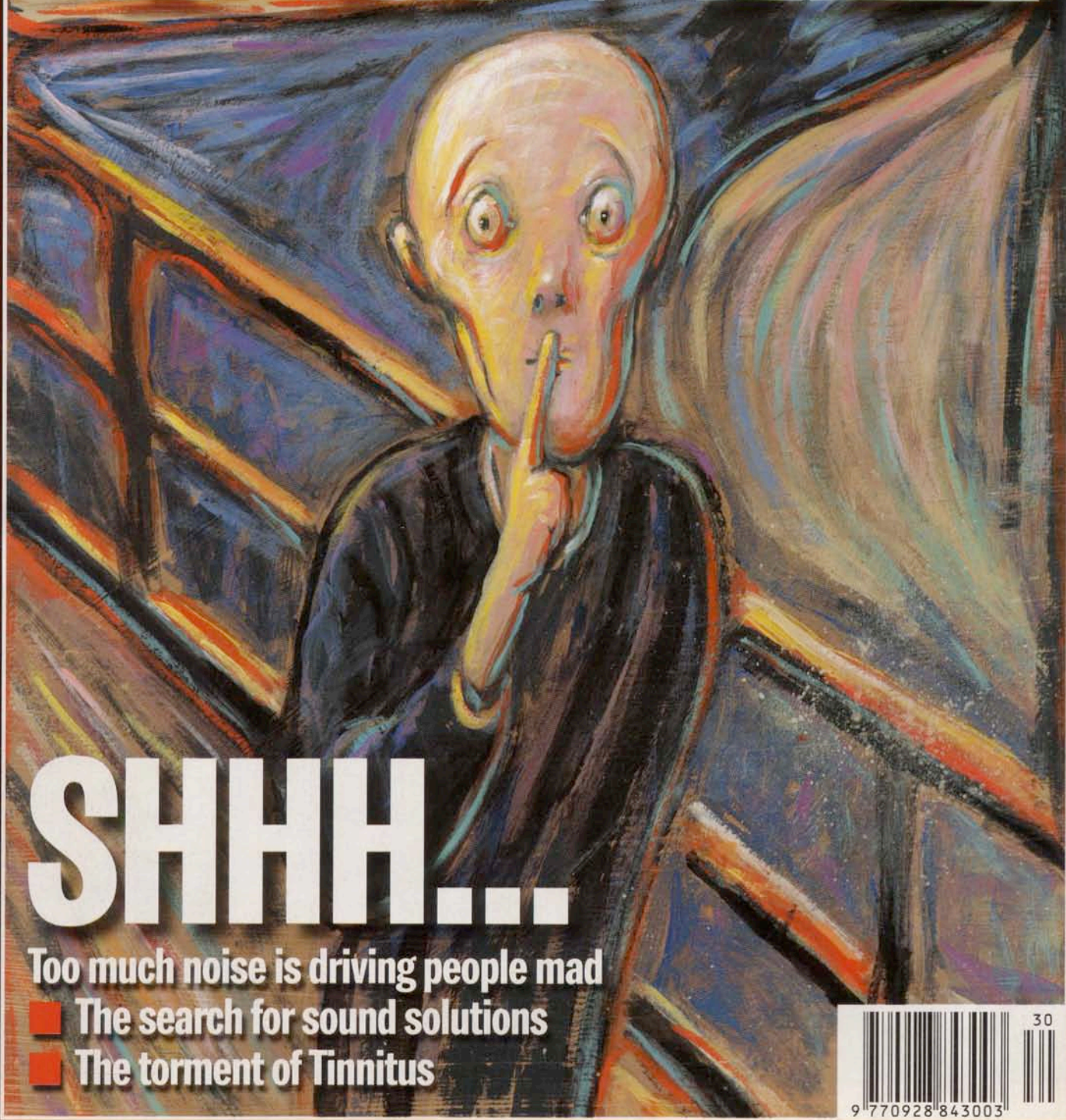


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# SHHH...

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# MAD ABOUT THE NOISE

**Noise pollution can damage your health and shatter your peace of mind.  
But there are ways to turn it down and tune it out**

By JAMES GEARY

**E**VER FELT LIKE MURDERING your neighbor for blasting music too loud? That's exactly what 78-year-old retired farmer Lambrinos Lykouresis did two years ago in Lithakia, on the Greek island of Zakynthos. Lykouresis, who claims he had complained to his neighbor for months and only wanted to listen to the evening news in peace, suddenly snapped. On May 31, 1996 he got up from his armchair, took his hunting rifle from the shelf, hobbled over to the neighboring apartment and rang the bell. When 40-year-old housewife Imberia Boziki answered the door, he fired three times at point-blank range, killing her instantly and wounding her 24-year-old son.

