

Profile:  
Maynard  
Ferguson

# MODERN RECORDING

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SERVING TODAY'S MUSIC / RECORDING-CONSCIOUS SOCIETY

VOL. 5 NO. 2  
NOVEMBER 1979

TRAVELS  
WITH  
YES

## BUILD A DUAL LIMITER

### Lab Reports:

AB Systems  
730a Triamp  
Orban 672A EQ  
Revox B-77  
Recorder

## HANDS-ON REPORT:

dbx Model 16  
Comp/Limiter

## NEW PRODUCTS AND REVIEWS



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# MODERN RECORDING

SERVING TODAY'S MUSIC/RECORDING-CONSCIOUS SOCIETY

NOVEMBER 1979

VOL. 5 NO. 2

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The most sophisticated piece of gear that we have presented to our readers in a construction article. It should be a snap if you pay close attention to reading requirements. Let us know how you feel about articles of this nature.

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YES has always been one of the most advanced music acts to work the rock element. In this article the *MR* reader gets the opportunity to look inside the inner workings of the group.

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Mr. Ferguson has been in the business of music for some time now, but his ability to try the new and different has enabled him to sustain a high level of energy. He passes along some of that energy to us in this interview on the run.

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George Benson On the Road

The Electric Primer

—Part III

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Cover Photo: Murray M. Silver, Jr.  
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Limiter "foil" side art: Courtesy PAIA Electronics, Inc.

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# TRAVELS WITH YES

By Murray M. Silver, Jr.





An essay concerned with the technical achievements of a Yes show should be prefaced by a few brief observations on the band itself and its history.

When at last in 1968 Jon Anderson met Chris Squire in a Soho drinking club, it seemed unlikely then that the pair would father a genre of such singularity that it should qualify as *suigeneris*. Anderson, performing on the road since 1956, had whiled away a singing career in a regionally popular group known as the Warriors. Chris Squire, a bassist of urbane disposi-

