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PRICE

FIRE HORROR IN PARIS

Over 200 Lives Lost in a Bazaar Where the Duchesse d'Uzes Presided.

CAUGHT IN A DEATH TRAP

The Duchesse d'Alencon, a Sister of the Empress of Austria, Reported Missing.

M. FAURE SEES THE DEAD IN THE PALAIS DE L'INDUSTRIE.

Several Bodies Identified as Those of Titled People—Families Distracted by the Inability to Find Relatives and Friends.

PARIS, May 4.—Fire broke out at 4 o'clock this afternoon in a crowded charitable bazaar in the Rue Jean-Goujon, at which the Duchess d'Uzes and other well-known patronesses were in charge. Fifteen hundred people were present. Many were burned to death, and there was a terrible panic, during which a large number of persons were injured. One hundred corpses have been laid out in the Palais de L'Industrie, and it is believed that 100 more are in the ruins.

One hundred and eighty injured persons have been conveyed to the Hôtel du Palais, in the Cour de la Reine, but many of the critical cases have been transported to the Hôpital Beaujon.

The only bodies which have been recognized with certainty are those of Mlle. Henriette Hinihsdal, Baroness Elizabeth St. Martin, Viscountess Marie Bonneval, Sister Guinoux, the Superior of the Sisters of the Convent of St. Vincent de Paul at Raincy; Mlle. de Grancy, and the Comtesse St. Perrier, the Baroness St. Didier, Mme. Lau-

POWERED KILLED

Three Railway in Acc.

May 1. Passenger killed on railway near Paris.

YIELD \$1.02.

Our Get Little in Luck.

May 4. Seven killed in New York caused by fire.

THREE EYES.

Given Birth to.

Y. May 4.—Mrs. ... yesterday gave

ordinary still, one of ... in the ... and the ...

THE CURTAIN.

When Trouble for ... in Chicago.

Contributor ... and to ... Theater had ...

The ... however ... for unpaid ...

ELEVEN LIVES.

ave a Medal for a ... Man.

Y. May 4.—Robert ... from ...

... home just ...

WISKY COMPANY.

age to Perfect the ...

... B. M. ...

IDENTIFYING THE DEAD

When a person dies unexpectedly, or in unusual or violent circumstances, in Australia it is generally the responsibility of forensic pathologists to establish the cause and mechanism of death. Sometimes the deceased person's identity is not known, in which case identification can usually be resolved by comparing some form of ante-mortem record with post-mortem findings at autopsy. This can be done in various ways, such as fingerprint comparison.¹

However, not all human remains are suitable for such comparisons. This may be because of post-mortem alteration of the body by putrefaction, burning or traumatic physical injury. In such circumstances the skeletal remains provide the most robust source of information. In life the teeth, being the only parts of the skeleton naturally exposed and visible, are more likely to have been documented in some way. Photographs of the living person may show them smiling, revealing the number, shape and arrangement of the front teeth, which may be sufficient to establish identity. The person's treating dentist can furnish X-ray images of the teeth and jaws. These also provide information about past treatments, such as placement of fillings and other restorations.

Fortunately, the teeth (and materials used by dentists to repair or replace them) are usually very resistant to breakdown. Teeth's mineral component does not melt below 1600 °C—higher than the melting point of most metals. Further, as dental tissues are progressively subjected to increasing heat, the sub-microscopic apatite crystals, which provide teeth with their hardness in life, fuse by sintering, so that even after the complete combustion of any binding organic components of the teeth has occurred, their morphology and component tissues remain, albeit in a shrunken and friable state. Dentures or false teeth are made of metal or acrylic, both extremely resistant to chemical destruction. Although acrylic is vulnerable to burning, such dentures, protected at the expense of the oro-facial tissues enveloping them, frequently survive a fatal conflagration.

