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Author Michael Nash (center) enjoying himself with friends at a concert last summer. A typical pair of microphones (opposite page) wears flowers and a Dead sticker.

# GRATEFUL TAPERS

## An Informal History Of Recording The Dead

MICHAEL NASH

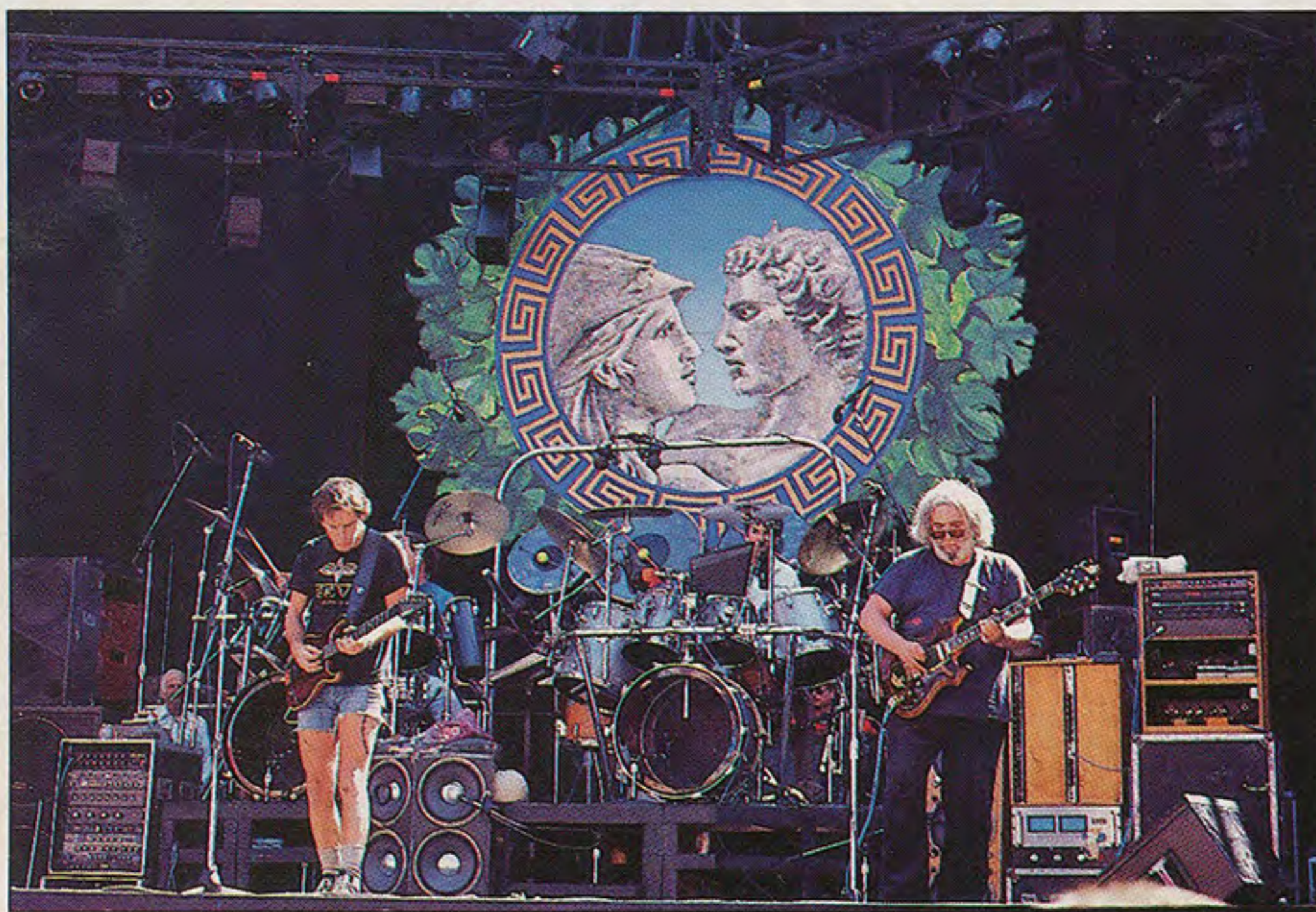
Photography by Philip Gould

**H**ey, you down there with the mike," Grateful Dead guitarist Bob Weir calls from the stage. A reprimand in the making? "If you want to get a decent recording, you gotta move back about 40 feet."

"It sounds a lot better back there," chimes in bassist Phil Lesh.

It is August 1971, about the time that live taping of The Grateful Dead began to take root. The Dead are playing the second of two nights at the Hollywood Palladium. And yes, these are words of encouragement—musicians advising their audience where best to record their concert. How do we know it happened? Why, it's all on tape, of course.

In the 16 years since that Hollywood date, tapers have evolved into an officially recognized and sanctioned group among the fans of The Grateful Dead; they've even got their own designated area from which to make recordings. Their concert habitat—the



tapers' section—is a hi-tech sea of sundry microphones; of foam, Plexiglas, and other sound-baffling materials, and of analog and digital recording equipment. All for the purpose of capturing The Dead, and all for free. "Once we're done with it, they can have it" is Jerry Garcia's oft-quoted remark on the subject.

