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JANUARY 1986  
VOL. 12 NO. 1  
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Profiles:

**STEVE FISHER**

**STEVE KHAN**

**JOE LYNN TURNER**

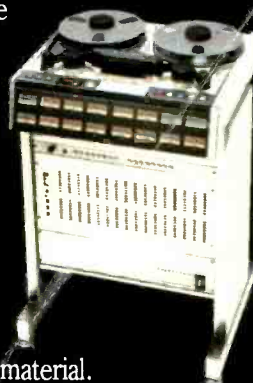
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### **A Word Of Praise**

In the jungle of industry publications (music and recording, that is), yours is one of the few that really keep our attention and teach us something as well. We have been subscribers for over six years, and in every issue we have found something useful. We have a very small sound reinforcement company here in New York. Although the artist profiles don't always reveal new techniques, they do hold our interest, and we find them very enjoyable. I especially liked the September profile of Lou Gramm of Foreigner. Lou has been one of our favorites since Foreigner's first album. Please keep up the good work.

—Jack and Denise Seaver  
Port Sounds  
Port Jervis, NY

### **A Marked Problem**

I am writing in reference to Bob Buontempo's article on "Backwards Hand Erasing" in your September 1985 issue.

I share his obvious dislike of "grease (yuk!) pencils" for marking recording tape for editing purposes. Grease pencils, graphite editing pencils, etc., all generate some kind of residue, which can lead to clogged heads and a poor quality of recording.

There is a solution to this problem. For more than a dozen years now, I've used alcohol-based spirit markers of one type or another. A dark color, (blue, green or black) marks best, and the alcohol dries in about three seconds, leaving an indelible but precise mark for editing work or for the type of technique to which Mr. Buontempo's article refers.

They are ideal because its nib is sharp and the pen is easy to handle, even with difficult to reach heads. And they're cheap to boot!

I often read articles that mention the use of grease pencils and I'm sure this tip will benefit a lot of engineers who find that their grease pencils cause ongoing concern.

—Brian Antonson  
Acting Department Head  
Broadcast Communications

*Thanks for your advice, Brian! However, while grease pencils do present a problem, so do felt tip markers. Firstly, some types contain metal-based pigments to create their colors. This, of course, can cause damage to your tape and tape machine, as well as create an audible "click." Another downfall is the ability to erase incorrect marks. As you noted these pens are indelible and can create problems if you make one or more mistakes. If you do decide to go ahead and experiment, be careful. Make sure the marker has no metal around the point. A medium point would probably work best. For those of you willing to stick with the age-old grease pencil, art supply stores are your best bet. They have small white grease markers with a very sharp point. Happy editing!*



### **STOLEN GUITAR**

Heart's guitarist had a custom guitar stolen during a show on November 15th at the Nassau Coliseum, in New York. It is heart shaped with purple heart wood (red) and gold hardware and strap locks. It has two C.F. Elliot pickups and is in a silver Anvil road case that has a heart shaped logo with the initials HL in it. If anyone has any information regarding this guitar, please contact Sammy Caine at MR&M, (516) 433-6530.

# Talk Back

## DEMAG DILEMMA

After reading the question on demagnetization in the Oct. 1985 issue, I found the answer significantly lacking. To realize that this was, indeed, even a reprint certainly surprised me.

There were several very specific questions that were asked that was not answered at all.

What do you do if the demagnetizer touches the head? Mine has a sleeve of plastic over its tip. What if mine touches? In answer number three, how far away need tapes be? What if the demagnetizer's cycle is broken when you're using it?

I, for one, would like to get advice on these questions.

—Ron Bianco  
Providence, R.I.

*The following is a reply from MR&M technical editor, Sammy Caine.*

We apologize if you found the answer incomplete. In answer to your first question, your demagnetizer has a sleeve of plastic over it because the uncovered metal tip could scratch the head if it touches. If you don't have plastic on the tip of your demagnetizer, we suggest putting scotch tape on the end to protect your heads. If the demagnetizer touches the head, no electrical damage will occur if it is

removed relatively quickly. Don't let it touch for more than a few seconds, as heat transfer (and damage) can occur.

When the demagnetizer is on, a safe distance for tapes is about three or four feet. The magnetic field declines very rapidly as distance increases (logarithmically), so this distance is sufficient.

If the demagnetizer is inadvertently unplugged (cycle broken) during the demagnetization process, simply begin again. The demagnetizer works by continuously reducing an alternating magnetic field that starts out at a maximum level (closest point to the head). Simply restarting the process will provide the necessary demagnetization.

There are many schools of thought as to proper movement of the demagnetizer during the demagnetization process. One method that works well is to do each head separately. Approach the head quickly and, as you slowly pull back, use a small side to side sweep. This sweep should be no larger than the actual width of the head. This should be repeated for the record and playback heads, the capstan, and any other metal part that the tape contacts. If your tape machine has a recommended method in the manual, use that.

It is probably better if the top of the demagnetizer is square with the head, as it insures even demagnetization.

I hope this has answered any remaining questions regarding demagnetization. Please refer back to the Oct. 1985 issue (pg. 6) for a complete guide to demagnetization.

## PUZZLING POLARITY

While there is much less than universal compliance to XLR polarity, a standard for polarity of 3-pin XLR connectors does exist. IEC 268-12 calls for pin 1 to be common; pin 2 to be positive; and pin 3 to be negative. (See page 18 of the April '84 R E/P for a listing of who is doing it to spec and who isn't.)

I would also advise caution when applying the "Bal to SE" circuit shown on page 41 of October '85 MR&M. While I would prefer to see pin 2 used to grab the signal, a balanced output will have signal at both 2 and 3, so for all but the most critical applications, using pin 3 will not cause a problem. What can cause a problem is shorting pin 2 to ground. If the output is balanced by a grounded center-tap transformer or the very popular electronically balanced (usually just two opposite polarity drivers) the output is not meant to be grounded and doing so may cause audible distortion or worse yet premature silence. Try the circuit as shown but leave pin 2 floating (float pin 3 if you grab the signal at pin 2). The only case where you will need to short the unused output to ground is when the output is floating transformer coupled and will not give you an output signal otherwise.

—John H Roberts  
Phoenix Systems, Inc.  
Stone Mountain, GA

# Recording Techniques

## AES Workshop On Recording Pop Music On-Location—Part 1

Two sessions covering on-location recording of popular music were featured at the 79th convention of the Audio Engineering Society last October. The first, covered this month, was "On the Repeal of Murphy's Law—Interfacing Problem Solving, Planning, and General Efficiency On-Location."

The participants were: Paul Blakemore of Blakemore Audio, Takoma Park, Maryland; Neil Muncy, Neil Muncy Associates, Toronto, Ontario, Canada; Skip Pizzi, NPR, Washington, DC.

I have paraphrased the discussion for this article; there are no direct quotations. Topics covered were hum prevention, grounding and power, cables, site survey, and pre-production planning.

### Hum Prevention

Most audio equipment includes a green wire in the AC power cord that is connected to the chassis, and also to the low side of the power supply. Thus, if you interconnect two pieces of unbalanced equipment where the shield carries signal, you set up a ground loop formed of the shield and the power-ground wiring. This ground loop can cause audible hum. A balanced interconnect solves this problem because the audio signal is not shared with the shield.

Power lines in walls radiate magnetic and electrostatic fields that oscillate at 60 Hz and its harmonics. These fields can couple to audio cables and produce audible hum or buzz. Magnetic fields couple best at low frequencies, and so are heard as a low tone or hum at 60 Hz. Electrostatic fields couple best at high frequencies, and so are heard as a buzz including harmonics of 60 Hz.

In an audio cable, the grounded shield is the path of least resistance to ground for electrostatically coupled

interference. Thus, the shield helps prevent electrostatic hum pickup. If you break a shield connection in a mic cable, there is no ground path for induced electrostatic charges, so you'll hear a buzz in the audio.

The pair of conductors in a balanced audio cable are twisted together to reduce pickup of magnetic hum. Here's why: according to the inverse square law, a magnetic hum field weakens very quickly with distance. In a twisted pair, both leads are the same average distance from the hum source, so they receive the same average field strength. Thus, equal voltages are induced in each conductor. At the preamp input where the cable is connected, the preamp amplifies only the "difference" signal between the pair. And since there is little difference in the hum voltage between the two conductors, there is little hum to be amplified.

Audio cables contain shielded, twisted pairs to reduce hum. The cable connector is susceptible to magnetic hum interference because the leads are separated.

Star Quad cable has two parallel-connected twisted pairs inside for extra hum rejection.

In a snake box, direct box, or splitter, it's a good idea to keep internal wiring twisted up to the connector and to use short lengths.

Mic-cable shields are either spiral wrapped or braided. Spiral wrap costs less but provides less coverage. Braided shield is stronger and provides better coverage, but costs more. Double spiral wrap covers the conductors better than single spiral wrap.

### Power And Grounding Practice

Here are some suggestions for making AC power connections on location. Check that your AC power source is not

shared with lighting dimmers or heavy machinery; these devices can cause noises or buzzes in the audio.

Measure the AC line voltage. Know what your equipment can do under widely varying voltages. You may need to use a Variac. Use a 3-prong tester to check AC outlets for reversed polarity or lack of ground.

If possible, get AC power from the same place as the sound-reinforcement company. Run a long, thick (14 or 16 gauge) extension cord from that point to the control room. Plug AC outlet strips into the extension cord, then plug all your equipment into the outlet strips. Do not overlook the third-pin safety ground on equipment power cords. If you have to float the ground to prevent ground loops, make a box as follows: Put male and female AC power connectors in the box, with the hot and neutral leads wired together. Between the ground lugs, put a bridge rectifier shorted across its center terminal. It will conduct only in the event of a ground fault. It will give you a disconnected ground at signal voltages, but will clamp if a fault occurs and the voltage rises above 1.2 volts. You may want to add a 20-amp circuit breaker. Plug this box between each piece of equipment and the AC power outlet.

Turn on all the stage musical-instrument amps and the sound system. Using a neon tester or voltmeter, connect one lead to system ground, and the other lead to the chassis of each instrument amp. Verify that there is no voltage measured. Also measure between guitar strings and sound-system microphones.

### Interfacing With Telephone Lines

If you're doing a live remote for broadcast, you'll probably send your signal to the transmitter via rented

telephone lines. The telephone company (Telco) rates the noise level of telephone lines in dBrn. Zero dBrn is the "absolutely quiet" reference. 0 dBrn equals -90 dBm. Thus, if the noise level is 30 dBrn, the signal-to-noise ratio is 90 minus 30 or 60 dB.

Telco zero level is +8 dBm. You don't necessarily have to feed +8 dBm from your console into a phone line; +4 dBm will give 4 dB more headroom. Telco test level is 0 dBm for tones above 400 Hz.

You may want to ask for lossless lines (with unity gain); otherwise you may be down about 20 dB after transmitting through the phone lines.

You need a 600 ohm source impedance, achieved by putting a 600 ohm resistor in series with the console output connector (300 ohms per leg of the balanced line). Have a terminated transformer on the sending end. To make a receiving line 600 ohms, put a 600 ohm resistor across pins 2 and 3. For stereo programs, specify phase-matched lines.

In addition to the program lines, rent a non-equalized private line for communications. Order program lines two or three days in advance. Order a standard non-eq'd line for communications about a week in advance.

## Cables

Let's move on to the subject of cables and cable connectors. In a 3-pin connector, if you tie pin 1 to the shell grounding lug, you reduce pickup of electrostatic hum. With this wiring method, however, ground loops are more likely to occur if the shell contacts metallic surfaces on stage.

Furthermore, if pin 1 is grounded to the shell, and you plug the connector into a direct box and push the ground-lift switch, you don't lift ground!

It's probably best *not* to tie pin 1 to the ground lug when you're recording on-location, because ground loops are more likely to occur than electrostatic hum pickup. But in controlled studio situations, it's best to tie pin 1 to the ground lug. In any case, standardize your connector wiring.

If SCR dimmer noise is a problem, insert an adapter between two mic cables to tie pin 1 to the shell.

Number the cables near their connectors and cover the label with clear heat-shrink tubing. Also label both ends of each cable with the cable length. Loctite the connector screws in place.

Try to use a single mic cable between

each mic and its snake-box connector.

Avoid bundling mic cables, line-level cables, and power cables together. If you must cross mic cables and power cables, do so at right angles and space them vertically.

Don't leave a rat's nest of cables near the stage box. Coil the excess cable at each mic stand. That way, you can move the mics and reduce clutter at the stage box. Don't tape the mic cables down until the musicians are settled.

Also, have an extra microphone and cable offstage ready to use if a mic fails.

## Pre-production Meeting

Have a pre-production meeting with the sound-reinforcement company and the production company putting on the event. Find out the date of the event, location, phone numbers of everyone involved, when the job starts, when you can get into the hall, when the second set starts, etc.

Decide who will provide the split, which system will be plugged in first, second, etc. Draw block diagrams for the audio system and communications system.

If you're using a mic splitter, note that the mixer getting the direct side of the split provides phantom power for condenser mics not powered on stage. If the house system has been in use for a long time, give them the direct side of the split.

Overly loud stage monitors can ruin a recording, so work with the sound reinforcement people toward a workable compromise. Ask them to start with the monitors quiet, because the musicians always want them turned up louder.


Make copies of the meeting notes for all participants. Don't leave things unresolved. Know who is responsible for supplying what equipment.

## Site Survey


Visit the recording site in advance and go through the following checklist:

1. Listen for ambient noises—ice machines, coolers, 400-Hz generators, nearby discos, etc. If the room is noisy, you'll need to mic close. If not, you may want to mic at a distance to include room acoustics.
2. Sketch dimensions of all rooms related to the job. Estimate distances for cable runs.
3. Turn on the sound reinforcement


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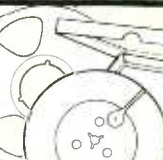
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system to see if it functions okay by itself (no hum, etc.). Turn the lighting on at various levels with the sound system on. Listen for buzzes. Try to correct any problem so that you don't document bad PA sound on your tape.

4. Check AC power on stage with a circuit checker. Are grounded outlets actually grounded? Is there low resistance to ground? Are the outlets correct polarity? There should be a substantial voltage between hot and ground, and no voltage between neutral and ground.
5. Determine locations for any audience/ambience mics. Keep them away from air conditioning ducts and noisy machinery.
6. Plan your cable runs from stage to control room.
7. If you plan to hang mic cables, feel the supports for vibration. You may need microphone shock mounts. If there's a breeze in the room, plan on using windscreens.
8. Find a source of power for the remote truck that can handle the truck's power requirements. Find out whether you'll need a union electrician to make those connections.

9. Find the circuit breakers for your power source and label them. Stay away from circuits supplying heavy machinery or old style cash registers. Use an assistant to see if any devices are on your circuit. Ask the custodian not to lock the circuit breaker box the day of the recording.
10. Make a file on each recording venue including the dimensions and the location of the circuit breakers.
11. Find out where the control room will be. Find out what surrounds it. Many noisy machines?
12. Visit the site when a crowd is there to see where there may be traffic problems.
13. You might want to record the ambient noise with a portable recorder and play it back at home. This will make the ambient noise much more audible.
14. If the AC power is noisy, you might need a power isolation transformer with an electrostatic shield. Use a line voltage regulator if the AC line voltage varies widely.

After doing the site survey, draw a complete system block diagram includ-

ing all cables and connectors. Use this to generate an equipment list. Keep a file of system block diagrams for various recording venues.

### Miscellaneous Tips

Hook up and use new, unfamiliar equipment before going on the road. Don't experiment on the job!

Walkie-talkies are okay for pre-show use, but don't use them during the show because they cause RF interference.

Allow fifty percent more time for troubleshooting than you think you'll need. Expect failures. Have backup plans if equipment fails. Leave as little to chance as possible.

Bring a tool kit with screwdrivers, pliers, soldering iron, connectors, adapters, cables, 9V batteries, guitar cords, guitar strings, AC-outlet checkers, fuses, a pocket radio to listen for interference, ferrite beads of various sizes for RFI suppression, canned air to shoot out dirt, Q-tips and pipe cleaners, and Cramoline Red from Cague Labs to remove oxide from connectors.

At the gig, have a gofer supervise the union people. Don't order them around. Make friends with them. Assistants can relay messages to and from the stage crew while you're mixing.

During short set changes, use a closed-circuit TV system and light table to show what set changes and mic-layout changes are coming up next; transmit this information to the monitor mixer and sound reinforcement mixer.

Don't unplug mics plugged into phantom power because this will make a popping noise in the sound reinforcement system.

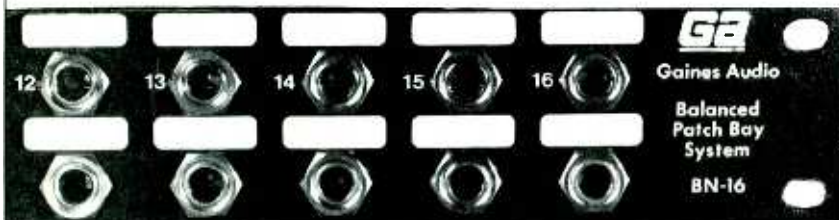
After the gig, note equipment failures and fix broken equipment right away. During the strike (take-down), don't use too many people. Make sure assistants do their jobs correctly so you can let them work unattended.

Don't put tapes through airport X-ray machines because the transformers in these machines are not always well shielded.

Hand-carry your mics on airplanes. Arrange to load and unload your own freight containers, rather than trusting them to airline freight loaders.

Get a public-liability insurance policy to protect yourself against suits. In general, plan everything in advance so you can relax at the gig and have fun!

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## Local Property Tax Savings

# TAXING TIPS

**T**he Tax Reform Act of 1984 was signed into law only a year ago and already the President and Congress are talking about still more changes to our massive tax rules. Tax reform, both real and proposed, poses quite a planning challenge to the average recording studio owner. Surprisingly, however, the biggest tax savings are not always to be found in our federal income tax laws—local property taxes also offer tremendous potential for tax savings.

Property taxes are not the exclusive problem of homeowners—more and more pressure is being exerted on local taxing authorities to shift the property tax burden from the homeowner to commercial and business property owners and others.

And not only those studio owners who own their own buildings (used in the recording operation) are feeling the pressure. Tenants are also facing rental increases as their landlord's property taxes escalate.

It is extremely likely that the present property tax assessment on your recording studio is far too high or wrong in any number of ways. Quite frankly, you are probably wrong if you assume that whoever valued your operation's property was qualified to do so. You are probably wrong if you assume your property tax bill is fair simply because the tax value is below market value. You are also wrong if you assume that you, as a tenant, cannot do anything about your landlord's property tax bill.

In fact, you are probably wrong if you assume anything at all about property taxes. After all, time and time again, the experts have labeled the property tax as the worst administered tax of all. In reality, the problem is compounded by the fact that there is no one real estate tax.

That's right, there are fifty-one different sets of property tax laws—one for each state and the District of

Columbia—and these fifty-one are further divided into more than 13,000 separate property tax districts. Not too surprisingly, the laws are not always applied uniformly even within a state.

The answer to one or more of these questions may provide the grounds for a property tax reduction:

1. Did the assessor make mechanical errors? Finding a mistake in the tax authorities version of building size or even in simple computations—and there are always plenty of mistakes—can put you in line for a quick reduction.

The test should not be the relationship to market value, but rather is the tax fair in relation to assessments on other recording studios or similar properties in your area? For instance, if you have land worth \$800 per acre and your assessment is based on an "appraisal" of \$600 per acre, you may feel that you are getting away with something. However, if neighboring property similar to yours is typically "appraised" at only \$200 per acre, your studio operation is paying three times as much real estate tax as it should.

2. Is the assessor's work in accord with the valuation guidelines he is supposed to follow? Many assessors follow an official valuation manual issued by a state agency—or at least they are supposed to unless they have a valid reason to depart from it.
3. Has the property been appraised for more than its market value? If this is the case a reduction is clearly in order.
4. Is the assessment on your recording studio a legal one? As simple as it might seem, perhaps not all of your property should be subject to the property tax. Perhaps part is exempt because of its usage, its utilization or even because you don't own it.

If your studio building, or any property falls within one of the above areas and you, like thousands before you, find substantial grounds for a reduction, the next question is: How can you ask for that reduction.

Surprisingly, at least to anyone familiar with taxes, most reductions in assessments are achieved without an official complaint or even a formal hearing. Often the taxpayer merely calls the mechanical error to the attention of the assessor; the assessor usually agrees to correct them and mails out a notice of the reduced assessment.

Usually if you are going to challenge an assessment for a particular tax year, you usually must do so by a specified cut-off date if it is an existing assessment or, in the case of a revised estimate, within a certain period after the change.

Should this informal approach fail and if you still feel that your property tax assessment should be reduced, local laws usually afford you an opportunity to petition for review of the assessment. Quite often local tax officials will provide an application form for you to use in requesting this review.

It may be misleading to call this appeal "formal" because quite often it is anything but formal. The business conducted is very serious, but the conduct is usually rather informal, sometimes candid, and more often than not, quite cordial.

If the decision by a local review board against your recording operation is not agreeable to you, you may have the opportunity to appeal to a review board at the state level. Then, if that review board does not agree with your protest, you normally must appeal to a court to review the assessment. The relatively few cases that ultimately reach the courts accurately reflect the ease with which compromise is reached at the various review stages.

Where does this review and appeal process begin? Unlike our federal income tax system where each taxpayer figures his own tax bill and answers questions raised by the ever-vigilant IRS, property taxes are computed for you and you are told only what to pay. In other words, the local tax assessor figures your tax burden for you, sending you a bill which tells you little more than how much to pay.

To find out how that assessment was figured, it is up to you to actually check the assessor's records. It is here that you may encounter a slight roadblock from assessors who forget that they are public employees overseeing public records.

Once you have the card, the first step is to check for mechanical errors. For instance, is the lot size stated accurately? Rely on a deed, abstract, or engineer's survey, but not on any dimensions shown in a drawing made in the assessor's office.

Are the improvements described accurately? Or, are the sizes of those improvements stated correctly? Are all of the other statements of fact correct? Are all of the arithmetic computations accurate? A good rule to follow during this process is to check all of the math for mistakes—even if you don't know its purpose.

A statement made by Barry Greever of Ralph Nader's Tax Reform Research Group shows some assessments are so shot through with errors that it's hard to believe that they are real. "Here is a notice of change in assessed valuation," he testified, "sent to a resident in the county which changes the assessment from \$750 to more than \$1.4 million." An obvious error, but how do you know that your own property tax assessment isn't

based on a five-story addition in the middle of your parking lot?

Once past the basics, the next step is to determine whether the assessment you are checking is reasonably consistent with assessments on similar properties. In checking the fairness of your assessment, you may want to use what is often the most convincing test of all: Compare the way your assessment was figured with the way assessments were figured on most comparable properties in your area.

Surprisingly, many assessments are successfully challenged without any discussion of market value. It can be enough to simply show that the assessment you are questioning is out of line (too high to be consistent with) those on similar properties. Of course, you may find yourself faced with tax officials who feel that the building's cost is a pretty fair gauge of its value. It is not, and convincing them can cut your bill substantially.

Sometimes even brand new buildings or improvements are worth much less than their construction costs. Because of ill-conceived design, inefficiency, excessive competition in a particular area, shifts in demand, extreme specialization or any combination of these factors, a studio owner frequently will spend far more than a building is actually worth. Most of the time, the assessor's preoccupation with cost, cost, cost can only be overcome at the review stage.

In the majority of states, all classes of property—dwellings, farms, apartments, commercial or industrial—must be assessed under law at uniform percentages of market value. As a homeowner, you would be upset if you found your house taxes were high only because several local businessmen had convinced the local assessor to give them preferential treatment. By the same token, it is against the law for homeowners to enjoy special property tax rates at the expense of your operation.

An important Latin phrase "ad valorem" best describes the capricious property tax. Ad valorem means "according to value." As we've attempted to point out, property taxes are supposed to be based on the value of the taxable property—not upon who owns that property or what it is used for.

Because property taxes are rarely levied strictly according to value, and even more rarely, correctly; your own property tax bill is, in all likelihood, unfair. But you will never know unless you check.

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# Bruce Jackson

## Mixing in the USA

### Part 2

In this conclusion of a special interview with Bruce Springsteen's sound engineer, the affable and articulate Bruce Jackson talks about touring with the world's largest travelling sound system. He explains several of the innovations he implemented on the *Born In The USA* tour, discusses working with the "hardest working man in rock 'n' roll," and shares a few details about a new generation of mixing boards that he's helping to design.

**Modern Recording & Music:** How knowledgeable is Springsteen about the technical aspects of what you are doing with the sound?

**Bruce Jackson:** He would often want an explanation about things. Over the years I've given him so many explanations, and his memory is so sharp, that he's been able to gain a pretty good technical base from the information that has passed between us. He was even able to make suggestions himself, like about lowering the PA, tilting the cabinets, and eq'ing the "edginess" out of the sound. He came from being pretty much a neophyte to a level where I think he'd surprise you from a sound point of view.

He educated me with his approach to things; what he goes for. Ideally, a soundman would go for everything super-separated, and super clean. He likes the excitement of the jangle and cacaphony he gets going, and there's a lot to be said for that sort of thing, too. I think he was a big influence, from a recording point of view, on things like a snare having lots of reverb, and having room sound on recordings. I think basically he hears things the way the old records sound, with lots of room sound.

**MR&M:** Can you tell us what working with Bruce Springsteen is like?

**BJ:** It's so satisfying working with Springsteen. You know it's coming

from the heart. That's what inspires the crew to work so well for him, too, because they all feel that. He's giving his absolute best, and therefore it's up to them to give their absolute best, and that's how they worked.

For an outdoor tour situation, our crew was considered very light. It was a tight, compact little group that was very efficient. We didn't need all the wretched excesses that some other tours have been known to go with. One guy would wear multiple hats.

**MR&M:** When I met you all, near the end of the tour, I was amazed by the

past tours. He knows that he has trouble singing three shows in a row, so we'd just do two shows, then have a day off. After a bunch of those we'd have a couple of days off, and after a leg of the tour we'd have a week or two off. Actually, during those weeks off we're still planning and organizing, but it breaks things up and it's not like a constant pressure and drive.

Also, I was able to specify the equipment we used and we had a whole bunch of new gear—connectors, amplifiers, and this and that, which also reduces headaches. You don't get all



Bruce Jackson

cheerfulness and high spirits I observed in a group that had been on the road for well over a year.

