

SONIC BOOM '78

A Musical Instruments Special

Rolling Stone



G.B. Trudeau

**LIFE IN THE
ELECTRO-HARMONIX FACTORY**
A SPECIAL REPRINT

A Musical Mystery Tour:
**LIFE IN THE
 ROCK & ROLL
 FACTORY**

By Faye Levine and Charles Grable

*In the subway rush-hour crowd in
 Copperfield's, a Village club:
 heavy metal brooding defiant
 ethereal acid-rock like an
 unsprung*

*Jefferson Airplane with jazz-
 complex rhythms played by
 The Invisible Man:
 one Botticelli angel on bass,
 one American Indian drumming,
 one dark mutant from Wisconsin
 on guitar.*

*The angel's factory has turned out
 to hear.*

THE FACTORY where the angel works as an engineer had turned out in force to cheer him on. He was helping the factory build a guitar synthesizer no bigger than a submarine sandwich, working from his own and circuit ideas supplied by senior engineers. The angel is twenty-one.

The senior engineers include a man who'd put radar on Nike Zeus Missiles, one who'd temporarily defected from the factory to check out the new arts center in Paris and one Scientist.

The guitar synthesizer was making Oriental sounds, orchestral sounds and a sound nobody but the angel, a bassist whose name is Joe, could get. It did with the six strings of a guitar what all the other synthesizers on the market did with a keyboard. It will probably sell for \$500.

Volpe, a summer professor who'd been teaching "Linear Active Electronic Circuits, Basic and Advanced, Theory and Applications" to the Electro-Harmonix

FAYE LEVINE last appeared in 'Rolling Stone' in issue 74 with a short story, "Tuesday Night My Plane Got in Late from Berkeley."

techs and engineers and curious stragglers, was at Copperfield's. Perhaps Joe's group intrigued Volpe because he was the only engineer who'd never shown his face in the circuits class. Instead, Joe worked late hours on a guitar synthesizer called the Flywheel.

Joe had already dropped out of engineering school once to join a band called the Invisible Man. He'd bought himself a bass, let his amber curls grow long, worked in a minicomputer company briefly for some cash, then hitchhiked out of Boston to join the band in Wisconsin. When the Invisible Man came to New York, Joe's bass riffs were described by a reviewer as "approaching speed of light."

Then one day Joe saw an ad for an audio technician in the *New York Times* and signed on at Electro-Harmonix where nearly everyone is supporting some kind of rock & roll glory dream habit.

ON THE PREMISES

When Jack Bruce was in New York during his tour, he stopped in at Electro-Harmonix, the only rock & roll sound-effects factory in the city and the one which, nationwide, has a reputation for being an "underground" outfit, perhaps even leaders in "guerrilla electronics." Bruce and his guitarist Hugh Burns tried out the latest Electro-Harmonix add-ons, notably the Talking Pedal (a spin-off from speech research at the Beaubourg arts complex in Paris), and took home their favorites—as have Pink Floyd, Todd Rundgren, Rick Derringer, the Who, George Benson and Stevie Wonder most recently, and in the earlier days of the company, John Lennon, Santana and Ike and Tina Turner.

This in spite of the fact that Electro-Harmonix prides itself on engineering phase shift, flange, wah-wah and other sound-modification equipment so they can be offered at very low prices. "Free yourself from the bureaucratically dominated sources of electricity!" was an early company slogan used to sell the battery-operated Mike Matthews Freedom Amplifier—and the Rolling Stones picked up several. Matthews, founder and president of the company, reports that his Small Stone phase shifter went platinum in 1975, when it proved to be not only the cheapest device of its kind on the market but also the best selling.