Grateful Dead sound mixer and audio wizard Dan Healy, with the band since their Fillmore Auditorium days in 1965, puts it this way: "Philosophically,

live recording hurts anything," says Healy. "If anything, it makes it better," he adds, noting that concert tapes have brought the band's music to a wider audience.

The Dead have notched nearly 2,000 concerts on their collective fretboards, probably more than any other touring band in history. And their appeal just continues to increase, especially in the wake of 1987's platinum-selling *In the Dark*, the group's biggest commercial success ever.

we come from a place where the music belongs to everybody. Only the machinations of financial motivation work against that. And it's just not enough. It wasn't what got me here, it hasn't been what's sustained me, and it won't be what will dissuade me."

As for the industry claim that allowing recording results in fewer record sales, The Dead would simply chuckle. "There's never been one shred of proof—none whatsoever—that



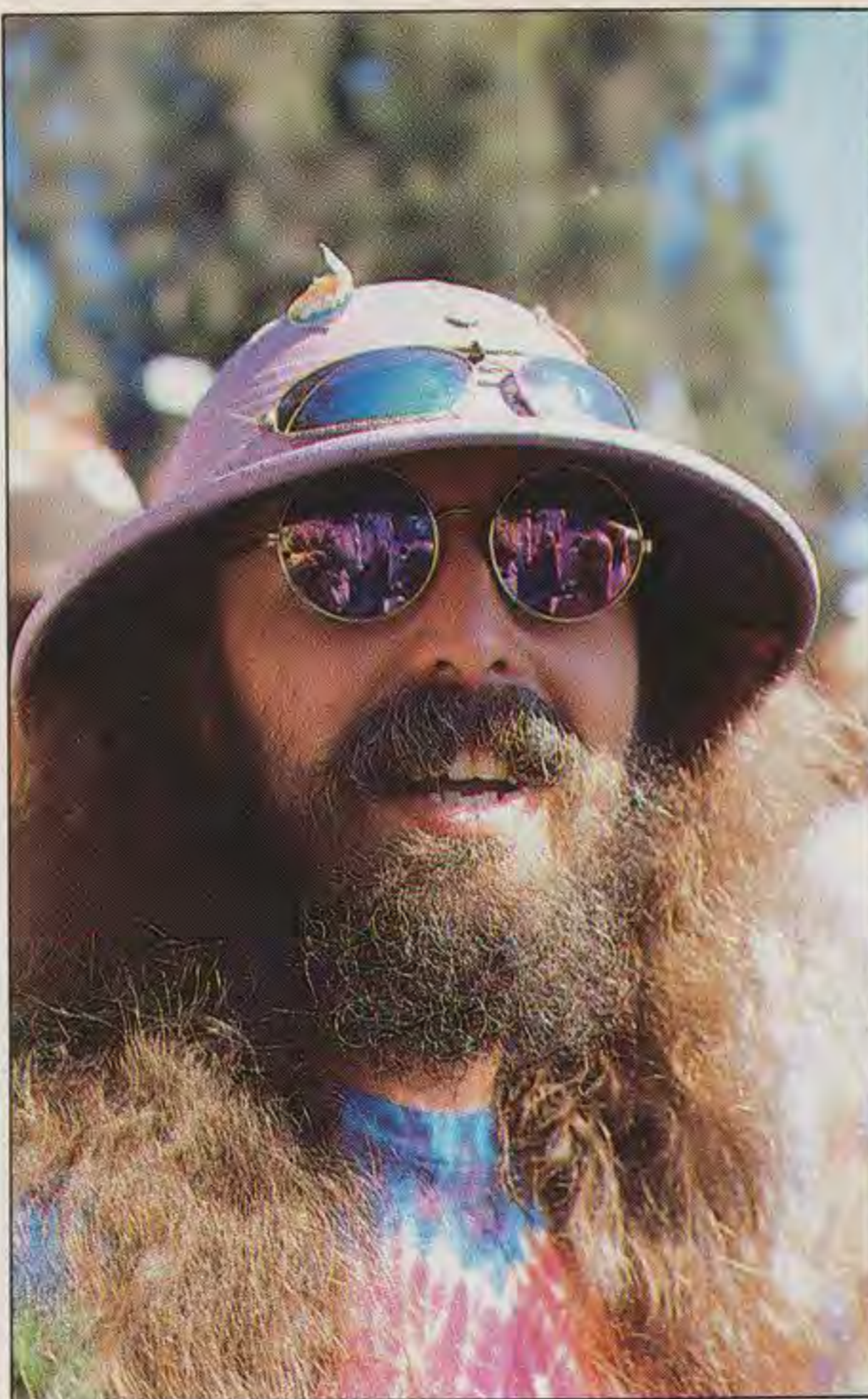
There may be nothing like a Grateful Dead concert, but a dedicated taper would say that a good recording comes close. And from one good tape, literally thousands may be bred, disseminated through a social network that has spread The Dead's music near and far. Whether one's interest lies in studying the music and its evolution, archiving it for posterity, or reliving those moments when "the music played the band," the tapes are there to fill the role.