Lykouresis now listens to the evening news in Greece's Ioannina maximum security prison. Convicted of manslaughter in 1996, he is serving two life sentences. The Lykouresis case is an extreme example of the lengths to which some people will go for a little peace and quiet. And it's sad testimony to the devastating effects of one of the world's most pervasive yet least publicized environmental problems: noise pollution, the presence of intrusive and unwanted sounds that can seriously affect physical and psychological health.

A 1996 study conducted by the Organization for Economic Cooperation and Development ranked Greece as the noisiest nation in Europe. In Athens alone, 60% of the capital's 5 million residents are subjected to noise volumes above 75 decibels (dB), a level that is double the threshold at which symptoms such as aggression and hypertension can oc-

cur. "There's no such thing as peace and quiet here anymore," says Takis Goulielmos, a senior member of Greece's Association for the Quality of Life. "Noise pollution is becoming the country's greatest [health] threat. If effective measures are not taken, Greeks will either turn mad or deaf."

And the Greeks are not alone. According to *Europe's Environment*, a report published in 1995 by the European Environment Agency (E.E.A.), about 450 million people—65% of the European population—are regularly exposed to noise intensities above 55 dB, a level high enough to cause annoyance, aggressive behavior and sleep disturbance. Although noise-data collection is limited and methods may vary, the E.E.A. also concluded that some 113 million Europeans are routinely subjected to more than 65 dB, the level at which hypertension can result, and 10 million endure noise above 75 dB, which

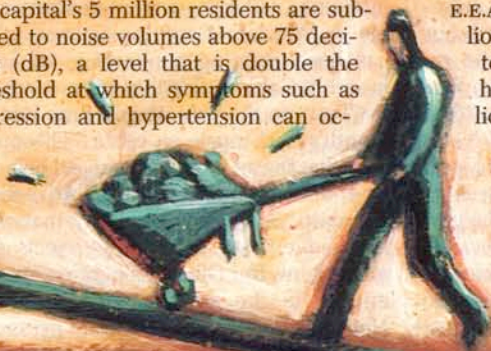


Illustration for TIME by Rhonald Blommestijn



**SHOUTS FROM THE ROOFTOPS** The high levels of noise around airports can potentially lead to increased stress, heart disease and learning disabilities in children

can lead to high stress levels, increased heart rates and potential hearing loss.

Unfortunately, the primary sources of noise pollution are also mainstays of modern life. Apart from people—who create a racket through stereos and televisions and at outdoor entertainment and sporting events—the usual culprits are planes, trains and automobiles. In Germany, for example, the Federal Environmental Agency estimates that 70% of the country's inhabitants feel continuously disturbed by road traffic. In the Netherlands, more than a million people are subjected to excessive noise levels as a result of their proximity to Schiphol Airport, according to a report by the Dutch National Institute for Public Health and the Environment (R.I.V.M.). In an increasingly overcrowded and congested Europe, noise pollution is a problem that resonates everywhere, not just in urban centers. And members of the silent majority who suffer from these acoustic intrusions are starting to speak out.

**V**ALERIE GIBSON, A 47-YEAR-OLD partner in a freelance photography business, started campaigning against noise pollution in 1991, when she was forced to move from her home in southeast London because of a neighbor who refused to turn down her music. "It was a horrific experience," Gibson recalls. "We still get feelings of panic when neighbors have loud parties." Indeed, amplified music was the number one domestic noise nuisance in a survey carried out this year by Britain's National Society for Clean Air and Environmental Protection.

In Britain, individuals saddled with loud and recalcitrant neighbors can complain to the local council. But taking noise-makers to court can be a long and arduous process. And councils often lack the resources—and the will—to prosecute. The Cardiff County Council in Wales takes a more hands-on approach. During Noise Awareness Day on July 1, it publicly steam-rolled many of the stereos and speakers it confiscated from offenders over the past four years. However justified the grievance though, those who do make a fuss can be stigmatized for insisting on their right to quiet. "There's a lot of prejudice against people who complain," says Gibson. "Most people move house rather than confront the source of the problem."

