

**PROFILE:
RYO KAWASAKI**

MODERN RECORDING & MUSIC

47947
\$1.95

DECEMBER 1982
VOL. 8 NO. 3

RECORDING WITH

KIM CARNES

**RECORDING
TECHNIQUES,
PART IX**

LAB REPORTS:

Crest 5000 Amplifier

h-TS-1 Audio Test Unit

erg TD 20A SE

Reel Recorder

D. POMEROY
193 BALTIMORE ST
BROOKLYN

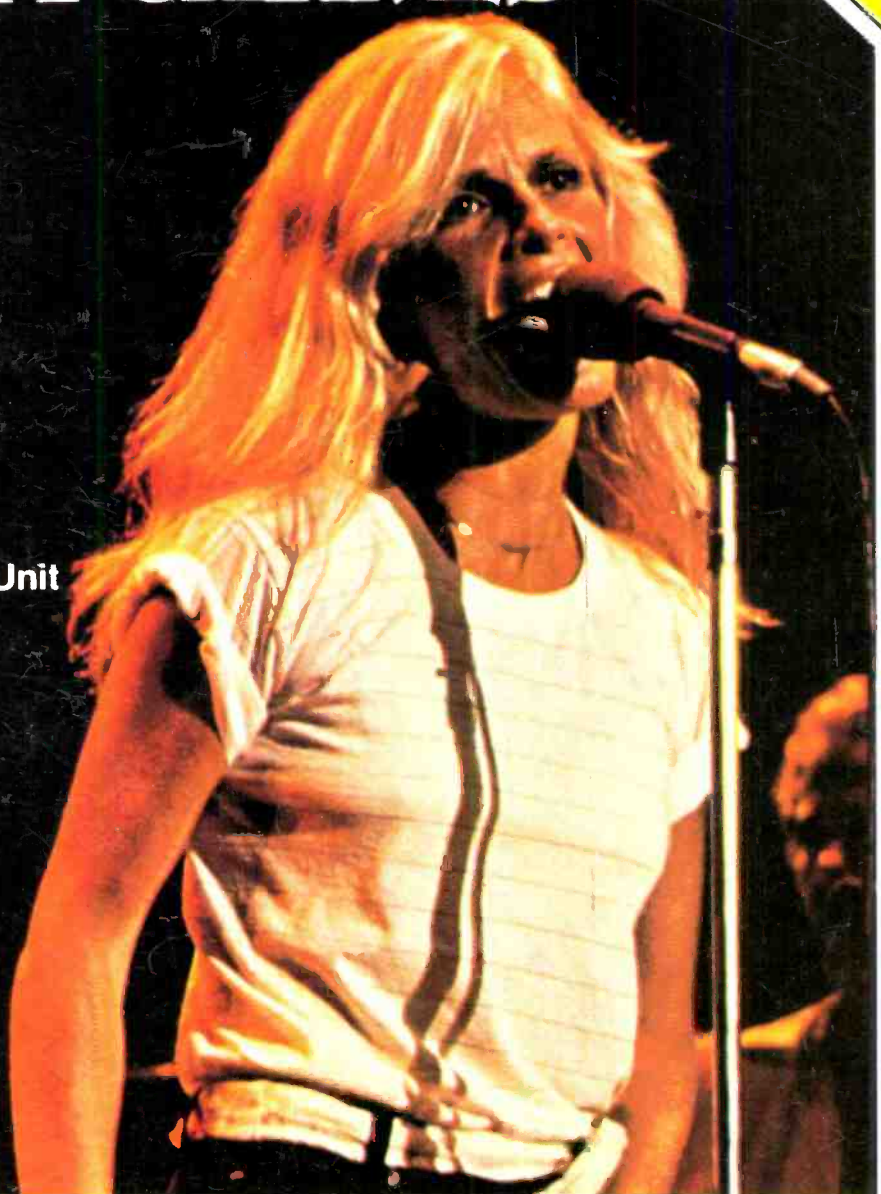
PRODUCTS

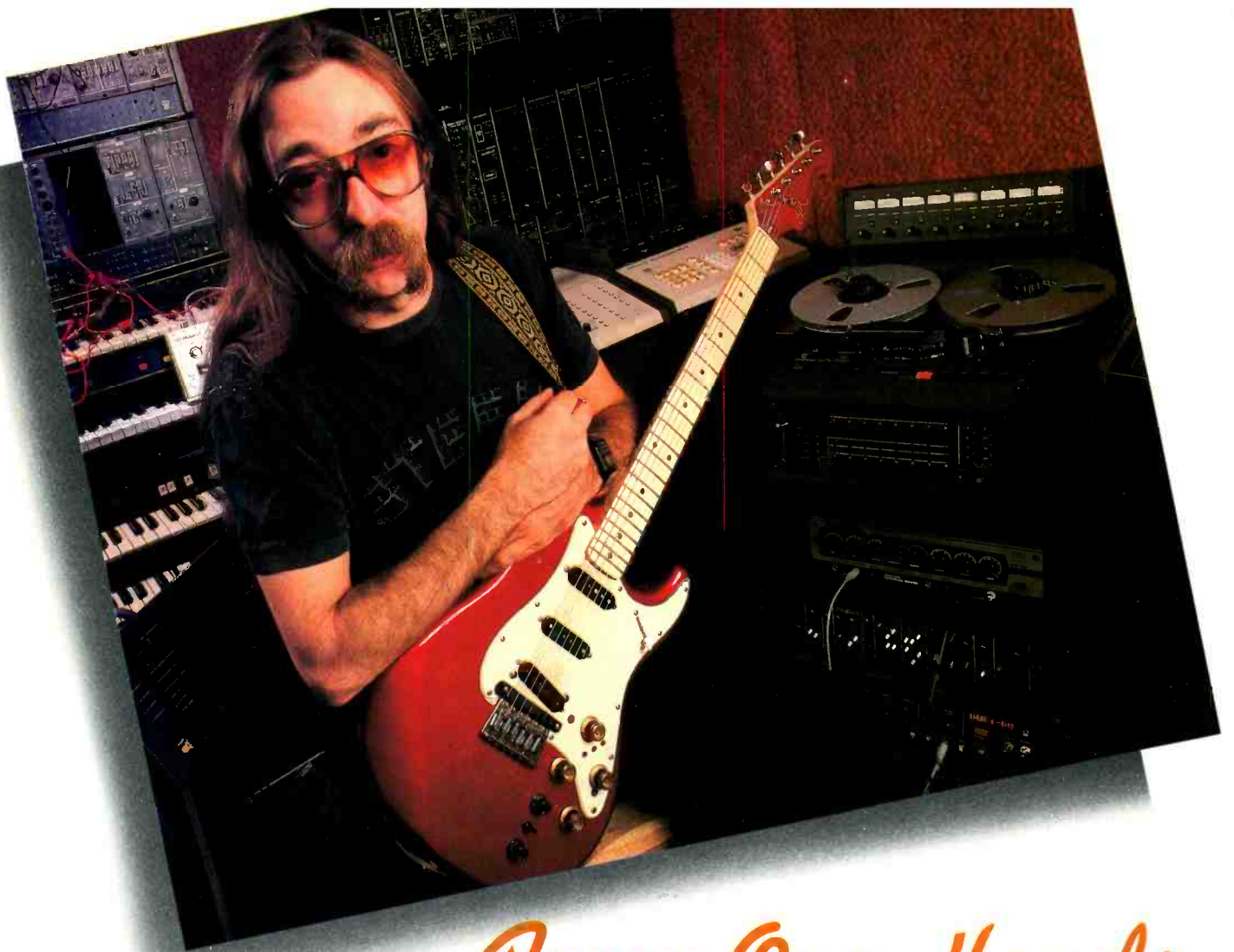
RD REVIEWS

NY 11201



IMR
MAY83





From Our Hands To Jeff Baxter's



The Otari
1/2" eight channel
MK III-8

Before Producer/Artist Jeff Baxter rolls into expensive studio time, he rolls tape on an Otari machine. At Home. In his studio, Casual Sound.

"The Otari saves me a great deal of time and money. A recording studio was never intended to be a \$150.00 per hour rehearsal hall, so I work out ideas and refine the tunes before I go into the studio.

All my pre-production recording for the last several years has been on my Otari. That machine has never left my studio, -it's been incredibly reliable.

There's a lot of musical moments that have been captured on that machine ... some of which have been

directly transferred to the final multitrack masters... Elliot Randall, Doobie Brothers, on and on. The Steely Dan Pretzel Logic album was mastered on an Otari 2-Track. And, that's obviously a statement in itself... how I feel about the quality of the sound."

Jeff Baxter's always been into instruments that musicians can afford. It's obvious that he's also been heavily involved at the leading-edge of recording technology.

Besides telling you his feelings about Otari tape machines, there's just one other tip Jeff would like to leave you with:

"Try anything and everything and always roll tape."

OTARI Technology You Can Touch.

Otari Corporation, 2 Davis Drive, Belmont, CA 94002
Tel: (415) 592-8311 Telex: 910-376-4890

© 1982 Otari Corporation

CIRCLE 10 ON READER SERVICE CARD

www.americanradiohistory.com

MODERN RECORDING & MUSIC

DECEMBER 1982

VOL. 8 NO. 3

THE FEATURES

STUDIO NOTEBOOK #10

By James F. Rupert

18

With a nod to the fact that the studio business is not all fast cars and big money, S.N. #10 delves into the art of borrowing money to get you off the ground.

RECORDING TECHNIQUES

—PART IX

By Bruce Bartlett

27

Compressors, limiters, noise gates, delays, flangers, pitch shifters, reverberation units... the list goes on and on. And, in order to operate in the studio we must know what these units do. Explanations herein.

RECORDING WITH KIM CARNES

By Stan Hyman

and Vicki Greenleaf

34

Solitary confinement or madness would be the only possible excuses which could allow you to say that you had not heard of Kim Carnes—especially within the past year (remember a little tune titled "Bette Davis Eyes"?). Kim gets involved in her recordings...

PROFILE: GUITARIST RYO KAWASAKI

By Jeff Tamarkin

43

Ryo Kawasaki's jazz credentials are impeccable, but what separates him from other jazz guitarists is that he truly operates in the world of modern recording.

COMING NEXT ISSUE!

Genesis "Live!"

Recording Techniques—Monitors

Profile: Dave Edmunds

THE STAPLES

LETTERS TO THE EDITOR

2

TALKBACK

8

The technical Q & A scene.

THE PRODUCT SCENE

By Norman Eisenberg

22

The notable and the new, with a comment on a joint car stereo venture by Bose and Delco.

AMBIENT SOUND

By Len Feldman

48

The EIA (Electronics Industries Association) has created a new set of standards for the operation of tape recorders—by the time you read this those standards may be in practice.

LAB REPORT

By Norman Eisenberg

and Len Feldman

50

Crest 5000 Power Amplifier
LofTech TS-1 Audio Test Set
Tandberg TD20A-SE Recorder

GROOVE VIEWS

Reviews of albums by The Who, Novo Combo, Holly Near, Hoagy Carmichael and Pee Wee Russell.

60

ADVERTISER'S INDEX

72



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.

Cover Photo: John Coulter
Carnes Color Photo: Mark Sennet
Carnes B&W Photo: Courtesy EMI America
Kawasaki Photos: Cathy Miller

DECEMBER 1982

**GENE SCARAMELLINO
RICKI ZIDE**
Associate Editors

**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
BERNADETTE WEBER**
Circulation

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, N.Y. 11803. Unsolicited manuscripts will be treated with care and must be accompanied by return postage.

LETTERS TO THE EDITOR

One for the Record

With all due respect to the venerable Mr. Feldman, I offer some thoughts on the home recording rights issue from the artist's point of view.

There was a time—before tape recording was so simple—when records had real power: Power to create stars of enormous financial proportion, beyond all reason, whose careers could stir the imagination of all us common folks and make us run to the store for that latest single. Girls would scream and swoon, crowds would gather and fill auditoriums, and record companies would grow rich sometimes with embarrassing speed, as recording artists were “discovered” and promoted with the same kind of push and slick media assertion given to movie stars. Before television and tape recording, fans of these stars had to do things like travel, sometimes great distances, and purchase tickets, to *see* and *hear* their favorites *in person*.

As one result of this juxtaposition of supply and demand demographics, the available wealth was spread out across the country so that money was easy to generate with no more than a talented artist, a promoter who believed, and a record. Of course, I oversimplify, but bear with me.

Today, we have a situation where big record companies are run by managers rather than moguls, and there is a tendency to defer to “dependable” successes when budgeting record projects.

Art, unfortunately, has never been the stuff that commercial success is based around, and old acts tend to grow and mature, getting better and losing public interest as they begin to produce art.

Now, we have a troubled economy and slumping record sales. All the record company executives are justly trying to be conservative with dollars they spend on developing new talent. Of course, this vicious-circle situation degrades the quality of the music we get and the really talented new people will be bypassed in favor of pap that meets marketing requirements.

Warner Communications Inc. recently released a survey of 52 pages showing that over \$2.85 BILLION (with a “B”, that’s *twenty-eight hundred and fifty*—MILLIONAIRES folks!) worth of professional entertainment was taped without any kind of payment to artists, record companies, publishers, composers, etc. In the record industry alone, this amounted to the equivalent of 250 million albums and 2 billion singles that did not get sold because people let their friends tape their records. In addition to this, a friend of mine who manages a huge audio chain of stores here in Los Angeles, told me that turntable sales are off by a factor equal to the increase in cassette deck sales, and that that trend is growing. Consumers bought more than \$600 million worth of cassette blank tape (in 1980) to facilitate this alarming trend.

One more thing: It used to be (maybe it still is) part of the incentive to become a “star” was the money. If it should come to pass that our nation’s hopefuls can look forward to earning

ON MAXELL, ROCK 'N' ROLL IS REALLY HERE TO STAY.



Every Maxell cassette is destined to become a golden oldie. Because at Maxell we build cassettes to standards that are 60% higher than the industry calls for.

Durable cassettes you can shake, rattle yet they keep on rolling.

Precision engineered tape that even after 500 plays still delivers high fidelity.

So when we say, on Maxell, rock 'n' roll is really here to stay... Be-Bop-A-Lu-La... we don't mean maybe.



IT'S WORTH IT.

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

CIRCLE 13 ON READER SERVICE CARD

www.americanradiohistory.com

wages of "normal" scope with no chance of hitting the jackpot, when the incredible struggle that ferments competition and produces musical growth and novelty that has so much been the guiding strength of American popular music, will degenerate into the same kind of insipid job that is always the core of disillusionment and cynicism.

I am not trying to defend the record industry or Disney and Universal per se, but any and all such industries that provide the public with services. It always seems that as soon as the public finds a way to steal the fruits of labor of creative people, whether it be illicit pay TV decoders or pirated tapes, an apathy of sorts sets in and the quality of the service suffers. Each time someone is demoralized by this inadvertent stealing, a little piece of the quality of our lives suffers too.

This is indeed a tricky dilemma, for how do we avoid lowering the "quality of life" and still provide equity to the concerns of recorder owners and software producers? If we arbitrarily tax the blank tape and recorders, can we ask the movie companies to respond by making films that show at theatres for less than \$6? Can we ask the record companies to lower prices at the

store? How can anyone be sure that owners of home taping equipment will only tape so they can watch later, or in the case of records, well, I can't think of any good reasons why someone who owned a record would want to step on the audio quality of the disc by taping it. EXCEPT for tapes to be played in the car, and that brings us to the intrinsic quality of the recording: Since cars are such poor listening environments, why should artists and engineers bother to make any attempt at good quality recording? Or will the engineer of the future "radio-in" the mix from the freeway?

I am just now finishing up a jazz album project, and I am amazed at how casually all my friends ask for a cassette copy. I can hardly contain my apathy at the prospect of making my Teldec-vinyl, audiophile pressings so that the friends of all the purchasers can tape the "really clean" surfaces. I wonder if I will get enough of my investment returned to enable me to make another album of this quality.

It's true that American lifestyles are extremely transitory. Within the memories of many middle-aged Americans are the radio programs of the thirties which featured live acts

singing or performing at the radio studio. Remember "live" TV? Well, it may be necessary to re-think how we produce entertainment every so often, and it may also be necessary to re-think what is fair and what is not fair about how we (the public) acquire it. It isn't hard to see the effect that home VCR's have had on the cable or pay-TV industry in just the short time that industry has existed. Broadcasts are purposely made to exhibit low quality, sound is bad, and the overall product is inferior to network broadcasting with its commercials. My pay TV service broadcast noise is so severe that it made movie dialogue hard to understand even after the graphic EQ, the amp, and JBL speaker—for the last two weeks the random noise has been (by measurement) 2 million times greater than network stations. I can only surmise that the noise is added to discourage people from taping movies and programs that are made "not worth it". Do we really want to encourage this sort of spiteful "service"? Who wants to pay for frustration?

When people's thinking processes become numbed by an inundation of technological input—everything from video games to Walkman players—and they are made unable to distinguish between sources of entertainment as public or private, the concept of stealing gets lost in the selling job at the stereo store. Would those same people feel the same way if they became top-selling record, TV, or movie "stars"?

—Drew Daniels
Record Producer
Montebello, CA

Speaker Selection

I'm curious about how the small monitor speakers, such as the Auratone 5C's, are used during the mixdown process.

When I EQ to what seems to be a good tonal balance through the small speakers, and then play the equalized material back through my main speakers, Magnaplanar MG-1's, the sound is terrible—to much bass and a cut in the high frequencies.

How do you use these small speakers in the overall scheme of things, and why, as they seem to be difficult to balance tonally?

—L.A. Safratowich
Billings, MT

Sam Ash

ONE OF THE WORLD'S LARGEST DEALERS

PRO AUDIO

BGW • JBL • YAMAHA • CETEC—GAUSS • ALTEC • ROLAND
TANGENT • EMILAR • KELSEY • TAPCO • ELECTRO—VOICE
PEAVEY • QSC • SHURE • MXR • BIAMP • ASHLY • KUSTOM
BOSE • ANVIL • BEYER • SENNHEISER • IBANEZ • FURMAN
EDCOR • SESCOM • WHIRLWIND • SUPERMUSICAL • ATLAS
AKG • ACOUSTIC • CALZONE • LEXICON • DOD • ASHFORD
DELTALABS • ADVANCED AUDIO • McCAULEY • EVENTIDE

WHY WAIT? CALL US NOW—WE PROBABLY HAVE IT IN STOCK.

FAMOUS
LOW
PRICES

SAM ASH HOT LINE
800-645-3518

IN NEW YORK STATE CALL 212-347-7757
TWX 510-222-1630 SAM ASH HEMP

SINCE 1924
Sam Ash

MUSIC STORES

301 PENINSULA BLVD. HEMPSTEAD, N.Y. 11550



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 ±8VDC (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

Craig responds:

As someone who uses Auratone speakers, my main reason for occasionally using smaller speakers during mixdown is as a "reality check." After all, most studios have speakers which are vastly superior to that of the average audiophile. If you want to know what something is going to sound like played over portable tape players, auto speakers, radios, etc., switching over to small speakers gives you a good idea of what to expect. For example, a bass sound might be great over your regular speakers, but be completely lost when played over little speakers.

Therefore, you might want to go back and change the bass EQ a bit so that the sound is acceptable on the smaller speakers, but still sounds real good over the big speakers. Switching back and forth between speakers, and aiming for a mix which sounds good over *anything* (headphones, small speakers, big speakers, etc.) generally gives the best overall results. It's very hard to mix an album so that the mix is "indestructible" and sounds good on any system. As an example of an album which comes very close to this ideal, listen to Tom Petty's "Damn the Torpedoes". The mix remains excellent over car

radio speakers, Walkman headphones, superb stereo systems, and not-so-superb stereo systems.

—Craig Anderton
Technical Editor
Modern Recording & Music

Shedding Misconceptions

We received the following letter from Drew Daniels in reference to our September issue's Talkback column.

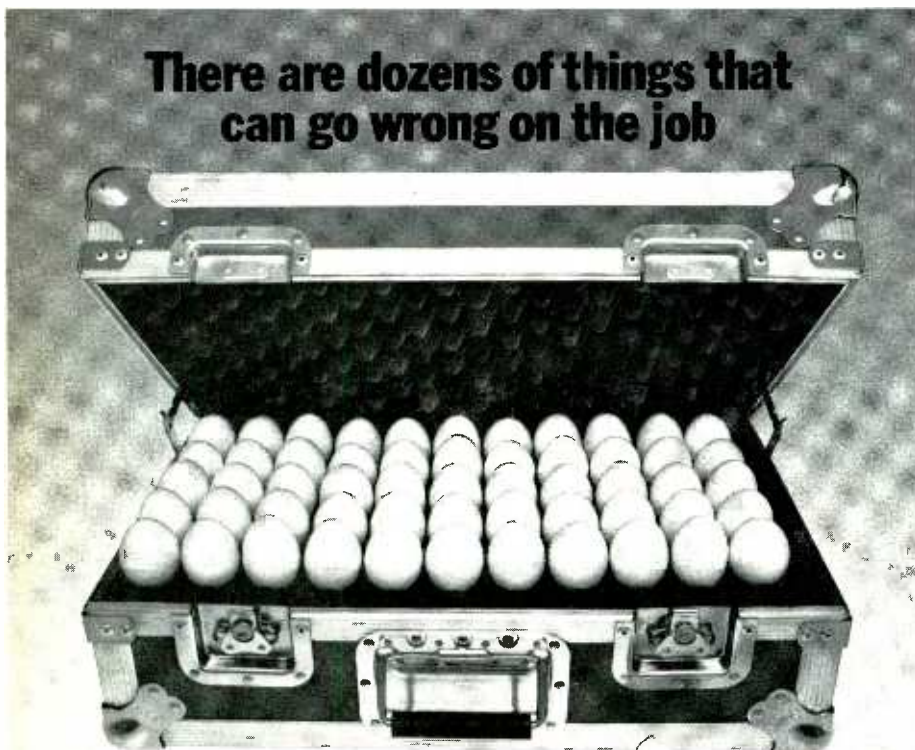
In the September issue I talked about tape oxide shedding in a most unfortunate way. I neglected to mention the tapes made by other manufacturers beside Ampex which exhibit the same effects and thereby seemed to imply that Ampex 456 was by comparison, defective. This is not the case. In talking with users on the phone, and in letters we receive here at TEAC, we get the distinct impression that tape oxide shedding problems are intermittent, depend on the phases of the moon, and are almost always caused by customer neglect (lack of proper cleaning) or damage to the heads/tape guides caused by improper use of degaussers and or cleaning implements that scratch or mar the heads or guides.

The problems with tape shedding come to our attention in waves. We may not hear a single complaint for six months to a year, then as if by Plutonian providence, we get three or four calls a day.

With deference to Ampex I wish to say for the record that all Tascam tape decks are set up at the factory for use with Ampex 456 or Scotch 226, and include in the packing carton, a manual which instructs users on re-setting for their tape of choice.

I personally use all the commonly available tapes from different manufacturers, and really can't complain about any of them. However, over the years, I've come to rely on the generally superior performance of Ampex, Scotch, and other manufacturers who supply the wide-tape format professional markets as a mainstay of their tape sales.

—Drew Daniels
Applications Engineer
Tascam Production Products
TEAC Corporation of America



Getting there shouldn't be one of them

Even though all "flight cases" may look similar, there are real differences between them.

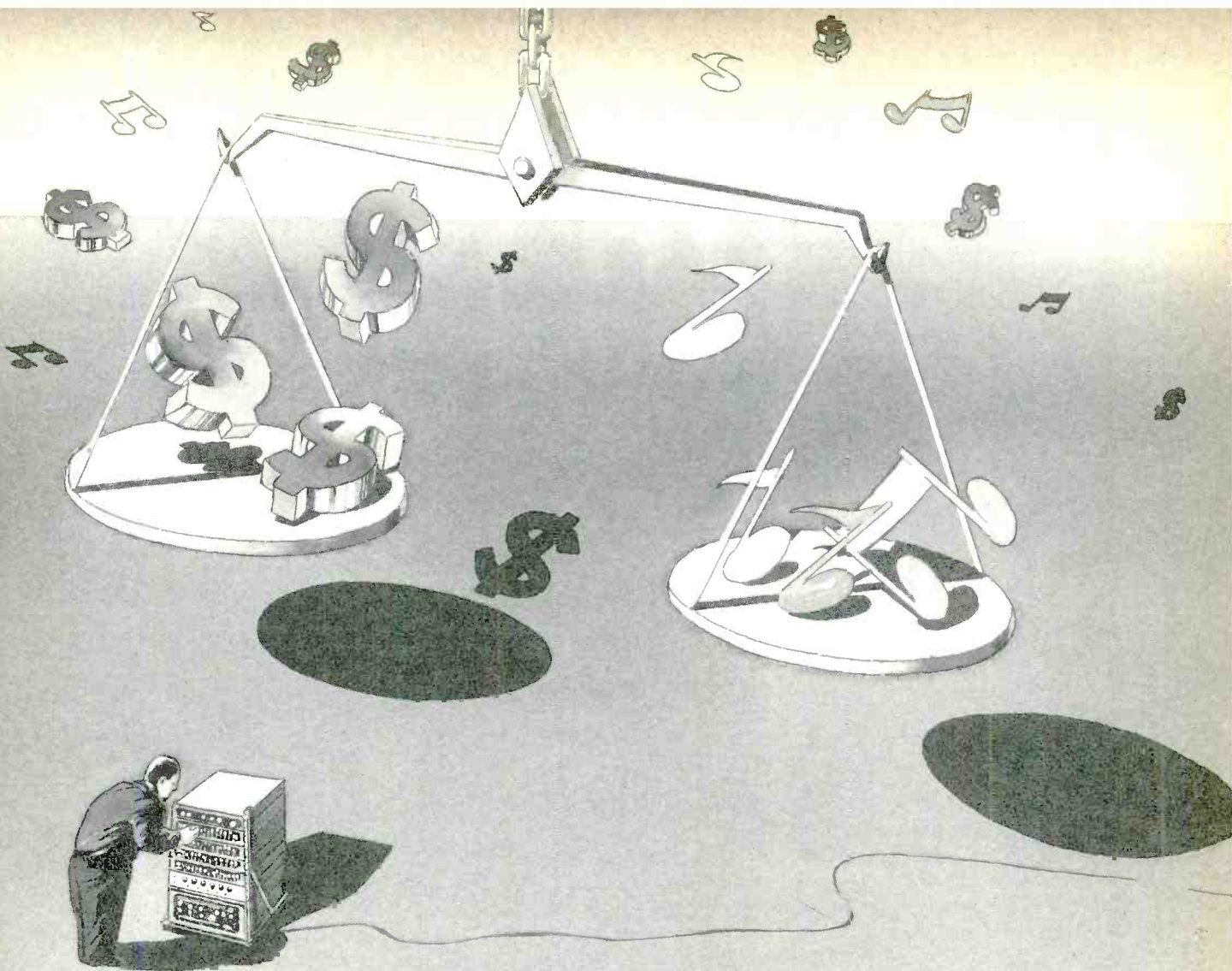
Calzone Escort cases are designed to protect expensive and delicate equipment from the most punishing travel conditions. Our patented *Double-Angle* construction provides ultimate strength and protection for rack-mounted equipment, mixing boards, lighting, speakers, cameras, VTR's, cables or anything that must endure the torture of heavy travel. Our cases are already being used

by many of today's production companies, sound contractors and radio/television crews whose living depends on getting their gear to the job in perfect working order.

Calzone also makes tough Convoy road cases for short hauls. We make dozens of different models to fit most any kind of job or equipment. Or, we can custom-build virtually any type of case in a hurry. When your sophisticated equipment requires high-tech protection, Calzone handles with care.

CALZONE
Case Co.

P.O. Box 862, So. Norwalk, CT 06856 1-800-243-5152



When it comes to Price/Performance, MXR Equalizers are more equal than others.

The balance between the dollars you invest versus the quality you get is what you should weigh into your decision when choosing an equalizer. That's why many leading recording and broadcast engineers, sound contractors and sound reinforcement companies have made MXR the industry standard for world-class performance at sensible prices.

There is an MXR Equalizer designed to fit your needs. Each one offers a quiet, professional way to eliminate feedback, tune a room, alter the frequency response of

monitors or program material, or accomplish any critical application calling for graphic equalization.

MXR now offers three professional models—the 170 Dual Octave EQ (10 band), the 171 Dual 2/3 Octave EQ (15 band) and the 172 1/3 Octave EQ (31 band). All feature center-detent controls, a lo-cut filter and signal present and Power LEDs.

The MXR Professional Graphic Equalizers. Helping you to make the equitable decision.

MXR Innovations, Inc., 740 Driving Park Avenue,
Rochester, New York 14613 (716) 254-2910



MXR Professional
Products Group



CIRCLE 22 ON READER SERVICE CARD

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.

When You're Using More Than One

I have a few questions that I hope you can answer about how to successfully use more than one guitar amplifier.

I own two 100-watt Marshall stacks and I would like to know how to use both heads together to get the best results. Right now I am using an A-B box to switch from one stack to another, but I would like to know how to use both stacks at the same time without Y-ing the inputs. Is there a way to successfully use one head to drive the other without causing any damage to either head or overdriving one head. I have seen professional guitarists use from 2 to 8 Marshall heads and would like to know what method or wiring configuration

they use to use more than one head.

I have heard of using a direct box between the two heads, and if this is the best process, what type of direct box should be used to properly match the impedances of both heads? Amplifiers are expensive and can be touchy so I don't want to experiment on my own and am hoping that you can show me the best possible solutions to my questions. Also, can a power soak, etc., be used with the system, and if so where would be the best place to use it along with other components?

I am using a Samson Wireless unit and it works fine when I am by myself, but sometimes when we are all playing together it will make rather loud crackles and pops. I have preamp built into my guitar and am wondering if this could be the source of my problem. I tried putting all new pots in the guitar and even completely shielded the insides of the guitar, including the pickups. I really like the wireless system and am very disappointed that I can't use it "live" with my group. Is there anything that you know of that I can do to get this system to function properly?

—Ken Nechvatal
Montfort, Wis.

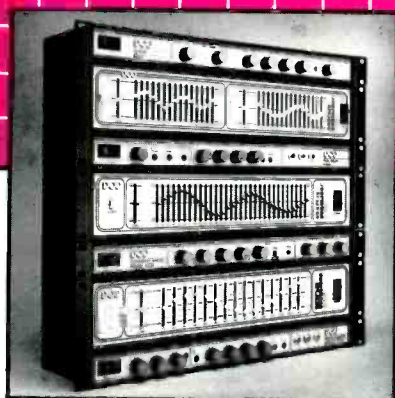
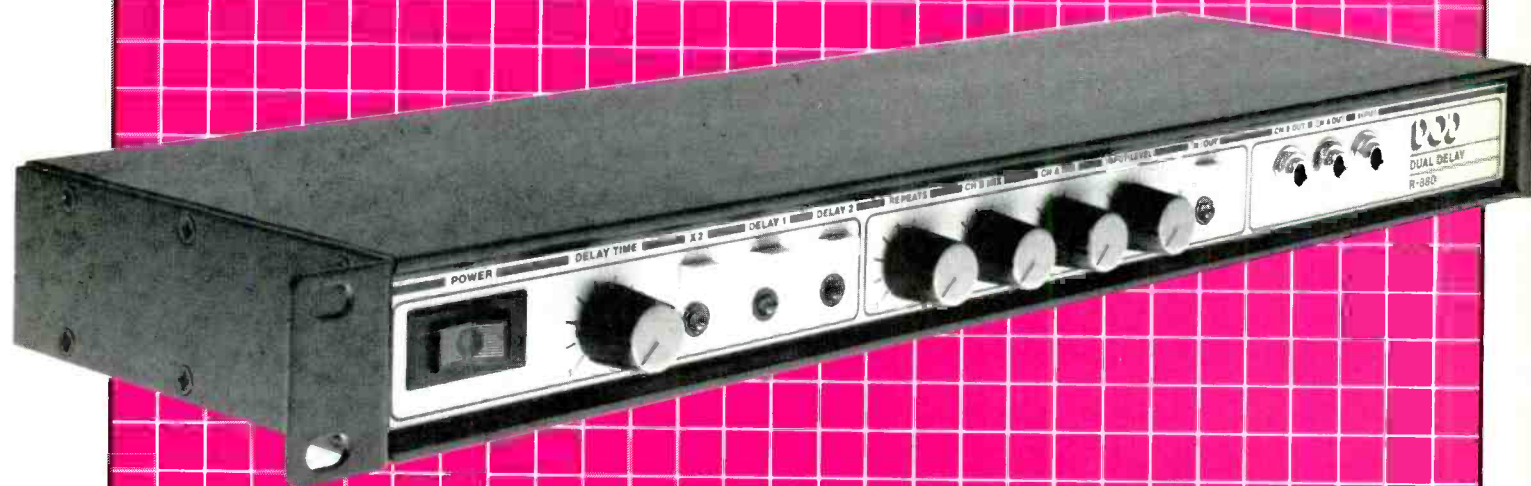
The easiest and safest way to use multiple Marshall amplifiers is to "daisy chain" the inputs of the amplifiers. This connects the amplifiers in parallel, and will produce a consistent sound from each amp. First, you should make sure that all ampli-

fiers are grounded together through the 3rd prong on the power cord (using an AC "adapter" to lift the ground can be very dangerous). The best way to do this is probably an outlet strip plugged into a single circuit that's rated to handle the combined power requirements of all amplifiers (outlets MUST be grounded!).

Next, you should connect the amplifiers together, treating the HIGH input jacks as *inputs* and the LOW input jacks as *outputs* (to other amplifiers). To do this, plug your guitar into the HIGH input jack of the 1st amplifier and then connect a signal cable from the LOW input jack of the 1st amplifier to the HIGH input jack of the second amplifier. If you have a 3rd amplifier connect a signal cable from the LOW jack on the 2nd amplifier to the HIGH jack on the 3rd amplifier.

Direct boxes with 20-30 dB attenuation could also be used. The disadvantages of direct boxes are 1) The extra cost, and 2) The extra distortion from connecting amplifiers in series (which may or may not be "good-sounding" distortion, depending on amp settings and playing style). If you choose to use direct boxes, the input of a direct box would be connected to one of the speaker jacks, and the output of that direct box would be connected to the input of another amplifier. Each amplifier should be connected to at least one speaker bottom as well. The direct box should have an input impedance between 5 k and 50 k, since higher impedances might produce interference and/or unwanted types of

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 companding 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 $\frac{3}{4}$ " \times 6" \times 19" rack.

Weight:

6 lb. 7 oz. (3 kg.)