**J**ust as the music of The Dead has continually moved forward, so too has the state of tapers' tech. But even before the multitude of high-end microphones appeared, before the days of dbx noise reduction and PCM digital processors, before there even was such a thing as the tapers' section, a lot of field work was being done.

One of the first to record The Dead on tape was Steve Brown, who first saw the group (then known as The Warlocks) in their old Palo Alto stomping grounds back in 1965, an experience he describes as "love at first sound." Working in both local radio and record promotion at the time, Brown continued to see the band over the next couple of years.

Later, Brown found himself in the Navy, where his job was to make tapes for the on-board entertainment systems of Navy ships stationed in the Pacific. On his free weekends, he would regularly head north from San Diego to catch the shows at San Francisco's Fillmore Auditorium and Avalon Ballroom, including performances by The Grateful Dead. One weekend in early 1968, Brown trotted his Navy reel-to-reel—a Uher 440—up the coast and sneaked it into Winterland, where Cream was playing. He discreetly recorded the show dead center from the first row of the balcony, over which his Uher condenser mike hung in all its monophonic glory.

The next morning, Brown heard that The Grateful Dead was going to play a free concert on Haight Street that day. His deck conveniently at hand, though pretty well depleted of battery power from the Cream show, Brown hit the street; sure enough, the band appeared and began playing. Holding the microphone with alternating hands, Brown was able to record the first four

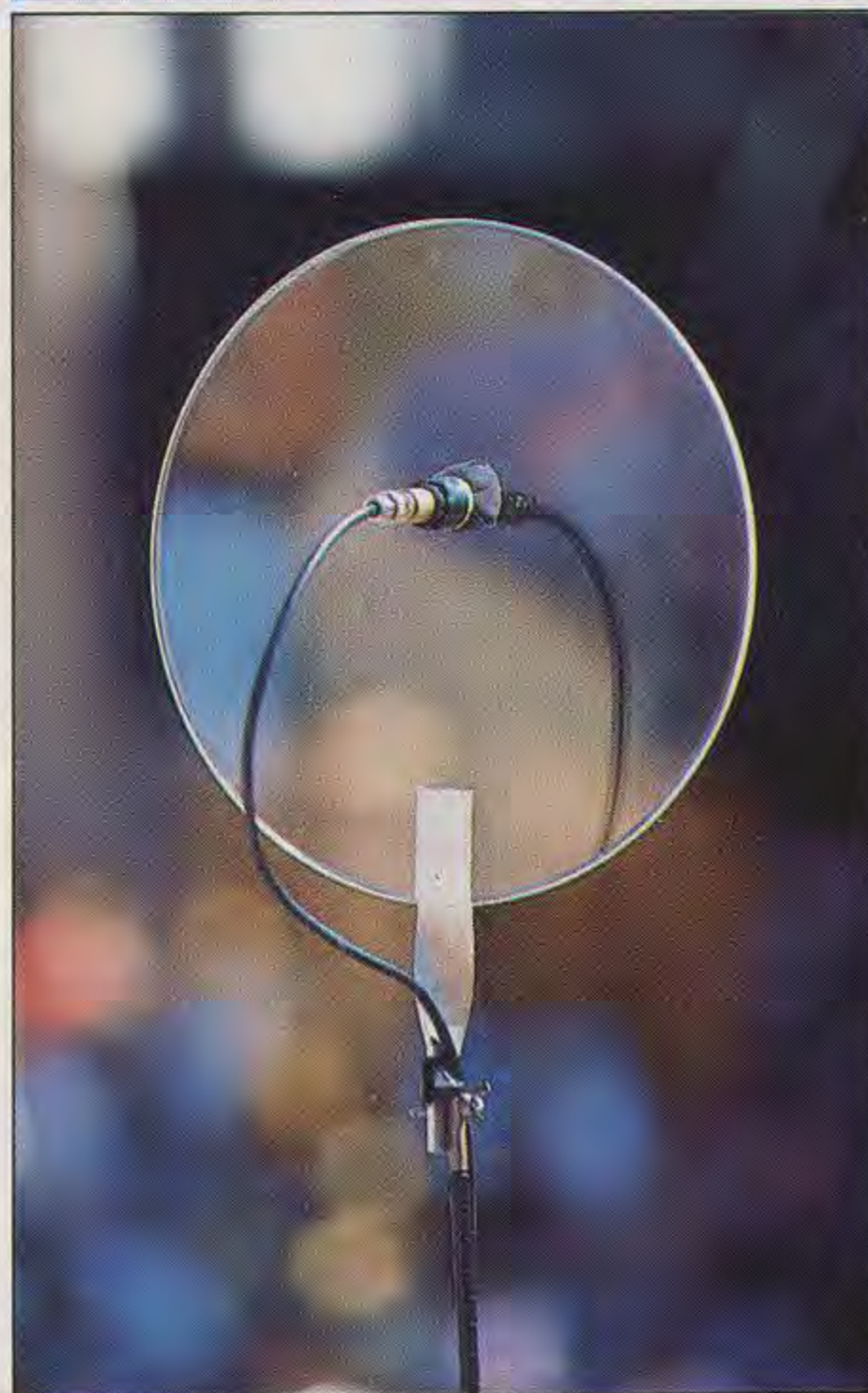


tunes—"Viola Lee Blues," "Smokestack Lightning," "(Turn on Your) Lovelight," and "It Hurts Me Too"—before the battery gave its last gasp.