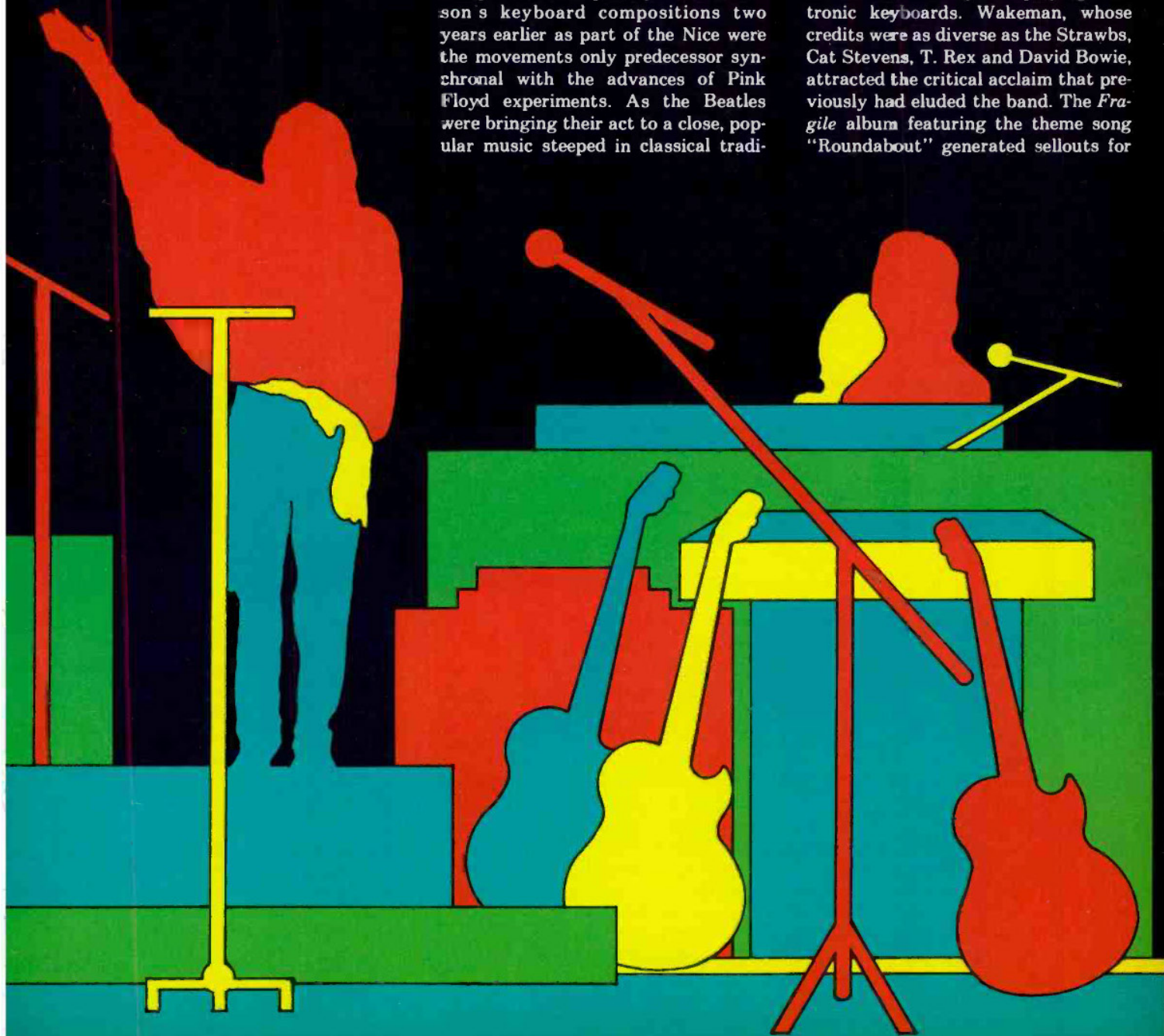
tions, had heretofore briefly been part of the Syn. At the time, Anderson was 24 and Squire was four years his junior, which meant, as far as musicians go, that both should have already begun their ascent. Now, more than ten years later, we look upon a vocalist at 35 and marvel at a voice of matchless dimension which fails to succumb to mounting years of strain, and a bass guitarist who transcends the normal limits of that mode of instrumental expression.

It is interesting to note that in 1969 when Yes released its first album that the "techno-rock" movement was being born. Perhaps only Keith Emerson's keyboard compositions two years earlier as part of the Nice were the movements only predecessor synchronous with the advances of Pink Floyd experiments. As the Beatles were bringing their act to a close, popular music steeped in classical tradi-

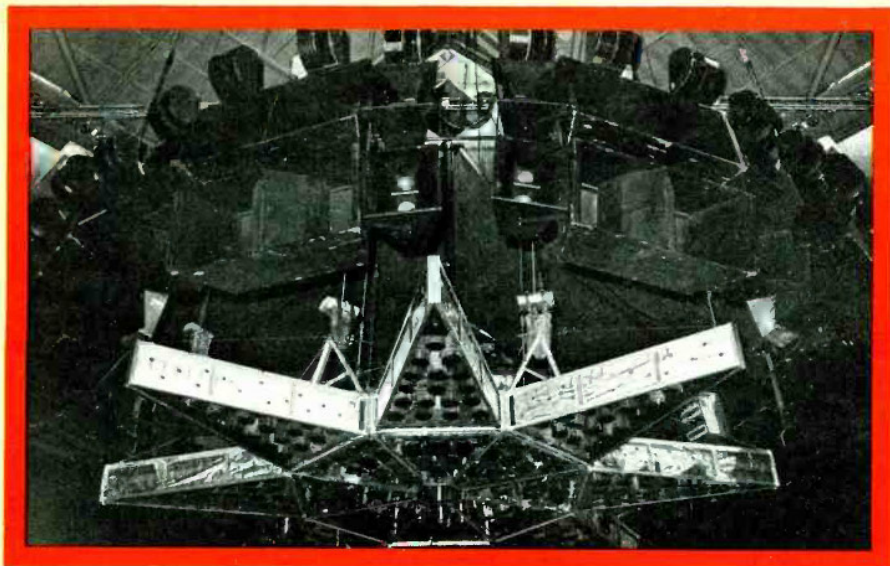
tions was on the upswing.

