earning a deaf ear:

LOUD MUSIC & HEARING LOSS

Leigh Silverman

"God protects musicians. Otherwise, they'd all be deaf."

—Dr. Mead Killion

I can't hear you!" screamed the tour manager for the heavy metal group Overkill, as guitar riffs ripped through the phone receiver. "Whatdidya say?"

"I'm doing a piece for *Audio* magazine on hearing loss," I yelled back, holding the phone a foot away from my ear. "Can you spare an interview?" Drums rifled in over the guitars, drowning out our screaming match completely.

It is possible that as Mike Osgerby was talking on the phone, the hair cells in his inner ear were being damaged by the loudness of the sound check being done by the band in the same room. Unfortunately, we don't always know when our hearing is being damaged. When we do recognize a loss, it is often too late.

It is difficult to measure just how much damage pop musicians and their listeners have incurred, and susceptibility to hearing loss varies. We do know, however, that hearing loss is contingent on the duration and intensity of exposure. The Occupational Safety and Health Administration (OSHA) determined in 1970 that repeated exposure to 85 dB for more than eight hours could cause permanent loss, although OSHA regulations (Table I) permit exposures to 90 dB for eight hours a day, five days a week, over 40 years. For such exposure, the possibility of experiencing permanent loss is great, though the damage would be slight. The maximum continuous level permitted for two hours under OSHA regulations is 100 dB. Rock concerts expose most audience members to about 105 dB and often last longer than two hours. According to Dr. Alvin Katz, surgeon director at the Manhattan Eye, Ear, and Throat Hospital, "Someone exposing themselves to fewer than 10 rock concerts would probably develop hearing loss." Dr. George Haspiel of St. Luke's Hospital in San Francisco agrees: "Kids exposed to rock music—their ears look very much like those of war veterans who have been exposed to artillery."

Nobody wants to admit they have a hearing impairment, especially a musician whose livelihood depends on his ability to hear. But performers such as 44-year-old Commander Cody, a veteran Bay Area rock musician, are now recognizing the problem. Cody, a professional musician since 1969, suffers from tinnitus, a ringing sensation in the ears that can last for days after exposure to loud noise. Chuck Stevens, former drummer with the San Francisco-based rock group Addie, was forced into early retirement when he developed tinnitus and a physical intolerance to loud music. "Whenever I played," recalls Stevens, "pains would travel up my arms, into my neck, and into my ears." Bassist Jay Morse, previously with his namesake group Morse Code, gave up playing when he began noticing aural discomfort during rehearsals. (His band rehearsed at levels up to 134 dB.) Now Morse's ears are so sensitive that he has to wear earplugs when he walks down the street.

The human ear can distinguish frequencies between 20 Hz and 20 kHz, roughly equivalent to the range from the lowest note on a pipe organ to the highest overtone on a violin. A normal pair of ears is most sensitive to sounds

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Illustration: ©1988, Bob Zuba

Permissible Noise Exposure According To OSHA

Daily Duration, Hours	Sound Level, dBA SPL
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼	115

Figures given are for daily exposures per working day, over a 40-year working life. Hearing conservation programs are mandated whenever steady-state noise exposures per eight-hour period exceed 85 dBA. Impact noise may not exceed a peak level of 140 dB SPL.

between 1 and 4 kHz, and less sensitive to frequencies outside of this range. From 0 to 140 dB, the scale for sound pressure level (SPL) approximates the range of sound audible to the human ear without pain. Because we are able to perceive such a wide spectrum of acoustic energy, the units of intensity used for measurement are compressed by using a logarithmic scale (based on powers of 10) on which the sound power multiplies by 10 with every 10-dB increase. For instance, the sound of a motorcycle at 25 feet (90 dB) would have 1,000 times the power of two people carrying on a conversation in the same room (60 dB). A-weighted measurements of sound level (expressed as dBA) are made using a filter on the sound-level meter which matches its frequency response to that of the human ear.