**BJ:** I think that's basically due to Bruce's being sensitive to what had happened in the past and his choosing to pace things. He learned a lot on the

the failures that come from using stuff that's been on the road for years.

**MR&M:** Where do you think Springsteen is heading musically?

**BJ:** I know that he's been writing a lot of songs and that he plans to get back into the studio again in the near

future. It's not as if he wants to run away from the whole thing. He's ready for another phase. His music seems to be in a constant state of evolution. More than anything, he's probably grown up in this last year and a half, in that he's married. I think you'll probably see influences in his music based on his broad experience of touring worldwide and meeting up with lots of different people and just basically being that much older. You'll just see a continuing evolution. As far as me being able to predict it, that's impossible. But based on what I've heard him experimenting with, he's got some interesting material up his sleeve. He'll come in with the band and run through something, and have me run a cassette. They'll run maybe halfway through it once and then all the way through it and that's the last you'll ever hear of it again until you might hear it on an album years later.

**MR&M:** Can you tell us about the sunken monitor system you used with this tour?

**BJ:** Before the tour, I had spoken to Clair Brothers about what I wanted in the way of monitors, which was something sunk into the stage. In the past, we just had 3-way monitors with a 15-inch, a compression driver, and a super high. Bruce used to always like the Bose monitors, but the trouble is that they never projected and they had trouble battling with the stage levels that we had. What I wanted to do was add some cones in there for the mid-range, so they custom-developed these cabinets with two 8-inches, one compression driver, and one super high in it. That was the small bit sunk into the stage and aimed at Bruce. Lying flat, underneath a metal grill and pointing up, were the bass speakers, which had one 15-inch in them. They were very inefficient, so I'd probably change them next time.

That way, we had a very low profile monitor system. Initially, we just had it on Bruce. It worked out so well that we went ahead and did it for Clarence and Nils, too. The same thing went for Danny, the organist. We put two bass cabinets under him and separate little speakers up on a stalk, what Clair Brothers now call Hot Spots, which consist of one 8-inch speaker and one 1-inch compression driver on a custom horn. They were very unobtrusive and gave a much cleaner look to the stage. We changed the one under him because he kept blowing it out by driving the low end so hard. We changed it to one

giant cabinet with four 15-inches in it.

**MR&M:** Was there anything unique about the monitor set-up?

**BJ:** I think that what's unique is the simplicity of it all. Basically it's a bar band up there onstage and we don't

Clarence and Max.

**MR&M:** How did you like working with all those wireless mics?

**BJ:** I'm probably a dinosaur in that department because I've never liked wireless units. You just can't beat a cord. I've resisted it up until this tour



Mike Keating, stage right monitor mixer.

make any pretense that it's anything else. They're just a bunch of guys up there having a good time making music and rocking 'n' rolling.

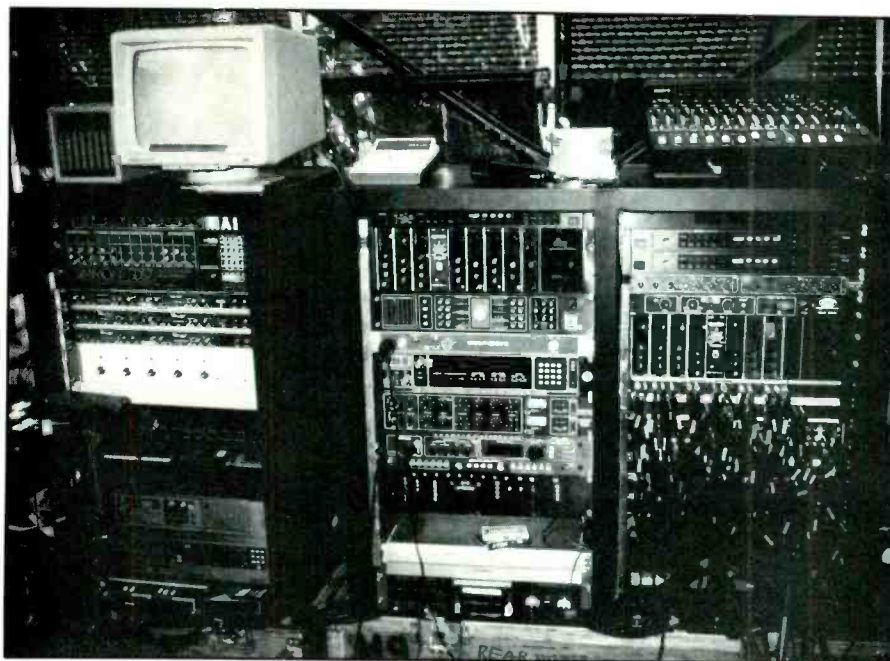
Bruce is pretty reasonable with his demands. He's not a monitor madman at all. I think that our monitor mixer, Jim Devenney was able to extract everything they needed out of a relatively simple amount of gear, although a lot of people would say that his 32-input Harrison board and all his electronics are not necessarily that simple. But it is, compared to a lot of shows that are over the edge with millions of monitor mixes going on.

I divided things up. On previous tours we just had one monitor mixer, but on this tour I made it so that Jim Devenney, on stage left, took care of Bruce, Nils, Roy, and Clarence when he went down front, and set it up so Danny, the keyboard player, could mix his own monitors on a little Soundcraft board. On stage right, Mike Keating was the most recent guy to take care of the two more demanding ones, from a monitor point of view, which were

when it became obvious that I had to give in. The one thing I held on to, which Bruce agreed to do, was his vocal mic. Although for the song where he does use a wireless, ("Dancing In The Dark"), I got a Sony transmitter. Sony has a very nice wireless system which operates in the UHF band and it's not compressed, expanded, or companded. Normally, to get the dynamic range, they compress the signal while it's going into the transmitter and out the other end to the receiver, then expand it back (companding).

Unfortunately, in that process you get all this breathing and modulation that you can hear. The Sony system is free of that. They have a very nice vocal microphone but, the electret capsule they have it in is unable to take rock 'n' roll levels—it distorts and carries on, and also it's not good for monitors. So what I did was replace that capsule. I made an adaptor and a special little pre-amp inside. I attached the Electro-Voice DS-35 on that, which I use for his regular vocal mic, to make a custom Sony wireless microphone. That

Photo by Susan Borey



**Outboard gear for the main system.**

worked out well.

In addition to that we also had a Sony wireless on the bass guitar, and Bruce had three Nady wireless units, which are the companding type. Guitarists seem to like them. Clarence had a custom configuration that Carl Countryman built for us using his little hypercardioid electret microphone going into Nady transmitter.

**MR&M:** Have you ever thought about trying to perfect the design of wireless mics?

**BJ:** I was talking with Carl Countryman, who's been talking about a whole new technique of spread spectrum wireless, which will be very interesting if everyone gets that together and does it. Right now the Sony system is very, very good, but there *is* room for improvement, and I don't know what's going to finance it. The existing Sony system is very expensive. I think it costs about \$8,000 for one full set-up, where the Nady is only a fraction of that price. You pay for approaching perfection.

**MR&M:** What about power for the show?

**BJ:** The power distribution system we used was very sophisticated in that we ran 480 volts everywhere on a delta service, so it's on a 3-wire, 3-phase, 480 volt delta. That fed the three different transformers, 225 KVA on each side of the stage, and then the stage power transformer, which was 75 KVA, transformed down to drive the Carver amplifiers.

Using the Carver amplifiers was unique, too. If we would have had to use conventional amplifiers we would have had far more space taken up in the trucks, far more weight, and far less

efficiency. The Jacksons also went out with Carver amps last year. Onstage we used SAE amplifiers and they proved to be very reliable.

Ron Borthwick has come up with a special arrangement for feeding the speakers that produces a very high-dampening factor, which is basically how efficiently you couple the amplifier to the speakers, and how much the amplifier stops the speakers from wobbling around. He's able to transfer the high-dampening factor available on the Carver amplifiers to the speakers very efficiently, using his special arrangement of speaker cable.

**MR&M:** Is that something that will soon be on the market? Everyone could use greater efficiency and less weight.

**BJ:** It should be on the market, but it's something that Clair Brothers will probably keep as a proprietary thing.

**MR&M:** What special considerations did you have to make in order to take the sound system to Europe?

**BJ:** The only consideration was to have enough time for it to make it in the containers. To air freight 140 S-4 cabinets and everything we brought over would have been ridiculously expensive, so we shipped them over by

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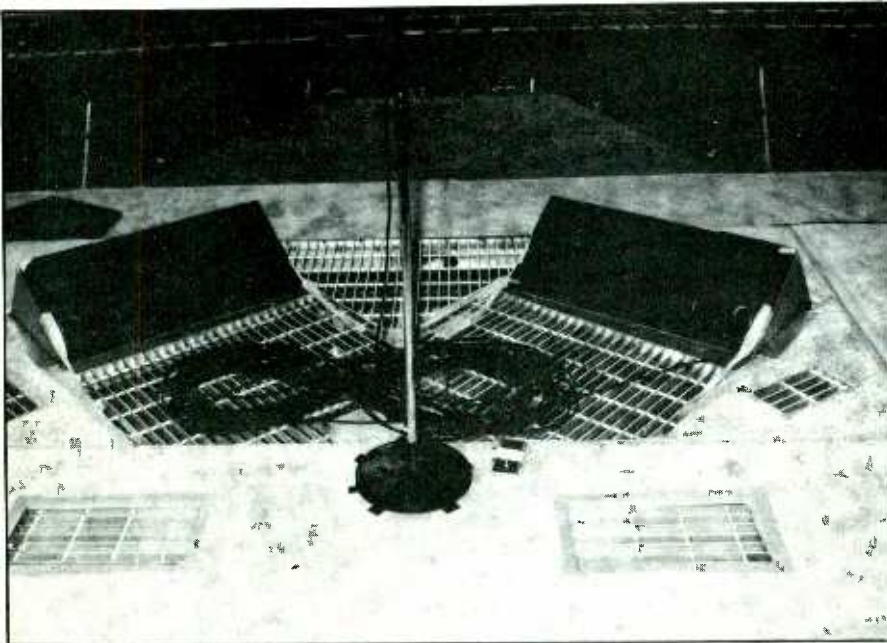
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Sunken monitor system used by Bruce Springsteen.

boat, which took about ten days.

We didn't use the delay towers in Europe. We used the initial version of the set-up, made out of scaffolding, with all the wire strung up through the air.

We probably had a wider variety of venues there, starting off with Slane Castle in Ireland, where the show was the biggest rock concert ever held in Ireland. There was actually an Earl there, Henry, who has an old castle sitting on top of the hill. The festival takes place on the slopes running down to the banks of the river. The Earl was

---

***Basically it's a bar band up there onstage and we don't make any pretense that it's anything else.***

---

up in his castle looking down at the concert with Pete Townshend and a bunch of other guests.

**MR&M:** What about after that?

**BJ:** From there we went across to Newcastle for two shows, and then we popped over to Rothenburg, then Rotterdam. Basically each place was quite a bit different, although the two which were the most unusual were Slane Castle and Paris, which was one big, flat field. We had some trouble because of the situation they had over there at the time we arrived. A huge facility had just burned down in that area, and there had also been a riot in Belgium, so people were a bit skittish. To ease everyone's fears, we changed from the regular venue to a big, flat field, and it worked out great.

**MR&M:** Were there ever problems with matching things up power-wise?

**BJ:** We solved that problem by carrying a generator with us on the whole tour, a 500 KVA generator powered by a big diesel engine. It's an integrated

unit in a relatively sound-proof enclosure. It's tractor-trailer sized.

We just didn't want to have any unknowns, because of the tight schedule, and we didn't want to go through a learning experience at the audience's expense, so obviously the luxury we were afforded was to be able to take everything over, which is usually hard to be able to justify, from a financial point of view. Bruce places such a priority on the quality of the sound that it just wasn't a problem here.

It was nice to go around and set new standards by which people will judge outdoor shows, and to bring a new level to state-of-the-art. Everyone painted Europe as a nightmare, but it flowed very smoothly.

**MR&M:** You're working on some designs for a new generation of mixing boards. What are some of the features we can expect to see on these consoles?

**BJ:** I think it's time to go with a totally new arrangement. The essence of it would be that the new boards

MODERN RECORDING & MUSIC



Jim Devenney, stage left monitor mixer.

would be operator friendly. It'll be something that you'll be communicating with by a computer-operated device, but you won't be aware that there's a computer in between. You'll feel like you're talking directly to the electronics. You'll have good tactile feedback—when you grab a knob and push it or pull it, it will actually feel like you're doing something, rather than being like going up to a TV screen and using a light pen to draw in what you're trying to do. We like the idea of being able to rotate a knob and get some sort of feel back, while taking advantage of all the magic functions that a computer can do; removing all those horrible mundane tasks of remembering eq settings, buss sends, preset mutes, and all that sort of thing. We were initially discussing doing things totally digitally, but unfortunately, the technology is far too expensive right now to do that effectively. We'd be able to make a board, but maybe half-a-dozen groups would be able to afford it. What we hope to do is make something that's affordable by a far broader section of the professional audio community.

**MR&M:** Would it have computer memory?

**BJ:** Yes. If you had four different groups on the bill, you'd be able to go through and soundcheck, and the board would remember all the settings for each one. You wouldn't have to read it off a chart, or listen to a tape with the recorded values.

It wouldn't look like a regular board. We'd do away with all those repeated knobs and have basically one area that you could access. That area would be optimized for tactile feedback and operator friendliness.

**MR&M:** Do you think that there's a substantial gap between the capabilities of studio and live boards?

**BJ:** Not at all. I think there's a gap between what's now becoming available in consumer equipment as opposed to professional equipment. With consumer equipment, they can get the quantities up, therefore the price comes down. You can get some fairly exotic features for a relatively small price. With professional equipment, the quantities are just not enough to be able to justify making all these customized integrated circuits and all this sort of thing. So what we hope to do is be able to capitalize on some of those items that are being mass-produced for consumer use, take the best of them and apply them to professional use.

**MR&M:** It sounds like you have a lot of faith in the live concert business. There are people who say concerts will soon be a thing of the past, and that people will enjoy their music via videos, holograms, or whatever.

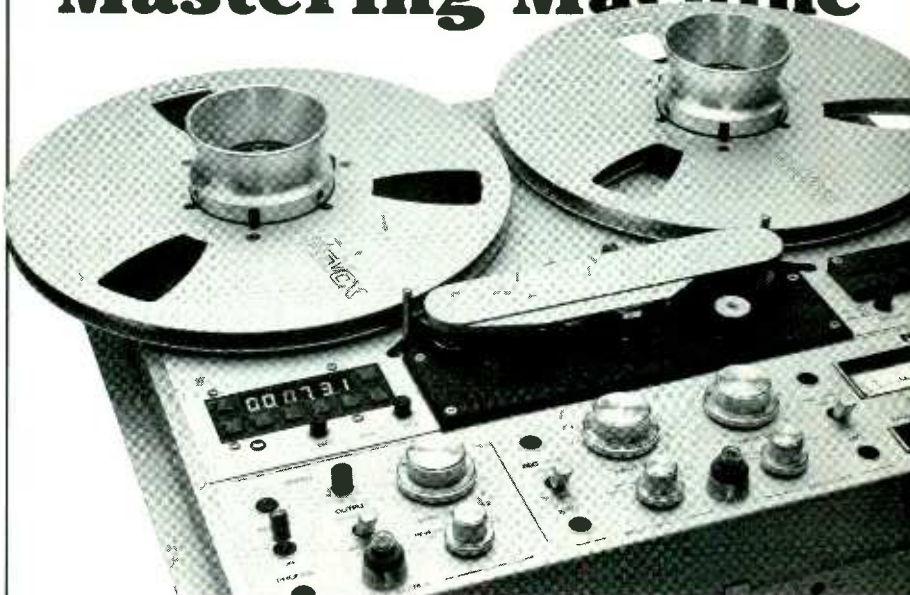
**BJ:** That's all very well to say, but I think sitting at home and watching a concert is a selfish, defeating kind of project, because I think half the excitement of a concert is being there amongst the people. I think there will always be concerts, but I think people will become more particular. You can't just serve them up a bunch of old crap,

like some groups have been doing. There are a lot of concerts I've gone to where I've been bored by a bunch of self-indulgent crap going on onstage. Even if they play their songs perfectly well, you may as well sit at home and listen to it. If they generate some excitement on stage, and get you involved in the whole thing, it's a unique experience that I don't think you can reproduce with video or laser.

I think it's people like Springsteen and others in that same league who'll always attract the concert goers.

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# Joe Lynn Turner

sammy caine



Photo by Carol Friedman

## Walking a Thin Line

**F**or Joe Lynn Turner, being successful is synonymous with being commercial. On *Rescue You*, his new album for Elektra Records, Turner walks a thin line between being commercial and being true to himself and his music.

His musical background proves diverse and includes being a member of Fillet of Soul (with J.T. Bell, now of Kool and the Gang), and Fandango. But he is probably most well known as the last of a series of hard rock "screamers" that fronted Ritchie Blackmore's Rainbow. Joe Lynn Turner sang with Rainbow for three and a half years and wrote and performed the hits "Stone Cold" and "Street of Dreams."

It was those hits that enabled Rainbow to break into the American radio market *and* Top 40 radio. Turner feels that his addition to Rainbow pushed them over the edge—to the commercial *and* successful limit. He now hopes that he can do the same for himself.

If things go as planned for Joe, *Rescue You* should be successful. With its broad-based sounds, Joe hopes to capture listeners in diverse markets.



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In fact, on *Rescue You* he has included a song aimed specifically at urban radio and the crossover market.

The first single released, "Endlessly," is currently at number 19 on *Billboard's* Top Rock Tracks chart, while *Rescue You* charts at number 167 (and is moving quickly) on the Top Pop Albums chart. Obviously, part of the credit for this initial success has to go to Roy Thomas Baker, who came out of retirement to produce *Rescue You*. Baker is no stranger to rock 'n' roll production, as he has worked with such notables as Queen and Led Zeppelin. His trademark is the elaborate production that is characteristic of Queen's older records, but this is not very obvious on *Rescue You*.

Still, Joe Lynn Turner describes the experience of working with Baker as "very educational." (Turner was formerly at the other end of education as a school teacher in his native New Jersey.) He also feels Baker helped him develop a sound to follow and refine in future releases.

**MR&M** spoke to Joe the day "Endlessly" made the *Billboard* charts.

**Modern Recording & Music:** Were you involved with the recording and production of *Rescue You* at all?

**Joe Lynn Turner:** I'm not a "hands-on" type of individual or anything. I pretty much get people like Ian Taylor, for example, who engineered this record. I think he is just a genius. What he's done is incredible. Of course, Roy Thomas Baker is no slouch, and Roy's a "hands-on" producer. A couple of times Roy was "hands-on" when I was doing vocals. It was just me and him in the room. Ian would set up certain things and then just leave for an hour or two. But I wasn't as involved as I could have been. I *was* there every step of the way, though. But I don't tell them what to do—unless I didn't like the sound of something. Then maybe I'd get into a couple of EQ'ings, but that's about it.

**MR&M:** So you do know a little about recording...

**JLT:** Oh, yeah. I do know about it. I can learn 16-track boards pretty efficiently. I've worked on the SSLs, but I'm no engineer. I have enough trouble just getting in front of the mic.

**MR&M:** What was working with Roy Thomas Baker like?

**JLT:** He's absolutely terrific. He's what a great producer should be. He gives you enough rope to hang yourself and he lets the artist *be* the artist. He lets you get what you want to get out of your music, out and then he sort

of polishes the edges. He taught me a lot of patience, I'll tell you that, because I am usually very uptight and I'm a go-getter. It was very educational to work with him.

**MR&M:** What equipment was used?

**JLT:** We recorded up at Bearsville Studios, and they had a Neve 808 that was taken out of the old Trident Studios in England. And, of course, they had to get another Studer so we could do 48-track lock-ups on it. We used an AMS, and all kinds of outboard gear that we rented. We used a lot of sampling techniques. But Roy's against using sampling. He's pretty much a purist, and he thinks everything

dy," or "Bicycle Race," and you're in the studio forever. So I said, "Listen, we're running out of time, so for the sake of brevity, let's sample this sucker." You don't really lose anything. We also sampled some of the drum sounds. And, of course, Al sampled a lot of the sounds on the Emulator...trumpets, wash basins falling, and any sounds he needed. Crazy stuff.

**MR&M:** What did you do for the drums?

**JLT:** For the drums, our intention was to trigger electronic pads so that we had a real drum happening, and we could have complete isolation and dexterity of the sound.

Chuck Burgi played no cymbals

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## ***So I said, "Listen, we're running out of time, so for the sake of brevity, let's sample this sucker."***

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should be done the way it should be, especially vocals. But then we were running out of time—it took us three months to do this record, (May 15-August 15)—because we were having problems with the studio. We didn't even credit them on the record.

**MR&M:** What happened?

**JLT:** We had a falling out with them. Simple Minds was in the other studio. They were leaking into our studio and we were leaking into theirs. It was a real mess. At the end I thought it would be a good idea to sample some vocals. I did three or four tracks and then we sampled them through the AMS and the Emulator II (with 16-second recording) and we made some background vocals with that.

**MR&M:** Do you think sampling affects the "life-like" feel of a recording?

**JLT:** I don't think there's any harm in sampling because you should use technology to enhance whatever you are doing as an artist. You shouldn't abuse it, and it shouldn't take away from the beauty of what you are trying to do. But to sing nine tracks of vocals when it's all the same part, and I've got to do three parts—that's twenty-seven tracks of vocals—that's crazy. That's what Roy likes to do. You take "Galileo, Galileo, Galileo," from Queen, or any other part of "Bohemian Rhapso-

whatsoever, he just played drums and he hit pillows, blankets, and pads, whatever he had to do, and it was a pretty interesting configuration. We had the drum set-up about twenty feet above the actual studio housing, and we only had about twenty feet above that (forty foot ceiling). The back wall was glass, the side walls were stone, and the floors were wood. We had all kinds of mics all over the room, close mic'ing the drums with some, and we had mics all along the sides and back, so we got great ambience. I think you could probably almost achieve the same kind of texture with an AMS or something, but I don't think you get the same kind of quality because it was a live room. You can't exactly duplicate a live room.

**MR&M:** Do you think this new technology can make something sound over-produced, over-polished, or over-extravagant?

**JLT:** Yes, I believe it can. We were working on an SSL board for the vocals and the mixing. It wasn't a totally automated board, but Roy didn't want the EQs to be computerized at all. He wanted Ian Taylor to do hands-on so that it wouldn't come out sounding very clinical, or over-produced or the same as everyone else that uses that board. Every time you use that board and the computer EQ, it comes out

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\*Suggested U.S.A. retail price. In Canada, \$1,795 CDM.





***I decided that I wanted to make a commercial album, because the only way you make up for lost time is to have the radio pounce all over your record.***

sounding similar. And I've heard different records that sound alike because of that board. So we made a conscious effort to do it manually.

**MR&M:** So nothing on *Rescue You* came out over-produced?

**JLT:** In my opinion, it's easy to have hindsight. I don't think it sounds half as bad as some records. I think it

sounds sonically brilliant, as compared to some records. But it is a starting point. I think Roy Thomas Baker had to take me to that starting point and develop a sound so I could follow it. Now all I have to do is refine it.

There was a constant ongoing process of trial and error with a lot of the things that we were trying to

accomplish. Al Greenwood MIDI'ed up everything. He has six or seven boards playing themselves sometimes. He also does some manual stuff. I think if you listen to the album you can hear some of the blocks of production that Roy used, whether it was backwards snare, or vocals "swooshing" up. There is a lot of technology in there.

**MR&M:** Will you be playing guitar on the road?

**JLT:** Yes, off and on. I am going to make a return to playing guitar. But I wouldn't say on every song, because I still have to establish myself as a lead singer.

**MR&M:** What equipment are you using?

**JLT:** Right now I have Guild coming down with a new guitar. My guitarist, Bobby Messano, endorses Guild guitars and Sundown amps. We found the amps to be very flexible and versatile, so I think I will also use Sundown amps. Otherwise, I am going to go out there and bust out with Marshalls, because that's what I'm used to.

And I have a small rack, but nothing elaborate because Bobby is handling most of the guitar work. But I can blow off a lead with just a small Ibanez digital delay. I don't need extensive equipment.

**MR&M:** What about mics?

**JLT:** As far as microphones, Shure SM-57s and SM-58s. That's all I use onstage *and* in the studio. I tried a lot of other mics, but I just blow the diaphragms out. They just can't take the response of my voice. I don't know why. I guess singers with different frequency ranges have a lot of success with these microphones, but me, I just sound awful on them. So I take this really inexpensive microphone (the Shure)—I mean it's an average microphone, it's a durable road mic—and it works great for me.

We use the Aphex Aural Exciter on some things, but we have to tweak it down because my voice doesn't need any more excitement. It enhances certain frequencies that I need in my voice. And we also used a de-esser for sibilance, but that's pretty obvious.

**MR&M:** Let's talk about *Rescue You*. The record sounds very commercial at times, but at others, it's what you would expect from the ex-singer of Rainbow.

**JLT:** Good! I hope you sit at the end your seat when you are listening to it.

**MR&M:** Well, it does have a wide variety of sounds on it.

**JLT:** That was totally intentional,

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as you have. This can be a great aid to 4- and 8-track studio owners who may not be ready to buy a larger multitrack. You only record the acoustic tracks; i.e., the vocals, piano, whatever. Then, during the mix, you have the synths, samplers, and electronic drums, (with patch changes galore), controlled by the sequencer and played directly into the board. All those electronic parts will be first generation. On your master!

If you have some of the new MIDI signal processing units, you can add a type of automation to your mix. If you need to change the settings of your delay unit in the middle of the mix, let the computer do it. Program the settings you want into different memory locations in the delay unit. Then use one channel of the sequencer to call the new settings precisely when you need it, just like calling a patch change on a synth.

I will admit that there are some stand-alone sequencers that can do all of what I have just described. There are two advantages that a computer based sequencer has over stand-alones: more information can be displayed at one time on a monitor; and, you can use it for other things!

If your studio is based heavily around synths, then having Patch Librarian and Patch Editing software could be a selling point. A good patch librarian program stores hundreds of patches on a computer disk. If you are building up a large collection of patches for a variety of synths, then the cost savings could be enormous. For example, a 32-voice cartridge for a Yamaha DX-7 costs around \$80-\$100. The cost of ten cartridges would make a major dent in the cost of the computer. Recalling patches from a computer disk, and sending it to the synth through its MIDI interface is much faster than any cassette based storage system. In the studio, as we all know, time is money.