The Yes debut album received much more attention than the fledgling project by Genesis in that same year, but both were overshadowed by the epic *Court of the Crimson King* by King Crimson. Yes seemed to choose to play it safe by covering material by the Beatles, Byrds, Richie Havens and Stephen Stills on their first two LPs while the others took added chances on popularizing their lyrical significance.

Instrumentally, Yes did not mature until as late as 1971 when guitarist Steve Howe replaced Peter Banks and Rick Wakeman arrived and soon after invented a new style in playing electronic keyboards. Wakeman, whose credits were as diverse as the Strawbs, Cat Stevens, T. Rex and David Bowie, attracted the critical acclaim that previously had eluded the band. The *Fragile* album featuring the theme song "Roundabout" generated sellouts for







The unique sound and lighting system completely assembled and suspended.

the first Yes tour. Yes as we now know them became complete when in the next year drummer Bill Bruford, having departed for King Crimson, was replaced by Alan White, a veteran of sessions with George Harrison, the Plastic Ono Band, Joe Cocker and Alan Price, among others.

In 1973 Yes entered the first of two blue periods when Rick Wakeman, having had enough of too much pretty, decided to go it alone. By 1975, Yes had nothing better to do than release a compilation, *Yesterdays*, and divide so that each member might record a solo album, none of which garnered much attention or acclaim.

For whatever reasons Wakeman decided to reunite with Yes, it is for sure that he did not do so for love or money. As one key member of the entourage explained, "This band stopped talking to each other a year ago." And Wakeman, who at last count was director of more than eleven companies (including one which manufactures instruments) does not need the work. We then suppose that when on his own, Wakeman tends towards self-indulgence, as exhibited with *Myths and Legends of King Arthur*, recorded while part of Yes.

The members of Yes choose to rarely see each other off stage which normally results in travelling in separate limosines, dining along and marathon sound checks. Steve Howe is locked away in his own dressing room where his array of guitars has previously been meticulously assembled and neatly laid out for tuning. Chris Squire is also deep-sixed with his collection of

basses and will step out onstage to play odd scales and exercises for an hour, all the while punching [foot] pedals. Alan White is content to leave whatever work there is to be done to his drum roadie to handle as are Wakeman and Squire.

### On the Road

The design, staging and staffing of a Yes show is a fine science which has been nearly perfected by Clair Brothers Audio, Inc. during an association spanning over eight years. Clair Brothers has handled audio matters for Yes since its first tour and Roy Clair still travels on the road in his supervisory capacity. G. Michael Roth has spent eight of his nine years with Clair Brothers in the capacity of engineering stage sound for Yes.

**T**he man we've come to Atlanta to see is sound engineer Nigel Luby, a mild-mannered individual who prefaces most answers to questions with a quiet smile. We are predisposed to believe that the Yes engineer must be an incredibly strong man—he has a band of volatile prodigies to pacify and a staff of mad dogs and Englishmen to cohabitate with. Above all, he must be endowed with a marvelous ability to maneuver sophisticated custom-designed equipment and to mix a highly complex signal.

And now for the surprise: this man Luby, this signal processor, has a list of credits as long as your little finger. Excuse us, but there must be some

mistake. His credits include one album and an assist on another. He has never mixed sound before in his life.

"Actually, I'm an illustrator," begins Luby. "Went to art school. The same as Bill Bruford, although we did not meet then. Seven years ago I began working with Yes primarily out of a friendship with Chris Squire. I was his personal road manager—looked after his instruments, etc. About three years ago I felt the need to progress into engineering to fulfill a creative urge and a desire to move ahead. My first job was assisting on *Going For The One* where I did little more than watch and acquaint myself with the equipment."