Having moved house once already, Gibson is standing her ground through the



## “The sound of aircraft thundering

Noise Network, an organization she founded that campaigns against domestic noise intrusions. Gibson's current nemesis is Cable & Wireless Communications, which has been running a one-page ad in its monthly *Cable Guide* that exhorts readers to "Turn up the volume and tune into the month's best music on cable." Gibson argues that the ad incites anti-social behavior by endorsing loud music. The Advertising Standards Authority, the body that regulates advertising in Britain, rejects Gibson's claim. But Gibson is fighting on, submitting to the government's Noise and Nuisance Policy Unit a clutch of press clippings detailing cases in which loud music has driven people to suicide and murder.

People living at 1 Place de Vanves in Paris' 14th arrondissement—a five-story housing estate beside the Périphérique,

the city's racetrack ring road—are regularly driven to distraction by the traffic clamor they endure 24 hours a day, seven days a week. Despite double-glazed windows and sound-absorbing barriers along the roadside, noise levels of 90 dB and above are not uncommon inside the apartments. "It's like a subway train blasting across my living room," says one resident.

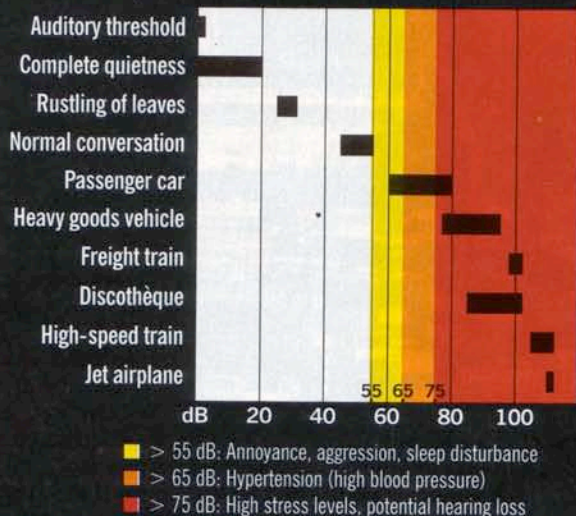
Unfortunately, those unable or unwilling to move away have little choice but to insulate themselves as best they can from the noise. Double-glazing helps, but the effectiveness of sound barriers is limited. In general, the higher the barrier and the closer to the noise source, the better it works. But with extremely wide highways like the Périphérique, barriers can't do much to block traffic noise coming from the farthest lanes.





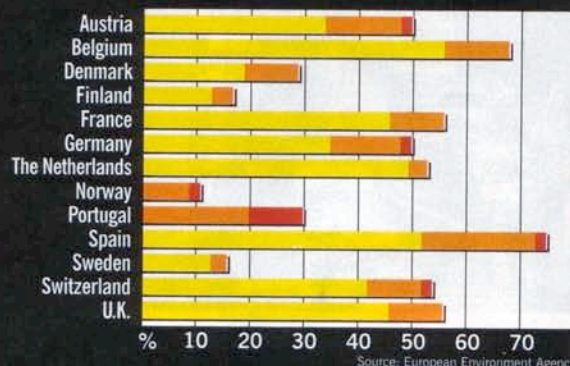
## The Sounds that Surround Us

Noise is measured in decibels (dB), where zero dB is the lower limit of audibility and 130 dB is the pain threshold. A 10-dB increase equals a doubling in volume: a 75-dB noise is twice as loud as a 65-dB one.



## Traffic Troubles

A survey of the percentage of the population in selected European countries exposed to road-traffic noise:



# over my head is...an unfair invasion into my life."

There are alternatives, however. Several U.S. states have recently taken to building new urban roads in tunnels, which has the dual effect of burying the noise and providing more public space for parks and playing fields. Quieter road surfaces—with open, pitted textures that absorb more sound than the denser surfaces currently in use—are also in the works. But there's a much easier way to crack down on road racket: reduce speed limits. As an automobile's velocity increases, so does its noise. According to information from the U.S. non-profit group Noise Pollution Clearinghouse, lowering vehicle speeds from 65 to 48 km/h would result in noise reductions equivalent to removing half the cars from the road.