The ear is an efficient, delicate instrument which converts sound energy—in a series of rapid, complex procedures—into electrical impulses which the brain interprets as sound. The outer, cartilaginous flaps of skin (pinnae) located on either side of the head serve to harness sound energy from the air and funnel it into the ear canals. The pinnae help us determine the direction from which sound is travelling. The auditory canal resonates at about 3 kHz, which is why the ear is most sensitive near that frequency.

The middle ear acts as an energy converter and safeguard against high amplitudes. As sound bumps up against the eardrum, which separates the inner and middle ear, this membrane oscillates in response to the changes in air pressure. These vibrations are translated to the oval window, a much smaller membrane opening onto the inner ear (or cochlea), via the three smallest bones in the body: The hammer, the anvil, and the stirrup. As high-intensity sound waves pass through these three ossicles, a muscle contracts, inhibiting the vibration of the stirrup. This process is known as the acoustic reflex.

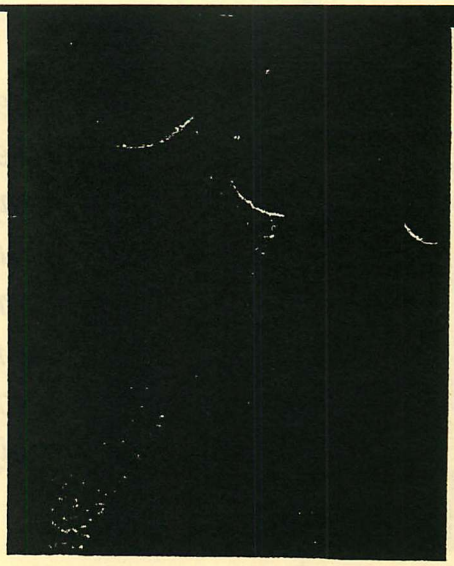
The inner ear is the sound receiver in this complex, high-fidelity system. A spiral-shaped chamber filled with fluid, the cochlea contains the basilar membrane, on top of which lies the organ of Corti, composed of about 20,000 hair cells. As sound passes through the oval window into the cochlea, it sweeps across the delicate hair cells, each of which is tuned to individual frequencies. When a hair cell is stimulated by acoustic energy at or near the frequency to which it is tuned, it sends electrochemical neural impulses to the brain, which reads the signals as sound. As intense sounds enter the ear canal, they bend the delicate hair cells along the basilar membrane. Usually, a good night's rest will restore them to normal. However, repeated exposure to loud noise will cause them to stiffen and die.

Noise doesn't have to be painful to be too loud. As high-intensity sound waves pass over hair cells, they first damage those that respond to upper frequencies. "The portion of the basilar membrane that controls high-frequency sounds," according to Dr. Maurice Miller, chief of audiology at Lenox Hill Hospital, "is extremely vulnerable because the blood supply to that part of the cochlea is not good, in addition to the fact that this region absorbs the greatest brunt of vibratory insult." Dr.

Typical Sound Levels

130	Air-raid siren
120	Live rock music Thunderclap Propeller aircraft Auto horn (3 feet)
	Discomfort Threshold
110	Pile driver Snowmobile (from driver's seat)
	Sandblaster
100	Subway train Pneumatic drill Diesel truck Police siren (100 feet)
95	Ride in convertible on freeway
90	Electric lawn mower Motorcycle (25 feet) Heavy truck (50 feet) City traffic
85	Average factory Electric shaver
	Hearing Loss Risk Threshold
80	Hair dryer Alarm clock (2 feet) Garbage disposal
70	Freeway traffic Noisy restaurant Vacuum cleaner
60	Conversation Air conditioner (20 feet)
50	Light auto traffic (100 feet)
40	Quiet office Quiet home
30	Audible whisper
20	Rustling leaves Broadcasting studio Soft whisper
10	Barely audible
0	Threshold of hearing

Hearing loss can develop in rock fans after fewer than ten concerts. Musicians, whose careers depend on their ability to distinguish sounds, are unfortunately at far greater risk.