The underground reputation, besides coming from low prices, was fostered by certain management antics: a topless assembly line in '69, an ad in *Guitar Player* featuring the controversial Miss Band-Aid. Those days are over, Matthews assures me, but some of that old exuberance is still apparent among the exotic, multinational musician-heavy personnel; close to Mike there's a young graduate from Vassar and Yale who happens to be an expert on medieval Latin gynecology. And a Dixie siren of incredible magnetism, who ran Albert Grossman's studio in Bearsville. Upstairs, guarding the inventory, is Oscar, once a mercenary soldier in the Congo. And Peter from MIT, diffident Maoist chief of service engineering, with his staff of Egyptian, Italian, Puerto Rican, Indian, and Korean men and women at the oscilloscopes. Downstairs Ulysses runs a crew of production techs who Mike refers to as "the beautiful Athenian women and the powerful Spartan men." And Alice, an enormous black lesbian, sells "Zipper Envelope





Followers" in a voice so syrupy sweet her customers in Sweden send her their pert little white boy snapshots.

In the sound-effects factory, on two floors of an unassuming commercial building at the toy center junction of 23rd Street, Broadway and Fifth, a dozen or more radios are playing different stations. Between some R&B and classical, musicians can be heard testing the products, working out of one psychedelic booth and one salsa office—a burble or squawk to be sent back; a nice lick. Okay.

Ken is the senior musician tester. One by one he puts the products through his guitar. He is consulted by research and development, and is sent on troubadour sales trips from the Alps to the Rhine to Hollywood. Last year he played solo on two E-H TV commercials. A tall, laconic black with a touch of French about him, Ken plays in a six-man group called Light Years, which uses E-H products: the Bad Stone phaser, the Electric Mistress flanger, the Crying Tone wah-wah. Angela at the front desk compares them to Santana; in fact, Ken says, their music is not commercial or disco, but rather "for comprehension."

When break-time bells ring, the testing area becomes a party. Cano comes from Customer Service to play and sing *ranchelos*. Or Ellis takes time off from devising algebraic metaphors for thought to beat his conga drum while Howard plays bongos. And Tommy unleashes a funky bass wah using the local Doctor Q, or makes a guitar sing like a woodwind courtesy of a Big Muff Pi.

Sometimes the salesman Mittenberg comes to the testing rooms, walking slowly, his hair a faint golden gauze drifting through the air to his waist, and he hooks up what his friends call the Von Mittenberg Effect: guitar to fuzzbox to flanger to phaser to echo—and presto: Schweitzer

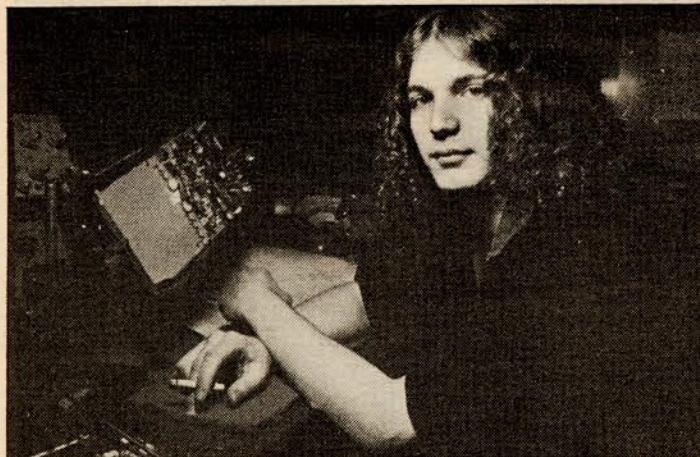
playing Bach on a baroque organ! Mitten is good at getting luminous sounds out of pop-bead chain boxes and pedals assembled by trial and error. Another time he connects only the Flywheel and echo to his guitar, with repeats set far apart, for a recognizable Led Zeppelin slide. Flo, a Continental bohemian, claps her hands wantonly and jumps up and down as she identifies it: "That's from 'Whole Lotta Love!'"

Joe is not impressed. "Anybody can do a Led Zeppelin riff. Howard can do a Led Zeppelin riff."

Howard knows only seven or eight chords on the guitar. But as manager of Analog Circuit Design he did the major work on the Deluxe Memory Man echo, the Deluxe Electric Mistress Flanger, and the yet-to-be-released Ambitron; he took the Talking Pedal from an idea and made it real; he did substantial finishing steps on the Big Muff Pi and the Clone Theory. Within the company his engineering genius is well-known. Right now the magnificent *bruja* Mary, a technician, is hanging around in Howard's office to spend break time with him. A mainstream rock fan, he likes everything from James Taylor to disco, except James Taylor or disco.

