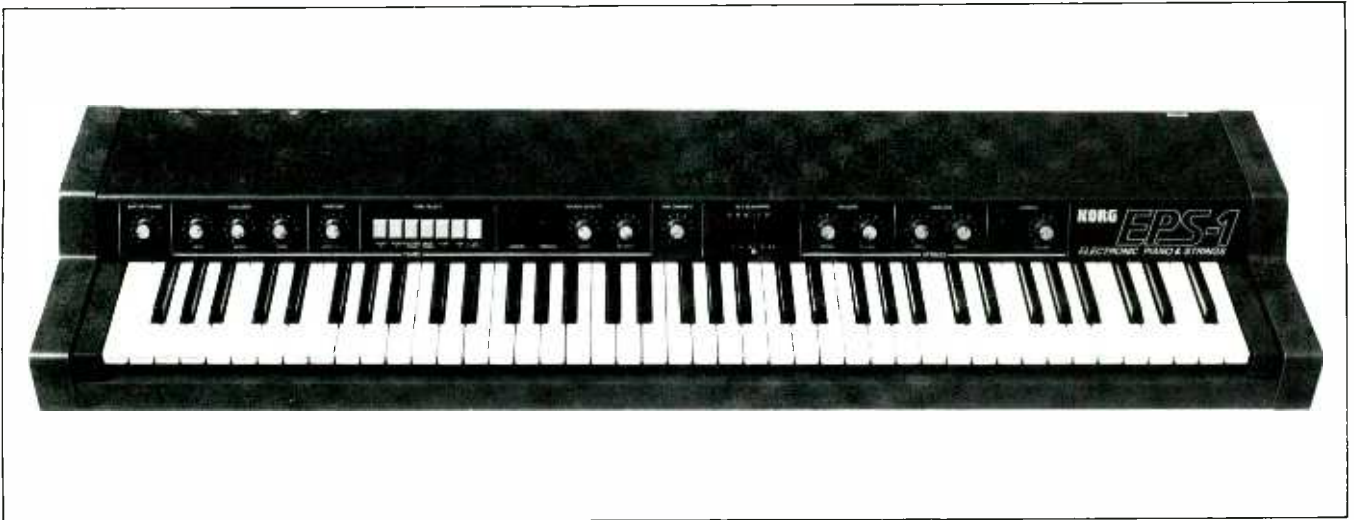


audio-technica®



AUDIO-TECHNICA U.S., INC., 1221 Commerce Drive, Stow, Ohio 44224 • (216) 686-2600

CIRCLE 23 ON READER SERVICE CARD



New from Unicord is the Korg EPS-1 Piano Plus Strings Keyboard. This new unit has a dynamically sensitive 6½-octave keyboard which produces six different piano voices plus a separately articulated string section which may be played separately from the piano section or layered with it. The six piano voices range from rich acoustic pianos to a mellow electric sound, and are selectable

via pushbuttons with LED indicators. The piano section also offers such features as a Keyboard Dynamics control to adjust the touch sensitivity of the keyboard, a three-band EQ section with a special Overtone Boost control, and Tremolo and Chorus effects. The string section features separate articulation and variable attack time controlled by the keyboard dynamics. The overall attack and release characteristics

are variable, with gently swelling strings produced by a soft keyboard touch and sharp, forceful attacks produced by a firmer touch. The string section has its own bass and treble EQ controls and a separate volume control. Other controls include an overall volume control, a key transpose switch, and a rear panel master tuning control.

CIRCLE 68 ON READER SERVICE CARD

ALL YOU NEED IS EARS

The memoirs of modern recording genius George Martin.

George Martin is the most famous producer in the music business. Working with such diverse stars as Judy Garland, the Bee Gees, Ella Fitzgerald, Cheap Trick, and The Beatles, he has constantly set new standards for the recording industry and redefined the relationship between artist and producer.

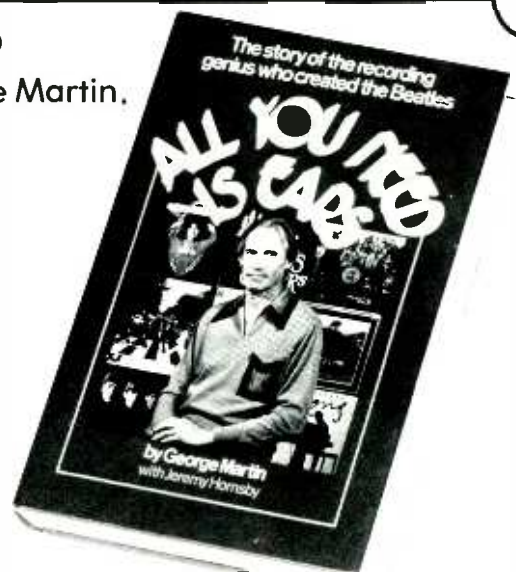
Now, in ALL YOU NEED IS EARS, Martin details his amazing career in the vanguard of modern recording. . . from the early days when wax was the medium, 78 was the speed, and an echo chamber was a small tiled room. . . to the advent of revolutionary digital reproduction. His vast experience makes him an expert commentator on fascinating backroom details like acoustics, arrangement, orchestration, microphone techniques, and more.

In addition, Martin offers an entertaining view of how he put together hit records, what it was like to be tapping The Beatles' endless repertoire of songs, the hardship and excitement of forming his successful independent studio, AIR.

Lucid and absorbing, ALL YOU NEED IS EARS is nothing less than a personalized tour of the world of recorded sound.

MONEY BACK GUARANTEE:

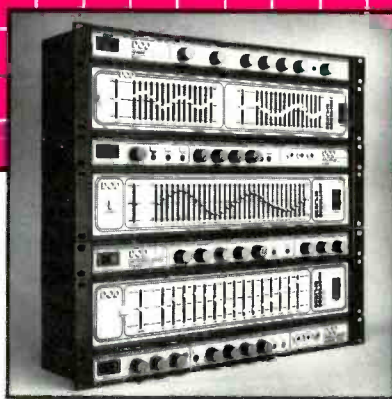
Examine this book for 15 days, if not 100% satisfied return it for a full refund.



TO: Modern Recording & Music, Attn: HL
 14 Vanderventer Ave., Port Washington, NY 11050
 Please rush me _____ copies of ALL YOU NEED IS EARS @ \$11.95 plus \$1.25 to cover postage and handling. If not fully satisfied, I will return the book within 15 days for a full refund. Enclosed is my check or money order in the amount of \$_____.

Name _____
 Address _____
 ZIP _____

Dual Delay R-880



Description

The DOD Dual Delay R-880 is intended for echo and reverb effects. The R-880 is ideal for mono or stereo P.A.

Special noise reduction techniques make the R-880 quiet enough for even the highest gain preamps, and it incorporates some features only available in digital systems.

All this, combined with the DOD reputation for quality and service makes the R-880 an excellent choice for medium to long audio delay applications.

The Dual Delay uses both compressing and emphasis to achieve its remarkably quiet operation.

Delay times of 12 ms through 500 ms are easily obtained by adjustment of the simple, straight forward controls. The front panel is divided into three sections: the delay controls; the signal controls; and the signal jacks.

The DELAY 1 and DELAY 2 switches engage each of the delay lines; therefore, at least one must be "in" to produce a delayed signal. The INPUT jack goes directly to the input level pot, so there is no input stage to overload. The CLIP indicator begins to light at about one-half of the actual clip point to allow for more headroom in the program material. The A MIX and B MIX controls are two identical mix circuits that go to separate output jacks. When using two amplifiers, the mix controls may be set differently for greater presence.

Specifications

Frequency Response:
 Dry 20Hz to 20KHz \pm 1db.
 Delay 40Hz to 6KHz \pm 1db.
 X2: 40Hz to 3KHz \pm 1db.
 Signal to Noise Ratio:
 Dry 95 db un-weighted.
 Delay 90 db un-weighted.

Input:

100K ohm unbalanced.

Outputs:

Channels A and B are separate and identical. Output impedance is 600 ohms each channel unbalanced.

Indicators:

All switches have LED lamps to indicate when they are in. The power switch is illuminated when on and the clip lamp lights when a signal over 5 volts PP is present.

Delay Range:

Delay 1: 12 ms to 125 ms.
 Delay 2: 25 ms to 250 ms.
 Delay 1 \times 2: 25 ms to 250 ms.
 Delay 2 \times 2: 50 ms to 500 ms.

Size:

Standard 1 3/4" \times 6" \times 19" rack.

Weight:

6 lb. 7 oz. (3 kg.)



Electronics Corporation
 2953 South 300 West
 Salt Lake City, Utah 84115
 (801) 485-3534

Also new from Unicord and Korg is the BPX-3 Bass Pedal designed to be used separately or with another keyboard such as the Korg CX-3 or

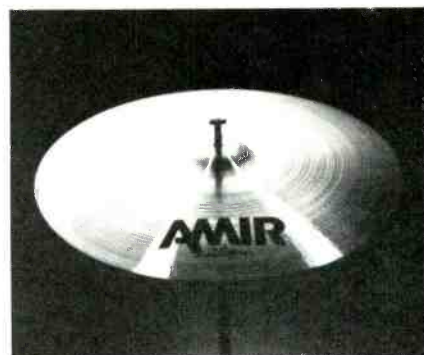


BX-3 organs. The PBX-3 includes a rugged 13-note pedal unit and a separate control head which provides pushbutton selection (with LED indicators) of four different, preset bass voices. For additional flexibility, the unit has a variable percussive attack voice plus variable key "click" for a full range of attack characteristics. The unit also features bass and treble EQ, a footswitch-activated variable sustain feature, and a built-in mixer to allow the bass pedal output to be combined conveniently with the output of one or two keyboards or other instruments.

CIRCLE 69 ON READER SERVICE CARD

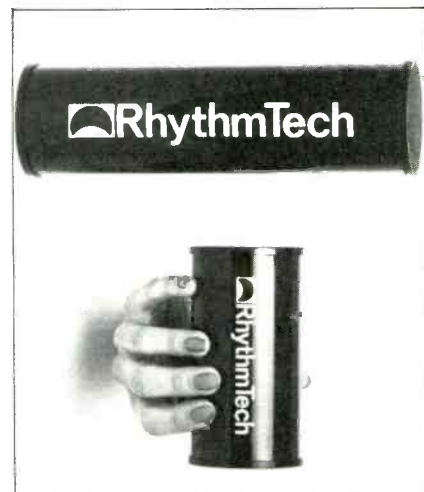
DRUMS AND PERCUSSION

The Avedis Zildjian company has introduced a new line of non-cast cymbals known as the Amir line. "amir" meaning "prince" in Arabic. The new line is a value-oriented line with a crisp, controlled sound aimed at today's pop percussionist. Amir cymbals are produced in Zildjian's American factory using discs of special, high-quality alloy produced exclusively for Zildjian by one of the world's largest metal fabricating mills. The superior sound quality of the non-cast Amirs is a testament to Zildjian's state-of-the-art engineering and production techniques.



CIRCLE 70 ON READER SERVICE CARD

New from Rhythm Tech Incorporated is the Rhythm Tech Shaker. This new Shaker was designed for ultra light weight to make it easier to play, and owes its improved sound and response to a new structural design which uses internal sound control ridges to control the feel of the instrument and create a crisp, present sound. The Rhythm Tech Shaker is available in a 9" size for maximum volume and projection, and a 5" size for a softer texture and greater control.



CIRCLE 71 ON READER SERVICE CARD

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

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

Sturdy, dependable ANVIL® cases are the industry standard, and always have been. They're designed around the delicate equipment they carry and are perfectly balanced for easy handling. They're dent-proof, scuff-proof, and slippery-fingered-roadie-proof. And they're available in just about any color you can name.

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



ANVIL® CASES, INC., 4125 Temple City Blvd., Rosemead, CA 91770 • (213) 575-8614

CIRCLE 21 ON READER SERVICE CARD

The Bose® 402 Loudspeaker.

The professional standard
for small-group P.A. systems.

Now Bose brings the advanced technology of the Articulated Array™ system to a speaker designed specifically for high-quality reinforcement of vocals and acoustic instruments. The 402 Professional Loudspeaker. An affordable and truly portable alternative to the traditional small-group P.A. speaker.

Each 402 enclosure contains four 4½" high-sensitivity drivers mounted on a faceted 3-dimensional baffle. This unique Articulated Array™ system works together with a special Acoustic Diffractor and built-in Directivity Control circuitry to deliver exceptionally uniform room coverage, without the penetrating shrillness of horns or the muffled sound of columns.

Tuned Reactive Radiator slots allow the 402 speaker to produce surprisingly high output levels with low distortion. The matched 402-E Active Equalizer assures smooth, accurate spectral response across the entire operating range of the system. And the TK-4 Transit Kit lets you clamp a pair of 402 speakers (with equalizer) together into a compact unit light enough to carry in one hand!

The 402 Loudspeaker makes it easy for anyone to



obtain the outstanding performance of Bose's Articulated Array™ system. Ask for a live demonstration at your authorized Bose Professional Products dealer.

402 Speaker on SS-4 Speaker Stand.



402 System Set in TK-4 Transit Kit.

Bose Corporation, Dept. MR
The Mountain
Framingham, Massachusetts 01701

Please send me a copy of the Bose Professional Products Catalog and a complete dealer list.

Name _____
Address _____
City _____
State _____ Zip _____
Telephone () _____

BOSE
Better sound through research.

Covered by patent rights issued and/or pending.
402 speaker design is a trademark of Bose Corporation.
© Copyright 1982 Bose Corporation.

Recording Techniques **Part 8**

by Bruce Bartlett

How are all the knobs and switches on a mixing console adjusted during a recording session? How do you achieve the cleanest sound or special sonic effects? To answer these questions, and to help you control the console efficiently, we'll run through a typical operating procedure for a multi-track session. You may want to review last month's article on console functions.

Before the session, you set all the controls to "flat," "off" or "0" so as to have no effect. That's to minimize surprises later on, and to establish a point of reference.

Let's say the microphones are already placed and plugged in; phantom powering is switched on for condenser microphones; the input-selector switches are set to "mic"; and each input module is labeled for the instrument it controls. The band is rehearsing the tune to be recorded.

First, you turn up the cue mixer pots about halfway so the musicians can hear themselves over headphones. The cue mix will be adjusted later after the input attenuators are set.

Next you assign each microphone to the desired output channel (bus). In a four-track recording, for example, you might assign guitars to Track 1, bass and drums to Track 2, vocals to Track 3, and keyboards to Track 4. Remember that when several instruments are assigned to the same track, you can't separate their images in the stereo stage. That is, you can't pan them to different positions—all the instruments on one track will sound like they're occupying the same point in space. For this reason you may want to do a stereo mix of the rhythm section on, say, Tracks 1 and 2; and then overdub

vocals and sweetening on Tracks 3 and 4.

If only one instrument is assigned to a track, you may want to patch it directly to the tape track. To do this, locate the *direct output* jack of the input module for that instrument and patch it to the desired track. Some mixing boards also require pressing a *direct* button on the input module.

Once the channel assignments are made, turn the submaster faders about $\frac{3}{4}$ up (10 to 15 dB from the top). Some consoles need the master fader up, too. Turn up the monitor-mixer pots and monitor the console bus outputs. For tape tracks receiving a direct-patched signal, monitor the *tape* track input rather than the bus.

Next, listen to just one instrument at a time by turning up the fader for that instrument, or by pushing the "solo" button for that input. Have the musician play the loudest part of the song. If necessary, adjust the input attenuation as follows: Starting with no attenuation, gradually increase attenuation (that is, reduce the level), just until there is no trace of distortion or until the LED clipping indicator stops coming on. Repeat this procedure for each input module.

In some cases, you may want to apply equalization at this point to each instrument heard individually. Filter out frequencies above and below the range of the instrument. Don't spend much time with EQ until all the instruments are mixed together, because the EQ that sounds right on individual instruments may not sound right when all the instruments are heard together. In creating the desired tonal balance, use EQ as a last resort after experimenting with microphone selection and

placement.

Should EQ be applied during recording or during mixdown? If you're mixing the instruments "live" to two-track as the music is performed, there is no separate mixdown session, so you apply equalization during recording. If you're assigning several instruments to one track, you must EQ those instruments during recording because you can't easily EQ them individually during mixdown. The same restriction is true for adding reverb or other effects to instruments assigned to the same track. If you assign each instrument to its *own* track, however, the usual practice is to record flat (without EQ) and then equalize the track during mixdown.

If the EQ used is a bass cut or treble boost, you can obtain a better signal-to-noise ratio by applying EQ during recording, rather than during mixdown. Similarly, if the EQ used is a treble cut, applying it during mixdown will reduce tape hiss.

Now you're ready to "get a level." Set all the faders in use about $\frac{3}{4}$ up (10 to 15 dB from the top). Have each instrument play one at a time and use its gain-trim pot to set the recording level as high as possible without causing tape distortion. Repeat this procedure for each instrument. You'll have to watch the *recorder* meters for tracks that are patched direct.

Different instruments require different recording levels. Instruments with weak attack transients, such as bass, organ and strings, can be recorded around +3 VU maximum. Bright-sounding instruments with sharp attack transients, such as cymbals, percussion and piano,

Hear today & Here tomorrow

Just two of the range of Europe's best selling sound reinforcement boards—now available in the United States.



SOUNDTRACS™ 16-6 MONITOR

Possibly unique in specification, certainly in price. Incorporating all the necessary facilities for versatile 'on stage' monitoring. Can be linked to all '16 Series' boards by way of multi-pin connector and cable to provide a full 16 channel sound reinforcement mix.

- Phase reverse
- Master/master interlink
- Talkback to any of the six groups
- Balanced inputs/outputs
- 6 separate sends to masters
- Channel mutes and solos

Also available: 16-2, 16-4, 16-4-2, 24-4-2, 3 way crossover, 10 band stereo graphic.

SOUNDTRACS™ OMNI 16

Available either in a studio version (as shown) or as a mobile unit in flight case, the Omni 16 combines compactness with ease of operation and an exceptional track record of reliability. A number one choice for 16 channel sound reinforcement or 16 track recording at a very affordable price.

- Unique monitor/mix switching
- Balanced inputs/outputs plus unbalanced line
- Three Aux rails
- 100mm faders
- Line up 1K oscillator plus separate output



Full color brochure and technical specs from:

SOUNDTRACS™

Soundtracs Inc. 262A Eastern Parkway, Farmingdale, NY 11735 (516) 249-3669

CIRCLE 25 ON READER SERVICE CARD

should be recorded at -10 to -3 VU to prevent tape saturation. You may prefer the sound of tape saturation on some instruments. Experiment with recording levels while listening to the tape playback until you become familiar with the proper settings.

If you have several microphones assigned to one channel, monitor that channel and turn up the faders for those microphones. As the band plays, set the desired balance between microphones with the faders while maintaining a proper recording level.

Next, have the entire band play the loudest part of the song, and touch up the attenuator and level settings. Adjust the monitor volume controls for a rough mix as heard from the monitor speakers. Then monitor the cue mix and adjust it according to what the musicians want to hear. These mixes are independent of the levels going on tape.

Now you're ready to record the tune. Start the tape in record mode, slate it and have the musicians count-off the beat. As the song progresses, you may need to make small adjustments in level and equalization. You can check the sound of individual instruments without affecting the recording by pressing the appropriate *solo* buttons.

At the end of the song, the musicians should be silent for several seconds after the last note. Or, if the song will end in a fade-out, the musicians should continue playing for about a minute so there will be enough material for a fade-out during mixdown.

Overdubbing

After the tunes are recorded, it's time to add overdubs. A musician lays down a part on top of the music already recorded. As he listens to the pre-recorded tracks, you record him playing new material on one of the remaining open tracks.

Here's how to set up the console for overdubbing. First, relabel the inputs if necessary. Set the recorded tape tracks to the "sel-sync" or "simul-sync" mode and set the tracks to be recorded to the "record-ready" mode. Assign the new instrument to the desired tape track; turn up its fader(s); and adjust the input attenuation, level and EQ as needed.

Set the cue mix and monitor mix for a good balance between the pre-recorded tracks and the "live" micro-

phone signals you're adding. For example, suppose you've already recorded drums, bass and guitars, and you're ready to add a vocal. While monitoring the cue bus, play the tape and set up a cue mix so the vocalist can hear himself and the pre-recorded tracks in his headphones. Have the vocalist sing along with the instrumental tracks. Set a mix on the monitor mixer, too. Remember, the monitor mix is not going on tape—it's just allowing you to hear how the vocalist blends with the other tracks. When you're happy with the cue mix and the monitor mix, record the new track(s). Repeat this procedure for the remaining overdubs.

Mixdown

With all the parts recorded, you're ready for mixdown. Relabel the input modules according to the content of each track. Flip the input-selector switch on each input to the appropriate position so the tape tracks will play through the console for mixing. Since you're mixing to two-channel stereo, monitor only Channels 1 and 2 (the 2-track mix bus), with the monitor pan pots set to the extreme left and right. Assign each track to Channel 1 (left), Channel 2 (right) or both (for panning between left and right).

Set the pan pot for each recorded track to place its sonic image in the desired location between the pair of monitor speakers. Try to achieve a stereo stage that is well-balanced from left to right. For ease of record cutting, the bass, kick drum, and lead vocal should go to the center (pan pot set straight up). Other instruments can go equally to left or right, or to half-left and half-right. Try not to pan everything to the middle—you'll end up with a mono tape.

Once the instrument-image positions are set, don't change them during the song (except for special

effect). Real instruments don't move across the stage as they're playing, and neither should reproduced instruments. An exception to this rule might be a stereo electric piano or a lead-guitar solo.

Now you're ready to mix. Set the master fader and input faders about $\frac{3}{4}$ up (10 to 15 dB from the top). Play the multi-track tape and adjust the gain-trim pots for a rough balance between the instruments. Then fine tune the mix with the faders. As a starting point, you may want to set the gain trims so that all the instruments and vocals sound equally loud, then turn up the most important tracks and turn down background instruments. Or you can bring up one track at a time and blend it with other tracks. For example, first set up a drum mix, then add kick drum, then bass, then guitars, then vocals. To reduce tape noise, mute any track that has nothing playing at the moment (or turn down its fader).

Next, adjust equalization as desired. Filter out frequencies above and below the range of each instrument to reduce leakage and noise. If you're unsure how to set the equalizers, refer to the section on "sound-quality descriptions" later in this article.

Set the echo-receive and effects-receive controls about halfway up. Adjust the echo-send and effects-send knobs for each track for the desired results. Apply reverb sparingly—too much can muddy the sound. Vocals, strings, horns, flutes and lead guitars usually get the most reverberation. Drums, bass, rhythm guitar and piano often get little or no reverb so that they retain their clarity, but there are always exceptions. You may want to roll off the highs and lows on the reverb return signal to reduce hiss and rumble.

As you're adjusting the mix, set the input faders and master fader to

Low-Frequency Boost (below about 500 Hz)	
Positive	Negative
Powerful (under 200 Hz)	Muddy
Ballsy (under 200 Hz)	Tubby (200-300 Hz)
Heavy (under 200 Hz)	Thumpy
Fat	Boomy
Thick	Barrel-like
Warm	Woody (200-400 Hz)
Robust	
Mellow	
Full	
Woody (200-400 Hz)	

MEET YOUR BACKUP GROUP.

Specialists behind the scenes helping you sound your best. Abadon Sun.

Engineers, technicians, designers constantly updating their knowledge to make your job easier, more efficient, more dynamic. Abadon Sun.

Custom designers that build to fit your needs and your

pocketbook. First to introduce a "total system design" approach that enables them to put together a compatible complete system. Or, the expertise to match new equipment to an existing system. It's this personal attention to detail that will keep you coming back.

Abadon Sun.

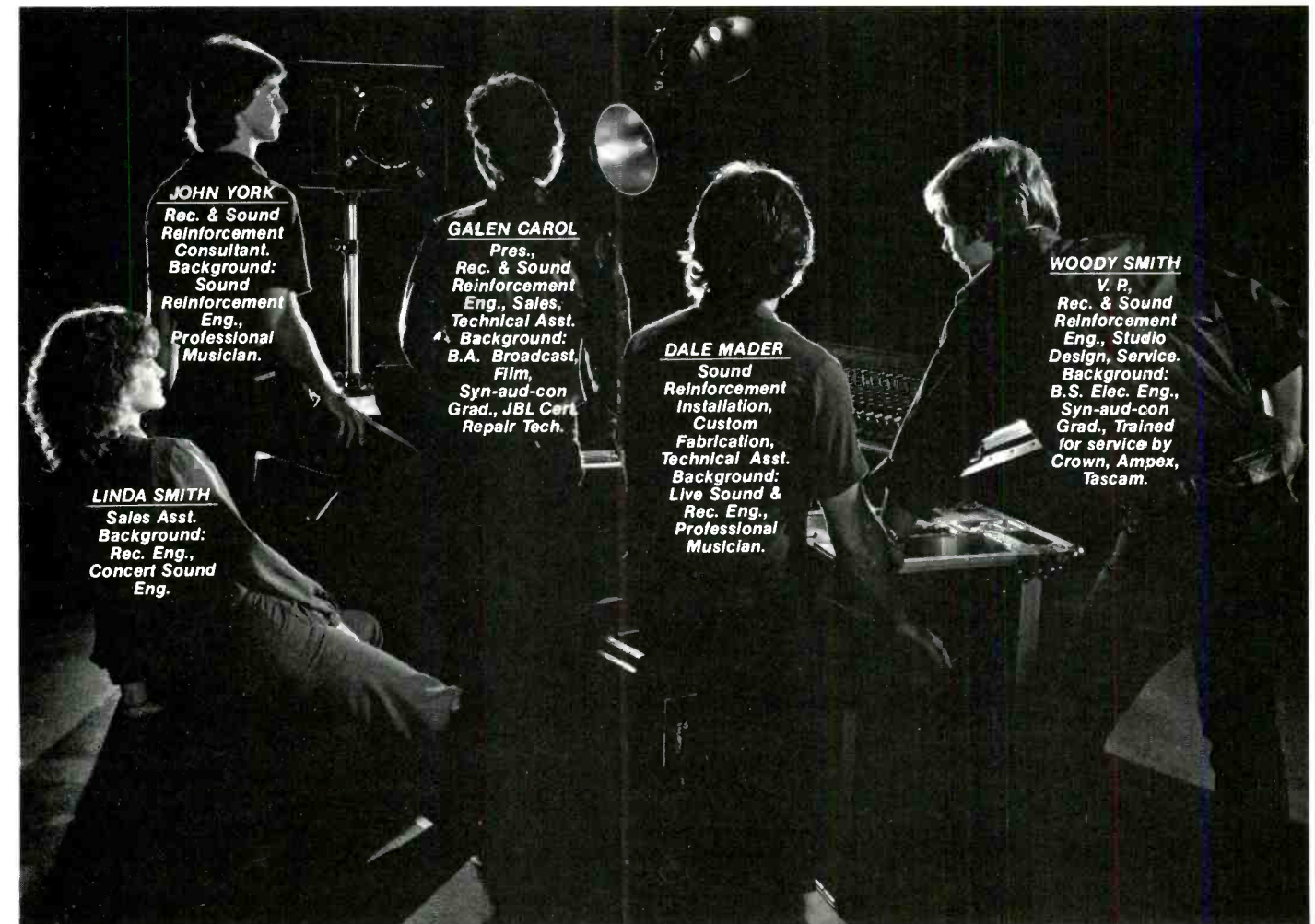
Designers of some of the most innovative systems today.