A Patch Editor program can make the process of creating new sounds on some of the more complicated synths a simple one. By having many of the parameters on the screen at once, it's easier to keep track of what you are doing. Again, let me use the popular DX-7 synth as an example. A DX sound has about 150 numbers which totally describe the "state of the synth" needed to produce that sound. Yet the DX-7 *itself* can only display one number at a time. A computer based editing system puts all or most of those numbers on the screen at once. Suddenly

the overall structure of the patch appears. All the numbers describing a pitch envelope are displayed together, and, depending on the software, a graphic representation of the actual envelope can be drawn, and redrawn, as you do your modifications.

This display ability becomes much more important when you want to edit a sound on a sampling keyboard, like the Ensoniq Mirage, or the Emulator-II. The computer lets you examine the sampled waveform in great detail, allows you to change an individual sample, find your loop points, and combine attributes of different sounds

The last performance-oriented use of a computer to be stressed is the use of a computer to print and manipulate music notation. There are some ambitious programs around that try to deal with this complicated subject. Some take the the MIDI data that has been recorded by a sequencer and transcribe it into standard music notation. This can be a boon to many musicians who never really learned how to read music. They can study their own performances, and painlessly get a printed part for another musician to play.

Other programs are purely "musical word processors." They have no playback ability, but give the composer/arranger a powerful score-editing tool that will print the parts neatly. Then if the new singer can't hit that high note, the computer can print out a whole new set of parts in a new key in almost no time!

## Studio Management

The subject of computerized studio management falls into two parts. For the front office, there are a plethora of general business programs that can be adapted. For the control room, a few specialized programs are just starting to appear. They are known in the computer biz as "Vertical Market" applications. In other words, they are of no use anywhere but in a recording studio control room situation.

If you are planning to use your computer to take some paperwork off your hands, first you should determine exactly what your paperwork needs are. There are many filing, accounting, communications, and word processing programs available—and some of them may be more of a hindrance than a help.

Certainly a word processing program can be a great help to anyone who needs to type a letter. I am not the world's greatest typist, but by using

my word processor, I can zip along and backspace when I know I have made a mistake (I usually know). I also have a spelling checker hooked up, which picks up many of my dumb typos. Then the editing stage is a dream.

Using a computer as a filing system, however, takes more planning. If you maintain a client list, you must decide what you use it for. If all you do is look up someone's phone number, then you are probably better off keeping a good card file up to date. Then you don't have to shut down a sequencer program in the middle of an important session to find the name of the good pizza place that delivers. On the other hand, if you want to market a new service to a specific segment of your client list, then a good database management program can help you find everyone who fits a certain customer profile, and then print the mailing labels.

These general business programs can be very useful, but you would be better off finding out about them from a computer store, magazine, or users' group than from a music and recording oriented magazine. Talk to your accountant, or whoever helps you keep your business moving, for advice.

Two new programs for the Apple Macintosh computer are good examples of vertical market applications for the music industry. Studio Master is an intriguing program which has two main parts. One part helps you manage the session, the other, the console. The session manager lets you keep all of your track sheets, tape logs, maintenance logs and rate sheets on the computer. You program in your rates for your various services, and the computer's internal clock will help you time the session. You tell it when you start the session, when you start a break, etc., and at the end of the session, it will compute the bill for the studio time in a flash. The tracksheets and tape logs can all be saved to disk with the information from the other part of the program, which gives a type of total recall to your console. The computer controls a device which hooks up to your console, and generates a frequency response curve for every channel. This info, along with level and pan measurements, is stored on a disk. When you need to recreate the console settings, the original response curves appear on the computer monitor, along with the active response curve. You turn the knobs on the console until you match the current curve with the old curve. It is not true

automation, but you do not have to modify your console to take advantage of this.

The other application to be mentioned is even more specific. Harrison Systems, Inc., makers of Harrison mixing consoles, have developed a 256 by 256 point audio routing switching matrix for their new Series X console. It is controlled by a Macintosh. It lets you assign any of 256 inputs and outputs of your collection of outboard equipment to any one of 256 patch points on the Series X. You select the equipment and the channels from menus on the computer, and it automatically connects them, and draws a schematic of the connections for you. As with any computer based program, you can save any particular configuration on disk for recall at a later session. In essence, this is a fancy automated patch bay which works only with the Series X. It costs \$100,000 for the 256 by 256 unit, but if you have already put out \$500,000.00 for the Series X, why not?

### How To Choose

So you still want to get a computer for your studio. Great!! Stop!!! Think!!!

If you have not already run out and put down the bucks for a computer, consider carefully what software package will do the most for you, and then get the computer that will run it. Go to other studios with computers and try them. Talk to friends, and other musicians, and try different programs. If you want to get a sequencer, consider what type of sequencing you do. If you are an accurate player, a basic MIDI recorder may be enough. If you do everything in step time, then a different sequencer may be preferable. Do you want to display music notation? Find out whether you need a special graphics card for the computer. What type of MIDI interface will you need? Do you need a printer? A floppy drive, or a hard disk? Make sure you budget for the cost of MIDI cables and for disks. Disks can especially drain your wallet fast. How long will it take you to learn how to operate the software? Not to mention the computer itself.

How much are you ready to put out for a computer? Music software, like computers, come in a wide range of prices. You can easily pick up a Commodore 64 for way under \$200, but an IBM PC may cost a few thousand. Maybe a compatible is the way to go.

The venerable Apple II series has been out for ages, and there is a ton of software available. The Macintosh has terrific graphics, and is fairly portable, well, luggable. Do you feel conservative, and will only get a proven warhorse? Or do you like to feel that you are on the cutting edge of software development, and prefer the daring feeling of having a brand new unit? What effect will the new Amiga and Atari computers have on the market place?

The point I would like to make is this: get the combination that fits your way of working the best. A computer should assist you in the way that you like to work. You should not have to alter your work habits to accommodate the computer. Look for reviews and discussions of specific units in future issues of *MR&M*. We will do our best to help you get the information you need to make a knowledgeable decision.

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# THE THOMPSON TWINS

## FUTURE EXPRESSION

**T**om Bailey is a smart businessman as far as music is concerned. His conversation rings of vintage 80s Yup, and, over the transcontinental line, Bailey often has the tone of a young broker discussing his hottest stock option—, *especially* when he's talking about his latest hit single.

But it might be advisable to give Bailey the benefit of the doubt. As the chief songwriter and vocalist for the Thompson Twins, he's part of one of the most successful bands of the last few years, while thankfully harboring less pretension than most of his similarly mounded counterparts. Along with bandmates Alannah Currie (she of the ascending scalpline), and Joe Leeway (he of the descending dreadline), they've made some of the best singles this decade has seen.

Originating in Sheffield, England, in 1977, the Twins garnered acclaim from the British press as *the* white dance band, and with seven members throbbing away at every percussion instrument available, it's little wonder. Their status as a great underground live act was solidified into even







greater success when "In The Name of Love" broke big, going all the way to number one on the American dance charts. At that point, the Thompson Twins streamlined down from seven to three, and were set on their way to making hits.

The next LP, *Side Kicks*, featured three big singles, "Love On Your Side," "We Are Detective," and the monster club hit "Lies," the video from which firmly established the band as an MTV staple. The Twins have the kind of easily memorable, cartoonish images that make video stars, and it has helped their sales enormously.

Throughout the band's career, the Thompson Twins have made beautifully crafted, if occasionally hollow records. Above all, Bailey is a pop pragmatist, injecting as much art as is sellable into what has been, for the most part, a hit machine.

The pressure is on, as much from within as without, to write songs that will sell big. This, Bailey instantly translates into "mass communication." Accessibility versus self-expression is no conflict according to Bailey; the hits must keep on coming, or it wouldn't be the Thompson Twins.

And they have, climaxing with "Hold Me Now" from *Into the Gap*. With that, the Twins crossed the barrier from 3,000 to 10,000 capacity halls, and from gold to multi-platinum records. That's where the band stood a year and a half ago, holding their biggest album and single ever, with nowhere to go but up or down. The choice was obvious, if not the means. And Bailey decided to go it alone, attempting to produce their new record, *Here's To Future Days*, himself, in addition to his other duties. Then, after a lengthy tour, and with all the basic tracks completed, Bailey collapsed.

To the rescue, Nile Rodgers! A perfect match to Bailey's commitment to commerciality. With LPs for Madonna and Bowie under his belt, Bailey's choice requires little explanation.

**Modern Recording & Music:** Why Nile?

**Tom Bailey:** It was a chance meeting. I'd been ill and told by a team of doctors that I had to take it easy. Everyone was saying, "Look, get someone else to help you with this production; get the weight off your shoulders." I actually didn't want to do that. I decided to go to Barbados to stay with someone there just to take a few weeks off. I went via New York, and on the way a friend of mine met Nile. It was

just one of those things that clicked. When we've chosen producers in the past, we've always had a big debate and listened to everyone's records. It was a really painful excruciating decision process, whereas, this was one of those things where we met, and five minutes later we knew we were going to do it.

**MR&M:** Why did you first decide to self-produce *Here's To Future Days*?



Photo by Richard Haughton

**When we've chosen producers in the past, we've always had a big debate and listened to everyone's records. It was a really painful, excruciating decision process.**

**TB:** I'd been heading in that direction for some time. I had co-produced the last two with Alex (Sadkin), and it seemed like I had easily reached the point where I knew what to do to make a good record. Yet I was ill about two-thirds of the way through the album, so Nile only got involved towards the very end.

**MR&M:** How many tracks were completed?

**TB:** They were *all* done. Basically, it was difficult for Nile. He couldn't fundamentally alter the nature of the project. He wasn't able to really

change things, but that's cool. He listened to what we'd done, enjoyed it, and said that there was nothing wrong with it, so why should we change it?

Musically, Nile and I cover each other's dodgy areas quite well. Basically, we're both fairly well-educated musically, but he's a guitarist and I'm a keyboardist, so we do come from alternate angles. Together we did

things that neither of us would have done separately.

**MR&M:** Will your next record be self-produced?

**TB:** Yeah, probably. But strangely enough, the next record we'll make will probably be a movie soundtrack. Being a pop group there's always this pressure for you to drum out three and a half minute pop songs, which is okay. I enjoy that pressure in a way. But there is another side to us, which is much more atmospheric and extended in form, maybe even just instrumental. I want to use our name now to take us

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*Christine is a singer, songwriter and, of course, a member of Fleetwood Mac.*



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into that area. Okay, all these movies want a hit song as well, but they also want soundscapes so I'll be happy to do that.

**MR&M:** What's your recording process like?

**TB:** We have a little demo studio—mobile—which we carry around with us when we're songwriting. Usually what we do is rent some sort of place in the countryside, away from distraction, and get into this very intensive three-way thing. I think the chemistry of the three people in the Twins is the source of *all* our creativity. And so, because we're very, very different sorts of people, we can be drawn into spending a lot of time apart. We think it's very healthy to force ourselves into a situation where there's nothing to do except rest a bit and work hard. There's no party to go to; there's no movie to see; there's no disco...just to keep us turning inwards rather than outwards.

I have a Fairlight, so a lot of the writing was done on that, and the arrangements also. So by the time (it reached) the studio proper, most of the stuff was pretty well started off. We cut all the basic tracks in a couple of days.

**MR&M:** In reading interviews, it really does seem like the three of you are friends, which seems almost impossible given how much time you have to spend together.

**TB:** I don't know. But it seems wrong, doesn't it? I think it's a legacy from the old days of the seven piece band which we had a few years ago. That was so complicated because of the number of people there were, and noth-

ing ever got sorted out. There was always repressed resentment. When we suddenly reduced it to three people, we found it very easy to sort problems out. We were so inspired by the fact that we could sort out a lot of the bull, and keep our nostrils above water emotionally. We were inspired to argue and shout and scream when it was necessary, knowing we *could* and remain friends.

That became the basis for our interpersonal relationship, and it *is* strange. When we cut this album in Paris, we were actually sharing an apartment together! There aren't many bands who you can say are *that* close anymore after their third worldwide album!

**MR&M:** To attain the level of success you've had, do you feel that you've ever had to compromise your musical ideas to get on the radio?

**TB:** No, because my idea was to get on the radio in the first place. So what happens is you change, or mutate, or make more suitable the means of your communication. It's perhaps most easily described by saying, if you have something to say to a close friend or to your lover, you use certain kinds of words. If you had to say the same thing to fifty people in a room at a company convention, you'd inevitably speak more formally. You may be saying exactly the same thing, but the *way* you are putting your ideas across changes.

**MR&M:** Isn't what you are describing a compromise, in different words, to sell records?

**TB:** Pop groups are about being popular, and having mega hits all over

the place. You can't do that and pretend not to care about whether you're selling records. Personally, I think you have to be realistic in 1985 about what it means to be in a pop group. It's about mass communication as much as just expressing your latest three-chord trick.

**MR&M:** You occasionally seem to have a message to get across, but it gets lost in the mix. How come?

**TB:** Really, when you're making a pop song, a lot of what you're communicating is a feel or an atmosphere. People get into the aural qualities of records in a very instant way. Then you get them singing along to the chorus, and maybe months later they'll start listening to the lyrics in detail and start figuring it out. But eighty percent of the people who buy a record don't ever get that far, don't relate to it. That's okay. An even greater percentage have no idea how you made the record, or how you play those notes on a keyboard. It doesn't really matter.

**MR&M:** A track like "Don't Mess with Dr. Dream," on the new record is very clearly a strong anti-heroin song, if you can understand the lyrics.


**TB:** The thing is, we could make a record saying Don't Take Heroin and everyone would go, "Big deal, I've heard that before." It leaves nothing to the imagination. I've written those songs. I've written a song called "Politics," in fact, and everyone just went, "Uhhhh...Next." People don't respond to straightforward polemic.

**MR&M:** On songs like "Hold Me Now" and "You Killed The Clown," there are real direct emotions, which isn't present on most of your other songs. Usually, there's a strong ironic distance put between you and the listener, and are extremely cool feeling. Is this intentional?


**TB:** There's always been that dichotomy in the Thompsons. On our early hits like "Lies," we were making a very cold technical sound; it was very groovy. You could wiggle your ass to it, but the sound of the record and the sound of the voices were very cynical, sardonic, and cold, almost embittered. As we began to experiment in a more emotional approach, with things like "Hold Me Now," I think we still carry some of that with us, and it's an interesting contrast to be working with. It's one that confuses me, actually, because as a vocalist I still think I've got a lot to learn. And those two influences are always dragging me in opposite directions.

**MR&M:** It took a lot of guts to do a

MODERN RECORDING & MUSIC



***I'm quite interested in making a heavy metal record now. They have all the drama and pyrotechnics at their disposal; It's part of their style to use all of the musical dramatics.***



cover of the Beatles' "Revolution." How did that come about?

**TB:** It was by accident. We never intended to release it, to be honest. I had decided I wanted to make a real, out and out rock 'n' roll record. By coincidence, we all had read this book which had an interview with John Lennon in it. We were just discussing it amongst ourselves, and I thought, "Revolution", that's a great song. Let's use it as an experiment to see if we can do rock 'n' roll, and if we can do that then maybe one day we'll get 'round to doing a rock 'n' roll song of our own.'

Steve Stevens, from Billy Idol's band, is a friend of mine, and he was basically the only guitarist of that sort that I could relate to. He came to Paris and played with me on it, and we really...I believe the expression is, "We got our rocks off on it." This is all new stuff for me. I've always played guitar in a very quiet way, whereas, Steve is a guy who cranks everything up to eleven, just like in *Spinal Tap*. And that was just amazing for me.

**MR&M:** Do you think the experience will have any effect on your future work?

**TB:** Possibly. I'm quite interested in making a heavy metal record now. They have all the drama and pyrotechnics at their disposal; it's part of their style to use all of the musical dramatics. And yet the content is often pretty empty. I think if someone, (as Stevie Stevens and Billy Idol do to some extent), use the techniques of heavy metal but with a sense of content as well. Inevitably you're going to come out with something out of the ordinary.

**MR&M:** Why have you stayed away from rock 'n' roll for all this time?

**TB:** Because we thought that rock 'n' roll had become cliched to our rather English ears. So it just became necessary to redefine our canvas, if you like, before we could paint the picture. And we said, "No guitars. Let's see if we can do it that way." That was almost the reverse of what happened with "Revolution," when we said, "Let's see if we can bring back the choice elements of classic rock 'n' roll approaches."

The painting analogy is an interesting one. I think until you've decided on the issue of your canvas, and the medium with which you're going to paint, it's difficult to express yourself. As soon as you've made that decision, then you can focus in on what has to be done.

The recent guitar playing I've been doing has been less metally, and almost surf guitar. Really naive stuff, just twanging away.

**MR&M:** Are there any other types of music that you're into?

**TB:** I'm getting into country music as well—Willie Nelson and Johnny Cash, not the really sugary stuff. It's something I've always ignored. For some reason, I've always found it unacceptable.

**MR&M:** What was your situation in the early days of the Twins?

**TB:** We were basically a cult band doing club tours, and we had a very enthusiastic, but small audience. As a result of that, our gigs became legendary. In a sense, that became a problem, because it meant that our first two attempts at recording were basically

between the Thompson Twins and Swatch about?

**TB:** It's part of rock 'n' roll touring reality in 1985 to have some sort of sponsor, and basically there's not a lot of money in it unless you go with beer and soda. And I just felt I didn't want to go with beer and soda. Swatch is something with a sense of style, something that's fun, something that's pretty well oriented towards our audience. I mean, I don't drink, and I don't feel that most sodas are very good for you, so I feel okay about working with Swatch.

**MR&M:** Do you feel that video has played a large part in your success?

**TB:** Sure. That's not to say that we wouldn't have been successful without it. But, for example, our first breakthrough in America coincided with the



Photo by Richard Haughton

oriented towards trying to recreate the excitement of our stage show in the studio.

**MR&M:** Going from that kind of small-scale success to where you are now, must place an incredible strain on your private life.

**TB:** There are certain jobs that people do that you know aren't going to last forever. In a certain way you make a trade-off. You're going to have to put your stability and social pride, as it were, on hold for a few years, in order to get done what you have to do, and afterwards, hopefully re-adjust. But it is hard; it's a hassle, but you get used to it. One doesn't complain because it shows you're doing well.

**MR&M:** What's the agreement

beginnings of MTV. It was just a stroke of luck that "Lies" had that really strange video, which, to be honest, I wasn't really crazy about myself. But it was an eccentric little piece of fluff which they picked up, I guess because it was a change from the heavy metal *Kerrang* sort of video. Our timing actually was quite good.

**MR&M:** MTV really creates a band's image at this point, so it seems natural that the Twins were on it from the beginning. The band seems extremely image conscious.

**TB:** I don't know. I think it's just that you've got three weirdos here who somehow bulls—ed their way into a situation where they can express themselves and get paid for it.

# NILE TALKS TWINS!

**W**e managed to track down a very busy Nile Rodgers in order to discuss his role as producer of the Thompson Twins' new album, and to catch up on some of his other recent projects.

**Modern Recording & Music:** You're a producer who's also a musician, and artists choose your production skills because they *also* want your musical contributions. In what ways did the Thompson Twins make use of your musicianship?

**Nile Rodgers:** I played guitar a lot. I also gave them musical ideas, changed some sections, helped them re-arrange. There were different approaches to every song.

They had started the album without me. When I came in, it was mainly to organize what had happened, to see what was salvageable, and decide what we all wanted to discard.

**MR&M:** "Love Is The Law" sounds like a Chic song...

**NR:** That was the song that was the *most* unfinished when I came in. When they *first* brought it in there was nothing there, just a drum track or something. I said, "It sounds okay, let me work on it," and that's how we started our relationship.

**MR&M:** Since your own musical ideas are so well defined, do you consciously draw the line with your musical influence, as far as affecting an artist's sound?

**NR:** No. I guess they'll let me know if I'm doing that. There were some times on this record when I *did* do that, and Alannah said, "No way!"

**MR&M:** Percussion is very important to the Thompson Twins' sound. Was there anything special about the way it was laid down?

**NR:** Not really. We just laid down a rhythm track and overdubbed percussion. Something that was interesting though, was that Alannah had all these different percussion instruments. It was really great. She had a guy build all her instruments into a large metallic sculpture. When you have a box of all these metal objects, how do you play them in the course of a

song without going crazy and looking like an idiot running from one thing to the next? In this large sculpture they're all right there, handy. It looked like a piece of art. She uses it live, too.

**MR&M:** Who are the East Harlem

doesn't have any religious connotations.

**MR&M:** There's a really big bass drum sound on the record. Was it from synthetic drums?

**NR:** It's a synthetic drum, a real drum and the elevator hallway. We fed



Photo by Barry Berenson

Hobo Choir, credited with backup vocals on the album?

**NR:** That was every great background singer in New York, plus the Thompson Twins and myself.

**MR&M:** Did it require any special mic'ing?

**NR:** No, just one mic. We didn't put on robes, or anything like that. When you call multiple voices a choir in pop music, it's just a label to denote that there are multiple voices recorded with one mic. You don't want too much definition in the sections; you just want a big vocal sound of random voices. If you call a group of horns a choir, you mean the same thing. It

the drum into the little waiting room that separates the elevator from the studio. We built a little echo chamber out of that. We ran the whole drum kit through that chamber, and so it sounds like we have a live band out there. We saved that, and used it throughout the course of the whole record, so we'd have some continuity.

**MR&M:** Did you take any special approach to the remake of "Revolution"?

**NR:** We never referred to the original record when we were putting it down. We didn't want to be biased by the obviously definitive version that the Beatles cut.

**MR&M:** As a musician/producer, you're sort of a parallel to film directors, such as Woody Allen, who *act* in the films they direct. Do you think you're setting a trend?

**NR:** To be totally honest, I haven't given it any thought at all. I'm sure there must be other producers who do that. I know that David Foster is a great player, and he plays on the records he produces. My ex-partner, Bernard Edwards, plays on the records. Most of the producers I per-

York. I mean, come on!

**MR&M:** Do you think different studios change the sound of records?

**NR:** Of course, but hopefully not to the point where it makes a major difference in the music. With all the new technology, it's getting less and less true. With artificial reverberation, you can get, say, a big drum sound anywhere.

**MR&M:** How much did you play on Madonna's last album?

**NR:** I played on every song.

just gotten turned on to the Kurzweil and other digital sampling synthesizers, which are great. And Casio, oh my God, all the Casio keyboards cost no money and sound absolutely record quality. With the Thompson Twins we re-did the bass on the whole album with a \$300 Casio. Now any kid with talent can make a really good-sounding demo at home.

**MR&M:** Anything else?

**NR:** Another new thing I'm using is the 12-track Akai, which I think is just dynamite. The cassette is about the same size as a video cassette.

**MR&M:** What's it like to balance your solo career with your production career?

**NR:** I'm sure it's going to work better in the future, since I'm going to concentrate a little bit more on my solo career, *unless* I get afraid, and pull back, as usual.

**MR&M:** How would you contrast your last album, *B-Movie Matinee* with, *Adventures In the Land Of The Good Groove*?

**NR:** I was terrified to make *Adventures...*, I was really nervous. This record, I wasn't afraid at all. As a matter of fact, I enjoyed myself immensely. This new album employed a lot of new technology, and researching new things. It was more like an experimental album for me as a musician. As an artist, I'm still trying to find out what I really want to do, and what kind of songs I really want to write. I don't know yet.

**MR&M:** Is it more difficult to produce yourself than other artists?

**NR:** It's probably the most difficult thing I've ever done. You go through so many changes working with other people, and you have so many different realities because of working with the different influences. I could make a record that sounds like Madonna, or Thompson Twins, or Chic, or Diana Ross. I just don't know what to do sometimes, and I don't know what kind of influences will become dominant in my own music. It's an interesting question that I definitely don't have an answer for.

**MR&M:** What are some of your upcoming projects?

**NR:** After Phillip Bailey, I (will) do Al Jarreau, and quite possibly Grace Jones. I've been under contract to do Duran Duran for more than a year now. I just spoke to Miles Davis the other day and had a great rap with him. Timing and scheduling is always a problem with this sort of thing, so I don't know exactly what's coming up.



Photo by David Allen

Engineer James Farber with Nile, Tom Bailey, and Joe Leeway at the SSL-4000 console at Skyline Studios.

sonally know are musicians. The guy who works with me, Rob Trevino, he's a keyboard player, and he's probably going to play on the records he produces. I don't know if it's a new thing. I don't know if the older producers who were around before us played on the records. I mean, God only knows who played on the Archies and the Monkees. Someone told me that Glen Campbell played on a lot of the Monkee tracks. He's a great guitar player.

**MR&M:** Are you comfortable working in a lot of different studios, or would you rather hang out in one place?

**NR:** It doesn't make any difference to me where I work. I just worked in LA with Rod Stewart at a studio called One On One, and that was great. I guess I prefer working at one place, only because I'm a creature of habit. I like to get up, get in the car, and go to the same place. I don't want to be looking for new parking places in New

**MR&M:** Did you think that album would be so big?

**NR:** I never know exactly how big a record will be, but I thought Madonna's album was a truly great album. Madonna's really talented. They don't make many like that, I tell you.

**MR&M:** What other projects have you been working on recently?

**NR:** I just finished Laurie Anderson. I'm in the studio now with Philip Bailey. I just wrote a song for Rod Stewart and produced it. Believe it or not, this was all in the last two weeks. Immediately prior to that I finished Sheena Easton's album.