Electronics Corporation
2953 South 300 West
Salt Lake City, Utah 84115
(801) 485-8534

feedback. Output impedance should be 5 k or less for similar reasons.

Using a power attenuator type device is probably not a good idea. The earlier model power attenuators apparently caused serious damage to many amplifiers. Later model devices seem to be safer, but only if they are used sensibly. Any attenuator device allows an unwary user to abuse an amplifier by playing for extended periods with the amplifier at "10" and the attenuator set for reasonable listening levels. Therefore, we cannot recommend the use of any model attenuator, and the Marshall warrantee specifically excludes any damage resulting from such use.

—Jim Wright
Product Engineer
G + W/Unicord
Westbury, N.Y.

You Got Dr. Rhythm, Who Could Ask For Anything More?

After reading the Notes report on the Dr. Rhythm Programmable Rhythm Device (see November 1980 issue, pages 60-64), I rushed out and bought one since it seemed to fit my needs (budget, triggers for sequencers and programmability) excellently. My only complaints about it were the ones Craig Anderton had mentioned in the report, so I got in touch with the now defunct *Device* magazine for their "Surgery" article on converting the clav sound and bringing out the drum's outputs and pulses.

The sheets that were subsequently returned to me only covered the clav to tom conversion and said nothing about the separate outputs that I could figure (not being electronically inclined, but amply able to follow instructions). The separate outputs are very important to me as I get picky about the drum sound and want to, for instance, fatten the snare with reverb, tighten up the kick and roll off a bit of the highs on the high hat without dulling the snare. Any information you could send to me on this would be greatly appreciated.

Another bit of information that I would find very helpful would be to learn if there is a way to make the Dr. Rhythm follow external trigger pulses. With his ability I could re-record drum tracks once

the piece is underway and/or overlay more drum sounds, by processing Dr. Rhythm through a ring modulator to make it sound more like congas or metallics, for instance.

—Scott More
Ottawa, Ontario, Canada

Trying to get separate instrument outputs for the DR-55 and/or making it follow external triggers is possible, but requires extensive surgery. Roland would not recommend that you attempt doing it yourself if you don't have a solid background in electronic repair.

Roland suggests that a possible course for you would be for you to take your DR-55 to an authorized Roland service center, and describe what you would like done. The service center can then contact Roland by phone, and Roland can describe to them the procedure. You can find out the name of an authorized Roland service center by calling the Roland Service Department at (213) 685-5141.

An easier (and maybe even cheaper) course for you would be to look into the purchase of a Roland TR-808 Rhythm Composer, which has individual outputs for each instrument, can be a master or slave to an external trigger, and also contains track memory to write entire compositions with automatic rhythm changes. The TR-606 Drumatix from Roland (a lower cost alternative) features all of the above, except separate outputs, and retails for only \$395.00.

—Ron Wilkerson
PR for Roland Corp. U.S.
Beverly Hills, CA

When the Hiss is Gone

The mixer that I use, a Sony MX-16, has an awful amount of hiss in the master fader section. There is no EQ on the board, nor do I have any outboard EQ's. What can be done—if anything—to save my tapes while keeping them sounding halfway normal?

—John Traynor
Fayetteville, Pa.

The MX-16 is an excellent mixer sonically. With proper use, the MX-16 should not add a noticeable amount of noise.

I will assume that the MX-16 is being used for only live (microphone)

recording since my first recommendation would be, of course, not to use it if it is not needed (FM, disc, etc.).

Located along the recording path are several points where noise and distortion can be introduced to the audio signal. I will begin by directing your attention to those factors which are external to the mixer itself. One area of concern is the matching of the electrical characteristics of the mics used with that of the MX-16's inputs. The MX-16 is designed for "low" impedance microphones. If your mics have an impedance rating of 150 ohms to 600 ohms, they should match quite well. Some mics, on the other hand, have an impedance of 10,000 ohms. This will not match properly and the incompatibility may result in signal level loss that will increase the overall noise level of the recording.

Another noise source is, of course, the inherent noise of the electronics themselves. Since the mic preamps have a 50 dB higher gain than that of the line inputs, they will introduce more noise. A high input microphone will enter the mixer at a level substantially higher than the residual noise of the mixer's electronics. Condenser microphones, such as Sony's Back Electret models, are higher in output than most dynamic microphones.

If the microphones are appropriate and you feel comfortable enough to go ahead, I will now recommend a setup procedure that will minimize noise often caused by improper setup.

Conventional volume, function select, EQ controls, etc. (whether rotary or slide type) will add noise and distortion to the signal. This can be caused by the wire used to join a control, the solder connection, or the electrical characteristics of the control itself. These controls will change in impedance as they are brought from minimum level to maximum. Corresponding with impedance variations we also find the noise and distortion levels changing as well. At both minimum and maximum level the controls have the best sonic quality. The amount of noise raises toward the mid-way point of the control then decreases as it approaches the maximum setting. We therefore recommend that any controls not being used be set at the minimum position and any controls being used be set at the maximum position. As you can imagine, this is not always practical, but an optimum set-up does exist.

DYNACORD IS HERE!

Europe's leading professional sound reinforcement equipment comes to America.

Musicians on the continent and 120 countries worldwide have known it for over 30 years. Pro sound men and recording engineers too. Dynacord is the standard for mechanical stability, technological advances and quality sound and construction. Now U.S. musicians who want the best, need the best, demand the best don't have to leave the country to get it.

SIGNAL PROCESSING EQUIPMENT

DDL-12 Digital Delay—studio quality natural sounding digital delay with up to 500ms delay time (1000ms with expander module) with full frequency response of 20Hz-12KHz. Unlike most digitals, compander noise reduction is inaudible even at long delay time with extended repeats. Active tone controls and balanced input and output.

VRS-23 Vertical Reverb—unique stereo analog reverb/delay. 92dB dynamic range for studio-quiet operation. Delay time of 20-400ms with modulation circuit for realistic reverb and echo effects.

DRS-78 Digital Reverb—stereo digital reverb/delay. 7-320ms delay time with 3 user-variable presets. Natural sounding reverb with user-variable pre-delay and decay. Universal application for stage and studio.

CLS-22 Compact Rotor System—ultra realistic rotor sound, separate bass and treble rotor sections, adjustable speeds, stereo and mono capabilities, easy to use, very compact.

EQ-270 Graphic Equalizer—high quality 27 band, 1/3 octave, electronically balanced, extended range LED display.

MIXERS

GIGANT III

Powered Mixer

—8 channel stereo, 2-100 watt power amps, balanced mic inputs and unbalanced instrument inputs, 3 band EQ per channel, 5 band stereo master EQ, 2 stereo effects loops, compact, self-contained, excellent for PA and keyboard.

ES-1250 Biampable Powered Mixer—4-100 watt power amps in biamp mode, 200 watts per side in stereo, 12 channels with 3 band EQ, built-in stereo variable active crossover, tunable low cut filter, master stereo 7 band graphic EQ, stereo 5 band monitor EQ, 2 stereo effects loops, balanced and unbalanced inputs, Accutronics reverb.

MC 16/4/2 Mixing Console—16 input channels with very wide dynamic range, balanced inputs with transformers and line inputs, semi parametric mid range, 4 sub groups, phantom power supply, multicore connector.

POWER AMPLIFIERS

A1001 Amp—produces 2 x 120 watts at 4 ohms

A2002 Amp—produces 2 x 250 watts at 4 ohms

Include XLR and phone plug inputs and outputs for easy connections, 12 step peak reading LED display, protection includes: thermal overload with "hi-temp" LED, power turn on delay and load protection, separate power supplies, mono/stereo capabilities.

SPEAKERS

CS-31 Bi-amp Speaker Cabinet—compact, 12" woofer, 2 midrange speakers, high power, high frequency horn, 100 watt RMS power handling capacity.

CS-41 Bi-amp Speaker Cabinet—same as the CS-31 but with 15" woofer and 4 midrange speakers, 150 watt RMS power handling capacity.

MUSICAL INSTRUMENT AMPLIFICATION

BS-408 Bass Amp—compact, 200 watt, rack-mountable professional bass amp for studio and stage. 7 band graphic equalizer with by-pass switch.

Hi and lo shelving equalizer, studio output, insert jacks. Envelope follower output stage for wide dynamic range, compression and distortion effects.



So to hear what the rest of the music world has known for over 30 years, get down to your Dynacord dealer today. For name of nearest dealer call: (800) 645-3188. [In N.Y. (516) 333-9100]



Dynacord
Pro Audio Systems

For free literature write: Unicord,
89 Frost St., Westbury, NY 11590.

Exclusively distributed by Unicord
Westbury, N.Y. 11590

© Unicord 1982

CIRCLE 18 ON READER SERVICE CARD

With the MX-16 and a recorder there are four points of volume adjustment alone.

1. The INPUT ATTENUATOR for each of the mic inputs
2. The individual GAIN CONTROL for each channel
3. The MASTER fader control
4. The RECORD LEVEL control on the tape deck itself.

If no input overload occurs, place the INPUT ATTENUATOR to its 0 dB position. Place the MASTER fader control and the recorder's RECORD LEVEL control to maximum position. With this starting point you may now feel free to control each of the channels used with the individual GAIN CONTROLS. By setting up the record chain this way, you are bypassing most of the side effects of the unused controls, effectively reducing four noise sources down to one. The recorder's RECORD LEVEL control and the MX-16's MASTER fader can now be used for fading only.

I will also mention that the MX-16 is not a current model; it was introduced in 1972. I recommend that the unit be checked for proper

functioning. Each of the eight channels is constructed identically and should, therefore, sound identical. If noise or distortion are noticeable in one or more of the channels and not in another, the unit should be serviced. It is also possible that the fader controls have collected dust over the years and introduce excessive noise. This is easily remedied with proper cleaning by a qualified service technician.

—Dennis Dougherty
Product Sales Trainer
Sony Corp. of America
Park Ridge, N.J.

Sounds Like a Pan Pot— But It's Not

I would like to replace the channel select switches on my Sony MX-14 board with pan controls. I've noticed that the later units offer these and it would certainly add to the versatility of the board. Can you offer some advice or info on this conversion?

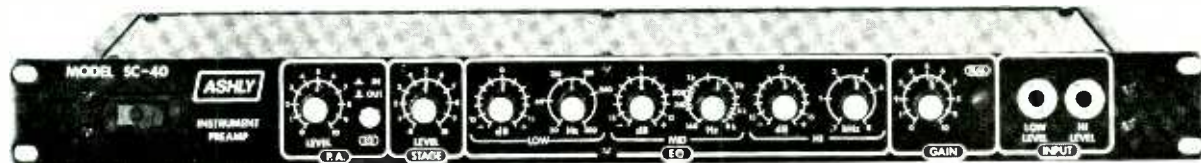
—Joe W. Berry
LaPorte, Texas

While I cannot recommend modifying your MX-14, I can suggest a recording technique that may prove useful.

It is possible to simulate a pan pot by splitting the mic signal as it enters the mixer. This can be accomplished with active circuitry or a simple "Y" chord. The split signal can then be sent to two channels on the MX-14 simultaneously (let's say channels 1 and 2). Set channel one's OUTPUT SELECT switch to LEFT and channel two's OUTPUT SELECT switch to RIGHT. With equal level settings in each channel the source will be placed in the center of the stereo image. By varying the levels of channels 1 and 2 the signal will shift toward the favored channel. With this technique the MX-14 can be used as a five channel mixer with one "pan pot" down to a three channel mixer with three "pan pots."

—Dennis Dougherty
Products Sales Trainer
Sony Corp. of America
Park Ridge, N.J.

The Missing Link



The ASHLY SC-40 Instrument Preamp

That critical first stage of amplification for your instrument can make or break your sound. The SC-40 Instrument Preamp gives you clean pre-amplification with an absolute minimum of noise and distortion. The sophisticated three-band tunable equalizer makes a wide range of voicings possible. (Equalization bypass switching is provided on the PA send.) We designed the SC-40 with an effects send and return, high and low level stage outputs, and line level and microphone level PA outputs so you can interface with practically anything without the need for expensive adaptors. But we didn't stop there! You'll also appreciate our heavy-duty 16 gauge steel construction and a host of other features not offered on any other preamp. The next time you plug in your bass, guitar, or keyboard, make sure it's going into an Ashly SC-40 Instrument Preamp...designed and built for those who want the best, by people who still care. For more information call or write us.



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

EXCLUSIVE CANADIAN DISTRIBUTOR:

GERRAUDIO
DISTRIBUTION INC.

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

Why Beyer microphones give you more extraordinary performance for the most ordinary applications.



Beyer M 88



Beyer M 201



Beyer M 160

There are other microphone alternatives when high sound pressure is a factor.



As Sennheiser claims, the MD 421 undoubtedly stands up to extremely high decibel levels and has other features that have contributed to its popularity. But if you're already using the MD 421 to mike loud instruments or voices, we suggest that you investigate the Beyer M 88.

The Beyer Dynamic M 88's frequency response (30 to 20,000 Hz) enhances your ability to capture the true personality (including exaggerated transients) of bass drums, amplified instruments and self-indulgent lead vocalists.

The Beyer M 88 features a matte black, chromium-plated brass case for the ultimate in structural integrity. Beyer microphones are designed for specific recording and sound reinforcement applications.

When you need a rugged and versatile microphone, consider the alternatives.



For over 10 years, engineers have used mics like Shure's SM57 for the widest variety of applications in the studio. And we feel that one of the main reasons more engineers don't use the Beyer M 201 in this context is simply because they don't know about it. Those who have tried it in the full gamut of recording situations have discovered how it can distinguish itself when miking anything from vocals to acoustic guitar to tom toms.

The M 201's Hyper-Cardioid pattern means that you get focussed, accurate reproduction. Its wide and smooth frequency response (40 to 18,000 Hz) provides excellent definition for the greatest number of possible recording and sound reinforcement situations.

Each Beyer Dynamic microphone has its own custom-designed element to optimize the mic's performance for its intended use.

You may not always need a condenser microphone for "critical" recording applications.



Some engineers prefer condenser microphones like the AKG C 414 to accurately capture the subtle nuances of a violin or acoustic piano. But should you have to deal with the complexity of a condenser system every time this kind of situation comes up?

The Beyer Dynamic M 160 features a double-ribbon element for the unique transparency of sound image that ribbon mics are known for. While its performance is comparable to the finest condenser microphones, the M 160's compact size and ingenious design offers significant practical advantages for critical applications.

Beyer Dynamic microphones offer state-of-the-design technology and precision German craftsmanship for the full spectrum of recording and sound reinforcement applications.

The Dynamic Decision

beyerdynamic



I own the Ibanez UE400 Multi Effects Unit [see review in Notes, January 1981 issue] and I have some problems with it with which I'd like some help.

My guitar overdrives the effects (most notably the phaser and compressor) due to an on-board preamp; is there anything that can be done to improve this situation other than turning the guitar down?

The phaser function seems rather soft and subtle, unlike some I've used which seemed more brilliant. Can you recommend anything to spark up this effect?

Other chorus and flanger devices I've seen have a control marked "Manual" which I don't see on the Ibanez unit. What exactly does this control do? It seems that I can't get some of my favorite flange and chorus effects from the Ibanez, especially a 12-string sound from the chorus. Would installing this control (if possible) help in getting some of these desired sounds?

I use the UE400 most in the studio for jingles and need to get sounds clean and *fast*. It is also not often that I can use two outputs from the Ibanez (stereo?) because of track input limitations. Is it important to utilize the two outputs provided for the proper operation of this unit? I've been told that it's possible to get the 12-string sound I described above out of other units using only one output.

—John Nicholas
Clarendon Hills, Ill.

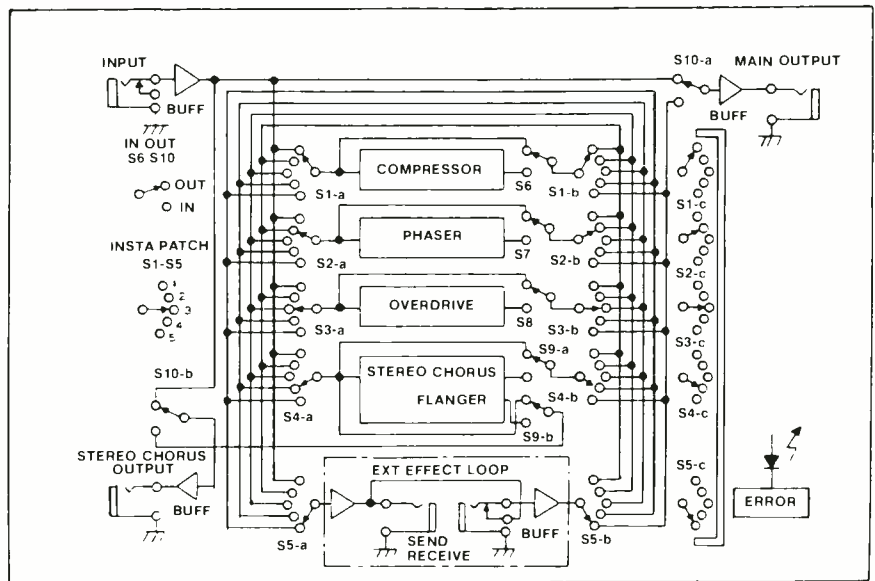


FIG. 1—EFFECTS EXPLORATION

(SPECIFICATIONS)

1—Compressor

Max. Input Level: +6.5 dBm at 400 Hz
 Max. Output Level: 0 dBm at 400 Hz
 Compressor Range: 40 dB
 Equivalent Input Noise: -90 dBm (1HF-A input shorted)
 Frequency Response: 30 Hz to 20 KHz (+5 dB, -2 dB)

2—Phaser

Max. Input Level: +5 dBm at 400 Hz
 Input/Output Level Ratio: 1:1
 Sweep Speed: 0.06 Hz to 13 Hz
 Equivalent Input Noise: -98 dBm (1HF-A input shorted)

3—Overdrive

Max. Amplitude: 30 db
 Max. Output Level: 0 dBm
 Equivalent Input Noise: -100 dBm (1HF-a input shorted)

4—Stereo Chorus/Flanger

Max. Input Level: +5.6 dBm at 400 Hz

Delay Time of Flanger: 1.46 m/sec. to 12.8 m/sec.
 Delay Time of Chorus: 3.2 m/sec. to 8.6 m/sec.
 Input/Output Level Ratio: 1:1
 Equivalent Input Noise: -106 dBm (1HF-A input shorted)
 Sweep Speed of Flanger: 0.06 Hz to 13 Hz
 Sweep Speed of Chorus: 0.3 Hz to 3.0 Hz

5—Overall

Input Impedance: 500 K ohms
 Main Output Impedance: less than 10 K ohms
 Ext. Effect Loop Send Impedance: less than 10 K ohms
 Ext. Effect Loop Receive Impedance: 500 K ohms
 Power Requirements: 117VAC/60 Hz/6W
 220VAC to 240VAC/50 Hz/9.8W
 Dimensions: Unit—482(W) x 98(H) x 232 (D)mm. Foot Switch—340(W) x 42(H) x 70 (D)mm
 Weight: Unit—3.9 kg; Footswitch—1.2 kg
 Accessory: Footswitch with connection cord—5 m

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 21 ON READER SERVICE CARD

www.americanradiohistory.com

There are several questions here about different aspects of the UE400. I'd like to answer each question by topic, so let's start with:

Overdriving the Effects: The UE400 was designed to provide four studio

board preamp, or both, overdriving may result. (You'll notice the overdriving when you play the bottom string or strike a chord). In this situation there are two things that you can do to compensate for the

of the other. If you find this to be the case, then it may need an adjustment. This type of adjustment is usually handled by the factory, however, it is possible to do by yourself. The procedure is given in *Fig. 2*.

Manual Control on Flanger or Chorus: Some chorus or flanger units have a manual control. If you look at *Fig. 3* you'll see that this control is used for centering the position of modulation. Modulation of delay time is what causes a chorusing or flanging effect. The difference between flanging and chorusing is the modulation width of delay time. On flanging units there's enough width of delay time to make it worth having a manual control. On chorusing units, however, the width of delay time is too small to produce any noticeable change in sound by moving the center. This is why you won't find many chorus units on the market today with a manual control. Because of the limited amount of space for controls on the UE400, the manual control option has been omitted in favor of a preset center. Pulling the width control knob out moves the center into position for the chorusing mode. To get a good 12 string sound from the UE400's chorus unit, the output must be handled in stereo. If making the connection in stereo is a problem, use a "Y" plug to mix the stereo signal to mono.

The outputs should be made from jacks marked "output" and (and the "external effect loop" heading) "send." This will give you the sound you're after. We've received other requests of a similar nature, and as a result, the latest UE400 does have a mixing circuit built in that allows the chorus unit to function normally in either stereo or mono.

Development of the UE400 came about over 3 years ago, by closely working with musicians who were looking for a practical alternative to unreliable cable hook ups between effects.

Also available, is the UE405 (sister unit to the UE400) and the recently introduced UE300 (a smaller floor unit implementing many of the 400 and 405's features).

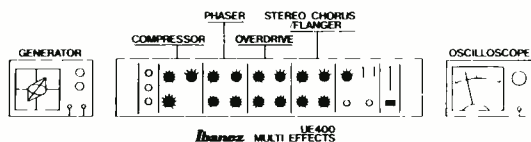
If there are any other questions regarding Ibanez electronics, please feel free to contact me.

—Chuck Fukagawa
Electronics Dept.
Hoshino (U.S.A.) Inc.
Bensalem, Pa 19020

ADJUSTMENT PROCEDURES

BIAS

1. Put 100mV 1KHz sinewave into INPUT.
2. Set WIDTH controls fully CW, SPEED controls fully CW and FEEDBACK controls fully CCW.
3. Adjust VR102 to achieve the Lissajous pattern shown in Fig. A.



4. Set WIDTH controls fully CCW.
5. Make sure wave form as shown in Fig. B.
If does not fit wave form, please readjust from 2.



Fig. 2

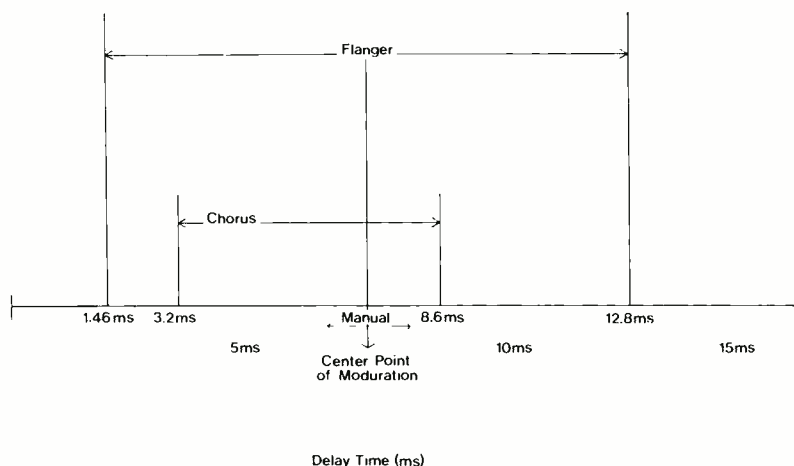


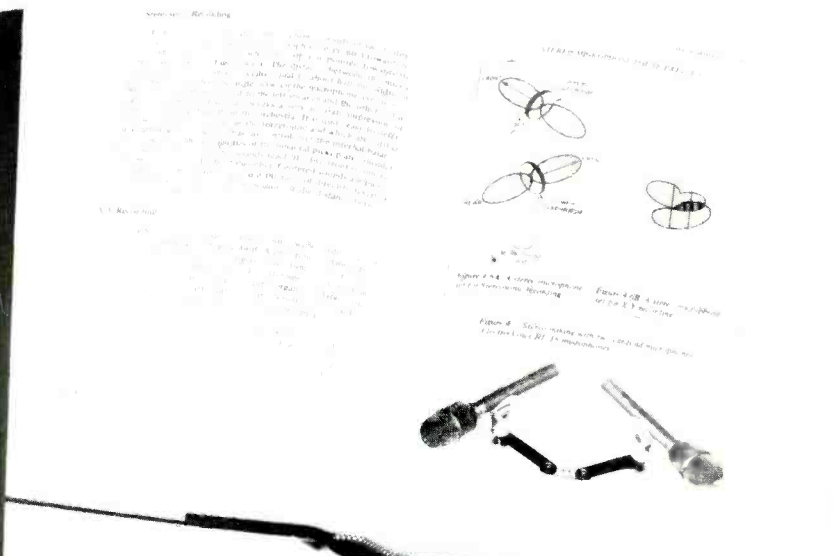
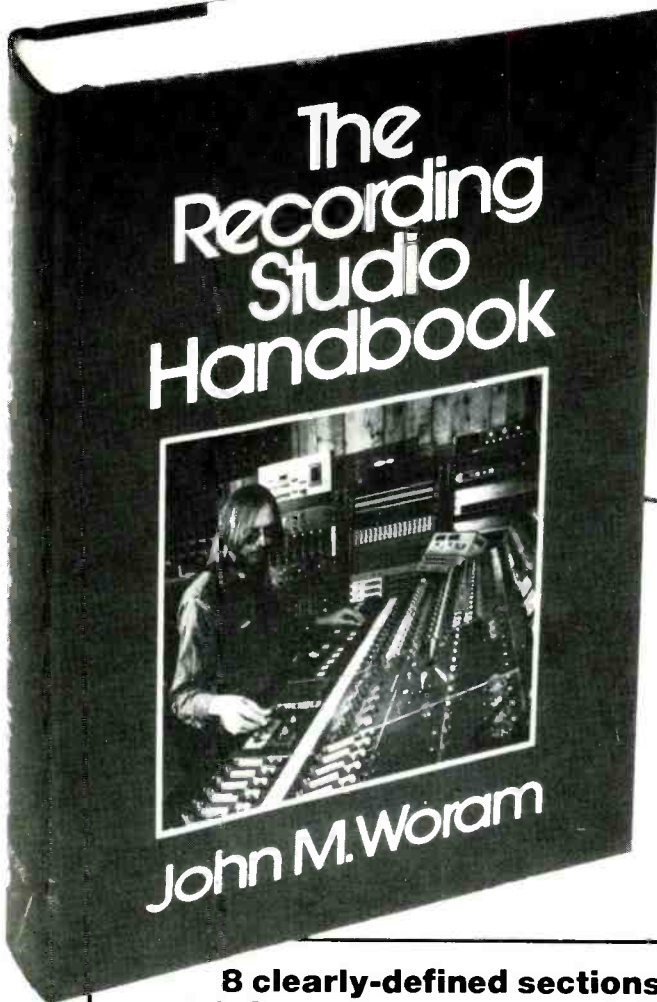
Fig. 3

quality effect units in one compact rack mount that could be used by keyboard and bass players as well as guitarists. If you check the specs on your UE400 (*Fig. 1*) you'll find that the maximum input level is +5 dbm -6.5 dbm (depending on the particular effect). These levels should handle any standard guitar's output, but there are a few exceptions. In cases where the pickups have an unusually high output (due to customized winding, etc.) or where there's an on-

problem. One is to install an attenuator (500 K Ω —250 K Ω potentiometer) in the space provided on the rear panel of the unit. The other is to reduce the output of your guitar a little and adjust the pickup so that it's slightly lower.

Brilliance of the Phaser: The UE400's "Feedback" system is what controls the brilliance of the phaser. If you check your UE400 against another, you may discover the brilliance of your unit to be less than that

25,000 copies in print



Fifth big printing of the definitive manual of recording technology!

"John Woram has filled a gaping hole in the audio literature. This is a very fine book . . . I recommend it highly."
 — **High Fidelity**. And the **Journal of the Audio Engineering Society** said, "A very useful guide for anyone seriously concerned with the magnetic recording of sound."

So widely read . . . so much in demand . . . that we've had to go into a fifth printing of this all-encompassing guide to every important aspect of recording technology. An indispensable guide with something in it for everybody to learn, it is the audio industry's first complete handbook on the subject. It is a clear, practical, and often witty approach to understanding what makes a recording studio work. In covering all aspects, Woram, editor of *db Magazine*, has provided an excellent basics section, as well as more in-depth explanations of common situations and problems encountered by the professional engineer.

It's a "must" for every working professional . . . for every student . . . for every audio enthusiast.

8 clearly-defined sections 18 information-packed chapters

- | | |
|--|--|
| <p>I. The Basics
The Decibel
Sound</p> <p>II. Transducers: Microphones and Loudspeakers
Microphone Design
Microphone Technique
Loudspeakers</p> <p>III. Signal Processing Devices
Echo and Reverberation
Equalizers
Compressors, Limiters and Expanders
Flanging and Phasing</p> <p>IV. Magnetic Recording
Tape and Tape Recorder
Fundamentals
Magnetic Recording Tape
The Tape Recorder</p> | <p>V. Noise and Noise Reduction
Noise and Noise Reduction
Principles
Studio Noise Reduction Systems</p> <p>VI. Recording Consoles
The Modern Recording
Studio Console</p> <p>VII. Recording Techniques
The Recording Session
The Mixdown Session</p> <p>VIII. Appendices
Table of Logarithms
Power, Voltage, Ratios and Decibels
Frequency, Period and Wavelength of Sound
Conversion Factors
NAB Standard
Bibliography
Glossary</p> |
|--|--|

Use the coupon to order your copies today at \$37.50 each. And there's a 15-day money-back guarantee.

ELAR PUBLISHING COMPANY, INC. 1120 Old Country Road, Plainview, N.Y. 11803

Yes! Please send _____ copies of THE RECORDING STUDIO HANDBOOK \$37.50. On 15-day approval.

Name _____

Address _____

City/State/Zip _____

Total payment enclosed \$ _____
(In N.Y.S. add appropriate sales tax)

Please charge my Master Charge
 BankAmericard/Visa

Account # _____ Exp. date _____

Signature _____
(charges not valid unless signed)

Outside U.S.A. add \$2.00 for postage.
Checks must be in U.S. funds drawn on a U.S. bank.

Studio Notebook #10

By James F. Rupert

If mail is any indication, this is the part of the Studio Notebook series that everyone has been clamoring for: "How do I get the bread together to get the whole thing off the ground?" We've tried to lay the groundwork in previous installments so that you might be able to intelligently answer questions the man with the money will be firing at you. Moreover, if you've filled out the forms in the past Studio Notebook chapters and done your homework thoroughly, you now should be able to counter attack with the data that the loan officer wants, needs, and is delighted to hear. So the red carpet should now be rolled out for you, cherubs spreading rose pedals in your path as you triumphantly stride in and blushing proclaim, "No, please, a million is more than I'll need, really...and there's no need to kneel!" Right? Wrong!

Everything you've done so far has only been to insure that the loan officer will take you seriously upon first examination of your credit application. Without it, despite the stoically courteous exterior being displayed by the man or woman across the desk, your application will be secretly greeted by a silent upward rolling of the eyeballs, or worse yet, the mental equivalent of a one-fingered salute.

But hey, you've got the charts and have researched your studio plan to perfection. You've also proudly slid letters of commitment across the formica that show that solid reputable firms have announced their intention to place orders with you. With a cavalier flip of the wrist you thrust home with the seemingly killing blow of a blueprint and floor plan of the proposed studio complex, and with a sample lease from the future landlord attached. Money time, right? Wrong again!

There are several types of loans and loan institutions, but all of them will begin by reviewing not just your plan, but you yourself.

The big question is collateral. Namely, "Do you got any or not any?" Bankers don't just want experience and expertise. They want to know what will be your personal stake in this venture. For those of you currently yelling, "Capitalist Pigs!" relax for a minute and examine the situation. If everything put into the company was the result of loans and other monies not your own, bankruptcy would constantly loom as an all-too convenient bail-out should times start to get a little tough. After bankruptcy, you've lost nothing and the bank is up a stump to get their dough back. All the bank wants to establish is that each of you has an equal stake in your studio. The risk should be shared by borrower and lender. And what's so unfair about that?

Collateral can be almost any personal property—

cars, real estate, stocks, bonds, securities, cash values on insurance policies, furniture, household items and savings all qualify. Especially savings. If you have \$10,000 in savings and are looking to borrow another \$10,000, one of two things will probably happen. The lender will question you extensively on how much of your savings will be going into the project or the lender will try to convince you to sink that ten grand into time saving certificates. The time certificates can still be used as collateral as well as earning a tidy profit in interest. Either way the lender will be looking for a commitment from you as to how much of your personal funds will be going into grubstaking the new studio.

Remember the old adage, "The only way to get a loan is to prove that you don't need it"? Well, it may not be true all the time, but in a lot of instances it can be painfully correct. There must be a way for the lender to get back loaned funds (or their equivalent in collateral) if the borrower poops out on the payments. Your lender will refer to this as a "secured" loan. It doesn't matter if you are looking for a long-term, business-financing loan from a bank, a savings and loan or a venture capital organization, you will probably have to obtain a secured loan.

Long-term loans are those which are to be paid off over five years or longer. Loans to be paid off in five years or less are called intermediate loans. Don't be surprised however if your lender refers to both as long-term loans.

Your banker might suggest other alternatives to solve your money dilemmas. If you own your house, you might be able to obtain a second mortgage to raise some bucks. A mortgage equity loan in which you borrow against the equity (how much you have paid off on the principal, not the interest) is another possibility the lender could put forward. Believe it or not, the loan officer you're dealing with really will try any way he or she can to find a loan that fits you. Now, the key word there is "fits." Neither the lender nor you really wants to sign a piece of paper that he knows one of the parties will be unable to live up to.

Now let's suppose that you've already got all your equipment together and you've financed the studio construction yourself. Maybe you're ready to turn that part-time basement operation in your home into a full-time business. Either way all you need is a minimal amount of money to keep the joint running and food on the table until the customers begin to pay off their bills. For this you can breathe a hair easier and go see the banker about a short-term loan.

A short-term loan is money advanced to you that will be paid back within 30 to 90 days. This is most often



**ALBATROSS
RECORDS, INC.**

3500 Albatross Ave.
Suite 514
Rockford, MI 40104
(311-555-3200)

August 1, 1982

Mr. Stephen West
4 Crestwood Lane
Acton, 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

used to tide businesses over until accounts receivable are received. The collateral for this type of loan can be the accounts receivable themselves. Sometimes these are in actuality inventory loans, a loan to buy tape and supplies to keep the recorders running until the outstanding accounts are paid to you. Payments to the bank often can be automatically drawn out of your business checking account at the bank. Short-term loans are much easier to obtain, but stand warned: You can lose your business to the sheriff just as easily by not paying off a small sum short-term loan as by defaulting on a big ticket long-term loan. The lenders are not waiting in the wings snarking up their sleeves, licking their chops in anticipation of foreclosing on some poor unsuspecting young businessperson. They only want those who have come begging for the lender's trust to keep their word of payback. If bank foreclosure seems like a distasteful practice to you, how would you handle it any differently?