Mead Killion of Etymōtic Research, a manufacturer of hearing-protection devices, agrees: "It is highly likely that the reason most people exhibit noise-induced hearing loss is because vascularization at the cochlea is not good, making it more susceptible to damage." Often, the initial hearing damage goes unnoticed until we harm our ability to hear the middle frequencies—those in the range of 1 to 2 kHz, which allow us to distinguish speech. Usually the first warning sign is the onset of a temporary threshold shift (TTS)—the muffling sensation that you sometimes get after a rock concert or high-level listening on your stereo. This means that if you normally can hear, say, a 1-kHz tone at 0 dB SPL, then after one to two hours of high-level listening, your shifted threshold for that frequency may be 40 to 50 dB. Typical recovery can take anywhere from a few hours to several days. Repeated exposure may result in a permanent threshold shift (PTS), in which hair cells undergo irreversible damage.

Sound reaches the inner ear via two pathways. It is either conducted by air into the ear canal, or it vibrates at the temporal (temple) bone, thereby stimulating the cochlea directly. Hearing loss associated with the outer and middle ear, in which something prevents the mechanical transmission of sonic energy, is called conductive loss. Some causes of conductive loss are perforation of the eardrum, infection, allergy, a bad head cold, and wax buildup. People with a conductive loss often show some or all of the following symptoms: Tolerance of loud sound, soft-spokenness (their own voice resonates in the inner ear, but everyone else's enters through the outer ear, so they often soften their voice to match others'), and the ability to hear speech well over background noise (their loss prevents them from hearing "white" noise and therefore allows them to concentrate on the person addressing them).

A more serious kind of hearing loss is the sensorineural type, which directly affects the cochlea or the nerve pathways from the inner ear to the brain. The main cause of this kind of loss is exposure to high-level sound. A person with sensorineural loss may hear voices clearly, but might have trouble understanding what the voices are saying because consonant sounds are high-pitched and weak in intensity. Words such as "laugh" and "gaffe" or "cake" and "bake" would start to sound alike. Someone with this type of loss might also speak unusually loudly. A person hears his own voice through bone conduction, and an inner-ear or nerve malfunction reducing bone conduction would make his own voice sound softer. Therefore, he would speak louder to compensate.

Tinnitus, a ringing sensation in your ears, can be caused by the ear nerves responding to noise trauma. It is a very common and early felt condition associated with sensorineural loss. This problem can also occur with conductive loss, however. Musicians should think of tinnitus as a danger signal. Although this condition may be episodic at first, it can evolve into a permanent condition after repeated exposure to excessive noise. The duration of tinnitus depends on the severity of the damage. A conductive loss may be medically treated or surgically repaired, so with this kind of loss, tinnitus can be temporary. Sensorineural losses, with rare exceptions, cannot be cured, so tinnitus in this case can well be permanent. The pitch of tinnitus is higher in sensorineural impairments than in conductive types, and it has been reported to reach levels as high as 70 dB. That's like listening to a vacuum cleaner placed right against your ear.

Another symptom that accompanies sensorineural hearing loss is recruitment, which is characterized by a sharp increase in a sound's perceived loudness after a relatively small increase in that sound's intensity. A person with this condition might hear 50 dB very faintly, while 60 dB might seem inordinately loud.

Pitch distortion, also a symptom of sensorineural dysfunction, can be especially detrimental to musicians. When this occurs, certain tones sound higher or lower than they really are. In other cases, one ear hears a tone normally while the other perceives the pitch as unusually loud or as noise instead of a pure tone.

A mixed type of loss combines conductive and sensorineural damage. An example of this is a person with a hereditary sensorineural loss who has an ear infection.

While excessive noise is primarily associated with hearing disorders, whatever sound enters the ear often affects the rest of the body. When the body registers loud noise, all parts of the organism stand alert. According to an article in *Science News*, Volume 121, June 1982, "The Environmental Protection Agency sums it up: 'The body shifts gears. Blood pressure rises, heart rate and breathing speed up, muscles tense, hormones are released into the bloodstream, and perspiration appears.' " It is evident that the body reacts to loud noise as it does to other types of stress.