Perhaps we are a bit hasty then to judge the merits of a decision to employ an art student as an engineer. A cursory investigation of the educational history of English popular musicians reveals more than a few illuminati who once pushed pencils and twittered with paint brushes. John Lennon, David Bowie, Jeff Beck, Eric Clapton (Stained Glass Design, Kensington School) Ian Anderson, Jimmy Page, Keith Richard, and the original Genesis and 10CC members were all art students. We may then deduce that an English artist may be, in some cases, twice blessed.

Luby, who still reflects more of the pensive nature of an artist rather than the hyper department of most engineers, relates what it is about sound engineering that he finds gratifying: "The immediacy of mixing sound in concert is exciting, much more than studio work of course. The changes in venues each with their particular problems is an exciting element. The repetition in performing the same job with the same music needn't be boring. The creative aspect involves getting sound which pleases the band and the crowd."

"Surprisingly, very few bands have discovered the advantages or have been able to take advantage of the benefits in taking their studio engineer on the road. The band is much more comfortable with the same engineer and no one else could be more familiar with the music," says Luby.

Nigel Luby will not tell you that he is the genius he is attributed to be. He is just interested in the learning process of mixing sound and finding a stage for his creative talents. He insists that the only true technical wizard is Steve Dove, a little man who can repair anything in moments. Less



than one hour before showtime, a UREI 1176 LN Limiting Amplifier is causing a very strange buzzing crackle over the system's speakers. In comes Dove who pops the top off the limiter and with clock-like and deliberate precision rights-wrongs-case-closed-lock-her-up-go-home.

Steve Dove, by profession, designs and commissions radio stations in Britain and finds himself in his present employment quite by accident. "I once designed a mixer for Jethro Tull," Dove relates. "Within a few days after delivery they called to tell me that no one could figure out how it worked and would I please come to Australia with them the next week for a tour."

Lastly in this cast of characters is Trip Califf, a Clair Brothers employee who administers to the mixing board alongside Nigel and is in charge of bad jokes and also has the responsibilities of after hours social director.

### Readying for Showtime

Luby points to the semi truck loads of equipment pouring into the Omni and claims that on a good day by getting a start at 10 a.m., the Yes show will be assembled and ready for a sound check by 4 p.m. In a rush, four hours at the very minimum.

In the very center of the floor, the sides of twenty large rolling cases drop to reveal housings for tools and cables to assemble the stage and sound system. Later, when the stage is set and speakers hoisted, these same cases will surround the circular stage and act as a barrier between band and crowd. Construction of the show is happening in four places simultaneously. Luby is uncrating the mixing console while the crew is erecting the stage out of a network of fitted steel beams on wheels which roll easily into place. Another crew is setting up instruments on stage while Michael Roth sets up his stage monitor mixing board underneath the stage.

In the center of the room, two crews are connecting a circle of speaker stacks around an eight-point star of stage lights. Thirty-two Phase Linear 700s grouped in stacks of four are bolted behind the stack they service. The entire production moves into place effortlessly once everything is unloaded and assembled.

[Those readers tuned into *Modern Recording* back in December 1978 will recall our cover story on Bruce Spring-

steen and the notes on the Clair Brothers mixing console, but similarities between the shows generally end here.]

The Clair Brothers 32 x 6 mixing console is a marvelous design which is one of only four in use. The other units have served other prominent touring acts such as Elton John and Fleetwood Mac, so take note: Each input module contains its own 15 dB pad, preamp gain control, submix selector, echo send bus selectors and pan. Each parametric equalizer provides each section—highs, low and midrange—with frequency selection, dB cut/boost, curve-shaping control and a push button EQ in/out switch.