If you are asking for a loan of say \$10,000 and the banker says they can only give you \$5,000, don't lose hope. That same lender might suggest a program of personal conversion of assets to raise the remainder. Maybe that shiny new Corvette sitting in the driveway should be sold to raise some funds? The aforementioned mortgage loan might come into play. Your world-famous-used-bicycle-seat-collection might have to go to the highest bidder. As stated previously, if it is to be your business, the risk and liability should be yours as well.

Another option is equity capital. Do not confuse equity capital with either term borrowing or real estate equity. Equity money is money you don't have to repay (sounds good, huh?). Equity capital is money you get for selling part interest in your business (maybe not so good huh?). There are specialized companies and individuals that are willing to sink money into struggling businesses for strictly investment purposes. Their interest is in potential income rather than immediate return. While a bank is interested in receiving only the money loaned and interest repaid to them, an equity capital investor is looking for an unlimited return within the confines of their percentage purchased. While neither a lender nor an equity capital investor is interested in the tiny details of day to day operation, you will be responsible for reporting to an equity investor just as you would to any other partner. The value or inconvenience of this type of scrutiny can only be judged by you.

Now, for the very few of you who have excellent credit ratings and most probably also have had previous credit dealings with the lender you are negotiating with, you might be able to qualify for an "unsecured" loan. This is usually a short-term basis loan only, but one that requires no collateral to secure the loan. The lender is crossing its fingers and handing out money strictly on the past credit reputation of the borrower. If you are under thirty, have limited management experience and a limited credit history (or if Mom or Pop are unwilling to co-sign), forget this one. This transaction is usually reserved for the good ol' boys who have banked at one place for years and are on a first name basis with everybody there, including the janitor.

If you are to be forced by circumstance into a long-term secured loan, don't forget about the equipment you might be using to start your studio. Most lenders should prove fairly agreeable to using the business' assets (the studio's equipment) as security for the loan. If you need to buy the equipment from scratch, consider a chattel mortgage on the gear to be purchased. You will, in effect, be giving the bank a lien on the equipment purchased with the loan. If you miss enough payments or break the loan contract in any way, the lien will entitle the bank to seize the lien equipment or at least prevent you from using it until a court date can be set for charges to be brought against you.

If you have a partnership, all partners will be expected to sign the loan papers. If you cannot obtain a loan for \$15,000 with the signatures of three partners, shoot for three separate loans, one to each partner, for \$5,000 each. In the case of a corporate loan, the officers of the corporation may be forced to sign personal guarantee notes stating that they guarantee with their personal funds and assets that the corporation will be able to repay the loan. If you have the trust and belief of your parents or your rich Uncle Louie in your studio dream, a little arm twisting to get them to act as co-signers couldn't hurt your cause a bit. Whether the bank lists them as co-signers, endorsers, co-makers or guarantors, it all boils down to all contract signers being equally responsible in the eyes of the law for the loan to be repaid to the lender. If you default on the loan, both you and Uncle Louie will be sitting in the defendant's docket trying not to talk to each other.

If all this is beginning to scare you, then perhaps the seriousness of obtaining financing and starting a business is beginning to sink in. Although it is no kid's game, it can definitely be referred to as hardball. Lending institutions have the money and the legal muscle to make kitty litter out of anyone who tries to duck the responsibility of a loan contract.

Work with your loan officer to keep the payments at a level and amount that will be reasonable to repay. Use the charts and tables you assembled from past Studio Notebook installments to show your expenses, your income and what you could allow for a monthly loan payment. Listen to the loan officer's suggestions as to how to cut your budget and save money every month. For the most part, they're smart cookies who want you to succeed. They want you to be able to repay your first loan and be able to come in with mutual confidence for future loans. What it's all about is a situation that will work for the success and profit of both of you.

But let's suppose that you've tried everyone in your area for financing. The banks said no, the equity company representatives said no, the private finance companies said no and Uncle Louie said get the hell out of his mobile home. Where do you turn?

The best place to turn is the subject of our next installment, the United States Small Business Administration. As for me, I hope that I'll be able to get the next chapter out on time since the bank is banging on the window right now to repossess my typewriter. (Uncle Louie is gonna kill me!)

See you next time.



The EV PL80 Microphone

When it came to designing the EV PL80, our engineers went far beyond traditional microphone design standards, measurements and technologies. They went all the way to the technology of the human voice.

Using a computer-generated procedure called "fast Fourier transform"

(FFT), EV engineers were able to visually display and study the complex frequency components

of the human voice's waveforms. The FFT technique allowed them to precisely predict how the PL80 would sound in real life use as it was being designed. As a result, the EV PL80 microphone is a precision instrument that enhances the performer's voice without compromising the performer's vocal quality.

Competitive mikes like Shure's SM58 (which was designed with technology over a decade old) simply can't match the "today" sound of the PL80.

**BEFORE WE PUT
THE EV PL80 TOGETHER,
WE TOOK THE HUMAN VOICE
APART.**

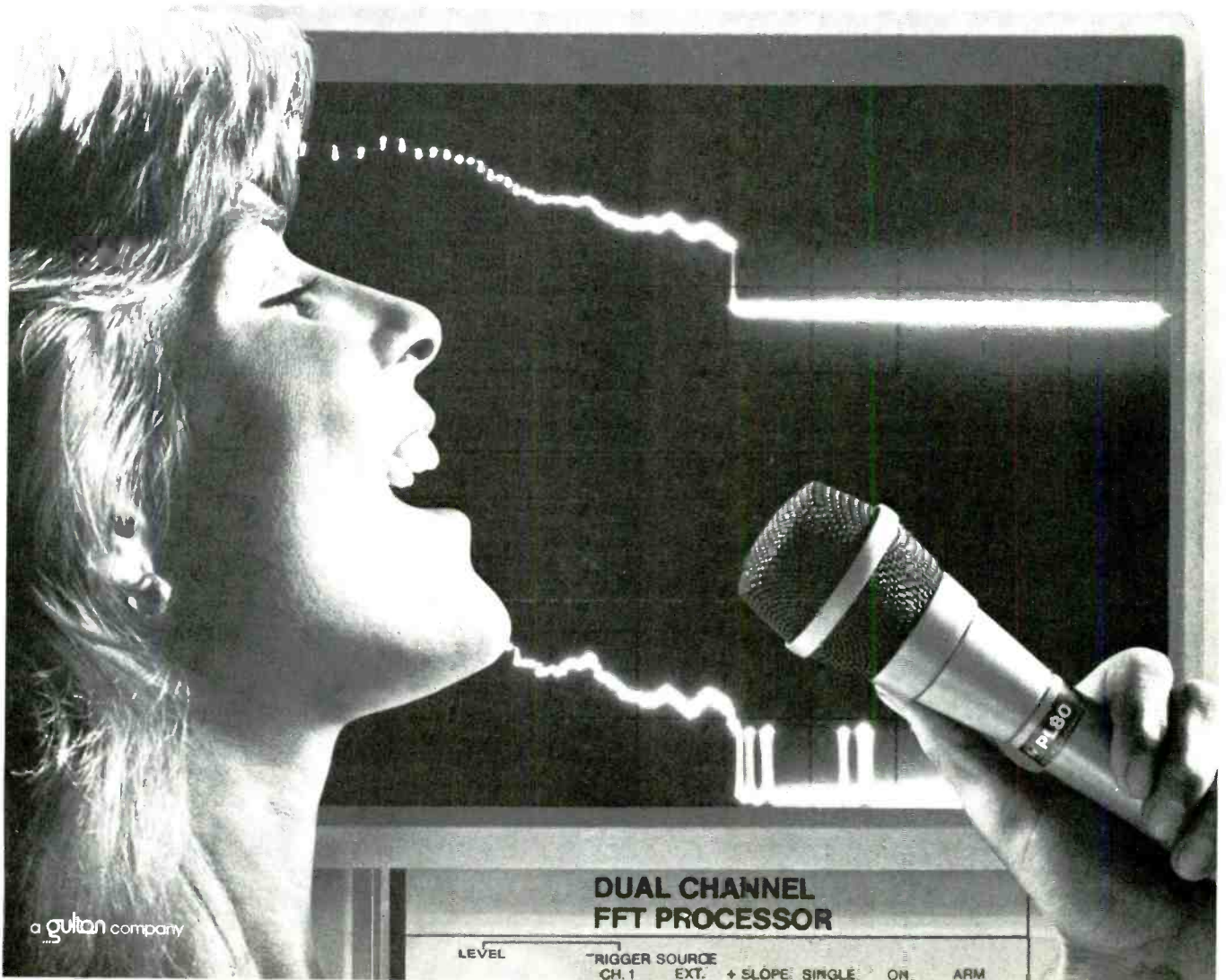
The tight, super-cardioid directional characteristic of the PL80 provides the up-close bass boost (proximity effect) preferred by many entertainers. At the same time, it also delivers high feedback resistance when working close to sound reinforcement speakers and monitors.

The PL80 has an attractive snow gray finish and a contrasting dent-proof Memraflex grille with integral blast filter to guard against P-popping.

For an up-close and personal look at the EV PL80, get into action and get to your EV dealer today. And

while you're there, be sure to ask about our other PL "Sound in Action" mikes—including our world famous PL6 and PL20 instrument mikes. Or write for a free copy of our EV Pro Line Brochure. Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan 49107.

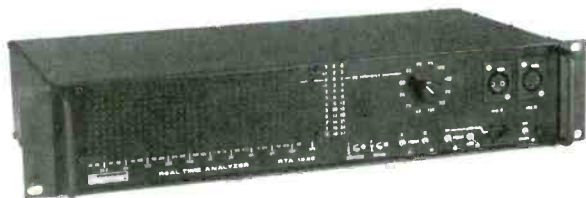
Ev Electro-Voice®
SOUND IN ACTION



THE **PRODUCT** SCENE

By Norman Eisenberg

THIRD-OCTAVE REAL TIME ANALYZER



From Banner, a division of Optics Corp. of Shelby, N.C., comes word of a full 31-band, 1/3-octave real time audio spectrum analyzer. The model RTA-1232 features a bar-column display matrix of 31 ISO-centered bands plus broadband SPL of 12 steps each. Explains Banner: "Even though most equalizers do not cover the full range of 20 Hz to 20 kHz displayed by the RTA-1232 this full 31-band range is desirable for setting rolloffs to prevent wasted power in sound reinforcement use." The display—which uses 384 LEDs—has a selectable range in 1, 2 or 3 dB per step. Each band may be user calibrated if desired. Total unweighted SPL range is 65 to 120 dB. The SPL readout has three decay rates. Two 15-volt phantom powered microphone inputs and two line-level inputs may be selected or summed together, a feature said to be useful for measuring from multiple locations within a room as well as for stereo program material. In the studio, this option also enables the RT-1232 to help in detecting frequency phase cancellations. Both pink and white noise are provided by any internal digital noise generator. The device employs a new filter shaping circuit (patent pending) that produces a "double tuned" filter shape found previously only in the costliest of lab type instruments, says Banner. The new filter shaping circuit allows high selectivity without loss of inter-band information. Price is \$1,195.

CIRCLE 30 ON READER SERVICE CARD

2-OHM AMP HAS BUILT-IN EQ



The model 119 from Biamp Systems of Beavertown, Oregon combines a 350-watt, 2-ohm monitor amplifier with a nine-band graphic equalizer in one relatively compact unit. The power amp portion features innovations recently developed by Biamp for its 29 Series and 619 powered mixers. A built-in Auto Limit™ and turbulent flow heat exchanger enable the 119 to drive four 8-ohm speakers in parallel, and the equalizer section is said to incorporate the latest in low-noise, high slew rate technology. Available in both rack-mount (as the 119R) and portable case versions, the model 119 has been designed for use in high power monitor systems and small P.A. installations. It also is recommended for multiple keyboard setups incorporating a separate rack-mount mixer such as the Biamp 683. The new amp also provides a low-frequency boost and stereo conversion capability to upgrade existing systems. For example, Biamp's model 619 monopowered mixer is convertible to a stereo powered mixer with the addition of the model 119.

CIRCLE 31 ON READER SERVICE CARD

NEW REVERB FROM AKG

Replacing the AKG BX-20E is the new BX-25E. AKG's latest studio and transportable two-channel reverb system. As in all AKG reverb units, the BX-25E is based on the patented torsional transmission line principle. However, in the new version the overall length of the spring has been extended by about 25 percent while the overall size of the unit has been reduced by about one-third. Each of the two electronically and acoustically separate channels has independent decay-time adjustment (via remote control); high- and low-frequency EQ external input/output level adjustments; dry/reverb signal mixing. Decay time is adjusted silently through the use of motional feedback. In addition to the shelving type of frequency equalization, AKG has incorporated a high-cut filter at the input/reverb drive amplifier to enable the selection of a bright, "more aggressive" sound or a more mellow natural reverb sound. Plug-in boards contain the electronics within the control module which itself may be removed from the main housing and operated remotely. AKG's new M-250 digital delay module may be added to the BX-25E at any later time, or ordered within the BX-25E. As a complete unit (reverb and delay), the BX-25E incorporates all the reverb features mentioned plus digital delay. The latter module provides mic control between reverb signal and reverb plus individual reflections; individually adjustable level for each of the discrete reflections in 2 dB steps from original level down to 20 dB below that level. The discrete reflections are available as reflections only or mixed with reverb; initial delay for the reverb signal is switchable to 0, +30 ms and +60 ms; two discrete reflections for each channel are adjustable in 6 ms steps from 6 ms to 60 ms; bandwidth reflections, 12 kHz.

CIRCLE 32 ON READER SERVICE CARD

WHITE ANNOUNCES TWO EQUALIZERS

Two L-C active equalizers have been announced by White Instruments of Austin, Texas. The model 4100A two-channel, octave-band unit is offered to recording engineers for use with the demanding 30 ips, half-inch and digital tape formats. The model 4400 is a new one-third octave monitor equalizer. It features 28 filters from 31.5 Hz through 16 kHz; range of ± 10 dB; adjustable 12 dB/octave high-pass and low-pass filters; tri-amp capability with three level trimmers; transformerless operation or optional plug-in input and output transformers.

CIRCLE 33 ON READER SERVICE CARD

POWER AMP BOASTS LOW TIM



In its new model B-901 stereo power amplifier, Cybernet International of Warren, N.J. claims to have virtually eliminated transient intermodulation distortion by the use of a triple push-pull MOS-FET amplifier with direct coupling from the front end to the speaker terminals. In addition to special circuit techniques, the B-901 incorporates two separate power transformers, one for each amplifier channel. TIM is effectively minimized by the use of a two-pole phase compensation circuit. A slew rate of 120 volts per microsecond with a rise time of 0.9 microsecond is said to produce exceptionally fast transient response which contributes to the lowered TIM. Power output is rated at 150 watts per channel into 8 ohms, both channels driven, from 20 Hz to 20 kHz with less than 0.01 percent THD. Overall frequency response is listed at +0, -1 dB from 5 Hz to 100 kHz. S/N is spec'd at 120 dB. Price is \$1670.

CIRCLE 34 ON READER SERVICE CARD

A-T GOOSENECK MIC

A wide-range moving-coil dynamic microphone designed specifically for talkback use is Audio-Technica's AT838G gooseneck model. Said to be ideal for use with mixing consoles or other applications that require a panel jack plug-in mic, the AT838G has a unidirectional polar pattern to eliminate competing background noise when used from a crowd or in other applications in which ambient noise is a problem. When used extremely close, a protective screen reduces wind noises and popping. Internal construction is said to reduce handling, shock and cable noises. A built-in QG3M connector mates with a professional Switchcraft D3F panel connector, or the mic can be plugged directly into a mating professional Switchcraft A3F connector. Impedance is 600 ohms. Price is \$130.

CIRCLE 35 ON READER SERVICE CARD

CONSOLE FOR OTARI MACHINES

A new console—model RL 400-B—to house the Otari 5050B and BQ Series II tape machines is offered by Ruslang of Bridgeport, Conn. The top opening of the console is designed to accept the tape machine as is—you simply lift off the removable front panel and place the unit in the opening, using its feet to locate the correct position and thus prevent movement. Measuring 22 $\frac{3}{4}$ inches wide, 33 $\frac{3}{4}$ inches high (variable on request) and 27 $\frac{1}{2}$ inches deep, the console features Ruslang's exclusive tilt design that provides the operator access to all controls whether he is sitting or standing. At the console's base a standard 19-inch opening accepts additional electronics for mounting on optional rails. Other options include rack rails for the top opening to mount electronics other than the Otari unit, and a rear riser assembly which accommodates a Ruslang over-bridge for added overhead rack space. Shipped knocked-down, the console is assembled in about ten minutes.

CIRCLE 36 ON READER SERVICE CARD

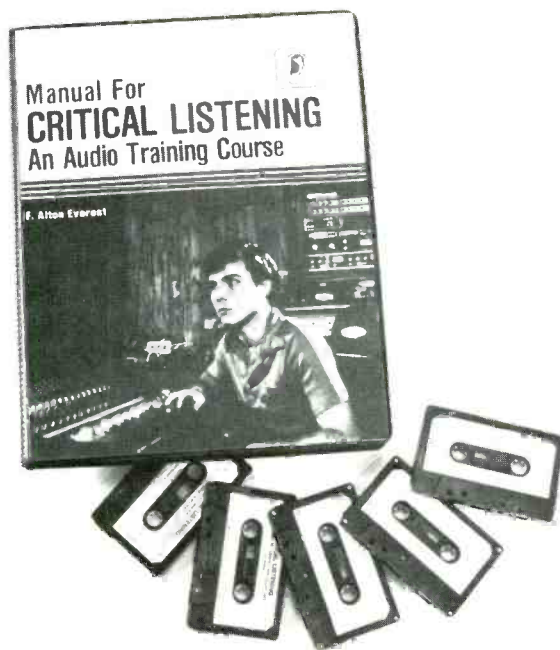
PROTECH DEBUTS NEW AMPLIFIERS



Two new pro amps from Protech Audio of St. James, N.Y. are the 10-watt model 610-S and the 25-watt model 625-S. Controls and terminals are all up front. The power switch incorporates a built-in circuit-breaker to eliminate the need to stock fuses. Other features include output short-circuit protection, bridging input, gain control and barrier terminal strip. Specs indicate maximum THD of 0.4 percent at full output, noise at -85 dB below rated output; frequency response of ± 1 dB from 20 Hz to 20 kHz.

CIRCLE 37 ON READER SERVICE CARD

CRITICAL LISTENING COURSE



Written by F. Alton Everest and published by SIE Publishing in Thousand Oaks, California, is a new audio training course. The program includes a manual (with ten lessons) and five cassettes which are programmed to follow each other. The purpose of the course is to "accelerate, not replace, the usual process of slow learning by experience on the job." Assuming that acuteness of perception can be improved by training and experience, *Critical Listening* is "based upon the premise that discriminating listening ability, which appears so remarkable and complex when viewed casually, can be subdivided into a number of simpler parts which are teachable." The cassettes (with music and narration) and written manual contain these sections: Lesson 1, "Estimating The Frequency of Sound"; Lesson 2, "Estimation of Sound Level Changes"; Lesson 3, "Estimating Frequency Band Limitations"; Lesson 4, "Frequency Response Irregularities"; Lesson 5, "Judgment of Sound Quality"; Lesson 6, "Detecting Distortion"; Lesson 7, "Reverberation Effects"; Lesson 8, "Signal versus Noise"; Lesson 9, "Voice Colorations"; Lesson 10, "Listening With Discernment." The entire package is available from SIE Publishing for \$129.95.

CIRCLE 38 ON READER SERVICE CARD

dbx's NEW MODEL 700 DIGITAL AUDIO PROCESSOR



The first low-cost digital audio processor for the pro market was unveiled at the 72nd AES show in Anaheim, California. In addition to the fact that it will sell for less than \$5000, the main revolutionary feature of the dbx Model 700 is that it does not employ the Linear Pulse Code Modulation Technology upon which other digital processors are based. The system utilized is called Companded Predictive Delta Modulation. Delta Modulation has long been known to be a low cost means of analog-to-digital data conversion. But it produces less than acceptable sound with a dynamic range of only about 55 dB. Its lost cost advantages motivated dbx engineers to develop a comparable system at lower cost. Two innovations, Linear Prediction and Precision Companding were what dbx came up with. The linear prediction circuit estimates a signal's future by monitoring its recent past history. It does this 700,000 times per second. It avoids audible noise modulation effects, and also is responsible for increasing the dynamic range of the basic Delta Modulator from 55 dB to 70 dB.

The rest of the dynamic range increase in the CPDM system is the result of the Precision Companding circuit. A direct digital link between encoder and decoder eliminates the possibility of mistracking and has an overall transparent performance. It increases the dynamic range of the CPDM system to more than 110 dB, with a neutral sounding, extremely low noise floor.

The new dbx Digital Audio Processor offers all the benefits of currently available PCM processors—absence of noise, distortion, wow and flutter—at a price that most studios can afford.

CIRCLE 40 ON READER SERVICE CARD

EQUALIZER WITH VIDEO SOUND FEATURES

The Audio Control Model TEN octave equalizer contains an extra set of inputs, outputs and front-panel switching designed especially for video soundtrack enhancement. Other features include adjacent paired sliders; LEDs on each slider to allow operation in low light; LED indicators for all functions; a special flashing LED mode to signal tape equalization at the touch of a button; separate tape monitor and equalizer program controls. Octave frequency bands range from 31.5 Hz to 16 kHz; each slider's range is ± 12 dB. Included in the device is a sharp Techebchev subsonic filter to protect against record warps and resonance at high bass levels. THD is spec'd as less than 0.07 percent; S/N is given as 99 dB; frequency response, less than ± 1 dB from 3 Hz to 100 kHz. Of rack-mount dimensions, the model TEN is priced at \$269.

CIRCLE 41 ON READER SERVICE CARD

DETENTS HELP USE OF PARAMETRIC EQUALIZER

Detented controls designed for quick, accurate and repeatable adjustments are featured on the new LOFT model 401 parametric equalizer. Adjustments include frequency, bandwidth or "Q" and boost or cut. Overlapping frequency bands with 18 dB of boost or cut include a low band (30 Hz to 600 Hz); a low-mid band (100 Hz to 2 kHz); a mid band (400 Hz to 8 kHz); and a high band (1 kHz to 20 kHz). The adjustable "Q" control allows the affected frequency range around the center frequency to be adjusted between 1/6 and three octaves. In addition, the bandwidth can be adjusted without affecting the amount of boost or cut.

CIRCLE 42 ON READER SERVICE CARD

MULTI-USE MEASURING SYSTEM

Kenwood is offering a multi-purpose acoustic measuring system, the model SE-3000. Self-contained in a carrying case, the device incorporates a print-out measurement recorder; level meter; signal generator; and reverberation meter. It is supplied with microphone and tripod stand. Suggested applications include: sound field measurements (frequency response, reverb characteristics, sound insulation characteristics, noise level); audio equipment performance tests (amplifier characteristics, tape deck frequency response, phono pickup frequency response and crosstalk).

CIRCLE 43 ON READER SERVICE CARD



VARIABLE ELECTRONIC CROSSOVER

The Loft 403-M is a mono, two-way, 18 dB/octave electronic crossover with continuously variable crossover frequencies from 40 Hz to 8 kHz (low-frequency range), and from 600 Hz to 12 kHz (high-frequency range). Detented and recessed front panel controls are calibrated in dB, while LEDs show peak output and power turn-on/turn-off suppression. Even if power is disconnected, the output of the crossover will be clamped down to prevent electronic thumps in the system that could damage speakers. According to LOFT, the use of 18 dB/octave, three-pole "true" Butterworth alignment in the filter provides a ruler-flat frequency response through the crossover region. Audible transparency is improved with the use of high-speed, low-noise circuitry. Specs include: 20 K ohms input impedance, balanced or unbalanced; input level of +24 dB (ref. 0.775 volt); output level of +18 dBm; frequency response of ± 0.25 dB from 20 Hz to 20 kHz; harmonic distortion of less than 0.01 percent; noise level of -93 dB ("A" weighted). Of rack-mount width, the 403-M requires 1 $\frac{3}{4}$ inches of rack space. Input and output connections are $\frac{1}{4}$ -inch phone jacks.

CIRCLE 44 ON READER SERVICE CARD

SLIM-LINE AUDIO TIMER

A slim-line audio timer, the SH-4060 from Technics, features programmable operation including automatic preset station selection when used with Technics quartz synthesizer tuners ST-S4, S6 or S8. The timer's weekly programmability has three basic timer modes: weekly 1, weekly 2 and once. The unit's display shows 24-hour time, on/off function, preset channel number (1 through 16) and day of the week. The three-mode operation allows for one single switching on/off of components any single day of the week; on/off every day of the week; on/off on weekends only; on/off every day of the week except Sunday; and on/off every day of the week except weekends. As a safety precaution, the timer will automatically turn off the other components after one hour should you forget to program the off-time after programming on the on-time.

CIRCLE 45 ON READER SERVICE CARD



CAR STEREO-LESSON TWO

In this column in our July 1982 issue I commented on the sound field that can be produced by a vehicular stereo system, and suggested that there may be a lesson here for larger acoustic situations in terms of surround speakers and equalization. No sooner did that item appear in print than I was invited, along with several other press persons, to experience what may well be called "Lesson Two" of this basic idea.

It came in the form of a new car stereo system developed over the past three years (and up to now one of the best guarded secrets in audio) jointly by Delco, the electronic arm of General Motors, and by Bose, the well-known audio manufacturer. In this system, which so far is available only in top-line GM luxury cars (Cadillac Seville and El Dorado, Buick Riviera and Oldsmobile Toronado) at a pre-installed cost of \$875 the 25-watt amplifiers that drive the four speakers are individually equalized for the specific acoustics of each car and for their front or rear locations in that car. Moreover, the listening distances between car occupants and speaker axes are so artfully arranged that one hears full balanced stereo throughout the car. These and other operating parameters are determined by computer measurements and listening tests as part of a design effort that represents what is probably the closest relating to date of a sound system to its specific intended listening environment.

The result, as heard by several of us with unanimous awe and appreciation, is a stereo experience second-to-none. In addition to smooth and extended response, the sound is full-bodied and the stereo image remains firm "from any seat in the house." The notion that car stereo can be as satisfying as, or more so than, normal room stereo has been given new impetus. And the carry-over implications for large indoor or outdoor sound-reinforcement setups are more obvious than before.

There's something else in this new Delco/Bose system that merits attention for its immediate value as well as in terms of possible applications in other audio areas. The 25-watt amplifier used for each speaker is a "digital mode" type (patented) in which the transistors are switched on and off in what Bose calls a "two-state modulation" design. In addition to accurate signal amplification this design also is highly efficient (it uses relatively little line power and it generates virtually no heat. Along with no cooling problem it is also small enough to nestle in the same enclosure as its speaker, and the resultant amp/speaker module can be neatly tucked into the side of a door and still function optimally. This technology is another "first" in music systems, and my guess is that it will not be its last.

Recording Techniques Part 9

by Bruce Bartlett

You can create special sonic effects, improve sound quality and even enhance the music you record through the use of *signal processors*. Usually external to the mixing console, this "outboard" equipment takes a signal fed from the console and modifies it in a controlled way. Then the modified signal returns to the console for routing to the appropriate channels. The result is a recording that sounds more like a "production" and less like a bland documentation.

This article will take a look at the most popular signal processors. We'll briefly describe what each one does and how to use it.

Compression

How often have you encountered the following problem when recording a vocalist? Sometimes he sings too softly and gets buried in the mix; other times he hits loud notes, blast-

ing the listener and saturating the tape. Or, he may move toward and away from the microphone while singing, so that the average recording level fluctuates.

To control this problem, you can ride gain on the vocalist—turn him down when he gets too loud; turn him up when he gets too quiet. Or you can use a *compressor*, an amplifier that automatically performs the same function. It reduces the gain (amplification) when the input signal exceeds a preset level (called the *threshold*). The greater the input level, the less the gain. As a result, quiet passages are made louder; loud passages are made softer; and so the dynamic range is reduced. (Figure 1).

Compression keeps the levels of vocals and instruments more constant, making them easier to hear throughout the mix and preventing

loud notes that reduce headroom. With extreme control settings, a compressor can also be used for special effect—say, to make drums sound "fatter" or to give a "sucking" sound to cymbals. Compression is applied nearly always to vocals, often to bass guitar and drums, and sometimes to piano and lead guitar.

Using Compressors

A compressor is usually patched between: (1) the access jacks of the desired input channel on a mixing console; or (2) the appropriate console bus output and tape-track input; or (3) the tape-track output and a line input on the console.

Normally, you compress individual instruments or tracks rather than the entire mix. That procedure makes the effect less audible by applying compression only to those

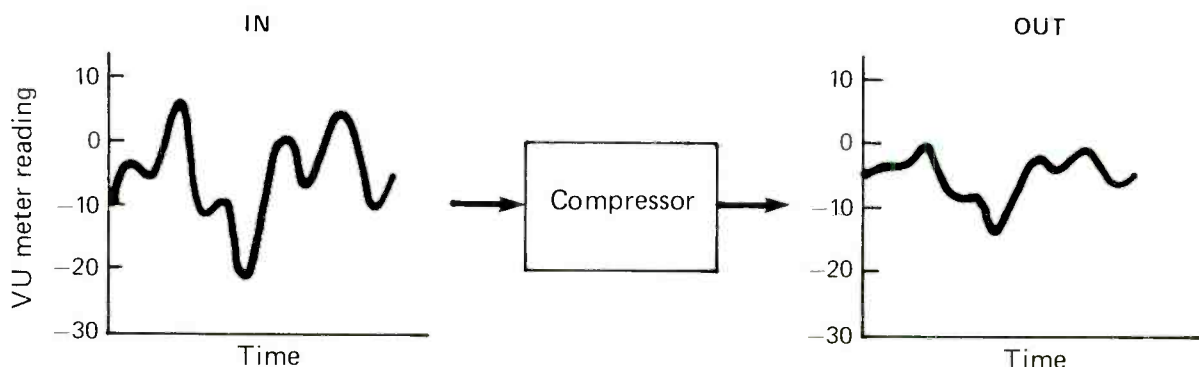


Figure 1. Compression.

instruments needing it. Compressing instrument signals during recording improves the signal-to-noise ratio of the tape tracks, but forces you to decide on compressor settings during the recording session. Compressing tape tracks during mixdown allows you to change the settings at will, but can make tape hiss audible.

Several controls on the compressor need careful adjustment. Some of the following parameters are preset internally on various models:

- *Compression ratio* or *Slope* is the ratio of the change in input level to the change in output level. For example, a 2:1 ratio means that for every 2 dB change in input level, the output changes 1 dB. A 20 dB change in input level results in a 10 dB change in the output, and so on. Ratio settings of 1.5:1 to 4:1 are typical.

- *Gain reduction* is the number of dB that the gain is reduced below unity gain. It varies with the audio level. This control is set so that the gain is reduced on loud notes by an amount that sounds right, or looks right on the gain-reduction meter.

- The *Attack-time* setting controls how fast the gain reduction occurs in response to a musical attack. Typical attack times range from .25

to 10 milliseconds, and many units adjust attack time automatically to suit the program material. The longer the attack time, the larger the peaks that are passed before gain reduction occurs. Thus, long attack times emphasize percussive attack transients; short attack times reduce punch by attenuating the attack.

- The *Release time* or *Recovery time* control affects how fast the gain returns to its normal value after a loud passage. It can be adjusted from about 50 milliseconds to several seconds. Release time must be longer than about 0.4 second for bass instruments to prevent harmonic distortion.

As the gain returns to normal, noise is increased along with the signal, resulting in what is called a "pumping" or "breathing" sound. Release time is usually set for the least objectionable effect, depending on program material. Shorter release times make the compressor follow faster dynamic changes in the music, and keep the average level higher. In some units, the release time is adjusted automatically.

- *Threshold* is the input level above which compression occurs. You set the threshold high (near 0 VU) to compress only the loudest notes; you

set it low (-10 or -20 VU) to bring up quiet passages as well as attenuating loud ones. If the compressor has a fixed threshold, the *input level* control is used to adjust the amount of compression.

- The *Output level* control sets the signal strength coming out of the compressor to the proper level for the input section of the console (usually around 0 VU maximum). Some units automatically maintain a constant output level when other controls are varied.

Limiters

A *limiter* is an amplifier whose output is practically constant above a preset input level. The compression ratio in a limiter is very high—10:1 or greater—and the threshold is usually set just below the point of tape saturation or amplifier clipping. The output of the limiter is virtually constant for input signals above that level, so tape saturation or amplifier clipping is prevented.

While a compressor reduces dynamic range but passes most attack transients, a limiter has little effect on dynamic range but limits the level of attack transients or peaks (*Figure 2*). To act on these rapid peaks,

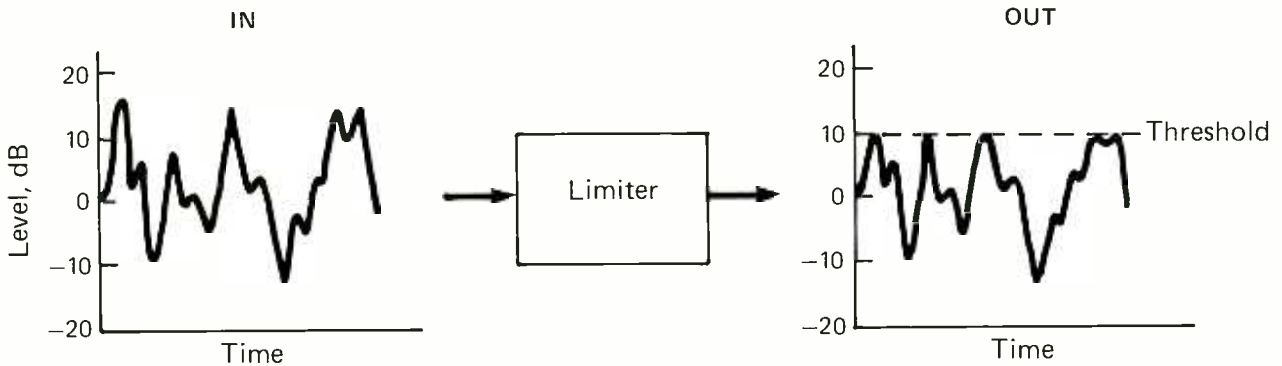


Figure 2. Limiting.

