

Music the great catalyst

The theologian Richard Hooker remarked in 1597 that music is “a thing which delighteth all ages, and besemeth all states; a thing as seasonable in grief as in joy”. And, as Lorenzo whispers to Jessica in ‘The merchant of Venice’, “The man that hath no music in himself / Nor is not moved with concord of sweet sounds / Is fit for treasons, stratagems, and spoils”.

Such notions indicate that people have long been fascinated by the connection of music with state of mind and elements of character. Research in recent years has provided evidence that listening to music is capable of relieving pain, assisting weight-loss, combating depression and promoting longevity. Music can do much to relieve stress, provided the right kind of music is chosen; otherwise it may increase cortisol levels and have the reverse effect. And since mothers first nursed their infants, it is apparent that music helps one to sleep. The world has a wealth of cradle songs.

Moreover, it is not only listening that helps one's mental and physical state. Performance, using the voice or an artificial instrument, performs a similar function. A research note published in *New Scientist* for 14 July draw



attention to the finding that playing a musical instrument may increase a child's intelligence quotient. It has been judged that studying music increases mathematical or spatial skills, possibly because the child learns to organise information into patterns. Research carried out in Toronto on six-year-olds has shown that keyboard and voice training produces a significant rise in IQ — more than drama exercises.

There is some argument about how long such an effect endures, but it is claimed that five years is a reasonable estimate. The claim is also made that the practice of music has beneficial effects in counteracting the adverse effects on a child of watching too much television.

How conventional breeding techniques may lead to a naturally decaffeinated coffee bean

In *Nature* for 24 June a group of biochemists from Brazil describe a method of producing a decaffeinated beverage without having to process a harvested crop of coffee grown in the usual fashion. They point out that, as a result of discovering the adverse effect of caffeine experienced by some coffee drinkers, the market for artificially decaffeinated beverage has risen worldwide until it comprises some 10 per cent of the total demand, despite the admitted loss of important flavouring constituents during industrial processing. They argue that it is practicable to raise a crop of coffee that contains 50–70 per cent less of the alkaloid by a process of genetic breeding.

A naturally low-caffeine variety of *Coffea arabica* has been discovered in Ethiopia whose beans are of high quality for preparing a palatable coffee. By means of intraspecific hybridisation, commercial varieties of arabica coffee plants might be raised, and this variety is at present the most cultivated and most consumed in the world. Moreover, biotechnological attempts have already been made to

reduce caffeine synthesis by impeding the effect of genes controlling key enzymes in its biosynthesis.

A study of 3,000 coffee trees in Brazil revealed that three of 300 derived from Ethiopia were almost free from caffeine, according to liquid chromatographic analysis of methanolic extracts of the seeds, having in fact a mean caffeine content of 0.76mg/g dry weight. This compares with a figure of 12mg/g for a commercial cultivar of *Coffea arabica*. Leaves and other parts of the fruit were also deficient in the alkaloid. These plants accumulated the immediate precursor of caffeine, theobromine, indicating that caffeine synthase, which converts it into caffeine, was deficient.

Thus, the naturally low caffeine content found in the new cultivars is unlikely to be attributable to enhanced degradation of the end product. Using conventional breeding techniques, a naturally decaffeinated *C arabica* bean is feasible, doing away with the present need for solvent extraction.

Man's inhumanity to man exposed by US treatment of prisoners

The 29 July issue of the *New England Journal of Medicine* makes grim reading. In it Robert Jay Lifton of Harvard and Susan Bachrach of Washington describe two deplorable episodes in recent human history which make one wonder whether any moral principles govern the world of power politics and whether the individual conscience is a machine that can be turned on or off as circumstances dictate.

Dr Lifton writes of the “broadening scandal” unleashed by increasing evidence that US doctors, nurses and other medical personnel have been implicit in torture and other illegal procedures in Iraq, Afghanistan and Guantanamo Bay. He remarks that we know that medical attendants have failed to report to higher authorities wounds that were clearly caused by torture techniques and have failed to take steps to interrupt such torture.

Moreover, prisoners' medical records, rightly regarded as confidential, have been released to interrogators who were bent on using them to explore weaknesses and vulnerabilities. Such medical details affording the military interrogators access to records have been provided in spite of complaints by the Red Cross, and the practice has disgusted civilian psychiatrists. And it appears that some death certificates of prisoners have been falsified to suggest death from natural causes instead of as a result of maltreatment.

As Lifton points out, a physician in a military environment is in a strange situation, being committed by his Hippocratic oath to the healing of individuals but by his position in the military hierarchy subject to orders from a superior. In his book on the Nazi doctors (1986), Lifton discussed “the most extreme example of doctors' becoming socialised to atrocity”. In adding to this discussion Bachrach has further pursued the appalling ideas of racial hygiene which the Nazis promoted in the name of public health. In Germany, influential racial hygienists and eugenics fanatics stimulated the control of reproduction and marriage and extended it to the mass murder of individuals regarded as threats to society. If the medical profession is not careful, its attitude towards prisoners in custody may make it as distrusted as the political profession has become. As Burns put it in 1786: “Man's inhumanity to man makes countless thousands mourn!”

Sweet are the uses of philosophy

“To teach to live without certainty, and yet without being paralysed by hesitation, is perhaps the chief thing that philosophy, in our age, can still do for those who study it.” — Bertrand Russell: ‘Introduction to history of Western philosophy’ (1946).