The heart receives the most stress from noise. High-level sound can cause blood vessels to change in size (vasoconstriction), impeding normal blood flow. It can also produce a significant rise in blood pressure and an increase in cholesterol and triglycerides, which are known to create blockages in arteries.

The digestive tract also suffers from noise stress. One byproduct of hormonal activity is an increased secretion of hydrochloric acid in the stomach. In certain people, this can cause ulcers. Another recognized symptom is spasms along the intestines, leading to diarrhea or irregularity. As Martin Polon of Polon Research International points out, "One notices increased bathroom trips in roadies and rock musicians." Polon terms this phenomenon "disco dump."

The respiratory system remains reasonably unaffected by excessive

The first warning sign of hearing loss is usually temporary threshold shift, which makes sounds seem muffled as you leave a noisy club or remove your headphones after high-volume listening.

noise, but the reproductive system can become greatly influenced by sound-induced hormonal output. In men, research indicates that sound can increase sexual drive while diminishing sexual potency. In pregnant women, sound can alter the rate and form of fetal development.

Another hazard of high sound levels is a distressed immunological system. Research indicates that agents in our immune system—such as eosinophils, the white blood cells that fend off allergies, and gamma globulin, a plasma protein that fights various diseases—become scarce when the body is subjected to high noise levels.

Psychological effects range from irritability, tension, and insomnia to symptoms as severe as epilepsy. A high amount of sonic exposure can also induce unwanted levels of chemicals in the brain.

With these facts in mind, one wonders how detrimental sound levels could be all but ignored by the music world. Perhaps the biggest factor is fear. Says Dr. Michael Santucci, audiologist with the Chicago-based Sensaphonics Inc., "Rock musicians are afraid of what might have already been done. Or they want to be able to say that they can play loud and it doesn't bother them." An unavoidable stigma surrounds hearing loss. We tend to associate rock and roll with youth, while deafness evokes old age. And even those who are concerned aren't always willing to wear hearing protectors, especially on stage. Jimmy Matheos, guitarist with the heavy metal group Fate's Warning, wears earplugs during practice sessions. But when it comes to performing, he says, "It takes away from some of the energy I feel on stage." Perhaps in some cases, sheer neglect prevents musicians and those who engineer their music from conserving their hearing. In a survey performed by Sensaphonics on the Engineering and Recording Society (EARS) of Chicago, 94% of the respondents felt they had experienced hearing loss, but only 14% had ever been tested for it. Only 66% had ever used a sound-level meter to monitor their work environment.

In a 1986 audiometric survey, members of the Los Angeles chapter of the Audio Engineering Society—which includes some professionals who are regularly exposed to high-level sound—were found to exhibit some hearing loss. Among those tested were recording and mixing engineers, managers, manufacturers, salespeople, students, teachers, and clerical workers. Over 10% exhibited impairment at 4 kHz, and all groups showed some damage in the range from 4 to 6 kHz. The loss averaged 15 dB, and it was considered significant enough to be attributed to noise exposure and not simply to aging. Results of this screening were consistent with surveys performed in 1975 and 1976.

Some musicians, however, are taking the issue into their own hands. Bassist/vocalist Kathy Peck decided to do something about her hearing after suffering an acute case of tinnitus following a San Francisco performance by Duran Duran and her own group, The Contractions. Peck heard "bongo drumming" in her ears for days and finally saw a physician, who informed her that she had suffered a 40% loss. Her loss was a gradual one, resulting from otosclerosis—the growth of a spongy bone over the stirrup, impeding its movement. Loud music had aggravated her condition. Peck teamed up with Dr. Flash Gordon (yes, that is his name), medical director of the Haight Ashbury Free Medical Clinic, to form the H.E.A.R. Project (Hearing Education and Awareness for Rockers). Peck and Gordon have plans to initiate a free screening program and to make information on hearing conservation available to the rock industry. Recently, the organization sponsored a benefit at the Rock Bowl in San Francisco. Participants heard lectures, read about hearing conservation, and received free earplugs. Peck, who has a conductive loss, concedes that a lot of people in the industry are hard of hearing. "It's a sad thing," she says, "because rock musicians aren't really invincible. We're human."