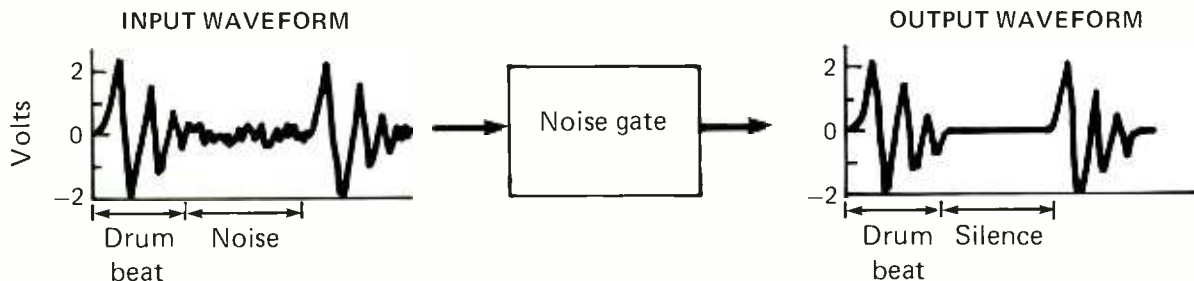


Figure 3. Noise gating.

limiters have a much faster attack time than compressors—typically 1 microsecond to 1 millisecond.

Compressors are sometimes called “limiters”: the setting of the ratio or slope tells what the device is really doing. A *compressor/limiter* combines both functions by compressing the average signal levels over a wide range, and by limiting peaks to prevent overload. It has two thresholds: one relatively low for the compressor and one relatively high for the limiter.

Noise Gates

A noise gate is patched between a tape-track output and a mixing-board line input. The gate acts like an on-off switch to eliminate noises during pauses in an audio signal. It does this by reducing the gain when the input level falls below a preset threshold. That is, when an instrument momentarily stops playing, the signal level is low enough so that the noise gate turns off—removing any noise and leakage during the pause (*Figure 3*).

Noise gates help to clean up drum tracks by removing leakage between beats. They also can be used for special effect to shorten the decay time of the drums, giving a very “tight” sound. Multiple gates are sometimes used on all the outputs of the multi-track recorder during mixdown to reduce buildup of tape hiss. The noise-gate threshold should be set high enough to chop off tape hiss during pauses, but low enough to not remove any program material (unless that is the desired effect). The release time should be very fast for drums and longer for more sustained instruments.

Several signal processors are available that combine compression, limiting and noise gating in a single package.

Echo

Some signal processors mimic the effects of room acoustics by simulating echoes. As we stated in Part 2 [*MR&M*, February 1982] of this series, an *echo* is a delayed repetition of a sound. Echoes can occur acousti-

cally when sound waves travel to a room surface, bounce off and return later—repeating the original sound. Echoes can be electronically simulated by storing a signal in an electronic memory, then playing it back after a slight delay—50 milliseconds to 1 second (*Figure 4*). A device that performs this function is called a *time delay* unit. It typically uses a digital delay line (DDL) or an analog “bucket brigade” circuit to delay the signal. Alternatively, the signal can be recorded on tape and played back as the tape is running. The faster the tape speed, the shorter the delay. Delays around 50 to 200 milliseconds result in a “slap echo” or “slapback echo”—often used in 50s rock ‘n roll tunes, and still used today.

On the mixing board, the *echo send* or *aux send* knob in a particular input channel controls the amount of signal sent to the echo device, and the *echo receive* knob affects the signal strength returning to the console. Using these knobs, you mix the original signal with the delayed signal in the desired proportion (*Figure 5*).

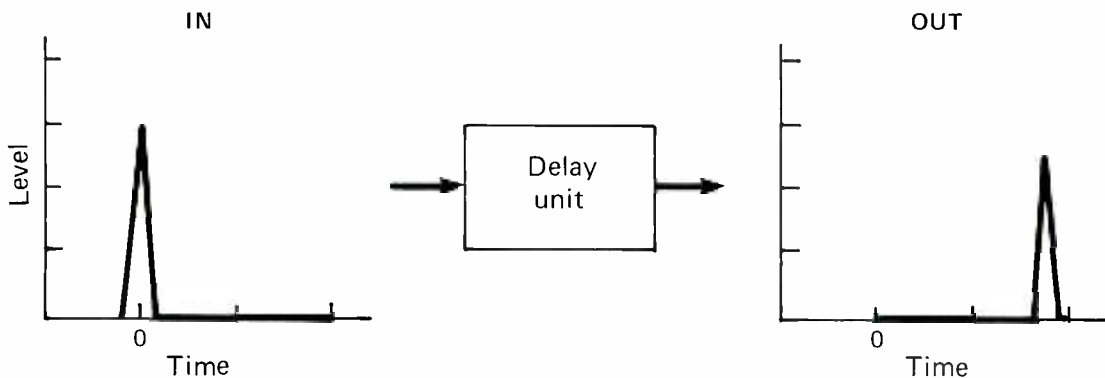


Figure 4. Delay.

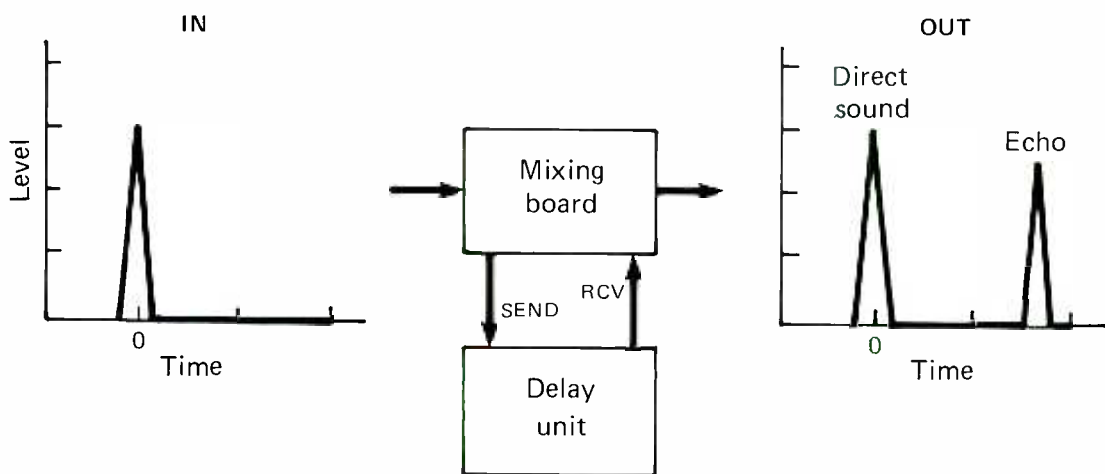


Figure 5. Echo.

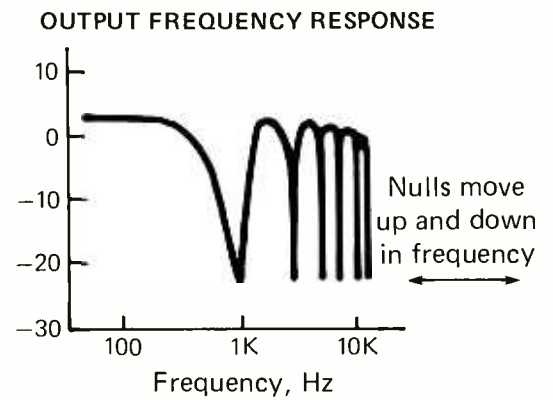
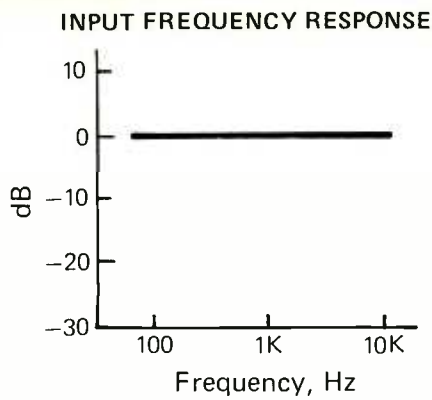


Figure 6. Flanging (or positive flanging).

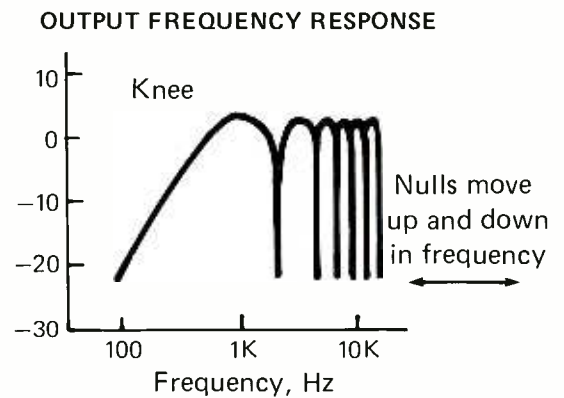
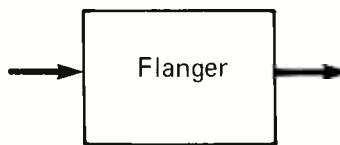
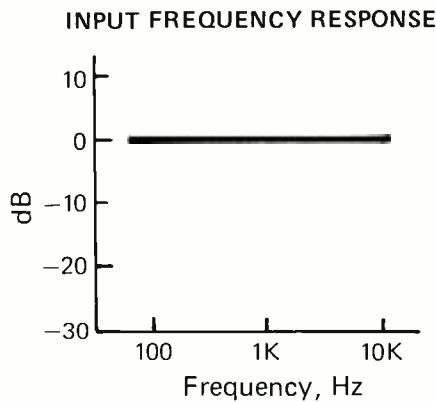


Figure 7. Negative flanging.

Doubling: If the delay is set around 15 to 35 milliseconds, the effect is called *doubling* or *automatic double tracking* (ADT). It gives an instrument or voice a fatter, stronger sound, especially if the original signal is panned left and the delayed signal is panned right. The short delays used in doubling sound like early sound reflections in a studio—thus they add a sense of “air” or “ambience” to close-miked instruments that would otherwise sound too dead.

Doubling a vocal can be done “live” by recording a vocal part, then redoing the same part on another track in sync with the first part. Playing back these two parts together gives a fuller sound than a single vocal track. Note that the repeated vocal part varies slightly in timing and pitch compared to the original part. To mimic this effect, some delay units randomly vary the delay time and pitch of the delayed signal.

Flanging: If the delay is set around 0 to 20 milliseconds, the ear is usually unable to resolve the direct and delayed signals into two separate and distinct sounds. Instead, a single sound with an unusual frequency

response is heard. Due to phase cancellations of the direct and delayed signals combined, there results a series of peaks and dips in the net frequency response called a *comb filter* effect (Figure 6). It gives a very colored, filtered tone quality. The shorter the delay, the farther apart the peaks and dips are spaced in frequency.

In a *flanger*, the delay is automatically varied from about 0 to 20 milliseconds, causing the comb-filter nulls to sweep up and down the spectrum. The resulting sound quality is hollow, swishing and ethereal, as if the music were playing through a variable-length pipe. Flanging is applied most effectively to broadband signals such as cymbals but can be used on any instrument.

Positive flanging refers to flanging in which the delayed signal is the same polarity as the direct signal. With *negative flanging*, the delayed signal is *opposite* in polarity to the direct signal, creating a stronger effect. The low frequencies are canceled (the bass rolls off), and the “knee” of the bass rolloff moves up and down the spectrum as the delay is varied. The high frequencies are still comb-filtered (Figure 7). It sounds like the music is turning inside out!

By feeding some of the output of the flanger back into the input, the peaks and dips are reinforced, creating a powerful “science-fiction” effect called *resonant flanging*.

You can hear what flanging sounds like by using a 2-track tape recorder with Sound-On-Sound. Record a song from a phonograph record (or a commercially recorded tape) on Channel 1. Then rewind the tape to the beginning of the selection. Put the recorder in Sound-On-Sound mode so that the Track 1 signal transfers to Track 2. While monitoring Channel 2, re-record the phonograph record selection on Track 2 in sync with the selection being transferred from Track 1. Match the loudness of the two recordings. To get them in sync, slow the turntable or the recorder by hand. When the two recordings are in sync, there is no delay between them; but when they are slightly out of sync, the resulting delay will cause the flanging effect. To produce negative flanging, reverse the leads to the Track 1 gap of the playback head (don't over-heat!) and repeat the process.

Phasing is similar to flanging except that a phase-shift network replaces the time-delay circuit. The resulting peaks and dips are spaced more widely and irregularly in the frequency spectrum.

Multiple Echo

Let's return to the echo delay setting around 50 milliseconds to 1 second. By feeding some of the output of the delay device back into its input, you create a repeating echo—multiple repetitions that are evenly spaced in time (Figure 8). The delayed output can be fed back to the input and re-delayed by turning up the *recirculation* or *regeneration* control on the delay unit. If the unit has not such control, you can make it recirculate externally. Patch its output into a spare console line input, and turn up that input's "effects send" control (feeding the delay device) for the

desired effect (Figure 9). The higher the recirculation level, the longer the repeats last.

Tape recorders with separate record and playback heads also can produce multiple echoes. You set the "tape/source" switch on the recorder to "tape," and patch the recorder's output back into its input as described above. The faster the tape speed, the faster the echoes repeat.

Multiple echo is most musical if you set the delay time to create an echo rhythm that fits the tempo of the song. A slow repeating echo—say, 0.5 second between repeats—gives an outer-space or haunted-house effect.

Multiple echo is sometimes called *reverb*, although "reverb" is also an abbreviation for "reverberation," a different effect.

Chorus: Chorus is a multiple echo with delays the same as used for doubling—about 15 to 35 milliseconds. It can make a single voice sound like a chorus of voices singing in unison, or give a lead guitar a spacious, "singing" quality. The delay should be randomly varied for the most natural sound.

Reverberation

In Part 2, we said that acoustic

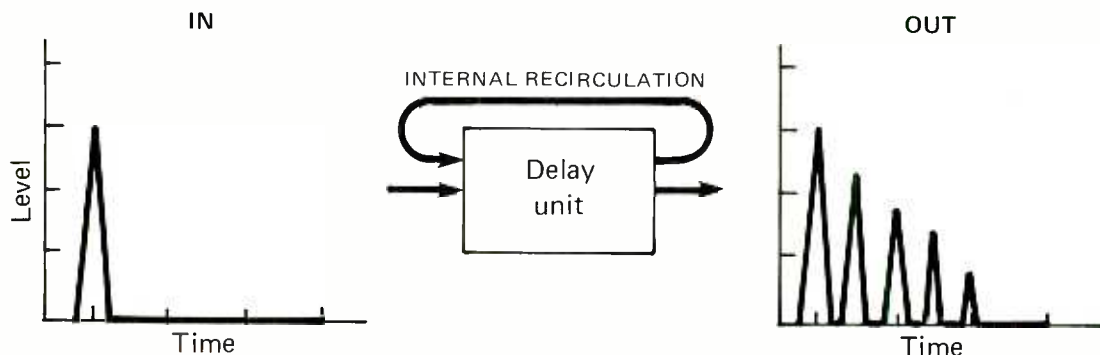


Figure 8. Multiple echo.

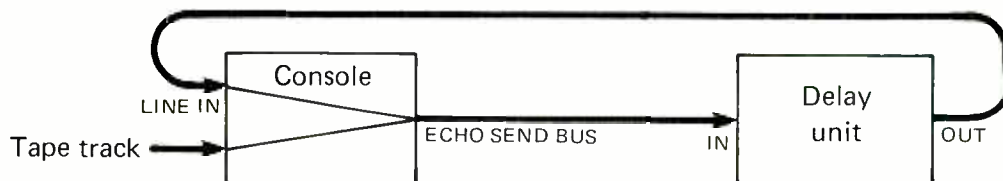


Figure 9. Setup for multiple echo using external recirculation.

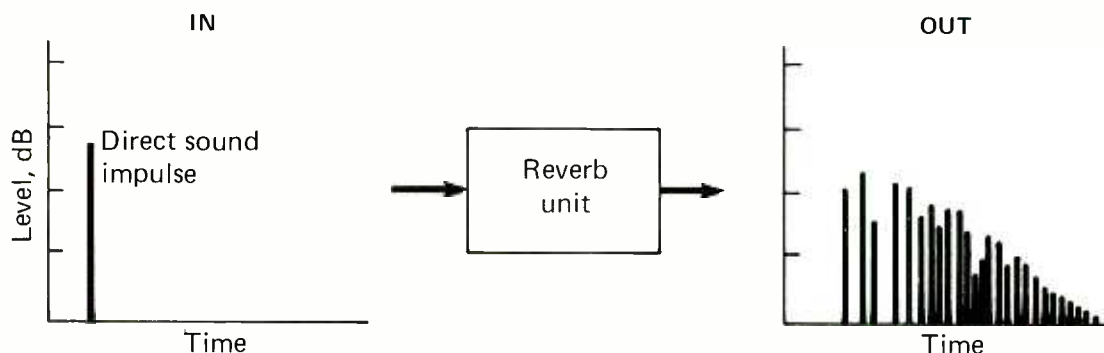


Figure 10. Reverberation.

Summary

Here's a brief description of each effect we discussed:

- *Compression*—reduces dynamic range while passing transient peaks.
- *Limiting*—leaves dynamic range largely unaffected while limiting transient peaks.
- *Noise Gating*—removes noise and leakage during pauses.
- *Echo*—repetition of a sound after a 50 msec. to 1 second delay.
- *Multiple Echo*—recirculated echo (several repetitions).
- *Doubling*—15 to 35 msec. delay for ambience and fullness.
- *Chorus*—recirculated doubling for a multiple-voice effect.
- *Flanging*—0 to 20 msec. sweeping delay (variable-length pipe effect).
- *Reverberation*—random, recirculated short delays (simulates concert-hall acoustics).
- *Pitch Shifting*—varies the pitch of the processed signal.
- *Psychoacoustic Processing*—a special low-level processed signal that adds brilliance.

The first signal processor a home-studio owner should purchase is probably a good reverberation unit, followed by a delay unit or compressor. These devices are practically indispensable in producing a commercial sound.

Special effects help define the characteristic recorded sound of an era. The 50s had the "tube sound" and slap echo; the 60s used fuzz, wah-wah and flanging; and the 70s and early 80s popularized delay and psychoacoustic processors. You make contemporary-sounding recordings by using the latest effects on the market, and by inventing new sounds. It's the *creative* usage of these effects—combining and using them in unusual ways—that leads to ear-grabbing recordings.

More information on signal processors can be found in the following articles in back issues of *MR&M*:

May, June, 1978: "Echo, Reverb and Delay" by Peter Weiss.

August, 1979: "Utilizing Studio Special Effects" by Larry Blakely.

November, 1979: "Building Dual Limiter" by Craig Anderton.

May, 1980: "An Overview of Echo, Reverb and Other Delay Effects" by John Murphy and Jim Ford.

October, 1980: "Building a Hot Springs Reverb" by Craig Anderton.

November, 1981: "Building a Noise Gate" by Jon Gaines.

reverberation was a series of multiple sound reflections which makes the original sound persist and gradually die away or decay. These reflections tell the ear that you're listening in a large or hard-surfaced room. *Artificial reverberation* devices simulate the sound of an acoustic environment—a club, auditorium or concert hall—by generating random multiple echoes that are too numerous and rapid for the ear to resolve (Figure 10). A reverberation unit adds a sense of "room acoustics" or "spaciousness" surrounding instruments and voices.

Note that "reverberation" is sometimes called "echo," although an echo is a distinct repetition of a sound, rather than a continuous decay of sound. In fact, the "echo send" and "echo receive" controls on the console are usually used to adjust the amount of recorded reverberation. The echo-send output on the console connects to the reverberation unit's input, and the reverb unit's output connects to the echo-return input on the console.

The random multiple echoes that form reverberation can be created *acoustically* by sending a signal to a speaker in a hard-surfaced room—an *echo chamber*—where the reverberant sound is picked up by a distant microphone and returned to the console. Or, the reverberation can be *mechanically* generated by vibrating a spring or a metal-foil plate with an electromagnetic driver, and detecting the response of the spring or plate with one or two pickups. Reverberation also can be *electronically* produced through multiple electronic delays and regeneration.

All-electronic units potentially offer the most control and variation of reverb sounds, but are currently expensive.

The plate or foil type has the brightest sound and has traditionally been the most popular type used in major studios. For home studios, spring units are cost-effective and vary from mediocre to excellent. A cheap, "twangy" spring reverb is worse than no reverb at all—a slow tape echo might be a better alternative.

Reverberation units often have two different outputs for a stereo effect. When the echo-return signals from these outputs are panned full left and right, the reproduced reverberation spreads out around the instruments, much as it does in real life. Many units also have tone controls to affect the timbre of the reverberation. Bass rolloff, for example, is used to reduce

muddiness. Some devices even have adjustable reverberation time (decay time) at different frequencies.

A more realistic reverb sound can be created by putting a delay (say, 30 to 100 milliseconds) before the reverberation to simulate the delay that occurs in real rooms before the onset of reverberation. You connect the delay unit between the console echo-send output and the reverb-unit input. In real rooms, there are a few early reflections following the original sound before the reverberation starts, and by simulating these reflections with a delay unit you can create a sense of room size.

Pitch Shifters: Some delay devices can actually change the pitch of a signal in "real time." In one method, the delay is varied in repetitive sweeps every 20 milliseconds. This results in a "Doppler shift" effect that varies the pitch. Devices using this method (such as the Marshall Time Modulator™) employ a bucket-brigade or analog delay circuit. In another method, the signal is read into an electronic memory (a RAM DDL) and is read out at a different rate, varying the pitch. The Eventide Harmonizer™ works this way. Pitch changes up to two octaves up or down are possible, which let you create harmony parts or correct out-of-tune notes!

Psychoacoustic Processors: These devices modify a signal in ways that are easy to hear but difficult to measure. One example is the Aphex Aural Exciter, which adds a special low-level signal to the original signal to enhance the sound. The subjective effect has been described as an "open," "airy," "defined" sound with greater "presence" or "brilliance."

To process a signal with the Aphex, you send some of the track's signal to the Aphex via the echo send or aux send, and bring it back to the console via the echo return or aux return. Inside the Aphex, the signal is high-pass filtered at 500 Hz, distorted mainly by even-order harmonic distortion, and phase-shifted by an amount that varies with frequency. You mix in the Aphexed signal about 20 dB below the original unprocessed signal.

The subjective brilliance is probably due to the added "edge" of the distortion and the "open" sound may be due to the phase delays that mimic sound reflections from room surfaces. The device also is said to make signal peaks louder by increasing their duration.

“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.
Chelmsford, MA 01824

RECORDING WITH

KIM CARNES

By Stan Hyman and Vicki Greenleaf

Everyone except Kim Carnes—and those who know her well—had been skeptical about whether the 34-year-old singer-songwriter could follow up her 1981 Grammy Award-winning Record of the Year, “Bette Davis Eyes,” with another chart-topping effort. However, her seventh album effort, *Voyeur* (EMI-America), has silenced critics and firmly established her as an innovator.

While the LP retains the synthesizer-laden, English-influenced tone of her most-identifiable work, *Mistaken Identity* (EMI-America), the album daringly moves into the more visual aspects of recording. With an extended video LP in mind, Carnes says she has made the songs lyrically graphic. Keeping with that line of thought, Carnes has released, in conjunction with the album, the first “talking press kit”—an audio-visual alternative to the one-dimensional confinements of the traditional press package. In addition to photos—several are outtakes from the *Voyeur* video by Russell Mulcahy—the kit contains a 10-minute interview with Carnes on cassette.

Carnes’ music blends the British influences of such groups as Ultravox, *Classie Nouveau*, *Spandau Ballet*

and the now-defunct *Buggles* with “good old Stones’ rock ‘n’ roll.” The *Mistaken Identity* band, headed by drummer Craig Krampf and keyboardist Steve Goldstein, remained intact for the recording, and, once again, the album was produced by Val Garay at his Los Angeles studio, *Record One*. Carnes credits Garay as another key factor in her recent successes.

As a child, Carnes received the obligatory training as a classical pianist. Although she attended high school during the folk boom, she never liked folk music. Instead, Carnes listened to several R&B groups, including *Smokey Robinson* and the *Miracles*. Ironically, one of her first efforts to gain extensive airplay was a remake of Robinson’s “More Love,” which Carnes recorded on her *Romance Dance* (EMI-America) album. However, her major influence remains rock, with the *Rolling Stones* at the top of her list.

MR&M talked with Carnes in L.A. in the early fall prior to her departure for a European promotional tour for *Voyeur*. Carnes discusses her unusual combination of distinctly-different influences and her unique application of visuals to music.

Kamm's
ON TAP

"WALDORF"
4th Annual
HALLOWEEN COSTUME
PARTY & FLOOR SHOW
BEST FEMALE COSTUME
BEST MALE COSTUME
BEST COMEDY COSTUME
TROPHIES

DRINK GAY
KISS
SHADES
BLIM
ONE
STAR



Modern Recording & Music: Can you describe *Voyeur*? The album's been detailed as very L.A., very 80s.

Kim Carnes: The 80s tag I like. But "very L.A."? I don't think it is. The general L.A. sound is very laid back and this album is certainly not laid back. Most L.A. albums aren't recorded "live"; I think quite a few use basic standard tracks which are later layered. There's hardly any overdubbing on *Voyeur*. Everything was recorded "live." It's probably a lot less polished than a traditional L.A. work. I think there's a lot more energy because it was cut the way it was. But I don't want to make any sweeping generalizations. There are lots of fine L.A. albums that don't fit that mold. When you come right down to it, I prefer not to be categorized...but, it seems to be inevitable it was cut the way it was. But I don't want to make any sweeping generalizations. There are lots of fine L.A. albums that don't fit that mold. When you come right down to it, I prefer not to be categorized...but, it seems to be inevitable. So, we all try to define in terms of categories.

MR&M: Would it be an understatement to say that you're excited about *Voyeur*?

KC: [*Laughs*] Yeah. On every other album there's been a couple of songs that I wanted to bury—like hiding it as the fourth cut on side two. My goal this time was not to do that. There isn't one song on this album that I needed to bury. That's something I never plan to do again.

MR&M: Do you remember where you were when you first heard *Voyeur* on the radio? Do you still get a kick out of hearing your songs on the air?

KC: Absolutely. It's one of the greatest feelings. I was coming home late one night—from Val's studio—and I heard the last part of *Voyeur* on the radio in my car. I remember calling up Val and saying, "It sounds great, wait until you hear it." You never really know how great a song is going to sound until you hear it on the radio. You can love a mix and you can love the way it sounds in the studio because of the EQ and the speakers, but it can sound different on the radio. Fortunately, all the things we wanted to come out—like Waddy's [Wachtel] guitar in the instrumental—leaped right out.

MR&M: Any special vibes with *Voyeur*?

KC: The night we cut *Voyeur*, we all looked at each other, smiled and said, "We've got that old feeling back again."

MR&M: What are the hooks that make *Voyeur* so appealing?

KC: After Craig Krampf my drummer brought me a tape of Duane's [Hitchings] songs, I found myself putting on the tape every day to try to get lyrical ideas. And when I did, I just couldn't stop moving to it. It just wanted to make me dance. I think it's got a pulse. Every time Waddy's guitar comes in, my heart starts pumping.

* * *

MR&M: How long were you in the studio?

KC: We started rehearsing the first of March, the day after the Grammys. It was perfect timing. [*Laughs*] I remember us talking about what a difference it would've made if things had gone the other way. No matter what anyone tells you, it was a lot better to start an album after you'd won Record of the Year as opposed to losing it the night before. [*Laughs*] We were so up and excited. The confidence that it gave to everybody you just couldn't buy.

MR&M: Have your standards gotten tougher as time has gone by?

KC: Yes. That's due in part to having the luxury to take more time and overcut for the album. On my first albums, there was a strict, limited budget and I was at the bottom of the heap. If I didn't like the way a song came out, I didn't have the luxury of going back and recutting it till it was right or throwing it out and trying something else. Now I do. So in the past there were things that I was unhappy about, but I couldn't change. It was terribly frustrating. You should be able to get it as perfect as you can get it at that particular moment. I know I'll never be satisfied because I'm real self-critical, but you want to be able to give it your best shot; not only your contribution as an artist, but the best studio, musicians, equipment as well. I'm definitely more pleased with this album than any of my others. I don't *think* this is the best album I've ever made. I *know* it is. And that's a real good feeling. The next album I'm sure will be even better.

MR&M: Did you expect "Bette Davis Eyes" and *Mistaken Identity* to become such big successes?

KC: We had a good feeling when we

cut "Bette Davis Eyes" and thought that it was going to become a big record. We felt it in rehearsal after trying for several days to figure out an arrangement. It was cut much differently than it was written. After we recorded it, there wasn't a day that went by where someone would come by and say, "I need my fix of 'Bette Davis Eyes'." That went on for months until the song came out. We all knew it was something real special.

MR&M: Did you feel the pressure to top the remarkable success of "Bette Davis Eyes" and *Mistaken Identity*?

KC: Sure, there was some pressure, but there's always pressure when you cut a new album. Under any circumstances, there's pressure to come up with a winner. We weren't in competition with "Bette Davis Eyes." We knew that we could go into the studio and make a killer album. Our primary thought was to make a better album. I was proud of the *Mistaken Identity* album, but there were songs that I wasn't 100 percent happy with. So I could hardly wait to make this album. I wouldn't want to make another "Bette Davis Eyes"-type song. I feel it's important to change.

MR&M: You retained the *Mistaken Identity* band for this album. Is there a basic approach you take to laying down a track?

KC: We've been together for a couple of years now and we're real in tune with each other. We rehearse and then go into the studio to cut "live." Of the first five things we cut, we kept just one: "Looker." After listening to the other four, we realized that we weren't going in the direction we originally wanted to go. So, we had to rethink a couple of things. In general, most of the tracks are cut with a [Arp] Quadra.

MR&M: What are the advantages to cutting "live"?

KC: If you make a very layered record, it's almost impossible to reproduce "live." When you record "live," you don't usually have many problems [reproducing the sound on stage]. Once in a while you may incur problems when you cut a vocal and piece it together to attain a vocal line that sounds good with layered instruments, but there shouldn't be a change in energy level.

MR&M: Can you detail the use of the synthesized drums on the LP?

KC: On four of the tracks, we used

BUDDY RICH IN A CLASS ALL HIS OWN.

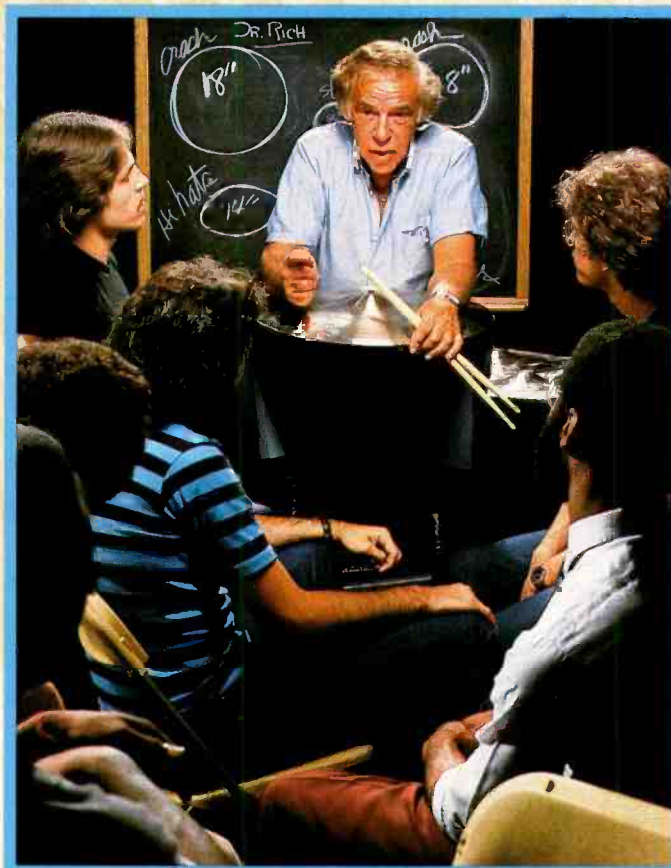
Buddy has been described as a "Blindingly gifted performer – his talent begins where other drummers' ends." No, Buddy didn't say that – he would have, but he didn't. Recently we sat in with Buddy and a group of students during a classroom session in New York. Here's what Buddy did have to say:

On The Drummer's Role.

"When I get on the bandstand, I have to play for my band. Listen, if I don't play good for them, they can't play good for me. So all I am, for the first hour and twenty minutes that I'm up there is the drummer in the band. When I play my solo, that's different, but up until that time, I have to approximate my band's sound. And that's what a drummer is for. The drummer is a timekeeper."

On Practicing. "Practice as long as you feel you want to practice. As long as it's a kick. If it's only 15 minutes and you feel like you don't want to play anymore, put the sticks down and go out. Play stickball, go out and do whatever you want. But then go back when you feel the urge to play, and really play! Remember, there's no substitute for practice."

On Technique. "What you do with one hand you should be able to do with the other. It will help you to get around



Buddy's no stranger to higher education; he was recently awarded an honorary doctorate from Boston's prestigious Berklee College of Music.

the set better and make you more versatile as a drummer."

On The Crash Cymbal. "It's got to be fast. When the brass plays a figure, the crash has to accompany it. It isn't something that you hit after the brass; it has to be right there. It can't be obtrusive, and it can't be more cymbal than brass. The cymbal has to sound like the brass sounds, so that's why I use a higher pitched 18" Medium Thin Crash on the right side and a lower pitched 18" Thin Crash on the left."

On Zildjians.

"Why do I play Zildjian cymbals? Because they're the only cymbals that are playable. You just have to listen to them to know what I mean. I started playing

Zildjian cymbals when I was ten years old – I've never used another cymbal in my entire life."

If you're a serious drummer, chances are overwhelming that you, like Buddy, 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.

MRM 1282

CIRCLE 24 ON READER SERVICE CARD

a drum machine instead of real drums and my drummer was the first person who wanted to use them. There's a certain pulse to "Voyeur," "Merc Man" and "Take it on the Chin" that we could only get with a drum machine. So, Craig played them manually. I think the drum machine is one sound, one pulse, one beat, one feel to a given record. You shouldn't compare them to real drums. I don't think by any means that they will phase drummers out. I believe different instruments can be used in inventive ways without making others obsolete. It's great to experiment. It's important in the creative process. I have a lot of friends who get to a certain point with new sounds and choose to resist. And I think that it can hurt you if you don't keep your mind and ears open to change.

* * *

MR&M: You seem very close to your drummer Craig Krampf. Is there a special musical chemistry between the two of you in the studio and on stage?