So, if you're a professional musician, singer or recording engineer looking for the best solution to your audio needs, we'll back you up.

 PROFESSIONAL AUDIO
ABADON SUN, INC.

SOUND ADVICE FOR A SOUND INVESTMENT.

P. O. Box 6520, San Antonio, TX 78209 • 512-824-8781
Please send \$1.00 for our latest catalogue.



JOHN YORK
Rec. & Sound
Reinforcement
Consultant.
Background:
Sound
Reinforcement
Eng.,
Professional
Musician.

GALEN CAROL
Pres.,
Rec. & Sound
Reinforcement
Eng., Sales,
Technical Asst.
Background:
B.A. Broadcast,
Film,
Syn-aud-con
Grad., JBL Cert.
Repair Tech.

DALE MADER
Sound
Reinforcement
Installation,
Custom
Fabrication,
Technical Asst.
Background:
Live Sound &
Rec. Eng.,
Professional
Musician.

WOODY SMITH
V. P.,
Rec. & Sound
Reinforcement
Eng., Studio
Design, Service.
Background:
B.S. Elec. Eng.,
Syn-aud-con
Grad., Trained
for service by
Crown, Ampex,
Tascam.

LINDA SMITH
Sales Asst.
Background:
Rec. Eng.,
Concert Sound
Eng.

AKG • ASI • AMPEX • ASHLY • AURATONE • BEYER • COUNTRYMAN • CROWN • DBX • DELTA LAB • DOLBY • ELECTRO-VOICE • EVENTIDE • EXR • HME
IVIE • JBL • KINETEK • LEXICON • MARSHALL • MRL • MICMIX • NEOTEK • OMNICRAFT • ORBAN • QUANTUM • REVOX • ROLAND STUDIO SYSTEMS
SENNHEISER • SHURE • SONY • SOUND CRAFT • STAR • TANGENT • TASCAM • TEAC • TECHNICS • UREI • WHITE

CIRCLE 26 ON READER SERVICE CARD

www.americanradiohistory.com

High-Frequency Boost (above about 7 kHz)

Positive

Treble
Bright
Crisp
Articulate
Etched
Hot
Sizzly (cymbals)

Negative

Treble
Sizzly (voice)
Edgy
Glassy
"Essy" Sibilant
Steely
String Noise

Flat, Extended High Frequencies

Positive

Open
Airy
Transparent
Clear
Natural
Neutral
smooth
Effortless
Detailed

Negative

Too detailed
Too close

High-Frequency Rolloff

Positive

Mellow
Round
Smooth
Easy-on-the-ears
Concert-hall-like

Negative

Dull
Restricted
Muffled
Veiled
Muddy
Distant

Overall Response

Positive (all flat response)

Natural
Accurate
Neutral
Smooth
Transparent
Effortless
Musical
Uncolored
Liquid

Negative

Rough, peaky, harsh,
colored (non-flat, peaks
and dips)
Phasey (sharp dips)
Cheap (narrow-band)
Flat (lacking character—too
neutral)

Reverberation or Leakage

Too Little

Sterile
Dry
Dead
Muffled
Thin

Well-Controlled

Clean
Tight

Pleasant

Warm
Rich
Sumptuous
Airy
Having depth
"Live"
Spacious
Open
Full
Bright

Too Much

Echoey
Bathroom-sound
Muddy
Loose
Washed-out
Barrel-like
Cavernous
In another room
Distant
Trashy



ALBATROSS
RECORDS, INC.

3500 Albatross Ave.
Suite 501
Rockingham, MI 48064
313-555-3206

August 1, 1982

Mr. Stephen West
4 Crestwood Lane
Anton, MA 01720

Dear Mr. West:

Thank you for your interest in Albatross Records.
Unfortunately, after listening to your demonstration
tape, we have decided that your talents do not fit in
with our needs at the present time.

Enclosed please find the tape which is being
returned to you.

Thank you again; we wish you and your group
success in the future.

Sincerely yours,
Dean Noble
Dean Noble
Artist and Repertoire Director

Enclosure

DN:EP

“Thank you for your interest in Albatross Records. Unfortunately...”

Few things in this world are as irritating as a polite rejection letter.

But maybe one of these days someone will like your demo tape. And instead of a form letter, you'll get a phone call.

At dbx, we know it's the quality of your music that will make you successful. But we can't help thinking that the quality of your tape recording will play a part, too. After all, how will they know how good you sound if the tape doesn't really capture your sound?

So we have a suggestion: dbx tape noise reduction.

For a modest investment, you can add a dbx professional component to your tape system and start sending in demos that sound like the real thing.

Because dbx doesn't just reduce noise. We eliminate it. You can record, mix-down and overdub, again

and again, without any build-up of tape hiss. Each generation sounds just as clean as the first. And you'll end up with a final mix that sounds better than you've ever sounded on tape before.

Now of course, we can't guarantee that this will make you a hit.

But it will sure make you sound like one.

Visit your authorized dbx professional dealer for a look at our full line of equipment. Or call or write dbx, Incorporated, Professional Products Division, 71 Chapel Street, Box 100C, Newton, MA 02195 U.S.A.
Tel. (617) 964-3210.
Telex: 92-2522.

dbx[®] Professional
Signal
Processing

Noise and Distortion

Absent

Clean
Clear
Smooth
Open

Present

Veiled (mild distortion)
Hard
Harsh
Grainy
Gritty
Dirty (positive or negative)
Distorted
Fuzzy
Sputtering
Raunchy
Noisy
Hissy

Transient Response

Good

Clean
Tight
Crisp
Sharp

Bad

Smeared
Blurred
Veiled
Muffled

Stereo Imaging

Sharp

Focused
Pin-pointed
Easy-to-localize
Fused
Defined
Pan-potted

Diffuse

Vague
Unfocused
Hard-to-localize
Smeared
Spread
Directionless
Spacious
Hole-in-the-middle
Phasey
Fat
Big

Relative Loudness in the Mix

Loud

Up front
On top
Present
Hot
Forward
Dominating
Covering

Quiet

Distant
Subtle
In the background
Recessed
Lost
Covered

Summary

We've covered basic console operation during the recording, overdubbing and mixdown stages. For more detail, consult the operating manual for your particular mixing board.

The general procedure during recording is as follows:

- (1) Turn up cue system and assign instruments to tracks.

- (2) Turn up monitor system and submasters (some consoles also need the master fader up).
- (3) Adjust input attenuators.
- (4) Set submixes and recording levels.
- (5) Set monitor mix and cue mix.
- (6) Record onto the multi-track tape.

Overdubbing

- (1) Assign instruments to be over-

dubbed to open tracks.

- (2) Turn up monitor system and submasters (some consoles also need the master fader up).
- (3) Play the multi-track tape in "sync" mode and set up a cue mix and monitor mix.
- (4) While the "live" musician is playing, adjust his or her input attenuation and recording level.
- (5) Set cue mix and monitor mix to include the sound of the instrument being added.
- (6) Record the new parts on the open tracks.

Mixdown

- (1) Set input selectors to accept the multi-track tape signals.
- (2) Monitor Channels 1 and 2 (2-track mix bus). Pan monitor channels to extreme left and right.
- (3) Assign tracks to Channel 1, Channel 2 or both (using pan pots).
- (4) Turn up the master fader and set a rough mix with the gain-trim pots and the input faders. In some mixing boards, the submasters should also be up.
- (5) Set EQ, reverb and effects.
- (6) Perfect the mix and set recording levels.
- (7) Record onto the two-track tape.

During mixdown, you set the mix, EQ and effects to sound like records you've heard through the monitors you're using. It's a good idea to play a record with tunes similar to those you're recording to hear a typical mix for the particular style of music.

It can be a humbling and enlightening experience to compare your finished tape to a commercial record of the same song. Suppose you've recorded a song that is already on a commercially released record. Put your tape on a tape deck connected to your stereo system. Play the record and the tape simultaneously while switching back and forth between "phono" and "tape," with levels matched. You'll hear surprising differences between the tape and record that display the recording engineer's skill, the producer's imagination, the musicians' talents and the studio's expensive facilities.

Trying to copy the sound of a record is excellent training for the ear. But coming up with new and better sounds is the real challenge. Creating those sounds involves, among other things, the use of *signal processors*, which we'll look at in the next installment.

Introducing Synsonics™ Drums. An amazing new electronic drum set with a built-in computer. So you can play drums, even if drums aren't your instrument.

The set includes a snare drum, two cymbal sounds, bass drum sound and two tom toms. One tunable for space drum sounds.

You play Synsonics Drums by simply touching the buttons that control the computer's pre-programmed drum rolls. Or by hitting the pads with your own drumsticks or fingers.

This makes Synsonics Drums great to practice and learn on.

And even better to compose with. The computer has three sets of programmable memories, so you can layer patterns indefinitely in the record mode. Then play them back alone or blended in sequence.

Synsonics Drums are really useful, though, when you need an accompaniment for entertaining or jamming. They can be played through any stereo or headphones.

Synsonics Drums are loaded with other impressive features like tempo control, pitch control and stereo outputs. All in a small portable unit costing less than you'd pay for a Synare® electronic drum alone.

See Synsonics Drums at your dealer soon. Your jam sessions may never sound the same.

Batteries and drumsticks not included.

SYNSONICS™ DRUMS



**THE LATEST
ELECTRONIC JAMMING
DEVICE.**

©Mattel, Inc. 1982. All Rights Reserved.

CIRCLE 28 ON READER SERVICE CARD

RECORDING WITH...

WARREN ZEVON



By Vicki Greenleaf and Stan Hyman

David Kramer



Warren Zevon's self-titled debut album (*Asylum*)—disregarding *Wanted Dead or Alive* (*Imperial*, 1970), which went, deservedly, unnoticed—garnered him much critical acclaim in '76, but little recognition from listeners; at a later date, *Time* magazine named the LP one of the top-10 rock 'n' roll efforts of the 70s. However, three songs from that album, "Poor, Poor Pitiful Me," "Hasten Down the Wind" and "Carmelita," became better known when Linda Ronstadt later recorded them.

Zevon's first LP—produced by Jackson Browne—and subsequent recordings featured such musical greats as Ronstadt; former Eagles Glenn Frey, Don Henley, Joe Walsh and Don Felder; Carl Wilson of the Beach Boys; Bonnie Raitt; Stevie Nicks and Lindsey Buckingham, top studio musicians such as David Lindley, Russ Kunkel, Waddy Wachtel, Rick Marotta, Roy Marinell and Bob Glaub also frequent his LPs.

Why buy two ordinary mixers when you can have one exceptional Ramsa?

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

This virtually unheard of versatility is possible because of innovative



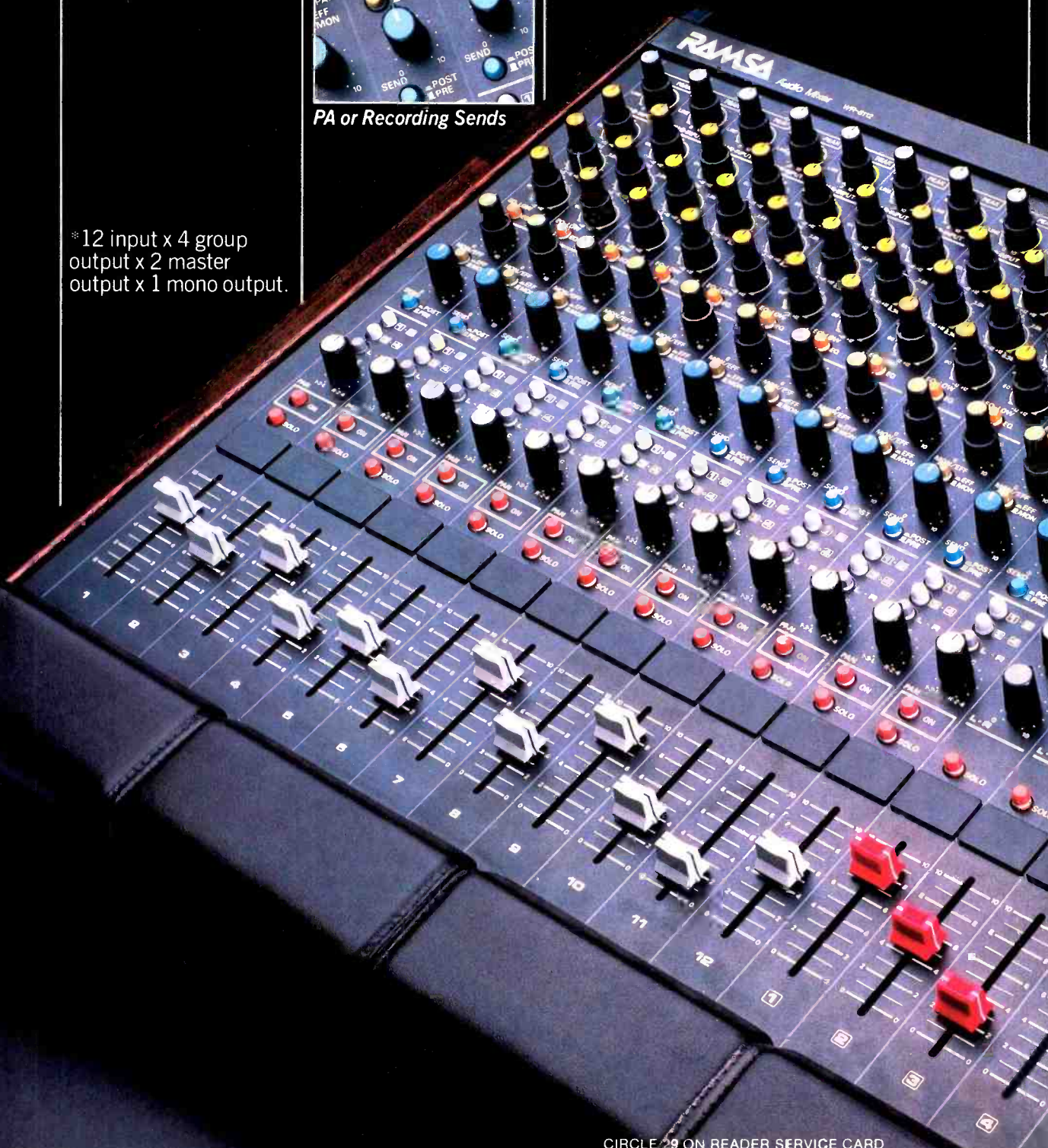
PA or Recording Sends

Ramsa engineering. One set of circuits actually performs as two. Functions like stereo tape monitoring are switchable to become stereo

effects sends for PA. PA monitor sends can be switched for effects sends for recording or mixdown. And that's just for starters.

The Ramsa WR-8112 gives you the flexibility of switchable turnover

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



RAMSA

frequencies for high and low EQ as well as continuously variable frequency for the midrange.

The metering is flexible and accurate with four 12-point peak-reading LED meters. There are selectors for group outs 1 to 4, Left and Right master outs, monitor send and solo metering for any channel.

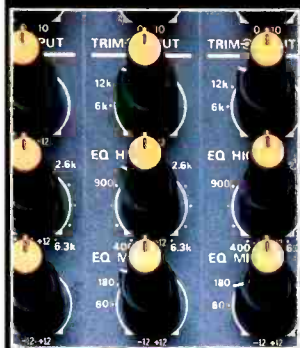
The group output levels can be internally connected for either -10 db or +4 db (nominal) to interface with either semiprofessional or professional equipment.

But perhaps the most remarkable thing about the WR-8112 is that it offers the same clean, transparent sound quality as our larger, fully modular mixers, at a more affordable price.

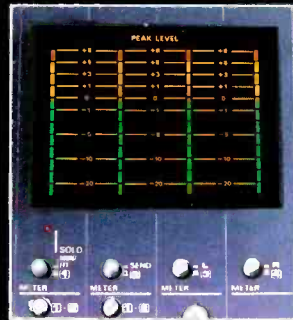
And if your needs are strictly recording, we recommend the highly affordable Ramsa WR-321C.

So whether you are recording, gigging, doing AV production or anything in between, why get two ordinary mixers when you can get one exceptional Ramsa. The WR-8112.

For more information, call (201) 348-7470.



Flexible Equalization



Versatile LED Metering



Panasonic
PROFESSIONAL AUDIO DIVISION

But it wasn't until Zeron's second album, *Excitable Boy (Asylum)*, was released two years later that he attained mass popularity with the top-10 hit "Werewolves of London." Although thrilled at the time, Zeron now professes some disappointment that the "gimmick" song earned him the long-awaited success.

Zeron's preoccupation with violence and his troubles with alcohol came to a climax in the two years preceding his next release in 1980, *Bad Luck Streak in Dancing School (Asylum)*. He admitted himself to an alcoholism rehabilitation hospital ("I didn't want to die," he says), went through a devastating detoxification process and an amicable divorce before re-entering the studio. *Bad Luck* is regarded by many as his most-violent effort, yet a self-revelatory and vulnerable one. Deciding to record again that same year, he released a "live" album, *Stand in the Fire (Asylum)*, material played at a concert at the *Roxy* in Los Angeles, was lauded as a keenly-emotional rock'n'roll effort. Today, the gun featured on the reverse of the album jacket of *Bad Luck* is no longer an obsessive

plaything that Zeron carries into interviews.

The over-all tone of his latest LP, *The Envoy (Asylum)*, released several weeks ago, is strangely optimistic for the dark-humored musician. The album retains a hard-rock edge, yet several tracks produce a poppish appeal. Although Zeron claims that excessive drinking and his songwriting process were never closely linked, he says that his rehabilitation and subsequent romance with Kim Lankford of *Knot's Landing* fame, have made him—and consequently his music—much more cheerful.

Modern Recording & Music spoke with Zeron in the Los Angeles offices of Elektra-Asylum Records a few days after he had completed work on *The Envoy*. According to the 35-year-old, singer-keyboardist-guitarist, the album—which was recorded at Val Garay's *Record One* and produced by Greg Ladanyi, Wachtel and Zeron—took approximately one-and-a-half years to make. It was well worth the time and effort and should rank among his strongest work to date.

Modern Recording & Music: Are you pleased with your new album?

Warren Zeron: I hate it. I really do. That statement sounds pretty rehearsed and coquettish, but it just occurred to me to make it. I think I feel that way because this is the first time I've ever been able to say that I couldn't have possibly worked any harder on a record. And, in the course of doing that, I exhausted whatever potential I had for entertaining myself.

MR&M: How is this LP similar to or different from your previous efforts?

WZ: I think my albums get clearer and healthier as time goes on. When I started out, I didn't want to play this or sing that or write with someone else. Now, I enjoy collaborating. So the albums have changed in that way. I believe they're reasonably consistent and, once again, this album is dominated by Waddy (Wachtel). I kinda wanted to make a record without him [*Laughs*], to make sure I could do it. But I couldn't imagine doing an album without Waddy or Greg [*Ladanyi*].

MR&M: Once again you're using the finest studio musicians to back you; obviously you feel comfortable working with the same guys...

WZ: There was a time when I was real intimidated by their strange personalities. Now, I'm only intimidated by their talent. They tend to play with a lot more enthusiasm and commitment than other musicians. They'll also stick around for the rest of the night after the date's over.

MR&M: Your last album, "*Bad Luck Streak in Dancing School*,"

wasn't received well by the critics or the listeners. Were you concerned about the commercial aspects of this latest project?

WZ: I think if I made any more of an effort not to be commercial, they'd put me on the None-Such label or something! [*Laughs*] (Elektra) Asylum has really been great. They don't bother me when I'm recording. I guess I had some private giggles about what people are going to think about my being optimistic or my being engaged to be married or my being happy or there being nothing grim about the last song on the album. But when you start a recording career with a hit like "Werewolves," where can you go? [*Laughs*] There's no point in second guessing is there? I remember asking Jackson [Browne] if he liked the album and he told me he did. But it occurred to me that it still might be devoid of anything people would care for. I really don't like to speculate.

MR&M: It seems that you're going for a "live" sound once again.

WZ: It's all "live" except for a couple of percussion overdubs. I remember some of the dramatic moments in engineering. There was one thing that happened that was sort of incredible and explained to me why *Record One* was the studio to record in. We were cutting "Charlie's Medicine" and we weren't really going for the vocal; I was just shouting above all the noise. It was about the seventh take and Waddy knew that we couldn't possibly have enough tape to record the whole song. But halfway through the take, Waddy realized that this was the take and

there was no way to edit it. At the same time, I'm concentrating on this 12-string guitar part that I've been practicing day and night for weeks and weeks. I'm also facing away from the studio control room, so I'm totally unaware of what's going on. At this point, Waddy looks at Greg—the band faces the glass—inside the control room and gives him some eyebrow language. But Greg stands up and turns his back on him! So Waddy gets that snarl look on his face, but I'm not really aware of why he's doing it. Just as he's about to have a stroke, the lights are up on the 24-track machine and at the same time the lights on the other 24-track machine come on as Greg turns around and smiles. Greg slammed up the other machine in the middle of the song and it picked it up. When they told me what happened afterward I thought they were putting me on. But I also realized the importance of having two 24-track machines in a studio. That impressed me.

MR&M: We're hoping you might be able to detail some of the tracks on the album. For instance, on "The Envoy" did you use a synthesizer or did you speed up the guitars?

WZ: We never speed anything up or slow anything down. I use a Toland synthesizer on every track. That broken organ sound on "Ain't That Pretty..." is the same synthesizer as the one on "The Envoy."

MR&M: What kind of guitars are you using...

WZ: I played Waddy's Stratocaster on the guitar solo on "The Envoy." I also used a Guild 12-string on the album.

MR&M: Is there any guitar you prefer?

WZ: There might be, but I don't own it! I'd like to have Waddy's guitar. I'd also take [David] Lindley's. [Laughs] I don't have much in the way of guitars. I've got a beautiful broadcaster that Jackson gave me.

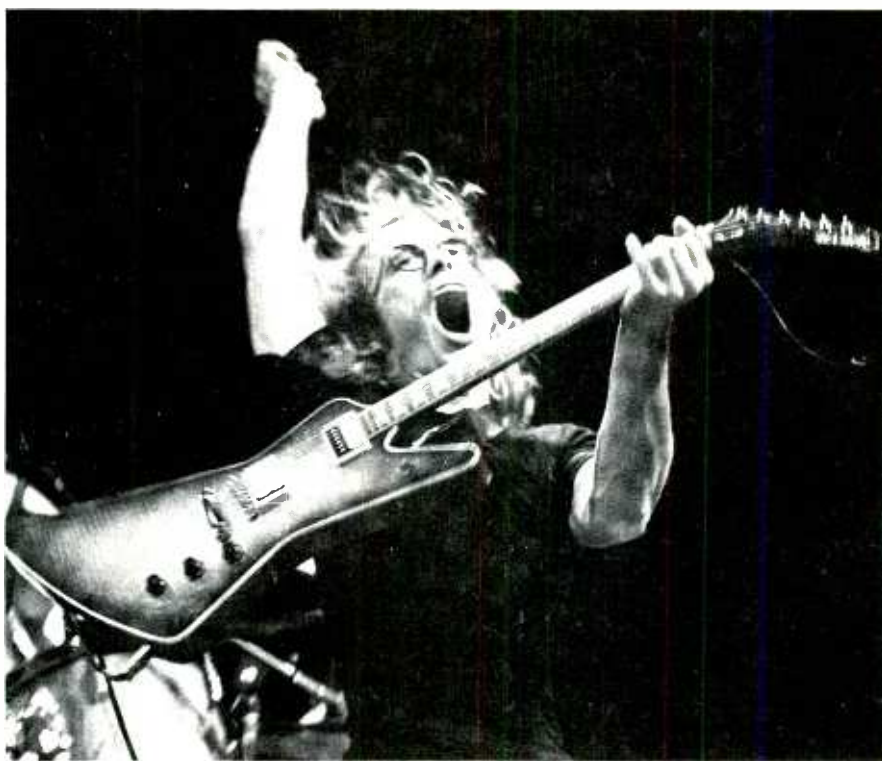
MR&M: According to Glenn Frey, Jackson gave him "old black," Frey's favorite guitar.

WZ: Don't tell me that. You know, we looked all over town for a Chiceron piano for the ballad. But nobody had one. They said, "Why don't you use a Duzeldorf or... something unpronounceable [Bosendorfer?], it has great rimmer action." They showed me all of their grand pianos, all of the best German makes. But we couldn't find a Chiceron. We borrowed one from Toto, but I think we ended up using a Steinway in the studio. Everything else on the album is that little electronic keyboard [Roland], which is the only instrument that I get along with and that gets along with me.

MR&M: What is it that you like about synthesizers? You seem to use them primarily as a good backing for the guitars.

WZ: A lot of the time I use them in that way. There are moments that—hopefully—you might have thought you were listening to guitars. A lot of the things were little duels between Waddy on guitar and me on synthesizer; we were both running through the same big Marshall's. The keyboard is not an expensive unit and it's completely polyphonic. I'm not even sure it's a true synthesizer. It might just be a glorified hybrid organ. Harrison Ford [star of *Raiders of the Lost Ark*] brought me an Oberheim; he flew it into my living room. I made him make a chart for me of what every knob did. I was going to play this thing all night and decide if I wanted to use it. It cost a shit-load of money. As the sun was coming up, I pushed all these buttons and it went, *bep, boop, boop, boop, bop, boop*. It sounded like the Who. It made its own part and told me that I could go to bed. I knew I didn't like this instrument. The Roland makes pretty satisfactory woodwind sounds. The oboe sound it makes strikes me as being a nice keyboard cousin to a lead guitar sound. It just seems to do a lot of things without doing them obtrusively and without throwing a couple of wrong switches and having it play back a whole sequence.