The stereo output of each module can be assigned to any one of six stereo submix buses and each channel is manipulated by dual faders. Each module contains a 100 segment neon glow bar graph wherein average levels and peaks are displayed over a 50 dB range simultaneously, the average level readings being brighter than the peaks. A flat, multi-conductor ribbon cable provides internal cabling, but lacking a shield, cannot then be used to connect the console to the stage. Therefore, Clair Brothers custom orders a 40-pair shielded cable with a connector that has required periodic replacement.



Technical wizard Steve Dove working on a Urei limiting amplifier before the show.



Five of the six submix channels are assigned from the main console. The drums, spanning inputs 3 through 13, comprise the first submix (inputs 1 and 2 are reserved for cue tapes). The second submix contains Chris Squire's bass on inputs 14, 15 and 16, Steve Howe's guitars on 17, 18 and 19 and Jon Anderson at 20. The third submix is for the vocals by Jon, Chris, Steve and Alan. Submix four devotes inputs 25 through 32 to Rick Wakeman's keyboards. The fifth submix oversees everything including special effects.

Luby also uses a 16-channel board solely for the odds and ends sparsely used in submix six. Assigned here are

Brothers Audio electronic crossovers. Luby's use of limiters is sparing.

"I refrain from using limiters and compressors because I don't like what happens acoustically," he says. "I will use them only on something like a bright guitar passage where I do not mind losing some of the brightness."

"Frequency crossover is something Clair Brothers would rather not discuss. Where this system crosses over tends to make sense only when referring to this particular system. It wouldn't make much sense as part of another system."

The second rack contains the White Instruments model 140 Sound Analy-

Speed is controlled by the DeArm-ond volume pedal which also pans back and forth. A second pedal interlocks the speed of the oscillators into the panning device and phases them back and forth. The effect is akin to a sonic tidal wave washing from one side of the room to the other.

### Set-up Continues

Talk then turns to the suspended sound system that has been hoisted into place by eight two-ton hoists. "The suspension of the system has three basic advantages, aside from [simply keeping the system out of the] line of sight," says Luby. "Suspension allows [the sound] much better travel over a distance and reduces reverb times. Also, the low frequencies tend to become omni-directional."

The speakers are constructed in eight small sections, each [section] powered by four Phase Linear 700s. Included in each stack are two large "W" boxes which house two 18-inch speakers each. On each side of these are two "Roy" (Clair) boxes which hold two 12-inch speakers. Above these units are four JBL horn boxes utilizing the 2482 2-inch driver, the 2440 60-watt driver and the 2405 ultra-hi driver. All speakers are made by JBL.



G. Michael Roth of Clair Brothers installing the Midas console under the stage.

special effects such as the drum synthesizer, electronic gong and Wakeman's Keytar (a guitar shaped keyboard worn like a guitar).

At the console, Luby uses an Electro-Voice RE 16 dynamic cardioid mic and an AKG C 451 EB during his sound check. Headphones put to use are Koss Pro/4AAA and Beyer Dynamic DT 109S.

Now that Luby has his system erected, he shoots in white noise to "voice" the system and then plays a 1-inch reel-to-reel tape with a lot of dynamics, vocals and bass on one of two professional tape machines.

"I choose to mix in stereo," says Luby, "primarily because certain effects in dynamics can be enlisted."

From Luby's command post, he oversees three racks of auxiliary signal processing equipment. In a rack furthest from the console, there are four White Instruments Series 4000 equalizers, five dbx 162 Stereo Compressor/Limiters and two Clair

zer and four UREI 1176 LN Limiting Amplifiers. Effects such as the dbx 160 Compressor/Limiter, Marshall Time Modulator model 5002A1, and the Eventide digital delay 1745M are housed here along with an SAE 2200 solid-state stereo power amplifier.