KC: Craig's the best I know. His energy and style are unbelievable. He's a rock 'n roller through and through. He's also the guy who—long after the tracks are done—comes to every session, every mix, every overdub.

MR&M: What about [guitarist] Waddy Wachtel?

KC: I've always said that if I could come back in another life, I'd come back as Waddy. [Laughs] As a musician, I've never heard him pick up a guitar without being absolutely devastating.

MR&M: Have you ever been intimidated in the studio by other musicians?

KC: I've never been intimidated by musicians I've worked with. The guys in my band are the most helpful, encouraging musicians. For example, with "Take it on the Chin" I wanted to try playing it myself on the synthesizer because there's a certain little feel—I play a songwriter's piano, which in my living room is great, but you can forget it in the studio [Laughs]—that can be lost when someone else plays it. My version may not be technically as good, but there's a feel that comes across. And with "Take it on the Chin" that was the case. Now, I'm always apprehensive about playing in the studio, but the reason I did it was because Waddy, Cuomo, Goldy [Steve Goldstein] and



"drummer" told me in rehearsal—I was playing it on the string harp to get the feel—that I *had* to do it myself. The confidence and encouragement that they gave me was the main reason I played on it.

* * *

MR&M: Val Garay is highly regarded as one of the best producers around. How did you come to work with him?

KC: I'd known Val for years and had followed his work as an engineer. I always thought that he made some of the best sounding records I'd ever heard. The vocals he always got on James [Taylor] and Linda [Ronstadt] were unbelievable. There was always a punch of energy in those records which others lacked. So, when we needed someone to mix my *Romance Dance* album—which was produced by someone else—Gary Gersh From EMI called up Val and asked him if he was interested. Ironically enough, he said that he had thought of calling up and asking to produce me in the past. So, naturally, he said he'd love to work on the album. He mixed the album, and by the time we were through working—it took about two weeks to complete the mix—we both

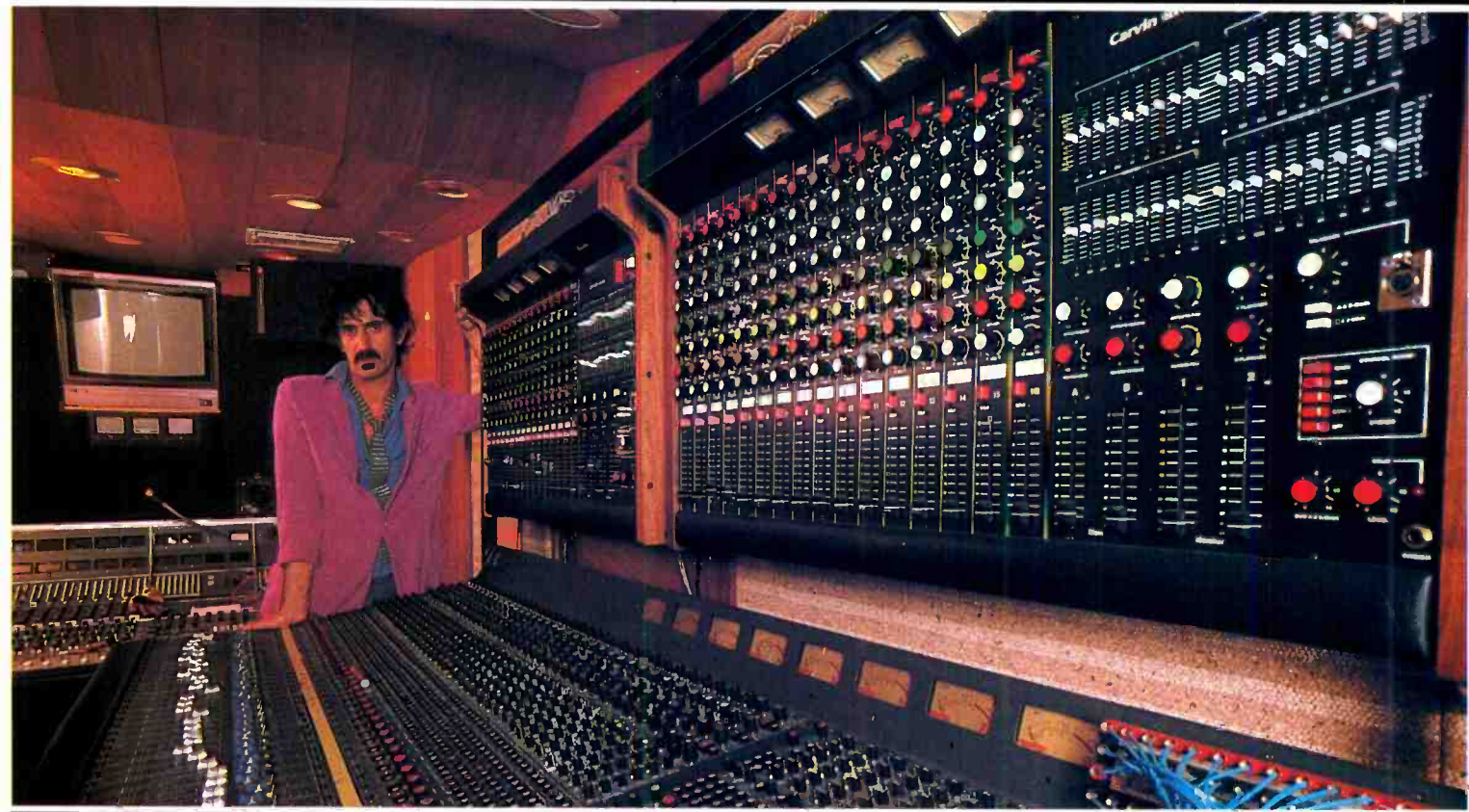
said that we'd like to work together on the next album.

MR&M: What does he contribute to your sound?

KC: Because Val plays instruments and writes songs, he can talk to the band in musical terms; he can speak to us in terms of bars and notes. He also has incredible structural ideas for the arrangement of songs. And, on the other hand, he is a brilliant engineer. For instance, I was looking for a particular sound on "Merc Man." I wanted a real metallic sounding vocal. I had a rough idea of what I wanted and I tried to put them in musical terms but had a hard time doing it. So I asked Val for a real metallic sound, something way out there and he was able to get it. That's where he's a real genius. As far as engineering, I don't think there's anyone who can top him.

MR&M: Has Garay allowed you more creative freedom than other producers gave you in the past?

KC: With both albums [*Mistaken Identity* and *Voyeur*], Val allowed me a lot of freedom. The albums have been true collaborations between Val, Dave [Ellingson], the band and myself; there's no one person who runs the show. I could never work



The Performer Speaks for Himself — So does the Board

Frank Zappa spared no expense in setting up his mobile recording studio for his tour. Along with the most expensive components in the industry, he has chosen 3 Carvin MX-1602 boards.

"For my tour I'm using 2 MX-1602 boards to mix my percussion and 1 MX-1602 for the keyboards. They're working out very well."

FRANK ZAPPA

Other Carvin professional boards include the MX-1608 as shown below. This 16 In x 8 Out board has all the industry standards plus 8 to 2 track mix-down. Ask about our new super Colosseum Sound System Designed for crowds up to 100,000.

Carvin sells direct only, eliminating retail markups allowing you to purchase at our low Pro Net Prices. Plus, you get direct factory assistance if you ever need it. Call or write for special Pro Net Prices.

CALL NOW! TOLL-FREE 800-854-2235 (Calif 800-542-6070) for more information or **WRITE** for our latest FREE 80 page Color Catalog to CARVIN, Dept. MR-39, 1155 Industrial Ave., Escondido, CA 92025. For RUSH 1st Class Mail, include \$1.



CIRCLE 25 ON READER SERVICE CARD

FREE CATALOG
 Enclosed \$1 for First Class Mail

Name _____
 Street _____
 City _____ State _____ Zip _____

MR-39

THE INSIDE STORY



That's what you need for the long haul, and with our 34 you get what you need. We listen to our owners when we begin a new design.

- Full size 10½ inch reels. Two speeds 15-7½ IPS with Variable Speed Control built-in.
- Full frequency response in Sync mode.
- Fully modular, adjustable and field replaceable electronics.
- Full dual process DX4D dbx* available—monitor decoded playback while recording.
- Full documentation supplied with every Series 30 product, schematics, parts lists, alignment procedures, everything you need is included in the owner's manual.
- At TASCAM we make tools, not toys. After the factory polish is long gone, our inside story will still be going strong. Reliability is always our bottom line. We've made our reputation there the hard way. We earned it. With the all new Series 30 Recorder/Reproducers (32, 34 and 38), we also have some good news for your bottom line. Three decades of experience building all forms of magnetic storage make it possible for TASCAM to offer the impossible, 1985 technology at 1975 prices!

We make the broadest line in the industry. From the MM-20 and the PORTA-STUDIO all the way to the 85-16E and M16, TASCAM means business. Multitrack, Multi-image and much more. Talk to your dealer to get the rest of our inside story.

TASCAM

TEAC Production Products

© COPYRIGHT 1982, TEAC CORP. OF AMERICA, 7733 TELEGRAPH ROAD, MONTEBELLO, CA 90640

CIRCLE 99 ON READER SERVICE CARD

*dbx® IS THE REGISTERED TRADEMARK OF dbx, INC., NEWTON, MA.

with a producer who was a dictator and said, "Stand on the line and sing." [Laughs] And Val knows that. The other artists he works with—like Martha [Davis, lead vocalist of the Motels]—couldn't work that way either.

* * *

MR&M: Any anecdotes from the studio that you can share?

KC: Not in terms of mixing. But when we cut "Breaking Away From Sanity," we put down a very elaborate track; Bill (Cuomo) overdubbed a lot of synthesizers while Craig [Krampf] played drums. We took a whole synthesized direction; that was the only track on the album that was kind of layered and I didn't do a "live" vocal because there wasn't enough track to do. Day after day I tried to get a vocal but couldn't find the right one. I'd start off in the morning playing it on the piano and it would feel great. But when I got to the studio, I still couldn't get it, and it bothered me. I usually can get vocals very quickly, especially if it's my own song. [Laughs] Val knew I was having problems; the drummer knew it; Dave knew it. But no one could put their finger on it. But we knew it wasn't the song. Finally, after sitting down at the piano one morning, it dawned on me that the whole problem was that it wasn't being played the way it was intended; sitting at the piano with a real stark vocal. In this case it wasn't the arrangement. So the next day we turned down the lights in the studio and I sat by the piano while Bill played and it sounded like it did in my living room.

MR&M: How did you come to record the children's vocals on "Breaking Away from Sanity"?

KC: Some months before—I don't remember what gave me the idea—I told Dave that I thought it would be wild to hear children's voices on "Sanity," even though I thought that it probably couldn't be done. For me, there is nothing more pure than a child's voice. And "Sanity" is such an emotional song that children's voices would be the most honest thing you could put on it. So, after Bill [Cuomo] and I did the piano/vocal, I said to Val, "This might be a crazy idea, but what about putting children's voices on "Sanity"? You wouldn't want to try it would you?" And he said, "Are you kidding? It sounds like a great idea; let's do it." The next day we put the kids on it, and the minute they

started singing, it brought the chills back. So, with that song, we went through a complete change. You always have to trust your instincts. You can't hype yourself that a track is right if you can't feel it in your gut. I'm real intuitive, and have to follow my gut feelings. When I haven't, things didn't wind up real well.

MR&M: How involved are you in the mixing of your albums?

KC: Totally. I can't imagine an artist not being totally involved. When they're adding a little EQ or dimming the faders, I've got to be there. I mean, you write the song, you rehearse and you record, so you've got to be there for the mix. That's when it all comes together or falls apart. I'm part of every single step. I think it's critical.



MR&M: Can you describe your songwriting process?

KC: I'm real unstructured as a writer. There are no rules when I write a song; it's different every time. I write at the piano and—in most cases—write lyrics and melody at the same time. In the case of "Voyeur," Duane wrote the melody first and Dave and I wrote the lyrics a month later. But usually we stick them together. When I get in the right frame of mind, it comes out like crazy and it's very easy. But if I'm not [in the right frame of mind], there's nothing that can help me to write. I'm, definitely not a nine-to-five writer. Sometimes my best ideas have come to me in the middle of the night [Laughs] and I'll get out of bed and write them down. I also write in the car. I'll write it down on the back of an envelope or on a road map. It's usually scribbled and is a mess to read. But, somehow, it always works.

MR&M: What about when you collaborate on a song?

KC: Except for Dave, I don't ever sit down in a room and write with someone. It just doesn't work. Writing, for me, is a very personal thing. With Dave...we have a rapport in which we can tell each other that a particular idea stinks. When you're collaborating, it's important to be candid.

MR&M: Is there a particular instrument you write on?

KC: I write on the piano and the [Sequential Circuits] Prophet. Jim Mazza of EMI gave me a Prophet for my birthday last year. It was a gift for this album. Duane Hitchings and Bill Cuomo, my keyboardists, use the [Oberheim] OBX a lot. But I primarily write on just the two [the acoustic piano and the Prophet].

* * *

MR&M: Has video affected the way you approach your music?

KC: Yes. It changes the way you write 'cause you're thinking in terms of visuals. It also changes your instrumentation and the way you perceive an album. "Voyeur" and "Thrill of the Grill" were written visually graphic. Video opens up a whole different world. As we're recording, we're thinking in terms of what's going on visually and how it will translate to the record.

MR&M: Will video replace touring?

KC: No. It's never going to replace "live" shows. It's a whole different thing. There's nothing that compares to being at a show and seeing the energy from a performance. There's still something very special about top-40, FM and AOR stations. Video is just another new avenue of expression that has yet to be fully explored.

MR&M: Do you enjoy interpreting other artists' work as much as writing your own?

KC: Sometimes I do, but most of the time it just doesn't work. We had four outside songs for this album that I originally heard on demos. At the time I thought they were great. But when I did them, it didn't happen. With "Bette Davis Eyes" something magical happened. When I write a song, I can close my eyes and it's the most honest thing I could sing. I understand what we're trying to convey. But, there are exceptions where other artists' work is just right. "The Arrangement" I heard on a demo and couldn't wait to sing it.

And it worked. I'll always do some outside songs on an album.

MR&M: Who have been the major influences on your work?

KC: I can go all the way back to Tomita, the Japanese artist. That was the first synthesizer-oriented album that turned me on to that kind of sound. His album, *Snowflakes are Dancing*, was just breathtaking. I went around screaming, "Listen to those strings!" At that point in time, I wanted to use synthesized strings on my demos. People told me that I was nuts. They said it was just cheap strings. But for me, it was a whole different game. If it's a string part

and the synthesizer is played right, the emotion can come out of it. That's true of Alan Parsons. He's the master at that time. I truly wore his *I, Robot* album out. [Laughs] He was doing synthesized albums when nobody else was even practicing that much. A lot of people still don't get it. I guess it's something you either like or don't. I know for myself, Val and most of my band, that we've been influenced by the European bands who utilize that sound. On this album, we wanted to continue combining the guitar with the synthesizer—blending the synth with rock 'n roll. Flock of Seagulls does just that. It's not just synthesized. And for my own music right now the

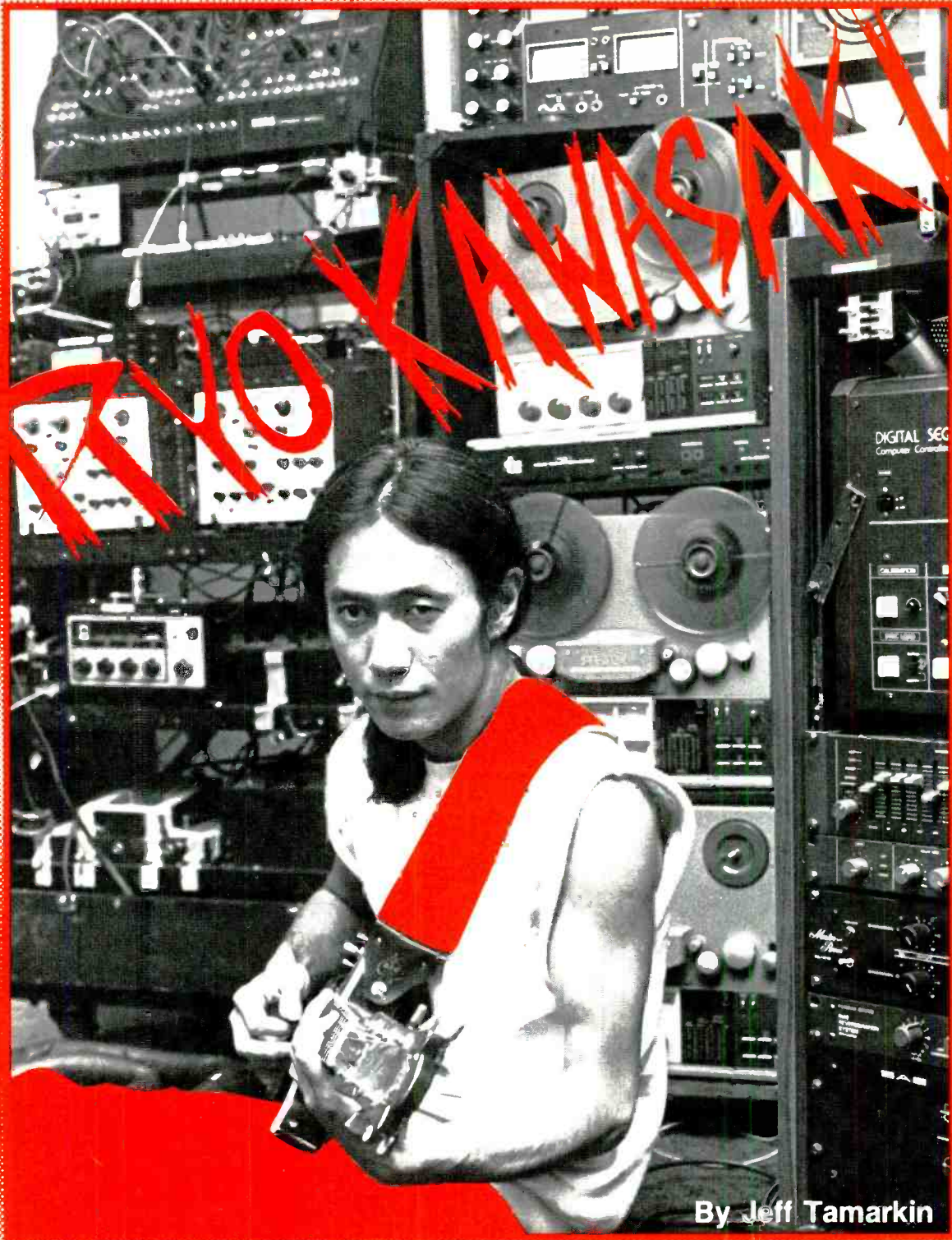
combination of the two seems just right.

MR&M: Who are you listening to now?

KC: I was listening to [the Rolling Stones'] "Start Me Up" the other day for the millionth time. It's great. I love it. It's one of my favorite songs. When the record comes on in the car, you want to turn it on full blast. I hope people feel the same way about my albums. A lot of my stuff is based around synthesizer, but there're big guitars with a lot of power under them. We're utilizing sounds and incorporating everything. That's what rock 'n roll is all about, and it's magic. It's what keeps me going.



Profile



By Jeff Tamarkin

Ryo Kawasaki is recognized in his native Japan and among progressive jazz enthusiasts everywhere else as one of the most innovative jazz guitarists. Although he is without a record label in the U.S. at the time of this writing, he has released over a dozen albums under his own name (four in the U.S., the rest in Japan and Europe), and has appeared on recordings and in concert with such well known jazz greats as Gil Evans, Cedar Walton, Elvin Jones and Joanne Brackeen. But none of these recordings, with the exception of Kawasaki's latest Japanese release, simply titled *Ryo*, will prepare the listener for Kawasaki's latest musical excursions.

Kawasaki has developed a solo guitar synthesizer program that can potentially revolutionize the instrument, and the *Ryo* album (Phillips Records, Japan), recorded in Kawasaki's New York City loft studio is the first vinyl evidence of Kawasaki's research and development—the first all-guitar synthesizer solo album. There are no keyboard synths on the LP, and yet the sounds Kawasaki elicits from his machinery are as colorful (if not more so) as any elicited from any electronic keyboard thus far invented.

Working originally with a basic Roland GR-500 guitar synthesizer, Kawasaki added on Oberheim modules, Korg rhythm boxes and just about every other available effect capable of bringing his guitar to a number of musical worlds never before heard in conjunction with that instrument. When he plugs in at his loft studio, where he lives and keeps his equipment, and a vast array of ethereal orchestral sounds are emitted from his awe, there is no mistaking that the man has created a monster. When his followers discover these new techniques, the sound of guitar as we know it will change, just as the mass acceptance of keyboard synths in recent years has altered our perception of electronic keyboards for good.

Kawasaki's mastery of electronics does not detract from his talents as a guitarist, however. If nothing else, he would still be one of the most spellbinding jazz guitarists on the scene today. At a recent Carnegie Hall

concert, Kawasaki joined a number of jazz legends in a tribute to the late Thelonious Monk, and had his fellow musicians stopping to watch him and listen to his fluid, intelligent, pure guitar work. Obviously, Kawasaki is a man whose concept of jazz embraces the past and looks steadily toward the future.

He was born in Tokyo in 1947 and started playing guitar at 16. He went to the university following high school and majored in physics, continuing a long fascination with that science. Kawasaki worked around Tokyo with various jazz groups and began recording for Japanese labels. By 1973, however, recognizing that the roots of jazz and its best practitioners were in the U.S., Kawasaki came to America to further his career. Within two weeks, he was a member of Gil Evans's band, where he stayed until 1975, when he joined the Chico Hamilton Group. He moved on to Elvin Jones's band in 1976, and he stayed with Jones for about two years. By then he'd recorded a few records in the U.S. and he decided to leave Jones to concentrate on his own concepts.

He worked with Joanne Brackeen for some time, but by 1979, Kawasaki formed the first of his Golden Dragon groups. Their first album, for the Japanese CBS/Sony label, was also the first to feature Kawasaki's customized guitar synthesizer. That edition of *Golden Dragon* was temporarily shelved while the guitarist formed a group called *Sapporo*, which toured Europe and recorded an album in Switzerland.

In 1981, a new *Golden Dragon* was put together, and the group, featuring vocalist Ilana Morillo, has been gigging steadily in the Northeast area. Since then, Kawasaki has been refining his solo guitar synth concept, and it was manifested on the exquisite *Ryo* album early in 1982. The LP, which includes Kawasaki's original compositions, was a true solo effort—Kawasaki played the entire contents by himself, engineered and produced it, arranged it, etc. It was shortly after the album's release that Kawasaki spoke with MR&M's Jeff Tamarkin.

Modern Recording & Music:

You've developed quite a guitar synthesizer system. Why did you decide to expand beyond "simply" playing guitar?

Ryo Kawasaki: My background was in audio, building amplifiers and such, when I was a kid. Then I started playing the guitar, and was involved with that for about 15 years. Then the Roland company made the GR-500 guitar synthesizer, and after discovering that I started branching out into my current, let's say, hobbies. I always used a tape recorder as part of my setup. The oldest one is a Teac [3340] which I still have. It's an antique, though, as far as its weight and even signal-to-noise ratio. The Fostex [A8], which came out after the Teac and which I use now, is of course more advanced.

MR&M: Did you do a lot of research before you built your system, or did it just grow piece by piece?

RK: I keep adding different effects. The GR-500 I got tired of in about two days, so I added an Echoplex and it sounded a little better, but it could only go so far. So then I bought one Oberheim expander module—it's too bad they don't sell those anymore—and then I became more interested in adding string sounds than keyboard sounds; I think they're more interesting. But that's only one sound I can get so I decided to use one expander module exclusively for the strings, and I added another one for different melodies. Then I bought the Roland sequencers. I now have one CSQ-100 and two CSQ-600s. Then I got a Korg NS-15 and Korg X-911 [sequencers]. The X-911 is terrible if you use it with guitar; it doesn't even track. Then I just decided to interface from the GR-500 and it works fantastic all the time. Then I got into rhythm machines [Roland DR-55] and the Roland TR-808 for recording. I use a

Roland Dr. Rhythm drum box.

MR&M: Have you ever thought of marketing your creations for others to use?

RK: What I'm doing is interfacing what's already out there. Anybody can do this if he has a decent mind. The way it is arranged is unique so therefore it functions in a unique way. If you buy a Prophet or an OBX the programming only gives you one type of sound. But I'm really into a symphonic sound and that is always a combination of different sounds to produce one sound.

MR&M: How did you modify your guitar to be usable with this system?

RK: I changed all the pickups and I added on a lot of switches.

MR&M: When you go on the road, how do you manage to recreate the sound you get in the studio with all of these machines? Obviously, you can't carry around this whole system.

RK: Actually, I brought it to Japan once; it cost more than people

to ship: about \$2,500. Fortunately, there were no accidents with it. But anyway, I want to add that this is just my side things: I'm also just a straight guitar player.

MR&M: And quite a good one I might add. I heard you play recently at a tribute to Monk at Carnegie Hall and you played beautiful jazz guitar. That's the other end of the spectrum from what we've been discussing. Do you like just getting out and playing a guitar with no synthesizers or does that seem antiquated to you?

RK: Well, that's my background. I played with Elvin Jones for three years.

MR&M: Did you enjoy that?

RK: It was great. The only thing I didn't like was that I didn't get time to spend at home. But it gave me the opportunity to practice classical guitar.

* * *

MR&M: Since we're discussing background, let's start at the beginning. When did you start playing guitar and why did you choose jazz as opposed to rock and roll or anything else?

RK: I started playing in the early 60s in Japan. The reason I became interested in more complex music, like jazz, is because I have a background in physics—I studied physics—and I have a scientific mind. So rock and roll was too simple for me and jazz is very mathematical in a way.

MR&M: In the last few years there have been a number of excellent jazz players emerging from Japan, but when you first started out were there a lot of jazz musicians in Japan?

RK: Yeah, there were a lot, but not so many originals. They were mostly copying from American records. And they may have been able to get the notes off the records, but they didn't have the attitude. They weren't involved in a society that jazz came from. Some of the musicians, like Sadao Watanabe, who is quite a bit older than me, came to the States and did quite a bit to bring the real thing to Japan.

MR&M: Has it changed over there? Are there more original composers?

RK: Not so much in jazz. I looked for them last time I went back and I didn't hear much. They now have people there playing reggae, too, but just the instrumental parts. And it



sounds strange because with something like reggae, all the messages are in the words. But they've developed their own system of doing things there—they sell records their own way, promote them, etc.—but in my way of thinking, it's still not original.

MR&M: Can you foresee a time when Japan will develop its own jazz styles and influential, original musicians? Will Japan ever be able to produce its own Miles Davis or John Coltrane?

RK: It's possible, but for me, the way I see it, I have to be here if I'm going to be able to do that. New York is where you have to make it. People can make it in Japan but when they come to New York they still have to struggle.

MR&M: What was your impression of the New York jazz scene the first time you came here?

RK: It was great. I could see everybody. And I don't know if it was a coincidence, but I got called from Gil Evans to play two weeks after I

got here. And I didn't know what he was saying so I asked him to write it out on paper. Then I asked my roommate if I understood right, that he was offering me a gig, and that he was going to pay me \$100 a week and the gig starts next week. My roommate said it was true.

MR&M: How did he know about you?

RK: I don't know. I never asked him to this day. I think it was because I'd done some playing with Teruo Nakamura the day I got here and there was a trumpet player sitting in that night who was playing with Gil at the time. Gil was looking for a guitar player and he probably recommended me.

MR&M: Who were some of the guitarists who influenced you?

RK: The first one was Kenny Burrell, who's still one of my favorites. Then I started listening to everybody: Wes Montgomery, Grant Green, Barney Kessel, Jimmy Raney, Jim Hall. I had a job as a tape editor

for a company that made music tapes for hotels, restaurants, etc. They had order sheets and my gig was to put the music on the tapes for these customers. Then they would give me whatever tape was left over, which was nice. So at the end of each day I'd borrow whatever records I wanted to tape from the library, then go home and tape them. So I listened to a lot of music, especially guitarists. And I also learned editing.

MR&M: Did your physics background come in handy when you started putting together various electronic components?

RK: I don't know, because physics to me is something like religion: it's less practical and more philosophical. It's a way of looking at things.

* * *

MR&M: What were your early records like? Were they straight jazz?

RK: Well, yeah. My favorite musician was Miles Davis and my favorite album was the one called *Jack Johnson*. So I was interested in that kind of funky jazz, the jazz attitude. And I'd say the jazz attitude was more based on improvisation and less structure... that sort of thing. On my latest album (*Ryo*, on the Japanese Philips label), the whole second side

is improvised. I don't sit down and say the melody is like this and this is like this; I don't construct that way. I just mess with the machine and decide if I like it or not. If I'm in tune with what's going on, I can create a melody right away, just like that. If I don't like what it sounds like, I just edit it out. If something is missing, I just overdub. Actually, it's the same thing when you compose with a piano and paper. You never know what it's going to sound like until you play it. This way you play first, though, and then you start condensing.

MR&M: Your records aren't totally spontaneous, though. Don't you accumulate ideas over a period of time and then put them down on tape when you record?

RK: Yeah, but it comes from the sound. It's the same thing as a classical composer: if you want to write for a cello, you think of the sound of a cello and the sound of an orchestra, and then you figure out how to put them together. I know what kind of sound all my equipment can produce so it's just a matter of trying to put them together, to create a story and the dynamics.

MR&M: How many albums have you had released in the U.S.?

RK: Four altogether: two on Inner

City, one on Audio Fidelity and one on RCA. But I have thirteen albums worldwide. I haven't had much luck in the U.S. Inner City folded about a year ago and Audio Fidelity went bankrupt right after I made the record.

MR&M: Are you looking for a label now?

RK: I'm not interested in the old stuff, unless somebody wants to re-release it. I am interested in finding someone to release what I'm doing now. In the last ten years I was more interested in building myself artistically, but now I'm interested in the market, too. This is the first solo guitar synthesizer album ever made—there are no keyboard synthesizers on it—and I don't think anyone has really heard that yet.

MR&M: Is the fact that you're from Japan a reason that the American labels are reluctant?

RK: That's one reason, but I don't think it's the main one. It might be a little easier if I was an American. I hear a lot of records that aren't as good as what we're doing. I think one reason is that a lot of the business people in the record industry like to have artists that they can control, not someone like me who does everything by himself.



MR&M: You've given your music a label that you like to use when describing it. Can you talk about that?

RK: I call it "Third Wave" music. It's connected with a book called *The Third Wave*, which is about the way culture develops in human history. The First Wave was agriculture; the Second Wave was industry; and the Third Wave is electronic. It's involved with a lot of micro-processors and computers. Let's say that jazz and rock were evolved in the Second Wave and most of the record company executives are from the Second Wave. They don't have the insight about where the culture is going to. Probably in ten years everybody will have a computer. The technology, in relation to music as well, will advance, and as long as you have a musical mind you won't have to have any chops at all because all you'll have to do is throw switches.

MR&M: Will music ever evolve to the point where musicians will become unnecessary and obsolete?

RK: It will always be nice to play with different musicians. It inspires you to go in different directions. If you hear something you like that you didn't think of, you can go with it. It should be incorporated with the technology.

MR&M: You have the best of both worlds, because you play "live" with your band, Golden Dragon, and then you do your solo thing.

RK: It's different. When I do it by myself, the attitude is more like playing chamber music. When I go out, the attitude is "live" music. What I don't like about a lot of recent albums is that even if it's a band playing, they make it sound like chamber music. I want to hear what I'd hear on the bandstand—full drums, not syndrums. It shouldn't sound like everything is compressed. You don't need a band to do that; I can make that sound by myself with a rhythm machine.

MR&M: There's nothing more boring to me than going to see an electronic band "live" when all they do is stand there and punch buttons.

RK: Right, it should be "live"; you should see them sweating. It should be uplifting and inspiring.

MR&M: When you play "live" with your band, Golden Dragon, is your music totally improvised?

RK: We have tunes and structures, but what I'm interested in is momentum. Otherwise you might as

well just record it and listen to the record. What's important "live" is that something else comes out of the energy for the musicians and the audience. My attitude is that jazz is a jam, but it has to be intelligent, not stupid. It shouldn't be just the blues. If I hit a chord the bass player should know which note to hit to support that chord. The drummer should know what kind of accompaniment to play. I like to integrate that stuff, to make a symphony from jamming. It's the future of jazz. I respect jazz, but like Gil Evans told me, the radio stations are too historically oriented when it comes to jazz. I want to use the jazz attitude toward the future. When I play I respect the past and I endure the present, but I want to imply the future.

MR&M: I know you've played in planetariums. How else would you like to incorporate visuals with your music?

RK: There are things I'd like to do, but music is music, and I don't want to mix them up. The music should be able to stand by itself, but I'd like to be able to associate with some other form of the arts.

MR&M: You recorded the *Ryo* album here at your home studio in New York. Can you talk about what went into the recording of that album?

RK: When I first got the deal I thought I'd have to go into a recording studio. But I didn't want to have to deal with engineers watching the clock. That's how it is at most studios—they're not creating anything. So I decided to invest—the whole thing cost about \$6,000—and a good thing is that all the equipment I bought for the recording I can use for my sound system. I recorded the piece "Concierto De Aranjuez" first because it was the hardest piece. I memorized the whole arrangement and I sang into one track of the 8-track. Then I started overdubbing the bass, violas and violins; then I bounced them to one track. Then I overdubbed the guitar part, then flute, oboe, and so on. It took about one month, splicing the sections together. One problem I had was that there's a fire department across the street and one truck always stays downstairs for about three hours during the night with his engine running. Also, my refrigerator makes a click. So I had to turn it off whenever I recorded my acoustic guitar. But then all the food went bad.

MR&M: Can you run through some of the equipment you used?

RK: The basic foundation is the Roland GS-500 and the GR-500. The GS-500 is the guitar part and I changed everything. I changed the peg to a Yamaha. Yamaha gave me some guitars because I endorsed them, and I took some of the parts. I took the pickup and made it two pickups. I took a lot of trigger switches. In the synthesizer rack, the basic GR-500, two Oberheim expander modules, a Korg X-911 guitar synthesizer and a Korg NS-15 expander module. I have two Roland CSQ-600 sequencers and one CSQ-100 sequencer. For the drum machine, I have one Roland DR-55 and a Roland TR-808. I have one Echoplex and a mini-mixer.