At a rock concert, much of the potential sound damage depends on the size and structure of the performance space. Says Polon Research International's Martin Polon, "Some halls eat up more sound than others." Large arenas tend to have long reverberation times—especially since, unlike small clubs, they're not usually equipped with sound-absorbing material such as curtains or carpeting. Professor Steven Berman of the Medical College of Pennsylvania says that "a lot of these places *want* the music to stay loud, so they're not acoustically treated." At outdoor stadiums, of course, the volume has to be turned way up because there are no walls for the sound to bounce off.

A typical sound system used in an arena is powered by 50,000 to 100,000 watts of amplification, says John Stillwell of Dawk Sound. Stillwell, who has engineered Bruce Springsteen's concerts, says The Boss regularly uses 100,000-watt sound systems. The speakers are aimed at the audience, but sound pressures on stage, near the speakers, can be as high as, or higher than, those reaching the audience. In addition to the 200 to 220 speakers aimed at the crowd, there are monitors pointing at the musicians from no more than 3 or 4 feet away. Further, the bodies and clothes of the audience tend to sponge up the sound; as a result, according to a 1974 report in *Acta Oto-Laryngologica*, sound levels in the sixth row have been measured at approximately 15 to 20 dB less than on stage. Dr. George Haspiel of St. Luke's Hospital confirms this: "The lead singer gets the blast sooner than the audience. Sound loses its power as it travels, so he gets it worse than the crowd." Jimmy Matheos of Fate's Warning feels that drummers may be at greater risk than other musicians: "Our drummer is not right in the main line of action, but he's got a drum monitor aimed right at his head."