THE DREAM JINGERS

In the late Sixties Charlie did sound on the road for Led Zeppelin, Spirit, Steppenwolf, Three Dog Night and Chicago with the Dallas-based company Showco. He still does recording for friends like Peter Schickele. And he feels most "his age" when playing and singing, with artificial reverb and an equalizer if possible, the music of the Eagles, Graham Nash, Seals and Crofts, Loggins and Messina, Paul Simon. Only on a recent marketing mission to Japan did he let out with a little "Stairway to Heaven." Other times he writes ads for the company. He has a law degree.



Joe's bass riffs were described as nearing the speed of light.

M. Abram once was in a group with pre-Steely Dan Walter Becker, and he gave sitar concerts in the Brooklyn Museum. At E-H he is called Flangerman because he helped develop the Electric Mistress and the complex Echoflanger, which boasts four rotary knobs, three two-way switches and a four-way master control. Now that his music making is limited to a mandolin or bass and Low Frequency Compressor, he keeps a hefty computer in his kitchen.

Gosia and Paul are eating pizza and french fries. They are E-H salesmen with the kind of excruciating skinniness that thrives on such food. Their dress is utterly fashionable: he à la Fonz and Bowie, red satin pants, tapestry shoes, leather; she pure Gulf Stream Vogue. Onstage at CBGB's and the Kitchen they sing together way off-key, tell jokes, fight, turn knobs and play guitar through the fuzzing of a Big Muff. Mike says off the record that he would manage these two if he were ever going to manage any of the performers in the company. They are disarming:

*The Sun is cold
The ice laid dead
The Snows grown old
My boots turned lead**

Another salesman, Ralph, is half Japanese, half Italian, owns a Samoyed, and resembles a big moustachioed Mongolian cat. He calls his work jazz, but there's rock in it. After a recent sales trip his tunes dealt with love-sex, hate-scorn, the paranoid mythic loneliness of the road, and an afternoon in Milan. In his band, Random Element, Ralph has performed with an E-H Deluxe Memory Man echo, an Octave Multiplexer and a Black Finger compressor.

Frank takes a different tack. As befitting his position as manager of customer relations, he says, with smiling realism, "We all have the music career to fall back on. We can always prostitute ourselves and play a wedding. 'Tarentella,' 'Alley Cat,' 'Hava Nagila,' the same tripe. Rock & roll guitar players who can do society gigs for fifteen or twenty dollars are in big demand." He has a plastic cube of wedding photos on his desk.

And yet sometimes the big rock dream comes close. This afternoon super sessionman Elliott Randall and his main lady Marilyn, who is an officer in his companies, are visiting Mike to talk about doing a record. They go through many changes together. The arcana of the new machines: a three-knobbed jobby, a four-knobbed jobby, a five-knobber that is a marriage of the other two; what does it mean? The business manager is consulted, and the ad-

Mike Matthews: 'We're bustin' through! We got it licked!'



ministrative assistant. And then suddenly the Electric Mistress and the Memory Man are alive, and the music that is only a dream in their circuitry is alit, and on, and real, and the men are jamming, and digging each other, and there is happiness....

MIKE MATTHEWS, INDUSTRIALIST

A momentary lull from the radios and the testing and the exclamations and the music and noise that are all in a day's work in the rock & roll sound-effects factory, Mike Matthews comes zooming around the circular hallways on Gosia's moped.

Mike is a broad-shouldered, powerfully muscled man, attentive, intuitive and given, like Howard Hughes, to phoning his key men at all hours of the night to plan strategy and rap with them about business. Occasionally he presents his massive biceps to one or another of his staff to be felt. To all he repeats his frontier mantras: "Nothin's gonna get in our way!" "We're bustin' through!" "We got this baby licked now!" His affectionate employees gave Mike a punching bag, gloves and gold satin trunks for his thirty-fifth birthday this year.