MR&M: "Ain't That Pretty..." doesn't sound like anything you've



recorded in the past. It almost sounds like music you'd hear at a carnival, a "Show Must Go On"-type song.

WZ: Maybe that's because it's a can-can. It's the big track on the album and those tend to be "live" and scary. We got it the first night on an early take. I had a real strong idea about what it should sound like prior to working on it. We wrote it with a rhythm machine. The idea was to get the beat sort of backwards. So I pulled this whipping knob, this pitch-bending thing and it went, *da, da, da, da, da, da, da*. When I heard that, I realized it was a can-can. It's supposed to be a three and one and two two and three and four and one beat.

MR&M: What's the song about?

WZ: Roy Marinell and I wrote it; it started out by him describing a Rossington-Collins concert he'd been to and a kid who hurled himself against a wall.

MR&M: "Charlie's Medicine" is another song that seems to have originated from a personal experience.

WZ: "Charlie" isn't an achievement in songwriting. It doesn't sound like a song in terms of making it rhyme. But the song needed to be written; it needed to be there 'cause I had a little of Charlie's medicine and had stayed away from him for a few months and I'd gotten worried about him. It just belonged there, it completed the process [detoxification] that I had gone through.

MR&M: So it was like exorcising a demon out of...

WZ: In this particular case I think so. It was the last song I wrote for the album. I tend not to want to have to explain that one very much.

MR&M: In the past, how do you think your drinking affected your work?

WZ: I don't think the process of writing and the process of drinking were tied up that closely. I never thought that I should try drinking when I couldn't write. I don't remember having a bottle of Jack Daniel's next to me when I actually accomplished anything. Maybe that's only a rationalization but I don't think I was really fucked up when I wrote the songs. I was the self-destructing drunk who realized that he had just taken a downer and was drunk. So I would make a pot of coffee and walk around the walls all night so I could wake up the next day. I never wanted to die. I always figured I'd come to in a hospital.

MR&M: Now that your drinking is behind you, do you feel more disciplined in your work?

WZ: I think so. A lot of things that I never could understand in music are becoming clearer. That's real exciting for me. It makes it a lot of fun. I found that I could sit down and play songs on the piano that in the past were hard for me to do.

MR&M: What do you think was your initial appeal to the public? Was it that drinking, gun-toting image?

MR&M: I believe—reluctantly—that it was my lyrics. I say reluctantly

because I started out thinking of myself as a composer. I kept saying that these lyrics were just minor notes in the music. But my lyrics are consistent, even during the time when I was morally at odds with myself. I also believe that I have established a certain amount of credibility; I think "Carmelita" effectively appealed to a little spectrum of society.

* * *

MR&M: What are your strong points as a performer?

WZ: Besides my good looks?

MR&M: Yes, besides your good looks.

WZ: I think a strong point is the fact that I go out there despite all my weaknesses. I'm also real in ease and enjoy being there and getting into it.

MR&M: What are your weaknesses?

WZ: I don't sing as well as I'd like to. I also don't play as well as I'd like to. When I listen to the piano part on "The Overdraft"...

MR&M: Are there aspects of performing or recording that you feel you've improved upon?

WZ: I still don't think of myself as a singer, but Waddy taught me how to sing "Jesus Mentioned." I learned how to sing from my diaphragm—the Simon and Garfunkel voice; the voice that we use at home in the middle of the night on demos. Not this one [*lowers his voice*], but this one [*raises his voice*]. Waddy really taught me how to sing that song. He sat facing me with a guitar and we started playing it. I started to get hung up trying to play it and sing it. Suddenly I realized, "Why am I playing this when all I have to do is give Waddy a rough idea of what I think it should sound like." It didn't occur to me that singing it and writing it was enough. I was trying to play a 12-string part, and finally I said, "Waddy, start in 5/4," and it worked. It was exciting just to be singing while Waddy was playing it and going through all those time changes. He took a Harmonizer™ and put those notes in pitch; I don't know exactly what a Harmonizer™ does, but it brings up the track and the vocal—it comes to the flat note and corrects it. Waddy and I have a lot of untapped potential together.

MR&M: Would it be a fair statement to say that you're more interested in attaining a certain level of energy rather than a note-by-note perfection?

WZ: Yeah, I think so. I think that would apply to anything I do. The

most exciting moment in my career was the first time I heard Phil Everly play something I did. There's something about hearing 10 guys and rosin and catgut.

MR&M: Who were the early influences on your work?

WZ: It's hard to remember because I forget so much. I started out listening to groups like the Kingston Trio and the Clancy Brothers. Eventually I started listening more and more to folk and bluegrass. There used to be a band that played a folk club out here in L.A. They were called the Rising Suns and were just unfucking believable: Taj Mahal, Ry Cooder, those were the front guys.

MR&M: It seems that "The Envoy" also retains some of your classical influences.

WZ: I'm glad you think so. I still think in terms of integrals in chords.

MR&M: Don't you have an unfinished symphony lying around somewhere?

WZ: Oh, I finished it and then decided I didn't like it and re-wrote it.

MR&M: Any thoughts about recording it?

WZ: I feel I should perform it first. I don't think it would be fair to the label to record it. If I could get a conductor or a student orchestra interested in playing it, then maybe I'd do it. But I wouldn't go into the studio cold. Someone tried to explain to me how an Emulator [E-Mu Systems] works. It sounded like a modern, digital Chamberlain. They said it could play the whole thing. But I told them that would take all the fun away.

MR&M: As someone who's capable of writing a symphony and songs such as "Poor Poor Pitiful Me," "Hasten Down the Wind," and "Carmelita"—all which became hits for Linda Ronstadt—do you see an irony in that you became an overnight success with a song like "Werewolves of London"?

WZ: You know, I'm not really sure. I think I was probably least equipped to deal with being successful, being in *Time* and *Newsweek*. I can say that maybe I would have preferred becoming known for "Hasten Down the Wind" rather than "Werewolves." Looking back, I should have been a little disappointed. But I don't remember being disappointed. I only remember being overwhelmed that I had a hit. I was so thrilled I must have rationalized it. But it was the last song we ever expected anyone to play. But everything is so screwy and inverted in this world and that proves it.

MR&M: "Werewolves" does reflect an important side of your work, namely your wry sense of humor.

WZ: Well, that style of humor is something that I grew up with. My father has a pretty devastating sense of humor, black humor. A lot of time, I've had a cruel sense of humor in my work, which is a drunk sense of humor. I still think it's a necessary part of my writing probably because the more scary something is, the more I'll fall back on it to cope with the idea of death and violence.

MR&M: Does violence play a part in "The Envoy"?

WZ: I wrote that song when—remember the thing in Syria—we went for about five envoys in a week. I was constantly listening to the news and by the time I heard the 5 p.m. broadcast on channel 40 or whatever, it had all kind of fallen into place. Wait till you see the cover of the album, it's like an Ian Fleming fantasy.

* * *

MR&M: Your music has been noted for its violent content. Guns have been used to graphically illustrate your album covers. I notice you're no longer toting the gun that you previously carried to interviews. Did John Lennon's death have any influence on your violent persona?

WZ: When Lennon died, I joined the Foundation Against Violence in America. I was more than pleased to join because I think it conducts primarily psychological research on violence and its impact. I do not believe that *Taxi Driver* motivated this creep to shoot the president. If it hadn't been that movie, it would have been *Bullwinkle & Rocky*. If not our president, it would have been a school bus full of children. I do not believe there is a direct linkage. A person in Hinkley's condition—who I don't believe is rational—is susceptible to any experience to elaborate on. *Taxi Driver* is real powerful, but I think there is a lot of shocking, appalling and violent stuff on television. I have nothing against R-rated violence, but personally, I think it's just too epidemic and too horrifying. It's in this country and those things are sobering realities. This country is very violent. We don't have a bigger conscience and *think* it's more violent; it *is* more violent here. All those things are getting to me, but I can't say I regret anything.

MR&M: So, you don't feel that your music has encouraged violence?

WZ: I don't think that's possible, but I worry about it. If it were

Profile: Koko Taylor



By Jeff Tamarkin

There may be a shortage of ladies singing the blues today, but even among that small group, there's little doubt as to which lady is the reigning Queen of the Blues. That honor surely belongs to Koko Taylor.

Koko has been nominated for Grammy Awards and she's twice won the coveted W. C. Handy Blues Award as top female blues artist. But Taylor's greatest award must surely be the love and respect she's earned among her audiences and the blues community. The New York Times hit the nail on the head when it called Koko's singing "impassioned." Perhaps there is no better word to describe the music coming from the mouth of this blues singing dynamo. Backed in concert by her tight band the Blues Machine, Koko belts out the songs from her three Alligator Records albums, climaxing in her million-selling 1965 hit "Wang Dang Doodle."

Although she began singing in her Memphis church,

like so many other blues performers, Taylor's real performing career began when she moved to Chicago and was discovered by blues great Willie Dixon. Dixon brought her to Chess Records, where she scored first with "I Got What It Takes" (later to become the title of her first Alligator LP) and then the classic "Wang Dang Doodle." When Chess dissolved, Koko found herself labelless, until Bruce Iglauer's Alligator label, the home of the best contemporary blues, signed her up. Three albums later, Koko Taylor is one of the label's biggest stars, and the leading female blues performer in the country, touring constantly and recording in between.

Following a recent concert at New York's Mudd Club, Koko spoke with Modern Recording & Music's Jeff Tamarkin about her past, present and future, and the future of the blues, which she's helping to keep alive.



Modern Recording & Music: Koko, you began singing in church in Memphis, is that correct?

Koko Taylor: I've been singing all my life, ever since I was knee-high to a duck. As far back as I can remember, I was singing and I loved it. I'd always sing with my sisters and brothers around the house, out in the cotton fields. We played music with our home-made guitars. In the meantime, I participated at church, a little Baptist church, singing gospel. In April of '53 I moved to Chicago.

MR&M: Why did you move there?

KT: I moved there to be with my husband, and what I did was start singing at local clubs, still for my own enjoyment because I liked singing.

MR&M: When did you first hear the blues?

KT: I heard it on the radio and from a few performers when I was still down in Memphis. I used to hear a lot of Muddy Waters, Howlin' Wolf, Elmore James, Sonny Boy Williamson people like that. It was an inspiration, an influence.

MR&M: When did you decide to start singing professionally?

KT: After I heard them—and I'd always liked singing myself—and started singing a bit around Chicago. I guess you could say I was discovered by Willie Dixon. He was working for Chess Records as an A&R man back then. He started me recording.

MR&M: What drew you to the blues style, as opposed to jazz or other styles that were popular at the time (late 50s, early 60s)?

KT: When I was growing up I didn't even know the meaning of a style; I never even dreamt of recording. It just turned out that this (blues)

happened to be my style. I guess I was born with it.

MR&M: What do you remember about the Chicago blues scene from the days when you were starting out?

KT: It was pretty active. It was all black clubs on the South Side; there were no white clubs at that time. In later years, whites started listening to the blues and it became very popular. Today we have more blues clubs around Chicago than we can visit.

MR&M: Were more women singing blues in those days than there are today?

KT: No, there weren't more. There were a few singing: Lucille Spann, Arlena Brown and a few others. Anyway, you could count them all on one hand.

MR&M: Your first recording was done for the USA label, and you used the name Cora Taylor. How did that record come about?

MR&M: That label was somehow affiliated with Chess, through Willie Dixon. I did one called "Honky Tonky." Then I did my first one for Chess, "I Got What It Takes," which Willie wrote. They just came out one after another after that, until I had "Wang Dang Doodle."

MR&M: Which is, of course, your best known song.

KT: Right. It sold over a million copies, and that's when I started touring, traveling all over the country. That was in 1965, and I think my first tour was with Jimmy Reed, Tina Turner, Otis Redding. It was quite a tour. Like I said, at that time we were playing mostly to black audiences. They put me with a lot of soul singers.

MR&M: What do you remember about your first recording session?

KT: Well, I was nervous. Everything was new to me; it was scary and I didn't know what to expect. It all turned out fine. Now I just go in there and open my mouth and do it.

MR&M: Are you intimidated by 16- or 24-track studios?

KT: Not any more. It used to bother me, but it doesn't anymore.

MR&M: Do you think blues is as popular now as it was in, let's say, the late 60s?

KT: Oh, it's more popular. Definitely. I'm traveling all over now—the U.S., Canada, Europe. The people are definitely into the blues.

MR&M: Is your audience mostly white?

KT: I'd say about 90%.

MR&M: How does that make you feel?

KT: Good! It's good to know that the younger generation coming along is into the blues. After all, you've gotta keep the blues alive.

MR&M: Does it bother you that more young black people aren't into blues?

KT: No, it doesn't bother me. I'd like to see more of them support the blues, but if that's the way they feel, to each his own. Now they're into soul and disco and other things.

MR&M: Why do you think they're not interested in blues?

KT: I think because it's in the black man's heritage, and most blacks were born with the blues, so it's a reminder of hard times, slavery, oppression. And they don't want to be reminded by these down blues tunes.

MR&M: Do you think that someone has to experience hard times to play the blues? Most young whites who play the blues have never really suffered hard times.

KT: No, you don't have to have the blues to play the blues. You can play the blues; all you have to do is to do it. If it's blues, it's blues, and it doesn't make no difference if it's black or white. Blues isn't music that you sit and listen to with your head down. It's music that you can sing and dance to and have a good time to. So if some people think that when you say blues, it means just down and out, it's not like that at all.

* * *

MR&M: How did you hook up with Alligator Records, your current label?

KT: I was with Chess for eight years, and then when Leonard Chess died, it left me and all the other artists

without a contract. Phil Chess was the only one left and it [Leonard's death] took something out of him; he didn't want to run the studio, the record company or anything. They also had a radio station. So he just folded up. In the meantime, I was still singing, and I was heard by Alligator several times. They liked me, kept listening, kept liking me, and when they decided to get a female singer, they selected me. I'm still the only woman they have on the label. I'm proud of that.

MR&M: A lot has happened since then. You've been nominated for some Grammys.

KT: Yes, I was nominated for the first album I did on Alligator, *I Got What It Takes*. And I was nominated for my latest album, *From the Heart Of A Woman*. I also won the W. C. Handy award for Female Blues Artist of the Year twice.

MR&M: How much input do you have into your own records?

KT: I have some. I can make suggestions. Sometimes it works and sometimes it don't. If I come up with a good idea and Bruce [Iglauer, Alligator president/producer] thinks it's a good idea, he'll say "Maybe you're right, let's try it." If he doesn't think

it's a good idea, then we won't waste it. We do try to put our ideas together and select material that we think people will enjoy the most. We try to pick songs that can be danced to, and some that if the people come to a club and don't want to dance, they can just sit there and listen to hard blues. The whole idea with the recording is getting a good, solid album. We're not concerned with pleasing ourselves because this is done for the audience.

MR&M: Do you involve yourself technically?

KT: When I'm in the studio, I don't do anything but get in the booth and sing. They do their jobs, pushing the controls. It takes all of my attention and concentration when I'm in the studio just to make sure I get the tune right.

MR&M: Do you rehearse a lot or just go into the studio?

KT: No, we rehearse quite a bit, but not in the studio. This way I know which way the tune is going, the musicians know.

MR&M: Some blues purists say that real, authentic blues doesn't exist anymore on record because all the technology gets in the way, making it too clean to be the blues. How do you feel about that?

KT: As far as I'm concerned it exists because on my records it's old, traditional blues. I'll agree that a lot of people don't keep up the old traditional blues—they like to keep it more uptempo and things like that—but I still like the old Mississippi style blues.

MR&M: You've toured in Europe a few times. What are the audiences like? Do they understand what you're doing?

KT: Oh yeah, they're beautiful. They don't speak English, but they know good music when they hear it.

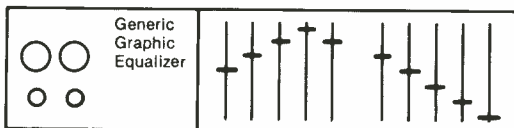
MR&M: What's lined up for the future?

KT: Hopefully, a very bright future. We'll be doing a lot of touring, a lot of recording, continuing to do the blues, as long as I'm able. I'm doing it because I love to do it. What I enjoy most is making people happy with my music, so why should I do anything else? It's the only thing I enjoy doing—keeping the blues alive. I would like to increase my audience, you know, to walk out and see 50,000 people. But if that doesn't happen, I'll just keep playing to my small audiences, trying to educate people about the blues. I'll just keep doing what I'm doing.

What's your EQ IQ?

For years, most of the world has relied on Graphic Equalizers for control of frequency response. After all, you can create any response you need and then see exactly what you've done by the position on the sliders...right?

Well...not quite. It turns out that Graphics are more approximate than that. Broad curves are ragged; fixed center frequencies and bandwidth make it impossible to pinpoint spot frequency problems like resonance and feedback.



With continuous and independent adjustment of amplitude, center frequency, and bandwidth, a Parametric can solve these and many more problems easily. All you need is a little time to get to know it. People who take the time to understand rarely go back to a graphic.

There's a lot more to it than we can explain here and if you'd like to know more about it, we'll send you our very comprehensive instruction manual. Your Ashly dealer will be happy to give you a demo. You'll improve your EQ IQ and wonder how you ever lived with a graphic alone.



Ashly Parametrics...designed and built by people who still care.



ASHLY AUDIO
100 FERNWOOD AVE.
ROCHESTER, NY 14621
(716) 544-5191

EXCLUSIVE CANADIAN DISTRIBUTOR:

GERRAUDIO 363 ADELAIDE ST. E.
TORONTO, ONTARIO M5A 1N3
DISTRIBUTION INC. (416) 361-1667

PHANTOM POWER

by *Pearl*®

With all the potential problems in performing why make power one of them!

Eliminate the power problem with Pearl's four new Phantom powered electret condenser microphones. They're designed to be used with an advanced power supply (PW-48) operated by an AC Adapter for trouble free power at all voltage levels. A battery operated power supply (PW-18) for 1 or 2 Phantom powered microphones is also available with a condenser coupling for leakage free operation.

A few of the many advantages of these new models are: • an internal amplifier (no output transformer needed)

- output voltage 3.5V at maximum SPL
 - current drain less than 3ma
 - 0.5% total harmonic distortion at high levels
 - internal attenuator switch increases maximum level allowing you to mike brass and percussion instruments cleanly
 - supply voltage is 12VDC to 48VDC (006P 9V battery with CR57-CR55)
 - CR45 with internal pop filter included
 - CR57 right angle unidirectional cardioid polar pattern
 - CR55 unidirectional cardioid polar pattern.
- Both CR55 - CR57 have a condenser element isolation system minimizing both stand and hand held noise.

The sound produced is both wide range and musical extending from 30 to 20,000 HZ, coupled with the quality and durability you have come to expect from Pearl. You will be making your best sound choice when you choose Pearl Phantom Powered Microphones.

Write for complete specifications on these and other new exciting Pearl products.

Sold in Canada exclusively by NUCO Musical Instruments, Ltd., Markham, Ontario.



A product of
Pearl International, Inc.
408 Harding Industrial Dr.
Nashville, Tennessee 37211

CIRCLE 32 ON READER SERVICE CARD

Ambient Sound

By Len Feldman

Back to Recording Basics

Over the past few months I've been dealing with a variety of topics in this column, ranging from politics (discussions of legislation which would affect our rights as recordists) to loudspeaker design using computer programs. It occurred to me that perhaps it's time to get back to a subject which is even more closely related to the name of this publication—recording, more specifically, tape recording.

Specifically, I want to talk about recording parameters and how they are related to each other. What prompts me to return to this topic is a recent modification that's been made in my Sound Technology 1500A Tape Tester. (That's the piece of test equipment that generates all those graphs that appear in the tape recorder test reports prepared by Norman Eisenberg and myself.) If you'll flip to our test covering the updated version of the Revox B-710 cassette deck, you'll discover that we have come up with yet another graphic presentation. This one is known as an MOL, or Maximum Output Level graph. It is more a measure of tape characteristics than a measure of the deck's performance. Nevertheless, as we shall see in a moment, varying a deck's recording parameters can vary the undistorted maximum output level of a given tape, just as it can vary overall frequency response, distortion and signal-to-noise ratios delivered by a given tape.

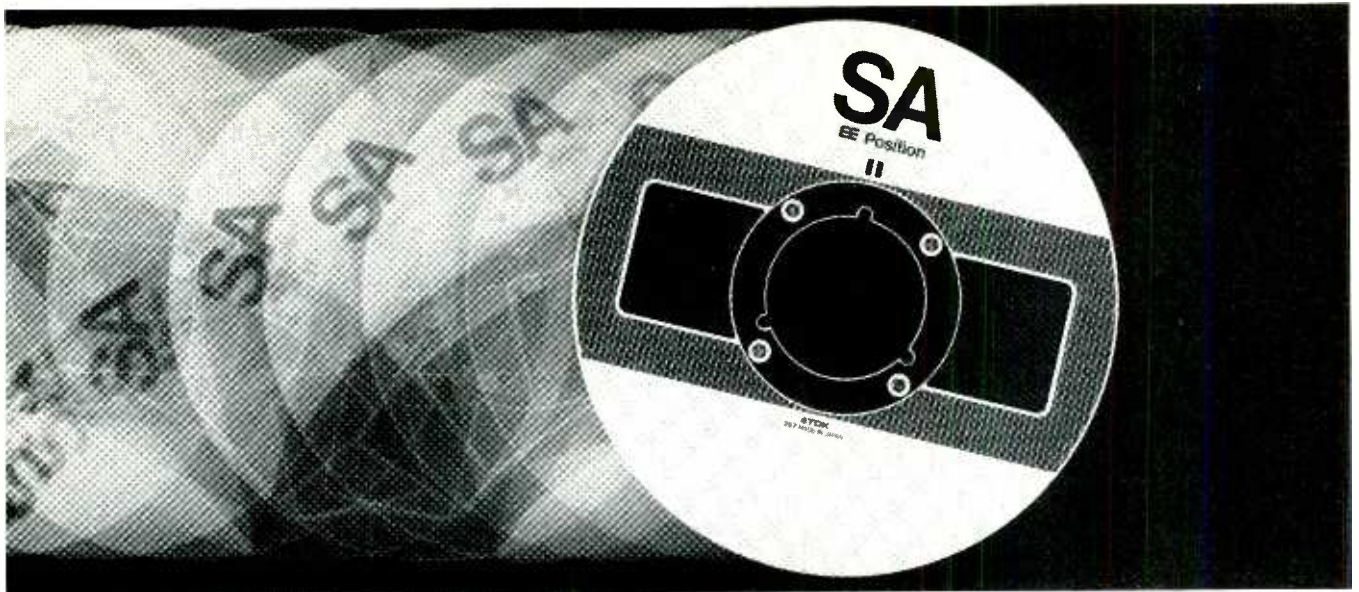
Especially in the case of cassette recording, where we are dealing with very narrow tape and very slow tape speed, bias and equalization settings are always a series of compromises. Underbiasing will result in more uniform high-frequency response at higher recording levels but higher distortion levels at mid-frequencies. Increasing recording bias will, up to a point, decrease mid-frequency distortion levels but will also cause an earlier roll-off at the high-frequency end of the spectrum. Fortunately, music has a

frequency distribution which contains greater amplitudes of middle and low frequencies than it does treble frequencies. It is for this reason that we can "get away" with allowing our record level meters to hit 0 dB or even go above that recording level occasionally. The meters are responding to the low- and mid-frequency peaks, which are nearly always much greater than the treble peaks. If treble amplitudes came close to mid-frequency amplitudes, they would quickly lead to tape saturation.

The MOL graphs illustrate this effect very clearly. The horizontal axis of each MOL plot represents constantly increasing *input* level, while the vertical axis represents *output* level during playback. Invariably, a mid-frequency tone (usually 333 or 315 Hz) recorded during the course of this MOL test will exhibit almost perfect linearity. That is, for every dB of increase in record level we will see a dB of increase in output level during playback. The plot of input versus output will therefore show as a straight line, ascending from left to right. When the same test is repeated using a high frequency (10 kHz is the usual value), the output-versus-input curve, instead of being a straight line, begins to droop over as tape saturation is reached. At cassette tape speeds, the only type of tape that can come close to producing linear output up to the nominal 0 dB record level at high frequencies is metal particle tape. That, in fact, is one of the chief virtues of metal tape.

Who Needs Highs?

In light of what I have just explained about the frequency distribution of "real" music, why would anyone worry about high-frequency tape saturation? If highs are always much lower in amplitude than mid-frequencies and low frequencies, then high-frequency



You can't stop the reels of progress.

TDK's reels are always turning—advancing tape technologies—moving tape recording and playback standards higher and higher. Whether you're into professional or home use, TDK open reel has always provided the quality tape for the discriminating user.

DEVELOPING NEW TAPE FORMULATIONS

Revolutionary SA/EE is the first open reel tape to use TDK's famous Super Avilyn particle formulation. Specifically engineered for use with the new open reel decks with the EE (Extra Efficiency) Bias/EQ setting. This new TDK formulation features almost double the coercivity and a high frequency MOL 2.5-3dB better than conventional (normal bias) ferric oxide tapes; plus a 2.5-3dB lower bias noise at 3³/₄ ips—half the normal speed. Offering you double the recording time with optimum reproduction quality.

MASTERING THE ARTS

For mastering applications it's hard to exceed TDK GX. Designed for live music mastering, disc-to-tape and tape-to-tape uses. GX features an ultra refined ferric oxide particle formula specifically developed by TDK—yielding a very high

MOL, low distortion and ultra wide dynamic range. TDK's exclusive binder, coating and mirror-finish calendaring processes make GX perform brilliantly. And GX offers special back-coating which reduces wow and flutter, and minimizes static. TDK GX is fully compatible with any quality open reel deck.

Equally impressive is TDK LX—the open reel tape ideal for professional broadcast, semi pro or audiophile applications. It delivers high output performance with low noise and lower distortion throughout an extended frequency range.

