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At the end of the last century a rickety population needed milk. Determination to strengthen British bones ushered in the most profound agricultural revolution since Georgian times and irrevocably married dairy farming to the emerging hi-tech scientific specialisations, not least of them genetics and immunology.

First came genetics. Until the 20th century British cattle were distinctive regional beasts: tiny Shetlands suitable for transport in small boats, Welsh blacks rugged enough to survive rough terrain and so on. Most were "dual purpose" - decent milkers and good for beef Across the Channel, however, the

Dutch, rivals in livestock "improvement", had developed the Friesian. According to Juliet Clutton-Brook and Stephen Hall in Two Hundred Years of British Farm Livestock, the rise of the Friesian here is owed first to the observations of an Essex farmer, Edward Strutt, who in 1896 started keeping milk records and commended the Friesian for its milk yield.

At the time there were perhaps 30 Friesian herds. This changed rapidly from the second world war, when food shortages led to the development of fertility technology. Cattle, like people, have to reproduce to lactate, and bulls kept cows pregnant with vexing inconsistency. This was solved by the invention of artificial insemination, then semen-freezing technology, followed in the early 1970s by embryo-transfer technology.

The speed of change was incredible: in 1942 the first artificial insemination station opened in Cambridge. By 1950 there were five or six private centres and

30-odd Milk Marketing Board stations, and dairy production had doubled from its 1914 rate.

Little thought was given to the perils of inbreeding. Hall and Clutton-Brock cite the example of Grove Spectacular, a Friesian bull owned by the Milk Marketing Board and kept at its AI centre at Ruthin in north Wales. By 1983, at the age of 1 l, he had fathered 80,000 calves. Today the British herd is 85 per cent Friesian or Friesian-cross.

Old-style beef farmers refer contemptuously to Friesians as "A-frames with udders". The ever more distended udders became prone to mastitis and from the 1940s prophylactic use of antibiotics rose more or less unchecked until resistance was noted in the 1960s. Government advisers - the Swann Committee in 1969, followed by the Lamming Committee in 1992 criticised the use of drugs in feed and excesses of "maximum residue levels" of antibiotics in the food sold

for human consumption. Today Milk Marque, which distributes roughly half of British milk, inspects it with a "Bactoscan". Bonuses are given to farmers for milk that tests negative for antibiotics and bacteria indicating mastitis, and fines levied on those who fail.

However, Swiss scientists reported in Nature last autumn that farm use accounted for "half of the world's antibiotic output" and that resistant bacteria are already detectable in soft cheeses. Four weeks ago a report from the National Consumer Council demanded urgent checks on antibiotic use.

For consumers, organic milk brings the guarantee that antibiotics are used only when an animal is ill, has been inspected by a vet and the dosage approved. The price difference tells the story: conventional milk is 28p a pint in Sainsbury's and organic 41 p, with much the same story in the other leading multiples. It is salutary to note that organic milk

is still only available in
260 of Sainsbury's 350 outlets.