Within a week, a large number of unassuming sailors throughout the Pacific were listening to a wild and psychedelic version of "Viola Lee Blues" blaring from channel 4 of the Navy's entertainment system. "It's why we lost the war," Brown laughingly surmises.

It turns out that Brown was probably the *only* person to make a tape of the

**A homemade yet effective attempt at improved directionality.**



Haight Street show (recorded, for the record, at 3¾ ips on a 5-inch reel, and sounding remarkably good after two decades). So, for anyone who has a dub of those four songs, this is probably where they came from.

That concert, on March 3, 1968, was the first and last Grateful Dead show that Brown taped, although he did go on to help form Round Records, The Grateful Dead's own recording label, back in the early '70s. During his tenure there, he says, never did the idea of people having live tapes become a negative concern.

A year after Brown made his Dead recording, Bob Menke went to a Blind Faith concert with his older brother. His brother brought along a Craig 5-inch reel-to-reel deck to record the show. They did the same thing at a Crosby, Stills, Nash and Young concert the following summer.

"I kind of liked the idea," Menke remembers. Within a year, he bought a Sony TC-40 portable cassette deck and taped his first show. A few months later, in July of 1971, a radio broadcast of The Grateful Dead closing Bill Graham's fabled Fillmore West brought him his first exposure to the band. He taped the show off the radio and decided the next logical step was to go to a Dead concert, Sony in hand.

In August, Menke taped the first of nearly 200 Grateful Dead concerts he would record over the next 16 years. The result was certainly listenable, though hardly state-of-the-art. But just making a tape in those days was no small feat: The practice was essentially prohibited, as it worried Warner Bros., with whom The Dead had a recording contract. Still, if one was able to sneak his gear in and keep a low profile, there was a good chance of success.

Having graduated to a stereo portable Sony 124 by August 1972, Menke tried out his new unit up front at the Berkeley Community Theater, only to get busted during the first song. Disheartening, but not enough to end his new hobby.

At the time, Menke says, the handful of tapers on the East and West Coasts were using essentially the same equipment, generally Sony portables. As taping bans became more closely enforced over the next couple of years, tapers turned to ingenious means of

sneaking in their recording gear. Tales abound of tape decks strapped to womens' legs or hidden beneath sleeping babies in their carriages, microphones stuffed through bathroom fan vents from the street (to be retrieved inside), and a host of other diversionary tricks to fool security guards. Menke himself would wrap his deck in towels, stuff it into a Boy Scout backpack, and cover it with packaged food. "You always had to keep one step ahead," he recalls.

In 1974, Menke began using a Sony 152 recorder; suddenly, he says, "taping became more serious." The 152, equipped with a one-point stereo mike, adjustable input levels, Dolby noise reduction, and equalization that could be switched to match the tape type in use, was a major boon to tapers. Though it was hardly a small deck and definitely more difficult to conceal, soon everyone was buying it, simply because it meant better sound.

And by 1974, better sound was certainly what the Dead audience was hearing, as Dan Healy and sound designer/engineer Ron Wickersham had completed their massive Wall of Sound, an awesome sound-reproduction system involving 641 speakers. Very likely the most ambitious project of its kind (and ultimately too large to continue using), the Wall of Sound represented an exponential leap forward in the quality of concert sound, much to the delight of Deadheads and tapers alike. Practicality and expense aside, the system sounded magnificent.

**F**rom late 1974 to early 1976, while The Dead took a break from live touring and pursued various recording and solo projects, Menke and his pals honed their skills by taping the club shows of Jerry Garcia's band and of Kingfish, a group featuring Bob Weir. Victories, such as laying their mikes next to Garcia's stage monitors, were balanced by upsets, such as having their mike cables snipped by a diligent roadie. Menke remembers one particularly good experience during a surprise free show in Golden Gate Park in September 1975. Someone had turned a vocal monitor out from one corner of the stage. Using a mismatched pair of Sony condenser mikes, Menke pointed one at the monitor and the other at the instruments. The result, he says,



Getting the axis of each mike pointed at just the right angle is important in live concert recording because sources are usually fairly far away.



A small forest of expensive high-tech microphones sprouts from the tapers' section at virtually all Dead concerts.

