

Jeanne d'Arc and relics from a pharmacy attic

Jeanne D'Arc — or Joan of Arc — has her feast day on 30 May, the date on which she died in 1431. She was born in about the year 1412, from a peasant family of Domremy in France, and had a chequered career.

Her nation was at that time in conflict with the English and, in 1425, she had a vision that she had been chosen to lead an army to victory. She convinced the then Dauphin to put her in charge of the troops that were to relieve Orléans in 1429. However, two years later, Jeanne was betrayed to the English, brought before her accusers and convicted of heresy and sorcery. She was burned at the stake. Long afterwards, in 1920, she was canonised as Saint Joan.

In 1867, what was believed to be her remains were discovered in a jar in the attic of a Paris pharmacy. They were accepted as genuine by the church and were taken to a museum in Chinon.

In a commentary published in *Nature* for 5 April it is explained that a forensic scientist in Garches obtained permission to study the relics, only to find that they came from an Egyptian mummy. There was a charred human rib, pieces of carbonised wood, a fragment of linen and a cat femur. The remains were examined by spectrometry, electron microscopy and pollen analysis.

One feature of the examination was an analysis of the odour of the relics, which was suggestive of burnt plaster and vanilla. It is recorded that Jeanne was burnt on a plaster stake to prolong the process, but the odour of vanilla results from the decomposition of a mummy. The black crust on the rib and cat



femur was consistent with an embalming mix of wood resins, bitumen, malachite and gypsum. The cloth was apparently a mummy wrap. Moreover, large amounts of pine pollen were present. Pines did not grow in Normandy in the 15th century, but pine resin was common in Egyptian embalming. Radiocarbon analysis produced a date between the third and sixth centuries BC.

The claimed relics of Jeanne D'Arc are bound to excite some controversy and add to the legends surrounding that young woman.

Health impact of the great US gun culture examined

An editorial in the 28 April issue of *The Lancet* goes into some of the aspects of violence in modern, and supposedly civilised, cultures in the light of the recent slaughter of 32 university students and teachers in Virginia. The affair has raised debate over the question of whether the situation in the US might be improved by stiffening gun laws or by increasing liberalising gun possession so that self-defence becomes easier.

Violence, whether carried out by criminal organisations or individuals, is a problem facing all communities throughout the world and its incidence is rising. It is fuelled by social inequalities, victimisation and a growing failure of social trust between different strata in a divided society.

The US has the highest gun homicide rate of any industrialised democracy. A Harvard survey of 2004 estimated that there were some 383 million firearms in the US, privately owned by 38 per cent of households and 26 per cent of individuals. Access to guns is readily available even to teenagers.

Although interested parties argue that citizens have a right to self-defence, guns are more often used offensively or for suicide than to defend someone under threat. In 2003 more than half the guns retrieved from scenes of shootings were traced to 1 per cent of dealers. Reducing illegal sales of guns and policing them off the streets in some places has resulted in distinct reductions in crime.

Obstacles to progress include problems with the collection of statistics. Criminal background checks of sales by gun dealers are destroyed within 24 hours and no records are kept of private second-hand sales, which account for 40 per cent of gun transfers in the US.

In order to discover the motives for mass murder, a forensic psychologist in the University of California has studied 30 adults and 34 adolescents who committed multiple murders in North America between 1949 and 1999. He found it difficult to assess their psychological state because two-thirds of the adults either committed suicide or were shot by police after committing their crimes, while most of the adolescents survived but left limited medical records.

However, certain characteristic patterns emerged from the study. Mass killers tend to be socially isolated and resentful individuals, often demonstrating antisocial and narcissistic personality traits. They often suffer from major depression or are paranoid. Many stalkers go on to commit acts of violence. There is often no evidence of uncontrollable rage, but killings are carried out with a clear head. Such characteristics make it difficult to avert a tragic outcome.

Is cruelty of use in the process of evolution?

Some comments in the 12 May issue of *New Scientist* make interesting reading. Social scientists have long explored the basis for much social behaviour such as altruism and jealousy as agents in the process of evolution, but little has been heard about gratuitous cruelty. Nevertheless, individuals and groups have shown almost unbelievable cruelty in dealing with one another over the centuries, and such behaviour must have at least some biological basis.

The attitude of cruelty does not seem to offer any evolutionary basis. It is most likely a throwback from the remote past. It is not long ago that humans lived as hunter-gatherers in small groups and, in some remote areas of the tropical rain forests, some still do. There is safety in numbers, and groups can specialise in individual tasks provided that associated groups will carry out other

essential tasks. There is open hostility towards any other group that competes for food and territory, but the group itself may be loving and caring.

The interests of security and co-operation confer advantages on an organised community, with conflict caused only by outside groups. But even today, different groups can be persuaded by those seeking power and dominance to regard competitor groups as inferior or even subhuman.

Viewed in that light, attempts at the elimination of competitors by brute force can be justified in rhetoric. Beliefs may be picked on as easily as living habits.

Cruelty is the easiest solution to achieving power in a society both to make a material advance and to whip up the support of others of like mind. It is therefore necessary to keep a close outlook upon its manifestations.