The third cabinet has the goodies which will set the Yes show apart from whatever else is currently touring concert halls. Aside from the Eventide Clockworks H910 [the Harmonizer™], a Technics M85 cassette player, the SAE 2700B stereo half-octave equalizer and the Lexicon Prime Time digital delay, are the panning and flanging devices. Clair Brothers has developed a very interesting technique in areas of flanging and panning. The B.E.L. electronic flanger BF-20 and the Survival Projects stereo panner are used in conjunction with two foot pedals. All oscillators can be linked enabling Luby to add flanging while panning from left to right by flicking a switch and locking the panning unit.

**T**he stage can be best likened to a carousel. Unobstructed by cabinets, the stage revolves one complete revolution in one minute so that everyone gets a good look at each member of the band. Jon Anderson stands on a riser at the very center and because of its small radius, he must constantly turn counter to the stage's movement to avoid dizziness. His Beyer Dynamic M88 [cardioid] microphone is suspended from above and hangs at his eye level.

Rick Wakeman's keyboard fortress faces toward the center of the stage and therefore most of the concert presents an adequate view of the back of his head. He has, after all, eleven instruments to manipulate, including two Mini-moogs, two Yamaha string synthesizers, a six-foot baby grand piano and an RMI Computer keyboard. The Keytar attracts the most attention although used only briefly in comparison with Wakeman's dependency on the Moogs and Polymoogs. All of the keyboards are taken direct and the Leslie is miked with a [Senn-



heiser MDJ 441.

In the course of an evening, Steve Howe will play seven guitars. His Fender Telecaster and Gibson Les Paul are used most often. Harp-like tones are coaxed out of either his Rickenbacker 12-string, Martin acoustic or Gibson Stereo. For more mystical effects, Howe plays a Portuguese Vacalia and a Gibson mandolin. Chris Squire plays 4 and 8-string basses by Rickenbacker and Ranney. Both guitarists sing into Beyer 88s.

Trapper Alan White is hidden among the forest of percussive instruments springing up around his Ludwig kit. He has a list of assorted devices to color his rhythms including a drum synthesizer and a tympani. The toms are miked closely by Sennheiser 421s and the snare is picked up by an AKG 451 condenser mic. Condensers are also used overhead for hi-hats and a lone 88 is used on the bass drum.

The monitoring of these complex signals is handled by Michael Roth from his sub-stage perch located almost directly under Alan White. He can make eye contact with band members through an orchestra leader's vent in the stage floor. For eight years Roth has manned the Midas 24 x 8 console for Yes and operates extremely effectively for a man who has a difficult time hearing what he is mixing.

Roth uses the eight mixes accordingly: Anderson on 1 and 7, Chris Squire on 2 and 3, Howe on 4, White on 5, instruments on 6 and Squire's keyboard mix is on 8. At module inputs 8, 12 and 13, Roth receives effects from Luby's board. The effects that Roth will administer include the Eventide Harmonizer™ H910, six dbx 160 Limiters and a Multivox Multi-Echo. dbx [limiting] is primarily used on the basses, keyboards, drum synthesizer and Anderson's vocals.

Roth's equipment is powered by four SAE 2600 amps and utilizes nine Clair two-way crossovers and eight SAE 2700B equalizers. Roth hears sound via a monitor which he practically sits on. His remedy for feedback is either to lessen volume or cut it out with EQ.