Electro-Harmonix was started in 1968, with Mike's own \$1000 cash and \$5000 from the bank. Now the company grosses \$5 mil-

lion, and the bank that has been upping his credit line all this time is so pleased with his success that when they come around, all suits and ties to Mike's baggy overalls, they can't help cheering the guy like a varsity team its star, practically lifting him to their shoulders.

Mike has been a musician and has had business ambitions since the age of four. He gave classical concerts in kindergarten, and fished things out of the Bronx sewers to sell to other kids. Today, in the middle of a heavy conference with his top engineers, he turns to his converted player piano and, grinning like a mad bomber, starts banging out honky-tonk improvisations that suggest Detroit-in-jail-in-New-Orleans, urban bluegrass and a rolling ragtime: "C'mon, let me show you where it's at!" He growls the words. He kicks out a percussion against the instrument mercilessly. His left hand is strong. His right hand does tricks. Once, the Isley Brothers asked him to tour with them, he says. He gave Jimi Hendrix some songwriting tips in his Lighthouse Club and Village days when his name was Jimmy James. He still has a four-handed keyboard friendship with Ian Stewart, sometimes called the sixth Rolling Stone, who came by not long ago to get some more portable amps.

Willie Magee, Mike's vice presi-

dent of sales, had a taste of stardom back in 1963-64. His group, the Kansas City Playboys, were hot: limo'd, valeted, top-billed at the Apollo, second only to the Temptations. Then something went wrong backstage in a supper club in Boston. "[One of the vocalists] and the organist had a fight — the audience could hear them—our manager told us, after all he'd done for us..." And that was it. Now Willie plays guitar with the Unlimited Entertainers, a group whose specialty is Masonic dances around New York. And every spring he and the group throw a big party, where their friends and an Electro-Harmonix crowd get together to do the latest dances, rap, eat, drink, smoke and otherwise scream and holler for Willie. Willie met Mike in Ithaca, where Willie went to high school and Mike picked up BSEE and MBA degrees at Cornell. They played together in a group called the Dynamos.

While he was in school, Mike was also involved in the music promoting business, which provided him an education in clubs, shakedowns and gangsters. After a three-year stint selling computers for IBM, he felt he'd learned enough and began the realization of his own longtime business ambition: nothing less than creating a powerful scientific and industrial organization, proceeding outward from musical electronics to consumer electronics and ultimately to the solution of the most pressing biomedical and terrestrial problems of all time!

"Genghis Khan on Doctor No's island," he jokes.

Early in his career, Mike made a brief attempt to market a plastic box full of spare parts from the preamp and booster business which he called an Alpha Neon Resonator. It flickered its tiny bulbs thirteen times per second, theoretically to massage the alpha rhythm in the brain and promote relaxation and creativity.

Then Mike hung out with a lie-detector specialist named Cleve Backster, who the *Wall Street Journal* reported as having influence over plants; and with T. Galen Hieronymous of Florida, who (a friend of Mike's from Bell Labs swore) had influence over people as well as plants via their photographs or other emanations, voodoo style. Mike flew his team to Haiti to compare notes with the voodooists there, and returned with three amazing Haitian paintings and a plan to import voodoo drummers under the name of the Electro-Harmonix Work Band. Projects in a semiactive state now include a mass ESP experiment in Yankee Stadium, wind energy, visual aids for the deaf, and getting up underground water to irrigate the world's deserts.



Willie Magee's group opened for the Tempts at the Apollo.

HOW MUSIC IS A SPINOFF OF WAR

Musical electronics is one of the industries which profits from government contracts for research and development in space and defense. The one-inch black bugs of plastic and gold that run the orbiting satellites and out-of-solar-system explorers are verily the same integrated circuits (called ICs or chips) that run a solid-state echo/analog delay line.

In other words, when Mike Matthews of Electro-Harmonix needs to hire an engineer, he hires Robert E. Myer, formerly of the Bell Laboratories. Myer's previous work includes fail-safe and radar tracking systems on such missiles as Nike Zeus, Nike Hercules, Safeguard and Sentinel. Myer holds seven patents for his work at Bell, and in his nineteen years there saved the government a conservatively estimated \$30 million. But the good-humored, forty-eight-year-old Mormon's work was not solely in defense. He also designed a direct-view Kirlian Aura device, and fashioned one of the earliest transistorized music synthesizers. Now he works for the funky electronic music factory out of a secret lab in rural New Jersey. And because he is familiar with "bubblechips" and "bucket brigade devices" and such from the wars, he can build superior gizmos for musicians to play with.

