

Thallium poisoning in fact and in fiction

This week's newspapers have been full of the story of the poisoning of the ex-KGB officer Alexander Litvinenko, a critic of Russian Federation president Vladimir Putin. At the time of writing, Mr Litvinenko is in a serious but stable condition in London's University College Hospital, possibly suffering from the toxic effects of thallium.

UCH has an interesting earlier connection with thallium poisoning: it was while working in the dispensary there during the 1939-45 war that Agatha Christie acquired a knowledge of poisons that she was to put to good use in her post-war crime novels. The use of thallium as a poison was suggested by the UCH chief pharmacist, Harold Davis, and in 'The pale horse', published in 1961, Christie employed it to dispatch a series of victims, the first clue to the murder method coming from the victims' loss of hair.

Christie was always careful to give realistic accounts of the effects of the poisons she wrote about. Indeed, so accurate was her description of thallium poisoning that on one occasion it helped solve a case that was baffling doctors.

In 1977 — the year after Christie's death — a young Arab girl was flown to England semi-conscious and admitted to a London hospital, where the doctors were mystified by her condition. After several days of deterioration, she began to lose her hair. A nurse who happened to be reading 'The pale horse' was suddenly struck by the similarity of the symptoms to those of the victims in the novel.

Subsequent tests revealed thallium in the girl's urine, and three weeks later, she was fit enough to return home. The case was written up in the *British Journal of Hospital Medicine*, with a note of thanks to the perceptive nurse and the late Dame Agatha.

Thallium salts — formerly used to kill rats and ants — are odourless and tasteless, and it is perhaps surprising that there are few recorded cases of their use in deliberate poisonings. Britain's most notorious thallium user was Graham Frederick Young, who in the 1960s and 1970s fatally poisoned his stepmother and two work colleagues and systematically poisoned dozens of other family members, friends and colleagues.

Perhaps the most bizarre political intrigue involving thallium is an alleged plot by the US Central Intelligence Agency to discredit Fidel Castro by causing him to lose his characteristic hair and beard. The plan was to expose the Cuban leader to thallium salts placed in his shoes while they were being polished. The scheme apparently progressed as far as testing on animals before it fell through.

Vexed question of the geographical origins of the meat-filled pasty

In the running of a pharmacy, particularly when it comes to locum work in an emergency, the taking of snacks and meals may present problems. The easiest way out is coffee and sandwiches on the premises. If the situation is prolonged and such a solution becomes boring, the pasty presents itself as a desirable variant, with its pastry casing able to enclose various meat, cheese and/or vegetable fillings — not only in solid form but as semisolids and even involving some liquid.

Workers in fields and mines have long explored how to produce a varied and nutritious product that is safely portable and can contain a semiliquid item and in both fields of working have concentrated on the pasty, in which a semiliquid food can be carried in a protective shell and managed by hand without the need for plates, knives and forks.

For some decades there has been fierce argument over the origins of the pasty. In particular, Devon and Cornwall never tire of the fight,



for in both counties, the miner and the agricultural worker have faced the problem of a transportable snack.

A Plymouth archivist has now produced documents showing that pasties were produced there as early as 1510, suggesting that it may have been Devon where meat was first put into a pastry parcel. The meat concerned, however, was Cornish venison, from across the Tamar. Top crimping, too, may have been a Cornish practice.

Another commentator has suggested that Cornwall may have used pasties as long ago as 8000BC.

Eve, he says, was tempted not by an apple but by a pasty. In medieval times, meat was served with a pastry cover that was then thrown to the dogs at the time of consumption.

There have always been arguments over the accepted contents of a genuine pasty, and exactly how it should be crimped has aroused violent confrontations.

How illegal chemistry has been causing problems down on the farm

We have become accustomed to hearing of large quantities of some chemicals intended for use as a fertiliser (eg, ammonium nitrate) being diverted to nefarious uses by terrorist organisations for the manufacture of weapons. Chemicals legitimately employed in farming have been available with ease for those who would misuse them, and in considerable quantities.

An alarming situation in the US is revealed in a note in the November issue of *Chemistry World*. In agricultural states across the country, methamphetamine, a popular illegal stimulant,

is increasingly being manufactured illicitly using farm chemicals. Storage tanks on farms are robbed of anhydrous ammonia intended for use as fertiliser. Most illicit manufacturers start with commercially available pseudoephedrine, sold over the counter as a nasal decongestant, and react it with ammonia using lithium strips from batteries as a catalyst.

A six-year programme has been organised at Iowa State University to stop people producing the highly addictive drug at home in small-scale laboratories. It has been found that adding another farm fertiliser, calcium nitrate, to the

ammonia reduces the yield of methamphetamine by 95 per cent, so that stealing the fertiliser no longer repays the effort.

In practice it has been found that unlocked tanks of treated ammonia are being left alone in areas where they were formerly pillaged. Farmers are recommended to add the inhibitor twice yearly as a deterrent that is cheaper than fitting a lock to the tank.

However, the methamphetamine problem in Iowa is far from a solution, since it is estimated that at least 80 per cent of the drug used originates not locally but in Mexico.