**MR&M:** Have there been any technological breakthroughs in the last year that you're particularly excited about?

**NR:** Well, a year ago I was using Sony digital tape recorders, and that's been my favorite thing. A lot of the same things I was using have just been improved, like the Synclavier and I've

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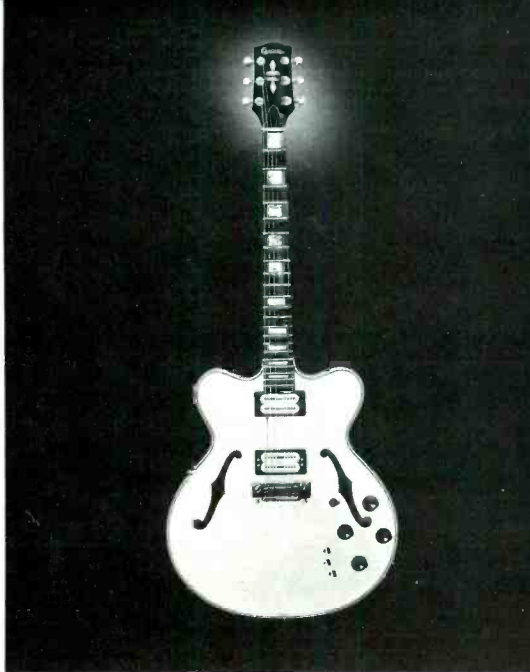
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## **AMI (AMERICAN MODULAR INSTRUMENTS)**

### **MDS-1**

The MDS (Modular Design System) is a patented interchangeable pickup guitar. Pickups for the MDS-1 are factory installed in high-impact plastic modules that load into the guitar from the back. A module can be loaded into any position—bridge, center or neck—depending on the desired effect. Pickup modules are available to accommodate virtually every popular single and double-coil pickup. MDS-1 features include: One, two and three pickup models, 22-fret maple neck, 25.5-in. scale, rosewood, ebony or maple fingerboards, Gotoh machines, Kahler Standard tremolo system, double offset cutaway body, red, pearl, blue, black or natural finishes, pickup selector switch, dome knobs, master volume, individual pickup volumes and master tone control, oversize strap pins, custom case, limited lifetime warranty. Prices range from \$1,000.00 to 1,200.00.

### **MDS-2**

This is a two pickup model (as above) available with a rosewood neck and a Kahler Flyer tremolo. Price: \$795.00 (without case).

## **CARVIN**

### **DC-100**

This guitar features Eastern hard-rock maple construction, glue-in neck, 24-fret black ebony fingerboard, solid brass nut, durable high-lustre poly-urethane finish, and smooth volume and tone controls. Two M22 22-pole alnico pickups are included with pickup selector switch. Options include: Kahler Flyer or Pro model tremolo system, black chromed hardware (or 24-karat gold). Price: \$329.00 (deluxe hardshell case, Price: \$60.00).

### **DC-150**

This model has all the features of the DC-100. Also features standard stereo wiring, fine-tuner stop-type tailpiece, dual-to-single-coil switches for each M22 pickup and a phase-inversion switch. Price: \$429.00 (deluxe hardshell case, Price: \$60.00).

### **DC-125 LEAD GUITAR**

This guitar is designed for the lead player who requires direct drive to his guitar amp. A single M-22 SD (super-distortion) is featured in the bridge position, along with a single volume control. All Carvin guitars have as standard equipment a 24-fret, 24.75-in. scale neck. Price: \$329.00 (case \$60.00).

### **DC-200**

Standard features on this model include stereo wiring, phase inversion switch, dual-to-single-coil switches, block mother-of-pearl inlay on selected ebony fingerboard, precision-surfaced 24 frets for lowest possible action, 24.75-in. scale length neck (glue-in) with smooth neck heel for easy access to upper register and choice of colors. Price \$479.00 (case \$60.00).

### **V220**

This model has a radical shape reminiscent of "V" styles introduced in the 70s. Among the standard features are Kahler PRO locking tremolo system, two M22 pickups (1 M22 SD in bridge position), two volume controls and one tone control, hard-rock maple body and neck for ultimate sustain, 24-fret scale, and excellent balance. Price: (with Kahler Pro tremolo) \$519.00 (case \$79.00).

### **DC-160 CURLY MAPLE GUITAR**

This guitar features quilted curly eastern hard-rock maple body with clear polyurethane finish, stereo wiring, 24-karat gold hardware, deep-sea abalone block inlays on ebony fingerboard, and 24-fret scale with glue-in neck and smooth neck heel. Options include: Kahler Pro tremolo system and pickup color option. Price: \$679.00 and lefthand model \$709.00 (case \$60.00).

### **BASS GUITARS/LB-40 and LB-60**

The LB-40 is available in single pickup version only, and features glue-in neck with smooth neck heel, 34-in. scale length, 20 precision surfaced frets for ultra-low action, and the M22-Bass specially wound pickup for bass frequencies. Options include: Kahler Bass tremolo, black-chromed or 24 karat gold hardware and fretless neck. Price: \$369.00 (case \$68.00).

### **LB-60**

The LB-60 is identical to the LB-40 except for the following regular features: two M22-Bass pickups, stereo wiring and phase inversion switch. The optional items are the same as LB-40. Price: \$419.00 (case \$68.00).

### **V440 BASS GUITAR**

The V440 is a futuristic design that features glue-in neck with smooth neck heel, 34-in. scale length neck, two M22-Bass specially wound pickups, heavy solid brass bridge for sustain, and more. Options include: Kahler bass tremolo system, black-chromed hardware, 24-karat gold hardware, and choice of colors. Price: \$399.00 (case \$79.00).

## **DEAN**

Dean guitars feature pick-ups, electronics and machine heads manufactured by Dean Guitars. All prices are quoted without the case.

### **SIGNATURE**

This has a strat type body with two single-coil pickups and one humbucking pickup in the bridge position. The neck and body are made out of rock hard maple. Features include a 22-fret white fingerboard, chrome pickguard and six fluorescent colors. Price: (with Dean-O-Matic locking tremolo system) \$599.00.

### **HOLLYWOOD**

This comes in two body styles. The Hollywood and the Hollywood "Z" (Explorer type body) both include humbucking pickups. The body is poplar wood with a maple neck and 24-fret rosewood fingerboard. Price: \$299.00 (Add \$100 for the Dean-O-Matic locking tremolo system). Custom finishes (Zebra, Wedge, Flame on Hollywood and Lightning Bolt on "Z" bodies) can be added for \$49.00.

### **HOLLYWOOD BASS & HOLLYWOOD Z BASS**

The Hollywood Bass and Hollywood Z Bass are the same as the Hollywood guitars except that they each feature one P-style and one J-style pickup. Price: \$399.00.

### **MACH V**

This features two humbucking pickups, a poplar wood body with a maple neck and 24-fret rosewood fingerboard. The unique body design comes in four finishes: Pearl Red, Pearl White, Pearl Blueburst and Jet Black. Includes a Dean-O-Matic locking tremolo system. Price: \$499.00.

### **MACH V BASS**

This bass is the same as the Mach V guitar, except it features one P-style pickup and one J-style pickup. Price: \$499.00 (Add \$200 for a Kahler locking tremolo system).

### **BABY**

These come in three distinct body styles: the "V," "Z" and "ML." All feature two humbucking pickups, bodies and necks are bound and are constructed of poplar wood with a 24-fret ebony fingerboard and block inlays. The bodies and necks feature binding. Finishes are Pearl Red, Pearl White, Pearl Blueburst and Jet Black. (Black guitars feature all black hardware). Price: \$999.00 (Add \$200 for Kahler locking tremolo system).

### **STANDARDS**

These come in "Z" and "V" styles and feature mahogany bodies and necks with 24-fret ebony fingerboards and block inlays. They have two humbucking pickups and binding on bodies and necks. Finishes include: Pearl Red, Pearl White, Pearl Blueburst and Jet Black. Price: \$1,099 (Add \$200 for a Kahler locking tremolo system).

## **FENDER**

### **CONTEMPORARY STRATOCASTER DELUXE**

This strat body guitar features two single-coil and one humbucking pickup, one volume control, a patented TBX tone control and a five-position pickup switch. It has a 22-fret, 25.5-in. rosewood fretboard with four-bolt tilt neck attachment. Body wood is basswood with chrome Fender/Schaller diecast machine heads and System III fine tune tremolo bridge. Price: \$699.00 (w/o case).

### **CONTEMPORARY STANDARD STRATOCASTER**

This strat-body guitar features three single-coil pickups, tone and volume controls and five-position pickup switching. It has a 22-fret, 25.5-in. rosewood fretboard with four-bolt tilt neck attachment. Body wood is basswood with chrome Fender diecast machine heads and System I tremolo with fine tuning. Price: \$439.00 (w/o case).

### **'62 CUSTOM TELECASTER**

This guitar features two single-coil pickups with a volume and a tone control and a three-position pickup selector switch. It has a 21-fret, 25.5-in. rosewood fretboard with four-bolt neck attachment. Body wood is bound basswood with nickel plated vintage closed back machine heads and bridge. Price: \$499.00 (w/o case).

### **'57 STRATOCASTER**

This strat body guitar features three single-coil pickups, a volume control and two tone controls (neck and mid). It has a 21-fret, 25.5-in. maple fretboard with four-bolt neck attachment. Body wood is alder with nickel plated vintage closed back machine heads and bridge. Electronics upgrade kit included. Price: \$799.00 (with case).

### **D'AQUISTO ELITE**

This guitar features a single humbucking pickup with a volume and tone control and 20-fret, 24.75-in. maple neck (set attachment) with an ebony fretboard. Body wood is laminated maple and laminated spruce top with gold Schaller/Fender Elite machine heads with ebony buttons and ebony bridge. Price: \$1,099.00 (with case).

### **ESPRIT ULTRA**

This guitar features two double-coil humbucking pickups with two volume and two patented TBX tone controls and a three-way selector switch with coil tap switch. It has a 22-fret, 24.75-in. maple neck (set attachment) and ebony fretboard. Body wood is alder with carved spruced top. Machine heads are the same as the Elite and the bridge is a gold three-way adjustable. Price: \$899.00 (with case).

### **SQUIER JAZZ BASS**

This bass features two J-style pickups with one tone and two volume controls. It has a 20-fret, 34-in. rosewood fretboard with four-bolt neck attachment. Body wood is basswood with chrome open back machine heads and chrome standard precision bridge. Price: \$399.00 (w/o case).

### **'62 JAZZ BASS**

This bass features two separate single-coil (series wired and diametrically phased) pickups and two volume and two tone controls. It has a 20-fret, 34-in. rosewood fretboard with four-bolt neck attachment. Body wood is alder with nickel plated vintage style open back machine heads and vintage precision bridge. Price: \$849.00 (with tweed case).

### **'57 PRECISION BASS**

This bass features one split single-coil (series wired and diametrically phased) pickup with one volume and one tone control. It has a 20-fret, 34-in. maple fretboard with four-bolt neck attachment. Body wood is alder with nickel plated vintage open back machine heads and vintage precision bridge. Price: \$769.00 (with tweed case).

### **CONTEMPORARY JAZZ BASS**

This bass features one J-style and one P-style pickup with two volume and one patented TBX tone control and three position pickup switch. It has a 20-fret, 34-in. rosewood fretboard with four-bolt tilt neck attachment. Body wood is basswood with black chrome, open back machine heads and precision bass style bridge. Price: \$499.00 (w/o case).

### **SQUIER PRECISION BASS**

This bass features one P-style pickup with one volume and one tone control. It has a 20-fret, 32-in. rosewood fretboard with four-bolt neck attachment. Body wood is basswood with chrome, open back machine heads and standard precision bridge. Price \$329.00 (w/o case).

### **PERFORMER BASS**

This bass features two pickups with two volume and one patented TBX tone control and 3-position pickup switch. It has a 24-fret, 34-in. rosewood fretboard with four-bolt tilt neck attachment. Body wood is basswood with Fender/Schaller standard style machine heads and P-style bridge. Price: \$499.00 (w/o case).

## **GIBSON**

### **SUPER V CES**

This guitar has two pickups in a single cutaway style body. The neck is 25.5-in. with a 20-fret ebony fingerboard and gold machine heads. Price: \$2,799.00.

### **ES-175D**

This guitar has two pickups in a single cutaway style body. The neck is 24.75-in. with a 20-fret rosewood fingerboard, and chrome machine heads. Price: \$999.00 (without case).

### **LES PAUL CUSTOM**

This guitar has two humbucking pickups in a single cutaway style body. The neck is 24.75-in. with a 22-fret ebony fingerboard and gold machine heads. Price: \$1,099.00 (without case).

### **LES PAUL STUDIO STANDARD**

This guitar has two humbucking pickups in a single cutaway style body. The neck is 24.75-in. with a 22-fret rosewood fingerboard and chrome machine heads. Price: \$799.00 (without case).

### **ES-335 DOT**

This guitar has two pickups in a double cutaway style body. The neck is 24.75-in. with a 22-fret rosewood fingerboard and chrome machine heads. Price: \$999.00 (without case).

### **EXPLORER**

This guitar has two humbucking pickups. The neck is 24.75-in. with a 22-fret rosewood fingerboard and chrome machine heads. Also includes tremolo. Price: \$649.00 (without case).

### **VICTORY ARTIST**

This bass has two humbucking pickups in a double cutaway style body. The bolt-on neck is 34-in. with a 24-fret rosewood fingerboard and chrome machine heads. Price: \$849.00 (without case).

## **EXPLORER**

This bass has two humbucking pickups. The neck is 32-in. with a 21-fret rosewood fingerboard and chrome machine heads. Price: \$699.00 (without case).

## **VICTORY STANDARD**

This bass has one humbucking pickup in a double cutaway style body. The bolt-on neck is 34-in. with a rosewood fingerboard and chrome machine heads. Price: \$649.00 (without case).

## **GUILD**

### **X-88**

This features a carved solid mahogany body in various colors. The maple neck has 4 bolts, an ebony fingerboard, and pearl inlays, with 24 frets and 24.75-in. length. The pickups are EMG humbuckers in single or double configurations. A Kahler bridge is optional. Price: \$715.00 (without case).

### **BHM-1**

This model has a solid mahogany body with a bound top and bottom. The three single-coil pickups are from DiMarzio, designed by Brian May with on/off switches creating endless sound combinations. The neck is solid mahogany, with an ebony fingerboard and large position dots. There are 24 frets at 24-in. with zero fret. Price: \$1,200.00 (without case).

### **S-281**

This guitar has an offset headstock. Its neck has a rosewood fingerboard with 22 frets, 25.625-in. scale, a maple back treated with a satin finish, and attached with 4 bolts. The body is available in curly maple or solid in many colors. The pickups are EMG or Pacific and come in single-coil and humbucker configurations. The Kahler bridge is optional. Price: \$765.00 (without case).

### **BLUESBIRD**

The Bluesbird body comes in curly maple or solid in a variety of colors. Three single-coil EMG pickups are standard with optional coil tap. The neck has 22 frets, and is cut at 25.625-in. scale. The inlay blocks are pearl in an ebony fingerboard and Kahler bridge is optional. Price: \$799.00 (without case).

### **NIGHTBIRD**

The Nightbird comes in black, honey sunburst, or amber sunburst and mahogany bottom with carved out sound chambers. Two humbuckers are standard, either EMG or Armstrong. The bridge is adjustable with a stop tailpiece. The pickguard is bound tortoise shell. The neck is 22 frets, mahogany, with a bound ebony fingerboard, and diamond shaped inlay, cut at 24.75-in. Price: \$1,195.00 (without case).

### **S-284**

This guitar has a glue-in maple neck which has 22 frets and is cut at 25.675-in. scale. It is finished in gloss and the fingerboard comes in ebony or rosewood. It has an offset headstock. The body is solid or curly maple and comes in various colors, with many pickup configurations from EMG or Pacific. A Kahler bridge is optional. Price: \$799.00 (without case).

### **SB-602; SB-601; SB-604**

The SB-602 bass has a curly maple or solid body in various colors. It has the EMG-PJ pickup configuration and has various volume and tone control set-ups. A Kahler bridge is optional. The neck uses a chrome back plate with 4 bolts into the body and comes in curly or solid maple with a rosewood, ebony or hard-rock maple fingerboard. It has 22 frets and is cut at 34-in. scale with an option for fretless or fretless with precision lines. The SB-601 is the same except only the EMG-P pickup is used. The SB-604 is the same as the 602 except that it has an offset headstock. Prices: SB-602 is \$899.00; SB-601 is \$749.00; SB-604 is \$899.00 (all without cases).

## **HONDO**

### **FLASH**

This headless bass has a hard-rock maple neck and body with 3-octave rosewood fingerboard and Grover machine heads. There is a master volume and a high-end passive/roll-off tone control with one humbucking and one Piezo electric pickup. Price: \$449.95.

### **H-763KT, H-763**

These guitars have one single-coil and one double-coil pickup and is available with Kahler Flyer or Fame tremolo. They have Grover machine heads. Price: \$499.95 (with tremolo, \$299.00 without).

### **H-787KT, H-787**

These guitars have two double-coil pickups, master volume and tone controls and is available with a Kahler Flyer or Fame tremolo. Price: \$299.95, \$499.95.

## **IBANEZ (HOSHINO)**

### **RS440 (ROADSTAR II SERIES)**

This guitar features two single-coil pickups and one humbucking pickup with a volume and tone control and a 5-position selector switch. It has a 22-fret, 25.5-in. maple neck with a rosewood fingerboard and chrome hardware. The body wood is basswood with a Pro Rock'r tremolo system. Price: \$429.00, case \$60.00.

### **PR1550 (PRO-LINE SERIES)**

This guitar features two single-coil pickups and one humbucking pickup with a volume and tone control and three on/off switches for each pickup. It has a 22-fret, 25.5-in. maple neck with oil finish and a flat radius maple fingerboard. The body wood is alder with black hardware and a Pro Rock'r tremolo system. Price: \$599.00, case \$60.00.

### **AR350 (ARTIST SERIES)**

This guitar features two "super 58 pickups" with two volume and two tone controls and a 3-way selector switch. It has a 22-fret, 24.75-in. 3-ply maple neck with an ebony fingerboard. The body wood is mahogany with gold hardware and a Pro Rock'r tremolo system. Price: \$799.00, case \$80.00.

### **XV500 (X SERIES)**

This guitar features two pickups with one volume control and a 3-position selector switch. It has a 22-fret, 25.5-in. maple neck with a rosewood fingerboard. The body wood is basswood with black hardware and a Pro Rock'r tremolo system. Price: \$529.00, case \$90.00.

### **AH10 (ALLAN HOLDSWORTH MODEL)**

This guitar features a special humbucking pickup with one volume and one tone control. It has a 22-fret, 25.5-in. maple neck with an ebony fingerboard. The body wood is basswood with black hardware and a Powerocker tremolo system. Price \$579.00, case \$60.00.

### **RS410 (ROADSTAR SERIES)**

This guitar features one humbucking pickup and a volume control. It has a rosewood fingerboard with a basswood body, chrome hardware, and a Pro Rock'r tremolo system. Price: \$349.00, case \$80.00.

### **RB960 (ROADSTAR II SERIES)**

This bass features two J-style pickups with two volume and two tone controls. It has a 24-fret, 34-in. 3-ply maple neck with a rosewood fingerboard. The body wood is arched top basswood with gold hardware and an Accu Cast B II bridge. Price: \$599.00, case \$70.00.

### **RB850 (ROADSTAR II SERIES)**

This bass features two J-style pickups with one volume and one tone control. It has a 24-fret, 34-in. 3-ply maple neck with a rosewood fingerboard. The body wood is basswood with black hardware and an Accu Cast B II bridge. Price: \$499.00, case \$80.00.

### **RB760 (ROADSTAR II SERIES)**

This bass features one P-style and one J-style pickup with one volume and one tone control. It has a 24-fret, 34-in. 3-ply maple neck with a rosewood fingerboard. The body wood is basswood with chrome hardware and an Accu Cast B II bridge. Price: \$429.00, case \$70.00.

### **MC940 (MUSICIAN SERIES)**

This bass features two J-style low impedance pickups with two volume and two tone controls. It has a 24-fretlength fretless 34-in. ebony fingerboard. The body wood is ash with gold hardware and an Accu Cast B II bridge. Price: \$895.00, case \$90.00.

### **MC924 (MUSICIAN SERIES)**

This bass has the same features as the MC940, but with a fretted neck. Price: \$819.00, case \$90.00.

### **RB885 (ROADSTAR SERIES)**

This bass has the same features as the RB850, except it is a 5-string model with an ebony fingerboard. Price: \$599.00, case \$80.00.

## **KAMEN**

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### **RIPLEY STEREO GUITAR**

This guitar features a 6-channel stereo mix with a pan pot for each string and uses six separate high output humbucking pickups which feeds into a tuning network and low noise op-amp. It is powered by two 9 volt batteries and has a Floyd Rose tremolo. The neck is 25.5-in. with 22 frets. Price: \$1,349.00.

### **PACER CARRERA**

This guitar has 2 humbucking pickups with a selector switch and two volume and one tone controls. The neck is 25.5-in. with 22 frets on a rosewood fingerboard. It has black chrome plated hardware, a Floyd Rose tremolo and Schaller strap locks. Price: \$995.00.

### **PACER DELUXE**

This guitar features two single-coil and one humbucking pickup with a 5-way selector switch and one volume and two tone controls. The neck is 25.5-in with 22 frets on a rosewood fingerboard and it has a coil tap switch for bridge pickup and Floyd Rose tremolo. Price: \$899.00.

### **PACER IMPERIAL**

This guitar features two humbucking pickups with a pickup selector switch and one volume and two tone controls. The neck is 25.5-in with 22 frets on a rosewood fingerboard and it has a Floyd Rose tremolo. Price: \$899.00.

### **VANGUARD**

This guitar features two humbucking pickups, one volume and one tone control and a pickup selector switch. The neck is 25.5-in with 22 frets on a rosewood fingerboard and it has a Floyd Rose tremolo. Price: \$899.00.

### **BARETTA**

This guitar features one humbucking pickup and one volume control. The neck is 25.5-in with 22 frets on a rosewood fingerboard and it has a Floyd Rose tremolo. Price: \$899.00.

## ***PHILIP KUBICKI***

### **EX FACTOR 4 EXTENDED BASS**

Bearing several international patents, this bass introduces an extended 36-in. scale, 3 1/3-octave neck with ebony fingerboard. A string clasp at the low E position can be disengaged to extend the string to a lower open D. It has an alder body and pressed veneer rock maple neck. A combined body mounted bridge/tuner offers fast and accurate tuning. Price: \$1,287.00 (with hard shell case).

## ***MODULAS GRAPHITE***

### **BLACKKNIFE**

This is a thru-body guitar with a neck that features an asymmetrical body joint for strat-style bodies and will accommodate 24 frets if desired. In addition, the peghead is angled, so that if no string lock is used, no string retainers will be necessary. Price: \$1,595.00.

### **BLACKKNIFE STANDARD**

This guitar features a strat-style neck and custom designed steel bridge combining traditional and modern tremolo design. Gotoh SG05 tuners are standard equipment. Price: \$1,095.00 (without case).

### **BLACKKNIFE SPECIAL**

This guitar features a strat-style neck mounted on a rear-routed strat-style body. EMG-SA pickups are included, as well as a vintage-style tremolo. Price: \$1,295.00 (without case).

### **QUANTUM-6**

This bass features thru body styling as well as a low B and high C string. The Quantum-6 comes with a 35-in. scale length. The extra scale length means the strings pull more tightly and the tone gets more punchy and defined. Price: \$2,195.00 (without case).

### **QUANTUM-5 SPECIAL**

This bass has many of the same features as the Quantum-6 except that it has five strings and it uses a bolt-on neck. It features a low B string and also features rear routing which offers stylized appearance in a choice of colors. Price: \$1,495.00 (without case).

### **QUANTUM-4**

This bass features a 35-in. scale length and uses the patented Modulus bolt-on neck. The 35-in. scale length also allows the bass to be transposed to notes as low as a fourth below low E. It features rear routing on bodies with hot paint jobs. Price: 1,395.00 (without case).

### **BASSSTAR SPECIAL P-J**

This bass features a 34-in. scale length and uses EMG-P-J pickups. The nutwidth is 1.6-in. Price: \$1,295.00 (without case).

### **FLIGHT-4 SPECIAL**

This is Modulus' version of the headless bass. The profile of the neck is very similar to a '62 P-neck, the shape most preferred by today's players: a wide flat feel. The body shape is compact but large enough to accommodate three or four control knobs. The Flight-4 Special comes with the popular P-J setup. Price: \$1,195.00 (without case).

## **FREEDOM BASS I**

This bass has a contoured ash body and maple with rosewood fingerboard neck construction. The wide vintage neck with fast, low action has a full 34-in. long scale. One humbucking pickup with active electronics offer one volume with treble and bass boost controls. Enclosed machine heads, chrome plated hardware and a high mass brass bridge offer increased sustain. Price: \$650.00 (without case).

## **FREEDOM BASS II**

This bass has two humbucking pickups with active electronics, one volume control, treble, and bass boost controls, and a 3-way pickup selector switch. Heavy duty chrome plated hardware and enclosed machines add mass for sustain. 34-in. scale maple/rosewood neck offers adjustment at headstock and at body. Price: \$695.00 (without case).

## **SCHECTER GUITARS**

### **MERCURY ST-1**

This is a select, hand-crafted, strat styled guitar with ash or alder bodies. Necks are hard-rock maple, with 22 jumbo frets, 12-in. radius, four-bolt with maple, rosewood or ebony fingerboards. Schecter's Graduated-Height tuning machines and Schecter's Tremlock are standard features. Price: \$1,149.00 (case included).

### **SATURN TE-2**

This, also known as the P.T., is a tele styled hand crafted guitar. Bodies are ash, necks are hard-rock maple, 22 jumbo frets, 12-in. radius, 25.5-in. scale. Available with one or two hot humbuckers, coil tapped. Hardware is gold, chrome or black-chrome. Schecters Graduated Height tuning machines are standard but the Tremlock is optional. Price: \$1,149.00 (case included).

### **JIMI HENDRIX JH-3**

This guitar delivers a unique sound because of the reverse peghead and reverse single-coil treble pickup. Bodies are hand crafted of select ash or alder. Necks are hard rock maple with rosewood or maple fretboards. Four-bolt attachment, 22 jumbo frets, 12-in. radius, 25.5-in. scale. Standard features include Schecter's Graduated Height tuning machines and Schecter's Tremlock. Price \$1,249.00 (case included).

### **JUPITER BASS PJ-4**

This bass has bodies of ash or alder, P-bass style. Necks are hard-rock maple with four-bolt attachment, on a 32-in. scale with 20 frets. Pickups feature one hot split single-coil and one hot standard single-coil, both tapped. Price: \$1,149.00 (case included).

### **VENUS BASS J-5**

This bass has a body made of select hand crafted ash or alder. Necks are hard-rock maple with optional rosewood or maple fingerboards and finished or unfinished headstocks. The necks are attached by four bolts, with 20 frets on 32-in. scale and two hot single-coil pickups, tapped. Price: \$1,149.00 (case included).

## **SPECTOR GUITARS**

### **NS-2**

This bass features maple neck through the body construction with a 34-in. Bolivian rosewood neck with 24 large nickel silver frets. The pickups are EM6 P and J (one of each) with 15 dB bass and treble boost controls. The bridge is gold plated solid brass and the machine heads are Schaller. Price: \$2,000.00 (with case).