All TDK open reel tape is available on precision engineered 10" metal and 7" plastic reels with perfectly circular hubs for accurate performance. Available also is TDK's HD-11 Head Demagnetizer for quick, simple audio head demagnetization.

TDK, the world's renowned tape company, sets the Reels of Progress in motion, continuously—giving you the finest quality tapes.

For your listening pleasure—you'll love the Sound of Progress—TDK tape.



©1981 TDK Electronics Corp

CIRCLE 33 ON READER SERVICE CARD

www.americanradiohistory.com

tape saturation should be of no concern to us, right? Wrong! Much modern music (and even some music that's been around for some time) *does* contain unusually high amounts of treble. This is especially true of some of the better quality "audiophile" records which are now available. It is also true of received FM programs in which such records are played over the air.

But it's not just the ability to record "highs" with good linearity that good MOL characteristics at high frequencies afford. Notice that in a typical MOL plot, the linearity of the mid frequencies extends well *beyond* the nominal 0 dB reference level of the given recorder. Often, linearity may extend for 6, 8 or even 10 dB beyond 0 dB. That means that if you didn't have to worry about high-frequency saturation (and had to deal only with middle and low frequencies) you could push your recording levels up by several dB without running into tape saturation or non-linear output/input relationships. That, in turn, would mean an effective improvement in signal-to-noise ratio or dynamic range. You are recording at a higher overall level, but the "noise floor" remains at the same level, so the overall signal-to-noise ratio is improved by the same number of extra dB. That's really how the big advantage of metal particle tape shows up. Unfortunately, just reading the S/N numbers doesn't get this message across. S/N numbers are traditionally "referenced" to the 3% third-order distortion level of a mid-frequency signal: *not* to a high-frequency signal. So, the listed S/N numbers for ferric oxide tape are about the same as those for the new metal tape. But because you can push overall recording level higher with metal tape without running into high-frequency tape saturation, the useful or effective signal-to-noise ratio of metal tape turns out to be considerably higher and better.

It Takes More Than Frequency Response

When I am asked to evaluate cassette tapes in my lab, I am faced with the problem of choosing a reference deck on which to test them. I have on hand a top-of-the-line three-head deck that not only speeds up the measurement process (it's nice not to have to rewind the tape each time to see what's been recorded), but also sets up "optimum" recording parameters for each tape being tested in a matter of seconds. Like it or not, however, "optimum" in this case is defined as optimum or extended frequency response. Recognizing that most amateur recordists think that frequency response is the most important (and in some cases the only) parameter involved in tape recording, the manufacturer of this deck has programmed the microprocessor in this recorder to "go for" most extended response even if that means sacrificing distortion and signal-to-noise levels. There's nothing wrong with that, of course, providing the person interpreting the test results for a given tape understands that this has been done intentionally. In fact, almost every type of tape that I have tested (with the exception of the "junk" varieties that still abound out there) using this reference deck has exhibited "flat" response (or response within 3 dB) out to well beyond 20 kHz. Does this mean that all the tapes are

great, or that I have discovered a super tape deck that makes every tape work well? Hardly. When you look at the other test results obtained (distortion at 0 dB, headroom, signal-to-noise ratio and now, MOL at 10 kHz) you realize that there are great differences between tapes even though each tape has been biased to produce "great" frequency response. Remember, too, that the extended frequency response exhibited by virtually all tapes tested is at a -20 dB recording level where we hardly ever run into tape saturation at any frequency. Bear in mind that if you actually recorded at such a low level, your signal-to-noise ratio would decrease by the same 20 dB or more!

It's for that reason that we usually show a frequency response plot taken for a 0 dB record level in addition to the one taken at a nominal -20 dB record level. If you examine this *upper* curve (we don't quote response at this level in our "Vital Statistics" chart, but you can easily check it out by referring to the response curves themselves) you begin to realize that not all tape decks are alike even in frequency response, and not all tapes are alike, either.

In a sense, the 0 dB frequency response curves and the new MOL curves that we are now able to present are related to each other. Both tell us something about the high-frequency saturation characteristics of the given tape/tape deck combination being tested. For example, a tape which has reasonably flat response to 12 or 13 kHz at 0 dB record level is bound to have a more linear MOL characteristic at 10 kHz than one which is already rolling off at 8 or 9 kHz when plotted at a 0 dB reference level.

Where Is 0 dB?

Before ending this little refresher course concerning tape recording parameters, I would be remiss if I didn't remind you that 0 dB to one tape deck manufacturer may not be 0 dB to another deck maker. By setting a record level meter's 0 dB point at a very low level (say, 145 nano-Webers per meter [nWb/m]) instead of at 200 nWb/m or even 250 nWb/m, the manufacturer can lead the uninitiated recordist to believe that he has purchased a deck having tremendous headroom ("After all, I seem to be able to record at +8 dB without running into distortion") when in fact, if the recordist backs off to 0 dB level signal-to-noise ratio will be degraded. Hopefully, new standards now being considered by the EIA (Electronic Industries Association) will be adopted before long. These call for a uniform 0 dB reference level of 250 nWb/m for all decks designed in the future. That's about 2 dB higher than Dolby calibration level (which is set at 200 nWb/m). The higher figure is being adopted in recognition of the improvement in headroom that has come over the years with improvements in tape and tape deck technology. While we suspect that there will be some holdouts at first, within a few years perhaps we can at least expect that all tape deck measurements will start from the same reference point. Understanding the subtleties of tape and tape deck performance is difficult enough without having to worry about where 0 dB is.

TRIDENT'S NEW VFM MIXERS

Quality you expect at a price you won't

The only totally modular console in its price range, the Trident VFM gives you features you'd only expect to see on their TSM, Series 80, and Trimix boards as used in major studios worldwide.

The Trident VFM comes in three configurations for all recording, studio, stage, and theatre applications. Whether you need 20x8x16, 16x8, or 16x4 input-output flexibility, the VFM comes through in either recording or P.A. versions.

Only Trident gives you full throw faders, separate mic and line inputs, 12 segment L.E.D. column meters for multitrack output monitoring, and pre-fade listening in a modular package.

Prices start at
under \$3,000.

If you're a rising musician, touring band, or sound engineer, you deserve Trident quality at a price you can afford.

For complete technical specifications and price list, call your nearest Trident dealer:

Boston—P.R.S. (617) 254-2101

Chicago—Bridgewater Sound (312) 528-4641

New York—Martin Audio (212) 541-5900

Nashville—Wilson Audio (615) 794-0155

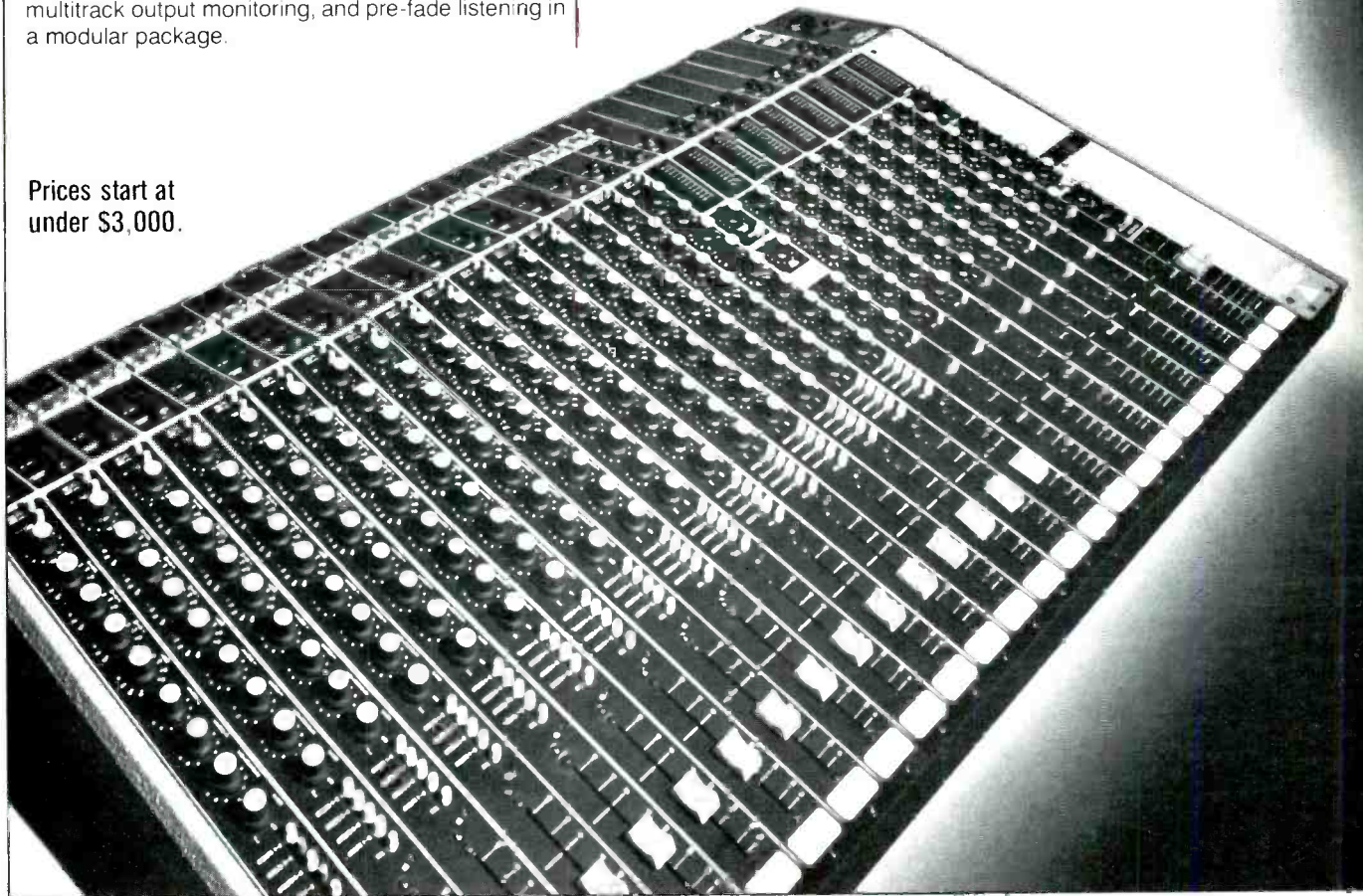
L.A.—Studio Maintenance Svcs. (213) 877-3311

For dealers in other areas, call:



TRIDENT (USA)

652 Glenbrook Rd., Stamford, CT 06906 (203) 357-3337



CIRCLE 34 ON READER SERVICE CARD



DeltaLab "Effectron"

Maybe we should change the title of this column to "Delay Line Notes." So far, we've covered a delay optimized for pitch transposition (MXR Pitch Transposer), one optimized for "live" performance (Eventide Bay Harmonizer™), a "stomp box" chorus unit (DOD 690), a high-performance stereo analog delay for short delays (AD/A's STD-1), an ultra-long delay mated with computer technology (Imagingear Audio's Echo/Digital Recorder) and a moderate price/high quality general purpose delay line (MXR Delay System II), and a medium price analog delay line/flanger (Loft 450). This month, we forge along with the DeltaLab "Effectron." Why bother to review yet another delay line? Well, aside from the fact that delays are the hottest effects going right now, would a list price of \$499 for 256 ms. of digital delay (\$699 for the upgraded model ADM 1024 with over 1 second of delay) interest you? It sure interested me, so let's see what the Effectron does.

1.) *Flanging (hi)*. With this button pushed in (incidentally, all the flanging buttons are white) the delay factor control varies the delay from 250 microseconds to 1 millisecond (ms.).

2.) *Flanging (mid)*. With this button, the delay factor control varies the delay from 1 ms. to 4 ms.

3.) *Flanging (lo)*. With this button, the delay factor control varies the delay from 4 ms. to 16 ms.

4.) *Doubling*. Pressing in this gray button and varying the delay factor knob varies the delay from 16 to 64 ms.

5.) *Echo (short)*. This selects a delay time from 64 to 256 ms. by, as you may have guessed, varying the delay factor control, both echo pushbuttons are black.

6.) *Echo (long)*. This selects a delay time from 256 to 1024 ms. Note that the only obvious difference between the ADM 1024 and its lower priced brother, the ADM 256, is the addition of this extra switch position. In other respects, the units appear identical.

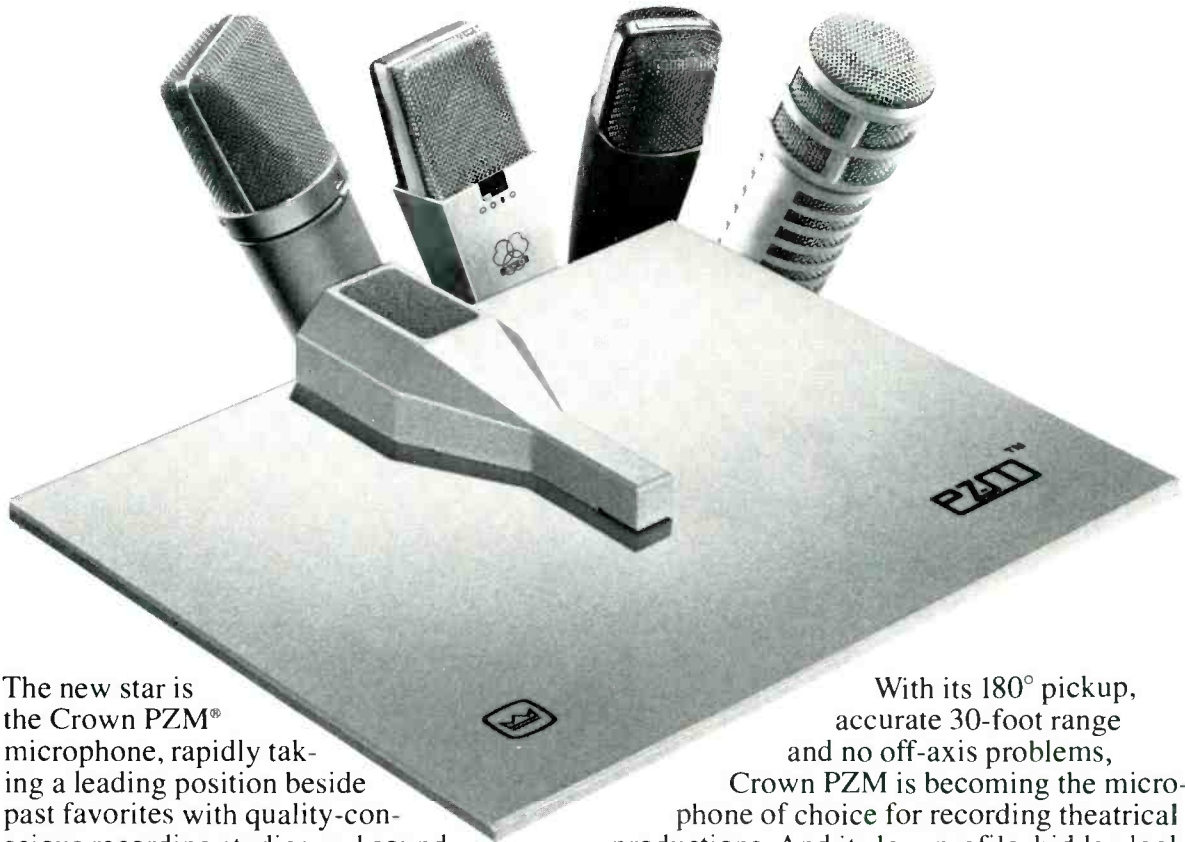


WHAT IS IT? The Effectron has no real surprises, and includes most of the functions we've come to expect with the typical delay line.

A series of push-button switches set the master delay, while a "delay factor" control provides fine tuning by varying the delay over a continuous 4:1 range. The ADM 1024 (1024 ms. maximum delay) has six colored pushbuttons, which from left to right are:

Next to the master delay select buttons is a red button labelled "infinite repeat," which stores a sound in the delay line memory and repeats it over and over and over and over and over and over and over and over again. We described this type of function pretty thoroughly in previous *Notes* columns on the EDR and MXR Delay System II, so for all you regular readers, we'll spare the redundancy of a detailed re-telling. Suffice it to say

STAR PERFORMERS



The new star is the Crown PZM® microphone, rapidly taking a leading position beside past favorites with quality-conscious recording studios and sound engineers. And for good reasons.

The PZM offers extraordinary reach and clarity, providing new latitude and simplification in miking setups. For drum pickup, for example, an overhead PZM, plus a ribbon or condenser mike, is often all that is needed.

Crown PZM enhances recording quality, as well. A skeptical symphony conductor, after recording with only two overhead PZM mikes, enthusiastically proclaimed that it was the first time he had heard on tape what he heard on the podium.

With its 180° pickup, accurate 30-foot range and no off-axis problems,

Crown PZM is becoming the microphone of choice for recording theatrical productions. And its low-profile, hidden look makes the PZM ideal for lecterns and TV.

Try the Crown PZM. It could help you earn a star performer rating for your next project.

FREE PZM NEWSLETTER

Add to your PZM education with PZMEMO, the Crown newsletter of PZM application ideas. For your free subscription, simply mail this coupon to Crown. Do it now because PZMEMO will soon announce a new, totally redundant clip-on PZM you will want to know about.

Name

Address

City State Zip



...WHEN YOU'RE READY FOR REAL!

1718 W. Mishawaka Rd., Elkhart, IN 46517, (219) 294-5571

Distributed in Canada by REMCRON ELECTRONICS LTD., Don Mills, Ont. • (416) 441-4007

CIRCLE 35 ON READER SERVICE CARD

that this is a "solid-state tape loop," which opens up a batch of possibilities to the creative musician. Additionally, once you've put a sound into the loop (by depressing the "infinite repeat" button just *after* the sound you want to store), you may transpose the pitch over a 4:1 range using the delay factor control.

Moving along to the input and output controls, the input control matches input signals to the unit. At the mid-point setting, the input stage gain is unity. At the full counter-clockwise (CCW) setting, the system gain goes down by half to accommodate signals up to 2V RMS. At the full clockwise (CW) setting, the input stage gain is X10 to handle low-level signals. There are two associated LEDs: a green "active" LED (which indicates that the signal hitting the delay line is sufficiently strong to at least keep the unit awake) and a red "limit" LED which does not indicate that the signal is being limited, but rather that you've hit the system's dynamic range limit. You have another 6 dB of headroom beyond the point at which this light turns on, but I wouldn't push things in order to have the cleanest possible sound. By the way, the input jack (and output jack too) is an unbalanced 1/4" phone type.

The output control includes a nice touch. At the mid-point position, there is a center detent which indicates that you're getting straight signal only. Turning the control CW from this point crossfades (pans) between the straight signal and the in-phase delayed signal. As a result, halfway between the midpoint and full CW, you have equal amounts of straight and in-phase delayed sounds; at full CW you hear only in-phase delayed sound. Turning the control CCW pans between the straight signal and the out-of-phase delayed signal. This means that halfway between the midpoint and full CCW, you have equal amounts of straight and out-of-phase delayed sounds; at full CCW you hear only out-of-phase delayed sound.

Like most delays, the Effectron also includes a feedback control. As with the case of the output control, DeltaLab has designed this control quite cleverly. There is a center detent at the mid-point position which indicates that you're getting no feedback. Turning the feedback control CW adds in-phase regeneration, while turning the control CCW adds out-of-phase regeneration. Between the phase options offered by the output and regeneration controls, you can obtain a wide variety of tonalities with the Effectron. However, there is one caution: If you have the unit patched to spread a mono sound into stereo and set for delayed sound only, make sure that you pay some attention to phase integrity. The easiest way to do this is to combine the stereo signal back into mono, and check for any cancellation problems.

That only leaves two more controls, which relate to a pretty standard modulation section. A width control sweeps the delay over a maximum 4:1 range, while a speed control varies the internal LFO (low frequency oscillator) from 0.1 Hz to 10 Hz.

That takes care of the controls, so let's check out the jacks on the back. The good news is that in addition to the input jack, output jack and jack for adding a bypass (foot)switch, there's a 0 to +5V control voltage input. This means you can alter the delay time with a footpedal, synthesizer control voltage generator or controllers which offer more flexibility than the Effectron's built-in LFO. The bad news is that there

are no break points in the feedback loop, so you can't stick low pass filters, phasers and other devices in there. Given a choice between one or the other, I suppose I'd prefer the CV input...but I'd really rather have both.

The appearance of the Effectron is quite subdued, basically relying on two shades of blue with white highlights. The unit looks neither cheap nor expensive, and seems intended for the budget studio and "live" performance environment.

The insides looked just fine—good quality components and layout. Overall, I'd say it also looks pretty easy to service.

PRE-FLIGHT for the EFFECTRON: This is another unit which requires little or no effort to get up and running—with one exception. I tried plugging a guitar directly into the thing; while the input impedance seemed sufficiently high, I had problems picking up "glitches," probably through the pickups themselves (the problem went away when I turned down the guitar's volume control, but of course, so did the signal). The moral of the story is don't feed the Effectron from a high impedance output; if you use something like a guitar, first plug it into a buffer, preamp, compressor or other electronic unit with a low-output impedance. Instruments with low-output impedances present no problem.

Another consideration is that there is no way to adjust the output level; so, if you have to turn down the input to accommodate a strong signal, the output goes down correspondingly. Those of you with +4 dB studios will have to pad down the input and then post-amplify the output to get it back up to strength again.

So, now that it's set up and ready for action, let's see what it does.

APPLYING the EFFECTRON—FLANGING: I thought I'd check out the flanging abilities first, since I generally don't like the flanging effects associated with digital delay lines and figured this would be the acid test. Unfortunately, the Effectron is no better than the other digital units I've tested recently; the problem is that you simply don't have a wide enough sweep range. The greater the sweep range, the more dramatic the flanging effect. What makes flanging so neat is the ability to sweep from a few hundred microseconds of delay down to 20-25 ms, or so in one long, slow, smooth, resonant sweep. Sweeping from, in the case of the Effectron, 0.25 ms. to 1 ms. (or 1 to 4 ms.) just doesn't cut it. The 4 to 16 ms. range is more musically useful, but still, just when you want the flange to kick up a little higher, it starts going down again. Of course, these short delays are still useful for many other purposes, such as vibrato, pseudo-equalization, rotating speaker simulation and phaser simulation. But if you're expecting a dynamite flanging sound, you're really going to get it out of the Effectron or any other digital delay which we have reviewed.

While sweeping around, I noticed that the noise becomes far more as the delay factor control approaches 1 (longest delay). This noise sounds like the breathing you get with a companded analog delay being pushed to a long delay, except that the quality of the noise is somewhat different. Whereas analog delay noise is kind of mushy (due to all the low pass filtering) and smooth, digital noise is brighter and "spikier."

This brightness can sometimes make digital noise seem psycho-acoustically prominent, even though it's not physically very loud.

Interestingly, reducing the delay factor to about 0.75 solves any noise problems except under extremely clinical circumstances, and at a delay factor of 0.5, the noise is for all practical purposes non-existent. Therefore, while you might be tempted to get chorusing effects by setting the master delay to the low flanging range and the delay factor to 1 (with a little modulation thrown in), you're better off selecting the next longest delay range (doubling) and setting the delay factor to a low value. This eliminates any noise problems.

Another problem which relates to the delay factor control setting is aliasing, where high frequencies from the input signal interact with the system clock. If you're putting out any significant high frequency energy (above, say, 8 kHz), you'll gear a "grittiness" or in extreme cases, "whistling" in the background which is a result of aliasing. By the way, I'd like to emphasize that these problems are by no means whatsoever unique to the Effectron; *all* delay lines—*analog* and *digital*—have to deal with noise, bandwidth and aliasing problems (as we've noted in previous reviews). Rather than putting down the Effectron for having these problems at long delay settings, a fairer appraisal is to compliment the Effectron for performing so well at medium and short delay factor control settings.

CHORUSING and DOUBLING: The doubling range (16 to 64 ms) is the one you select for real tight echoes and chorusing. At these longer delays, any modulation doesn't need to sweep over too wide a range to be effective; as a result, the Effectron's modulation section certainly does the job for chorusing and echo + chorus effects—simply set the speed for fairly slow sweep and crack the width open just a tiny bit. The resulting "shimmer" is quite tasty, and the Effectron has the bandwidth to give a clear, bright chorusing sound.

LONGER ECHOES: The echo range pushbuttons, not surprisingly, give echo effects. While the ADM 1024 does give a full second of delay, remember that's at maximum delay with the delay factor control of 1. Therefore, for high fidelity applications, I figure the maximum echo is more like 600 or 700 ms.—still a significant amount of delay, and since the delay is trimmed back with the delay factor control, the sound is clean and natural.

EVALUATING the EFFECTRON: The Effectron has a lot to recommend it, so let's get any criticisms out of the way first. My main complaints are the difficulties with which the unit handles higher level signals, the background noise at the longest delay factor setting of each range and the modulation speed control. The problem with the speed is that it only goes up to 10 Hz—almost enough, but you really need 15 Hz and preferably 20 Hz. Some critics cite the optimum range for vibrato as about 7 to 14 Hz, and I would agree with those figures. While 10 Hz hits the lower end of that range, there are many useful vibrato effects which require a slightly higher speed. I'm sure there's a simple mod to change this, which DeltaLab might

want to consider in future runs of the Effectron. In any event, you can always feed in a different LFO signal via the control voltage jack. My final criticism is picky, but...on my test model, you had to hit the infinite repeat button pretty hard to release it from the repeat position. I don't know whether this is a problem with all units, but if you've got a light touch, remember to bash the button a little harder than you normally would.

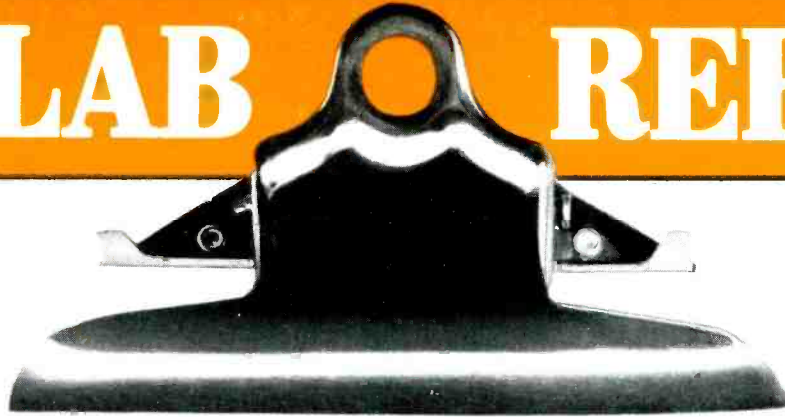
What I like about the Effectron is the quality of sound at delay factor settings under 0.5 or so: it seems a curious compromise between "analog sound" and "digital sound" which avoids some of the objectionable aspects of both. Some people complain that digital is too clean or too "sharp," and that analog is too mushy; the Effectron avoids being as clinical-sounding as some digital units but is cleaner and crisper than many analog delays.