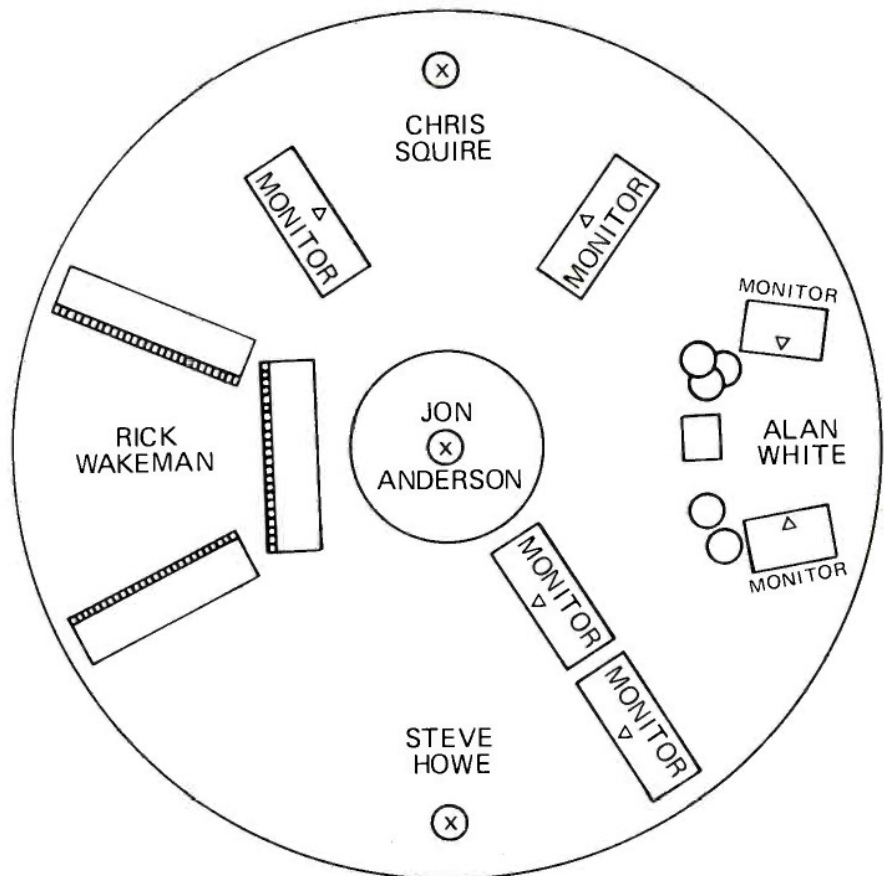
Roth and Luby have a list of special effects on stage to deal with. Jon Anderson's vocals alone will require use of a plate reverb, double-tracking delay, Lexicon, Eventide Harmonizer™ and one technique which will involve Harmonizing and flanging off the same mix. Steve Howe's guitars will be siphoned through an Echoplex

or phaser. Chris Squire will employ a reverb, fuzz and Harmonizer on his bass guitar.

Clair Brothers engineers its own stage monitors using JBL components in arrangements which, like its crossovers, it considers to be trade secrets. Gene Clair relates that a standard favorite is two 12-inch speakers with a two-way crossover or two 15-inch speakers with horns. Variations of this

says Luby, "so they ended up rehearsing before recording. It required only about three weeks to mix the album and the work was made easier because many of the special effects were added 'live' in the studio rather than leaving those additions for the mix.

"On songs such as 'Freedom,' 'Future Times' and 'UFO,' we were using a Harmonizer™ on the bass 'live.' When taking a direct feed at cer-



plan may involve using two 18-inch speakers or smaller units of one 10-inch or one 15-inch speaker.

### The Recorded Animal

Yes has recorded many of the earlier concerts of this recent tour for an anticipated "live" album. Whenever taping was desired, Luby simply split the inputs, one into the board and one into an MCI 24-track recorder. No changes are made in miking.

A Yes studio LP is a different animal. The recent release *Tormato* was completed in four months, somewhat shorter than for most state-of-the-art performers. "The only reason it took that long was that the band came into the studio not knowing the material,"

tain times, Chris had to be limited, which sometimes resulted in him having to stop using his [in the studio] and I would add on [a Harmonizer™ in the control room]. One special effect I am particularly fond of was the use of a reverse echo that comes in before the vocal arrives."

When the Yes World Tour of 1979 closes, the members of the band will be looking forward to a vacation. Clair Brothers will be returning home to the drawing board to overcome problems encountered on this tour and begin preparations for the staging of the next tour. Nigel Luby is headed for Montreux, Switzerland, where he hopes to begin other involvements and hopes to spend his vacation in the studio working on a new project.