For recording, the main unit is a Fostex A8. One of the reviewers in your magazine said that it is impossible to use this machine to make the album we did, but it's not true. You can use a Teac, a cassette. What's important is that the music comes through. A record can be done on anything as long as the message comes across. This Fostex is quiet. People might say that this 8-track doesn't have the dynamic range but you don't need that on an 8-track. When you mix you can get the dynamic range. For mastering I used dbx 150 noise reduction and the mixing on a Fostex 350, which is very compact. I have a graphic equalizer. I use Koss and Sennheiser headphones and the speakers are mostly self-made.

MR&M: Do you see yourself first as a guitarist or composer or as a technician?

RK: I'm a guitarist, but my love is for composing. That's what I want to get more into. But I'm also a straight jazz, classical and rock guitar player. The problem with classical is that you really have to practice every day and the reality of my situation is that I can't do that. I also love blues, although that's not really been exposed yet.

MR&M: Would you like to produce other artists?

RK: Yes, as long as the person is coming from a sincere place. If he's coming from someplace else, then good bye.

MR&M: One last question: What is the Fourth Wave going to be?

RK: Hmm, the Fourth Wave. Uh, probably like *Star Trek*, when you can just beam yourself anywhere, with or without instruments.

Ambient Sound

By Len Feldman

New Tape Recorder Standards—Maybe!

By the time you read this, the EIA (Electronics Industries Association) membership may well have voted to accept a new set of measurement standards relating to tape recorder performance measurements. For those of you who haven't been following the tortuous path of audio standards as they are promulgated in the United States, let me bring you up to date on how we arrived at this point. The old IHF (Institute of High Fidelity), which used to work on audio consumer product standards in parallel with other national and world standards bodies, was absorbed by the EIA a few years ago. In the course of that consolidation, the EIA retained me as a part-time consultant, and one of my duties is to push forward the creation and adoption of measurement standards relating to audio products. An excellent FM tuner measurement standard was completed before the IHF/EIA merger. An amplifier measurement standards committee, headed by its able chairman Edward Foster, had just finished its work at about the time the merger took place and that standard has since been taken over and adopted by EIA.

Ed Foster did such a fine job in chairing the amp standards committee that we induced him to take on the chairmanship of the tape recorder standards committee. That committee has been working on the new standards since late 1978, and now it's just a matter of dotting the "i's" and crossing some "T's." One more meeting, scheduled to take place during the autumn Audio Engineering Society (AES) meeting, should wrap things up, so I thought it would be a good idea to give you a preview of some of the new measurement techniques that will appear in the new standard. If past practice is any indication, it will take anywhere from two to three years before the industry as a whole starts to use the new standards. That's what happened in the case of both the tuner standard and the amplifier standard. But those of you who read our lab reports will recognize such amplifier measurements as Dynamic Headroom, IHF-IM Distortion, Slew Factor and many more. All of these came into being with the new amplifier standard. Hopefully, the same thing will happen once the new Tape Recorder Standard is adopted.

New Reference Levels

One of the most important elements of the new standard is the establishment of new reference levels. As we have emphasized so often in our test reports, every cassette deck maker has his own ideas of where "0 = dB" record level should be. Accordingly, some cassette deck makers set "0 dB" at a magnetization level of 145 nWb magnetization levels, others set it at Dolby level (200 nWb/m) while a few even set it at DIN zero (the level called for in the German national tape standards: 250 nWb/m). If you think the situation is prevalent only in cassette decks, let me assure you that the same sort of thing happens with open-reel machines. Some makers use the now antiquated "Ampex 0" reference (185 nWb/m), others use 200 nWb/m and still others establish 320 nWb/m as a "0-dB reference" on their meters.

Because of these different 0 dB reference levels, it has not been possible for the industry to publish signal-to-noise ratios that relate to "0 dB" on a given machine. Instead, common practice has been to reference signal-to-noise ratios to the recording level at which 3% harmonic or third-order distortion (in other words, tape saturation) occurs. That kind of measurement, more often than not, tells you more about the characteristics of the tape being used than about the performance of the tape deck being tested.

In the new standard, 250 nWb/m will be used as the "0-dB" reference level for *cassette decks* while 400 nWb/m will be used as the "0-dB" reference level for open-reel machines. These higher reference levels will accomplish two things (besides the obvious one of standardizing everyone's measurement techniques and allowing prospective purchasers of equipment to compare "apples and apples" instead of "apples and oranges"): The new reference levels take into account the improvements in tape software and hardware that have taken place over the last decade or so. If most premium grade tapes operated in most modern tape decks can accept recording levels of 400 nWb/m (in the case of open-reel units), what's the sense of calibrating machines 6 dB lower and then bragging about an extra 6 dB of "headroom"? That's just deceptive and confusing to the neophyte as well as to the seasoned recordist.

The second benefit to be derived from the new reference levels is that it will, once and for all, end the often ridiculous comparisons that are often made between the performance of cassette decks and open-reel machines. By setting both open-reel and cassette tape reference levels near their maximum capabilities, there is less of a likelihood that the uninitiated will come away from a comparison of spec sheets thinking that a certain cassette deck actually offers greater dynamic range than a certain open-reel machine operated at 7½ or 15 ips!

Frequency Response At What Level?

An important portion of the proposed new standard deals with the measurement of frequency response (or, more correctly, amplitude versus frequency measurements). If you think signal-to-noise ratio measurements and 0-dB reference levels have been confusing in the past, that's nothing compared with the various and sundry ways in which tape deck frequency response has been specified in spec sheets until now. In the case of cassette decks, it has been somewhat of a tradition to take record/play response curves at a level of -20 dB. But, as we have seen, -20 can mean -20 dB with respect to "0-dB" reference points that can be as much as 6 dB apart! And then again, not everyone has adhered to the -20 dB level for frequency response. Some have used -25 dB and a few have insisted on -30 dB. As you get further away from a fixed 0-dB reference, you also get further away from possible high-frequency tape saturation and that, of course, makes some tapes and tape decks look better than they would if the tests had been performed at a somewhat higher level.

Well, after much debate, the Tape Recorder Standards Committee decided that all frequency response measurements (and published statements) shall be referenced to -25 dB for cassette decks (remember, that's 25 dB below the common 0-dB reference level of 250 nWb/m), while for open-reel machines, the frequency response will be measured at -10 dB for 15 ips tape speed, -15 dB for 7½ ips, -20 dB for 3¾ ips and, as with cassette tape decks, -25 dB at 1½ ips. Again, bear in mind that these dB levels are all with respect to the new 0-dB reference level for open-reel machines of 400 nWb/m.

Frequency Response Plus Noise Reduction

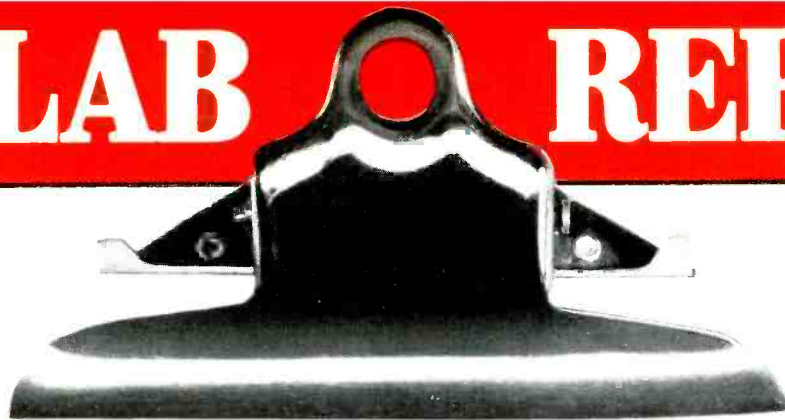
When have you ever seen a tape deck spec sheet that tells you what the frequency response is when built-in noise reduction is applied? Admittedly, this is not much of a problem with open-reel machines—few of them have built-in NR. But almost every high-quality cassette deck sold today has some form of noise reduction; usually Dolby B or Dolby C or perhaps another form of "sliding band" or frequency dependent NR system. Miscalibration of such noise reduction systems can cause serious aberrations in overall record/play frequency response that will not show up if the response measurements are made only with the NR system turned off. Accordingly, the proposed standard is going to require that record/play response be quoted both with and without noise reduction turned on.

While it may sound obvious to you, the standard is going to require that the manufacturer not only tell you what the frequency response of its product is, but also what tape it used to make the measurements. Most tape-deck makers don't want to offend any high-quality tape manufacturers and so they have adopted a practice of listing a great number of tapes (often a couple of dozen or more) that they "recommend" for use in their products. All well and good, providing they tell us which one was used to calibrate the machine, especially if it's a deck that can't be fine-tuned by the user for optimum use of all those other tapes listed.

In the area of frequency-response measurements, it's important to know the so-called playback-only response of a given machine. When a manufacturer of a deck knows that it has control of both the record and play part of the tape recording cycle in specifying frequency response, it could theoretically adjust record bias and equalization as well as playback equalization until overall response is pretty flat. But what will happen when a tape made on another deck is played back on the deck in question? The industry is in general agreement that playback equalization should be standardized and that a manufacturer has the freedom to do whatever it has to in record equalization to make the overall record/play response as flat as he can. That means that we need a standard playback test tape for each of the standard equalization curves commonly used in the playback electronics of tape decks (e.g., 70 µsec and 120 µsec EQ time constants for cassette decks, NAB standard curve for open-reel, etc.).

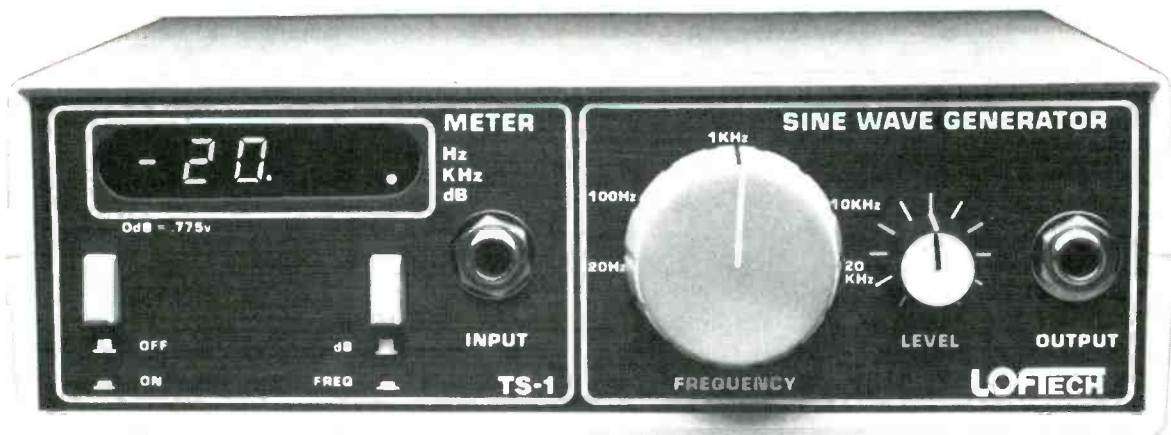
Unfortunately, most of the commercially recorded test tapes currently available, both for measuring playback-only frequency response and other tests, fall short of the ideal. In the case of playback-only response tapes, for example, recordings of spot or sweep frequencies are usually made across the entire width of the tape. (This is true of open reel as well as cassette test tapes.) When such tapes are played on a 2-track or 4-track machine, the response has the inevitable boost in the low-frequency region due to the so-called "fringing" effect. While the EIA can not get into the business of making test tapes, the new standard will encourage those who are in that business to produce new test tapes that will fulfill the requirements of the new standard and that will be beneficial to the entire industry.

Needless to say, there are many more measurements covered in the proposed new standard, including new approaches to signal-to-noise measurements and to wow-and-flutter measurements. (Yes, we hope to finally do away with wrms wow-and-flutter and to substitute a more meaningful weighted-peak flutter.) At the moment, there are, for example, no fewer than thirteen "primary" specifications or ratings that would be required of a manufacturer which wants to comply with the new standard, and as many as eighteen more secondary disclosures which a manufacturer which wants to "tell everything" about its products might optionally publish as well. When the proposed standard is finally approved, I promise to get back to this subject and give you more of the details concerning some of the other important measurement techniques that it contains.



NORMAN EISENBERG AND LEN FELDMAN

Loftech TS-1 Audio Test Set



General Description: The LofTech TS-1 from Phoenix Audio Laboratory, Inc. of Manchester, Conn. is a compact device that combines an audio sine-wave generator with a digital meter. The oscillator's range extends from 15 Hz to 30 kHz, and the meter can be switched to read decibel levels as well as frequencies.

The oscillator portion has an output jack for feeding test signals to external equipment. For its part, the meter has an input jack to accept signals from external equipment. When a plug is inserted into this jack, the internal connection between oscillator output and meter input is broken, and the new connection takes over. In this way it is possible to use TS-1 simultaneously as both a test-signal source and a readout device for other equipment being tested.

When switched for signal level, the meter reads whole decibels over a range of -50 to +24, with 0 dB representing 0.775 volt. The "minus" sign comes on automatically as applicable. A rear-panel adjustment may be used to adjust the "0" db reference point.

In its frequency display mode, the meter responds from 1 Hz to 99.99 kHz. LEDs at the right of the digital display indicate Hz or kHz or dB. The "minus" sign at left is fourth LED.

The meter "Side" of the front panel contains the TS-1's off/on power switch; the dB or frequency selector; the meter input jack. The right portion of the panel contains the oscillator's selector knob; output level control; output jack. Both jacks are 1/4-inch phone jacks. The frequency selector knob has markings for

20 Hz; 100 Hz; 1 kHz; 10 kHz; and 20 kHz, although the actual frequencies selected between those markings, and below and above the 20 Hz and 29 kHz markings, is displayed on the meter, as¹ is the specific output level chosen.

Suggested uses of the Loft LofTech TS-1 include calibrating levels of tapes and mixing consoles; verifying the frequency response accuracy of those and other external audio equipment; checking signal levels at various points in an audio chain as a troubleshooting aid.

Test Results: In *MR&M's* lab tests, the LofTech TS-1 met or exceeded its published specifications, and impressed us as a handy device that is capable of doing its intended job very competently, its small size and relatively low cost notwithstanding. Connections into and out of the TS-1 require only the use of ordinary unbalanced ¼-inch phone plugs. Operating the TS-1 is quite simple, although at times it did take a "light touch" to obtain a precise specific frequency as shown on the unit's meter.

General Info: Dimensions are 8 inches wide; 2½ inches high; 6¼ inches deep. Weight: 4.4 pounds. Price: \$299.

Individual Comment by L.F.: As one who runs an audio test lab, I am very much aware of the cost of even a modest piece of new test equipment. Of course I can justify an occasional purchase of an expensive item since it is needed for my work. But what about all those other folks out there who do not specifically work with test equipment every day, but who may need to level-calibrate a mixing board or tape deck at times? Or how about when your ears tell you that frequency response of a piece of gear is "off" and you'd like to verify that quickly and easily?

Phoenix Audio Laboratory must have had just those situations in mind when they came up with the LofTech TS-1. This unit is small enough to hold in your hand, yet it offers amazing versatility for its size and its relatively low cost. (I recently spent more than its cost to have my laboratory-grade distortion analyzer oscillator repaired!)

Combining a frequency meter with an audio oscillator and a dB level meter makes good sense, and makes it possible for the oscillator to be continuously variable in frequency (by means of a single rotary control) and yet to be made very accurate in frequency when that is necessary. All I had to do to trim the rotary control for a precise frequency was to read that frequency on the display of the TS-1. And when I wanted to produce an output signal of, say exactly 0 dBm (0.775 volt into 600 ohms), pressing one button converted the display to a dB meter.

With its optional input jack, of course, you don't have to use the TS-1's built-in oscillator as a signal source. That oscillator is completely independent of the metering section except for the interconnection between them when nothing external is connected to the instrument.

That makes sense too, since the distortion level of the built-in oscillator, while low enough for making frequency response and level and calibration checks, would not be low enough in my opinion to use a signal source when checking for distortion. These days, power amps boast distortion figures much lower than the inherent 0.2 percent or so that we measured for the TS-1's built-in oscillator.

The TS-1 is almost too easy to use. By that I mean that in its attempt to reduce the number of controls, the manufacturer made it a bit difficult to "zero in" on the exact oscillator frequency you might need for a given test. With 330 degrees of rotation of one knob to cover a frequency range from below 20 Hz to nearly 30 kHz, it becomes pretty tricky to home in on 1 kHz exactly. Still, with patience and a light-fingered touch I was able to come close enough for my self-nulling distortion analyzer to recognize the signal as being "close enough" to 1 kHz to read its distortion automatically.

Much the same comment holds true for the output level control, whose smaller diameter and similar amount of rotation makes it pretty difficult to arrive at a specific desired output level—especially since here too the range covered is quite large, from less than 1 millivolt to over 6 volts RMS.

These really are minor criticisms, however, compared with the usefulness of this neatly designed tester. Anyone seriously interested in audio and recording who does not have an audio oscillator and a good level meter, and who cannot afford more expensive laboratory-quality versions of such instruments would do well to consider the LofTech TS-1. It meets all of its important specs and it offers a degree of accuracy both in its frequency metering and level metering that you'd never expect to get for \$299.

Individual Comment by N.E.: What I like about the TS-1 is its handiness. You can use it at the same time "both ways"—that is, connect the oscillator output to an external device, such as an amplifier or tape deck, and run the output of that device back into the TS-1's input. In this way you can feed a test signal of given frequency and level into the other device and monitor how it handles that signal in terms of reproducing that frequency for a given level with respect to its own gain or volume control. You can, of course, do this without the TS-1 by using separate test devices, but the TS-1 wraps it all up in one compact and—as prices go today—modestly priced unit.

At the time we tested the TS-1 the final instruction booklet had not yet been released, but judging from the rough draft I saw this new test set will boast a very thorough set of user instructions. Included are explanations of decibels, VUs, reference and operating levels—plus detailed procedures for measuring frequency response of preamps, line amps, power amps and mixers; signal-to-noise ratios; equipment and system levels for consoles, tape recorders, stereo buss

and pan pots, microphone outputs; setting up or verifying the performance of electronic or low-level crossover networks (for bi-amped or tri-amped systems); tape recorder alignment; speaker measurements including impedance and system resonance. Of course, to many readers of *MR&M* this may not be new stuff, but having it “all together” in terms of one compact, accurate and reasonably priced device surely merits the attention of all audio hands, old and new.

LOFTECH TS-1 AUDIO TEST SET: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
<i>Audio Oscillator Section</i>		
Frequency range	15 Hz to 30 kHz	14 Hz to 29.7 kHz
Level accuracy	±0.25 dB	±0.25 dB, 20 Hz to 20 kHz
Harmonic distortion	0.25%	0.20%
Maximum output level	+18 dBV	+20.2 dBV (Hi-Z)
Output impedance	50 ohms, unbalanced	confirmed
<i>Decibel Meter</i>		
Meter Range	-50 to +24 dB (re: 0.775 V)	-50 to +24 dB
Accuracy	within 0/0.25 dB	confirmed
"0" ref adjustment range	-10 to +8 dBV	confirmed
Input impedance	> 100 K ohms	confirmed
<i>Frequency Counter</i>		
Frequency range	1 Hz to 99.99 kHz	confirmed
Accuracy	±1 count	±1 count
Input level	-40 dB to +24 dB (re: 0.775 V)	confirmed
Input impedance	100 K ohms	confirmed

CIRCLE 47 ON READER SERVICE CARD

Crest 5000 Power Amplifier



General Description: The model 5000 is a professional power amplifier from Crest Audio, a division of DMI, Inc. of Hawthorne, N.J. The amp is rated for stereo and mono applications, with loads down to

2 ohms in stereo. The full published ratings are: 8 ohms stereo, 350 watts per channel for a THD of 0.06 percent, or 375 watts at midband clipping; 4 ohms stereo, 600 watts per channel for 0.1 percent THD or 650 watts

clipping at midband: 2 ohms stereo, 800 watts per channel for 0.1 percent THD with 900 watts available at the 1-kHz clipping level; 8 ohms mono, 1100 watts for 0.1 percent THD and 1200 watts at midband clipping; 4 ohms mono, 1600 watts for 0.1 percent THD, and 1700 watts at the midfrequency clipping point.

Of rack-mount width, the model 5000 is large and heavy. A two-speed fan is incorporated, with front-to-rear passage. Both balanced and unbalanced inputs are provided, and when strapped to operate in the mono mode, the amplifier will deliver enough voltage to drive standard 70-volt distribution lines to multiple speakers via the usual transformer-tap arrangement commonly employed with such setups. No step-up transformer will be needed at the amplifier end of such a distribution system.

The slotted (for rack-mount) front panel has the usual handles plus the power off/on switch; channel gain controls; a multi-colored vertical dB readout (0 dB down to -57 dB scale); and four LED indicators for each channel that show clipping, current limiting, temperature rise and protect-activation.

Inputs at the rear include ¼-inch phone jacks as well as both female and male XLR balanced connectors. Just above the inputs is a mono/stereo switch. Outputs consist of four sets of five-way binding posts for multiple speaker hookups in stereo or in mono. There also are circuit-breaker resets for each channel, and the amp's power cord (the thickest we have ever seen) terminated in a three-prong (grounding) plug. As an added convenience, the amplifier's specs are printed on the rear panel.

Internal construction is all modular, with locking type "quick disconnect" connectors and PVC covered wiring. The chassis is made of 14-gauge steel; the front panel, of ¼-inch heavy aluminum. Operating power is selectable for 100, 120, 220 or 240 volts AC, 50/60 Hz.

Test Results: In *MR&M's* lab tests, the Crest 5000 met or exceeded all of its specifications except for a very slight difference in continuous power into 4 ohms—we measured 625 watts as opposed to the claimed 650 watts. This is quite unimportant, however, especially in view of the splendid measurements for distortion, response and signal-to-noise. For its rated distortion of 0.06 percent, the model 5000 delivered 370 watts per channel minimum into 8 ohms at any frequency from 20 Hz to 20 kHz. Reducing the output to the manufacturer's rated value of 350 watts per channel resulted in an even lower distortion reading (at 1 kHz) of only 0.01 percent. Other forms of distortion—such as CCIF IM, and IHF IM—were all so low as to be insignificant from an audible standpoint in any professional application for which the model 5000 is likely to be used. In both bench tests and subsequent listening tests, the two-speed fan was hardly ever called upon to deliver its greater air-movement capacity, thanks to the tremendous heat dissipation capability built into the amplifier.

General Info: Dimensions are 19 inches wide, 7 inches high, 15½ inches deep. Weight is 75 pounds. Price: \$1,829; \$1,699 without LED display meters.

Individual Comment by L.F.: Crest Audio obviously believes in the traditional approaches to amplifier reliability and stability. If you build a power amp with full protection circuitry, reserve heat dissipation capacity, rugged chassis construction and a more than adequate power supply, you will end up with an amplifier that rarely will be found in the service shop. Crest apparently has done just that with this big power amp. And "big" applies not only to size and weight (I'd advise installing this one in a rack that has wheels or casters if you plan to move it around), but to its power output capabilities as well.

We were not provided with an owner's manual, and so we cannot comment on the circuitry used in this amplifier except to mention that the output stages use a full complementary circuit design which contains a total of 28 output transistors, each of which has a 20 MHz cut-off frequency, and a 200-watt rating!

No doubt someone can design an amplifier of the same power rating as the Crest 5000 that will be lighter and less bulky. But somehow, as you work with a heavy-weight such as this one—whatever your sound-reinforcement needs—you sense a measure of over-design (in its most positive connotation) that instills confidence that you will get through the session, concert or whatever the event with no unforeseen catastrophes in the amplification department.

Individual Comment by N.E.: This is not the kind of amplifier you are likely to see on the shelf of a typical home hi-fi dealer, although come to think of it there undoubtedly are some aficionados out there who would take to it because of its high clean power output and its capability for driving multiple sets of speakers for stereo in more than one room. Be that as it may, the model 5000 is primarily a professional amplifier that has been designed and built with really heavy duty in mind. Everything about it, internally and externally, seems extra-sturdy and creates an impression of providing a very generous margin of "erring on the side of caution"—if indeed the term "erring" can be applied to such a solidly crafted product. The designers have not overlooked a cosmetic flourish either—that front panel dual-channel VU metering system becomes a veritable rainbow since various portions of its scale light up in different colors as you approach maximum power or clipping. And of course the cosmetics here relate to function, inasmuch as it makes it easier to spot what is going on. For that matter, the other LED indicators for clipping, limiting, temperature and protection also are well executed.

So, if you need this kind of unflappable powerhouse, and have a strong back or another person to help lift it, the Crest 5000 merits consideration.

CREST 5000 POWER AMPLIFIER: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Continuous power for rated THD		
8 ohms, 1 kHz	375 watts	378 watts
4 ohms, 1 kHz	650 watts	625 watts
FTC rated power (20 Hz to 20 kHz)	350 watts (600 @ 4 ohms)	370 watts
THD at rated output,		
1 kHz, 8 ohms	0.06%	0.01%
1 kHz, 4 ohms	0.10%	0.045%
20 Hz, 8 ohms	0.06%	0.01%
20 kHz, 8 ohms	0.06%	0.06%
IM distortion rated output,		
SMPTE	0.04%	0.03%
CCIF	NA	0.006%
IHF	NA	0.09%
Frequency response @ 1 watt	+0, -0.2 dB, 20 Hz to 20 kHz	+0, -1 dB, 6 Hz to 46 kHz
Signal-to-noise re 1 watt, "A" wtd, IHF	NA	90 dB
Signal-to-noise re rated output, "A" wtd	100 dB	112 dB
Dynamic headroom, IHF	NA	1.0 dB
Damping factor @ 50 Hz	400	400
Input sensitivity re rated output	1.13 volts	1.31 volts
Slew re rate (volts/microsecond)	60	60
Power consumption, idling; max	NA	160; 1600 watts (8 ohms)

CIRCLE 48 ON READER SERVICE CARD

Tandberg TD20A-SE Open-Reel Tape Recorder



General Description: The "SE" after the model number of this deck stands for "special equalization," more of which presently. The TD-20 itself is available in

two versions. One is the quarter-track model with the two speeds of $7\frac{1}{2}$ ips and $3\frac{3}{4}$ ips—this unit was test-reported in *MR&M*, October 1978. The other version

is a half-track model with speeds of 15 ips and 7½ ips. It is this model, enhanced with "SE," which is the subject of this report.

The SE technique involves using less treble boost (equalization) in the deck's playback circuitry based on the premise that today's better tapes do not need as much treble boost in playback as tapes did a few years ago. Tape recorder manufacturers use equalization of their own choice for the recording half of a record/playback cycle, but the playback equalization has been standardized to enable any deck to play with reasonably flat response a tape made on the other deck. The TD20A-SE has this standard EQ, but in addition it has the special EQ developed by Tandberg. Either kind of equalization is selected by a front-panel switch marked "normal" and "special." The special position applies a time constant of 10 microseconds at 15 ips, and a time constant of 25 microseconds at 7½ ips (the "normal" time constant for both speeds is 50 microseconds).

Two other Tandberg circuit developments (used in previous decks) also included in the TD20A-SE are "Dyneq" and "Actilinear". Dyneq varies the amount of treble emphasis during recording, based upon the frequency and amplitude content of the incoming signals. If a high frequency signal would normally cause tape saturation, with fixed record EQ, the Dyneq circuit dynamically lowers the gain by the amount necessary to permit the tape to accept as much high-frequency information as it can without becoming overloaded.

The Actilinear recording is designed to provide at least 20 dB of additional headroom compared with conventional record-amplifiers. Since it operates at a low voltage level, the danger of IM distortion caused by the slew rate is reduced. This circuitry also provides electrical buffering between the bias oscillator and the recording amplifier to further minimize IM, and to improve transient response in the recording mode.

The TD20A-SE handles tape reels up to the 10½-inch (NAB) diameter. The three heads for erase, record and playback are completely separate. Switching is provided for "sel. sync" whereby multi-track recordings can be made by synchronizing newly recorded material with signals on the other channel. The earlier program is monitored via headphones from the record head while the new material is added. The deck also provides "sound on sound" whereby a mono program may be played from one track and simultaneously combined with a new program so that both programs are recorded on the other track. Echo effects, with controllable level, also are possible.

The transport of this deck is powered by four motors—two for the tape reels, one for the capstan drive and the fourth for the pinch-roller and tape gate. Full-logic transport controls permit fast-buttoning, including flying-start recording. An edit/cue switch permits rocking the reels manually to locate a given passage on a tape, and also permits hearing the recorded signal in fast-wind mode.

The tape is threaded from the supply reel via a tape tension arm past the head area and up through another tension arm onto the takeup reel. Three switches at the left are for power off/on; speed; and reel size. Below them are the output level controls, one for each channel. Below these are four switches that handle playback mode (stereo, left only, right only); tape source monitor; sel. sync selector; and edit/cue.

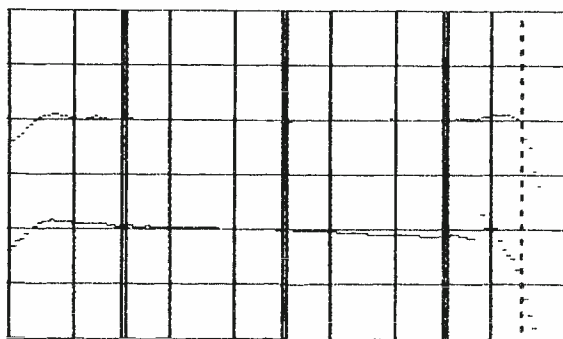
Transport buttons are ranged to the right of the head covers, with the index counter and reset button above them. The transport controls have individual LEDs including a standby indicator. Below are two sets of input level (recording) controls. One pair handles left and right channel microphones, "line 2" or "radio." "Line 2" refers to a second set of line inputs which may be optionally used. "Radio" refers to the European-type DIN socket. Below these knobs are the normal "line 1" level controls. Just to the right of the upper set of knobs is a socket for connecting an optional remote-control accessory. To the right of the "line 1" level knobs is a master input level control for adjusting program levels on all inputs. Associated with this control is a rotatable marker against a dB scale. When this marker is placed at any setting it automatically creates a detent for rotation of the master control as an aid in making a quick control setting and for use in fading adjustments. Below the line-level controls are recording-select switches and a pair of recessed adjustments for changing recording bias. According to the owner's manual, the deck is adjusted at the factory using Maxell UD XL tape and will give best performance with that tape as well as with TDK GX and Ampex Grand Master 456. Use of other tapes is possible with some readjustment.

Below the head assembly are the deck's meters, headphone jack and left- and right-channel microphone jacks. The meters show equalized peak readings and are calibrated from -24 to +3 dB, with +2 dB deflection indicating a maximum of 2 percent distortion.

The rear of the TD20A-SE contains the line inputs and outputs, the DIN socket and the socket for the removable AC power cord. The normal position of the Tandberg deck is vertical. Small "feet" on its back permit horizontal or angled installation in which event the signal cables and power cord would have to be carefully dressed under the unit.

Test Results: While the Tandberg TD20A-SE was put through the usual tests and measurements we run for all open-reel tape decks, special attention was paid (both in the lab and in subsequent use and listening tests) to the net effect of the new "SE" (special equalization) found in this machine. This accounts for the somewhat greater number of graphs that accompany this report. Our net impression is that "SE" does indeed do what it is intended to do—which is to say, it helps widen the recorder's dynamic range and it gives up very little in the way of useful high-end response in doing so.

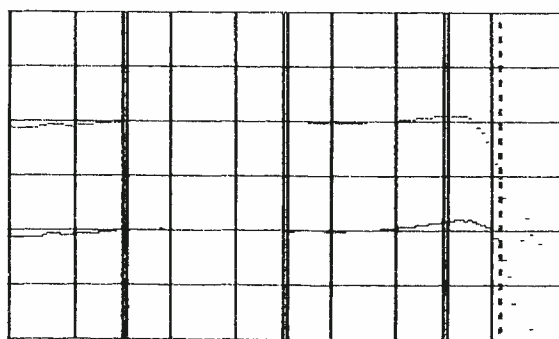
FR



10dB/D L-10.1dB R- 1.2dB 31.0kHz

Fig. 1: Tandberg TD20A-SE: Frequency response at 15 ips at 0 dB record level. Upper curve, without SE; lower curve, with SE.

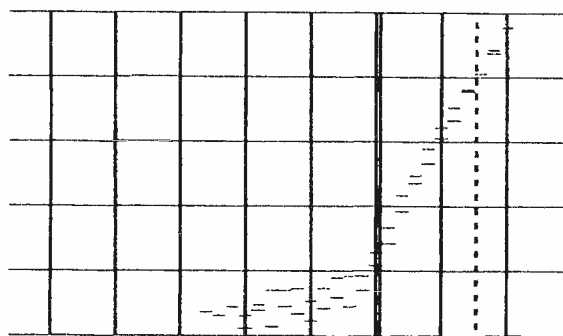
FR



10dB/D L- 2.7dB R-10.2dB 22.0kHz

Fig. 2: Tandberg TD20A-SE: Frequency response at 7½ ips at -10 dB record level. Upper curve without SE; lower curve with SE.

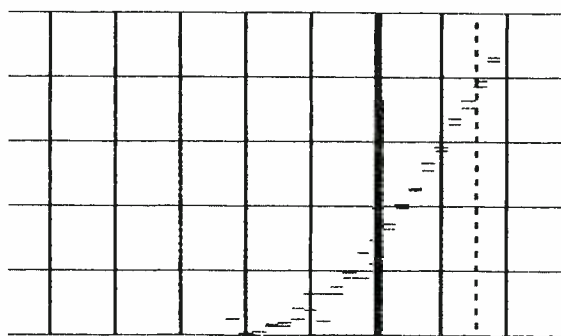
D3 L 3.2% R 3.3%



10dB/D L-29.7dB R-29.4dB + 8dB

Fig. 3: Tandberg TD20A-SE: Third-order distortion vs. record level at 15 ips. "L" figure is without SE; "R" figure, with SE.

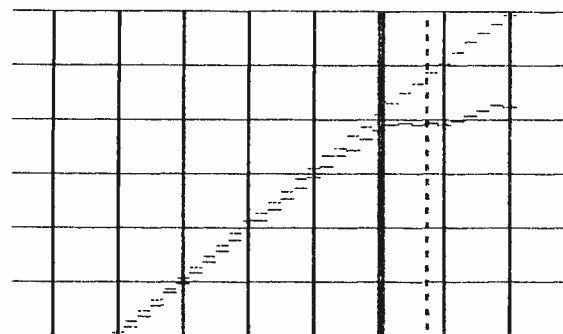
D3 L 2.7% R 3.0%



10dB/D L-31.2dB R-30.4dB + 8dB

Fig. 4: Tandberg TD20A-SE: Third-order distortion vs. record level at 7½ ips. "L" figure, without SE; "R" figure, with SE.