I also like some of the little touches. The way the regeneration and output controls are set up is really slick, and it's convenient to have two LEDs to set level instead of just one LED to indicate overload. The inclusion of a control voltage jack is a nice touch for those of us who like to experiment; although as mentioned earlier, I would have also liked a set of loop jacks for the feedback path. Our ears have gotten used to echoes which get less bright as they bounce around an acoustical space, and I feel it's important for delays with good bandwidth to have some way to optionally lower the bandwidth to approximate this "natural echo" effect.

Another Effectron plus is the documentation. Usually, I can't comment on instructions because the devices I get for review are so new they only have preliminary manuals. The Effectron, however, came with a comprehensive manual which would also be instructive for those who are just getting into delay lines.

OVERALL EVALUATION: The Effectron's role in the musical scheme of things is to provide digital delays of reasonably long lengths for those on a budget. It seems ideally suited for 4-track and smaller 8-track studios, as well as for inserting in the "effects loop" jacks found on guitar or keyboard preamps. It may appear that I've been too picky with such a low-cost unit, but that's because something with this kind of price tag invites the question, "What are the limitations?" instead of the question a high-priced unit invites, namely, "What's so great about this thing, anyway?"

As far as where DeltaLab cut corners to get the price down, the low price appears to be mostly related to lower memory costs, simpler A/D and D/A conversion circuitry, no-frills design, and simplified production techniques (single circuit board, single rack space packaging). The sound quality is certainly impressive for the price, and in terms of cost-effectiveness, I can't think of any available delay which comes close to the Effectron. Sure, it doesn't sound as good to me as units costing twice as much; and you'll also have to spend more if you want delays beyond 1.024 seconds. However, if you're looking for a cost-effective delay which gives you a "greatest hits" of all the popular time delay effects you hear these days, definitely check out the Effectron. The money you save just might keep you in tape for a year.



NORMAN EISENBERG AND LEN FELDMAN

Studer Revox B710 MK II Cassette Recorder



General Description: The B710 Mk II is a new cassette recorder from Studer-Revox, a name familiar to *MR&M* readers for its open-reel recorders. A three-head configuration is used, with the record and play heads sharing the same housing but electrically discrete so that off-the-tape monitoring is possible while recording. The B710's transport employs four motors of which the two used for the capstans are direct-drive and controlled individually by a common quartz frequency. No belts, slip clutches, friction wheels or mechanical brakes are used. Transport operations are microprocessor and logic-controlled, and complete fast-button options are available, including run-in recording directly from playback or from fast-forward or reverse wind. The deck also

provides for front-panel mixing of mic and line inputs.

Tape type selection is made manually by three selector buttons for ferric oxide (IEC Type I), for chromium dioxide or chromium substitutes (IEC Type II) and for metal (IEC Type IV). In addition there is an "automatic" button which allows the deck to adjust itself according to the tab-coding found along the rear edge of cassettes. The selection made by any of these buttons handles both equalization and recording bias. A bias fine-adjust is included within the machine itself in keeping with the Studer philosophy that this adjustment need not be a regular or normal front-panel control.

The deck includes a built-in digital clock for automatic unattended record and play timing

FR

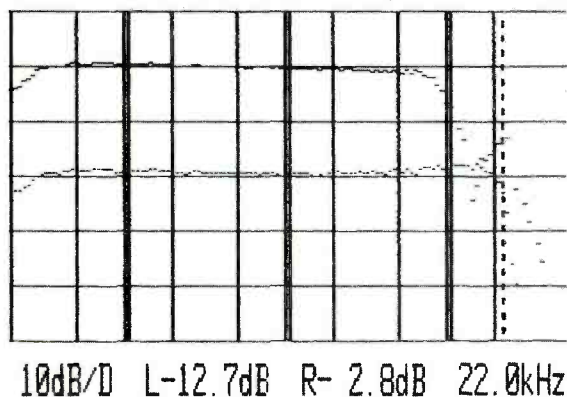


Fig. 1: Revox B-710 Mk II: Record/play frequency response at 0 dB and -20 dB using TDK tape.

FR

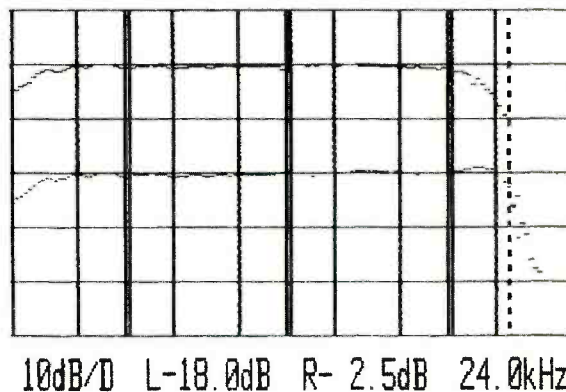


Fig. 3: Revox B-710 Mk II: Record/play response at 0 dB and -20 dB (TDK MA tape).

FR

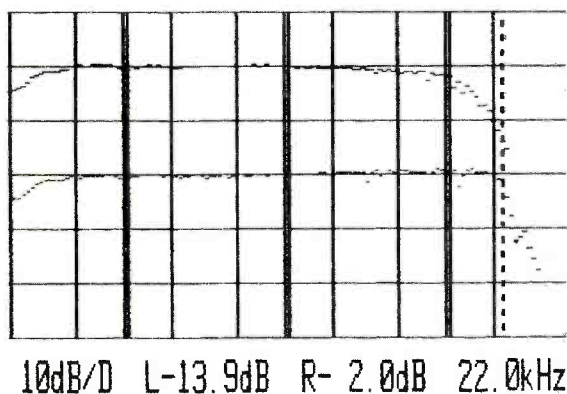


Fig. 2: Revox B-710 Mk II: Record/play response at 0 dB and -20 dB (TDK SAX tape).

D3 LNO DATA R 3.5%

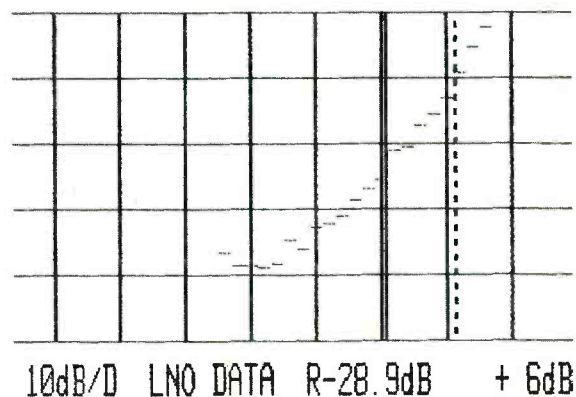


Fig. 4: Revox B-710 Mk II: Third-order distortion vs. record level (TDK-AD tape).

operations. The timing is displayed on a four-digit counter which also may be used to read the time of day. It also serves as the tape index counter. The microprocessor associated with this timing setup also handles memory location of preselected portions of recorded tape, and repeat play of desired sections of a tape or an entire cassette.

Both Dolby-B and Dolby-C noise reduction systems are included. The peak-reading meters are horizontal "bar graph" segments extending from just below -30 to +8 dB.

The cassette compartment occupies the center of the front panel. It is covered by a dark-tinted

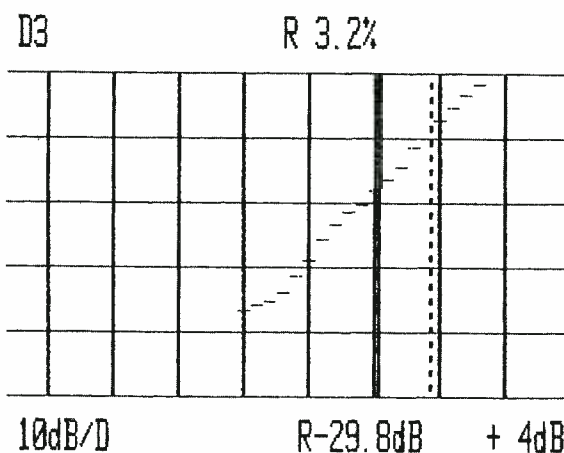


Fig. 5: Revox B-710 Mk II: Third-order distortion vs. record level (TDK SAX tape).

at the left relates to the timer and memory operations; the group at the right handles the multiplex filter and the tape selection.

At the rear are the line input and output jacks. The latter have individual output level adjustments. Also here are the recorder's power-line fuse; AC cord connector; an operating voltage switch; a remote-control socket for use with other Revox components; a second remote-control socket for the deck itself.

The owner's manual supplied with the B710 Mk II is printed in three languages—German, English and French—but each language occupies its own section with the illustrations, of which there are many, repeated in each section.

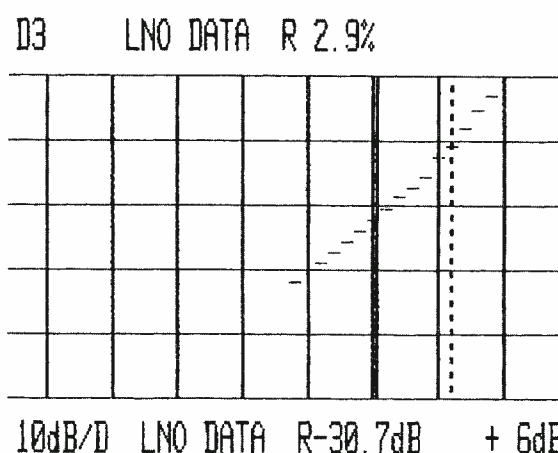


Fig. 6: Revox B-710 Mk II: Third-order distortion vs. record level (metal tape).

translucent panel that is readily slipped off or on. The cassette is loaded directly in place vertically, and is held securely when the deck is operated. It may be removed only when the deck is in "stop" or "pause" modes (the latter operational only during recording). With the cassette removed, there is complete access to heads and capstans.

There are three rows of controls to the left of this area. The top row contains buttons relating to the timer; next to them is the timing display itself. The second row contains the transport controls for pause, rewind, fast-forward, play, stop and record. In the record mode, an additional symbol lights up on the digital display readout. The third row contains switches for power off/on; tape/source monitor; and the Dolby B or C (or off) selection.

To the right of the panel are the signal meters, the input level (recording) controls; microphone jacks; headphone output jack; headphone volume control. The level controls are dual-concentric types permitting adjustment of both mic and line on each channel individually or simultaneously. The headphone volume control acts independently of line-level output.

Across the top of the panel is a hinged cover which, when lowered, reveals additional controls. The group

Test Results: Our sample deck had been calibrated for use with TDK tapes. Accordingly, in our tests we used TDK tapes: Type AD as the normal-bias or standard ferric-oxide sample; type SA-X for the high-bias sample; TDK MA for the metal tape. We were informed by Studer/Revox that if we insisted upon using other brands of tapes they would be happy to advise us as to how to realign the machine for them. We saw no reason to do so, however, and we went ahead with the TDK samples.

In all tests, the B710 Mk II met or exceeded published specifications. The results, as summarized in our "Vital Statistics" table, just about speak for themselves, but some additional comment is relevant here. To begin with, frequency response—as shown in the plots of *Figures 1, 2 and 3*—was consistently wider than claimed. In each case, the response was taken at the -20 dB record level referenced to the recorder's own "0 dB" meter marking. It is worth noting that "0 dB" for the Revox B-710 Mk II is set at 200 nWb/m, rather than at 165 nWb/m or even 145 nWb/m as is the case with so many home-type cassette decks, or Dolby level.

Plots of third-order harmonic distortion as a function of recording level are shown in *Figures 3, 4*

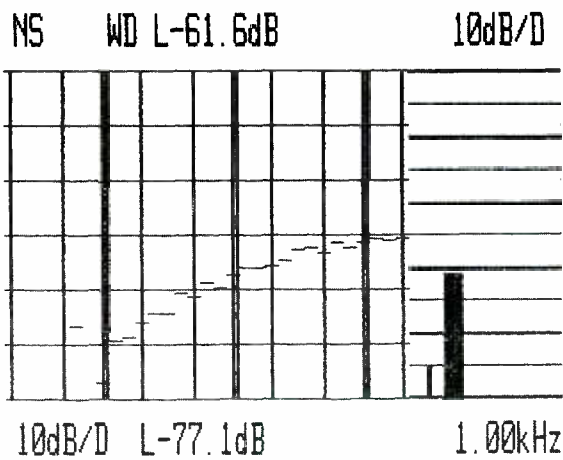


Fig. 7: Revox B-710 Mk II: S/N analysis, Dolby off, TDK AD tape.

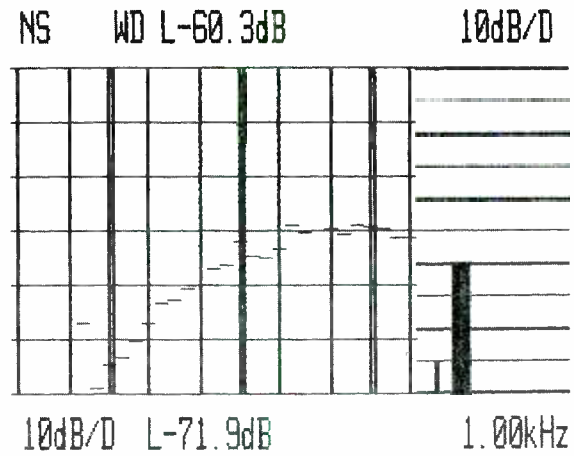


Fig. 9: Revox B-710 Mk II: S/N analysis, Dolby off, TDK MA metal tape.

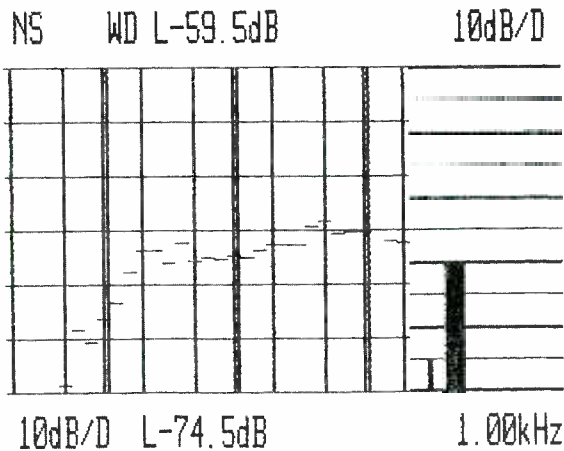


Fig. 8: Revox B-710 Mk II: S/N analysis, Dolby off, TDK SAX tape.

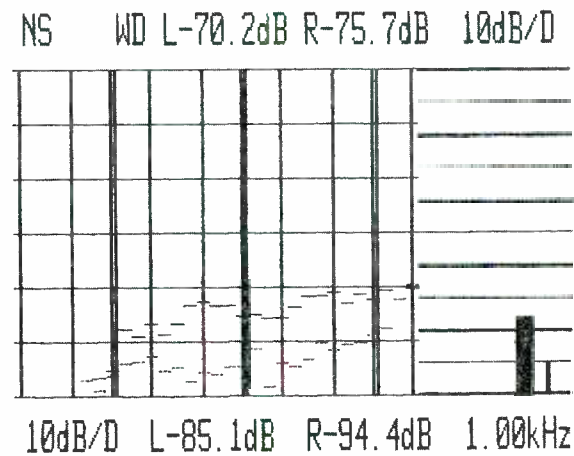


Fig. 10: Revox B-710 Mk II: S/N analysis, Dolby B/Dolby C, TDK AD tape.

and 5. In these graphs we have set the dotted-line "cursor" for each tape tested at the nearest "+dB above 0" level to the 3-percent third-order distortion point—for example, with the AD tape (normal bias) a +4 dB record level results in a third-order IMD of 3.2 percent.

Using these +dB levels as reference levels, we measured S/N ratios and made spectral noise analyses for the three tapes. The results *without* Dolby are shown in *Figures 7, 8 and 9*. These readings are superb, among the best we ever have noted for these tapes without the use of any noise reduction. The test results here show, in our opinion, what can be done in optimizing parameters of a tape deck when you are willing to give up a bit on frequency response in return for the more important superior signal-to-noise results.

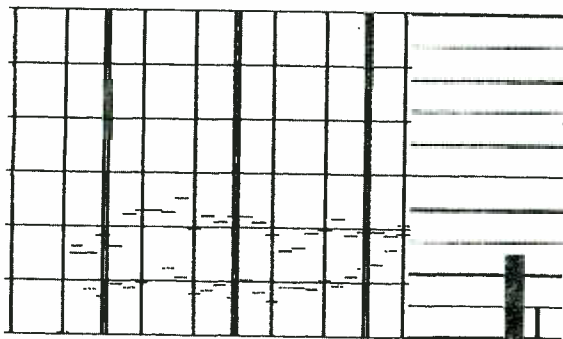
Since the B710 Mk II incorporates both Dolby B and Dolby C noise reduction, we felt it would be informative to plot S/N and noise analysis for both noise-reduction systems on the same graph (for each type of tape). This would facilitate making valid

comparisons of the two Dolby systems. Results are shown in *Figures 10, 11 and 12*. During these tests, "A" weighting curves were used.

The S/N readings next to the letter "L" at the top of each display are for Dolby B; the readings next to the "R" are for Dolby C. The readings below each graph apply only to the third-octave noise contribution about a center frequency of 1 kHz, and are only of secondary interest.

Our Sound Technology 1500A Tester was recently upgraded so that it is now possible to plot Maximum Output Level (MOL) at any desired test frequency. Essentially, MOL plots are input versus output level plots, and are very useful in showing how high-frequency saturation of tape affects its ability to record treble tones with the same linearity as mid-frequencies. Plots of MOL at two popular test frequencies (315 Hz and 10 kHz) are shown for the three tested tapes in *Figures 13, 14 and 15*. Since these curves may be new to readers of *MR&M*, some explanation is in order.

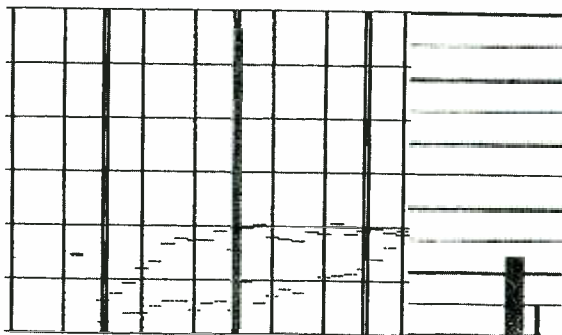
NS WD L-67.5dB R-73.3dB 10dB/D



10dB/D L-77.8dB R-92.7dB 1.00kHz

Fig. 11: Revox B-710 Mk II: S/N analysis, with Dolby B and Dolby C, TDK SAX tape.

NS WD L-68.7dB R-74.6dB 10dB/D



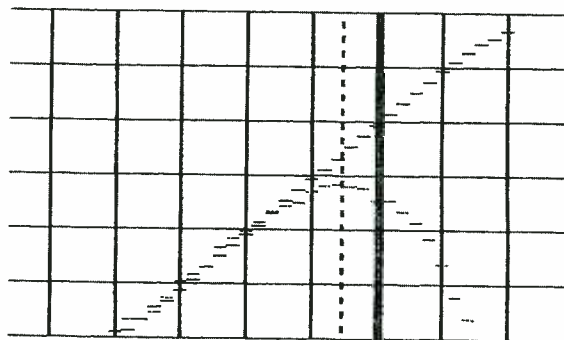
10dB/D L-84.2dB R-95.4dB 1.00kHz

Fig. 12: Revox B-710 Mk II: S/N analysis, with Dolby B and Dolby C, TDK MA tape.

Consider *Fig. 13*, for example. At the top are the notations (next to the "L" and "R" designations) of 315 Hz and 10 kHz. These, of course, are the test frequencies we used. The virtually straight-line plot sloping upwards to the right is an output-versus-input plot for the 315 Hz tone. It remains linear to well above the 0-dB reference level (indicated by the double vertical line). The 10-kHz plot, however, shows a maximum output when the input level reaches -3 dB (the notation at the lower right). At that time, the 10-kHz output has only reached a level of -5.8 dB and is at its highest possible point, or the MOL. Trying to record 10-kHz signals at still higher levels results in lower rather than greater output.

The other MOL plots can be interpreted in the same manner. Note especially the results obtained for the metal tape—it exhibits virtually perfect linearity at 10 kHz even up to the 0-dB record level, and its ultimate MOL of +0.6 dB is much higher than that of either of the other two tapes tested. This, by the way, is one of the chief virtues of metal-particle tapes—they do not tend to become saturated at high frequencies nearly as

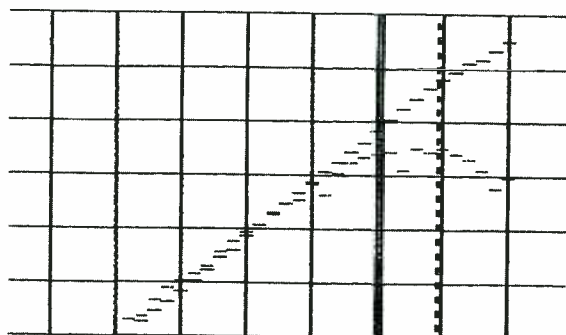
ML L315Hz R10.0kHz C2.00kHz



5dB/D L- 3.5dB R- 5.8dB - 3dB

Fig. 13: Revox B-710 Mk II: MOL plots at 315 Hz and 10 kHz (input vs. output) using TDK AD tape.

ML L315Hz R10.0kHz C12.5kHz



5dB/D L+ 4.1dB R- 2.4dB + 5dB

Fig. 14: Revox B-710 Mk II: MOL plots at 315 Hz and 10 kHz (input vs. output) using TDK SAX tape.

early as do conventional (ferric-oxide or high-bias) tapes.

Yet another MOL plot is shown in *Figure 16*. Here, however, both plots were done at the 10-kHz test frequency. The reason: To confirm the claims made by Dolby Labs that, when properly used and calibrated, the new Dolby C noise reduction actually improves high-frequency headroom. Expecting that a deck such as the B710 Mk II not only would be properly calibrated but that any circuit refinements would be used to best advantage, we felt that this would be a good deck in which to check out this particular point. As may be seen from *Fig. 16*, the claim is fully confirmed. The upper curve (with Dolby C activated) clearly shows an improvement in MOL of more than 2 dB at 10 kHz as compared with the lower curve (Dolby off).

Published specs for the B710 Mk II were among the most "conservative" we have seen in a long time. Consider, for example, the wow-and-flutter spec, given as 0.1 percent (per DIN 45507). This DIN spec is a peak-reading weighted spec, whereas we normally

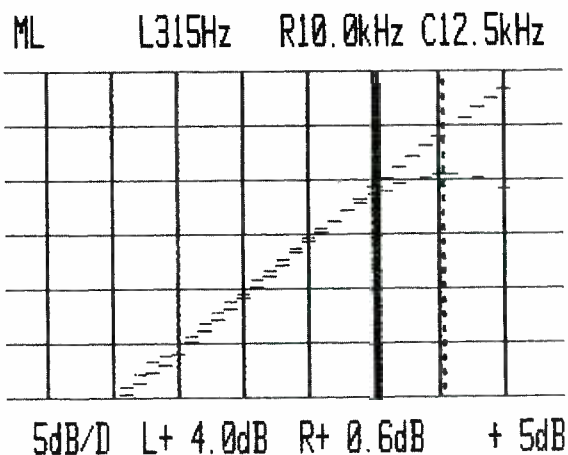


Fig. 15: Revox B-710 Mk II: MOL plots at 315 Hz and 10 kHz (input vs. output) using TDK MA metal tape.

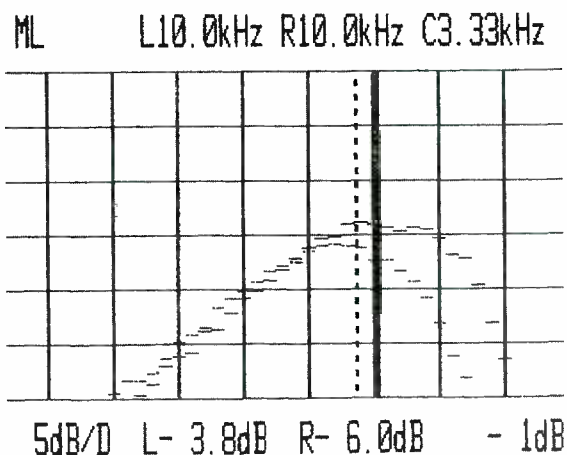


Fig. 16: Revox B-710 Mk II: Dual MOL plot at 10 kHz illustrates how Dolby C improves high-frequency headroom of any tape. Improvement in this case was 2.2 dB at 10 kHz (6.0-3.8).

measure wow-and-flutter using the more common (and better looking) WRMS method of measurement. Using that method we came up with an incredibly low wow-and-flutter reading of only 0.025 percent (better than a good many open-reel decks we know of), as shown in *Fig. 17*. Even when we switched to the DIN method, wow-and-flutter still read a mere 0.053 percent, well below the Revox claim of 0.1 percent.

Finally, as shown in *Fig. 18*, we plotted speed accuracy for the first two minutes of the deck's operation. Speed error was insignificant at 0.259 percent, and since it was obvious that the speed was not going to fluctuate over an extended period of time, we discontinued this test after 120 seconds.

General Info: Dimensions are 17.8 inches wide; 6 inches high; 13.85 inches deep. Weight is 22 pounds. Price: \$1999.

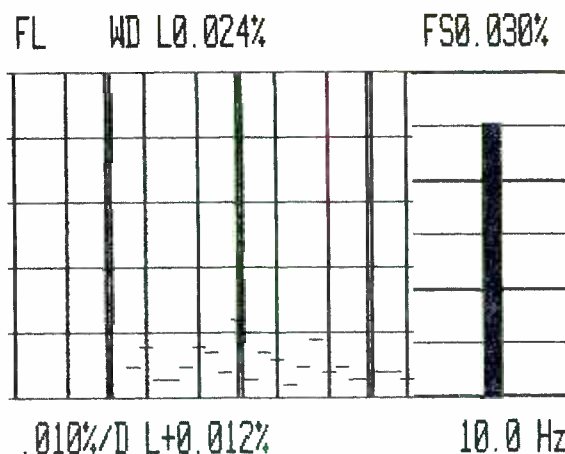


Fig. 17: Revox B-710 Mk II: Wow-and-flutter analysis (WRMS weighting).