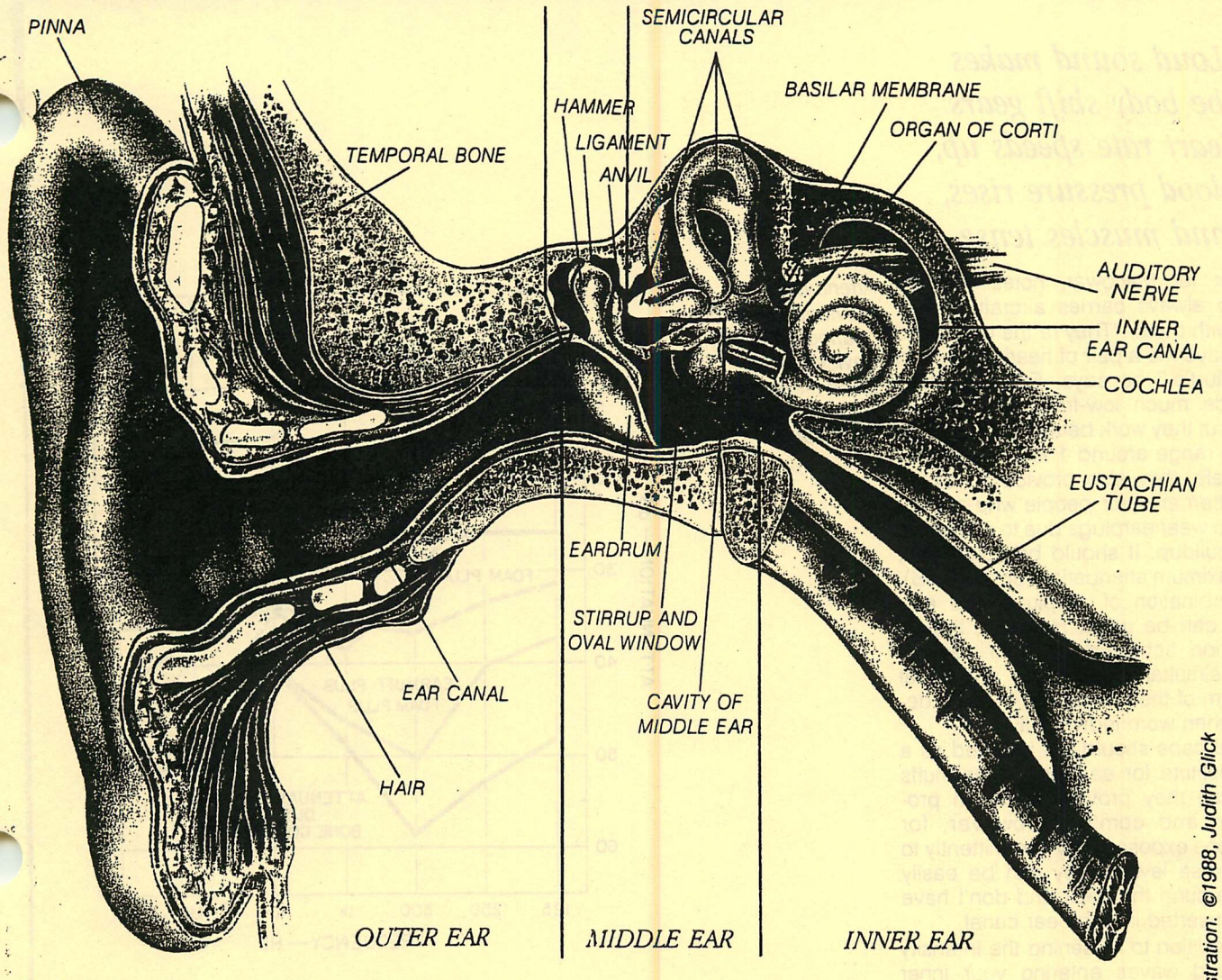


Illustration: ©1988, Judith Glick

The human ear is a complex, valuable, and vulnerable organ.

Manowar has been documented as the loudest band in the world by the *Guinness Book of World Records*. Claims the group's bassist, Joey DeMaio, "Rock music has to be played at a certain level to be appreciated." Commander Cody agrees: "Part of the political statement of rock 'n' roll is that it's loud and parents don't like it." But unlike many groups, the members of Manowar take the necessary precautions to preserve their hearing by wearing earplugs.

With over 125 types of hearing protectors in the market today, it's not difficult to find one to suit your individual requirements. Hearing-protection devices (HPDs) come in many shapes and sizes, and you will need to experiment, through trial and error, in order to find one that offers the optimum comfort and protection.

There are three different types of HPDs. Earplugs are inserted directly into the ear canal and come in various types of material, including foam, rubber, wax, plastic, and fine mineral fiber. Earmuffs are worn over the head, with a cup over each ear. Canal caps are held against the outer ear by a headband. Earmuffs and plugs both provide high attenuation, but most rockers choose earplugs for their combination of convenience, cosmetics, and comfort.

The most important thing to remember when trying various earplugs is to find a brand that will provide a tight seal. As Elliott H. Berger of E.A.R. Division has pointed out, sound can easily pass by a loosely fitting plug, lowering attenuation by 5 to 15 dB. A well-fitting plug will reduce the sound pressure level anywhere from 20 to 35 dB. All HPD manufacturers supply Noise-Reduction Ratings (NRRs), indicating their product's effectiveness. Always read the accompanying instructions in order to get the proper fit and to ensure maximum attenuation. Foam plugs, such as the E-A-R or Husher brands, provide a comfortable fit and high protection, and can be purchased at any drugstore. They're not messy, like wax inserts, and mold to any ear canal. Rubber plugs—such as the Sonic II, manufactured by North Co.—can be used regularly. Although these don't offer the comfort of E-A-R plugs, they have a built-in diaphragm which slightly reduces the muffled effect often associated with hearing protectors. Richard Sanders, manager of the bands White Lion and Overkill, finds that Sonic II earplugs help him endure what he terms "painful" rehearsals. Custom-made ear molds provide less attenuation (usually 15 dB), but they are designed specially for your ear and therefore can provide maximum comfort. While no plug can deter sound from entering your inner ear via skull bone or tissue, custom ear molds are designed so that the plug does not vibrate within the ear canal, thereby transmitting the vibrations to the cochlea.