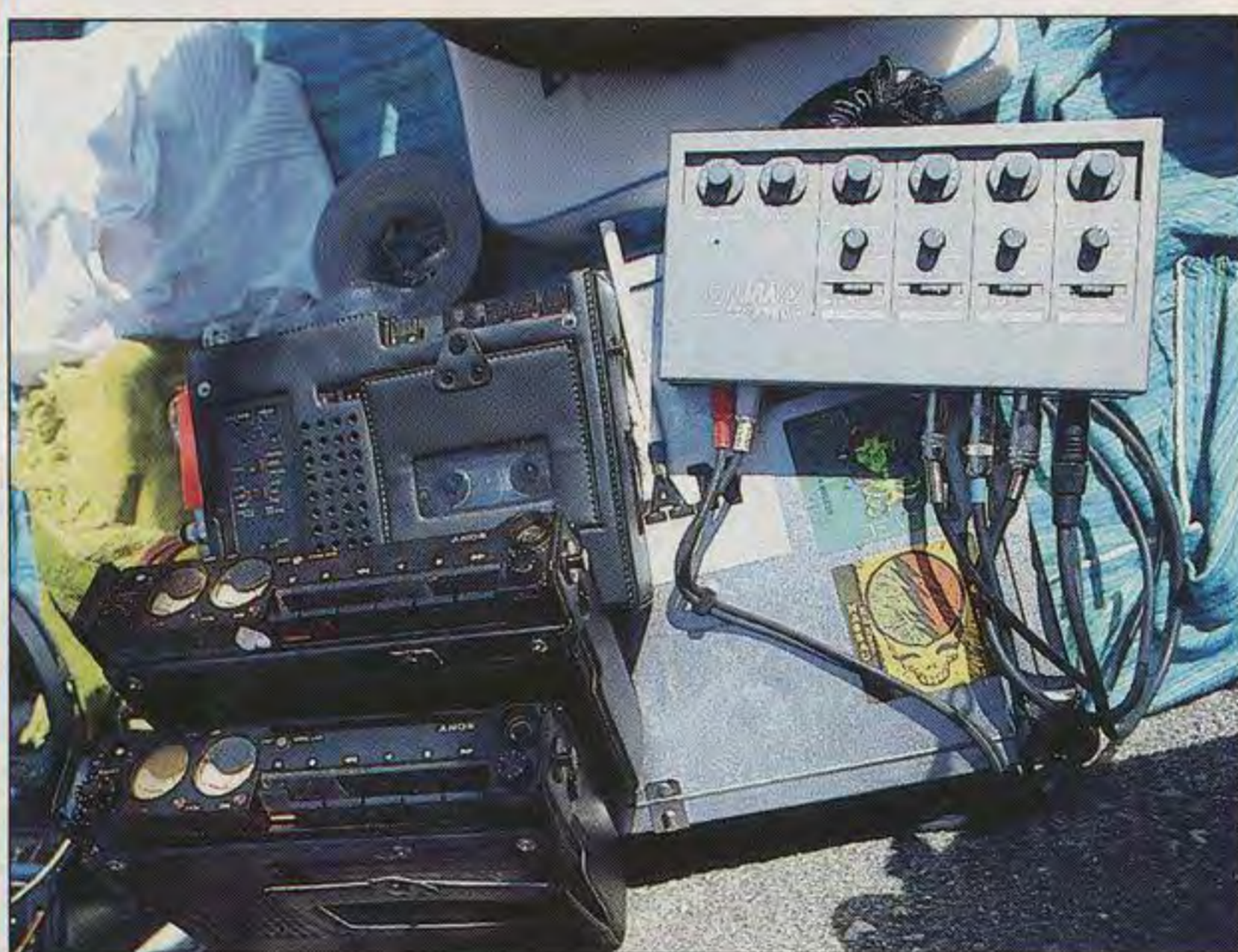


Foam and gaffer tape are regularly used to extend the reach of even directional mikes.

Three Sony TC-D5M portable cassette recorders atop a Nakamichi 450, which has its pot taped to avoid changes in level. Despite the rigors of outdoor use, fairly large sums have been invested in this equipment.



Heavy-duty cabling connects three Sony TC-D5Ms and their mixer, a Yamaha MM-10. Crowd noise takes on a new meaning when you're taping a Dead concert.



"sounds like a board tape, no ambience whatsoever."

When The Dead returned in 1976, the taping population slowly increased. The procession of Sonys moved on from the 152 to the 153 and then the 158, which Menke bought in 1977. He had also acquired improved mikes, Sony ECM-270s and 280s. In addition, he was using high-bias chromium cassettes, which had first appeared in 1971. By degrees, the recorded sound was improving.

In March 1977, while taping a show at Winterland, Menke and his friends happily discovered an a.c. power outlet conveniently located on the first-row balcony floor. Wasting no time, at The Dead's next Winterland appearance in June, they carted in two 10-inch reel-to-reel decks—a Tandberg 10X and a Revox A77—and plugged in. Adding a new pair of AKG D-224E dynamic microphones, which they fastened to a stick and hung over the balcony, resulted in yet another small step forward in good sound. They continued using the reel-to-reels on and off for the next year, with the best results, according to Menke, coming from a friend's December 1978 combination of a Nagra deck and Neumann mikes with external power supplies.

In 1979, Sony introduced the TC-D5, the first cassette unit truly designed for serious field-recording enthusiasts. Far more portable than its predecessor, the 158, the new deck proved to be a boon to the entire Grateful Dead taping scene, and the number of tapers grew even larger. Initially listing at \$700, the TC-D5 was no small investment, but it soon became the norm. Menke bought one immediately, replacing it about a year later (as did many others) with a TC-D5M, a newer version with metal-particle tape capability.