### **NS-2JA**

This bass is a bolt-on neck version of the NS-2. The fingerboard is East Indian rosewood and the pickups are two EM6 Js. Price: \$1,380.00 (with case).

### **NSX**

This bass has a 34-in. East Indian rosewood neck with 24 large nickel silver frets. The bridge is black chrome plated solid brass with Schaller machine heads. It has one tone and two volume controls. Price: \$1,100.00 (with case).

## **KEN SMITH BASSES**

### **B.T. STANDARD**

This guitar has a dovetail neck/body joint. The body features bookmatched exotic wood tops and backs with contrasting center core. The necks are 5-piece laminated of maple and caviuna. Lefty models also available. Price: \$1,799.00.

### **B.T. CUSTOM**

This guitar features a 5-piece neck through body design. The body features bookmatched exotic wood tops and backs with contrasting center core with the body halves joined to the neck. The neck is of similar design to the B.T. Standard. Price: \$2,199.00.

### **SMITH 5 AND 6-STRING CONTRABASS MODELS**

A 5-string model is available with High C or Low B tuning. Price: Custom 5-string Contrabass, \$3,059.00. The Smith/Jackson Contrabass is a 6-string model that was originally designed and built for Anthony Jackson and is now available in 3 models with High C and Low B tuning. Price: Smith/Jackson B.T. Custom 6, \$3,359.00.



## **S-II WOODWORK**

This model features a dovetail neck/body joint. The necks are 5-piece laminated of maple and caviuna. It features two custom wound Smith humbucking pickups in Soap Bar configurations, passive printed circuit board, master volume control, pickup balance control, midrange roll-off tone control, in-out phase switch, stand-by switch, heavy duty switches and conductive plastic element pots. Price: \$1,699.00.

## **ACTIVE/PASSIVE MODELS**

The woodwork is flawlessly hand-carved from figured maple with rosewood trimmings. Classic hand-rubbed natural finish, neck-through-body-design of 5-piece construction, graphite Carbon-Fiber inlaid neck (IIG model), perfect lap balance, 24-fret (2 octave) select ebony fingerboard (34-in. scale with pearl inlays), dual flex-action truss rod. Price: \$3,699.00.

## **STEINBERGER**

### **XL-2 BASS AND GL-2 GUITAR**

These guitars and basses feature a neck and body that are molded as a single, ultra-rigid unit from a proprietary blend of reinforced composite materials. This construction isolates string vibration, increases harmonic content and permits extremely long sustain. Steinberger L-series instruments feature excellent clarity, brilliance and dynamic range. In addition, the materials used eliminated the dead spots common to some wooden-necked instruments. L-series instruments come equipped with special active low-impedance pickups specially made by EMG which permit extended frequency response and improved signal-to-noise ratio. Any L-series bass or guitar is available with active equalization as an option. Prices range from \$1,900.00 to 2,500.00.

### **STEINBERGER P-SERIES BASSES AND GUITARS**

Instruments in the Steinberger P-Series feature a specially designed wood body, mechanically fastened to a molded composite neck fabricated from the high-performance Steinberger Blend of reinforcing material. Special pickups, designed for Steinberger by EMG, are being produced exclusively for these models. Prices range from \$995.00 to 1,350.00.

## **TAKAMINE**

### **GX-100**

This guitar has two double-coil pickups, a master volume and tone control and a 3-position pickup selector. Available with tremolo.

### **GX-200**

This guitar has two double-coil pickups and one tone and two volume controls with a 3-position pickup selector switch. Available with tremolo.

## **WASHBURN**

### **PANTHER G-20V**

This guitar features a special carbonite fingerboard, custom metallic finishes, eliminator pickups and Wonderbar tremolo. It has 24 frets and a 25.5-in. scale length. A rock maple neck is set into an ash body. The carbonite fingerboard improves sustain and harmonic transfer. Price: \$699.00 (without case).

### **HARVEST CUSTOM D-70**

This guitar is completely handmade from choice woods selected from around the world, and uses unique trapazoidal bracing. These lightweight spruce braces provide the optimal balance between strength and structural acoustics. This gives the Harvest rich bass and clear crisp treble response. The design utilizes all wood bindings, purfling and pickguard. Price: \$1,100.00 (without case).

### **STALLION G-10V**

This guitar has two single-coils and one humbucking set directly into the body. While the pickup configuration offers all possible tonal variations through individual pickup on/off switches, the direct mount pickup application offers improved warmth and power. The 24-fret maple neck has a rosewood fingerboard and a 25.5-in. scale length. It is equipped with the Wonderbar tremolo and has an ash body. Price: \$499.00 (without case).

### **EA-40 MAPLE**

The Electric Acoustic Woodstock is crafted with a select spruce top and highly figured birdseye maple sides and back. The Woodstock accu-sensor pickup system offers individual volume, treble and bass controls that provide amplified acoustic sound at any volume. The cutaway design offer accessibility to the 21st fret via a polished rosewood fingerboard. Price: \$699.00 (without case).

### **RR-12**

The RR Series accents bold new graphics that enhance the guitar's performance features. Two single-coil and one humbucking pickup are activated by individual on/off switches offering impressive tonal combinations. The 24-fret rosewood fingerboard has a 24.75-in. scale length. The Wonderbar tremolo is standard equipment. Price: \$599.00 (without case).

### **REBEL G-2**

This guitar features the Wonderbar tremolo, 22 jumbo frets and a rosewood fingerboard. Two single-coil pickups and one humbucker offer accessibility to all tonal variations. Price: \$349.00 (without case).

### **RUDY SARZO SLAMMER-B-70**

This bass was designed by bassist Rudy Sarzo, and offers unique components and advanced electronics. The use of our exclusive carbonite fingerboard creates perfectly balanced harmonic transferal. Two eliminator humbuckers and the advanced rototek active EQ system provides added tonal versatility. Price: \$899.00 (without case).

### **B-40EQ**

This bass offers advanced electronics and neck through body design that gives this bass unlimited tonal possibilities and rich harmonic transferal. The active parametric EQ offers the selection of a wide or narrow band. Twin humbucking eliminator pickups offer quiet performance and power. The long scale bass has a rosewood fingerboard and ash body. Price: \$749.00 (without case).

### **BANTAM DOUBLENECK B-62**

This offers doubleneck, fretted and fretless necks in a headless design that is unusually light weight and comfortable. It allows the performer to switch quickly between both necks for added versatility. The low mass design offers a sound that is always warm, resembling the bass strings of a piano. The Bantam Doubleneck also includes locking jack and eliminator pickups. Price: \$1,499.00 (without case).

### **B-42**

The headless design and straight string pull give this bass a unique tone that closely resembles the bass strings on a quality piano. The long scale maple neck has a rosewood fingerboard that extends through the ash body. Price: \$899.00 (without case).

### **B-5**

The B-5 active circuitry offers 6 dB boost and is activated by one eliminator humbucking pickup. The long scale maple neck has a polished rosewood fingerboard and offers accessibility to the 21st fret. The eliminator humbucker uses the Washburn direct mount to body installation offering warm, punchy tone. Price: \$549.00 (without case).

### **REBEL B-2**

This bass is a medium scale bass offering easy access to the 22nd fret. It has one eliminator split pickup and a sure track bridge. The maple neck has a rosewood fingerboard which is bolted onto an ash body. Price: \$299.00 (without case).

## **WESTONE**

### **X139TBL SPECTRUM MX**

This guitar has a solid maple body and a 25.5-in., 22-fret hard maple neck with a hard maple fingerboard. It features chrome Gotoh machine heads, two single-coil and one humbucking pickup, tremolo bridge, master volume and tone, and a push/pull pot for coil tap. Price: \$299.50 (without case).

### **X4SW DIMENSION IV**

This guitar has a solid maple body and a 25.5-in., 22-fret hard maple neck with a rosewood fingerboard. It features black Gotoh machine heads, one single-coil and two humbucking pickups, tremolo bridge with string lock, master volume and two tone controls, two push/pull pots for coil tap and phase reverse. Price: \$499.50 (without case).

### **X135BK SPECTRUM ST**

This guitar has a solid maple body and a 25.5-in., 22-fret hard maple neck with a rosewood fingerboard. It features Gotoh machine heads, two humbucking pickups, a master volume and tone control, and one push/pull pot for coil tap. Price: \$269.50 (w/o case).

### **X188TPR SPECTRUM SX**

This guitar has a solid maple body and a 25.5-in., 22-fret hard maple neck with a hard maple fingerboard. It features chrome Gotoh machine heads, one humbucking and two single-coil pickups, a master volume and two tone controls, and two push/pull pots for coil tap and phase reverse. Price: \$399.50 (without case).

### **X800 RAIL BASS**

This bass has two tuned steel rails coupled to hard maple bodies. It has a 32.25-in., 24-fret headless solid maple neck with a rosewood fingerboard, and a master volume control. Price: \$499.50 (with bag).

### **X650CRD SPECTRUM GT**

This bass has a solid maple body and a 34-in., 22-fret, hard maple neck with a rosewood fingerboard. It features Trak wind machine heads, two pickups, a Magnacast bridge and a master volume with two tone controls. Price: \$425.00 (without case).

### **X630SW SPECTRUM ST BASS**

This bass has a solid maple body and a 34-in., 21-fret hard maple neck with a rosewood fingerboard. It features Trak wind machine heads, a Glide Trak bridge and master volume and tone controls. Price: \$299.50 (without case).

## **X910WA SUPER HEADLESS BASS**

This bass has a maple body and a 34-in., 24-fret hard maple neck with a rosewood fingerboard. It features Trak tune string lock, two pickups, master volume, tune, equalizer tone, dualtone switch, and bypass controls. Price: \$850.00 (without case).

## **YAMAHA**

### **SA2100**

This guitar features double cutaway hollow body made from arched beech and birch with alder and spruce center block. Extra-thin mahogany neck set in body holds a bound ebony fingerboard with 22 frets. Scale is 24.75-in. Equipped with two tone controls, each with coil split switch, two volume controls and two humbucking pickups. High ratio machine heads for accurate tuning. Price: \$995.00 (with case).

### **SA800**

This guitar features double cutaway hollow body in arched beech and birch with alder and spruce center block. Mahogany neck set in body with rosewood fingerboard, 22 frets, and 24.75-in. scale. Light compact bridge and two sensitive humbucking pickups. Price: \$795.00 (with case).

### **AE1200S**

This guitar has a single cutaway hollow body with carved solid spruce top, beech and birch rims and back, and maple neck set in body. Ebony fingerboard with 20 frets and a scale measuring 25.25-in. Light compact bridge, high precision machine heads, and highly sensitive humbucking pickups. Two tone controls with coil split switch and two volume controls offer several tone settings. Price: \$1,195.00 (with case).

### **SE700E**

This guitar has a deep cutaway body style made from solid alder with bolt-on solid maple neck. Ebony fingerboard with 22 and 25.5-in. scale. New vibrato unit with double string locking system and fine tuning bridge. Two single-coil and one humbucking pickup. Also has coil split capability and 5-position switch. Price: \$695.00 (with case).

### **SE700HE**

This guitar features double cutaway body made of solid alder and solid maple neck set in body. The ebony fingerboard has 21 frets and a 25.5-in. scale. One tone control with coil split, one volume control and one pickup switch. Equipped with two high-output, low feedback humbucking pickups and vibrato unit with string locking system. All hardware is black matte finish. Price: \$695.00 (with case).

### **SJ550**

This guitar's body is made from alder with a single cutaway. Detachable neck is solid maple with a 21-fret rosewood fingerboard. Scale measures 25.5-in. Two Spinex humbucking pickups combined with one tone, one volume and a coil split switch provide expanded versatility. Price: \$495.00 (with case).

### **BX1**

This bass features a futuristic body style made from nato-maple-mahogany and a one piece integral, maple-mahogany, headless neck. Its ebony fingerboard has 24 frets and 33-in. scale. Equipped with a fine tuning bridge, two 16-pole piece humbucking pickups, two volume controls, one tone control and a coil split switch for versatility. Price: \$695.00 (with case).

### **BB5000**

This is a 5-string, double cutaway body style bass made of alder-maple-mahogany and a one piece integral, maple-mahogany neck. The fingerboard is ebony with 24 frets and 33.75-in scale. One split single-coil pickup and one alnico pickup at the bridge. One volume control, one tone control and selector switch. A 5-string split type head is a special feature. Price: \$1,295.00 (with case).

### **BB3000S**

This bass features double cutaway body made from solid alder with an extra thin, one piece neck. The ebony fingerboard has 24 frets and a scale measuring 33.75-in. with a brass nut for extra sustain. Compact low-mass bridge, one front split pickup and one rear bar magnet pickup for power and balance. One tone and two volume controls. Price: \$1,195.00 (with case).

### **BB2000**

This bass features double cutaway solid alder body, ebony fingerboard with 21 frets and a 33.75-in. scale. Maple-mahogany neck through body with torque adjustable machine heads. Equipped with one single-coil pickup and one split coil pickup. Price: \$980.00 (with case).

### **BB1600**

This bass features double cutaway solid alder body with an extra-thin, solid maple, detachable neck. Rosewood fingerboard and 21 frets with scale measuring 33.75-in. One split front pickup and one rear bar-magnet pickup. Machine heads are torque adjustable and is also equipped with low-mass bridge. Price: \$795.00 (with case).

### **BB1100S**

This bass features double cutaway body in solid alder with an extra-thin, solid maple, detachable neck. Rosewood fingerboard with 21 frets and a scale of 33.75-in. Eight-pole rear pickup and split front pickup with low-mass bridge. Built-in active electronics with 3-band equalizer is a special feature. Price: \$695.00 (with case).

## GUITARS AND BASSES

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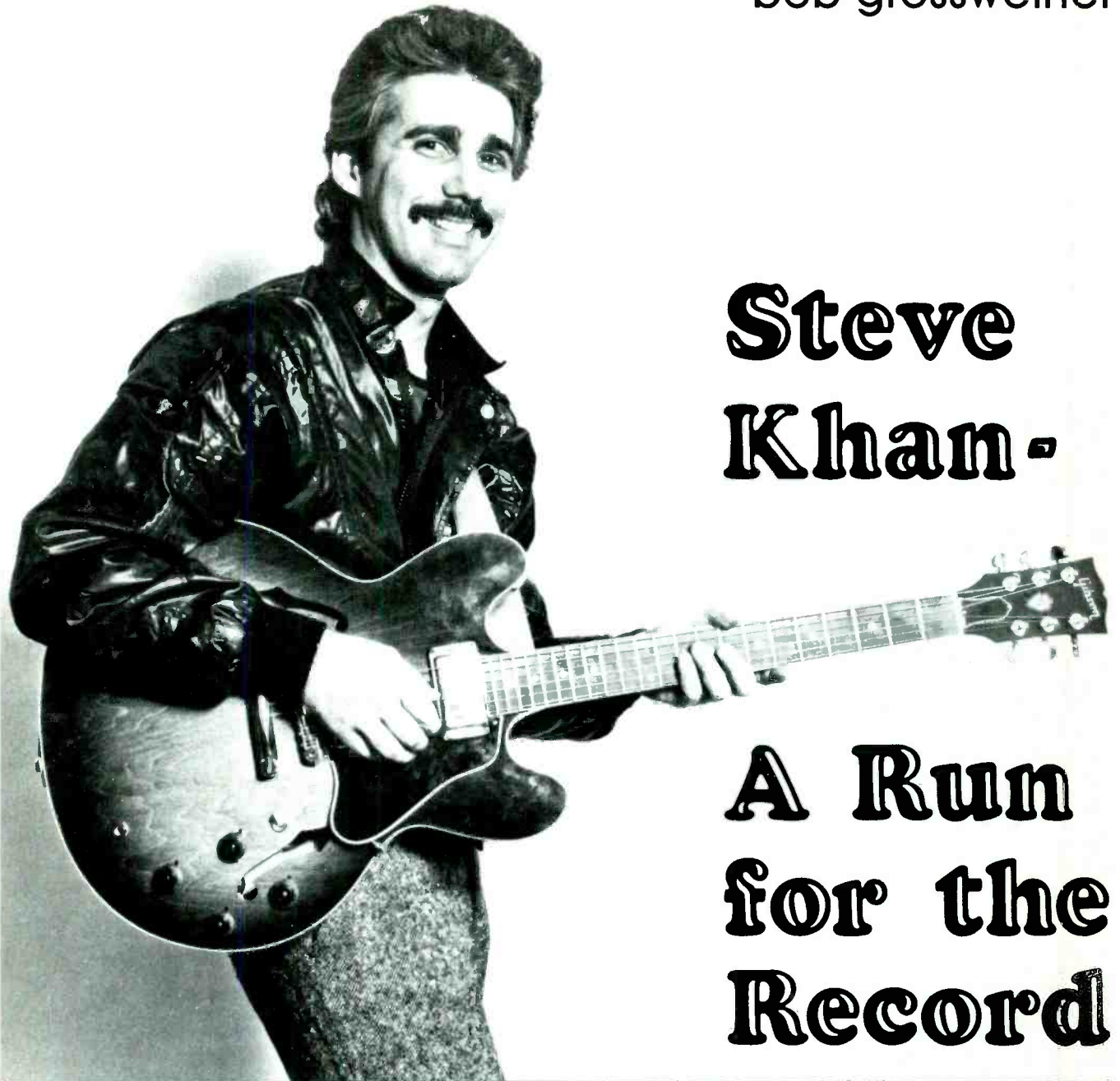


Photo courtesy of Antilles Records

# Steve Khan

# A Run for the Record

**I**n the 70s, record companies spent much of their time courting jazz fusion musicians. In the 80s, record companies are not interested, for the most part, in releasing instrumental fusion albums—and in some cases, refuse to even listen to demo tapes.

Therefore, new artists looking for a record deal sometimes must finance their own records by issuing the album on their own label or getting hooked up with a small independent label. Yet, established artists rarely need to finance their own albums since established practice is to be granted advances and recording time.

Now consider Steve Khan. He, as a member of the Brecker Brothers Band, has recorded with Larry Coryell, David Sanborn, Bob James, Billy Joel and Steely Dan, among others, and has released three albums on Columbia (plus the obligatory *Best of...*) and one on Arista Novus in the 70s. Despite his background, he is not highly visible in the 80s. As incredible as it may sound, he has had to finance two of his last four albums while the other two were financed by a Japanese record label. The last two were re-

leased in Japan two years before they were released in his native country. And without his Japanese support, Khan realizes that he would probably not be able to record as a solo artist.

The jazz fusion scene is so bleak that Khan's group, Eyewitness, has only performed twice in America in the past few years while doing three Japanese tours. "I hope we can garner enough interest to get out of New York and play Boston, for instance," he said not too long ago. "It seems real simple, but it's real difficult to get out of New York and play a club somewhere. We almost can't do it without losing money, which isn't fair to the musicians. The last time we played a note together was eight months ago."

About two years ago, Eyewitness played Seventh Avenue South in New York, and just a few months ago, they played the Berklee Performance Center in Boston and returned to New York later that night. Each musician made \$125.00 for the tour! Eyewitness did not even play a New York club.

Khan still does sessions, most recently with Aretha Franklin, Al Green and Michael Franks, plus numerous commercials. "Creativity is my main focus," he notes, "and to play music I care about the most." He recently went out on tour with Michael Franks to pump back some of the creative juices that can get stale with just studio work.

But Khan, who has played in the studio with Freddie Hubbard, Dexter Gordon, Hubert Laws, Maynard Ferguson, Ashford & Simpson, Chaka Khan, Mike Mainieri, Ben Sidran, Spyro Gyra, Leo Sayer, and countless others, realizes that session work is getting even scarcer. Less records are being recorded, groups are becoming more self-contained and do not need a band to back a singer, and many sessions are moving out to Los Angeles from New York.

So Khan, the thirty-eight year old son of lyricist Sammy Cahn, keeps waiting for the day that American record companies will once again be open to instrumental music that is not overly commercial. It should be noted that Khan is just one of numerous fusionists of the 70s in the same boat: without a major record company contract. Many musicians have seemingly disappeared from the record world—they have taken up giving instrument lessons and becoming anonymous studio cats. But Khan has taken his destiny into his own hands to fight back at

the music business establishment on his own terms.

*Modern Recording & Music* spoke with Khan a few times over the past year. At times he seemed pretty bleak, but for the most part he was fairly optimistic.

**Modern Recording & Music:** In the 70s, you were in demand as a jazz fusion guitarist. By the end of the decade, Columbia dropped most of its fusion artists. Now, you are finding that the major record companies are no longer interested in instrumental jazz fusion artists. How do you feel you fit into the 1985 business world of music?

**Steve Khan:** When you add the word "business" to the world of music, it's very hard to say, at least in terms of the last three records our group, Eyewitness, has put out under my name. One might say that we don't fit into the business world of music, but on the other hand, *Blades*, the most recent LP released in the United States on Passport Jazz (distributed by JEM), is selling more copies than the two Antilles albums, *Eyewitness* and *Casa Loco*, combined. The album is completely devoid of anything commercial—it has four eleven minute cuts. I can only assume that it's selling so well because JEM is the largest independent distributor of records. I did get a sense though that *Eyewitness* and *Casa Loco* were getting played quite a bit on the radio, but apparently they were not in the stores.

**MR&M:** What kind of genre of music do you feel Eyewitness falls into?

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## ***If you're not the favorite artist of the president of a record company most of the time you don't have a prayer.***

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**SK:** Eyewitness is a cooperative group, a melting pot of influences and elements that drummer Steve Jordan, percussionist Manolo Badrena, bassist Anthony Jackson and myself bring to it. We're basically an instrumental group. Manolo does vocals in either Spanish, chants, or nonsense syllables, which adds another dimension, making it hard to describe what it is.

**MR&M:** In the 70s, the record com-

panies were signing jazz artists in abundance, but they were dumping them by the end of the decade. Columbia graced you with a *Best of...* as a going away present, like they did everyone else in the purge. Now you're finding a hard time getting accepted again in the business world of music.

**SK:** The problem is not only the same, but it's even worse than in the 70s. There wasn't a lot of radio for it, but during that time there was free form FM rock radio which would play Cream or the Grateful Dead or the Beatles and then the Mahavishnu Orchestra or Return to Forever or Miles Davis or the Brecker Brothers or myself. It brought the music to a much wider audience. Our culture gobbled it up and spit it out and that was the end of that. Now, every major market in the country does not have a twenty-four hour a day FM jazz station. The chances of getting heard now are very slim and are dependent upon college radio, which, if we're lucky, might have a three hour jazz program or just five to six hours a week devoted to this kind of music. But it might be the midnight-to-six-in-the-morning shift. It's hard to break through to a bigger audience now.

**MR&M:** After being dropped by Columbia, you went over to Arista.

**SK:** I recorded *Evidence* myself and was lucky that Steve Backer of Arista picked it up. The whole show from the ground up is different from a run-of-the-mill television show. I financed *Evidence* for \$6,000 and was lucky enough to get that much money back from Arista for release on its Novus label.

**MR&M:** Where did you record it?

**SK:** At Media Sound in New York in 1980.

**MR&M:** Did you record it during off hours?

**SK:** Yes. It was done on two weekends and one weekday night. It was a simple project in some ways, but difficult musically. I was dependent only on myself since it was a solo guitar album.

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***The comments were that it was too sparse, too open sounding and that we should add a saxophone or a Fender Rhodes. It was unbelievable! Record company executives were saying this.***

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**MR&M:** Then what happened to your recording career?

**SK:** In the summer of 1981, I went to Japan as part of the Fuse One tour, which resulted from a CTI album called *Fuse One*. John McLaughlin and Larry Coryell did the record, but couldn't do the tour. Ndugu, Will Lee, Joe Farrell, Ronnie Foster and Jeremy Wall (formerly with Spyro Gyra) were in the tour band. We did Fuse One material and compositions by each of the musicians, I did some stuff from *Arrows*.

During that tour, George Braun of PMC International, which put the tour together, and I had dinner with a Japanese critic. He said that there was a lot of interest in Japan about me because of an interview I had done in the Japanese press *Eyewitness*.

Whereas America is a very radio and video oriented country, Japan is very print oriented. Good articles on an artist in Japan make an amazing difference. George and I left Japan with the feeling that if I had an album, there would be some interest for it in Japan.

I decided I wanted some simple elements—no keyboards—to see if a newer kind of music could be formed by composing by committee and leaving things very loose without having careful arrangements. I had worked with Manolo on a Mike Mainieri album. Steve Jordan wasn't really doing anything at the time. We got together and played a few times. I was really excited about what was happening. So I called George Braun and said that I've got something and I want to get into the studio and record it before we know what we were doing. We went into Media Sound and recorded it in a weekend in November, 1981, and mixed it at night.

**MR&M:** Who financed it?

**SK:** George financed the album for the Japanese record company Trio. He got the money back from them. But I couldn't get the album out in the United States until 1983.

**MR&M:** How much did *Eyewitness* cost?

**SK:** Fifteen thousand dollars.

**MR&M:** Why did it cost so much more than *Evidence*?

**SK:** The musicians got paid, which isn't usually normal when you're royalty artists. And *Evidence* was mostly direct to two-track without the need for mixing.

After *Eyewitness* was released in Japan, we toured there in May, 1982. We decided to let people know that we were really a group rather than a solo artist who could have different musicians on different tours. We decided to make a live album in Japan, which was very unconventional because we were making a live album of our own very first gig playing live anywhere. That album was released in Japan in July, 1982, called *Modern Times*, which is now called *Blades* in America.

**MR&M:** Why did you change its name?

**SK:** Steps Ahead later called one of its albums *Modern Times*, and we didn't want to confuse people. It's a common name for an album anyway; Jefferson Starship called one of its albums *Modern Times* as well.

**MR&M:** Who financed the tour?

**SK:** The promoters, the Pit Inn. We made a little bit of money. We got paid for the four nights, for doing the live recording, and for backing a Japanese pianist on his album. **MR&M:** At this point, you have two albums out in Japan and none in America.

**SK:** Right. When we got back to America, we started to prepare the

music for our third album *Casa Loco*.

**MR&M:** You obviously tried to get your albums released in America. What did the record companies say about them?

**SK:** The comments were that it was too sparse, too open sounding and that we should add a saxophone or a Fender Rhodes. It was unbelievable! Record company executives were saying this. My argument was that this was what was so good about it. It's very transparent music and different. If you're not the favorite artist of the president of a record company most of the time you don't have a prayer. If you notice, the record company presidents who bounce around from company to company, like Bruce Lundvall, for instance, take their favorite artists from one company to another with them.