In a small, crowded country like the Netherlands—Europe's most densely pop-

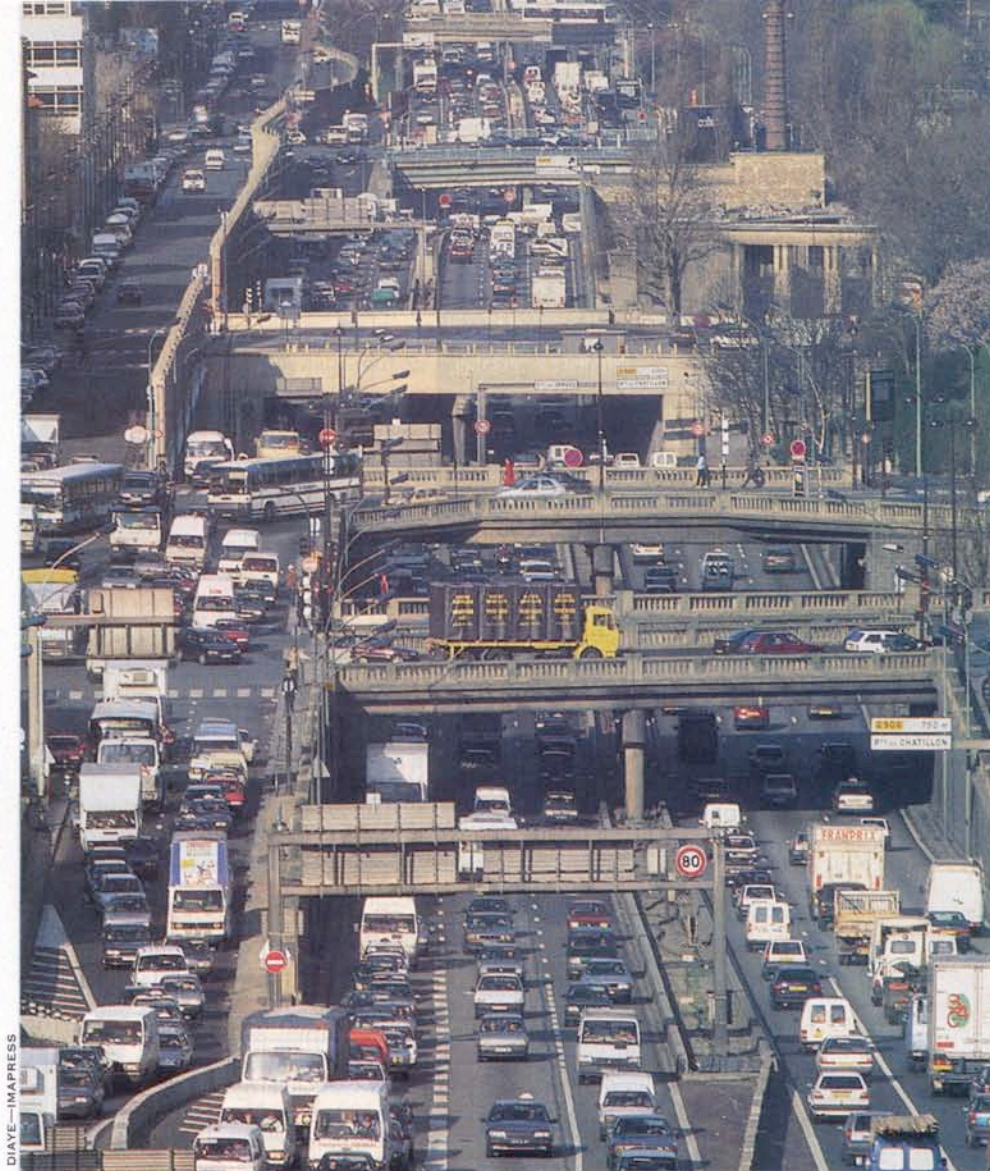
ulated—it's hard to find a spot that is naturally silent. For the past 10 years, the Dutch noise pollution debate has focused almost exclusively on plans to add a fifth runway to Schiphol Airport. Opponents claim it's a mistake to expand Europe's fourth busiest airport when it's located just 16 km from Amsterdam. Proponents of expansion counter that the new runway is vital if Schiphol is to maintain its status as a major gateway to Europe for passengers and goods. "Politicians still have to make a choice between economic growth and environmental norms," says Keimpe Wieringa of the R.I.V.M.