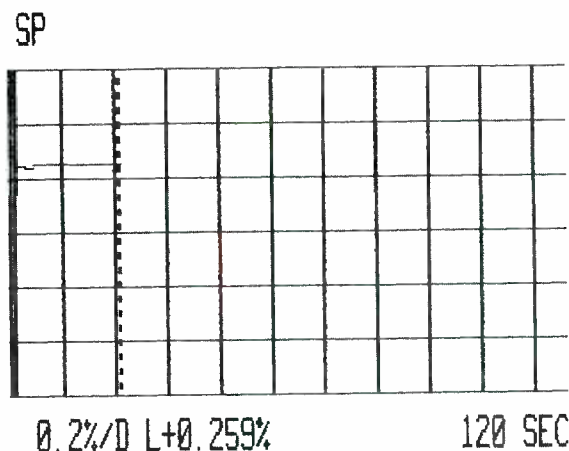


Fig. 18: Revox B-710 Mk II: Speed accuracy vs. time for first two minutes of operation of the unit.

Individual Comment by L. F.: If I had to characterize the new Studer-Revox B710 Mk II deck in a few words, the words I would choose are precision, elegance and no-nonsense. Having met the brilliant founder of the company that manufactures this and other high-technology consumer products under the Revox name, and professional audio products under the Studer name, I find it easy to relate the B710 Mk II to the man behind the product, Dr. Willi Studer. Both the man and the machine exude a similar sense of technical perfection. At the same time, both the man and the machine seem to reject useless frills and unnecessary gimmicks. Which probably is why the B710 Mk II does not feature such things as automatic bias and equalization adjustments, or "mindless" automatic rewind. By the same token, that's probably why this deck used four—yes, you read right, four—separate motors, and not a single belt or pulley that can wear out, stretch or alter position with time. It also is why the microprocessor in this deck has been used for such practical purposes as memory location of

preselected sections of tape, repeat play and the like, instead of the memorizing of bias and other tape deck operating parameters. Studer obviously believes that once a user has elected to go with a particular brand of tape, he or she should stick with it unless good reason is found to change to another brand or type.

The B710 Mk II, in my opinion, is the kind of cassette deck that will appeal to the professional recordist who needs a cassette machine whose performance has not been compromised in any way in the interest of cost saving or fancy features that do not contribute anything to ultimate recorded sound quality. With our sample deck we were also sent a spare transport mechanism to examine, and all I can say is that while the Swiss may have lost dominance in precision watch-making to Oriental competition, that same skill and craftsmanship are still very much in evidence in such products as the Revox B710 Mk II stereo cassette deck.

Individual Comment by N. E.: Having seen something of the Revox B710 at the Chicago C.E.S. in June, and having read its specifications and glanced through the owner's manual, I could hardly wait to

unpack the test sample and get my hands on it. I was not disappointed one whit. The B710 Mk II is one sweet cassette machine, a joy to use for both recording and playback. It does exactly what you expect of it, and with a deck of this caliber those expectations can be pretty high indeed.

It provides, to begin with, excellent performance both in audio terms and on all mechanical counts. It is built to run, and to last. Everything about it—from its outer case and controls, the entire head assembly, the innards and all parts—is splendidly crafted of high-grade materials, and the whole product obviously has been designed and put together with consummate care and skill. The B710 also has features—the kind that I feel really count in serious audio use and which are cannily planned and executed to make things easier and/or better functioning for the serious user.

Speaking of which raises the obvious question of tape selection and the lack of a bias fine-adjust control on the front panel which just about every other brand of cassette deck does have. The three buttons at the top of the panel do set bias and EQ for three IEC tape types individually, while the fourth button will do so as per the "coding" on the edge of a cassette. There is, of course, a bias fine-adjust inside the deck, as there is on a pro open-reel deck. Our own experience with cassette decks and tapes over the years indicates that between

REVOX B710 Mk II CASSETTE RECORDER: Vital Statistics

PERFORMANCE CHARACTERISTICS	MANUFACTURER'S SPEC	LAB MEASUREMENT
Frequency response		
normal tape	±3 dB, 30 Hz to 18 kHz	±3 dB, 20 Hz to 22 kHz
hi-bias tape	±3 dB, 30 Hz to 20 kHz	±3 dB, 20 Hz to 23 kHz
metal tape	±3 dB, 30 Hz to 20 kHz	±3 dB, 25 Hz to 24 kHz
Signal-to-noise ratio w/o Dolby		
re 3% 3rd order HD		
normal tape	NA	61.6 dB
hi-bias tape	NA	59.5 dB
metal tape	NA	60.3 dB
Signal-to-noise ratio re 3%		
3rd order HD with Dolby B; Dolby C		
normal tape	NA; 72 dB	70.2 dB; 75.7 dB
hi-bias tape	NA; 72 dB	67.5 dB; 73.3 dB
metal tape	NA; 72 dB	68.7 dB; 74.6 dB
Record level for 3% 3rd order HD		
(0 dB = 200 nWb/m)		
normal tape	NA	+ 6 dB
hi-bias tape	NA	+ 4 dB
metal tape	NA	+ 6 dB
THD at 0 dB record level		
normal tape	0.8%	0.54%
hi-bias tape	1.5%	1.20%
metal tape	1.5%	0.78%
Wow-and-flutter	0.1% (DIN 45507)	0.053% (DIN)
		0.024% (WRMS)
Line output at 0 dB	0.775V	0.775V
Headphone output at 0 dB	2.45V (200 to 600 ohms)	Confirmed
Mic input sensitivity for 0 dB	0.35 mV	0.35 mV
Line input sensitivity for 0 dB	35 mV	35 mV
Fast-wind time, C-60	45 seconds	43 seconds
Bias frequency	105 kHz	105 kHz
Power consumption	50 watts	53 watts

batches of the same brand and type of cassette tape there are insignificant differences and moreover that the bias fine-adjustments do not consistently work out in terms of optimizing all parameters for a given tape. Between different brands of tape, yes—there often are significant differences, and so if you do not want to use the particular brand of tape for which Revox has optimized this deck, you can readjust by going inside the deck and following their instructions. As it happens I did experiment with several well-known brands of cassette tape (other than TDK) in making recordings and dubs on the B710, and I found no problems or lessening of audible performance with those tapes (without bothering to go inside and readjust).

Among the three types of tape we tested on the B710 Mk II we found the usual minor differences in specific

parameters with the differences in this case being really minor. In other words, the B710 performs beautifully with any of the tape types. If the cost of tapes concerns you, note the fine results obtained with normal-bias tape which scored higher than the other two tapes on most counts except for a little response above 22 kHz, and for MOL. More important here, of course, is what Dolby C does—achieving signal-to-noise ratios significantly better than 70 dB with any of the tapes tested.

Incidentally, on the mix option—you can add voice via the mic inputs without giving up either stereo channel on the line inputs. If you voice-over through the “left/mono” mic input, your voice will ride on both channels together with whatever else is coming in on the stereo line inputs. If you voice-over on the right mic channel, the voice will appear only on that channel but again without upsetting left or right line inputs.

CIRCLE 36 ON READER SERVICE CARD

Technics SV-P100 Digital Audio Recorder



General Description: The Technics SV-P100 is the first “dedicated” digital audio recorder to be tested by *MR&M*. The term “dedicated” here means that the unit is designed especially for audio work and combines the basic elements, plus additional relevant features, for sound recording and playback. Our previous test-reports on digital recording equipment were based on the use of digital audio processors which converted audio signals into a now-standardized video signal format which then could be interfaced with a

home video tape recorder. The Technics unit contains the requisite A/D and D/A conversion circuitry, plus a complete tape transport system for standard VHS video tape cassettes.

In addition to the convenience of having “everything” in one relatively compact unit, the SV-P100 also offers microcomputer full-logic transport control; an automatic cassette holder; editing facilities; and other features of primary use in audio work.

The unit is designed for upright installation, with a front sloping section that lends it a "console" look. Controls found on this section include the cassette holder open/close key plus seven transport keys: recording; fast-forward; play; stop; rewind; pause; and search. The last-named key may be used in conjunction with other controls to find "search" marks recorded on a tape as an aid in editing. The other control on this sloping section is a large knob marked "fader" which functions as a recording and playback level control. Fading in and out is aided by the associated indicator light and the fact that at the calibrated control's "0" position signal attenuation is 0 dB, the normal level. There are additional individual left and right channel recording level controls above the fader, on the vertical portion of the front panel.

The narrow "apron" in front of the sloping portion contains a headphone jack, a remote-control jack, left and right channel microphone jacks and the unit's power off/on switch.

The left portion of the vertical panel is given over to the cassette compartment. The cassette is loaded into the holder "upside down" so that the tape, in record or play, normally moves from right to left as you view it.

Signal level metering is at the right. Peak levels are shown in both recording and playback on separate "bar graphs" for each channel, calibrated in 1.5-dB steps from -40 dB to +5 dB. The left-channel indicator also may be used to check playback-signal quality (for both the heads and the tape) when a special "data button" is pressed. To the left of the meters are a digital tape counter, and two more indicators. One is a "dew check" that lights up when condensation is detected inside the recorder (the deck will not operate). The other is a digital indicator which lights up when the input selector is placed in "digital" position for special operations such as dubbing between two SV-P100s.

Below the meters and display panel are six more controls. One is the input selector (line/mic or digital) just mentioned. Next are "locate" buttons which include a memory function for allowing the transport to fast-forward or rewind to a given tape-counter position, and a "recall" option for recalling the tape-counter position previously entered into the memory. The next two buttons control the metering and may be used to show audio peak readings or digital peak-hold, or the tape playback check previously described. The final button in this group permits timer-switched recording or playback. For either of these operations an external timer is required.

Below this group are the recording level knobs already mentioned, plus three editing controls. One of these may be used to record a "jump mark" on a tape during recording or playback. This portion of the tape then will be skipped over during playback, while the jump mark indicator lights up. Another switch in this group may be used to add a "search mark" to a tape. This signal is of 70-seconds duration during which time the search-mark indicator flashes on and off. The

search key (the last key on the right in the transport-control group) then may be used to fast-wind the tape and stop it at the beginning of the search mark. There's also a "clear" lever in this group to eliminate jump marks and search marks from the tape.

For cue-and-review, the play key and either the fast-forward or rewind key must be engaged. Monitoring in this mode is possible only through headphones since there is no output signal at the line outputs during fast-wind.

Line input and output jacks are located at the rear of the machine. These connections are for interfacing the SV-P100 with conventional analog audio equipment. In addition there's a pair of jacks for digital input and output which are used for digital dubbing. Also at the rear are switches for clock, editing and timer recording. These are preset by means of a special overlay fastened to the back plate, and are to be changed only in special applications described in the owner's manual. The recorder's AC power cord and fuse complete the picture at the rear. However there is one more adjustment found on the right hand side near the front—this is a screwdriver-adjustment for tracking which may be necessary to use when playing tapes that were recorded on a different machine.

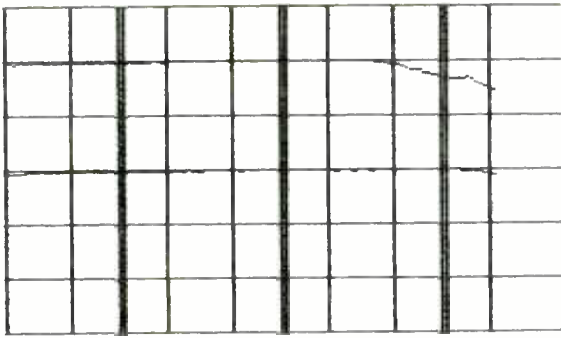
The Technics SV-P100 operates at only the "SP" video tape speed which means that with a T-120 video cassette, maximum stereo recording time is 2 hours. With one of the new T-160 cassettes that time can be increased to 2 hours, 40 minutes.

Test Results: Readers who are familiar with the technical advantages of digital recording will not be surprised by the relative brevity of our "Vital Statistics" table for the Technics SV-P100. After all, the type of tape used in digital recording matters little, so long as the tape is not full of dropouts and can run smoothly. Accordingly, for our lab measurements this time we used only one brand of tape.

We did run three frequency response tests. At the 0-dB recording level (the upper curve in *Fig. 1A*) we noted a slight rolloff at the very high end (despite the notion that digital recording response is supposed to be "ruler flat" to 20 kHz). We suspect that some form of pre-emphasis in the audio circuits ahead of the A/D converter may have driven amplitudes beyond the actual 0-dB reference level to cause this rolloff. In any event, as we reduced the recording level by a few dB, the high-end rolloff lessened to only -3 dB at 20 kHz (*Fig. 1B*). Finally, we took the response at a -20 dB recording level to obtain the lower curve shown in *Fig. 1A* which is, of course, the "ruler flat" response expected of digital recording.

Unlike analog tape recording, the "0 dB" mark in digital recording is the absolute maximum at which peak levels should be allowed to occur. The term "headroom"—as it is normally used in recording—

FR



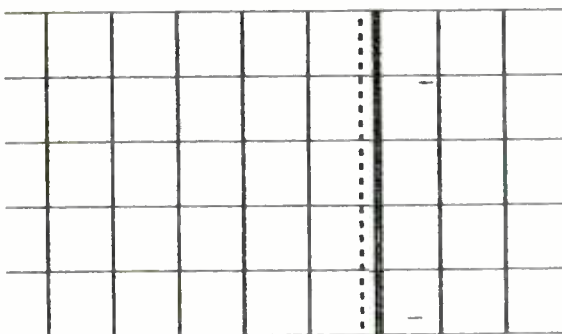
10dB/D L- 0.5dB R- 5.1dB 20.0kHz

Fig. 1A: Technics SV-P100: Record/play frequency response at 0 dB (upper curve), and -20 dB (lower curve). Plots are from 20 Hz to 20 kHz.

really has no meaning in digital recording because going above "0 dB" causes the digital system to "ask" for digital sample numbers that just aren't there, and so distortion rises astronomically. Of course, you can go a lot further below the 0-dB mark with digital recording and not run into a noise floor, and thus achieve digital's enormous dynamic range.

Probably in deference to recordists who might have some difficulty in getting used to this approach, Technics has deliberately calibrated the metering system used here so that "0 dB" is just a bit below the point at which "everything falls apart." This is evidenced by the third-order distortion versus recording level plots shown in our Fig. 2. Still, the way the distortion suddenly occurs above a certain nominal level is totally unlike the familiar, more gradual rise in distortion to which we are accustomed. At the -1 dB record level, third-order distortion reads 0.01 percent which is the effective residual of the test instrument (Fig. 2A), while at +4 dB distortion suddenly jumps to 2.8 percent.

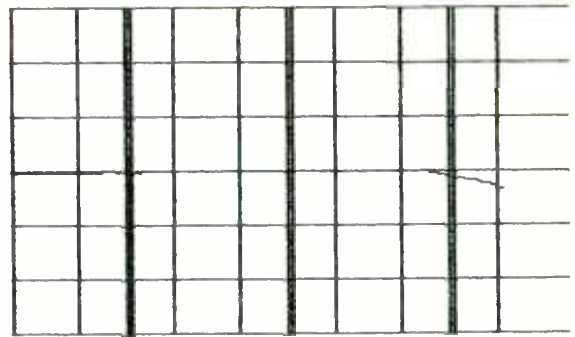
D3 L 0.01%



10dB/D L-78.1dB - 1dB

(2A)

FR



10dB/D L- 3.1dB 20.0kHz

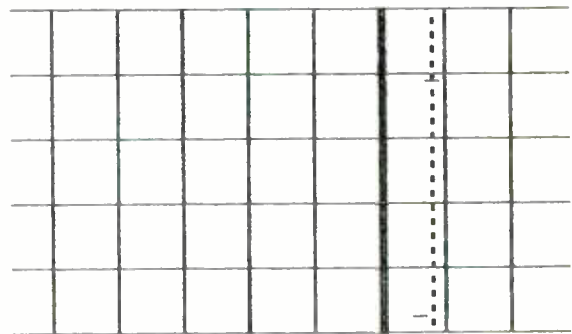
Fig. 1B: Technics SV-P100: Record/play response at -3 dB record level. Plot is from 20 Hz to 20 kHz.

Noise analysis and signal-to-noise of the SV-P100 are shown in Fig. 3. There is no noise reduction used in this system, and still the S/N measured a magnificently high figure of 86.4 dB, referenced to the previously noted +4 dB maximum recording level. Even adhering to the 0 dB record level, we subtract 4 dB and still come up with 82.4 dB of dynamic range.

Channel operation is plotted in Fig. 4, which shows that separation hovers around the 70 dB mark at all but the highest audio frequencies. Actually, in theory there should be no crosstalk at all with digital recording. We suspect that the limitations here (including the notable decrease of separation at high frequencies) is an audio phenomenon, rather than having anything to do with the digital recording system. It probably occurs because of cross-channel leakage in the audio circuits ahead of the digital electronics.

Wow-and-flutter, for all practical purposes, are nonexistent in this system. They were simply too low to be measured, even on our sophisticated test setup.

D3 L 2.8%



10dB/D L-30.9dB + 4dB

(2B)

Fig. 2: Technics SV-P100: At "0 dB" record level, 3rd-order distortion is less than residual HD of test equipment (A). Above "0 dB" record level, distortion rises very rapidly, reading 2.8% at a record level of +4 dB (B).

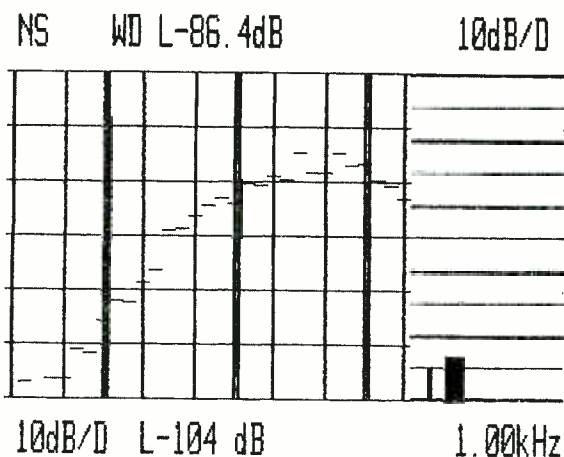


Fig. 3: Technics SV-P100: Signal-to-noise ratio (referenced to 3% distortion record level) measured in excess of 85 dB.

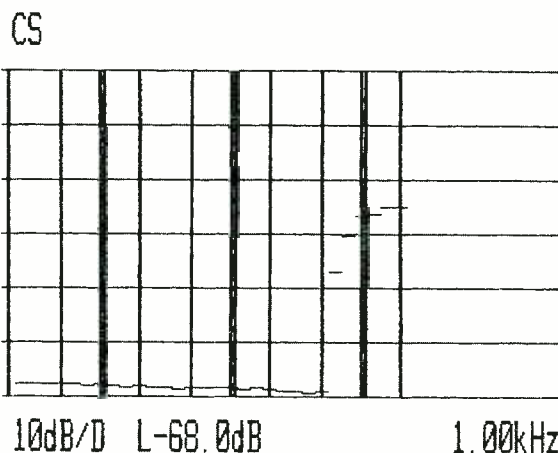


Fig. 4: Technics SV-P100: Channel separation was nearly 70 dB at all but the extreme treble frequencies.

General Info: Dimensions are 17 inches wide; 11 inches high; 13.6 inches deep. Weight is 46.3 pounds. Price: \$3000.

Individual Comment by L.F.: The consolidation of a video cassette tape transport and digital electronics into a single unit has its advantages and disadvantages in my view. It is nice, of course, to have a dedicated digital audio recorder that is not tied into any separate VCR but which has been designed strictly with audio recording in mind. For example, the electronic search facilities—used in conjunction with the counter display—does a far better job of accurate cueing than is possible with most VHS VCRs. If you are at all familiar with the VHS format, you know that the tape threading technique involved requires that the tape be withdrawn completely from the heads whenever the “stop” or fast-wind transport buttons are activated. That makes returning to an exact spot on the tape quite difficult, and we were amazed at how accurately the cueing task is performed here, albeit with a bit of back-and-forth hunting on the part of the transport system. Technics, being a division of Panasonic (Matsushita) which, in turn, is linked in a corporate way to JVC, naturally chose the VHS format rather than Sony’s Beta format for this recorder. I wonder how much smaller the unit could have been made had it been based upon the smaller Beta cassette package. As matters stand, the SV-P100 weighs about as much as a good quality open-reel tape deck though it is, of course, quite a bit smaller in size.

I was especially pleased by some of the special circuits that offer editing and convenience features on the SV-P100. For example, pressing the “jump mark” lever during recording or playback causes a “mark” to

be recorded on one of the auxiliary tracks of the tape that have been provided for in the standard EIAJ Digital Tape Standard (to which this product adheres). When this “mark” is sensed during playback, that section of the tape is skipped over at eight times normal speed. The normal speed is resumed when the end of the “mark” is reached. This seems to me a useful and quick way to edit out unwanted material. “Search” marks also can be applied to the tape, and these I found to be very useful during playback in locating specific points in the recording. Finally, the fact that tape counter readings can be placed into the machine’s memory allows you to stop the tape at any specified setting or location during fast forward or rewind. In short, Technics has done about as much as is possible to offset the rather awkward and slow way in which tapes are normally accessed in the VHS video tape recording format.

Does the availability of a digital two-channel recorder such as this one mean that it is time for all small studios to toss out the half-track reel-to-reel mastering decks? Hardly! The SV-P100 is a remarkable achievement for its price and, indeed, if you are talking about a straight real-time “live” recording, it might well prove to be the ideal machine for low-distortion, high dynamic range taping. But for those applications where anything but the most elementary type of editing is required, or for any multi-track or punch-in recording applications which you might encounter, the SV-P100 still needs companion pieces that will allow the kind of editing you can do on an analog multi-track machine, and the kind of splicing that you can do with a razor blade. Unfortunately, no one has yet figured out how to splice into digital bits or bytes manually. We suspect that Technics (and others engaged in digital audio development) are as aware of these shortcomings as we are, and will undoubtedly be doing something about them as more and more recordists turn to digital audio recording.

Individual Comment by N.E.: My own comments this time parallel Len's on all counts, but I would like to add a few more thoughts. We have, in the past, covered two separate PCM (digital) processors—the Sony PCM-F1 (*MR&M*, May 1982) and the Toshiba PCM Mark II (*MR&M*, March 1980). Both of these devices required, of course, being interfaced with an external VCR and this meant a somewhat cumbersome setup not to mention the attendant need to preempt the particular VCR employed from its original intended use as a source of video entertainment.

But it must be remembered that with those PCM audio processors, you could use any VCR—either the Beta or the VHS format. With the Technics SV-P100, the video tape transport is built-in, and to that extent—not to mention the special audio-type features with which the product has been embellished and which have to be counted as all to the good—a great measure of compactness and convenience has been achieved. By the same token, however, it does lock you into one of the two possible major formats, specifically in this case, the VHS. Now I have nothing against VHS as such (I have been having a great time with a VHS video machine myself, in fact). But I do wonder now about the possible shaping up, in the audio world, of yet another “battle of formats” with VHS versus Beta for dominance among serious audio recording people. Not only that, but it may well be that the time is soon upon us when it will become necessary to make comparisons. For instance, someone's PCM processor linked to a given VCR of any format versus the dedicated type of digital audio recorder of any format. How such

comparisons will turn out, what they will “prove” and what effect they will have on the whole future audio recording scene suddenly looms as a big question, or series of questions. We are, in other words, sort of on the threshold of a whole new era in audio recording. It may well be that, given the general excellence of all the PCM variables (not so many at that, at least up to now) we have so far encountered, the outcome will depend less on hair-splitting differences among the competitors but rather upon convenience features, facility for “working” with the medium and, of course, cost.

At this stage it seems to me very much a toss-up. But despite these questions, it is impossible not to be thrilled by digital recording in any of its so-far released formats. We set up the Technics SV-P100 in the audio shop “The Sounds of Music” in Lenox, Mass. where I rent work-space from its owner Ross Tane, an audio veteran who often is wryly humorous about new products and new twists in old products. We dubbed a lot of material, some “live” and some from what we considered to be very high-quality analog sources such as dbx-digital discs. Monitoring the results was simply an exercise in pure repetition. At one point Ross said with a wink: “I like it better than Dolby.” There's no need to “explain” to a guy like Ross—you just laugh at his backhanded humor-compliment. In any event, and as with previous PCM encounters, we both agreed that here was unprecedented dynamic range, and a quality of sound that remained intrinsically noise-free even at extremely high amplitude signal levels. No doubt about it: Digital may have some growing pains ahead of it, but it is on the way.

TECHNICS SV-P100 DIGITAL AUDIO CASSETTE RECORDER: Vital Statistics

PERFORMANCE CHARACTERISTICS	MANUFACTURER'S SPEC	LAB MEASUREMENT
Frequency response	±0.5 dB, 2 Hz to 20 kHz	0 dB record level: +0, 2.8 dB, 20 Hz to 18.5 kHz 3 dB record level: +0, 3.1 dB, 20 Hz to 20 kHz 20 dB record level: +0, -0.5 dB, 20 Hz to 20 kHz
Signal-to-noise ratio re 3% 3rd-order distortion (no noise reduction used)	86 dB	86.4 dB
Record level for 3% 3rd-order distortion	NA	+4 dB
THD at 0 dB record level	0.01%	0.01%
Wow-and-flutter	NA	Too low to read
Line output at 0 dB	400 mV	2V
Headphone output at 0 dB	NA	388 mV (8 ohms)
Mic input sensitivity for 0 dB	0.7 mV	1.9 mV
Line input sensitivity for 0 dB	30 mV	140 mV
Fast-wind time, T-120 cassette	NA	Fast-forward, 160 seconds Rewind, 164 seconds
Power consumption	85 watts	83 watts

CIRCLE 37 ON READER SERVICE CARD

Acoustat TNT-200 Power Amplifier



General Description: Acoustat's TNT-200 is a "twin" power amplifier which is to say it consists of two identical amplifier modules on one chassis. Power for each amplifier is supplied by individual bridge rectifiers off separate windings (secondary and primary) of the power transformer which itself is controlled by a common switch. The amplification circuitry employs two innovations. One is the use of power MOS-FETs in the output stage but not in familiar configurations of voltage followers or as transconductance stages. Instead, the Acoustat amplifier uses what the manufacturer calls its "anisotropic" configuration, described as "a pure transresistance-nodal voltage amplifier—i.e., TRANS-NOVA stage." Advantages claimed are full (power) gain-bandwidth while preserving the distortion, damping, phase and noise properties of a follower circuit, and full rail-to-rail dynamic range with no gate-enhancement loss. The output stage, into 8 ohms, is designed to show a current gain of about 500-to-1, and a 10:1 voltage gain for a combined power gain of about 37 dB. This high output-stage power gain, in turn, results—goes the explanation—in "a circuit simplicity which directly improves sonic integrity."