**MR&M:** How did the recording of *Casa Loco* come about?

**SK:** It cost me \$18,000 out of my pocket! I had such high hopes for the record that I wanted to own it. I then licensed it anywhere I could.

**MR&M:** Where did you license it and did you get your investment back?

**SK:** It came out in Japan and America. I wasn't able to cover my expenses—I was way short, and still am.

**MR&M:** Were you still trying to license the second album in the United States?

**SK:** Yes. We went to Japan for the third time since *Casa Loco* was just released there. We played a different venue and our first outside of Tokyo. We played one night in Osaka which was great. We could start any song from the albums, and the audience would start applauding which made us feel great because some of the music is obscure in a way. For them to know it like that was fantastic.

When we came back, I learned that Jim Snowden was putting a label deal through Passport/JEM. He needed some albums. He called me and said he understood that I had an album sitting around. He didn't know too much about the album. I told him we had two albums out on Antilles and this other album had four eleven-minute cuts. He picked up the album for release. I got a *very, very* minute amount of money, but it's out. With a three year old album, I was in a no-win position with no bargaining power. I would have taken anything just to have the record out.

**MR&M:** Let's go back to *Blades* or

*Modern Times*, whichever name suits you. How did you record it?

**SK:** We recorded it over two nights, four sets of music. We knew the album was going to be just four tunes. We were also under the impression that they were going to change the house every set, but they let the people stay the whole night. Unfortunately for the audience, we repeated each song each set because we wanted four songs to choose from. Some of them were unbelievably long, and we had to do some editing, which we did in Japan. I asked each musician which of their solos they preferred.

We mixed the edited tapes at Media Sound in New York. I took all of the input from the musicians and worked it out in New York. Steve Jordan participates in almost all of the post-production. Anthony and Manolo stick their noses in occasionally. In Japan, it was recorded at the CBS-Sony Studio, which is right upstairs from the Pit Inn. A lot of live albums are done there—Steps Ahead did one. A lot of lines were already there going from the club to the studio.

The post production took a day per tune. We used the Lounge at Media Sound; that's what the room is known as. It has a 24-track Harrison board.

**MR&M:** You recently produced an album for Bill Connors, who was in an early version of Return to Forever and then left the group to record a few acoustic albums for ECM in the 70s. How did this project come about?

**SK:** A drummer friend of mine who lives down the block had auditioned for Bill Connors' band, and he told me that Bill was raving about Eyewitness. I was very flattered. We didn't really know each other although we ran into each other a few times because he also lives on my street. Then, Island Records' publicity director Ellen Smith called me and said that *Guitar World* magazine was putting together a jazz fusion panel discussion with guitarists John Abercrombie, Bill Connors, John Scofield and myself, which you moderated. So I took the opportunity and called Bill. He told me about his music, and we got together to hear his tapes. He sounded really terrific and the music was very interesting. We reached a place where we were feeling each other out about whether he wanted a producer. We decided that we *could* work together. Without being too pushy, I made some suggestions about the players to use. I got him hooked with Dave Weckl, the drummer, who he really liked, and Dave

turned him onto Tom Kennedy, the bass player. Suddenly there was a dynamic trio, and the music sounded better.

We did a lot of pre-production work, which I'm very proud of. We restructured some of the tunes. We sat with a stopwatch and timed the live performances, which were pretty long—more than twelve minutes. If he cut things down, we could get in at least five songs and present a broader program of music and still have a lot of stretching out. We wound up with eight tunes and have a lot of great improvisational playing with a balanced program.

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## ***The chances of getting heard now are very slim and are dependent upon college radio...through the midnight-to-six-in-the-morning shift.***

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We sent the tapes to every major and independent record company. We didn't get a response back from all of them. The closest we got in interest was from Jonathan Rose of Gramavision Records who liked it, but didn't want to release it for another year since he was releasing three or four other guitar records and didn't want the label to look like a guitar label. Bill got very discouraged and impatient and decided to go with his friend Douglas Lichterman's Pathfinder Records. (Interestingly, Lichterman was a guitar student of Connors.) It's essentially a one-man operation, but Douglas picked up the tab and got the record out. Distribution was pathetic—there was no coordination between radio and stores stocking it. But just recently, JEM picked up the distribution and an independent promotion man was hired.

**MR&M:** Where was it recorded?

**SK:** *Step It* was recorded at Media Sound in the big room. It was recorded in one weekend and one night. The album cost about \$15,000.

**MR&M:** As your first outside production, how did you feel in the studio?

**SK:** I felt very good about it because I spent a lot of time and energy in pre-production. The end result is all

that matters because that's what people hear. I feel that what I contributed in pre-production made Bill's music better. I was a good producer for him.

**MR&M:** Were you anxious about being behind the board and not playing?

**SK:** No, not at all. I didn't want to play on the album, but Bill asked me to play on one track. I tried to talk him out of it because I didn't think the track needed it, and I wanted the album to just be a trio. But I really enjoyed doing it. We rehearsed, and it sounded good.

**MR&M:** Will you be working with Bill again?

**SK:** I don't know. Bill may have garnered enough knowledge from what we did together to co-produce it with Doug Epstein (the engineer).

**MR&M:** What kind of guitars do you play?

**SK:** In Eyewitness, a Gibson 335 and a 1963 Fender Stratocaster, depending upon the character and the color of the piece of music. On *Blades*, three of the songs ("Blades," "Penquin Village," and "Blue Shadow") had the 335 while "Modern Times" was with the Stratocaster.

I have a newer Strat now which I customized with EMG pickups, a DiMarzio bridge with Gibson spacing, which I picked up from Bill, and I put in Spurzil machines with a locking tuning peg. I had the guitar around, and I've been putting things on and taking them off to make it sound right.

I use Roland JC-120 amps and a few different effects. I use a Dyna-chord digital reverb, an ADA digital delay, an Ernie Ball volume pedal, Morley distortion, and a TC stereo chorus.

**MR&M:** What plans do you have for Eyewitness now?

**SK:** We're ready to do a fourth album and probably will have to finance it ourselves.



# Lab Report

## Tascam 246 Portastudio



### General Information

The 246 Portastudio is a completely self-contained, 4-track production system designed to meet the needs of the musician/composer, multi-image, and video producer. If you have had any experience with TASCAM's earlier Portastudio, let me say at the outset that this newest version runs rings around the older model.

Lightweight and conveniently dimensioned, the newest Portastudio contains a full-function six-input-to-four-out mixer and a 4-track, 2-speed cassette recorder with transport remote capability and built-in (but switchable) dbx noise reduction.

Between its inputs and its outputs, the mixer section of the Portastudio uses a series of sub-mixers to organize and route signals to various locations. There are four such sub-mixers: the Main Mix, Monitor Mix, and two Effect Mixes. The Main (or Program) Mix is the primary mixing system. It accepts channel inputs from microphones, instruments, line level signals, or from the built-in cassette recorder sending the resulting mix to the recorder, to the other sub-mix systems, or to the stereo and program outputs. The Main Mix is also used

for remixing, and, of course, it can be used as an independent stereo mixer.

The Monitor Mix takes signals from the recorder's playback or PGM (Program) buss. These signals are patched through individual pan and level controls. Monitor mixes are used so that performers can hear previously recorded and new material while recording or rehearsing an overdub.

The Effect Mix system's signals come from the Main Mix system. With the Effect Mixers you can send signals to a pair of Effect Outputs at the rear of the unit. These outputs are then plugged into any kind of signal processor (such as a reverb unit, for example), and the signal processor's outputs are connected to unused Line Inputs. This enables you to add as much or as little of the processed effect as you wish to the final mix.

As for the recorder section of the Portastudio, its 2-speed operation makes it compatible with standard pre-recorded cassettes while allowing for better quality recordings (and compatibility with other cassettes made at the faster 3-3/4 in/sec speed). The recorder records on a cassette in one direction only; hence the 4-track capability. This Portastudio incorporates dbx linear com-

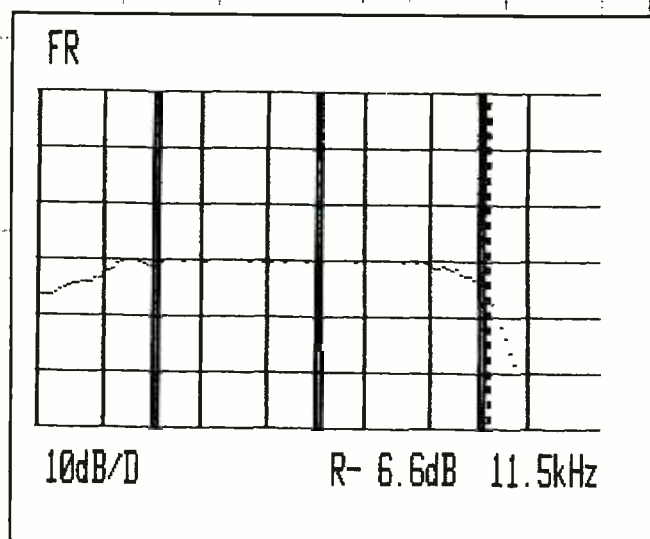
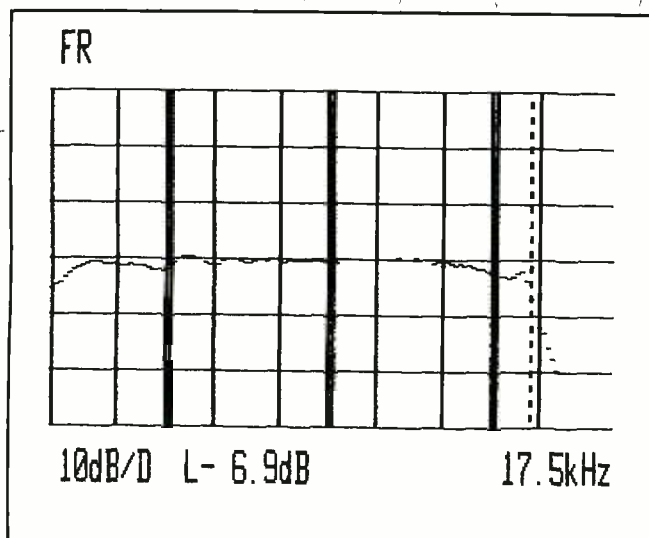


Figure 1. Frequency response without dbx. At 3-3/4 in/sec (A), and at 1-7/8 in/sec (B).

panding for noise reduction and dynamic range expansion, but the feature can be turned off if, for example, you need to play recordings using Dolby or some other noise reduction system—or no noise reduction system at all. SMPTE time code and FSK synchronizing tracks can be recorded on track 4 of the recorder, which has a separate dbx-off switch, since such time code recording can cause tracking errors in the dbx system.

An optional remote control module (Model RC-71) can be used to operate the tape transport functions (including *Record*); and, punch-in, punch-out recording can be accomplished by means of an optional available foot-pedal switch.

### Control Layout

The top, working surface of the Portastudio is logically laid out as a six-in-four-out mixing console at the left; with the master level controls, meter assignment, effects master gain controls and other overall switches and controls at the center; and, the cassette recorder controls and transport at the right. The six mic/line phone jack inputs as well as two stereo phone output jacks are found

on the vertical front lip of the unit; while the four tape-out channel jacks, program, monitor, and effects out jacks, program buss input jacks, remote control connectors, and dbx on/off switches are all located on the rear apron of the unit.

Each of the six identical input control banks contains a mic/line-off-RMX (remix) switch, a line/mic level trim control, a pair of dual-concentric eq controls which provide the flexibility of a dual-band parametric equalizer, Effect-1 and Effect-2 level controls, four output assignment pushbuttons, a panning control, and a slider overall level control for that input channel.

The center section contains four MONITOR GAIN and PAN controls, a MONITOR MASTER gain control, a MONO switch, a pair of EFFECTS MASTER controls, meter selection pushbuttons (which switch the meters from Program, to Monitor, to Effects output indications), Phones selector-switches (which do the same thing for phones output), a PHONE LEVEL control, indicator lights for the record function and, of course, the two master slider fader/level controls.

The cassette recorder section of the Portastudio has

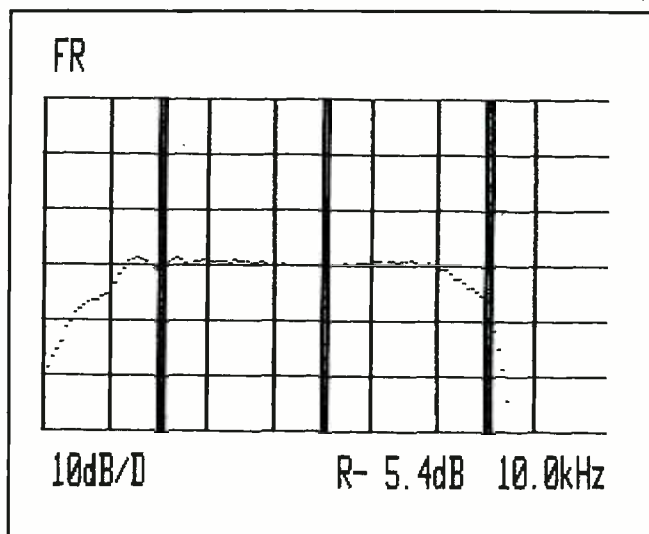
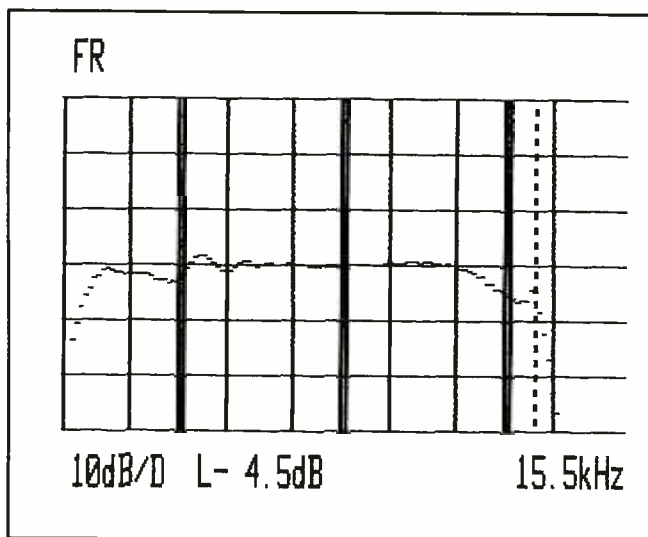
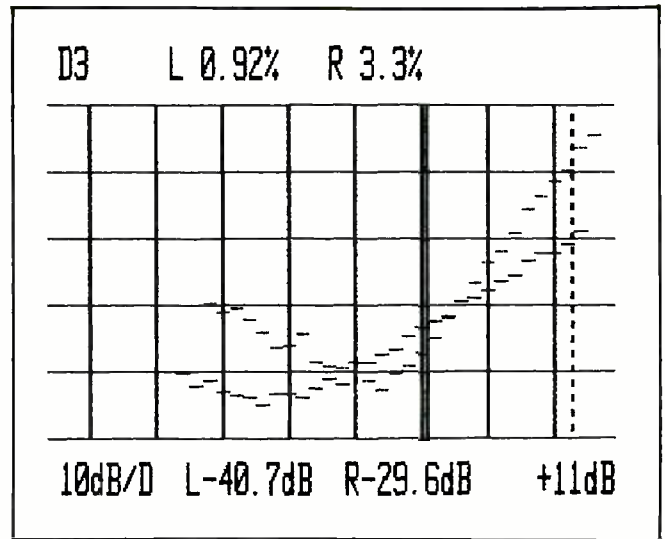
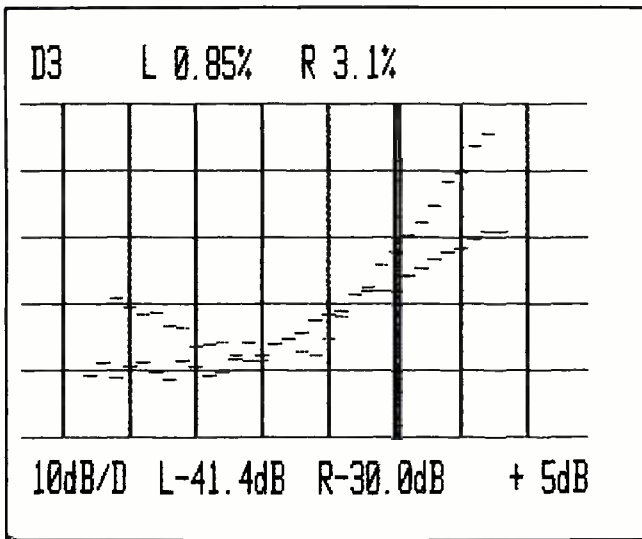


Figure 2. Frequency response with dbx, at 3-3/4 in/sec (A), and at 1-7/8 in/sec (B).



A

**Figure 3. Third-order distortion vs. recording level at fast speed (A) and at 1-7/8 in/sec (B). Results shown as "L" are with dbx on, while those next to "R" were plotted with dbx off.**

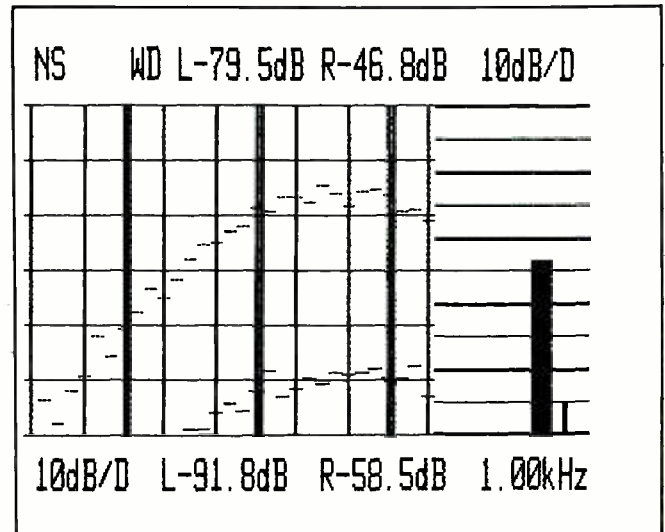
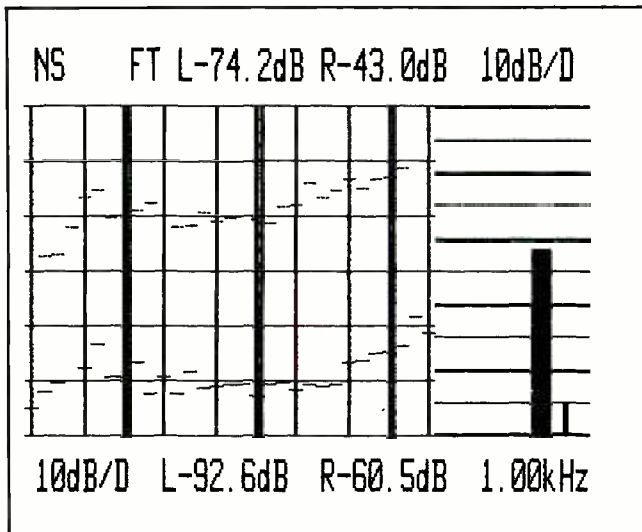
B

the cassette compartment up near the top of the unit, and it's covered by a pop-up door. The speed selector slide switch is not visible with that cassette compartment door closed. The expected array of tape transport controls are found near the bottom edge of the deck section. A rotary pitch control and a pitch-control On/Off switch are found to the right, below the cassette compartment. A variety of memory function buttons, as well as buttons relating to "Zero Return" of the tape counter, occupy the space below the cassette compartment. The transport memory functions are extremely versatile. You can cause tape to rewind to "0000" on the tape counter and to either stop or begin play from that setting. You can also program in any setting of the tape counter and have the tape stop when it reaches that setting or rewind when the memorized counter setting is reached. A button identified as TRT, toggles the counter from 4-digit readings to actual recording elapsed time in minutes and seconds, while a "Reset" button clears the display (causing it to show "0000"), while at the same time canceling any "Memory" counter setting.

Four VU meters at the upper left of the Portastudio have a logic system that automatically switches them so that they will display program material while you are recording your basic tracks. When you switch the recorder to the PLAY mode, the meters automatically switch to read the track material. The two meters at the upper right are labeled PGM L and PGM R with an alternate labeling of EFFECT 1 and EFFECT 2. These are the meters that can be switched by the earlier-mentioned meter select switches. They are used to read either left and right stereo outputs, left and right Monitor outputs, or Effects 1 and 2 signals.

### Laboratory Measurements

As usual, our VITAL STATISTICS chart at the end of this report shows the manufacturer's performance claims as well as our measured results. The chart does not list such basic characteristics as input and output levels. Nominal mic and line input levels to the Portastudio are 1 mV and 0.3V, respectively. Maximum input



A

**Figure 4. Signal-to-noise ratio analysis with and without dbx. (A) is unweighted and (B) shows weighted results (all at slow speed).**

B

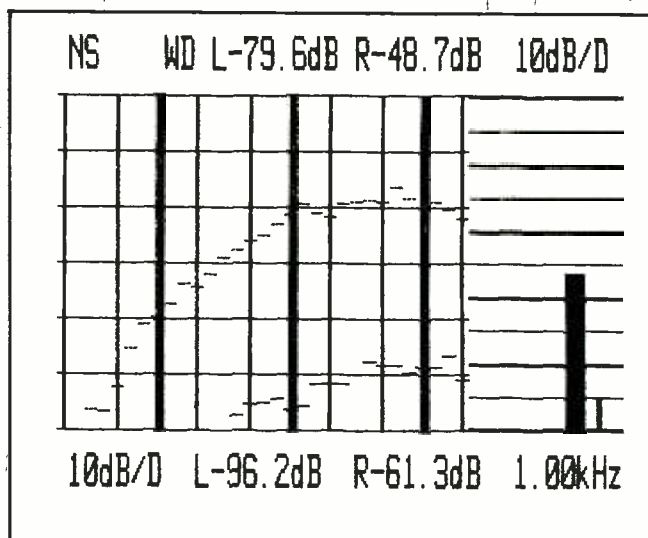
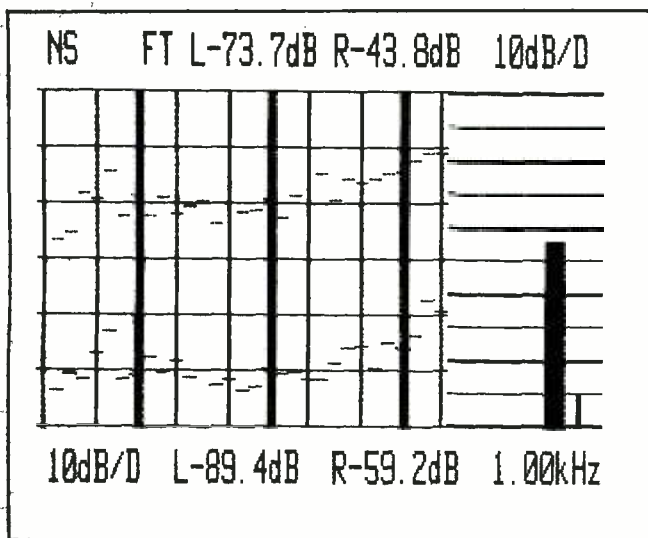


Figure 5. Signal-to-noise ratio analysis with and without dbx at 3-3/4 in/sec. (A) is unweighted and (B) shows A-weighted results.

and output levels are 5.6V, while maximum phone output level is 100 mW/channel into 8-ohm loads.

Most of our lab measurements dealt with the performance of the tape deck section of the Portastudio, whereas our hands-on evaluations of the unit involved its mixer and eq facilities. The tape deck's bias level and equalization are set up for Type II cassettes (chromium dioxide formulations or cobalt-doped ferric oxide equivalents), and in all of our tests we used Maxell XL-IIS—one of the tapes recommended by the manufacturer. Figure 1 shows plots of record/play frequency response without the dbx noise reduction circuitry activated. Response at high-speed (3-3/4 in/sec) is shown in Figure 1A, while the response obtained at the lower speed (1-7/8 in/sec) is plotted in Figure 1B. Since TASCAM's published response lists a +/- tolerance of 3 dB, our plot extends to approximately the -6 dB point, since the plot has been referenced to 0 dB at 1 kHz, and there are no excursions above 0 dB within the frequency range plotted. This and other frequency response plots were all taken at -20 dB with respect to 0 dB levels as

indicated on the unit's VU meters. In this case, 0 dB corresponds to a recording magnetization level of 160 nWb/meter. The response plots would therefore be about 24 dB below the newly established reference of 250 nWb/meter that is commonly used. In any event, at the high speed, response extended out to 17.5 kHz, while at the slower speed, roll-off occurred at 11.5 kHz.

The response measurements were repeated with dbx turned on; results are shown in Figures 2A and 2B. Results were somewhat poorer under these circumstances, but were still quite impressive at the higher speed, considering the intended applications of the Portastudio. At the 3-3/4 in/sec speed response was down 4.5 dB at 15.5 kHz. All of the graphs of Figures 1 and 2 are logarithmic sweeps extending from 20 Hz to above 20 kHz, with double vertical lines denoting the 100 Hz, 1 kHz and 10 kHz points. Vertical sensitivity in each graph is 10 dB per division.