For Arnan Oberski, chairman of the Amsterdam Residents Group against Noise from Schiphol, the choice is clear. Oberski keeps a decibel meter on his balcony and claims that it regularly hits 100 dB and

higher as planes scream across the sky every 90 seconds during peak periods. "The sound of aircraft thundering over my head is extremely disturbing," he says. "It's an unfair invasion into your life resulting from other people's desire to make money." Marianne de Bie, spokeswoman for Schiphol Airport, agrees that expansion of the existing site would be "unwise in terms of safety and environmental considerations." Though Schiphol's fifth runway is due to be in operation by 2003, De Bie says the airport proposes that further growth take place on a purpose-built island off the Dutch coast linked to the airport by rail.

Cees van Ojik, a family physician from Zwanenburg, deals every day with the side-effects of living under Schiphol's flight paths. His campaign to stop the airport's expansion began more than 30 years ago,





DIAYE—IMAPRESS



THOMAS HALEY—SIPA

**ROAD TO RUIN** Parisians living near the city's *Périphérique* ring road, left, endure even more stress than those driving on it. Noise levels often exceed 90 dB

**SPEAKING OUT** Residents of the area around Roissy Airport outside Paris, above, take their grievances to the street in 1995

**CHILDREN FIRST** Kids are particularly sensitive to excessive noise. Studies have shown that sustained exposure can adversely affect their cognitive abilities

PETER MARLOWE—MAGNUM

## “[Traffic noise] is like a subway train blasting across

when he was given a confidential government report on the public health effects of a proposed new runway. “I was shocked,” he recalls. “The report said 70% of local people would suffer from excessive noise and 30% would have sleeping and/or anxiety-related problems.” The runway was built as planned in 1968, but a study carried out 10 years later showed that heart disease had doubled in the Zwanenburg area, and the use of sleeping pills increased 20-50%. “We’re back where we started,” Van Ojik muses. “People seem resigned to the fact that sickness is the price you pay for a healthy economy.”

“When a plane roars overhead,” says Van Ojik, “your heart rate goes up. This has a negative effect on the nervous system and is a factor in heart disease.” The sound of an aircraft engine goes straight to the heart because loud noises switch on our ‘fight or flight’ mechanism. Sustained exposure to loud and disturbing sounds means that the

body produces a steady stream of adrenaline, a state that can lead to hypertension, psychological problems and sexual dysfunction. A German study completed in 1992 by the Berlin Institute for Water, Soil and Air Hygiene found that individuals exposed to average noise levels of 65 dB during the day—roughly one-sixth of the German population—had a 20% higher risk of heart attack.

**K**IDS SEEM ESPECIALLY VULNERABLE to excessive noise. Studies carried out around Munich Airport found that noise from the aircraft adversely affected learning abilities in schoolchildren. The studies, published in *Psychological Science* in 1995 and 1998, tracked the cognitive abilities of students attending schools near Munich Airport when the facility was moved to a new site in 1992. Be-

fore and after the move, children from both sites took a range of psychological tests, including cognition, physiology and motivation. Researchers found reduced cognitive ability in the area of long-term memory and language comprehension in both groups of children during their residence near the airport. But these adverse effects disappeared in children at the previous airport site two years after the move, while exactly the same pattern of reduced learning ability occurred in children living around the new airport.

The extent and location of Schiphol’s future expansion should be decided by the end of the year. In the meantime, the European Commission has proposed a new directive which, if approved, would consolidate noise pollution requirements for a range of outdoor equipment—from lawnmowers and leafblowers to garbage trucks and that keening harbinger of autumn, the shredder/chipper. The idea is to label such





## my living room."

products with a "guaranteed maximum noise level," thus giving consumers a chance to assess weed whackers, for instance, in terms of quietness.

In some cases, there is a technological fix for intrusive noise. In the small town of Pegnitz near Nuremberg, hotelier Andreas Pflaum has created an oasis of natural sounds where weary travelers can take sonic refreshment. In the 200 sq m gardens behind his Post Hotel, guests are lulled by twittering larks and a purling fountain even as traffic roars down the busy highway running alongside the premises.