The other novel design feature in this amplifier is called "complement feedback." Termed by Acoustat a circuit invention, it is intended to "complement" or "perfect" the deficiencies of conventional negative feedback so that with only 20 dB of closed-loop overall feedback, the amp is said to yield zero (nodal) output stage distortion and zero output impedance, resulting in a damping factor of over 1000:1. This connection also eliminates the need for current-limit protection against load faults. In addition, the amplifier's "high speed" performance is achieved into complex loads without the need for introducing sonic-altering inductive "fixes" into the output signal path.

The external appearance of the Acoustat amp is quite simple. The front panel contains nothing more than the power off/on switch. The rear contains an input pin-jack and color-coded binding posts for input and output, respectively, for each of the "twin" amps, the large heat-sinks and the AC power cord (fitted with a three-prong grounding plug).

Since the unit is basically made up of two independent (mono) amplifier modules, it is possible—in the event of trouble with one channel—to remove the offending module and continue operation with the remaining module. All fuses are located inside the chassis. For rack-mounting, an optional adaptor bracket kit is available. The chassis is "floated" with respect to the audio grounds which means that speaker

cables must not touch any point on the chassis when connected to the amp while the unit is turned on.

Test Results: In *MR&M's* lab tests, the Acoustat amplifier delivered its rated output (200 watts per channel) from 20 Hz to 20 kHz into 8-ohm loads at the rated total harmonic distortion level of 0.1 percent, but it fell a bit short of reaching the 325 watts per-channel mark when driving 4-ohm loads, producing in this instance 300 watts per channel. These and other pertinent data are summarized in our usual "Vital Statistics" table. Acoustat does offer too many published specifications against which we could make comparison measurements, but we have listed most of the test results that we normally report for a power amplifier. Sonic performance of the TNT-200 was excellent and, despite the steady-state power limit which would seem to suggest little dynamic headroom, we did in fact measure a dynamic headroom of 1.4 dB.

General Info: Dimensions are 17.5 inches wide; 5.5 inches high; 14 inches deep. Weight is 45 pounds. Price: \$1095.

Individual Comment by L. F.: The note at the lower right corner of the schematic diagram included in the owner's manual for the Acoustat TNT-200 reads: "WARNING This document discloses pending patents. Licenses available."

I mention this not because I am soliciting licensees for Acoustat, but rather to point out that they *have* come up with a rather remarkable output circuit for this high-powered amp. Their "anisotropic" output configuration, they explain, is a pure TRANSresistance-Nodal Voltage Amplifier. Put all those upper-case letters together and you get TRANS-NOVA, the name they have given to this output circuit and to the amplifier. Add to this the fact that we have two channels of amplification, or Twin amplifiers and we can abbreviate all of this (Trans-Nova-Twin) to TNT-200, a dynamite amplifier! (Do you ever get the feeling that some manufacturers come up with the acronym first and then work backwards to make words fit the letters of the acronym?)

All of that aside, the new circuit—from what I have been able to discover—does offer some distinct advantages, at least on paper and in lab measurements. That's not to say that it is not a good sounding amp. It

certainly is. It's just that I must confess that a slew rate of 165 volts/microsecond doesn't sound any better to my ears than say, 20 volts per microsecond. And a damping factor of 1000 (claimed for this amp but not measureable in our lab because the wires connecting from the output terminals of the amp to our test equipment inputs would have to have far less than 0.008 ohms of resistance to prove it) sounds no better to me than a damping factor of 50 or 60 with any speaker system that I've ever used.

What I did appreciate about the novel output stage circuitry was its use of MOS-FETs and the fact that their being powered by a +/- 72 volts does yield a very wide available dynamic range or signal swing capability. The other circuit innovation (and one that did seem to contribute to its audible superiority) is the complementary feedback and the attendant lack of a need for adding inductive devices in the output signal path.

Is the TNT-200 worth its \$1000-plus asking price? I honestly think so. I know that in the past I have been quick to criticize "overpricing" of amplifiers, but in this case I have the feeling that the ultimate reliability of this amplifier along with its sonic performance will please anyone who purchases it. It is one thing to be asked to pay a high price because a manufacturer is too small to employ manufacturing economies. It is quite another when you are asked to pay a higher price for real extra user benefits. In the case of this amplifier, the latter situation applies.

Individual Comment by N. E.: In the main, two general criteria would seem to apply to an evaluation of a power amplifier. One is its sonic performance; the other, its reliability. The Acoustat TNT-200 is without doubt a really fine performer; as far as we could determine its "sound" is that of the sources and/or associated equipment before it and that of the speakers it is driving. How much of this can be attributed to those circuit innovations I cannot tell. Certainly, this is hardly the first power amp I have auditioned which conveys that sense of sound-reproducing ease and authority, and just as surely those other amps did not employ the particular circuit configurations used here.

As for reliability, the TNT-200 did seem unflappable and thoroughly dependable, at least within the necessarily limited time available for our testing. The fact that it uses no forced-air cooling, and has its fuses all within the chassis certainly bespeaks a definite vote of confidence on the part of its manufacturer in the long-term reliability of this product.

Whether any given user would prefer this amp to another of perhaps somewhat higher power and/or a few added features (such as more "professional" type inputs, or a front-panel power readout, or input level controls, etc.) is something I cannot answer. A prospective buyer would have to decide that for himself or herself. Obviously, Acoustat has a definite "design philosophy" that underlies this amp, and you either go for it or not.

ACOUSTAT TNT-200 POWER AMPLIFIER: Vital Statistics

PERFORMANCE CHARACTERISTICS	MANUFACTURER'S SPEC	LAB MEASUREMENT
Continuous power for rated THD		
8 ohms, 1 kHz	200 watts	200 watts
4 ohms, 1 kHz	325 watts	300 watts
FTC rated power (20 Hz to 20 kHz)	200 watts	200 watts
THD at rated output		
1 kHz, 8 ohms	0.1%	0.1%
1 kHz, 4 ohms	0.1%	NA
20 Hz, 8 ohms	0.1%	0.1%
20 kHz, 8 ohms	0.1%	0.1%
IM distortion, rated output		
SMPTE	0.1%	0.2%
CCIF	NA	0.034%
IHF	NA	<0.03%
Frequency response at 1 watt for -1 dB	NA	4 Hz to 125 kHz
S/N re rated output, "A" wtd	NA	107 dB (unwtd)
Dynamic headroom, IHF	NA	1.4 dB
Damping factor at 50 Hz	1000	NA
IHF input sensitivity	NA	1 volt
Input sensitivity, re rated output	1.4 volts	1.4 volts
Slew rate (volts/microsecond)	165	NA
Power consumption, idling; maximum	100; 750	163; 815

CIRCLE 38 ON READER SERVICE CARD





GROOVE VIEWS

Reviewed By:
ROBERT HENSCHEN
ELLEN ZOE GOLDEN
NORMAN WEINSTEIN
JOE KLEE

POPULAR

STEVE WINWOOD: *Talking Back To The Night*. [Steve Winwood, producer; Steve Winwood and Nobby, engineers; recorded at Netherthurk-donic Studios, U.K.] Island ILPS9777.

Performance: **Bright and brimming**
Recording: **Expertly crafted**

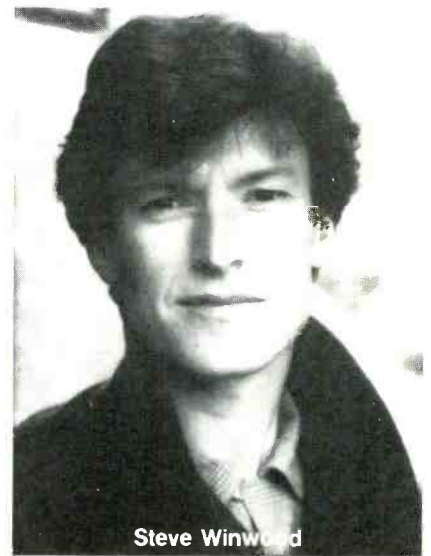
To capture the remarkable metallic singing voice of Steve Winwood is no snap assignment, but if anyone can do it, apparently, it's Winwood himself. Kicking off with a cathartic pop-rocker called "Valerie," this album immediately establishes itself as an audio dazzler full of crisp, crunchy synthesizers and sharp-edged vocals.

Winwood's reclusive nature has prevented him, at least partially, from becoming more of a superstar than he already is. Following an

auspicious teenage beginning with the R&B laced Spencer Davis Group, artistic success as founder of Traffic, and even momentary monster rock stature in Blind Faith, Winwood's long string of solo efforts has offered considerably less in the way of fireworks.

Talking Back To The Night is, then, something of an ultra-accessible surprise, an outpouring of enthusiasm that would almost indicate that a new, more visible era may lie ahead for this incredible singer-composer-musician. While there is still no ready-to-work backup band—Winwood plays keys, bass, drums, guitars, everything on this album—a legion of fans must be primed for a tour after hearing *Are Of A Diver* and now this one.

Musically, at least one comparison can be made between the two recent



Steve Winwood

albums by The Who and Pete Townshend and Winwood's more finely-wrought disc. In all three cases, veteran British rockers are contending with their middle age and espousing new, important ideological directions, mental changes directly affecting their new music. Townshend, the reformed drug abuser, and The Who are turning over new leaves and apparently looking for a rejuvenation of social consciousness. Winwood, by contrast, seems to have reached the earth shaking—yet astonishingly simple—conclusion that the essence of life has been right under his nose.

Talking Back To The Night existentially celebrates the virtues of hard

The JBL Factory Warranty Recone Center—2 Ways Better.

1. Newcome Sound installs only authorized factory parts.
2. Newcome Sound services most models in 96 hours.

Send us a copy of this ad with your JBL speaker, and get 10% off on Speaker Reconciling from the professionals at Newcome Sound.

**NEWCOME
SOUND**
INCORPORATED

4684 Indianola Avenue
Columbus, Ohio 43214
(614) 268-5605

JBL

work ("Still In The Game," "Talking Back To The Night") and holds up the artistic lifestyle as a model of perseverance and survival. In some ways, this LP could be called *Are Of A Striver*, it is so fixed on the notion of art and beauty.

But it is even more possessed with a sudden and total appreciation of the moment. "Valerie" sets the tone for a series of very sensual, sensitive, and celebratory explorations of mature love, and side two's "It Was Happiness" represents a supreme comment on the importance of intimacy and giving. On the other hand, "Big Girls Walk Away" warns against taking relationships too lightly. In "Help Me Angel," Winwood enlists divine aid because, "You've got something I have to know/'Cause I've still got so far to go." To wrap it all up, "There's A River" contains lines like "...it's good to be alive" and speaks glowingly of the ever after.

So it's an album brimming with self-realization and optimism, and the message infects the bright sound. Whether Winwood has gone ga-ga over girls or God would be interesting to learn, yet either way there's no mistaking the *spirit* that lifts *Talking Back To The Night*. The tunes here are punchy and radio-length, not as progressive as the Winwood of days gone by. But this is obviously a new age for Steve Winwood, and his new music is expertly crafted and refreshingly exuberant. R.H.

TRANSLATOR: *Heartbeats And Triggers*. [David Kahne, producer and engineer; recorded at The Automatt and Iguana Studios, San Francisco, Calif.; mobile unit provided by Phil Edwards Recorders; Philip De Lancie, remote assistant; mastered by Paul Stubblebine.] Columbia/415 ARC 38162.



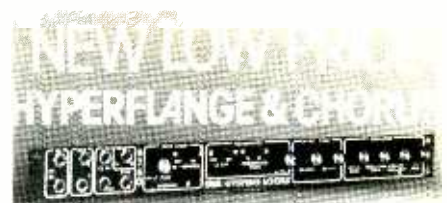
Performance: **Wonderfully sinister**
Recording: **Effectively dreary**

San Francisco's Translator writes love songs for the acid-head romantic—you know, the guy who thinks he'll see God on that Orange Sunshine, but instead teeters with paranoia waves until he's overwhelmed and wants to come down *sooo* bad. Without the drugs, listeners of the appropriately tagged *Heartbeats and Triggers* experience a similar emotional confusion, and not because this is the first 415 Records LP to be distributed by CBS, either. A good number of cuts mesh optimistic lyrics with neo-psychedelic music that undercuts the poetry with looming bass riffs and desperate vocals.

The thing that pulls the record together is the fact that Translator has made life's drear easier to swallow. What better time to pull out the melodic acoustic guitar than in a moody love-lost song like "Everywhere That I'm Not," where the pained protagonist continually spots mirages of his beloved. Three cuts down the grooves, our boy feels better as he shouts, "When I am with you/I feel like smiling" to perkier, brighter early '60s-like musical strains.

Translator is a schizophrenic bunch, however, and when the gloom does set in, it doesn't really stay too long. The off-line vocals and rebellious electric guitar of "Dark Region" do threaten one's general aesthetic, yet this isn't dissonance with intent to kill—it's a *release* of tension. When the horror starts to rub against the grain, David Kahne (producer and engineer) turns up the guitars and drums ("Sleeping Snakes") to bury potential lyrical bombs.

Kahne's aural common sense is an integral part of the mood that permeates this album. Much of the



The first thing you'll notice about Craig Anderton's latest PAIA kit is what careful design and input/output companion does for noise levels. This is an incredibly quiet effect useful both in the studio and live processing.

But controlling the PAIA trend to quiet quality isn't the only thing that makes the Hyperflange & Chorus an exceptional value. The Hypertriangular control oscillator based on a Curtis 3340 VCO chip allows both linear time sweeps (the way everybody else does it) and the exponential sweeps (which is the way your ears really prefer) both over a 72:1 range. And an exclusive Resonance Lock Circuit lets you hang regeneration "on the edge" without having to worry about breaking into feedback howls.

More? OK, how about control features like a pan pot for dry and processed signal, + or - flanging, clipping indicator LED for precise setting of optimum input signal level, separate external control inputs for both LFO and time delay, even a sync input for the control oscillator. The Hyperflange & Chorus comes in a standard 1 3/4 inch rack mount configuration compatible with other products in the 6700 series of equipment and requires ± 12 to 15 volt 200 ma power supply.

No. 6750 HYPERFLANGE & CHORUS KIT
\$149.95 3 lbs.

**ORDER TOLL-FREE WITH
VISA OR MASTER CARD
1-800-654-8657**

Direct mail orders & inquiries to:
PAIA Electronics, Inc.
1020 W. Wilshire, Oklahoma City, OK 73116 (405) 843-9626
CIRCLE 76 ON READER SERVICE CARD

A SINGER'S DREAM!

REMOVES VOCAL FROM MOST STEREO DISCS
The Thompson Vocal Eliminator can actually remove most or virtually all of a solo vocalist from a standard stereo record and yet leave most of the background music untouched! Not an equalizer! We can prove it works over the phone. Write for a brochure and demo record below.

YOU SHOULD SEE US

- Studio Echo/Reverb
- Tape Noise Reduction
- Parametric Equalization
- Electronic Crossovers
- Comp/Limiters

For:

We manufacture a full line of high quality audio and recording equipment. You will probably have to pay twice as much elsewhere to obtain comparable quality. Only Direct Sales make our prices and quality possible. Send \$1 for a 24 page brochure and 20 minute demonstration record.

Write to: **LT Sound**, Dept. MR, P.O. Box 338, Stone Mountain, GA 30086 (404) 493-1258



Ken!

You don't have to shout. Ken's wearing Sonic II™ sound filters.

They block out harmful, high-level sounds. But he can still hear the music.

They come with their own carrying case and have been worn for years by professional musicians and sound engineers.

Ken knows what he's doing all right. Except when it comes to music. Oops! Sorry, Ken.



Look for Sonic II sound filters at your favorite music shop. If not available, order by mail.

Please send me _____ pairs @ \$7.85 pair
(plus 50¢ postage and handling). Enclosed is my
check or money order for \$ _____ (Calif
residents add 6% sales tax)

Name _____

Address _____

City _____

State/Zip _____

NORTON

**NORTON COMPANY
SAFETY PRODUCTS DIVISION**

Dept. MR-11/82, 16624 Edwards Rd
Cerritos, CA 90701

heavy bottom used to create the feeling of walking on the edge comes from this man's decision to mix up more bass guitar than throbbing drum beat. When the acoustic guitar does appear in the compositional pattern, the clarity of the string's strum adds enough folkie conviction to raise the listener's consciousness; the electric guitar gets the same attention with its bite.

Musical therapy is an ambitious undertaking, especially when self-awareness, world conscience and well-crafted songs are connected in one vinyl session. Translator has synchronized these elements on *Heartbeats And Triggers* for an honest success. E.Z.G.

DURAN DURAN: *Rio*. [Colin Thurston, producer; Colin Thurston, engineer; recorded at Air Studios, London.] Harvest ST-12211.

Performance: **Not just a band to watch**
Recording: **The more contrast, the better**



Duran Duran

There is no question that Duran Duran has, from the outset, looked like a band to watch. Literally. This is one of those 'made-for-MTV' new rock units that is as much into video as audio—maybe more.

Now, Duran is a band suitable for listening purposes as well. They've tightened up their stage shows and also filled out this record with a more consistent brand of modern pop. The music is electronic and synthesized, almost always danceably fast, and

plotted with sharp hooks characteristic of latter day New Wave.

Going right to the grooves, Duran Duran delivers such likeable little rockers as "Hungry Like The Wolf," "Rio," "Last Chance On The Stairway" and "Hold Back The Rain." The material is easy to like on the surface, and it's a slick dancing surface to boot. If the musical structures seem simple on "Rio" and "My Own Way," there's a sophisticated fascination with polyrhythms that keeps the ear moving to the beat.

On the other hand, *Rio* doesn't just function on a superficial boy-meets-girl-at-the-Mudd-Club plane. While interpersonal relationships may once again provide the impetus for several songs, there are unusual scenes and circumstances for new romantic trysts: lonely nightmares, a hungry wolf in search of prey, or "miles away from nowhere." There is depth to the lyrics on songs that might otherwise seem short-lived in their hit and run appeal, and writer Simon LeBon is skilled in devices of poetic brevity that shift emphasis to oft-powerful imagery:

And watching lovers part, I feel

you smiling
What glass splinters lie so deep in
your mind
To tear out from your eyes, with a
word to stiffen brooding lies
But I'll only watch you leave me
further behind.

—"The Chauffeur"
1982 Tritec Music Ltd.

The production itself is energetic for the most part, even if a string of similar sounding tempos threaten to

flatten the dimension. "Hungry Like The Wolf" is the single release, and its engineering may intentionally lack warmth to capture the "I'm on the hunt I'm after you" thrills and chills. Producer Colin Thurston (David Bowie credentials) gets a hard, techno-rock sound out of Duran Duran on the faster pieces, but works wonders with the eerie "New Religion" or excellent slower pieces like "Save A Prayer Til The Morning After" and "The Chauffeur."

All in all, it's a powerful display of pop and potential. Duran Duran can now run with the talented young pack of rock technicians that offers Split Enz, A Flock of Seagulls, Soft Cell and ABC as new hope for rock's future. R.H.



LESTER BOWIE: *The Great Pretender*. [Manfred Eicher, producer; Martin Wieland, engineer; recorded at Tonstudio Bauer, Ludwigsburg, Germany.] ECM Records ECM-1-1209.

Performance: **Hilarious;**
impressive too
 Recording: **Up to the challenge**

Lester Bowie is a great pretender. He's also a great musician, perhaps the most inventive trumpet player of the '80s, and this album finds him in rare form.

To his musical prowess in a moment. First, some background regarding the "pretender" side of Lester Bowie. Decked out in a clinical white physician's coat, spectacles, two-tone brown shoes, and a Fu Manchu moustache, there can be little doubt that this guy is a master of buffoonery. His "live" performances contain sheer gems of deadpan comedy, with his horn becoming the mouthpiece for Lucy & Desi spats, slapstick sputters and moans and a thousand odd sounds.

That kind of hilarity is to be found here on side one's doo-wop title track, not to mention a tipsy rendition of "It's Howdy Doodie Time" run totally amuck. "The Great Pretender" starts off with the familiar old Platters'



800-645-3518

WHAT'S BEHIND THIS TELEPHONE NUMBER?

There's a whole world of *service* behind the Sam Ash telephone number.

Like quick delivery. We know that once you've made up your mind on an item, you want it *NOW*. So we keep \$5 million dollars worth of merchandise on hand to insure that almost everything is *in stock*.

Another plus: Sam Ash telephone sales people are all professional musicians. They know what they're talking about and you can trust their advice. Even our *packers* are specialists in musical gear, quality checking every shipment before it goes out. What a pleasure to get service like this! Call the Sam Ash Hot Line—and enjoy.

IN NEW YORK STATE CALL 212 347-7757



Since 1924
Sam Ash
 MUSIC STORES

124 Fulton Avenue, Hempstead, New York 11550

CIRCLE 40 ON READER SERVICE CARD

RANE Introduces the RE 27 Realtime Equalizer

The equalizer with a perfect ear, because yours isn't.

Unless at least one of your ears is calibrated, any equalizer without an analyzer is just a shot in the dark—a costly instrument capable of superb performance if you could just tell it what to do.

The RE 27 tells you exactly what to do. It's so easy to use that anyone can equalize a system to ± 1 dB accuracy in just a few minutes, start to finish, for reduced feedback and optimum sound quality wherever you perform. And the RE 27 comes with everything you need, including a calibrated condenser microphone.

"Great! But how much?"

\$799 complete, suggested list price

"Ingenious!"

RANE CORPORATION 6510 216th SW,
 Mountlake Terrace, WA 98043
 (206) 774-7309

The Affordable

Digital Real Time Third-Octave Spectrum Analyzer

- Full 30 Bands • Six Memories • Quartz Controlled "Switched Capacitive Filtering" to eliminate drift • Ruggedized for Road Use • Microprocessor Controlled • Built-in Pink Noise Source • "Flat," "A," or "User Defined" Weighted Curves may be employed
- ROM User Curves Available.



MODEL 30
Affordable at just **\$1500.00**

GOLD LINE

P.O. Box 115 • West Redding, CT 06896
(203) 938-2588

SEND FOR COMPLETE LITERATURE:

NAME _____
COMPANY _____
STREET _____
CITY _____
STATE _____ ZIP _____

CIRCLE 42 ON READER SERVICE CARD

INSTITUTE OF AUDIO/VIDEO ENGINEERING

OFFERING DIPLOMA PROGRAMS IN:

RECORDING ENGINEERING (AUDIO & VIDEO)

Also Forming:

4 WEEK INTENSIVE WORKSHOPS IN RECORDING ENGINEERING

Two In-House State-Of-The-Art
24-Track Recording Studios

Faculty Members Are Leading
Recording Industry Professionals

Internship/Placement Assistance

Professional Working Environment

Write or Call for Brochure

INSTITUTE OF AUDIO/VIDEO ENGINEERING
1831 Hyperion Ave.
Hollywood, California, U.S.A. **90027**
(213) 666-3003

CIRCLE 43 ON READER SERVICE CARD



Lester Bowie

background parts sung by Fontella Bass and David Peaston, and the lead vocal supplanted by one of Bowie's bent over, constipated solos—a howl. From there, the 16-minute development heads into an upbeat bop groove led by Hamiet Bluiett's excellent baritone sax solo. The cut gets way out there before the singers return to the doo-wop theme and Bowie closes with a talking solo parody.

After "Howdy Dooddy," a cut called "Doom?" closes the side with some fast and furious free improvisation, intensely ominous soloing that suddenly culminates in Bowie's dripping sweet chorus from the Kate Smith white elephant, "When The Moon Comes Over The Mountain." What an imagination.

The flip side of Bowie's madcap jazz comes with side two of this disc. Three medium length compositions display totally different aspects of Bowie's talent. "Rios Negroes" starts off in a nice progressive mood with Latin bass beat and fine work from sidemen Donald Smith (piano), Fred Williams (bass) and Phillip Wilson (drums). Despite its offbeat ending, the cut contains a broader appeal factor that is seldom found in either Bowie's previous work as a solo artist or with the great Art Ensemble of Chicago.

Even more awesome conceptually is the Oriental "Rose Drop," an exotic piece with bowed bass, chimes and a myriad of strange, breathy sounds from Bowie's trumpet. Stranger still is the finale that "Rose Drop" evolves into. "Oh, How The Ghost Sings," with a whistling trumpet and deep diving bass that sound like underwater whales.

The Great Pretender is a tour de force for the serious listener capable of accepting the roller coaster of imagination that Lester Bowie rides so well. Manfred Eicher, the German producer behind the fine ECM label, has done a superb job of capturing one of the most elusive and creative minds in modern music. R.H.

OLIVER LAKE: *Jump Up*. [Jonathan F. P. Rose, producer; Alec Head, engineer; recorded at Vanguard Recording Studio, New York, N.Y.] Gramavision GR 8106.

Performance: **Ebullient and electrifying jazz/
funk/reggae**

Recording: **Lustrous and vivid**

A number of years ago famed avant garde sax player Oliver Lake released a recording on Arista called *Life Dance Of Is*. Not many purchased the record. My copy was a dollar cut-out. The session showcases the striking versatility of Lake's playing. There're plenty of experimental squeals, shades of R & B, and one absolutely devastating jazz/reggae cut. Lake plays a soaring sax solo to a backdrop of a sizzling young drummer named Pheeroan Ak Laff. Six minutes of the music of the gods. How I've wished for an entire album of that jazz/reggae over the past five years. *Jump Up* more than justifies that long wait.