Distortion measurements came next. In Figure 3, third order distortion was measured with and without dbx at the fast speed (Figure 3A), and at the slower speed

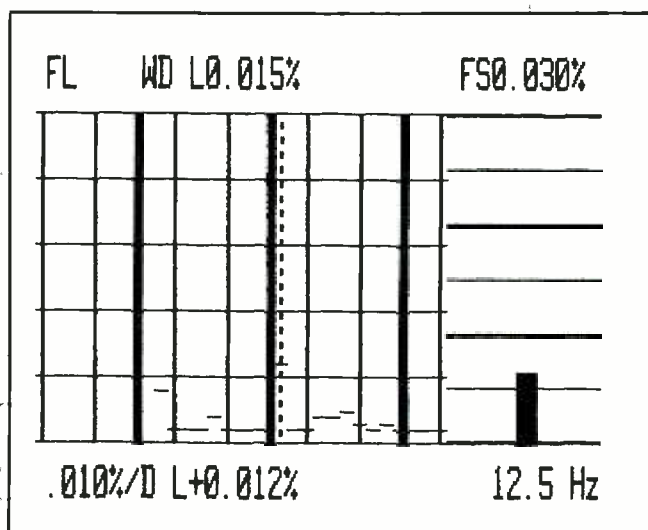
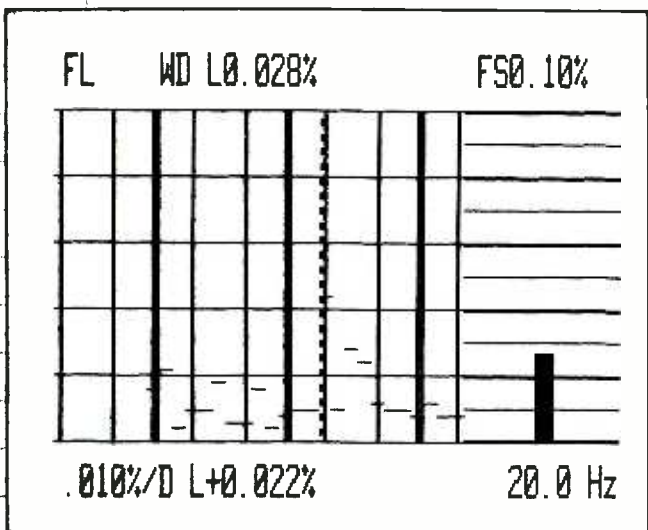
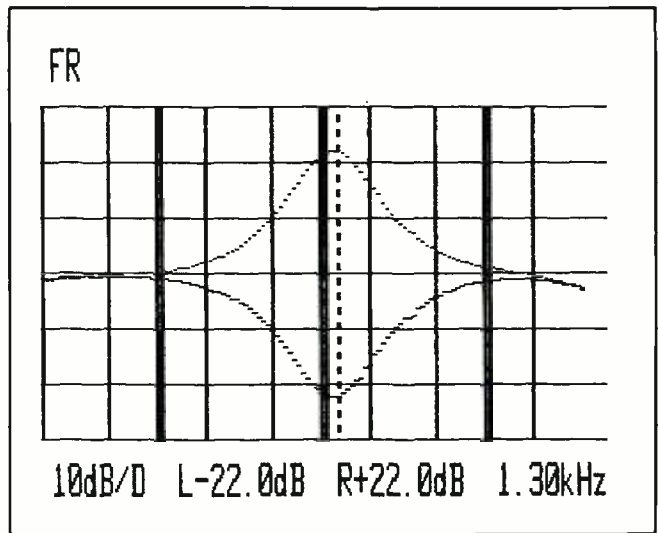
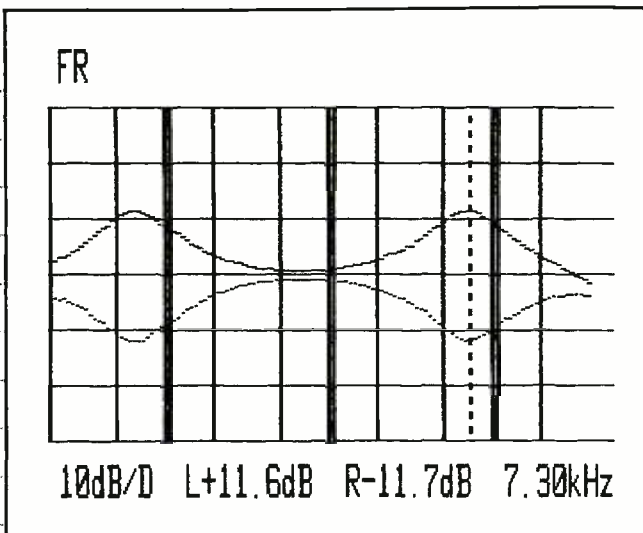


Figure 6. Wow and flutter analysis at high speed (A) and low speed (B).



**A** Figure 7. Maximum boost and cut range of eq controls, with each set at its lowest and highest center frequencies (A). When each control's center frequencies are set to the same mid-frequency, the control's effects are additive (B).

**B**

(Figure 3B). Without dbx, 0 dB distortion readings were recorded on our VITAL STATISTICS chart as 0.70% and 0.79% at fast and slow tape speeds, respectively. With dbx turned on, the third order harmonic distortion at 0 dB was 0.4% at both operating speeds. The electronic "cursor" in Figures 3A and 3B has been set to read the level (in dB), closest to the 3% maximum record level for operation without dbx. That level was +11 dB at the slow speed and +5 dB at the faster speed. With dbx turned on, we could not reach the 3% distortion point on the graph, since the plot only goes out to +12 dB. By changing the reference level, we were able to determine that with dbx turned on, the headroom at both speeds was a very high 14 dB above 0 dB on the meters.

The headroom values just mentioned have to be taken into account when examining the signal-to-noise plots of Figures 4 and 5. Our Sound Technology tester was calibrated so that all measurements are made with respect to 0 dB. Thus, in Figure 4A (unweighted S/N at the slow tape speed) you see an overall S/N reading of 43.0 dB without dbx and 74.2 dB with dbx. To these numbers must be added the headroom available above 0 dB before the 3% maximum level is reached. Doing so, we obtain a 48 dB figure without dbx (43.0 dB plus 5.0 dB headroom), and 88.2 dB with dbx turned on (74.2 dB plus 14 dB headroom). The other S/N figures, for weighted S/N at both speeds and or unweighted S/N at the slow speed, tabulated in the VITAL STATISTICS chart were arrived at in a similar manner.

NAB weighted wow and flutter analyses are shown in the graphs of Figures 6A and 6B. In these graphs, the values shown at the top of each plot are the overall wow and flutter figures, while the numbers shown below each graph represent the wow and flutter at the particular frequencies to which the electronic cursor has been set (20 Hz in Figure 6A; 12.5 Hz in Figure 6B). The major left-hand sections of each graph are plots of the wow and flutter contributions made by specific third-octave frequency segments. Frequency range of these plots extends from 0.5 Hz to 200 Hz. As you might expect, the major contribution to wow and flutter at slow speed—12.5 kHz—almost doubles at high speed, where the major contribution of wow and flutter occurs at around 20 Hz. In any event, the wow and flutter of this tape transport is

as low or lower than that of even the most costly stereo cassette decks intended for "audiophile" use.

Figures 7A and 7B should give you some idea of the flexibility and usefulness of the two sets of eq controls found on each of the mixer's input banks. In Figure 7A we deliberately adjusted the low-frequency eq control so that its center frequency was at its lowest point (around 60 Hz), while the other eq control's frequency ring was set to its highest point (7.3 kHz). Then we plotted response with both amplitude controls set to maximum and to minimum. The resulting graphs show the range of these controls: approximately  $\pm 12$  dB. When the center frequencies of the two eq controls are shifted to their other extremes, they both reach the same center frequency—around 1 kHz, and their effects are additive, so that the maximum boost and cut range is about  $\pm 22.0$  dB as plotted in Figure 7B.

The last measurement we made in the lab had to do with speed accuracy. Of course, this unit is equipped with a pitch control which permits a swing of pitch of around 12% in either direction, but with that control defeated, speed is supposed to be locked in at the standard 1-7/8

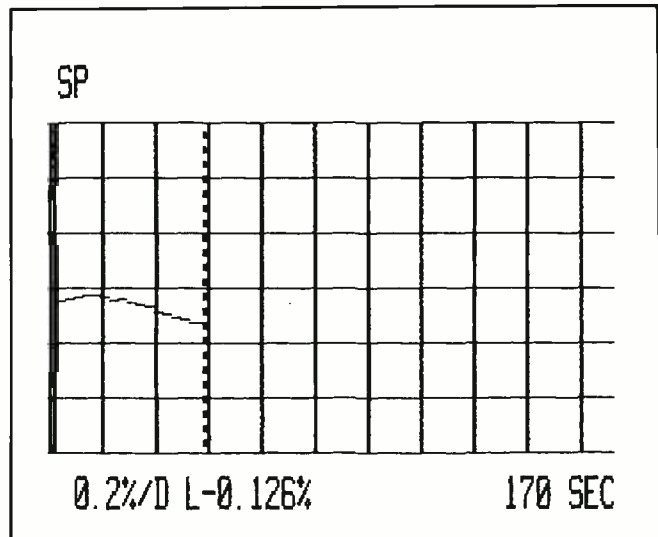


Figure 8. Tape speed variation over a period of three minutes.

in/sec or at 3-3/4 in/sec Using a test tape recorded at 3.15 kHz in conjunction with one of the test settings of our SoundTechnology 1500A tape tester, we plotted speed deviation for a period of three minutes, during which time maximum deviation from perfect speed was a mere -0.126%—far less than the 1% maximum deviation published by TASCAM in their spec sheet.

## Comments

It would be difficult to summarize all of our experiences with the TASCAM 246 Portastudio in the few brief paragraphs allotted to these comments. Over the course of several evenings, we put the Portastudio through its paces, both as a mixer and as a versatile, in-the-field auditioning console. Every function performed splendidly. Certainly, there's a lot to learn about this jam-packed combination mixer/recorder, but as usual, the folks who write TASCAM's (and TEAC's) owner's manuals have done another excellent job, guiding the user, step by step through the intricacies of mixing, recording, remixing and monitoring. All things considered, in using the machine I found that the fast speed yields much better results all around. Of course, at that speed a C-90 tape (TASCAM warns never to use C-120s with this machine), only gives you 22-1/2 minutes of continuous recording time (remember, you can only use tapes in one direction); but I doubt whether anyone using this Portastudio will find that to be a serious limitation.

Using the dbx, I found that there was literally no audible tape hiss or noise during any of my playbacks. That's important when you consider the fact that every

subsequent dubbing and remix adds a few dB of noise. Even after a couple of mix-downs and dubs there was still no audible noise on my final version of a tape, so I would recommend using the dbx system whenever possible.

It goes without saying that if you own a decent reel-to-reel tape deck (either 1/2-track or stereo 4-track), there's nothing to prevent you from using all of the mixer functions of the Portastudio with such a machine. Don't overlook the use of the Portastudio as a video post-production facility, either. Virtually all popular brands of 3/4-inch and 1/2-inch VCRs will interface directly with the 246 Portastudio. Stereo and mono audio signals originating from the VCRs, voice-over mics, audio cassettes or "carts," as well as any mic or line sources, can be mixed simultaneously using the 246. The mixed signals can then be assigned to the Left and Right Program Out jacks to feed an edit master VCR.

If you think you're getting a bit lost or confused when using the Portastudio, there are some really great diagrams in the forty-five page owner's manual that will set you straight again in no time. The full-page pictogram on page 40 of that book is especially useful; it shows the path followed by every single input of the unit as those signals wind their way to the many outputs and meters. You couldn't ask for a more clear picture of what's going on in this amazingly compact, yet fully effective and professional piece of gear. Perhaps the best new feature of all is the price, \$1,300. Frankly, I would have been prepared to pay that much for a mixer with the capabilities of the 246. Having that 2-speed, 4-track cassette recorder thrown in is like getting it "for nothing."

TASCAM 246 PORTASTUDIO: Vital Statistics

SPECIFICATIONS	MFR. CLAIM	MR&M MEASURED
	<b>Mixer Section</b>	
Frequency Response	20 Hz - 20 kHz, +/-1 dB	18 Hz - 20 kHz, +/-1 dB
S/N Ratio (A-w'td/Unw'td)		
1 Mic to PGM Out	68 dB/65 dB	70 dB/67 dB
1 Line to PGM Out	85 dB/80 dB	88 dB/81 dB
THD at 0 dB nominal level	0.05%	0.03%
Crosstalk	65 dB	68 dB
	<b>Recorder Section</b>	
Frequency Response (Rec/Play)		
High Speed (w/o dbx)	40 Hz - 14 kHz, +/-3dB	20 Hz - 17.5 kHz, +/-3dB
High Speed (w/dbx)	N/A	27 Hz - 14.5 kHz, +/-3dB
Low Speed (w/o dbx)	40 Hz - 12.5 kHz, +/-3dB	22 Hz - 11.5 kHz, +/-3dB
Low Speed (w/dbx)	N/A	42 Hz - 10.0 kHz, +/-3dB
Signal-to-Noise Ratio		
High Speed		
No dbx (wt'd/unwt'd)	58 dB/55 dB	59.7 dB/54.8 dB
dbx on (wt'd/unwt'd)	95 dB/90 dB	93.6 dB/87.9 dB
Low Speed		
No dbx (wt'd/unwt'd)	57 dB/54 dB	51.8 dB/48.0 dB
dbx on (wt'd/unwt'd)	93 dB/88 dB	93.5 dB/88.2 dB
Wow-and-Flutter		
High Speed (NAB/Peak Wt'd)	0.04%/0.06%	0.015%/0.065%
Low Speed (NAB/Peak Wt'd)	0.05%/0.1%	0.028%/0.11%
Total Harmonic Distortion		
High Speed (0 dB, w/wo dbx)	1.0%/1.0%	0.4%/0.7%
Low Speed (0 dB, w/wo dbx)	1.0%/1.0%	0.4%/0.79%
Adj. Chan. Separation (w/wo dbx)	70 dB/55 dB	70 dB/57 dB
	<b>Mechanical Characteristics</b>	
Speed Accuracy	1.0%	-0.126% (after 3 minutes)
Fast Wind Time (C-60)	85 seconds	98 seconds
Dimensions (W x H x D, in.)	19 <sup>1</sup> / <sub>16</sub> x 15 <sup>13</sup> / <sub>16</sub> x 4 <sup>13</sup> / <sub>16</sub>	Confirmed
Weight	22.7 lbs.	Confirmed
Price:	\$1300.00	

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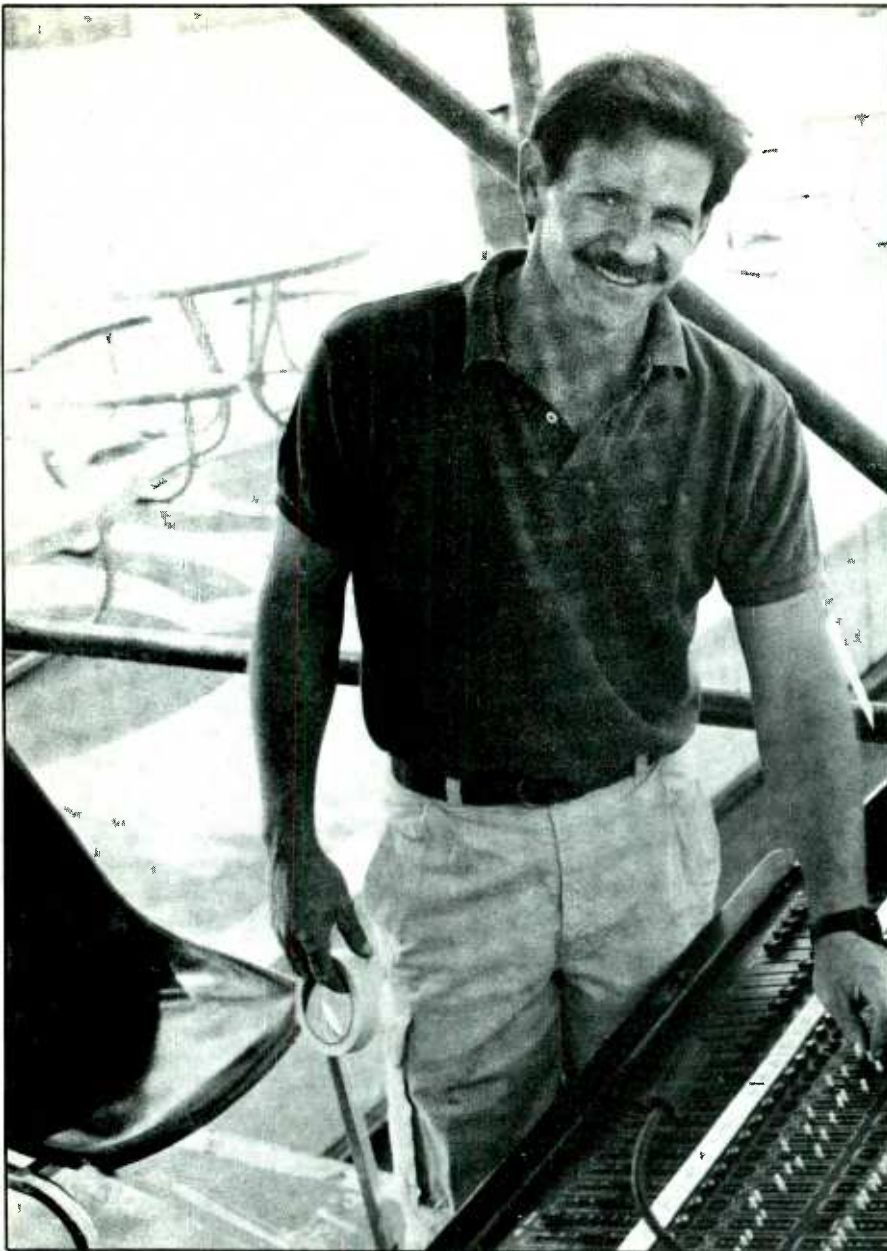


Photo by Ed Learned

Steve Fisher

# Steve Fisher Monitors the Mixing Evolution

**T**he rapid absorption of electric instruments into 60s pop music posed a new sonic problem for performers. As the volume throughout the stage environment increased, it became increasingly difficult for vocalists to hear themselves sing. Clearly, it had become essential to provide an onstage speaker system, focusing sound back at singers so they could cope with the electronic escalation onstage. This concept grew and expanded into the development of modern stage monitoring. Over the past twenty years, monitor philosophy has evolved from simply reinforcing vocals to completely replacing all stage amplification. In some circumstances, today's monitor engineer has total control over stage sound. Steve Fisher, a fifteen year veteran of the sound reinforcement business, has successfully evolved with the industry to become one of today's top monitor engineers. Here, Steve relates his thoughts on stage monitoring in the mid 70s, and the evolution towards the multiple-mix approach of the 80s, evidenced by his recent position as monitor engineer for Electrotec, Inc., currently assigned to the Al Jarreau "High Crime" tour.

**Modern Recording & Music:** Steve, you've been engineering for quite a few years now. How did you get started in the business?

**Steve Fisher:** I started working for bands in high school and college, from around 1967-71. This was back when no one knew what sound was, and nobody wanted to find out, except for me. I ended up working for a successful club act, and we soon wanted to buy a PA system from the local PA company (Portable Audio, Whitmore Lake, Michigan). In buying the system, Portable Audio hired me to go out and do shows, because it seemed like I knew what I was doing.

**MR&M:** In your club days, you were a house engineer. What were your first duties with Portable Audio?

**SF:** I was third man for a Stevie Wonder tour in 1971, which was actually my first major-league professional gig. I set up the PA, ran power, mic'ed the stage, stuff like that. Shortly thereafter, I got into monitor mixing.

**MR&M:** One of your first assignments as a monitor engineer was work-

ing for Peter Frampton. How did that come about?

**SF:** We did a show for Peter at Ford Auditorium (Detroit) in early 1974. I got in early, and got set up early. When Peter came in before the band, I introduced myself and rather blatantly said, "I'm real new at this. I know what I'm doing, but I'm new, so let's work on it." His attitude was like "Great!", so together we walked through his mix, mono side-fills, the other guitar player's mix, bass, drum and keyboard mixes—before the rest of the band even arrived. He's a great guy; I ended up working for him throughout the midwest, carting around a monitor system for him in a van. It was a great working relationship.

**MR&M:** That comes to a total of six mixes. Considering the 18-mix setup you're using now with Al Jarreau, you've certainly come a long way.

**SF:** In those days, there was nothing even close to eighteen mixes. If you had four mixes, you had a monitor system. Six mixes were big time, and eight mixes were state-of-the-art, but I didn't have that; being in Michigan, I

couldn't even rent it. For the most part, the mainstay of monitor mixing in the early 70s was 4 to 6 mixes.

**MR&M:** I was working as house engineer for my first touring accounts in the mid 70s, and was just becoming aware of the proper use of a monitor system. The philosophy of monitoring was quite a bit different back then.

**SF:** Right. A monitor mix was only around twelve channels. For instance, with Frampton we had four vocals, kick, snare, hi-hat, guitars, bass, and keyboard. You were looking to kick vocals back at the band, maybe spread a little drums and a few instruments around the stage. Everyone had their own amplification for their individual sounds, and used the monitors for reinforcement. The amp line was seventy-five to eighty percent of the stage sound, with the monitor system providing the rest. Of course, in that era, the bands weren't playing venues the size of the venues that we routinely do today.

**MR&M:** Foreigner was among your accounts in the late 70s. You toured with them in 1978 on their first world

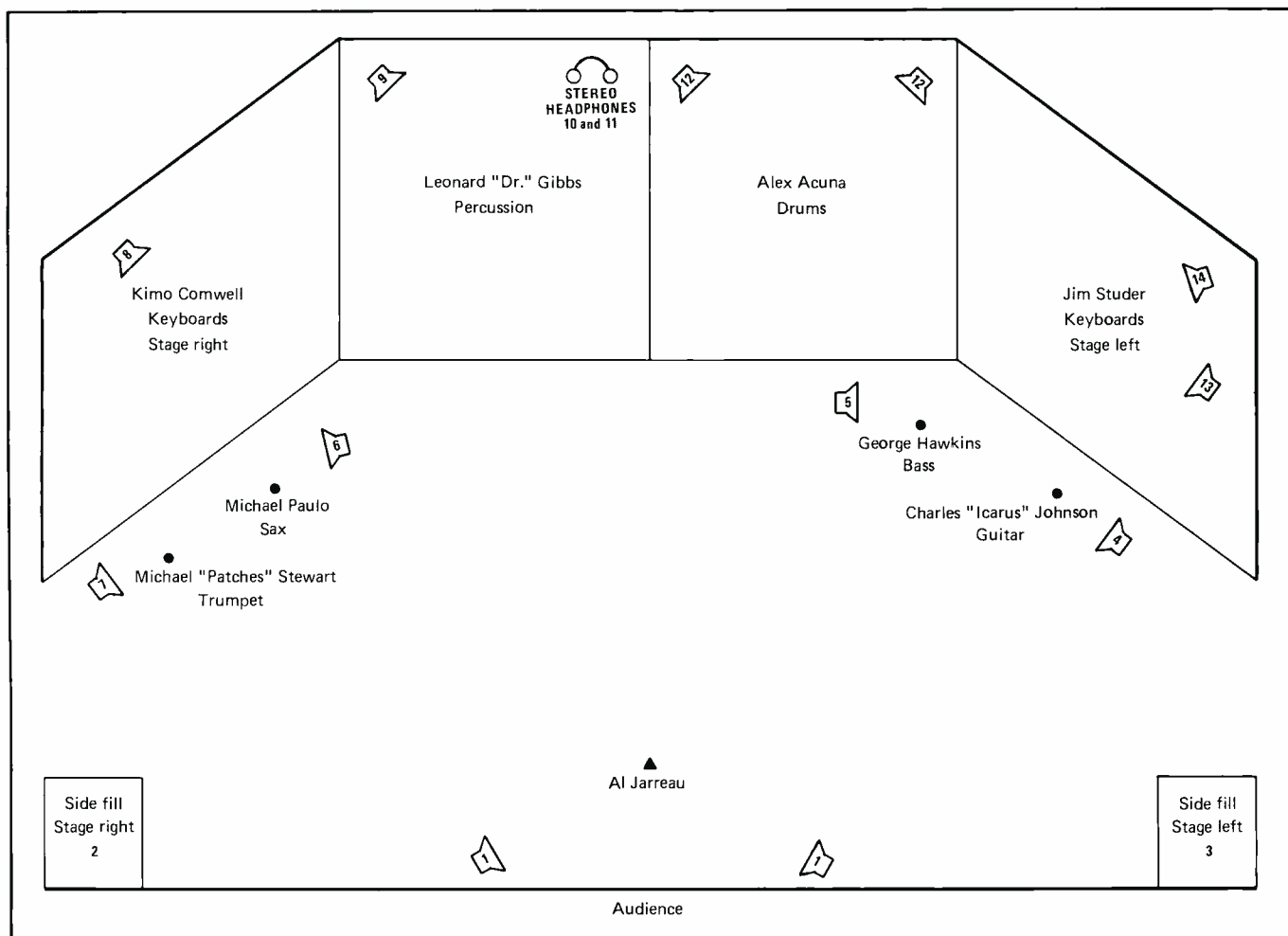


Figure 1. Stage layout.



tour. What were their monitor requirements like?

**SF:** I used twenty channels in, seven mixes out. Those were mono side-fills, Lou's vocal, Mick's guitar, Ian's mix, bass vocal, drum mix, and keyboard mix. Everyone still had their own amps for stage sound except the keyboard mix, which was dependent on the monitors instead of an amp. We were beginning to play the larger venues, so some of these mixes got pretty sophisticated as a result. Both the drum and key monitors contained complete vocal and instrument mixes, with the side-fills basically a band mix. The individual vocal mixes were predominantly vocal mixes, with a taste of kick, snare, and hi-hat.

With Lionel Richie, I used a real 32 channels in, 13 mixes out. Some of those channels weren't used all night, but they were used, so the board was full. That's a long way from the basic twelve by six rig of the 70s. There are also more cues in the monitors than ever before.

**MR&M:** Without an amp line, a premium is placed on the monitor engineer's ability to control the stage sound. Has this trend become the norm in today's music scene?