Once a putative identity has been established, and because almost everyone in Australia has had a dental examination at some stage of their life, excellent records often exist for comparison with these most persistent and stable parts of the remains. The considerable recent success in preventing dental disease across the population has brought a paradox: as wealth and education increase and dental decay and extractions

Cat. 43 'Fire horror in Paris: Over 200 lives lost ...', published in *The New York Times*, 5 May 1897, newspaper cutting, 56.0 x 45.0 cm. HFADM 3120, Henry Forman Atkinson Dental Museum, University of Melbourne. The modern era of forensic odontology began with the identification of the victims of the fire in the Bazaar de la Charité, which occurred on 4 May 1897 in Rue Jean-Goujon, Paris.

decline, appearance assumes a greater importance. The result is that more, rather than fewer, highly detailed dental records are generated. Many young people with no evidence of dental treatment in their mouths may still have had their dental status very carefully and comprehensively recorded somewhere. The problem is how to locate the corresponding ante-mortem records. Responsibility for this task lies with the police, but the odontologist can help interpret the records collected.

Also, the huge improvement in dental health as a result of fluoridation and other preventive measures is not universal. Disadvantaged people still carry an unacceptable burden of oral disease. Many live in difficult circumstances that result in vulnerability to premature death and violent, sometimes fatal, crimes. This group is therefore over-represented in cases referred to the coroner. In life, many disadvantaged people cannot afford private dentistry; they may attend the Royal Dental Hospital of Melbourne or community centres which, as teaching institutions, keep exhaustive dental records.

For people young and fortunate enough to avoid tooth decay, there is a concomitant increased social awareness about the importance of good physical appearance to a sense of well-being and employability. This has brought greater demand for orthodontic treatment, which may require removal of some teeth and repositioning of others using a removable or fixed appliance. Such appliances, being handmade and unique to the wearer, may help identification. In addition, orthodontic examinations generate useful sources of information, such as X-rays of the whole head and plaster casts of the entire dentition.

Humanitarian reasons for identifying human remains include the need for authorities to be able to return the correct body to the next-of-kin; for people to know the fate of a family member and understand the circumstances of death; to afford the bereaved an opportunity to grieve; and for the next-of-kin to dispose of the remains and commemorate the person's life. Legal reasons include the need to reconstruct the circumstances of an accident or crime; to collect evidence for criminal prosecutions; and questions of inheritance, insurance, litigation, compensation, taxation and social security payments.

People to be identified may include individuals who go missing—very young children, for example, or the elderly wanderer with Alzheimer's disease—then get lost and die; people who commit suicide; and victims of accident, murder, natural disasters, inter-ethnic violence, terrorism, politically motivated violence, and genocide. Forensic investigations are highly inferential and hence heavily dependent upon the practitioner's ability to construct likely scenarios based on limited evidence—in this respect they are like archaeology or

palaeontology, but overlaid with rigorous legal requirements. Forensic odontology also has to cope with incomplete or altered remains, fakes, frauds and attempts to deceive or thwart the investigator. Ours is largely a comparative discipline, but deciding what to compare, how to do it and in which sequence can be difficult, because some types of examinations destroy the evidence needed for others to be performed. A close working relationship between coroner, pathologist, police and odontologist is essential.

Molecular biological techniques can be unparalleled in their capacity to identify deceased individuals when corresponding ante-mortem samples are available. However, in real-world situations their applications are frequently limited. DNA analysis cannot distinguish between identical twins for instance, whereas simple dental morphological comparisons often can. DNA analysis tells us nothing about the life of the deceased; with intelligent interpretation, much can be inferred about a person's life from post-mortem dental findings, even without ante-mortem dental records.

For DNA comparisons, the consent of the mother or siblings to provide corresponding biological samples is often required. When a family is scattered between continents, this is difficult. Another option is to use personal items such as a comb or razor used only by the deceased in life. Again, finding pristine examples is not always easy: flatmates sometimes unwittingly use each other's personal effects. There is also the matter of expense and time for analysis, both of which are greater than for the corresponding odontological comparisons. There are problems caused by fragmentation of remains. Expert physical matching of dissociated body parts by a trained anatomist, anthropologist or odontologist can greatly reduce the amount of DNA analysis needed, saving time and expense. Another problem is post-mortem tissue decay, which can make extraction of usable samples impossible. In cases where children need to be identified, the odontologist's knowledge of the chronology of human tooth development can narrow the range of possible matches confronting the DNA expert, improve the statistical power of their calculations, and enable confident matching. Odontology and DNA are complementary techniques which together may succeed when either used alone might fail.

Professor John G Clement (1948–2018)

¹ This text is a substantially edited version of John G Clement, 'Identification of the dead: A fundamental human right and a cultural imperative', *Chiron* (November 2005), pp. 55–8.