Lake's jazz/reggae utilizes the solid and funky base of drummer Ak Laff and bassist Billy Grant. Both musicians embody clockwork precision—a necessity for an effective reggae band. Yet great reggae involves more than maintaining perfect see-saw rhythm. Subtle coloristic variations play against the apparent monotony of the steady reggae beat. Listen carefully for Ak Laff's cymbal work, to Grant's playful bass lines. The counterpoint between Grant on bass and Lake on flute on "Hey Lady" is dazzling. Percussionist Jawara fleshes out a very flashy percussive bottom.

Frank Abel on various keyboards, Alphonie Timms on guitar, and Jerome Harris on guitar and synthesizer join Lake in producing driving dance music that merges the best of jazz fusion, funk, and jazz. Lake and Harris do vocals. The vocals are raggedy, raw and infectious in small

doses. Both sing more dynamically on their respective instruments.

Eight brief compositions comprise *Jump Up*. They are nearly divided between instrumentals and songs. My favorite cut is "Consume." Since Lake is far from a convincing vocalist, the force of the lyrics has to contribute to the effectiveness of any song. "Consume" is a wry and wicked satire of consumerism. It is simply one of the best satiric statements about our economy I've heard in recent years. And any music that can make me laugh about the economy must be magical! In a just world (not this one... maybe the one next door), "Consume" would be an AM radio hit.

The instrumentals glow with their own passionate intensity. Lake's looping sax solo on "Sun People" is a particular treat. His solos are always funky, sharp and to the point. He plays with obvious relish. And his band matches his boundless, bounding energy. *Jump Up* is, simultaneously, a forceful dance record and arresting jazz session. All too rarely do these types of music merge. It's about time. How many of us realize that Ellington was once danced to?

The sound on *Jump Up* is just as explosive and brash as the music. The liner notes state that the session was recorded and mixed at 30 ips. I believe it. The guitars, horns, and synthesizers have a terrifically full presence. The cymbals on Ak Lefe's drum kit sound like they could shatter all the first floor windows of the World Trade Building. Just one bitch about the sound: the vocals are not as high in the mix as I would have wished. Since the vocals are the weakest element in the recording, this might have been intentional. But the words to a few songs tend to get lost in the total sound.

This recording demonstrates Lake's remarkable feat of producing commercially viable dance music without compromising his jazz soul. That's the kind of feat that makes this jazz critic want to jump for joy and beg for more. N.W.

ALBERTA HUNTER: *The Glory of Alberta Hunter*. [John Hammond, producer; Frank Laico, engineer; recorded at CBS Studios, New York, N.Y., July 1981.] Columbia FC 37691.

Performance: **More of the night of the Hunter**
Recording: **All right, but...**

Alberta Hunter is a national treasure. She is part of the very small remnant of the vaudeville/tent/show era. She survived into the era of Europe, the posh night club and the big show in the big theatre. She's still here in the days of the overcrowded village cabaret and the monster jazz festival. And she hasn't changed all that much. Hearing her sing spirituals like "Ezekiel Saw The Wheel" and "Old Time Religion" one can well imagine Alberta presiding at a tent show where God's purposes and the Devil's music first came together in unholy union. Hearing her belt out vaudeville zingers like "Some Of These Days" and "You Can't Tell The Difference After Dark," it's easy for the mind's eye to picture Alberta in one of those sleazy theatres on the T. O. B. A. circuit. Hearing Alberta do sophisticated material like "The Glory Of Love" or "Sometimes I'm Happy," it's easy to hear why she was a hit both on the legitimate stages and the fancy supper clubs of London.

This is Alberta Hunter's third LP for Columbia and incredible as it seems, she hasn't had a hit record yet. I don't know what it takes to make a record a hit but if it can't (or doesn't) happen for Alberta Hunter then it's a good bet that whatever makes a record a hit has little to do with roots, taste or ability—all of which Ms. Hunter possesses in quantity.

There are some mistakes here but Alberta Hunter triumphs over all of them. Somebody must have forgotten that "The Love I Have For You" was on Alberta Hunter's first LP for Columbia because here it is again. CBS, in typical corporate fashion, has now divested themselves of that wonderful renovated church studio on 30th St. and this was made in one of those little cubicles at CBS which can never begin to approach the beautiful, spacious sound that came out of 30th Street. Balancing the



defects is a vast improvement in the accompanying band due to the inclusion of drummer Butch Miles on this date. His rhythmic propulsion does the same wonders for Alberta that it did for Basie and has done for Bob Wilber's Bechet Legacy. The rest of the band is about on an even keel with Hunter's first Columbia LP largely because the same guys are on hand. Producer John Hammond knows that when you have aces at backing singers like Doc Cheatham, Vic Dickenson and Budd Johnson you don't meddle with success. I could do without Billy Butler's amplified guitar but except for some brief solo spots he stays out of the way and comps rhythm more than adequately. Also bless John Hammond and Alberta Hunter for giving the band a little room to blow. Good musicians like these don't detract from a singer's performance, they enhance it.

Whether it's a hit or not, this is a beautiful record—a joy to hear repeatedly. When the hits have all been forgotten and played to death—a death most of them richly deserve—there will still be pleasure to be gotten from hearing Alberta, Vic, Doc and Budd wail on "I Cried For You." J.K.

Compress/Limit/De-Ess and Noise Gate/Key/Duck -Two Channels/Push Button Stereo/Independent Tracking-



The CLX-2 is the most versatile two channel compressor/limiter/expander you have ever seen. We use the BEST Voltage Controlled Amplifier available; the EGC-101 and the latest Feed Forward design technology to produce the most natural and musical sounding compression and noise gating obtainable at any price. Knee type compression switchable in or out. Price: \$595.00

Write for a 24 page brochure on our full product line and a demo record.
Send \$1 to: **LT Sound, Dept. MRX, PO Box 338,**
Stone Mountain, GA 30086 Phone: (404) 493-1258

**Professional Grade
Recording
Tape**

Stocked for Immediate Shipment

1/4" & 1/2"
**Audio
Tape**
ALL TYPES

AMPEX
3M
TDK

CASSETTES
ACCESSORIES

ASK FOR OUR CATALOG
OF PROFESSIONAL
RECORDING SUPPLIES

Polyline
Corp.
1233 Rand Rd. Des Plaines, IL 60016
312/298-5300 25

CIRCLE 44 ON READER SERVICE CARD

BOBBY SHORT: Moments Like This.
[Dick Hazzard and Bobby Short, producers; Dan Wallin, engineer; recorded at the Record Plant, Los Angeles, Ca. Sept. 15 and 16, 1981.] Elektra EL-60002.


Performance: **There's been a change in Short**


Recording: **Slick but unobtrusive**

Bobby Short is going through some kind of change in his career and this record is indicative of the new Bobby Short. Those who remember Bobby Short as a saloon singer at New York's Cafe Carlyle will note that he still works there though not as frequently as before. This recording, however, is a great contrast to those recorded "live" twofers which used to turn up on Atlantic where'd they'd just take some portable equipment into the club and open the mic on Bobby Short and his trio. This is a carefully planned, studio-made extravaganza with a big string orchestra and added starters like former Count Basie trumpet ace Harry "Sweets" Edison backing up Bobby. What Short gains in terms of spectacle he loses in terms of intimacy.

inclusion of recent hit material like Barbara Streisand's and Paul Williams' "Evergreen" which, despite who wrote it, doesn't quite fit into a collection of classy songs by composers like Noel Coward, Cy Coleman, Berlin, Porter and Ellington. If Bobby Short is planning a move into the Las Vegas/Atlantic City strata of show business he'll probably do well at it. He is an ingratiating performer whose voice oozes the kind of posh atmosphere that has surrounded him at places like The Carlyle for lo these many years. As a pianist he is at the very least workmanlike and the rest of his trio (Beverly Peer on bass and Robbie Scott on drums) provides more than adequate support. With the added support of Dick Hazzard's arrangements and the big band it should be plenty enough to enable Bobby to make the switch from the cabaret or the lounge to superstar status in the main room.

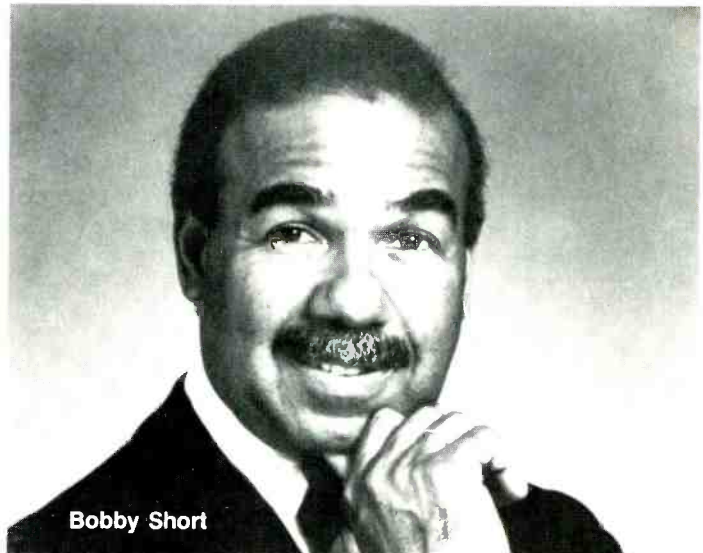
The engineering, like the repertoire and the performance, is slick and sleek. If there's any overdubbing, cut and patch engineering or other electronic cheating it's done well enough that it's neither obvious nor offensive.

memo 

24 TRACK
24 TRACK
24 TRACK
**planet
sound
inc.** 

251 W. 30 / NYC 10001 / 594 7554

CIRCLE 45 ON READER SERVICE CARD



Bobby Short

There's also a difference in repertoire. The odd-ball (lost, forgotten) non-hit by Gershwin, Kern, Berlin, Porter, etc., which has long been Bobby Short's stock in trade has been temporarily banished for the Las Vegas repertoire associated with the likes of Frank Sinatra. Old movie tunes such as "Moments Like This" show up next to Irving Berlin classic standards like "Say It Isn't So" and Broadway show tunes like "Body and Soul" or "I Am In Love." Actually that's not as surprising as the

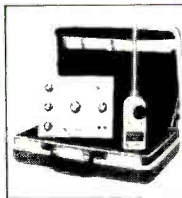
As an album that might make a Bobby Short fan out of a Sinatra fan this LP is commendable. For those of us who treasure the intimacy of you, me, Bobby Short, a rhythm section and the kind of memories that a tune like "I've Got Beginner's Luck" or "Looking At You" can engender, it's more of a culture shock crisis. I hope that the new Bobby Short is a both/and situation instead of an either/or—or I just may have lost one of my favorite pleasurable things.

J.K. 

MODERN RECORDING & MUSIC

CLASSIFIED ADS

FREE your copy of yesterday's prices on the industry's leading Pro Audio and Stage Lighting Equipment and Accessories. Mixers, amps, equalizers, mics, lights, dimmers, lamps, gel and much more. Check our prices before you buy. All-Pro Audio and Lighting, P.O. Box 3992, Centredale, RI 02911. Big Savings from the Smallest State.



ACOUSTIC TEST INSTRUMENTS USE TO ADJUST EQUALIZERS, OPTIMIZE SPEAKER PLACEMENT, ETC.

Complete Test Set	\$449
Calibrated Sound Level Meter	\$199
Fractional Octave Pink Noise Generator	\$339
Handbook on Acoustic Testing	\$10

Free broch. HALL ENGINEERING Dept. R5
P.O. Box 506 Martinsville, NJ 08836
(201) 647-0377

FOR SALE: Tangent 3216 16 x 16 mixing console; Otari MTR-90 16 TRK Recorder with Auto Locator. Low Hours/Mint Condition 312-525-6565.

FOR SALE: Otari 8 track studio, 32 x 10 mixing board and much more 11K. Steve Bennett, Rt. 1, Box 144A, Monroe, VA 24574. 804-929-0704.

C-24, M49 and other old mics and used rec gear for sale. 415-441-8934 or 415-527-6167.

BLANK AUDIO & VIDEO CASSETTES. Direct from manufacturer; Below wholesale: Any length cassettes, four different qualities to choose from. AMPEX BULK & REEL MASTERTAPE: FROM 1/4" to 2". Cassette duplication also available. BROCHURE. ANDOL AUDIO PRODUCTS, INC. 4212 14th AVE., DEPT. MR, BROOKLYN, NY 11219, TOLL FREE # 1-800-221-6578/N.Y. RES. 212-435-7322, Ext. 2.

FREE CATALOG!! Complete selection of Consumer and Industrial Audio/Video tape and accessory products. COMPETITIVE PRICES! PROMPT DELIVERY! Corporate/Bid Solicitations Welcome. Wyco Sales, P.O. Box 887, Cary, NC 27511. 919-467-8113.

WANTED: McIntosh, Marantz tube amplifiers, EMT 927DST, 930ST. Western Electric tubes, amps, mixers, microphones, drivers, speakers, horns, others. 213-576-2642. David, P.O. Box 832, M. P., CA 91754.

MICROPHONES, mixers, amplifiers, speakers and supplies from ELECTRO-VOICE, TAPCO, NEI, QSC, ATLAS, PYLE, AUDIO-TECHNICA, MXR, WHIRLWIND, SESSIONS, SWITCHCRAFT, NUMARK, AUDIO CONTROL, etc. For over 7 years now, we have specialized in fast and reliable service with competitive prices. Send or call for free list. SONIX CO., INC., Box 58-MR, Indian Head, MD 20640, Phone (301) 753-6432.

4 TRK PRODUCTION STUDIO designed specifically for high quality voice over demos and radio production; state of the art equipment; full production and engineering staff, (212) 867-2392. 44th St. and 2nd Ave.

Quantum Gamma Console—28 main-frame, 24 in/out, Penny & Giles faders. 1981; Otari MX5050 2-track, road case; More. 313-971-2414.

101 RECORDING SECRETS MOST ENGINEERS WON'T TELL, \$7.95. TUNERONICS, P. O. BOX 88, NO. HACKENSACK STA., NJ 07661.

Raw Drivers, crossovers, cabinets, accessories for home, auto, professional speaker systems. Also guitar strings, accessories at lowest prices! Free catalog. Speaker Emporium, 14 Center St., Lake Ronkonkoma, NY 11779. (516) 737-0131.

CLASSIFIED

- PRODUCTS
- EQUIPMENT
- SERVICES

Classified Rates
75¢ per word

Minimum 10 words.
Copy must be received at Modern Recording & Music, 1120 Old Country Road, Plainview, NY 11803 by the 1st day of the 2nd month prior to cover date (for example, the April issue closes February 1st). Payment must accompany order.
Phone numbers count as 1 word. Zip codes are free.

DISPLAY ADVERTISING
\$115.00 per column inch.

Advertiser's Index

R.S.#		Page #
26	Abadon Suri	31
30	AB Systems	45
21	Anvil	26
31	Asnley	48
23	Audio Technica	29
No #	Bose	27
No #	Carvin	7
14	Cetec Gauss	6
35	Crown	55
No #	Delta Lab	13
No #	dbx	35
24	DOD Electronics Corp.	25
22	Electro-Voice	21
18	Furman	14
42	Goldline	76
27	Ibanez	33
43	Institute of Audio/Video Engineering	76
No #	LT Sound	73
No #	LT Sound	77
28	Mattel	37
No #	MXR	Cov. 4
39	Newcome Sound	72
37	Norton	74
16	Orban	10
11	Otari	Cov. 3
38	FAIA	73
32	Pearl	49
45	Planet	78
44	Polyline	78
29	Ramsa	40, 41
41	Rarie	75
40	Sam Ash	75
18	Soundcraftsmen	12
25	Soundtracs	29
20	Studer Revox	14
33	TDK	51
7	Tascam Div./Teac Corp.	11
12	Technics	3
15	TOA	8, 9
34	Trident	53
65	Yamaha	Cov. 2
13	Zildjian	5

RESPONSIBLE, HARDWORKING ROAD CREW TECHNICIAN AVAILABLE WITH PASSPORT. EXPERIENCE: STAGE SET UP, SOUND-MIX, EQUIPMENT MAINTENANCE WITH ELECTRONICS BACK ROUND (1st class FCC license). INSTALLATION OF NUMEROUS AUDIO-VISUAL RECORDING STUDIOS. FRANK (216) 398-6178.

Audiohouse makes the highest quality cassette copies in real time from your master tape. Guaranteed lowest rates. From 10-10,000. Call collect 1-303-751-2268.

Snakes and Cables, 100 ft. 16 plus 3 channels, XLR connectors, stage box, highest quality components \$330.00. Mic cables \$12.00 and up. Coax cables, multi-cables, Mic cables, any length or connector including AMP multi-pin available. AUBURN CORP. (301) 459-1959.

NEW, MUST SELL, BEST OFFER: Tascam: Model 5B, talkback, \$1470: As unit, 3 Model 1's, MB20, 2 PBG4's, custom console, \$600; Crown, D 150A, \$420; D60, used, \$300; JBL 4311 B, pr \$400; Lt Sound, ACC 2, \$650; PEQ2 \$310; Ness 6 x 2 Disco Mixer, Meters, Cue, \$120. 402-463-5059.

WANTED: McIntosh, Marantz, Western Electric Tube type amplifiers, Preamps, JBL Hartsfield & EV Patrician Speakers, 713-728-4343, Maury Corb, 11122 Atwell, Houston, TX 77096.

UHER and Sony Portable Recorders, Sony and AKG Professional line microphones, Sennheiser full line microphones, Audio-Technica microphones (in quantity). Send SSAE (specify models and quantity). JA Carpenter (Sound), P.O. Box 1321, Meadville, PA 16335-0821.

FOR SALE: TASCAM model 10 console with spare input modules, meter bridge and power supply. \$2250 or best offer. 201-526-1613.

Peavey MK III 16 channel stereo mixing console. Phantom power. Many features. New \$1085.00. 1-302-654-1310.

AES Journal Back Issues, October 1975 to date, 67 issues. Dave, 216-238-0644 after noon.

Otari MX-5050QXHD "4", 4 track tape deck in factory sealed carton, \$2000. 301-733-2999.

THE RECORDING BOOK THAT IS ROCKING THE MUSIC INDUSTRY

"Practical Techniques for the Recording Engineer" by Sherman Keene is endorsed by major Colleges, Universities, Recording Schools, Studios, Musicians and our Correspondence Students around the world. Recommended by reviewers of the MIX, Re/P, Guitar Player and other top publications.

THE BOOK: hard cover, 380 pages, 28 chapters (4 on computer assisted mixing), illustrations. \$29.75 (\$31.69 in Calif.) plus \$2.50 shipping.

THE CORRESPONDENCE COURSE: certificate course using two textbooks, corrected and graded homework, cassette dialog with the author via cassette. Basic, Intermediate and Advanced levels.

THE CURRICULUM: for schools only, Teacher's Manual (lesson plans for two textbooks, charts, suggested session content), Student's Workbook, Final Exams.

FOR INFORMATION OR TO ORDER contact:

S.K.P.
1626 N. Wilcox No. C-677
Hollywood, CA 90028

Order by phone using Visa or MasterCard by calling (213) 708-2933.

SUBSCRIBER SERVICE CHANGE OF ADDRESS

Planning to move? Please let us know six weeks in advance so you won't miss a single issue of MODERN RECORDING.

Attach old label and print new address in space provided. Also include your mailing label whenever you write concerning your subscription to insure prompt service on your inquiry.

MODERN RECORDING
1120 Old Country Road
Plainview, NY 11803

Attach
Label
Here

▼ New Address Here ▼

Please print

Name _____

Address _____

City _____ State _____

Date _____ Zip _____

FROM OUR HANDS TO YOUR HANDS

*The Otari 1/2" Eight Channel MARK III/8 &
1/4" Four Channel 5050 BQ-II*



At Otari, we focus everything we do on innovation, quality and staying close to your music. These priorities are values that are interwoven into every tape recorder we offer the recording professional and serious musician.

The commitment to step-up to the level of professional performance in an Otari recorder is a decision that only the successful and knowledgeable musician/engineer can make. Our MARKIII and 5050BQ-II are for those fortunate few who are achieving their musical and artistic goals.

Both recorders are designed with microprocessor circuitry for smooth, responsive transport control and precise electronic counting with L.E.D. display. True, three head design, selectable +4 or -10dBm input and output levels, 15/7.5 ips with continuously variable speed control and full overdubbing capability delivers flexibility in multitrack recording that's typically reserved only for the big, world-class studio machines. The same goes for the mastering quality performance and spec's. To wring-out every last dB of quality, you won't find a competitive machine that let's you get your hands on a full complement of adjustments as easily. Add to all this the ability to interface both recorders to SMPTE time code synchronization for multi-media video /film projects and compatibility with dbx and Dolby** noise reduction.*

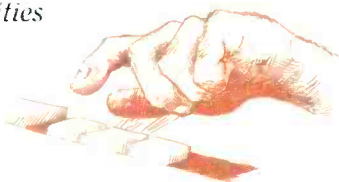
The comprehensive feature list goes on. And so does the craftsmanship that is the hallmark of our reputation. From our hands to yours, the MARKIII and the 5050BQ-II professional recorders are engineered like no other tape machines in the world; with the qualities you can hear and feel.

*Trademark dbx Corp. **Trademark Dolby Labs, Inc.

The Technology You Can Touch.

OTARI

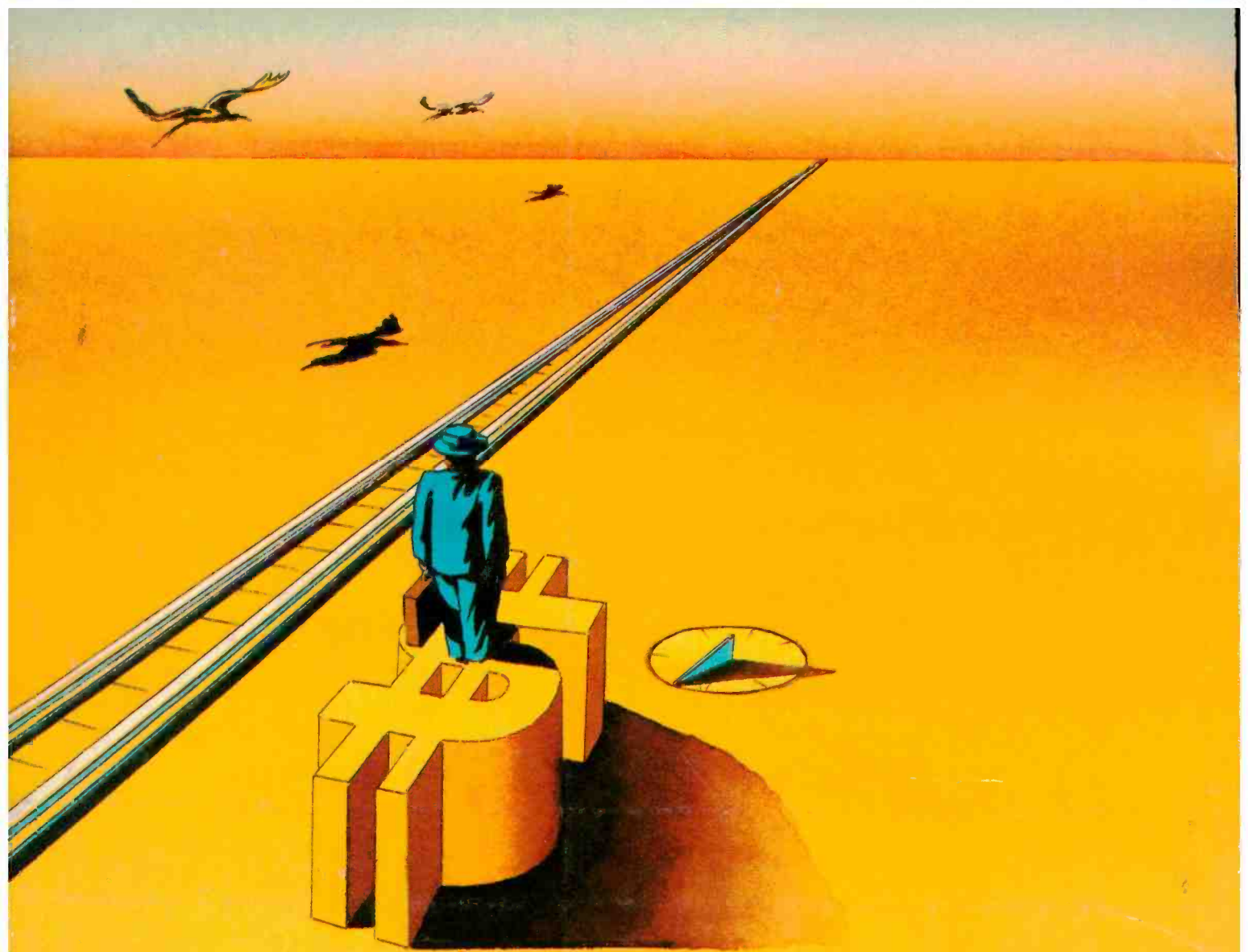
Otari Corporation
2 Davis Drive, Belmont, CA 94002
Tel: (415) 592-8311
Telex: 910-376-4890



CIRCLE 11 ON READER SERVICE CARD

© Otari Corporation 1982

www.americanradiohistory.com



You haven't had this much delay for the money since the 7:43 stopped running.

The new MXR Digital Time Delay leads the way in affordable, professional-quality digital delays. For less than half the price of most digital devices, you get up to 320 ms of clean, quiet delay for studio-quality stereo flanging, stereo doubling, stereo chorus effects, simple reverb, long echo and slap-back effects.

The Digital Time Delay lets you add a deep, resonant flange to the rhythm guitar, double harmony vocals in stereo, fatten up the keyboards with stereo chorus or add long echo to give the overall mix added depth. The Time Delay's dynamic range is greater than 90 dB which makes it ideal for sound reinforcement and broadcast. The amount of delay is push-button selectable and the Time Delay's

sweep Width and Speed controls vary the selected delay times over a 4:1 range for flanging, chorusing and doubling effects. Stereo outputs are provided for multitrack recording and mixdown. This compact (1 3/4" high) and attractive unit also features a green/red LED signal present/overload indicator and a footswitchable bypass function.

The MXR Model 175 Digital Time Delay. The most delay for the money in recent memory.

MXR Innovations, Inc., 740 Driving Park Avenue, Rochester, New York 14613 (716) 254-2910

MXR Professional Products Group