To maintain its own soundscape, the Post Hotel is outfitted with an array of directional microphones that track the sound of approaching cars and trucks. The microphones continuously transmit information about the location and intensity of this noise to a computer, which adjusts the volume of a network of loudspeakers accordingly. The loudspeakers play snippets of classical music

## A Voice Crying in the Wilderness

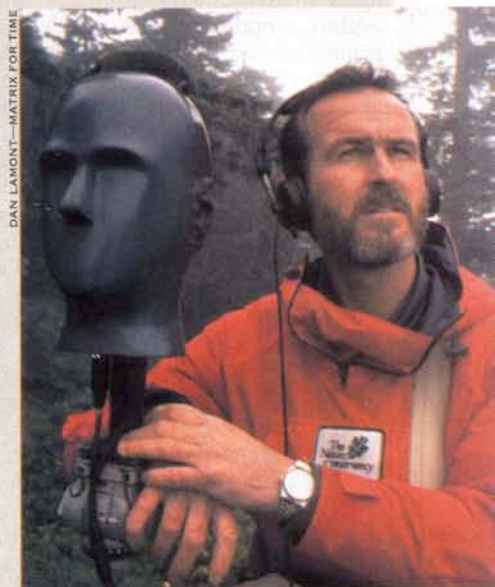
**W**HEN AMERICAN EXPLORERS LEWIS AND CLARK NAVIGATED THE COLUMBIA River in 1805, they first heard the roar of the Pacific Ocean 29 km from the coast—a distance so great that many historians have questioned its accuracy. No such doubts trouble Gordon Hempton, a 45-year-old professional sound collector who won an Emmy Award in 1992 for his *Vanishing Dawn Chorus*, a recording of the sounds of sunrise from around the globe. Hempton is an acoustic ecologist, a relatively new breed of environmentalist committed to preserving the world's natural sounds before they are drowned out by the din of machine noises. For the past 18 years, Hempton has forayed into some of the planet's most remote wilderness areas to record and preserve these endangered soundscapes before they vanish forever.

"Most people have the illusion that there are still quiet places on planet Earth," says Hempton, "but that's not the case." Indeed, noise pollution has become so bad that Hempton estimates intervals undisturbed by man-made noise in American national parks rarely exceed a few minutes. His long treks into the backcountry woods around Olympic National Park in the state of Washington where he lives are regularly interrupted by the roar of aircraft and the buzz of chain saws. "It's wonderful when insects begin to hum at dawn and you hear the countless wings beating from many square kilometers around you," he says. "Then you hear an insect you haven't noticed before—and of course, it turns out to be a jet."

But Hempton is fighting for the right to peace and quiet a few centimeters at a time. The Dawn Chorus Project would establish zero tolerance for human noise intrusions in 2.5 sq cm sites in 10 U.S. national parks. But since the roar of an airliner, for example, can carry 32 km, a vast area would have to be made noise-free to get those square centimeters of silence. The likely result: no more helicopter tours of the Grand Canyon, no more snowmobile rides in Yellowstone, no more boom boxes at Yosemite campsites. Officials with the U.S. Department of the Interior admit noise has become a problem and applaud Hempton's idealism, but they say his proposal is too extreme. "Gordon wants a pure sound, while we're more concerned with handling the worst noise sources," says Wes Henry, wilderness coordinator for the National Park Service. Not good enough, argues Hempton, who points out that the drive to attract tourists has increased noise levels and that airline flight patterns still routinely take planes over nature reserves. "[The Department of the Interior] is saying natural sounds are being protected," remarks Hempton, "yet there has never been a single acoustic inventory in any national park." As part of his project, Hempton intends to carry out these acoustic surveys, painstakingly cataloging the threatened sounds of nature: the faint lisp of snowflakes in winter, the rush of wind through pines.

Hempton believes people must realize that natural soundscapes should be conserved like any other endangered species. To achieve these islands of silence, he suggests some simple solutions: Alter flight paths, use pioneer methods to maintain trails and ban some forms of tourist activity. "National parks are like natural cathedrals," Hempton says. "The acoustic environments inside these cathedrals deserve the same respect we have inside our man-made cathedrals." Hempton's only prayer is that someone in the U.S. Department of the Interior is listening.

—By Dan Cray/Los Angeles



**SOUNDTRACKER:** Hempton recording the sounds of silence



to gently distract guests from the din of traffic, while the data gleaned from the directional microphones ensure that the volume of this protective sound screen ebbs and flows with the stridency of the noise. During evening rush hour, for example, the garden swells with Wagner's *Das Rheingold*. When all is quiet on the traffic front, the music fades too. "This kind of noise is a pleasure, not a pain," says Pflaum.

Musical interludes are also being used in Paris to introduce a note of calm. Louis Dandrel, self-professed "sound anthropologist" and head of the Paris-based firm Diasonic, is determined to blot out polluting noises—the rattle of motorbikes, the bleating of mobile phones—from the French capital's soundscapes. One of Diasonic's recent commissions came from the Music Pavilion in Paris' Villettes exhibition complex, which wanted an end to the deafening echoes and reverberating footsteps in a passage connecting a suite of offices to concert and exhibition spaces.