Though not cosmetically suitable for performing musicians, earmuffs are often used by roadies and sound engineers. Rich Breen, head recording en-

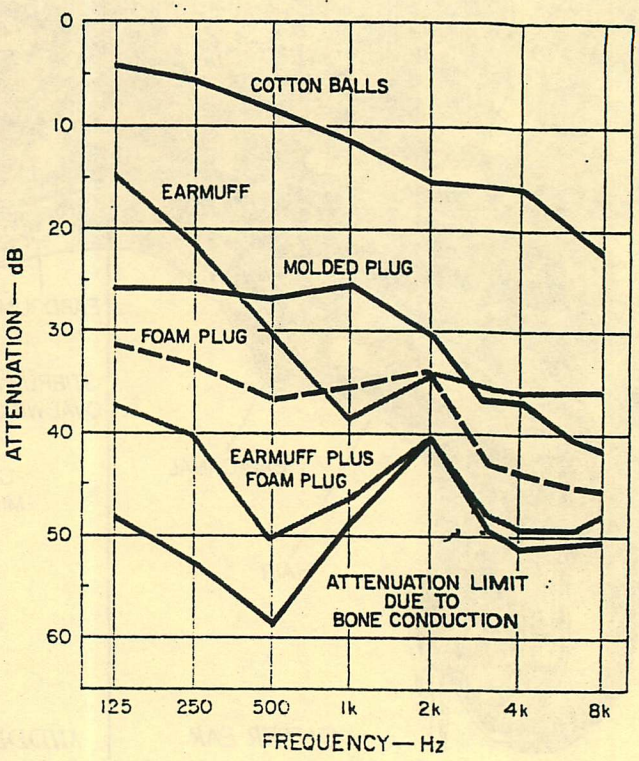
Loud sound makes the body shift gears: Heart rate speeds up, blood pressure rises, and muscles tense.

gineer for Manowar, notes that the group always carries aircraft protectors with them. "They're the only band that gave me a pair of hearing muffs in the studio," he says. Earmuffs don't provide much low-frequency protection, but they work better than earplugs in the range around 1 kHz. During rehearsals, they also provide an excellent alternative for people who are unable to wear earplugs due to excessive wax buildup. It should be noted that, for maximum attenuation (up to 40 dB), a combination of earplugs and earmuffs can be used. However, the attenuation achieved by both devices worn simultaneously does not equal the sum of the attenuation of each device when worn individually.

Canal caps should not be used as a substitute for earplugs or earmuffs because they provide minimum protection and comfort. However, for someone exposed only intermittently to high noise levels, they can be easily worn around the neck and don't have to be inserted into the ear canal.

In addition to lessening the intensity of sound waves entering your inner ear, HPDs can also help you discriminate sounds better in noise environments exceeding 85 dB. The ear, like an amplifier, goes into a distortion mode at high levels. This phenomenon is called clipping. An HPD reduces the sound level so that the ear can function adequately. According to Dr. Gordon of H.E.A.R., "Just as an amp can clip at high output levels, the transducers in your inner ear can also distort by having the input energy at too high a level. By putting earplugs between the inner ear and the sound source, you can avoid that clipping." HPDs also cut fatigue, allowing musicians to play for longer periods.

One complaint often heard from rock musicians is that HPDs make them feel as though their head were in a barrel. This condition is called the occlusion effect. When the ear canal is blocked, sounds conducted through the skull are more easily heard, causing the HPD-wearer's voice to resonate inside his head. Inserting an earplug deeply into the ear canal diminishes this muffling sensation, but no earplug can completely skirt the occlusion effect. As Dr. George Haspiel says, "The more stuffed up you feel, the better job the plug is doing." Elliott H. Berger, however, adds that inserting a plug more deeply will offer increased protection as well as diminished occlusion. Members of Manowar avoid the sensation of stuffiness by wearing one earplug, alternating ears daily.