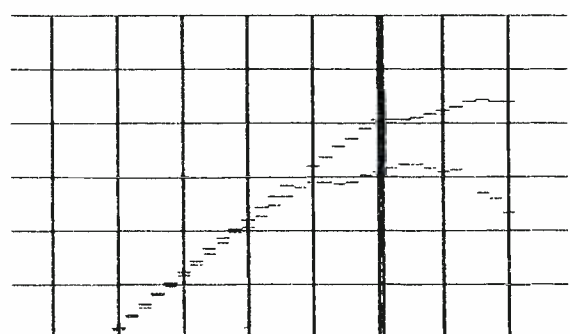
ML L10.0kHz R10.0kHz C10.0kHz



5dB/D L- 0.3dB R+ 4.4dB + 4dB

Fig. 5A: Tandberg TD20A-SE: Linearity plot of input vs. output at 10 kHz at 15 ips. "L" figure is with SE; "R" figure is without SE.

ML L10.0kHz R10.0kHz C4.00kHz



5dB/D L+ 0.4dB R- 4.4dB + 0dB

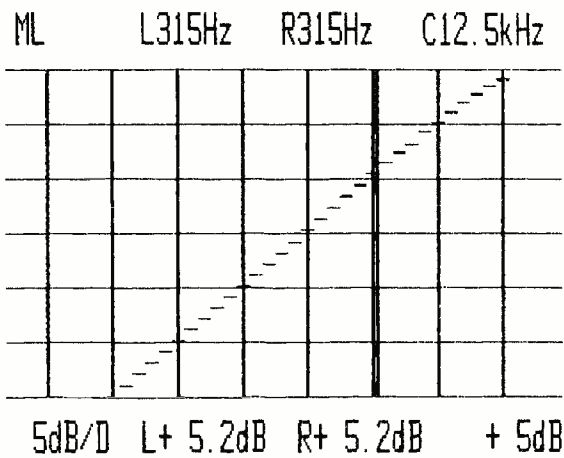
Fig. 5B: Tandberg TD20A-SE: Linearity plot of input vs. output at 10 kHz at 7½ ips. In this plot, the "L" figure is without SE; the "R" figure, with SE.

Frequency response at both 15 ips and 7½ ips are shown in *Figures 1 and 2*, with the upper curves representing the normal EQ setting, and the lower curves obtained with SE. Obviously, SE does sacrifice something at the extreme high end, but one could hardly fault a recorder that still offers flat response to within 2 dB out to 22 kHz at 15 ips even with SE employed.

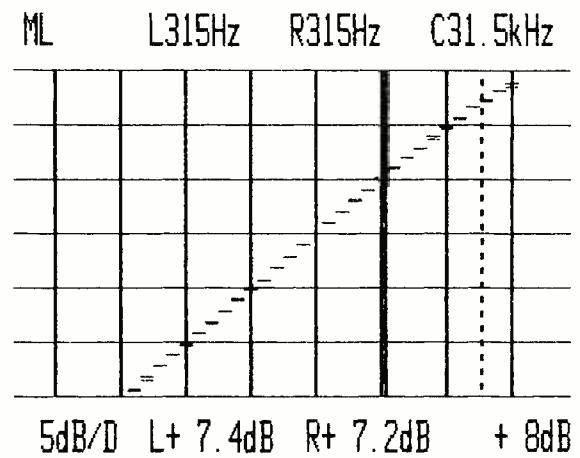
Plots of 3rd-order distortion versus record level for a mid-frequency signal at 15 ips and 7½ ips, respectively, are shown in *Figures 3 and 4*. The "L" notations are for normal EQ; the "R" show the effects of SE. When SE is used the change is fairly insignificant at 15 ips, and a bit more apparent at 7½ ips. It should be pointed out there that "0 dB" on this machine corresponds to a very high magnetization level of nearly 400 nWb/m, and the 3rd-order distortion point is around

8 dB above that level. This indicates tremendous headroom.

The effect of SE is more evident in the measurements of maximum output level (MOL), or input versus output linearity for high frequencies. This is shown in the two curves of *Figure 5*. Here, nonlinearity or saturation occurs sooner when SE is used—even at 15 ips—as shown by the nonlinear portion of the lower curve in each display. However, even with SE, at the 0-dB record level (shown by the double vertical line in each graph), linearity is still nearly perfect at 15 ips for this high frequency (both curves are almost identical up to 0 dB record level in *Fig. 5A*). Moreover, as shown in *Figures 6A and 6B*, using SE has no adverse effect on linearity at middle and low frequencies, where linearity remains almost perfect out to +10 dB above the already high "0 dB" level at either recording speed.

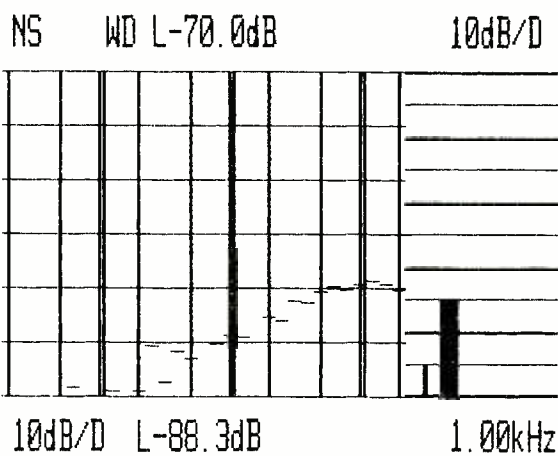


(6A)

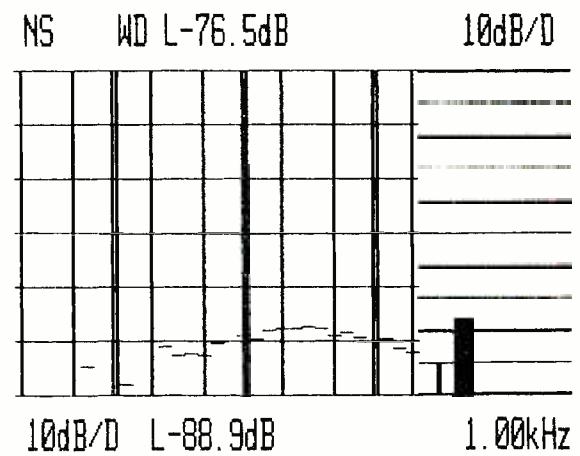


(6B)

Figs. 6 A&B: Tandberg TD20A-SE: At mid-frequencies, special EQ (SE) has no effect on linearity or MOL, as shown by these plots of input vs. output for 15 ips (Fig. 6A) and for 7½ ips (Fig. 6B). In both plots, the "L" figure is with SE; the "R" figure, without SE.

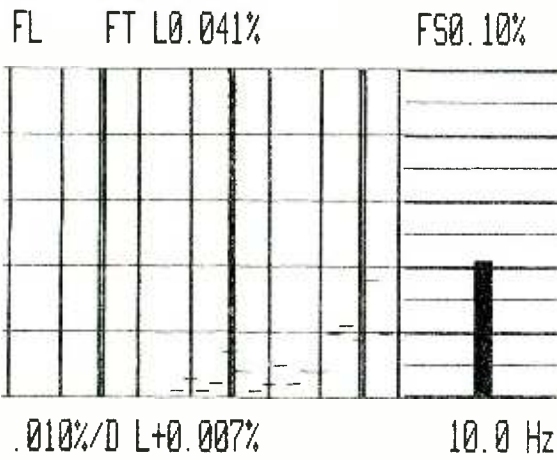


(7A)

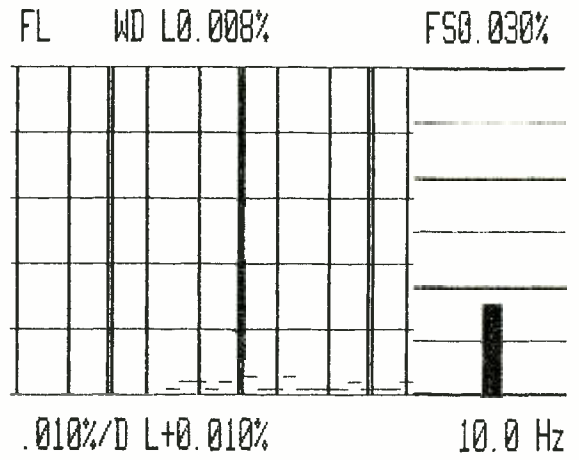


(7B)

Figs. 7 A&B: Tandberg TD20A-SE: The excellent signal-to-noise ratio of 70 dB shown in Fig. 7A is further improved to 76.5 dB (Fig. 7B), referenced to 3% 3rd-order distortion recording level when SE is switched in.

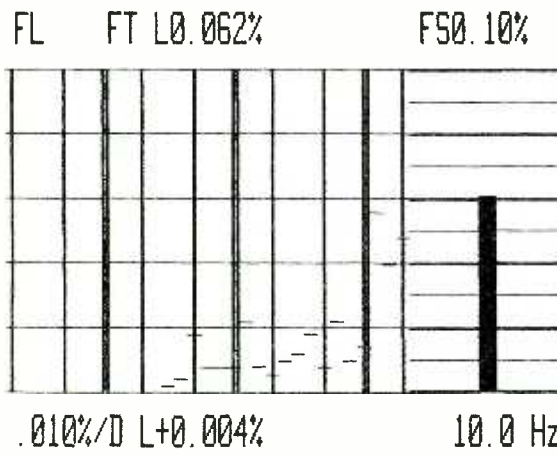


(8A)

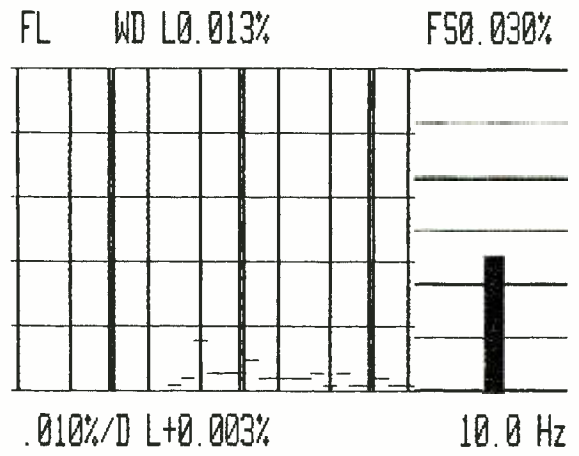


(8B)

Figs. 8 A&B: Tandberg TD20A-SE: Wow-and-flutter analysis at 15 ips, peak unweighted (Fig. 8A) and WRMS (Fig. 8B).



(9A)



(9B)

Figs. 9 A&B: Tandberg TD20A-SE: Wow-and-flutter analysis at 7 1/2 ips, peak unweighted (Fig. 9A), and WRMS (Fig. 9B).

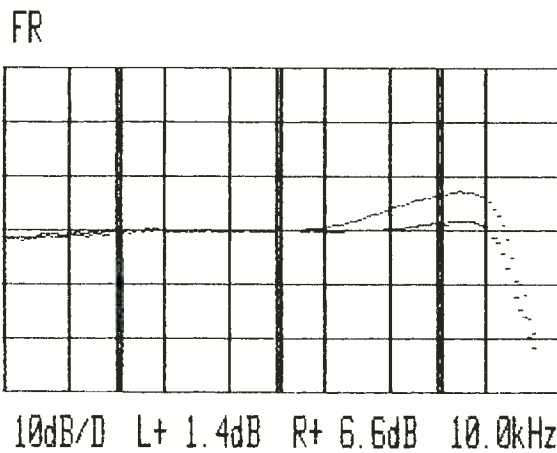


Fig. 10A: Tandberg TD20A-SE: If a recording is made special EQ, and is played back with standard EQ, a rising response will result as shown in the upper response curve.

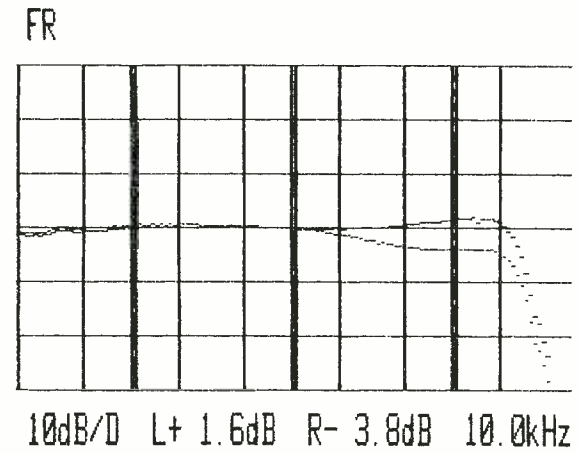


Fig. 10B: Tandberg TD20A-SE: If a recording is made using standard EQ, and is played back using the special EQ setting, a treble rolloff will result, as shown here in the lower curve.

Actually, SE's chief virtue—its ability to improve signal-to-noise—is shown in *Figures 7A and B*. At the 15 ips tape speed we obtained a S/N reading of 70 dB using Maxell UD-XL tape with EQ switch set to "normal." Under the same test conditions, switching to "SE" improved the S/N to 76.5 dB referenced to the 3rd-order distortion output level.

As for the transport system in the TD20A-SE, it was superb. Peak *unweighted* wow-and-flutter measured at 15 ips was a mere 0.041 percent, while the more forgiving WRMS measurement yielded an almost unbelievably low figure of 0.008 percent (*Figures 8A and B*.) Peak unweighted wow-and-flutter at 7½ ips was only 0.062 percent; with weighting it was only 0.013 percent (*Figures 9A and B*).

To investigate the effect on frequency response, or the relative incompatibility of SE with standard playback EQ, we conducted two additional simple tests. First, we recorded a frequency response sweep with the EQ switch set to "special" and played it back with the switch set to "normal," (which would be equivalent to playing it back on any other machine having standard EQ). The upper curve of *Figure 10A* shows the rising treble characteristic that would result: a boost of about 5.2 dB at 10 kHz (the difference between +1.4 dB shown for the lower curve at that frequency, and the +6.6 dB shown for the upper curve labeled "R").

A reverse procedure was used to obtain the curves of *Figure 10B*. This time we recorded a frequency sweep on the TD20A-SE using the normal EQ switch position, but played it back using the SE switch position. The lower curve shows how treble frequencies would be attenuated. The error is virtually the same, as might be expected—5.4 dB (the difference between the +1.6 dB reading for the "flat" curve and the -3.8 dB reading for the incorrectly equalized playback).

General Info: Dimensions are 17¼ inches wide; 17½ inches high; 6 inches deep. Weight is 37.5 lbs. Price: \$1595.

Individual Comment by L.F.: Tandberg has taken the bold step of reducing the amount of treble boost (equalization) built into the playback circuitry of this deck on the premise that today's better tapes do not need nearly as much treble emphasis in playback as tapes did in "the old days." Based upon the lab measurements and my observations during use, this new "SE" combined with Dyneq makes for a system that offers tremendous dynamic range without the need for any electronic noise reduction, and it still manages to provide extended frequency response with very low distortion. The various graphs reproduced here help to confirm this conclusion.

I can recall being extremely pleased with the performance of the Tandberg TD20A when we tested it some time ago. As you can imagine, the improvements in S/N and dynamic range resulting from Tandberg's new alternative equalization setting make me just that much more enthusiastic about the TD20A-SE.

Individual Comment by N.E.: This newest version of the Tandberg open-reel deck incorporates a genuine improvement in its circuitry that makes an already fine machine that much better. The upgrading is in terms of greater dynamic range with reduced distortion. Mechanically, nothing has been overlooked either—the wow-and-flutter measurement is almost unbelievable, and the deck handles like a real thoroughbred. The "product personality" of the TD20A-SE is such that it seems to me it would appeal to a fairly broad group of users—advanced amateur and semi-pro or even full-pro recordists—who want to work with the half-track format for two-channel stereo mixdowns or, with the sel. sync feature—or an external mixer—for multi-track original tapings. With regard to using the new special EQ for record and playback on the TD20A-SE itself, it does make for cleaner-sounding tapes, especially when the program material includes a lot of high-amplitude high-frequency information.

TANDBERG TD20A-SE OPEN REEL TAPE RECORDER: Vital Statistics

PERFORMANCE CHARACTERISTIC	MANUFACTURER'S SPEC	LAB MEASUREMENT
Frequency response, 15 ips at 0 dB record level	±2 dB, 20 Hz to 30 kHz	±2 dB, 24 Hz to 31 kHz (using SE, to 22 kHz for -2 dB)
Frequency response, 7½ ips at -10 dB record level	±2 dB, 20 Hz to 25 kHz	±2 dB, 20 Hz to 21.5 kHz (using SE, to 17.5 kHz for -2 dB)
THD at 0 VU, 15; 7½ ips	0.5% max from tape at 320 nWb/m record level	0.14%; 0.11% (at 385 nWb/m) with SE at 15 ips, 0.11% with SE at 7½ ips, 0.17%
Record level for 3% 3rd order HD, 15; 7½ ips	NA	+8 dB; +8 dB
Best S/N ratio	80 dB wtd; 70 dB unwtd	76.5 dB; 70 dB
Wow-and-flutter, 15 ips (WRMS)	0.03%	0.008% (0.041% peak unwtd)
Wow-and-flutter, 7½ ips (WRMS)	0.05%	0.013% (0.062% peak unwtd)
Fast-wind time, 3600 ft tape	NA	85 seconds
Erase ratio	NA	>70 dB
Mic input sensitivity	-.2 mV	0.2 mV (self-adjusting)
Line input sensitivity	50 mV	42 mV
Line output level	1.5 V	1.41 V
Headphone output level	1.3 V/8 ohms	1.3 V/8 ohms

CIRCLE 49 ON READER SERVICE CARD



GROOVE VIEWS

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

POPULAR

THE WHO: *It's Hard*. [Glyn Johns, producer; Glyn Johns, engineer; recording location not listed.] Warner Bros. 23731-1.

Performance: **Also Sprach Pete Townshend**
Recording: **Versatile, submissive**

Uneven, disoriented, searching. That's how this new Who album sounds at first, and the current state of their art can be distinguished right down to the group's thematic core. Pete Townshend and his colleagues *are* uneven, disoriented, and searching at this point in time.

Because the music here seems almost careless in its new-found fervor, some listeners might be left with a raggedy first impression. *It's Hard* is not as cohesive as classic Who works such as *Tommy* or *Who's Next*. When the band is in its most familiar sounding groove ("Athena," "It's Your Turn.") they sound good but not great, at least not ambitious or memorable. Fortunately, the majority of the cuts here are inspired by Townshend's personal intensity, and a renewed focus on global issues as well.

Townshend's private life turmoil, adequately documented elsewhere, has pumped an almost evangelical energy back into his songwriting. "Cook's County" is the third song into this LP and, after more traditional Who anthems, the "Cooks County" realism hits with a disquieting bluntness:

"People are suffering
I'll say it again
People are suffering



I'll say it again..."

© 1982 Eel Pie Publishing

This is a powerful, unusual song about social injustice in the '80s, sung by Roger Daltrey with real nerve and commitment. It's also a song that breaks the mold and sets the tone for much of the music to follow.

The title cut is another brutally honest measure of contemporary Western society:

"Any kid can fly—few can land

Any gang can scatter—few can form

Any kid can chatter—few can inform."

© 1982 Eel Pie Publishing

One by one, Townshend shakes down the misconceptions of youth and self indulgence. And similarly on other cuts ("Eminence Front," "I've Known No War," "Why Did I Fall For That?," "A Man Is A Man") it is the wizened, often aphoristic edge to

Townshend's lyrics that makes this perhaps the most *important* Who album ever made, though possibly not the easiest to love. Important because guys like Townshend, Daltrey and John Entwistle have been to that existential abyss and back... and with potent songs like "Cry If You Want" they're offering their followers a kind of exorcism.

Musically, *It's Hard* covers plenty of big beat rock ground, but also works its way back toward some of the rhythm & blues essentials that really are an important part of the band's roots (Daltrey once did a mean James Brown). Despite a range of styles utilizing complicated Entwistle horn charts ("One At A Time"), Townshend's classical piano ("One Life's Enough"), and jazz influences ("Eminence Front"), Glyn Johns' production takes a mandatory backseat to the musical message-making. It is the heart of the matter that is most important here, and after two decades together The Who are showing more "heart" than ever before. It's not a pretty album, but it's unforgettable and it's hard. R.H.

NOVO COMBO: *The Animation Generation*. [Novo Combo and Elliot Scheiner, producers; Elliot Scheiner, engineer; recorded at A&R Studios, Mediasound, and Soundworks, New York.] Polydor PD-1-6356.

Performance: **Two-dimensional**
Recording: **Clean and calculated digital**

Novo Combo has come together from several rock directions to form an unabashed 1980's pop semi-supergroup. They're smooth, they're appealing, and they're definitely tuned into what makes for some of today's more successful pop-rock concoctions.

Take The Police, please. As if combining elements of The Police, Journey, and Hall & Oates, Novo Combo layers high-voiced rock heroics between a musical mixture of Anglicized reggae and a touch of blue-eyed soul. The band's Michael Shrieve recently described the perfect pop song as one marked by "...simplicity, clarity, and a hook you can hang a winter coat on." Having met those prerequisites on *Animation*



Novo Combo

tion Generation, the group should be poised for takeoff.

And frankly, they've done quite a job technically with some of these tunes, especially soundwise. "Animation Generation," "Too Long Gone," and "Welcome Innervation" may not have the Sting, so to speak, of a Police record, but the hollow bass sound and pushy polyrhythms are there, and the engineering is excellent. Instrumentally, these musicians are highly competent, and drummer Shrieve (Santana founding member, also with Stomu Yamashta's *Go*) adds an element of surprise that would otherwise be lacking. The well-travelled Carlos Rios (Quincy Jones, Tom Scott, Mark-Almond, Chuck Mangione) also whips out some original guitar phrasings.

Vocally, Pete Hewlett (also guitar) and Stephen Dees (bass, formerly in the Hall & Oates band) trade vocal duties, and seem to be major league quality. Unfortunately, they haven't really established a niche of their own. Whether it's the Steve Perry sound of "Keep Your Love Alive" or the Pages/Hall & Oates feel to "Slow Fade," the Novo singers seem to be assimilating the better aspects of more original performers. And a lack of lyrical strength ("She Runs," "Anyone Can See") does not help any in their bid for individuality.

Novo Combo manages to skim the cream from the top of today's pop, turning out a sweet mix (engineer Scheiner is a two-time Grammy winner for work with Steely Dan) soundwise and a highly saleable product. Their willingness to experiment with a variety of popular styles is bound to result in some degree of commercial success, but they'd do better to dig a little deeper. *The Animation Generation* is two-dimensional and just a bit calculated, and like TV itself is most enjoyable in half-hour episodes. R.H.

HOLLY NEAR: *Speed of Light* [Evie Sands and Leslie Ann Jones, producers; Leslie Ann Jones, engineer; recorded at The Automatt, San Francisco.] Redwood RR 403.

Performance: **Passionate, polished lyricism**
Recording: **Flamboyant**

For the past decade Holly Near's music has reflected the politics of the Left: feminism, peace, and ecology. This was quite an unfashionable program for a pop singer trying to commercially succeed during the disco-dizzy Seventies. Anachronistic,

A SINGER'S DREAM!

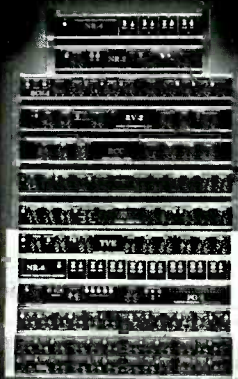


REMOVES VOCAL FROM MOST STEREO DISCS

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



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

PROTEUS I^{T.M.} the lead synthesizer that has it all



IS NOW \$100 OFF!

You've always had a lot of options.

You could have the convenience and easy operation of a normalized synthesizer if you were willing to give up the versatility of modular equipment.

Or the unlimited spectrum of tone colors and timbres of modules if you didn't mind the cumbersome patch cords and time required to set up or change a patch.

You could have programmable presets if you could raise the bucks, or low-cost equipment if you could stand the snap-crackle-pop.

You could even have such technically innovative features as computer control of voice and sequence if you had the technical savvy to design it all and make it work.

Now you have another option. YOU CAN HAVE IT ALL. Wide range, precise, low-noise, presets, meaningful patch bay and an easy-to-use computer interface.

All at a price that's nothing but unbelievable: the easy-to-assemble Proteus I Kit, was \$499 now \$399.

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

**Similar savings on other PIA kits,
ask for our free brochure.**

Want to know more? Proteus I's Using/Assembly manual which includes a demo tape will answer all of your questions. The price, \$10.00 is refundable upon purchase of the kit.

Direct mail orders and inquiries to: Dept. 12M
PIA Electronics, Inc.

1020 W. Wilshire, Oklahoma City, OK 73116 (405) 843-9626

CIRCLE 27 ON READER SERVICE CARD

some might say. Such music peaked during the Sixties with the likes of Joan Baez, Phil Ochs, Tom Paxton, and the grand daddy of them all, Pete Seeger. The debt that Near owed to to all of these singer/songwriters was certainly evident during her initial releases on the tiny Redwood label. The most individual quality of those early recordings could be found in the distinctively feminist cast of her lyrics.

Last year Near released her least political sounding recording, *Fire in the Rain*. No longer was a solo acoustic guitar her primary backing instrument. This album had plenty of electric instruments—plus arrangements as slick as New York sidewalks come December. The album featured love songs, and though they were directed to her female lover (there goes AM airplay in Kansas!), the lyrics were ambiguous enough, and the melodies catchy enough, to make the album a commercial hit.

Truth to tell, I didn't think much of it. A little too polished and vapid for my taste. Even her voice sounded strained. Too many nights getting ready for a potential gig on prime time?

This rambling introduction provides a context for comprehending the stunning achievement of *Speed of*

Light. This album is every bit as commercially appealing, as lushly produced as *Fire in the Rain*. The difference is that Near has learned how to write, perform, and package her political as well as love songs in a manner that doesn't compromise the vital spark implicit in her mission. The songs pack a wallop—musically as well as politically. And, surprisingly enough, they are also pretty.

Side one features both upbeat love celebrations ("Dancing Bird," "Room for Me") and an absolutely stinging rejection of a manipulating lover ("Back Off"). Few pop singers can address the failures of intimacy with anything more than a burst of adolescent nastiness. Near's approach is mature and thoughtful. I can't remember the last time I heard a white female vocalist sing about maintaining "self respect" with conviction. The only overtly political cut on this side, "Emma," is dedicated to the late great Anarchist leader (who was warmly dramatized in Warren Beatty's film "Reds"). Near's voice positively glows when she sings: "But I will laugh and sing and dance/and make love with consenting humans/in our evolution." A very snazzy set of arrangements for various horns propels the tune along fervently.



Holly Near

Side two gets off to a roaring start with a handclapping chorus while Near wails: "I'm afraid I'm falling in love with you/And I really didn't want to." Sheila Escovedo adds lovely percussive touches on this and on several other cuts. Drums, congas, and various percussive instruments are mixed high and lend rhythmic life to many numbers. "El Salvador" is a stark protest song, uncompromising and driving. The tone reminds me of Gil Scott-Heron. Lots of bitter agitprop poetry. Two more politically inspired songs follow. A cover of "Power," an anti-nuke anthem by John and Johanna Hall is passable. Near's own "Family Promise" which pits child raising against the threat of war is more inspiring and convincing. The album closes with a reggae-tinged plea for political unity. The reggae band backing her will hardly put Peter Tosh into early retirement—but they suffice. Her regular band of female backing musicians—supplemented by jazz/fusion electric guitarist Ray Obiedo—are ingenious and forceful musicians.

The production is exemplary. I appreciate how unobtrusively strings and horns are mixed with Near's vocals. Backup vocals are well situated. The overall sound is remarkably glossy and present. I can imagine any cut from *Speed of Light* sounding bright even on a Sony Walkman headset.

Is it impossible idealism to dream that a few thousand kids with *Speed of Light* on their tapeplayers might work to make this a more peaceful and loving world? N.W.

JAZZ

THE KLEZMORIM: *Metropolis*. [Stuart Brotman, producer; Peter Suthem, engineer; recorded February 3-7, 1981 at The Great American Music Hall, San Francisco, Ca., except "The Shepherd's Dream," recorded March 13, 1981 at Audio Engineering Associates, Pasadena, Ca.] Flying Fish FF 258.

Performance: **Deliciously sentimental, robustly danceable**

THE EXUBERANT LEGACY OF THELONIOUS SPHERE MONK

By Nat Hentoff

One of the year's most exhilarating surprises is a previously unissued "live" Thelonious Monk session. Part of Columbia's admirable Contemporary Masters series, *Thelonious Monk—Live At The It Club* was recorded in Los Angeles in 1964. Since I used to hear Monk just about every chance I could—you never knew how long the silences between gigs would be—I can attest to this being one of his most celebratory sessions. Monk was always worth hearing, but some nights his playing was especially joyful. It was on those nights that he would get up and dance more often during a solo. I think he danced a lot on this night.

Not only is Monk enjoying the act of surprising himself but tenor saxophonist Charlie Rouse has never before on record sounded as fresh, biting authority and indeed playful as he does here. Also very much in the careening collective groove are bassist Larry Gales and drummer Ben Riley.

It's a two-LP set, and so there is an ample array of Monk classics, among them "Round Midnight," "Straight No Chaser," and "Misterioso." I must have heard just about every tune here at least a couple of hundred times, probably more, but it's all new again. Monk could not abide playing the same way twice, and on a night like this when everything was coming together, his inventiveness never stopped.

The sound is exceptionally clear and vibrant, giving the sense of immediacy that should be there in a "live" date.

Charlie Rouse and Ben Riley have now decided to pay the best possible tribute to Monk—keeping his songs alive in the night. They've formed a co-operative combo

called Sphere, and their associates are pianist Kenny Baron and bassist Buster Williams. The first album is *Sphere: Four in One* Musician, distributed by Elektra/Asylum).

Wisely, Sphere does not try to imitate any of the Monk groups of the past. The spirit of Thelonious is clearly present, but these four improvisers have not circumscribed themselves to fit into any sequence of Monk literalisms. They are very much themselves; and the group as a whole has its own warm, crisp, often airy character.

A particular note about Buster Williams, long undersung by the jazz public. His time, his room-filling sound, his incisive imagination—all these elements make Buster perhaps the most deeply satisfying bassist in jazz.

Among the legacy of Monk originals in this set are "Four in One," "Monk's Dream," and "Evidence." Since jazz is so personal and so fired by spontaneity, I used to be skeptical about whether you could be sufficiently individualistic if you based your repertory largely on the originals of someone else. Sphere shows it can be done. The engineering is first-class, very warm and resonant. And I do not think Buster Williams's bass has ever been so completely realized in recorded sound as here.

THELONIOUS MONK: *Live At The It Club*. [Teo Macero, producer; Don Puluse, engineer.] Columbia C2 38030

SPHERE: *Four in One*. [Damu Productions, Ltd., producer—no human name given; Rudy Van Gelder, engineer.] Elektra Musician 9.

Recording: **Surprisingly ample given the recording situation**

Nat Hentoff tells of introducing the late Charles Mingus to Jewish "soul music" by playing recordings to him of particularly inspired cantors. Apparently Mingus recognized some jazzy and soulful quality in those recordings. But had Mingus lived a few years later, he would have had the chance to hear a thunderously robust example of Jewish ethnic music married to jazz: a group of six young musicians who identify themselves as *The Klezmerim*.

The group takes its name from Klezmer, the label applied to a 400 year old body of folk and popular Jewish music from Eastern Europe. Klezmer music is a great gumbo, a stew comprised of musical ingredients from gypsy music, military marches, light operatic songs, and American ragtime and jazz. It was

often played by roaming bands of impoverished musicians. The years of its heyday in America were from the start of this century to about 1930.

The Klezmerim have carefully resurrected this long ignored style with great aplomb and verve. They've done so in a modest yet captivating fashion on *Metropolis*. First, they present only instrumentals, thus circumventing the problem of whether to sing in Yiddish or English. A number of the Klezmer lyrics I've heard sound somewhat bizarre in English—requiring listener knowledge of an entire cultural situation long since erased from the earth. Second, they present the upbeat and optimistic face of the music. Authentic Klezmer music does have its tediously *dour* moments. Finally, The Klezmerim opt for a hefty, brassy sound, forgoing the violins and other potentially too-too-sweet string instruments. So the total sound texture created by the band is gutsy, forcefully energetic.

How can one begin to describe what The Klezmerim's music sounds like. My first impulse is to respond: it sounds like a crazy mixture of Benny Goodman, Dixieland, *Fiddler on the Roof*, and Charles Ives. To be specific: a great deal of the swinging nature of the songs is sustained by the clarinet. Suffice it to say that David Julian Gray's clarinet playing on *Metropolis* is stunning. On "Bucharest" he punctuates the complex musical layers with a tone that is at once sardonic and loving. The speed of his attack on "Heyser Bulgar" made me believe my turntable had accelerated to 78 RPM. Kevin Linscott's solid trombone playing was redolent of Dixieland a la Preservation Hall. John Raskin's crisp and danceable percussion evoked the rhythmic vitality of the songs in *Fiddler on the Roof*. And Charles Ives? His spirit is drawn to earth by the uncannily odd juxtaposition of Sousa-like horn anthems with sweetly delicate religious tunes. A heady brew, and one heroically sustained by each of these six dynamic musicians.

The recorded sound is surprisingly ample. I say "surprisingly" since the following recording information is printed on the album jacket: "All tunes were recorded directly onto two tracks without overdubbing or mix-down." I had my qualms initially reading that data. Yet the sound is delightfully bright and well separated—which is no easy task in a band that counterpoints xylophone with tuba! The producer and engineer did their jobs with accuracy.

And Flying Fish Records did a service for the American musical community by recording this rousing young band with one foot in the past, another strikingly in the future. You don't have to be Jewish, as the rye bread company advertisement once read, to enjoy this. Music this soulful crosses all artificial boundaries of body and soul. N.W.

THE PRESERVATION HALL JAZZ BAND: Volume 2. [Allan Jaffe, producer; Skip Godwin, engineer; recorded Dec. 3rd & 4th, 1981 at Sea-Saint Recording Studio, New Orleans, LA.] CBS FM 37780.