Also in 1979, Menke began using a pair of Nakamichi 700 microphones. Condenser mikes outfitted with both cardioid and omni capsules, the 700s, according to Menke, had improved presence in the high end and a better sound from farther back than the AKGs he'd been using. The Nakamichis have remained his choice ever since. Menke also built a passive preamp to add a 6-dB bass boost to the mix, later dropping the unit when The Dead's sound system began to deliver more bass.



**A**s the number of tapers continued to grow, so did the difficulty of getting equipment into The Dead's concerts. Of greater import was the growing number of problems regarding certain tapers infringing on the rights of nontaping concertgoers. Early tapers were always careful to maintain a low profile, to get their spots legitimately, and to respect those who didn't care about taping. Unfortunately, as more tapers joined the ranks, not everyone was so courteous. Menke says that the appearance of tripods on the East Coast started to spell trouble. Things were slowly beginning to get out of hand. Meanwhile, he settled in with his Sony/Nakamichi combination.

Jaime Poris, a taping acquaintance of Menke's, was using a similar system but felt there was room for improvement. Poris, an electrical engineer at National Semiconductor, first saw The Dead on the East Coast in 1971 and taped a few shows in '73 on what he calls "lousy portables." In 1979, he moved to California and began taping seriously. Ever since then, he has been experimenting with a broad range of means and methods.

Early on, Poris realized that the best way to decide what equipment to use and how to use it was to just go out and experiment. He began playing with phase and amplitude differences, alternating pickup patterns, and angling his microphones, all in various combinations.

One experiment that caught on for a while was blending three mikes into two channels with a homemade passive mixer while varying the capsules, e.g., two cardioids and one omni. The results, Poris says, compromised the signal-to-noise ratio but still sounded better than the results from two mikes.

In 1981, Poris decided that he and his new taping partner, Jim Olness, were getting too much indirect sound, particularly at indoor shows, where reflection presented a problem. A more directional mike, such as a cardioid, seemed to be a solution, but Poris preferred the sound of an omni. The problem with cardioids, he felt, was that they weren't the same at every frequency; their response pattern changed as they were angled away from the sound source, leading to some coloration. The partners opted to



alternate omnis and cardioids and compare results.

Hoping to increase the ratio of direct to reflected sound, they started shaping foam in various forms around the mikes. Anything more than 90° off the mike's axis became attenuated significantly; thus, the crowd noise was muffled and the music was made more prominent. While not sounding completely natural, the results were better than they had been. "Good," Poris says, "but not the solution."

By the following year, Poris and Olness had made further changes in their system. Attempting to improve their Nakamichi 700 mikes, Poris replaced capacitors with better ones, got rid of the transformers altogether, and made separate power supplies, which he hooked up to the capsules via BNC connectors. In the process, the mikes were reduced in size from 9 inches to about 4 inches. The resulting "mini-Naks," Poris and Olness attest, are quieter and definitely better sounding than their precursors.

In addition, Poris also built a new mike preamp, using some high-quality op-amp chips, to replace what he felt was a relatively low-quality preamp in the Sony TC-D5M.

Another step was to improve the tape's signal-to-noise ratio by turning to dbx noise reduction. Poris and Olness purchased a dbx 224, a home unit; then they replaced several capacitors and op-amps and inserted a portable power supply of eight 9-V batteries in the transformer's place. Adding a patch bay, they were able to split the signal into a dbx side and a Dolby

side. Adding more patch bays down the line allowed up to 15 additional tapers to plug in.

The microphone modifications, new preamp, and addition of dbx resulted in tapes that sounded appreciably better than previous efforts. Though carting around a dbx unit designed for home use was certainly no fun, it was worth the hassle to get an improved sound. At the same time, Olness and Poris continued to experiment with shaping ordinary foam, and later Sonex, trying to reproduce the music as best they could.

While the serious tapers were developing their craft, the rude behavior of some of the newer tapers became increasingly felt. More poles began to appear, interfering with people's sight lines and their ability to enjoy the show. Some tapers showed up late and moved in on spaces that others had stood in line for hours to get. People were asked not to talk or sing along, so as not to "ruin" the tapes. Although those causing problems were a minority, they were numerous enough to make a difference. More and more complaints were voiced.

**B**y 1984, Healy and the generally tolerant Grateful Dead organization had had enough. The choice they faced was to enforce a total prohibition on taping or find a way to prevent ongoing trouble. The Dead opted for a creative solution and established the tapers' section—a designated area at each show where those so inclined could record the music without having to be surreptitious about it. Suddenly, tapers had rights.

In October 1984, The Dead, via their telephone ticket hotline, began instructing those who wanted to tape to specify that on their mail-order ticket requests. In return, they were sent tickets marked appropriately. This process has been used ever since for facilities with reserved seating; at general-admission shows, a designated section is filled on a first-come basis. Almost invariably, there's been enough space in that section for everyone who wants to tape.