Dandrel made the corridor sing by rolling a wave of ambient sound along its high, curving walls. To this end, he placed

five sets of brass gongs along the corridor and hung a "sound cloud" in the shape of 12 small bells from the ceiling. The result is a something akin to a mechanical orchestra conducted by a computer. The soothing, meditative music it produces, says Dandrel, is "like a fugue, with the street noise as the contrabass, the gongs as the brass and the bells as the strings."

A similar principle is being applied at the high-speed train station at Roissy Airport outside Paris. At more than 100 dB, the sound of a high-speed train barreling through a station at 180 km/h is only slightly quieter than the sound of a jet airplane taking off. The delicate hearing mechanisms of the ear can be damaged by noise

at this volume, especially if it occurs in a sudden burst. So to protect passengers waiting on the platform, the sound system at Roissy is programmed to chime in when a train is within 1 km of the station. The speakers broadcast a rhythmic, synthesized music that builds to a climax as the train approaches, then does a slow diminuendo as it moves on. Since the ear is gradually prepared for the coming sonic shock of the train's approach, the risk of damage is greatly reduced.

The noisy nature of modern life is unlikely to be muted any time soon. But that doesn't mean that noise pollution is destined to drive us all mad or deaf. Sensible urban planning, innovative new technology and creative acoustic architecture—plus some old-fashioned good neighborliness—can go a long way toward restoring peace and quiet. And that may well be the best way to stop the sound of silence from becoming an endangered species. —*Reported by Anthee Carassava/Athens, Phil Couvrette/Paris, Abi Daruvalla/Amsterdam, Helen Gibson/London, James L. Graff/Brussels, Ulla Plon/Copenhagen and Ursula Sautter/Bonn*



**HEAR NO EVIL** High-speed trains produce a 100-dB roar, but special sound systems can soften the blow to the hearing mechanisms of the ear

## THREE SIMPLE SOLUTIONS FOR NOISE POLLUTION



**WORSE THAN THEIR BITE:** Parisians love their dogs, but many find the incessant barking a bit too much. In response, a few inventive Frenchmen are trying to turn the city into a no-barking zone. The AboiStop (Bark Guard) collar manufactured by Dynavet emits the scent of citronella or mustard, which dogs detest, every time the animal barks. As a result of this crash course in Pavlovian training, the dog eventually comes to associate the unpleasant smell with barking, and simply stops. Another collar called Bark Control made by Eurosos Systèmes emits high-frequency sounds, which dogs also detest, at every bark. The effect is the same: the dog learns that barking causes pain, and quickly shuts up. No doubt these forms of canine noise control would bring a knowing nod from Pavlov.

PAUL VILCOT—CFCU

**MEN AT WORK:** The jarring sounds of public utility and roadworks, especially when they occur at night or during weekends, are the source of some of the loudest complaints about noise pollution. The Compagnie Parisienne de Chauffage Urbain (C.P.C.U.), the public heating company in Paris, is working to reduce the impact of its activities on the city's acoustic environment. The C.P.C.U.

has developed mobile sound-suppressing containers to cover its construction sites. Placed over the work area, these modules keep most of the noise, caused primarily by pipe cutting, inside. A layer of sand strewn around the container absorbs escaping noise and dampens vibrations. The C.P.C.U.'s silent structures are a resounding success, halving construction site noise levels from 110 dB to a mere 55 dB.



PAUL VILCOT—CFCU

**BACK TO BASICS:** When neighbors are hosting an all-night rave, what you mainly hear from their sound system is the bass, which penetrates walls and minds with irksome ease. Now Dutch electronics giant Philips has developed the Ultra Bass sound system whose speakers, instead of actually producing bass notes, exploit the principle of the "missing fundamental" to create the illusion of sound. Complex tones consist of a low fundamental frequency and a series of higher frequencies called harmonics. If the human ear hears harmonics without their corresponding fundamental, the brain supplies the missing tone by itself. In Ultra Bass, Philips removes the music's fundamental bass tones while filtering the harmonics that accompany them back into the signal. The result: the rhythms of bass notes dance only in partygoers' heads—and neighbors have peaceful nights. —*J.G. Reported by Phil Couvrette/Paris and James L. Graff/Brussels*