**SF:** There are still bands that use an amp line, and go more with the 50/50 amp line/monitor system stage sound approach. These are the acts that can probably do a one-nighter easier. But most bands now are heavily reliant on

and upstage. The mixes assigned to each area are designed to provide for the specific needs of the performer(s) in that area, that is, what they need to hear in order to play. (See *Figure 1*)

**MR&M:** As Al Jarreau is the furthest downstage, let's start there.

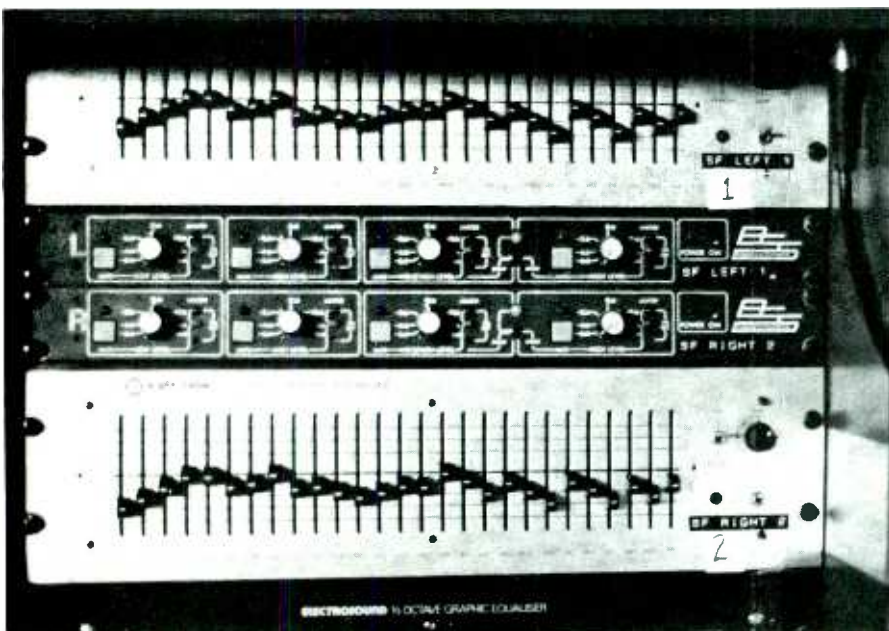
**SF:** First is the downstage center wedge mix, which is Al's vocal mix. These are two wedges, which are focused towards Al's center stage mic position. They contain Al's vocal and bit of hi-hat for rhythm. The drums are behind him on a riser, so hi-hat is really about the only thing he can't hear acoustically. Secondly, there are two side-fill mixes, stereo left and right side-fills. These contain Al's voice on top, because when Al leaves the center of the stage and goes to the side of the stage he still needs to be predominant. There are also a fair bit of drums, and just enough keyboards and guitars so these instruments don't sound dull on stage. Because there is no amp line, these instruments are going through monitors, with the sound directed up at the player. If you're downstage, away from those wedges, the keys and guitars sound distant because the highs aren't reaching you and the speakers are pointing in a different direction. So these instruments are in the sides only enough for definition.

**MR&M:** The midstage area contains electric guitar and bass, sax, and trumpet. What are the electric instruments looking for?

**SF:** Both the bassist and guitarist have their own wedge with their own mix. These contain kick, snare, and hi-hat to varying degrees, depending on the individual personality; a vocal mix, so they can harmonize; a bit of horns and keyboards, again to add definition due to the distance from these instruments. Guitar and guitar vocals are predominant in the guitar mix, bass, and bass vocals on top in the bass mix.

**MR&M:** The horn players are on the opposite side of the stage from the guitar and bass. Are their mixes radically different?

**SF:** Not radically, but they are a bit different. Each has his own wedge with his own mix. These contain kick, snare, hi-hat, a vocal mix so they can harmonize, and a bit of keyboards for definition. They want to hear each other, but in varying degrees. The sax player wants to have his sax and flute predominant, with the trumpet just below. The trumpet player wants his trumpet predominant in his mix, with



Side-fill crossovers and EQ settings.

**MR&M:** Any significant problems as compared to Frampton?

**SF:** *Volume!* Seriously, the stage level with Foreigner was much hotter than with Peter, so getting the vocals to cut through the din was a real challenge in itself. Fortunately, I had the pleasure of working with Lou Gramm. He's a powerful lead singer who gave me a lot of level to work with. He also had a great attitude—he was very friendly and a pleasure to work for. With his cooperative attitude, we were always able to deal with the problem of getting him heard on stage.

**MR&M:** What's the biggest change you've seen in monitor systems between the 70s and 80s?

**SF:** Size and sophistication. Nowadays, you'll find acts that don't even have an amp line, and are looking for 12 to 14 mixes, including headphone mixes. There are more channels used.

the monitor system and mixes in it.

**MR&M:** Does this imply that one-nighters pose a difficulty for you, the operator?

**SF:** It could, but that's why I like the monitor console I have now. The individual level controls are detented, so the console will "hold" a mix. With Al Jarreau, where I'm running 27 x 14 and doing a string of one-nighters, continuity is essential. With these requirements, if you had to twist it up every day, you'd be in big trouble. If you had your levels wiped clean at night, and had to start over the next day, you'd be fired (laughs).

**MR&M:** Let's talk about the Al Jarreau tour. Can you describe the mixes, and a bit of the philosophy behind how inputs are assigned to each mix?

**SF:** The stage is basically divided into three areas: downstage, midstage,

the sax just below. You could almost do both on one mix, except for the difference in horn levels and the fact that they each have a slightly different idea of drum and key levels. In a pinch, I could do both on one mix, but they are happier with two.

**MR&M:** How about the upstage area, which contains two keyboard rigs, percussion, and drums?

**SF:** Keyboards stage left has two wedges, each on a separate mix, designed to function as a stereo mix. It allows him to get a gist of how he's panning, because he pans himself and he can feel how he's panning for the house guy. There's no amplifier, but he does have a little Yamaha mixer that he runs his keyboards into. He's got a Yamaha 7-ft. grand piano and a DX-7 synthesizer, both equipped with triggers that operate another DX-7 and a Prophet 5 located behind his riser. He gets his keys, triggered keys, and vocal on top; then gets kick, snare, hi-hat, electric bass, stage right keyboards, and a vocal mix to harmonize with.

**MR&M:** The drum riser area is very clean and compact, with no giant drum monitors visible from the house. How are you handling drum monitoring?

**SF:** The drum mix is mono, with two heavy-duty wedges. We start with kick, snare, and hi-hat for reinforcement. It's not any louder than the drums alone: it's not like you hear the wedges over the drums, but you turn off the wedges and the drums definitely get wimpy. He also gets some vocal harmonies, a little grand piano to work off of, and Al's vocal to work off it. That's basically it, although it changes some nights, as he might be on a riser and feel that he can't hear something as well as he wants, so we make changes to add what he needs.

**MR&M:** Percussion is next in line; I understand his mixes are rather extensive.

**SF:** He's actually got three mixes back there. The first mix is through a single wedge; this contains a pretty full mix of vocal harmonies, horns, guitar, bass, and keyboards, with his percussion on top for reinforcement. He's also got a pair of headphones. This could be one mix, but it's two for full stereo. These two mixes, headphone left and right, contain vocals, horns, and his percussion, but we have only the microphones strapped to his wrists.

**MR&M:** That's certainly an interesting mic technique. Could you tell us a little bit about it?

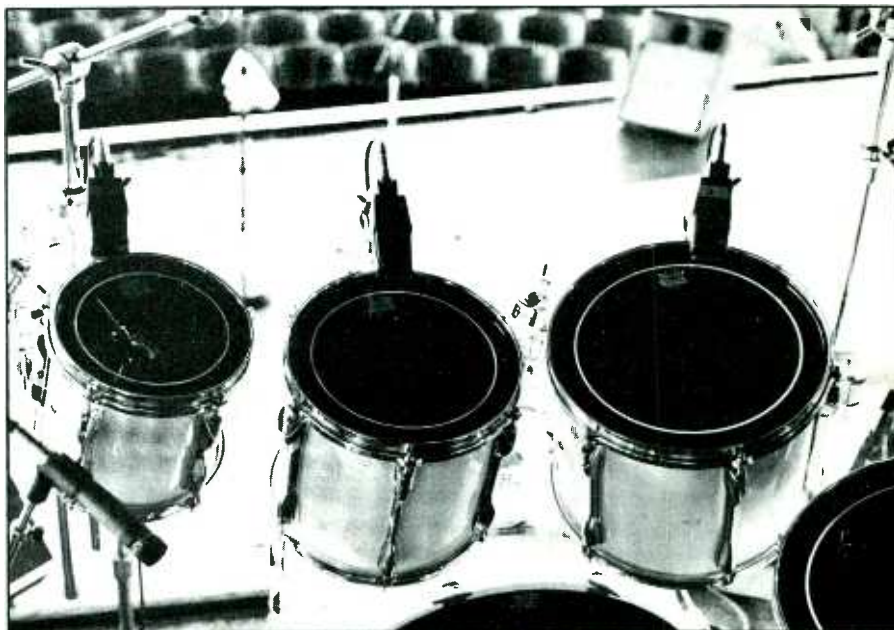
**SF:** It's the brain-child of Lars Brog-

gard, our house engineer. We use two Countryman Iso-max omnidirectional mics, taped to his wrists, with the elements positioned on the tops of his hands. So, wherever he puts his hands, whether it's his toys table, congas, bongos, or timbales, the hand mics pick it up and it's right there in the house. Lars worked with Dr. Gibbs (the percussionist) previously on a Rickie Lee Jones tour, and started using this mic'ing then. I must say it works great.

**MR&M:** Does the use of omni elements on percussion pose any feedback problems for you?

**SF:** That's where the headphone mix comes into play. I can't use the Isomax in the wedge, because he turns back to his toys table and it feeds back. So, for his wedge, I use only the congo and timbale mics, and the hand mics only in the headset. The phones are open-air Sennheisers, so he can still hear the drums next to him and the wedge on the floor. When he turns to his toys table or plays a drum, anything he does is right there in the phones and, of course, it's out in the house.

**MR&M:** It's a nice solution to the inevitable dilemma of many open mics on percussion.



Mic'ing used for toms.

**SF:** Percussion is a difficult mix. You've got sensitive mics, and they're hot. If you're going to make a conga loud enough to hear, you've got a hot mic on stage. With him in cans [headphones], it makes it a lot easier. If things aren't working well enough one day, he can grab a set of open-air headphones, put those on and he's

right back into it without going through major changes, or us having feedback problems or oversensitized mics. It also helps in the house, because you don't have all the blowback from a wedge going into hot conga and timbale mics. Right now, we'd like to take the conga and timbale mics out of the wedge and just have *them* in the cans, which would make percussion sound great in the house.

**MR&M:** That leaves only the stage right keyboards. What's running back there?

**SF:** He gets a single wedge, and receives his vocal and keys on top of a rather full mix. These keys are behind a facade extreme stage right, separated from the rest of the band acoustically, so he can't hear as well. As such, he also gets keys stage left, guitar, bass, horns, drums, and a vocal mix to harmonize with. And, if that all adds up, I believe that comes to fourteen mixes.

**MR&M:** Okay, now you've also got David Sanborn, the opening act. How many mixes is he calling for?

**SF:** David is traveling with us as our "permanent" opening act, and I'm doing monitors for him as well. When he's on stage, there are ten mixes going, surprisingly enough.

output. This shunts aside the previous mix and inserts a new bank of faders. It means that four mixes are completely "held" for Al, with no changes required. Another thing is that Al is only really using 26 inputs, so I've got six channels free. By doing channel patching, I put the keyboards, guitars, and bass into the open inputs, which gives me greater flexibility in handling David's mixes.

**MR&M:** Could you give us an example of how a mix is changed for Dave Sanborn?

**SF:** Sure. Take the downstage center wedge mix, which is Al's vocal monitor. This becomes Dave Sanborn's mix when he plays. While Al is looking for his vocal and hi-hat, David is looking for his vocal, his sax, kick, bass, and a little keyboard. As I channel patch the bass and keys, I can turn these up in David's mix. When I unpatch for Al, these automatically go away and I don't have to worry about restoring levels on 'em. All I have to do is take out the kick and sax, restore my hi-hat, which is a marked setting, and I'm ready for Al.

**MR&M:** Could you briefly describe the mixes you're running for Dave Sanborn and his group?

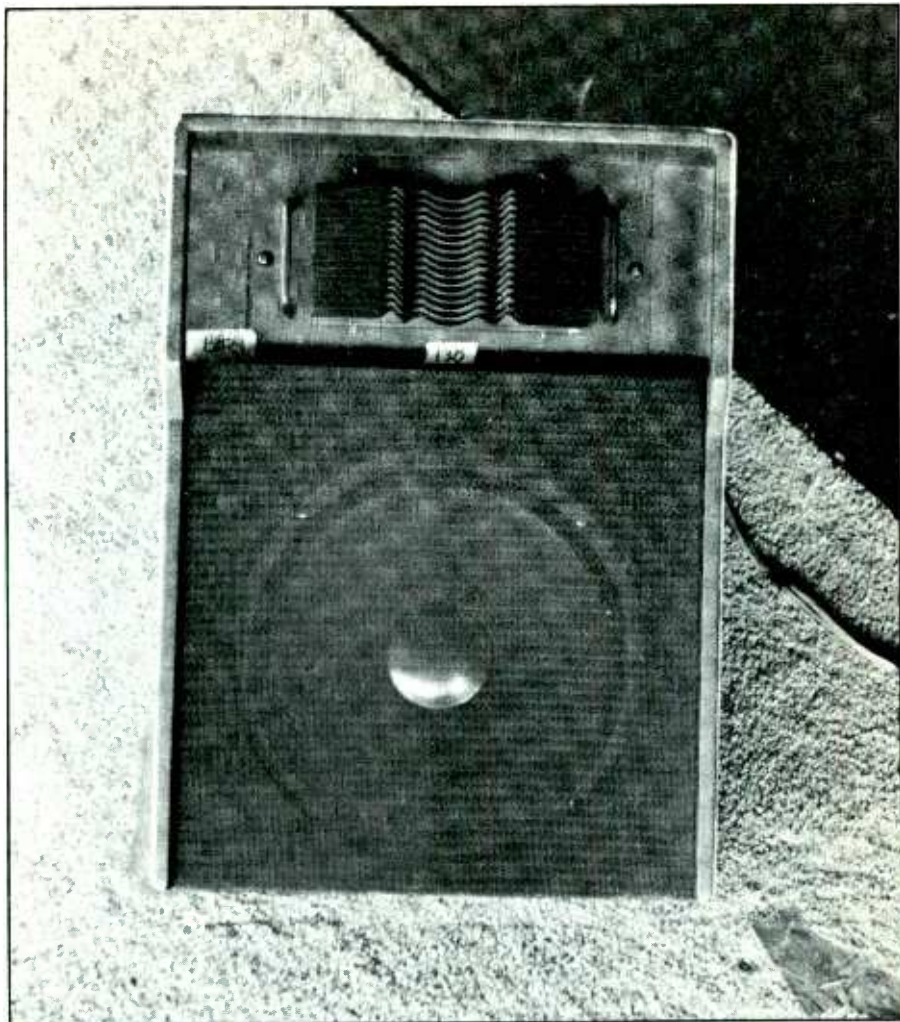
**SF:** I've got left and right side-fills, down-center wedges, stage left bass player, stage left guitar player, stage right keyboard player, drums, and the same three percussion mixes, as Dr. Gibbs plays for both bands. So there are ten real mixes, although only four are markedly different in content from Al. I made sure that if a mix was markedly different, it would be one of the mixes that I would patch around. This way, instead of changing and matching a bunch of settings, I only have to remove one patch cable to be back at it, instead of having to go with grease pencil markings.

**MR&M:** On a humid day, you're lost.

**SF:** Right, you're lost (laughs). This way, there are only eight marked level changes, the rest is patch cables. Otherwise, you run into the little idiosyncrasies of trying to tweak it back to markings. I've done it with markings, and I'm sure people still do it that way, but with this many mixes, it's much easier to sort out channel patching.

**MR&M:** Dr. Gibbs, the percussionist, plays for both bands, so there are no required changes in mic'ing or stage gear. Is there any other shared equipment?

**SF:** Both drummers share the same drum kit. Al's drummer is Alex Acuna,



Electrotec floor monitor.

and Armond Grimaldi drums for David Sanborn. They each bring in their own snare and cymbals, but the rest of the kit and all mic'ing stays the same.

**MR&M:** You've got to love that.

**SF:** You *know* that's right. It makes stage changes a lot easier, and takes most of the headache out. It would create a lot of trouble to come up with a lot of different drum sounds for the two drummers. If I had to, I'd be looking to channel patch kick, snare, and hi-hat to get the different gain, tone, and mix settings. Since I've got 26 inputs for Al, and 6 channel patches for David, that lets you know I'm out of inputs; I can't channel patch anymore. I feel it's just about impossible to come up with grease pencil tone control markings. Those things are never super-duper accurate. To twist tone controls for an opener. Re-set those controls without a sound check, and they would never be the same as before, and these guys *would* know the difference.

**MR&M:** So, in the monitor systems

of the 80s, the large number of console inputs are really there for the convenience of the engineer, enabling you to have extra inputs available for channel patching.

**SF:** Yes, that's absolutely true. I don't know if the consoles were designed with that in mind, but you (the writer) and every other monitor engineer I know took full advantage of it. As soon as we figured out that it was possible to patch into open channels that gave separate gain, tone, and mix levels, it was the way to go. This way, you can completely leave what you've done for the headliner during sound-check; you don't have to twist a knob. And it's the same with the outputs. If your headliner side-fills are set, and the opening act wants side-fills, you simply patch in a new bank of faders. Pull one patch cable, and the headliner's mix is right back there. In this case, it also allows me to hold David's side-fill mix, so the next day I have a two minute job instead of a twelve minute one.

**MR&M:** With this many mixes

onstage, how important is monitor directionality?

**SF:** It is quite important. Most of the monitors out there are deployed symmetrically, in that there are two stage left, two stage right, etc. This way, you're in a much better position to end up with an even vocal sound, without hot and cold spots. It's easier to mix that way; if you can keep it in mind when placing monitors, you'll be better off. Obviously, placement isn't always ideal in all circumstances: where can it fit, where can it be hidden, where can it

still might need to double-check yourself, and on the fourth night of four consecutive one-nighters you might plug something in backwards. I try and systematically set everything up the same each day, down to the wiring. If you've got a problem with the same mix two days in a row, you *know* which wires to head for without having to search your whole cable package. It lets you scope out any problems a lot faster.

**MR&M:** Let's talk hardware for a moment. Could you describe the Elec-

very close to equal power through highs and lows.

**MR&M:** How are you running your crossover gain controls in respect to each other?

**SF:** The highs are obviously more efficient, so they're backed down a bit. The electronic crossover is built right into the Klark-Teknik one-third octave equalizer that I use on each wedge mix; this is a standard Electrotec modification. The crossover point is permanently set, but I do have adjustable gain controls for the high and low outputs. There are no graduated markings on these controls, so I set 'em via pink noise and real time analysis. I try and set each mix so I've got identical levels going to all wedges again, trying to maintain consistency between the stage monitors and your listen wedge. If the cue wedge isn't identical, then you're guessing, and that's not good.

**MR&M:** One last question. You're one of the few guys I know who has the ability to do either monitor or house engineering at the major-league level. Which poses more of a challenge to you?

**SF:** There's definitely more challenge in the monitors, but more gratification in the house. I know we share the attitude toward monitor engineering, which ought to be, "I'm working for the band, and I'm here to take care of their audio needs." But you also have to deal with the individual personalities, and that can get very interesting. Even if the monitors sound great, if you're in the house, mixing and controlling effects, you are in control of the band instead of the other way around. You can let more of your own ideas and personality get involved in the mixing. And, let's face it, the house engineer is the glamour position.

**MR&M:** So there is much more "human" engineering involved in monitor engineering.

**SF:** Definitely. The most important thing I try and do is make sure the band understands that I care about their needs, and that it's okay to come to me with any problems. If any potential problems get nipped in the bud immediately, you don't have any lingering animosity that can lead to an attitude later. Now that these guys all know I'm open to suggestion and willing to work, we're *all* happier, and that leads to successful shows. As a monitor engineer, you don't get any applause or recognition from the audience, but the friendship and respect you get from the musicians makes it all worthwhile.

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be heard. But we do look at that—staying symmetrical is the best way to get an even spread. Even with multiple mixes, a balanced stage can at least lead to consistency in generated SPL.

**MR&M:** Do you "tailor" each wedge, via EQ or crossover settings, for its specific use?

**SF:** Definitely not. I think that possibly the most important factor in monitoring is tonality. If you've got all your monitors sounding similar with one vocal, then you're in much better shape. If you EQ a wedge for, say, a keyboard mix, then you've lost grip on how it sounds for voice. You make Al's voice sound great in the downstage wedges, and the stage left keyboard mix has drastically different EQ or crossover settings because of situations up there, then you've probably created a problem instead of solving one.

**MR&M:** Running twelve wedges, two 3-way side-fills and headphones involves a lot of different cabling. Is it difficult to keep all that sorted out?

**SF:** Yes and no. Once you're out on tour with a band, and you've done four or five shows, that stuff starts to fall into place. I label everything, and I make sure the labels don't fall off. This is show number six, and I don't need the labels anymore, but I still make sure they don't fall off (laughs). You

trotec floor wedge, covering components and crossover frequencies?

**SF:** The floor monitor cabinets are an Electrotec design, containing all JBL components. There are two models of woofers: first is a JBL E130 15-inch speaker, which is full-range type cone speaker. This is used for vocals and other high SPL applications. Basically, it has a lot more mids. The other woofer used is an E140 15-inch speaker. That is a heavier paper, heavy bass speaker. It has a lower efficiency, but can handle more power and has a much better low end. The high end is the same for both types of cabinets: a JBL 2441 driver on a short conical horn with an acoustic lens. The system is crossed over electronically at 1.2 kHz.

**MR&M:** That (1.2 kHz) seems a bit low for me on the high end. What are your feelings?

**SF:** I don't know aesthetically or tonewise if it's the best crossover point, but for power handling and SPL output it's a very good crossover point. My wedges are powered with JBL Ice Cube amps, and via the on-board metering I can monitor how my amps are working. You can see that at 1.2 kHz I'm putting good power through both high and low components. You don't have one amp side coasting while the other side is working hard—it's

# The Market Place

what's new in sound and music

## NEW MUSICDATA SOFTWARE

MusicData, Inc.'s SoundFiler is for the Apple II+, IIe and Commodore 64 computers. With it, a single piece of software can store programs from many popular MIDI instruments to floppy disk, organizing an entire MIDI set-up under computer control. MIDI SoundFiler eliminates the need for data cassettes and costly RAM cartridges by using the far more efficient method of computer information management. Programs can be named by the user, and most instruments support MIDI SoundFiler's ability to load and save either individual or complete sets of programs. While MIDI SoundFiler is entirely software, it can be thought of as a mainframe that deals with main system functions plus a set of Driver Modules, one for each instrument it can support. Driver Modules currently included on the SoundFiler disk are: Yamaha DX-7, Roland JX-8P, Casio CZ-101, Oberheim OB-8, and Xpander Driver Modules for additional instruments are being added to MIDI SoundFiler regularly, expanding the system to include new instruments



as they come out. Additional utilities, such as editor packages, are also being developed as add on options to MIDI SoundFiler for Apple II+ and IIe. They require MusicData MIDI interface or compatible with at least 48K memory

and disk drive and retails for \$75. The MIDI SoundFiler for Commodore 64 requires MusicData MIDI Interface or compatible and disk drive and retails for \$75.

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## SOUND AND VISION SYNCHRONIZER

The Sound and Vision SV-1000 "Mini-Loc" Tape Controller is a calculator sized tape controller that allows programmable record in/out, loop, and up to three locate points. It adds a digital tape counter and tracking system that will interface practically any multitrack with a remote control port. Programming is done by the tap of a button at the desired in/out, play/rewind, or locate points. There is also an output for triggering external devices and optional record in/out footswitch. The suggested price is under \$300.

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## ENGINEERING COURSE

The Institute of Audio/Video Engineering offers a 27 week, state approved Diploma Sequence emphasizing practical experience in a working atmosphere. The goal of the program is to enable graduates to become Music Industry Recording Engineers also capable of working in other industries requiring audio expertise. Video, motion pictures, cable, satellite communications, computer software, radio, theater, sound reinforcement, and television are just a partial list of these industries. In-house facilities include: 24-track automated recording studio, 24-track audio sweetening room with Fairlight Computer Musical Instrument, video editing bay, and a telecine department. New classes begin approximately every ten weeks. For a free brochure, contact the Institute of Audio/Video Engineering, 1831 Hyperion Avenue, Hollywood, CA. 90027; (213) 666-3003, Ext. 6.

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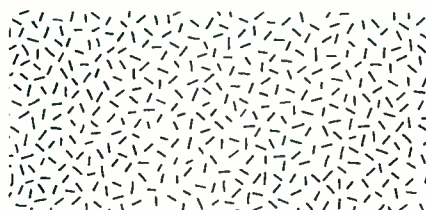
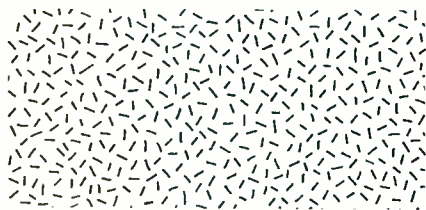
## AUDIX VOCAL INSTRUMENT MICROPHONE

The Audix OM-1 features a hand-crafted brass body that is well balanced and comfortable to hold. With a frequency response of 50-18,000 Hz, the OM-1 has a new stock mounted capsule designed to isolate handling noise. The 200 ohm capsule is housed in a removable middle ring (also brass) for easy field replacement. Another feature of the OM-1 is that it is available with two types of interchangeable grille caps; one grille is flat shaped (as pictured) for instrument application, the other grille is ball shaped with woven steel mesh and pop filter for vocal application. Specifications include: a sensitivity of  $-77.5$  dB ( $0$  dB=1V microbar), a front to back ratio of 20 dB at 180 degrees, 1 kHz, and a weight of 336 grams. The OM-1 is available in black or non-reflective



matte gray, and is supplied with leatherette pouch and mic holder. List price is \$325.

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## GIBSON/ROLAND GUITAR SYNTH

Gibson's Les Paul and Explorer synthesizer models, designed for use with the Roland GR-700 synthesizer, offer Gibson's feel and sound options as on their non-synthesized counterpart, plus the complete and truly remarkable sound capabilities provided by the Roland GR-700 synthesizer for a virtually limitless array of sound alternatives. In each new model, the Roland package has been carefully integrated so the appearance of the instrument remains the same. The Les Paul Roland Synthesizer model offers the classic combination of carved hardwood body with distinctive, multiple binding around the top. The Explorer model offers a solid American hardwood body in the classic Explorer shape. They both feature a one-piece quartersawn Northern rock maple neck and select bound ebony fingerboard with dot inlays. Other features include: two plated Gibson pickups and one Roland #601 hexaphonic pickup, master volume and tone controls, pickup selector, onboard controls for the



GR-700 system (GR-700 sold separately), and Gibson ABR-1 Tune-O-Matic bridge and Stop Bar tailpiece. The Les

Paul controller is priced at \$1,299, and the Explorer controller at \$1,049.

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## GET YOUR ACT TOGETHER AND TAKE IT ON THE ROAD.

Packing up for a gig. It's an important moment of truth for every musician. Within the safe confines of your studio, you've worked your music into shape. Polished it. Perfected it. Put it on tape. Now it's time to take it on the road. You're excited, keyed up. How will your music hold up under the hot lights and cold scrutiny of the outside world?

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*Peavey PS™ 2B and PS™ 4AC Phantom Power Supplies are available as optional equipment for use with the Celebrity Series Electret Microphones when the mixer lacks integral phantom power.*

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