Mike Matthews likes to call Myer the da Vinci of the twentieth century.

In another secluded laboratory is Bob, with an underground version of the same hard-nosed background. When Bob was in Bronx High School of Science, he built six-foot rockets in shop, using chrome, molybdenum and steel, to military specifications. Out of some esoteric Maleficarum he remembers as "Bizarre Biological Projects You Can Do on a Low Budget," he found the recipe for breeding giant fruit flies. It was unsuccessful, he reports; they

didn't increase in size by more than thirty or forty percent. On the music scene, Bob designed the Queen wah, the Frequency Analyzer and the first Bad Stone. Mike claims Bob also discovered the feedback or regeneration effect of the phase shifter, a key sonic breakthrough of the Seventies, but this is moot. His latest interest is LED art.

Other E-H work went on in Paris this year, at the Institute de Recherche et Coordination Acoustique Musique, a division of the exposed-pipe Beaubourg arts complex. There, an Englishman named David continued the work that had led him to invent the Small Stone. High on him, Mike declares that David is the most knowledgeable designer of electronic music equipment in the world — and will be the most famous designer of robots. Anyway, all the hot-shot avant-garde stuff in Paris didn't keep David from missing down-home Electro-Harmonix, and so he decided to come back to 23rd Street.

Six o'clock on a Friday evening, midwinter, midtown Manhattan. Almost everyone is out of the building. Paul and Gosia have just announced they're getting married. In the testing room, Ralph and Larry are deep into a jazz-rock jam. Ellis is going home to sleep it off. Dozens of photos line the factory walls: there are the people from assembling, shipping, packing, screening and building care, all sunstruck in a field, picking strawberries and grinning or mugging at the camera, their faces and asses auto-graphed. There's a group pic of the salesmen, ridiculous nicknames written in. There's Mike, looking pensive, coiled up, powerful (Angela's coated him in plastic for durability). And there's the gang down at Copperfield's....

"Shall we hold the elevator for you, Mike?"

"No, thanks, I'll beam down."

WHAT PRICE WAH-WAH? A Buyers' Guide

PERSONALLY, I LIKE SOUND-effects records. Sometimes late at night, I get a mint julep and just sit there and listen to sound effects. I'm surprised more of them aren't on the charts. If I had my own label, that's what I'd record.

—BOB DYLAN

SYNTHESIZERS, THOSE AWESOME arsenals of sound generation, range in price from \$600 (Octave, Unicord) to \$40,000 (Electronic Studios of America) complete; kits start at \$230 (Paia). This is a lot more than the cost of an add-on box, which is a single synthesizer component function, patch or circuit, removed and sold individually. Wah-wahs and triggered wahs, for example, are pretty much standard features or easily set subsystems of any synthesizer now on the market, technically equivalent to the voltage-controlled filter and the envelope-follower patch. Ring modulators are another basic.

The majority of add-on effects, however, are state-of-the-art circuits, not available as synthesizer functions or patches. Devices of this sort include the fuzzes, phasers, flangers and echoes.

Under the name of "electronic musical accessories," "sound-modification devices" or even "sound effects," most of these small steel or aluminum add-on boxes can be purchased for under \$100 wherever electric guitars are sold, and the sandcast foot pedals for under \$200. They come battery-powered, with AC cord or both.

To some extent, sound-effect devices enable even top groups to duplicate their recorded sound in concert. Studio units may be twice as quiet, distortion-free and reliable as portable accessories, but they are also an estimated ten to fifteen times more expensive. And accessories are indisputably superior for use on the road, being compact, rugged and simple to operate. Paradoxically, certain of the lower-priced units actually make more beautiful sounds than their studio counterparts — in particular, phasers and flangers.