Some old-school tapers were upset at losing their sweet spots in front of the sound board, but overall the tapers' section made things much easier for everyone. Suddenly free from

the need to act covertly, tapers were able to pursue their audio experiments with a new-found sense of legitimacy.

Jaime Poris had been reading articles about Pressure Zone Microphones (PZMs) and decided to give the technique a shot. Though it appeared, Poris says, more apropos to string quartets, he and Jim Olness figured they had nothing to lose.

Their idea involved using a Plexiglas plate to create a hemispherical pickup pattern for the microphones. The mikes were mounted on the plate, facing the flat surface, and sound was reflected back into them. The main advantage was that almost nothing behind the plate got into the mix. The disadvantage was that the bass rolled off depending on the size of the plate.

Starting with a plate of reasonable size, the partners changed the size of the capacitors in the mike power supplies for both the cardioids and the omnis to acquire more control over the bass. Ultimately, they preferred the bass response of the omni capsules and opted for those. The Plexiglas plate, meanwhile, was built with a hinge and operated like a book. In this way, Poris and Olness could adjust the relative angles of the mikes. The resulting tapes, Poris says, "had no coloration, relatively flat frequency response, good bass, and good directionality."

Experimenting further, the two split the mikes 20 feet apart, using two separate Plexiglas plates. The effect, they decided, was significant; the split



mikes seemed better suited to the panned signal and resulted in appreciably better imaging. Later, they built larger plates and began alternating the Nakamichi 700s with some capsules made by Knowles—tiny electret condenser mikes often used in telemetry, hearing aids, and surveillance. For their price (all of \$25), the Knowles sounded quite good but had some slight coloration in the upper mid-range.

At around the same time, Poris also built a peak meter and linked it to the system, allowing Olness to easily read the peaks on his Sony recorder in 3-dB steps instead of settling for the average offered by the deck's VU meters. Poris is currently working on a new microphone preamplifier, with built-in mike power supplies, which will allow him to tailor the bass response in four steps.

While always striving for better results, the two make sure they enjoy themselves in the process. "It's still a lot of fun," a friend observes, "but they take their fun seriously."

If tapers like Poris and Olness are serious about their pursuits, certainly the same must be said of those who have converted to the digital faith, incurring serious costs as they use PCM processors to put digital signals onto portable videotape decks. "The standard joke," says one digital taper, Ross Lipton, "is that when you go digital, you sell your TC-D5 to buy the batteries." Indeed, the four 12-V rechargeable cells that Lipton and his taping partner Chris Hecht use in their phantom power supply go for about \$100 a pop.

**A thin blanket provides precious little padding beneath recording gear that has been tweaked in every possible fashion.**



**Three Sony PCM-F1 digital processors and several video recorders, including two Sony SL-2000s.**





# Dialing For Deadheads

Digital's first appearance on the Grateful Dead taping scene came in the spring of 1983. Dave Cramer had been taping since 1979, using the standard cassette format and collaborating with Jaime Poris on three-mike blends. Convinced that no other band offered the same incredibly high fidelity in concert as did The Dead, he figured it was worth giving digital a whirl. He rented a Sony PCM-F1 digital processor and a portable Betamax video recorder, powered them with heavy-weight ni-cad batteries, and put them to work at a show in Tempe, Ariz.

**T**he difference was huge, Cramer recalls, with a complete absence of tape noise which was most noticeable in the pauses between musical numbers. With great dynamic range, no wow or flutter, and no harmonic distortion from 20 Hz to 20 kHz, it became unquestionably clear to Cramer that digital was *it*.

He soon bought his own equipment even though PCM processors were rather hard to come by at the time. Eventually he sold his Sony processor and bought a Nakamichi DMP 1000, which offered what he felt was a warmer sound. He also exchanged his Beta machine for a top-of-the-line VHS, as that tape format was more readily available out on the road.

With a background in studio engineering, Cramer had tried out virtually every microphone in the book. Ultimately he decided on three Sennheiser 421s—cardioid dynamic mikes—two of which he places in an X-Y configuration with the third slightly behind them and out of phase. Aside from a slight rise in response at 30 Hz, he says the result sounds great.

With a \$12,000 investment and 120 pounds of equipment, Cramer's efforts have not been minimal, but he feels they have been worth the results. His sentiments are shared by Hecht and Lipton, who estimate that, between the two of them, they could be driving a BMW for all they've poured into their system. The two began taping together on and off in 1982 after often seeing one another in airport baggage areas in transit to and from Dead shows. In 1985, Lipton bought a digital system. Today they use a PCM-F1, a Sony SL-2000 portable Betamax video recorder, and a variety of high-end micro-

One doesn't have to go to every Grateful Dead concert to keep up on the group and their music. For those who prefer to tape the group in the comfort of their own living rooms, there's a radio show to suit the occasion, and for those who want to keep in touch with each other via computer, there's a hackers' bulletin board set up for that purpose. Both are the handiwork of writer and editor David Gans, author of *Playing in the Band: An Oral and Visual Portrait of the Grateful Dead*.

