

An ancient solar observatory revealed

The 2 March issue of *Science* carries an account of an intriguing new discovery in Peru at Chankillo, a massive ruin estimated to date back 2,300 years and situated 400km north of Lima.

Chankillo has puzzled archaeologists since the 19th century. The main structure comprises three concentric, roughly circular, hilltop walls surrounding a central complex and flanked to the east by a row of towers, 13 in all, positioned along a ridge running north-south. They were once considered to constitute a defensive structure, but the site's elegance, its many gates and the lack of a water supply have ruled out a military function. Two artificial observation mounds some 200m east and west of the ridge have been revealed to be so situated



that on the winter and summer solstices the sun rises and sets over the towers at the ends of the row. The western mound was reached from a complex of buildings by following a corridor 40m long without windows and containing a walled structure in which ceramic figurines are displayed, holding a variety of offensive and defensive weapons.

The evidence suggests that sun worship and associated beliefs were used to promote the authority of an elite ruling caste at a time when major Andean religious centres were undergoing collapse and many centres of population were emptied or fortified. Such developments continued during the growth and then eventual collapse of the Inca civilisation.

Puzzling productivity difference between male and female scientists

For some time there has been irritation over the difficulty that women scientists find in publishing the results of their research in contrast with the ease with which their brothers manage to do the same thing. When you consider the number of papers appearing in print, women obviously produce fewer.

Several suggestions have been offered. To the simple-minded critic it appears that women's brains are less active than those of men, as a recent president of Harvard was rash enough to suggest, drawing on himself well-deserved condemnation. A more favoured explanation is that the work of

women is more widely divided, with less attention paid to single issues.

This is, of course, an old story that we can trace back to the hunter-gatherers who were our ancestors. In those days the men went on the track of edible prey, diverting all their thoughts to the hunt, while the women undertook multiple tasks such as collecting herbs, caring for infants and cooking meals. Their developed ability to bear a wide range of tasks in mind at the same time has persisted.

Studies have shown that journals are no less likely to accept papers sent in by women than by men, but there is evidence of

discrimination in the awarding of grants. A foundation has been set up to furnish grants to enable women scientists with children to reduce the time spent on household tasks and so make more time for scientific studies.

It is also thought that women favour quality over quantity in their submissions. This is something to be encouraged, and in matters of emphasis, as in matters of empathy, the woman writer has virtues that should help us in raising the level of civilisation above the prevalent combative one where the loudest voice and the longest knife influence political decisions.

Researchers uncover intriguing ancestral intolerance to lactose

An examination of neolithic human skeletons dating back to 5840BC has revealed an intriguing situation in that these stone age people had an inability to tolerate lactose.

Experts from University College London and Mainz University in Germany examined the DNA from skeletons of neolithic date obtained from archaeological sites across Europe and found no evidence of genetic mutations affecting the expression of the lactase enzyme. In modern adult northern Europeans, and some people from Africa and the Middle East, there is a gene dealing with lactase production, and thereby the hydrolysis of glucose and galactose, although most humans lose their lactase production after infancy.

Studies of the modern human genome have identified mutations affecting lactase expression, which indicate that lactose intolerance in adulthood was normal before dairy farming expanded in Europe. What is not clear is whether lactose-tolerant people adopted dairy farming or whether exposure to milk induced lactose tolerance. Indications are that neolithic people could not have tolerated milk in the diet. Thus it appears that a cultural shift to dairy farming commencing some 9,000 years ago in Europe prompted the tolerance to lactose.

No, Dr Reid, smoking does not improve one's enjoyment of life

A piece in the 17 March issue of the *BMJ* disposes of the contention that better quality of life and more pleasure result from the habit of smoking tobacco, as was asserted recently by the former health secretary John Reid.

A study investigating the link produced no evidence to support the assertion that for some people the only enjoyment in life is having a cigarette. The absence of such evidence holds good both for the general population and for low socioeconomic groups of society. Viewed as a group, smokers have lower levels of pleasure and a lower quality of life than people who have never indulged in the habit, while ex-smokers occupy an intermediate position.

To investigate the situation a team from the Peninsula Medical School and Cambridge University analysed data derived from a study of 9,176 men and women aged 50 years or older who age details of their past and present smoking habits and their household wealth. The pleasure they took in their daily routines was reckoned as part of the quality-of-life assessment.

The odds ratio for experiencing lower than median levels of pleasure for smokers from low socioeconomic groups was 1.42 and for all smokers it was 1.33.