Attenuation provided by various hearing-protection devices. After Elliott H. Berger, High Fidelity (July 1988).

Some recent developments have been made in HPDs to reduce occlusion. Etymotic Research has designed an earplug called the ER-15, which attenuates at low frequencies as much as it does at high frequencies. This custom-fit ear mold blocks out 15 dB, and it can provide the listener with clearer, more balanced reception. It is recommended by the manufacturer for "the person whose hearing is not really at risk, but who would prefer to hear without discomfort at amplified music concerts." Another recent development is now available from Sensaphonics. This custom earplug has a flat response (attenuation is constant at all frequencies), knocks out 23 dB, and has a built-in valve that allows for ventilation within the ear canal. Dr. Santucci notes that all custom earplugs shrink and need to be replaced every 10 to 12 months.

But hearing conservation goes beyond earplugs and earmuffs. It is an attitude, and an awareness. Dr. Santucci recommends that anyone exposed to loud music on a regular basis take precautions. First, educate yourself as to the possible dangers. Next, measure your sound environment with respect to loudness, duration, and proximity to the sound source. Reduce your exposure by wearing personal ear protectors and by taking longer breaks between loud playing or listening sessions. (Studio engineers and musicians should use headsets which have independent volume controls.) Also, have annual or semiannual hearing checkups for air-conducted and bone-conducted sound, speech understanding, and proper functioning of the middle ear and Eustachian tube. These checkups will help ensure the effectiveness of your program and will monitor any hearing problems unrelated to loud sounds. Finally, use common sense. As bassist Jay Morse advises, "Anyone who goes to dance clubs, rehearsals, or concerts should listen to their ears. If things sound too loud—they are."

Townshend says Who will lower the decibels

Now that the Who has announced plans to reunite for a summer tour starting June 24, guitarist Pete Townshend explains his longstanding reservations about playing live.

"The reason I haven't performed live for a long time is that I have severe hearing damage," Townshend tells People magazine. "I've actually disabled myself doing my job and it's painful and frustrating."

Townshend says he'll use an acoustic guitar instead of a loud electric guitar during the upcoming tour.

The band will have a new stage monitor system, keeping the sound to 96-100 decibels on stage (it will be higher for part of the audience), compared to the "terrifyingly loud" 106-108 range The Who used to experience every night, Townshend says.

Noise levels became the chief source of discord on a 1982 tour.

The trauma of living in a world of silence

DEAR ANN — I am very close to taking my own life and the guilt is unbearable. I am only in my 30s and becoming more deaf every day.

My social life has come to a stop because I find it impossible to pretend that I can still hear. My young son tells me what went on in school and he becomes angry with me because I can't hear him. My older boy becomes frustrated and screams, "Are you deaf? Can't you hear me calling you?" My husband thinks it is harder on him and the boys than it is on me. Little does he know the agony I go through.

I saw an ear surgeon last month who told me about an operation for nerve deafness, but unfortunately, he doesn't think it would help me. My hearing aid is no longer a help. It whistles like crazy because I have it turned up so high.

My husband becomes very impatient and yells at me because we cannot communicate. He doesn't realize that the noise in my ears is driving me insane.

Please suggest something, Ann. I am truly desperate.

— *New York*

DEAR NEW YORK — I called Dr. George Shambaugh, professor emeritus of otolaryngology at Northwestern University Medical School. He said it sounds as if you have a progressive nerve loss. This sometimes runs in families.

There is a possibility that nerve loss can be caused by an allergy or a nutritional deficiency, mostly zinc. He said you need to see a doctor who knows about allergy and nutrition-related deafness.

I hope you will get counseling to help you deal with depression. It is not uncommon for people with hearing problems to become depressed. Your husband should go with you for the first few sessions. He needs to understand what you are going through and from your letter it sounds as if he doesn't have a clue.

Article Summary

Title_____ Date_____

Summarize this article in 2-4 sentences.

What is the issue or controversy?

How does this issue relate to what we are studying in class?

What is your opinion on this issue?

Name one interesting or startling fact you learned from the article?