*The Deadhead Hour* radio show, hosted by Gans, is an audio kaleidoscope of sorts, featuring a mixture of high-quality concert tapes, interviews with band members and associated figures, an eclectic sampling of The Dead's source music, up-to-date concert information and other news, and Gans' offbeat sound montages.

Originated by San Francisco's KFOG in 1984, the weekly program, not surprisingly, found a waiting audience on The Dead's home turf. Gans, music editor at *Mix* magazine and a 15-year veteran of Dead concerts, took the reins a year later. Today, in addition to its home station, the show can be found on WMMR in Philadelphia and WNEW in New York.

Though he has a vast and varied collection of concert tapes as well as permission to use material from The Dead's own vaults, Gans is not interested in trying to "fake" a Grateful Dead concert on the air. Rather, he uses the hour to offer a kind of community resource to Deadheads,

aware that the Dead scene isn't just the music.

Like Dead concerts themselves, no two *Deadhead Hour* programs are ever alike. Shows in the past year have ranged from an evening with bassist Phil Lesh commenting on Charles Ives' Fourth Symphony, a piece he describes as having a major influence on The Dead's early musical philosophy, to *Prairie Home Companion*'s Garrison Keillor performing acoustic versions of Dead tunes with his band, The Wigglers, to a night of The Dead's versions of Bob Dylan songs. Ultimately, Gans hopes to deliver the program digitally via satellite.

In addition to his role as radio producer, Gans is the cofounder and online editor of the Grateful Dead Conference on a computer network called The WELL. Essentially a hackers' bulletin board, the Conference is a social forum where Deadheads, via computer modems, can wax lyrical, statistical, or otherwise about the band. In so doing, they conduct long-running conversations on a host of related topics and form friendships with people they've never seen.

Both *The Deadhead Hour* and the Grateful Dead Conference serve a uniquely interactive community, one not likely to fade away. *M.N.*

(*Editor's Note:* Radio stations and individuals interested in *The Deadhead Hour* can contact David Gans at 484 Lake Park Ave., Suite 102, Oakland, Cal. 94610. Those interested in the Grateful Dead Conference can call The WELL at 415-332-4335.)

**Voice of KFOG's *Deadhead Hour*, David Gans has been going to Dead concerts for more than 15 years.**



phones which are traded among the members of a taping co-op to which they belong.

Hecht and Lipton feel the tapes they make offer a vastly improved dynamic range, better signal-to-noise ratio, and far more presence in the bass. They also like the fact that video decks have a much faster writing speed than audio decks. Their tape of choice is the Sony Pro-X 500, thicker than the standard Beta tape, and they record at the fastest speed available. Further, unlike audio cassettes, the process of digital transfer ensures that successive copies suffer no generational loss of sound quality or increase in noise.

Last summer at Berkeley's Greek Theater, an outdoor amphitheater considered by many to be the best place to hear The Dead, Hecht and Lipton's group conducted a microphone comparison test. Controlling all variables,

they set up three separate pairs of top-quality mikes: Neumann TLM170s, Schoeps CMC 341s, and newly re-engineered AKG 414s. On each of three successive days, they matched the pickup patterns in the respective mikes, using the switchable pattern capability of the Neumanns and AKGs and manually replacing the capsules of the Schoeps. Each pair was placed within a 7-foot range and run into similar units to allow A/B/C comparison.

After listening to the tapes on a reference system, all members of the taping co-op concurred that the Schoeps mikes with the omni capsules sounded best. Hecht felt that the Neumanns still had lots of potential, noting that they had been underpowered. (It turns out that they're not truly compatible with the power supply which had been used for the test.) As a result, Chris built a separate power supply for the



170s. As well, he's working on a new, all-purpose preamp with an active circuit using the SSM chip recommended by Jaime Poris. Eventually he plans to build a series of dedicated preamps, each specifically optimized for a particular set of microphones. He is also planning to field-test a pair of B & K microphones to see how they perform in Grateful Dead concert conditions.

Poris, meanwhile, talks about getting into Ambisonics. Theoretically, Poris says, the idea should result in better imaging. "We've gone as far as we can go with two mikes," he says, but adds that in any thought of a new endeavor, he always considers "the pain-in-the-ass factor. If it's too complicated, forget it."

One next step that everyone in these circles seems to look forward to is the arrival of DAT recorders, if and when they become available and affordable, let alone portable.

"I think a digital cassette is where it's at," Dan Healy says unequivocally. Tapers seem to agree, and eventually DAT may make as deep an impression on the Grateful Dead taping scene as did Sony TC-D5 recorders almost a decade ago. Whatever they use, however, all tapers are quick to attribute their high-quality tapes to one primary source.

"All this would be meaningless without the incredibly high-quality sound we have to work with, the raw sound," Hecht says. "An audio purist, an engineer, would start laughing if you told him that we actually record the sound at a rock 'n' roll concert. It's like, 'Why would you bother?' And most of the time, they'd be right. But at a Dead concert, it's different. This is the best sound system in music today." **A**

**The soundman for The Grateful Dead, Dan Healy, plays on his instrument, the mixing board, during a concert.**



**Veteran Dead taper Bob Menke, in his Bay Area home, has been recording concerts since 1971.**