Performance: **Another generous helping of red beans & ricely styled jazz**

MODERN RECORDING & MUSIC



Klezmerim

Engineering: **Spectacularly
unspectacular**

I'd give this record five stars for the fine New Orleans jazz as played by the gang from Preservation Hall and another five stars for the recording which sounds like it just happened that way. Then I'd take away eight or nine stars because public domain material like "Shake It And Break It," "Just A Little While To Stay Here," "Bucket's Got A Hole In It" and "Down On The Farm" are credited to Preservation Hall Jazz Band and published by Preservation Hall Music Company so somebody can collect the few pennies royalties. What is sacrificed is honesty, tradition and truth—the kind of things that I would hope any band with a name like Preservation Hall would respect. Public Domain ought not to mean a license for anyone to stick their name on an existing work whose composer has been forgotten in the long line of aural tradition which brought most of the New Orleans/Chicago jazz repertoire to its current state. It should also be noted that the Preservation Hall version of "Shake It And Break It" is in no way related to the piece composed by Friscoe and Clark bearing the same name.

The band itself never sounded better. Allan Jaffe must have put in a lot of practice time on the tuba. His playing has improved infinitely from the time of the band's earlier recordings. He now provides a bass line of great interest rather than just humping back and forth from tonic to dominant or subdominant.

The star of the band, despite fine performances by the Humphries brothers and Frank Demond, is still banjoist/singer Narvin Kimball. His work on "I Ain't Got Nobody" is outstanding.

The recording itself is a masterpiece of restraint and understatement. It would be so easy to overkill performances like these with added echo and other technological improvements. I am sure the engineer who made the recording is well versed in his craft and could have come up with a dozen gimmicks to enhance the sound. In a recording like this, that's not what's called for. It's better just to hear the music captured the way it goes down in the studio or on location with enough clarity that all three separate contrapuntal lines (trumpet, trombone and clarinet) can be clearly distinguished

in the polyphonic ensembles, and with enough range on the bottom that the tuba doesn't get lost. The job that Skip Godwin has done on capturing the essence of the band is to be applauded. So is the music that the Preservation Hall band plays. Although P. H. has suffered heavily the losses of such major talents as Orange Kjellin, Jim Robinson, George Lewis, Billie and Dee Dee Pierce and others, Allan Jaffe usually manages to pull replacements out of thin air. I do wish that on one or more of the Preservation Hall Jazz Band's major recordings we could hear some of the other players who work the hall like the great Kid Thomas, Emanuel Paul and Emanuel Sayles. Maybe next time. J.K.

PEE WEE RUSSELL: *The Pied Piper of Jazz.* [Milt Gabler, producer; no engineer listed; recorded in New York, N.Y., March 25th, 1941 and Sept. 30th, 1944.] Commodore XFL 16440.

Performance: **Oui, oui, Pee Wee, magnifique**

Recording: **Par for small labels of the forties**

To paraphrase a title from Irving Stone, Pee Wee Russell—Missouri born clarinetist, played the Agony of the Ecstasy. Pain and pleasure were always side by side in Pee Wee's playing. The squeak and the squawk were part of the beauty. If he had played the clarinet correctly, legitimately, in tune, he wouldn't have been Pee Wee, he would have been Benny Goodman. Pee Wee played with a sound that matched his surroundings—rough, ragged, always ready for a blast of notes that sounded like they were wrenched from the tormented soul of a mad monk wrestling with the inner values of life and death, good and evil, and forever tormented by that thin line between the beautiful and the ugly. That was Pee Wee Russell.

He was, like most of the best traditional jazz musicians, basically an ensemble player yet he made a number of sessions highlighting his clarinet. Two of these are included here on this Commodore reissue. The Three Deuces of 1941 paired him with my second favorite pianist (Joe Sullivan) and a drummer who had to rank with everybody's top ten (Zutty Singleton). It is interesting that these

**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

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

CIRCLE 29 ON READER SERVICE CARD

memo

24 TRACK

24 TRACK

24 TRACK

**planet
sound
inc.**

DONE

251 W. 30 / NYC 10001 / 594 7554

CIRCLE 28 ON READER SERVICE CARD



Pee Wee Russell

records are being reissued as Pee Wee Russell LPs because the original 78s came out under the name of The Three Deuces with no specified leader. Had there been a leader it probably would have had to have been Zutty Singleton who was already well known as a drummer with Louis Armstrong by the time that Sullivan and Russell were getting established as recording artists in New York. Pee Wee's Hot Four of 1944 featured another Missourian jazz musician who was to become so associated with Eddie Condon and the Chicagoans that he was often mistakenly thought of as being from Chicago—pianist Jess Stacy. Although drummer George Wettling was close enough in age to be considered a contemporary of Jess and Pee Wee, his late appearance on the scene in Chicago put him chronologically behind Gene Krupa and Dave Tough though both Krupa and Tough were younger than Wettling. Bassist Sid Weiss was the baby of the Hot Four but he learned his craft well in the big swing bands of Benny Goodman, Tommy Dorsey and Artie Shaw. But by that time it really didn't matter that much. Pee Wee Russell had established himself as the patron saint of the clarinet to the patrons at Nick's and it was definitely Pee Wee being accompanied by Stacy, Wettling and Weiss—not, as three years earlier, a collaboration between three equals. By 1944 the guys in the "rhythm section" knew their place and backed Pee Wee to the hilt without calling undue attention to themselves. The one exception was a

moment in the introduction to the A or published take of "Take Me To The Land Of Jazz" when Pee Wee and Stacy are running at right angles to each other and for that brief interlude they collided in improvised ensemble just like the good old days. Perhaps that's what makes the difference between Pee Wee with rhythm accompaniment and the collaborative efforts of 1941 is what makes The Three Deuces superior, in my mind, to the Hot Four. There are moments, particularly in the slow evocative blues "The Last Time I Saw Chicago," when Pee Wee, Sullivan and Zutty operate in the ensemble style that makes traditional jazz different from the forms that came after (and that's not an easy effect to achieve when you're working with only one horn).

And again thank heavens for the alternate masters (on all but "Jig Walk" from the 1941 session and everything from 1944). Although Gabler's judgement on the A take was invariably correct even the safeties offered us something new. Pee Wee couldn't have played it the same way twice if you offered him all the money and all the whiskey in the world.

The liner notes by John McDonough of *Down Beat* are written professionally and they include some interesting sidelights and anecdotes about the sessions. I do, however, question several of McDonough's value judgements and statements, especially as concerns the comparison between two such individual yet totally different players as Frank Teschmaker and Pee Wee Russell and also McDonough's feeling that

the Pee Wee style doesn't show up that much in today's players. I think McDonough needs to spend more time listening to players like Perry Robinson, Kenny Davern and Frank Chase if he really believes that.

As far as the sound goes, it's about what you'd expect from the 1940's in the independent studios that Gabler and the rest of the small jazz labels tended to use. If the results were better than some of the other Commodore releases, it's because one horn with piano and drums or even adding a bass is easier to balance than a whole band with three or four horns plus rhythm.

The main thing these records have to offer today's listeners is a chance to hear a musician who was practically without rivals in his domain and his time and who left a peculiar, particularly identifiable mark upon the music of his generation. McDonough keeps referring to Pee Wee as a man who lived on the brink. He lived, indeed, on the brink. He played on the brink. Whenever Pee Wee played it counted for something important.

J.K.

PUG HORTON: *Don't Go Away.* [Debbie Berman, producer; Fred Miller, engineer; recorded at Vanguard Studios, New York, N.Y., May 30th, 1979.] Bodeswell BW 102.

Performance: **A dozen glimpses of the versatile Horton**
Recording: **Tight, close, intimate**

After listening to this record for the first time I was left with the somewhat uncomfortable feeling that I didn't really know who Pug Horton is. There was, however, enough of musical interest in the diversity of Pug's programming that I put it away for awhile and came back to it later. I'm glad I did. It would be near to impossible for anyone to relate to material from the varied sources on this LP. It goes from the rock of David Gates' "If" to the Hollywood pop of Henry Mancini's "Send A Little Love My Way" to the jazz classics of "Melancholy," "Sweetheart O' Mine" and "I Found A New Baby" to the classic Broadway show material of "By Myself." There are also two original pieces of material by singer Horton and her husband, reed virtuoso Bob Wilber, "Don't Go Away" and "Miss My Lovin' Time." It

would take someone with the vocal resources of a Streisand, an Ethel Waters, an Ethel Merman and a Linda Ronstadt to approximate this varied program.

I won't say that Pug Horton is universally successful in making this hybrid program believable, but I will say that she is flexible enough that she comes close to the mark in a repertoire that stretches over a dangerously wide gap of emotions and generations. The sparse accompaniment furnished by a rhythm team including pianist Roland Hanna and bassist Milt Hinton with the only other available voice being that of saxophonist, clarinetist Bob Wilber, sometimes helps such as in jazz oriented material like "Melancholy" and sometimes works against the



Pug Horton

effect such as in current material like "Send A Little Love My Way," a song that would benefit from increased orchestration to hide the fact that the songs they write today just aren't as good as the songs they wrote years ago. Yet, like another British singer of an earlier generation—the late Al Bowlly, Pug Horton gives all she has in the way of dedication and artistry equally to those songs from the bottom of the barrel and classics by Dietz and Schwartz, Jelly Roll Morton and Richard Whiting.

I think the closest that Pug Horton comes to revealing herself is in the original tunes she and Bob Wilber have composed and in a performance of the World War I classic, "Tipperary," which strikes a performance which owes not only to the jazz influences to which Pug Horton readily admits but also a touch of the British music hall and Gracie Fields.

Engineer Fred Miller and producer Debbie Berman have managed to get a very clean tight intimate ensemble sound from Vanguard's New York Studio which has brought forth some enigmatic results in the past.

As this is being written this recording is nearly already three years old. The past three years have been, as those of us who've heard her recent performances can attest, years of growth for Pug Horton. I would hope that her next record might concentrate on a smaller piece of the history of pop music than this. Then, on the other hand, knowing Pug and her versatility and the pride she takes in being able to be so many different characters in her songs, it's likely to be even more of a mix and match affair than this one. Like her husband Bob Wilber, Pug resists being pigeon-holed. J.K.

THE TOMMY DORSEY/FRANK SINATRA SESSIONS. [Ethel Gabriel & Don Wardell, producers; Trinie Austad, Paul Austad, Bob Auger, Brian Snelling, reissue engineers; recorded between Feb. 1, 1940 and July 2, 1942 in Chicago, New York and Hollywood.] RCA CPL 4334, RCA CPL 4335 and RCA CPL 4336.

Performance: **Two perfectionists combined to make perfect music**

Engineering: **Typical 40s 78 sound, some pristine pure, others in various states of decay**

Francis Albert Sinatra, a skinny kid from Hoboken, graduate of the Major Bowes Amateur Hour and veteran of the Harry James band joined the Tommy Dorsey band in January of 1940. He was there about two and a half years. When he left he had the world, especially its female population, at his feet. The fact that Sinatra was not the first such phenomenon (Rudy Vallee and Russ Columbo had engendered much the same hysteria) nor was he the last (Elvis and the Beatles were to follow) in no way reduces the magnitude of the effect that he had on the so-called bobby soxers of the '40s. What was surprising about Frank Sinatra, even in his early days with Harry James, was that he was good. While other band singers just got through a song harmlessly providing a vocal variation sandwiched between two band choruses, Frank Sinatra had personality. He brought something of himself to every tune he sang. That

We've Put *SIZZLE* Into Echo and Reverb
At an Affordable Price-

The main problem with most echo and reverb units is that they don't have the high frequency response it takes to "cut" through the mix and add the type of clarity and depth that vocals in particular need. Our Echo Control Center provides over twice the frequency response of units costing almost twice as much as ours. The reverb section is the quietest, crispest, and least boomy portable unit we have seen.

Capabilities include: •Straight Delay •Echo and Reverb •Doubling •Slapback
•Chorus and Vibrato •Over 95 dB Delay Dynamic Range. Price: \$595.00

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

Equipment to Excite Your Creative Genius.

Sales and Service on pro audio equipment including
TASCAM

Authorized JBL Speaker Recone Center **JBL**

NEWCOME
ISOUND
INCORPORATED

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

goes for the good ones (like "I'll Never Smile Again" and "Star Dust") and the bad ones (like "The Call Of The Canyon" and "Light A Candle In The Chapel").

These 40s were pivotal years. They changed Tommy Dorsey. They changed Frank Sinatra. They changed the music business. They changed you and me and everybody else in the world. There was, remember, a war going on. Dorsey's previous male vocalist, Jack Leonard, after a brief career as a radio soloist, went into the armed forces. While Leonard's following was not as fanatical as Sinatra's was to be, it was a loyal herd, which was totally unwilling to accept his successor. His unlucky successor had been a singer named Alan DeWitt. The herd didn't like him. Neither did Dorsey. He lasted a couple of weeks or so and then Dorsey sent somebody over to get that skinny kid that was singing with Harry James. Lured by the then magnificent sum of \$100.00 a week the kid was willing to go with Dorsey and James wasn't about to hold him back. So it all began, for the record, with a date in Victor's Chicago studios on Feb. 1st, 1940. We hear an obviously nervous kid, not only getting through the lyrics of "The Sky Fell Down" and "Too Romantic," but putting some meaning into them. Even we Jack Leonard fans had to admit that, while the kid was no Jack Leonard, he wasn't bad and in time we'd probably grow to like him. We did. The Dorsey Band was always like a revolving door. Guys were in and out of that band as they fell in and out of favor with the temperamental and demanding leader. Of those present in the band on Feb. 1st, 1940 the only ones still there for Frank's last date with the band on July 2nd, 1942 were trumpeter Jimmy Blake (who'd been in and out a few times in between), Sax man Fred Stulce and drummer Buddy Rich and, of course, TD and FS. Let it be said for Tommy Dorsey that despite all the drinking, the brawling and the temper tantrums, Tommy was a perfectionist and nothing but perfection would suit him. So was Frank Sinatra. He worked harder than any other band singer to achieve a vocal blend with a group. You can hear the results of this on "I'll Never Smile Again." And yet Sinatra was not yet the finished, polished artist he was to become. He matured in his two years in the Dorsey band. Tommy smoothed out the kinks in the kid's phrasing—and

nobody turned a smoother phrase than Tommy did on trombone or a smoother one than Frank was soon to with his voice. The band itself was in transition. It had been a fine dixieland-styled band with soloists like Max Kaminsky, Sterling Bose, Pee Wee Erwin, Johnny Mince, Bud Freeman and Davey Tough giving a strong Chicago style tone to the band. By the time Sinatra joined Dorsey, all the dixielanders except for Johnny Mince and Dean Kincaid were out of the band. Kincaid was important as an arranger but not as a player and his arranging duties were being slowly usurped by the new kid on the block, Sy Oliver. Mince stayed with the band almost until Sinatra left, but his clarinet work could comfortably walk either side of the line that separated Benny Goodman's swing style from the Chicago Dixieland style epitomized by Frank Teschmaker and Pee Wee Russell. The change from 2 beat dixie to 4 beat swing was aided and abetted by Buddy Rich, a loud but effective drummer. Eventually, with the addition of players like Charlie Shavers on trumpet, Buddy De Franco on clarinet, Louis Bellson on drums and others of the be-bop persuasion, the change would be complete.

The change in the band which took place during Sinatra's stay was just as drastic but a lot more subtle. And the changes it brought just about killed the band business. When Frank Sinatra started singing with Dorsey, the band played the first chorus, usually with Tommy taking the melody on solo trombone, the singer sang one chorus and the band came back for either a half chorus or another full chorus depending on how much more room there was on the old 78 RPM records. This was all changed May 23, 1940 with "I'll Never Smile Again." The vocal chorus came first, then Tommy got eight bars of trombone solo before the singers came back in. If one record could be said to have launched the era when the singer became the star and the band became the extra added attraction, this would be the one. It sold. It sold millions. Every juke box had it. Every DJ played it. Some people still break into tears of nostalgia at the sound of the first measure of it. It was the record that finally won over *this* Jack Leonard fan, and probably a few others as well, to Frankie's fan club. It was another departure for Tommy Dor-

sey. His initial fights with his kid brother Jimmy—including the one that broke up the Dorsey Brothers band right there on the stand at the Glen Island Casino, were over tempi. Jimmy thought that ballads should be played extremely slowly. Tommy took them at a good medium bounce clip and the fast numbers went up from there. Tommy must have sensed that with the sentimentality of those separated from their loved ones during the war, the times had changed; even Jimmy never beat off a slower tempo than Tommy did for "I'll Never Smile Again." It hit the right groove—it worked. From then on there were as many fans out front waiting to hear Sinatra's vocals as there were waiting for Dorsey's trombone work. Once the girls started swooning in the aisles that was it. Sinatra mania was in. And with Tommy Dorsey's inflated ego, that must have hurt. Another band member who was not too happy about the attention Frank Sinatra was getting was Buddy Rich, the drummer. Their egos clashed on the stand with Rich hitting loud rim shots behind Frank's romantic vocals and spoiling the mood. Their egos clashed off the stand when one of them (I forget which one) threw a water pitcher at the other. Fortunately the missile missed it's mark but made one heck of a hole in the wall behind the bandstand at the Hotel Pennsylvania. The Hotel Pennsylvania is gone now; they changed the name to something else. The hotel still stands at the same place but it's not the same hotel by a long shot. I don't know if they even have a rooftop dance floor anymore. Tommy Dorsey is gone—Nov. 26th, 1956 he choked to death in his sleep. Frank Sinatra's still around. He's not the same Frank Sinatra though. The kid who sounded almost like a boy tenor on his first records with Dorsey (the arrangements had been made to suit a singer with a higher range and Dorsey refused to have them redone in Frank's key) developed a finely voiced baritone and while his voice is long past it's prime (my favorite Sinatra is the Sinatra of the 1950s Capitol records), there's still enough there to make his performances rewarding. Buddy Rich is still going strong—but then it's easier for an instrumentalist than it is a singer. When Buddy's drums wear out with age he can get a new set from the factory. There's no place a singer can go to get a new voice when his wears out, or at least wears down, with age.

The world never stands still. From the moment we're born 'til the moment we die, nothing stays the same. The best we can do is listen and remember. These records document an important part of the careers of many artists, not the least of whom are Sinatra and Dorsey. They document an era when public taste was changing from bands to singers. They document 83 performances of tunes that, like the tunes of any era, had their share of winners and their share of garbage. For me, at least, they document two and a half years of my life; where I was, whom I was with, the war. If you were part of that generation, you'll remember too.

J.K.

HOAGY CARMICHAEL: *Collectibles*.

[Producer not listed, engineers and studios not listed; recorded between 1939 and 1951, mostly in Los Angeles, CA.] MCA 1507.

Performance: **The Stardust road...
Hoagy's way**

Engineering: **Period**

HOAGY CARMICHAEL: *A Legendary Performer*.

[Ethel Gabriel, producer; various engineers and studios; recorded between 1927 and 1959 in various locations.] CPL 1 3770 (e).

Performance: **The Stardust road,
halfway Hoagy, the
rest All Star Stardust**

Engineering: **Fake stereo; they
should've left well
enough alone**

**GEORGIE FAME & ANNIE ROSS &
HOAGY CARMICHAEL: *In Hoagland*.**

[Georgie Fame, Rod Slade and John Lambe, producers; Steve Short, Terry Evenett and Dan Reynolds, engineers; recorded circa 1981 at Pye Studios and Trident Studios in London.] DRG SL 5197.

Performance: **A rocky trip down the
Stardust road, plus a
bit by Hoagy**

Engineering: **Up to date, up to snuff**

Hoagy Carmichael is dead and the tributes come. The earliest of these, the RCA, was issued before Hoagy's death; the others are memorials. There is hopefully at least one more in the can because CBS/Columbia has Hoagy material (including a recording of "Rockin' Chair" with a vocal by Hoagy and Louis Armstrong) that surpasses anything here. Yet

even at his least monumental Hoagy always brought something charming and engaging to his authoritative performances of his own songs.

By all rights the MCA/Decca should be the best album. It's all Hoagy and two cuts in particular have him in the excellent company of Glen Gray's Casa Loma Orchestra. Their versions of "Little Old Lady" and "Washboard Blues" are the best things on the MCA release. Other recordings have him with a typical L.A. studio band conducted, in at least one case, by Lou Bring, and with a trio that included a fellow named Lindley Jones—before he changed his name to Spike, and became famous (or infamous). Little of this information appears on the album cover—MCA doesn't believe in listing personnel. Yet there is much to admire in this "collectibles" issue: the two sides with the Casa Loma band and a particularly hot "Stardust" sung by Hoagy much under the Armstrong influence.

The RCA album, which I hope is still available, is about half Hoagy and includes an earlier "Washboard Blues" recorded with a Paul Whiteman band that included Bix Beiderbecke and the Dorsey Brothers. This 1927 version beats all for hot jazz but somehow more justice is done to the tune by the simpler arrangement the Casa Loma band uses with no hot solos to detract from Hoagy's vocalization. Fortunately, it is not an either/or situation and the collector who has both "Washboard Blues" recordings in their collection is indeed fortunate. The classics selected by RCA, done by other performers than Hoagy, are somewhat less fortuitous. Except for Mildred Bailey's superb version of "Rockin' Chair" it seems to fall into the "greatest hits" category including the lamentably slick version of "Stardust" recorded by Tommy Dorsey, Frank Sinatra and the Pied Pipers and the umpteenth reissue of "Riverboat Shuffle" by Muggsy Spanier and His Ragtimers—a great record 'tis true but one that I suspect everybody and his brother must own by now.

There are no reissues on "In Hoagland." The record consists of Georgie Fame (a rock star from the Beatles era), Annie Ross (of Lambert, Hendricks and...) and a band that sounds very rock-oriented indeed, plus Hoagy singin' "Rockin' Chair" and suggesting various arranging ideas in what's advertised as his last

recordings. This alone makes the album worthwhile for the jazz collector. There are other good moments like Peter King (who plays alto sax on "Stardust" and sounds like Freddy Gardner would have sounded if he had heard Charlie Parker) and a delicious Mildred Bailey-like "I Get Along Without You Very Well" by Annie Ross accompanied only by Martin Kershaw's guitar. The band is dreadful, with a drummer who plays with all the taste and subtlety of a "Wurlitzer sideman." Yet if Georgie Fame's name will get some of the kids to listen to Hoagy Carmichael's songs, there is some good will come of this album.

There are things that are common to all three albums. Wouldn't you know that "Stardust" would have to show up everywhere? "Rockin' Chair" and "Georgia" also get three performances. RCA is the only label to include "Skylark," "Moon Country" and "Judy." If you want to hear "Ole Buttermilk Sky," "Doctor Lawyer and Indian Chief" or "Little Old Lady" you'll have to go to MCA for those hits. "One Morning In May," "Drip Drop" and "Two Sleepy People" show up only on D. R. G. There's also an item on D. R. G. called "Hoagland." No composer credit is given on the label, but judging from both the lyrics and melody I would suspect the tune was not composed by Hoagy Carmichael, but by someone (probably Georgie Fame) as a tribute after Hoagy died.

Of course, the D. R. G. has the better sound. The RCA has excellent liner notes by Richard M. Sudhalter, while neither D. R. G. or MCA have any liner notes to speak of. MCA has the most Hoagy—but CBS will have (if they come out with it) the best Hoagy. There's a great "Hong Kong Blues" and a marvelous "Riverboat Shuffle" which Hoagy made for them in Los Angeles in 1938, the Armstrong/Hoagy "Rockin' Chair" and a couple of duets with Ella Logan from 1938. If you can afford all the Hoagy Carmichael reissues that are out, and those which are to come, you are indeed fortunate because you'll have an awful lot of good music. If you have to be more selective, just pay your money and take your choice.

J.K.

LUCIANO PAVAROTTI: *Luciano*.

[No producer or engineer listed; recorded mostly in Vienna and London between 1967 and 1979.] London PAV 2013.

Performance: **More golden hit reissues**

Recording: **Excellent, non-digital stereo**

Luciano Pavarotti's recent major TV special on ABC is the latest occasion for another London sampler of various Pavarotti recordings. Some, but not all, of these selections were featured on the recent TV special but this is not the TV soundtrack. It is previously commercially issued material.

For the neophyte fan who discovered Pavarotti with the TV special this album is a godsend. It includes Luciano Pavarotti in some of his greatest triumphs and in other selections which are obligatory for all tenors regardless of whether or not they are associated with the artist in question. Therefore we have Pavarotti singing "E lucevan le stelle" from *Tosca* and "Che gelida manina" from *Bohème*—roles which are inevitably associated with him. In addition we have showpieces like "Vesti la giubba" from *Pagliacci* (which he already sings better than he did on this 1977 recording) and "Celeste Aida" (recorded rather early in his career and I would presume even better today since he has now done the complete opera on stage in San Francisco).

Of course the things to which most Pavarotti fans will turn immediately are the familiar canzoni on side two of the LP. Pavarotti's "Torna a Surriento" and "Mari Mari" are already well known phonographic staples. I don't know how they missed "O sole mio." As an anthology collection the buyer will need to be careful not to duplicate things he already owns to a greater extent than he wants to. If, for example, one has the famous "O sole mio" album you have half of the selections on side two but none of those on side one so at the "special low price" the album is selling for it may well be worth your while to buy it. On the other hand, if you already have the twofer *Pavarotti's Greatest Hits* you already own nine of the fourteen selections contained herein and you might be best off to purchase some other recording by Pavarotti instead.

As far as sound goes, London, which used to be Decca FFRR of England, was a pioneer in high

fidelity sound and one of the first companies to get on the LP bandwagon. Generally speaking, the London recordings are as good in sound as their competition and in the exceptional cases quite better than their peers.

I'm a bit bothered by the lack of liner notes. When one considers that with the gimmick of the TV special a lot of the people buying this album may well be making their first foray into the operatic repertoire I think this was a bad place to omit the libretto (with English translation as well as the sung Italian, French or Latin) plus a brief synopsis of the plot. London could even have turned this to their advantage by citing the album numbers from which these selections were culled so that if a first time listener finds himself or herself attracted to the Neapolitan Songs they can ask their dealer for the "O sole mio" album London OS 26560. For a general overview of the singer, this LP does what it sets out to do. I am a bit surprised that "Una furtiva lagrima" from *L'Elisir d'amore* was omitted but in a way I'm glad it was because had it been included, the aria from *Daughter Of The Regiment*, also by Donizetti, would probably have been omitted. I already have the *L'Elisir* excerpt while the selection from *Daughter Of The Regiment* is one I didn't have in my collection 'til now.

J.K.

BRAHMS: Variations and Fugue on a Theme by Handel, Opus 24; LISZT: Grandes Etudes after Paganini (No. 2 in E Flat and No. 6 in A Minor); Dante Sonata. Andre Michel Schub, piano. [Max Wilcox, producer and engineer; recorded at the American Academy and Institute of Arts and Letters, June 29 and 30, 1981.] Vox Cum Laude D-VCL 9009.

Performance: **Definitive**
Recording: **State of the art**

About a month before making this recording Andre-Michel Schub made media history by taking first prize in the 1981 Van Cliburn International Piano Competition in Fort Worth, Texas.

His victory was no surprise. All the newspaper reports coming back from Fort Worth had been studded with his name and predicting his excellence if not his victory. At first I felt

this somewhat unfair—that an artist who had been around as long as Andre-Michel Schub and whose career had been visible enough that I knew who he was should be competing in this sort of affair which I had always thought ought to be reserved for newcomers. Schub, having played with the Boston Symphony, the Chicago Symphony, the New York Philharmonic and the Mostly Mozart Festival, seemed to me to have an unfair advantage. He well may have had an unfair advantage. He also, as this recording reveals, has a heck of a lot of talent. He also has a good sense as to what repertoire works best for him. If Schub is a virtuoso of the highly technical variety such as Horowitz, Cliburn or Kapell he always uses his technique for the most musical of ends. There's no show-offy, 'look what I can do' playing here. The main people served by the pianist are Brahms, Handel, Liszt, Paganini and the listener.

Andre-Michel Schub has another advantage which, while it might be considered unfair, certainly is one of which any pianist can (and should) avail themselves. If ever the superiority of the Hamburg-built Steinway piano was in question this recording should settle it once and for all.

There is yet another advantage that Andre-Michel Schub has been lucky enough to catch the brass ring on as he went by on the merry-go-round of record companies. Max Wilcox, a former producer for RCA who turned out some excellent recordings by Ormandy and the Philadelphia Orchestra, did the kind of a sonic job for Andre-Michel Schub that is going to make a lot of people sit up and take notice. The period of tone decay following the close of Liszt's *Dante Sonata* (the actual title is "Apres un lecture de Dante, fantasia quasi sonata") was enough to startle even this reporter who mistakenly thought he'd heard it all.

The album notes by Richard Freed are informative and interesting. The graphics on the album cover are eye-catching if maybe a little unreal. But the music, the main reason to buy a record, and the sound, either the reason of secondary importance or perhaps as important as the performance depending on what the buyer is looking or listening for, are without question and without flaw. If this isn't the best piano recording released this year, it is surely the one to beat.

J.K.



CLASSIFIED ADS

LIQUIDATION: JBL 2441 Diaphragms new \$79 (\$42 each). New JBL E-140 15" speakers \$129 (\$28 each). Barney (614) 268-5643.

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.

Yamaha-PM 2000 32 x 8 for rent or lease. Includes flight case, extra power supply, and cord. Available by the day, week or month. FOB Davenport, Iowa. Contact RM Submix (319) 323-6500. Tour inquiries welcome.

PROPHET 5. Complete with tape interface, 800 Sequencer, Anvil Case. 18 months old. All in Mint Condition. \$3400.00 for everything. Liben Music, 6265 Dawes Lane, Cincinnati, OH 45230. (513) 232-1395.

Tascam 40-4, Tascam model 5A, dbx 165, Orban 111b, AKG BX20E, Best Offer (303) 751-2268.

FOR SALE: 1-pair JBL 4311B monitors used \$350. 1-pair JBL 4312B monitors mint \$450. 1-pair JBL 4312B new \$475. Barney (614) 268-5643.

Sacrifice—Model 5 and 5ex Tascam, 20 input with patch bay, parametric eq., and model 1 in custom flight case. Looks nice! \$3500.00 or best offer. (405) 233-3255. 10-6 pm, Mike.

WANTED: Shure SR-107 10 Band EQ in Good to Excellent Shape. (313) 544-3046.

KEPEX AND GAINBRAINS: For Sale. 8 Allison Kepex and 4 Gainbrains Rack Mounted With Power Supply Card. (212) 242-2100 Paul.

RMA DEMO SALE—ELECTRO-VOICE SENTRY-V studio monitors \$550 pair. EV SENTRY-100 \$400 pr. SHURE MICS SM-33 \$230. SM-59 \$125. SM-78TNCN \$120. USED TEAC PB-64 Patch Bay \$60, Shure A15PRS Phase Reversers \$15. Rocky Mountain Audio. Box 2577, Silver City, NM, 88061. phone: 505-388-1123.

101 Recording Secrets Most Engineers Won't Tell. \$7.95. Tunetronics, No. Hackensack Sta., River Edge, NJ 07661.

FOR SALE: Professional tape flutter and noise test instruments. Mincom #6500 by 3M. D & T Enterprises. (703) 751-8100.

Audiohouse sells Ecoplate, EXR Exciter, Micmix, Symetrix, Valley People at the lowest prices. (303) 751-2268.

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.

TRIDENT TSM CONSOLE. 40 input, 24 buss. 32 monitor. \$80,000. (914) 725-3519.

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

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.

Yamaha-PM2000 32x8 for rent or lease. Includes flight case, extra power supply and cord. Available by the day, week or month. FOB Davenport, Iowa. Contact RM Submix (319) 323-6500. Tour inquiries welcome.

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

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.

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 #
19	... Ashley Audio	12
20	... Beyer	13
16	... Calzone	6
25	... Carvin	39
No #	... dbx	19
17	... DOD	9
No #	... Delta Lab	33
23	... Electro-Voice	21
12	... Ibanez	Cover 4
No #	... LT Sound	62
No #	... LT Sound	67
22	... MXR	7
13	... Maxell	3
26	... Newcome Sound	67
10	... Otari	Cover 2
27	... PAIA	62
15	... Pearl	5
28	... Planet	65
29	... Polyline	65
14	... Sam Ash	4
21	... Soundtracs	15
11	... Technics	Cover 3
18	... Unicord	11
24	... Zildjian	37

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.

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

BLANK AUDIO & VIDEO CASSETTES: Direct from manufacturer: Below wholesale: Any length cassettes, four different qualities to choose from. 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.

UNDER \$20.00! Build your own ACTIVE DIRECT BOX with readily available parts. Compact and easy to build. Precision etched and drilled circuit board with complete instructions only \$5.00 postage paid. Send check to DAAK AUDIO, P.O. Box 2162-A, Riverside, CA 92516. Calif. residents add 6% sales tax. Foreign orders add \$2.50.

LOWEST PRICES ANYWHERE! Don't buy anything until you have checked our prices. Guaranteed to be the lowest anywhere! Send for our free listing. Audio Systems Corporation, P.O. Box 17562, San Antonio, TX 78217. Dept. MR (512) 824-6402.

Sound Workshop Series 40

28x24 Automated with expanded patch points. Brand New, used for test only. Call for info. 714-632-9452. Attn. Studio Mgr.

Otari MX5050-QXHD 1/4" 4-track w/cases & rack mounts. Used 2 hours. Real Bargain at \$1800. Steve (212) 698-6973.

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

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.

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

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 _____



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 LEDs 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 11 ON READER SERVICE CARD

“...WITHOUT A DOUBT, THE BEST EFFECTS PACKAGE AVAILABLE TODAY...”



Lee Ritenour

That's what Lee Ritenour has to say about his Ibanez UE400, UE405 and AD202. The UE400 and UE405 combine eight effects in rugged rackmount cabinets. The simple and sensible footswitch panel lets you bring any or all of these effects in at the touch of a single switch and the Ibanez Insta-Patch system lets you custom tailor your effects chain to your own taste.



RIT•P-10973E

The AD202 is the ultimate analog time processor for live performance and the studio. It offers a choice of flanging, doubling, chorus and echo with full stereo capability. Make the effects connection at your Ibanez dealer today.



Tomorrow's Innovations

For a full color catalog send \$2.00 to: IBANEZ Dept. MR P.O. Box 886 Bensalem, Pa. 19020-0886 327 Broadway Idaho Falls, Idaho 83401-0309 17421 "B" East Gale Ave. City of Industry, Ca. 83401. In Canada: 6355 Park Ave. Montreal, PQ H2V 4H5.

CIRCLE 12 ON READER SERVICE CARD
www.americanradiohistory.com