

British Agricultural History Society

Winter Conference 2012

'Science and Knowledge in Agriculture'

by Liz Scott

This promised to be an interesting day and did not disappoint. Four papers were presented to conference exploring science and knowledge in agriculture from the medieval era into the twenty first century.

Entitled 'Manuring as art and science in the Middle Ages', the opening paper was presented by Dr. Richard Jones (Leicester University). Beginning with the literary contribution, Dr. Jones argued that the ideas of Roman agronomists, Cato, Varro and Columella strongly influenced sixteenth century publications on husbandry; but most farming lore was passed down orally from father to son. It was therefore difficult to assess how scholarly advice percolated into and influenced the practice of peasant farmers. Manuring was clearly taken seriously during the medieval period, even if it is more difficult to ascertain how it was being applied. Evidence of its importance is found in a rich vocabulary of terms, from sources such as Coroners' Rolls reporting deaths associated with dung heaps, while disputes over location and obstruction of the Kings highway appear in manorial court rolls.

Archaeology offers a more solid foundation. Dating broken pottery shards found in ploughed-up soil provides evidence of manuring practices. Findings support a tendency to deposit manure in areas close to its source. There was an intensification of manuring activity over the post-Conquest centuries with far more pottery getting into the soil from the mid-thirteenth century. Peasant farmers were making specific choices on how to best utilize a finite manuring stock. There is evidence that higher status households followed manuring practices found in literature. But peasant farmers developed their own language of names, places, colours, and textures that stood apart from scholastic notions of elemental principles. Noting that Romano-British farmsteads showed archaeological evidence of

pottery deposits peasant farmers could have observed a correlation between pottery deposits and fertility on previously manured locations.

The second paper of the day, entitled 'Theoretician or gentleman enthusiast? Sir Hugh Plat and agriculture', was presented by Dr Malcolm Thick. Plat trained as a lawyer but had wide ranging interests including alchemy, medicine, cookery, distilling, military technology, agriculture and horticulture. The nature of fertility was a mystery in Plat's time, the late Elizabethan and Jacobean era. Plat's treatise *Diverse new sorts of soyle not yet brought into a publique use*, relied heavily on the works of continental alchemical scholars such as Palissy and Paracelsus. Plat concluded that to avoid exhaustion soil required salts of which there were many. Setting up a number of experiments on the production of marl and manure (in a manner anticipating Bacon), Plat conducted small-scale field trials in his garden at Bethnal Green. In addition he collected and collated facts about industrial and agricultural techniques from a wide variety of people producing what Dr Thick described as a 'histories of trades'. Studying the technology in everyday use by artisans was important, perhaps more important than the sophisticated experiments of enquiring gentlemen. Plat left no great body of theory and was not particularly recognized by his contemporaries. It was after his death when he gained posthumous recognition from the 'Hartlib circle' of the 1640s and 1650s. He was a doer not a thinker, one who dug the footings (of knowledge); a man who could be described as a proto-scientist.

The third paper of the day, presented by Professor David Moon (York University), brought the conference into the nineteenth and twentieth centuries. In a paper entitled 'Dry farming in Russia and North America: a case of transmission or simultaneous invention?',

Professor Moon set out to discuss science and knowledge in agriculture by focusing on a particular agricultural technique – dry farming – how it was invented, the role of agricultural scientists, and the transmission of knowledge. Hardy Webster Campbell was the greatest exponent of dry farming on the Great Plains but there was controversy and debate over the various methods suggested for this environment, including Campbell's. In Russia, where dry farming was also established, government and agricultural scientists were becoming increasingly concerned at the threat to their grain exports from the growth in grain production in the USA. From the 1860s, American and Russian governments exchanged official information and documents, including official publications on agriculture. In 1907 the provincial council of Ekaterinoslav (today's Ukraine) set up an agricultural agency in Minneapolis, USA.

This brought Professor Moon to consider whether or not the parallel emergence of dry farming developed independently a case of near simultaneous invention, or had some common origins or roots in the exchange of information. Agricultural settlers in both regions came from backgrounds familiar with western European farming, and it was these backgrounds that led Professor Moon to consider the case for transmission of dry farming techniques. He concluded arable farming took off on the steppes in the first half of the nineteenth century before the American settlements. But among the pioneers were the Mennonites many of whom emigrated to the USA, settling in the Great Plains taking with them their knowledge, taxonomy, experience and seeds.

In the final paper of the day, 'Science, dairy farming, and the bovine mastitis problem in Britain, c.1925–80', Dr Abigail Woods (Imperial College) introduced conference to the world of the dairy cow. Following a brief overview of mastitis, a prevalent and costly problem, Dr Woods presented three distinct biological and social framings of the condition.

The first, *Streptococcus agalactiae*, originally managed

by vets and farmers, had very little input from scientists. Factors contributing to mastitis rates were thought to include poor milking techniques, bad hygiene, chilling or injury to the udder, flies, and hot summer weather. The standard approach for dealing with mastitis in the 1930s was to separate the infected cow from the rest of the herd along with a regime of penicillin. By 1952, *Streptococcus agalactiae* was on the wane but another germ, *Staphylococcus aureus* was in its ascendancy. Reference was made by scientists, vets and farmers to the post-war government drive to increase food production and the consequent changes in agricultural production, including dairying. The prevalence of the new germ was attributed to factors including machine milking, separate dairies, loose housing for cows, and selective breeding. A mastitis awareness campaign in 1972 provided advice based on research and field trial outcomes. As a management plan for the control of mastitis was being implemented nationally, so a new form of mastitis rose to prominence. Caused particularly by coliform bacteria and *Streptococcus uberis*, it was associated with acute clinical symptoms, which often occurred around calving time and could end in death. Vets and scientists pointed to a range of possible causes: intensive dairy farming; hereditary factors including breeding regimes; increase in herd sizes and cross infection.

Dr Woods concluded that scientists made limited progress in controlling or eradicating mastitis although therapies may have managed to shore up cattle health in the face of ongoing threats. Alternatively, interventions may have enabled the disease to assume new manifestations. A selected approach to mastitis enabled scientists to avoid bigger questions about the sustainability or morality of intensive farming, or of meeting the immediate needs of farmers.

So ended a constructive day offering delegates an opportunity to listen to high quality papers, share and transmit ideas and to catch up with friends and colleagues. With thanks to Dr Paul Warde for organizing the event.