

Sir Hugh Plat and the Chemistry of Marling

By MALCOLM THICK

IN his interesting article, 'Marling in British Agriculture: a case of partial identity',¹ Dr Mathew floated the idea that historians concentrated on the physical benefits of marling because of reliance on contemporary writers who were ignorant of the chemical action of marl on soils. Whilst not disagreeing with his general conclusion, the lack of appreciation of the chemistry of marling before the eighteenth century was not as total as he implies.

Sir Hugh Plat produced *Diverse New Sorts of Soyle* in 1594, a sixty-paged essay of which ten are devoted to marling. Not once does Plat mention the physical role of marl in improving the soil; he is solely concerned with chemical matters. Plat derived much of his knowledge 'out of twoe larger Treatises, the same being even wrung out of the bowels of the earth, by that learned husbandman, maister Bernard Palissy, whereof the one is entitled, *Des sels diverses*, and the other *De la marne*'. Palissy, a French potter, first published his work in 1580. Plat produced almost a complete translation of the essay on salts, which argued that fertility is an essential salt and it is the action of this salt which makes seeds grow. Manure raises fertility by imparting the salt to the soil. He was more selective in his translation of the treatise on marls, concentrating mainly on practical matters: where and how to find marl, how to extract it from the ground, the various colours of marl, how long an application of marl will last, and the amounts to use.²

Plat did, however, provide some theory of the chemistry of marling. Marling improves fertility, he wrote, because it contains a fifth element which he called 'a generative water, cleer, subtile, mingled inseparably with other waters'. This generative water was carried into 'a certaine earth' by the ordinary water, congealed there, and was left behind when the ordinary water evaporated. The earth 'waxed hard, and became white by the vertue thereof', turning to marl. When the marl is spread on arable ground, seeds take up the generative water. Eventually this element is exhausted, and 'the marle becommeth unprofitable, as a sign of some decoction finished, the like is to be thought

of all other dung and lime'. Ordinary water must be present in the soil to allow the seed to take up the generative water.³

Sir Hugh recognized that chalk and lime were closely related to marl. 'All Marle was earth before it became marle, it is a kinde of clay ground, and chalke it selfe was marle before it became chalke. And that which is more, that which is yet chalke within the Matrix of the earth, wil in time harden into a white stone, And last of all, wheresoever there bee any stones that be subject to calcination, they were first marle before they were stones, for otherwise by their calcination they could not possibly amend any barren grounds ... Also chalke and lime, after the frostes have taken them, whereby they crumble into powder, do become good marle, and serve in stead thereof'. Drawing on his own experience he suggested that lime and marl might be interchangeable, 'in the groundes bordering upon the woods of Arden, which are verie colde, they use lime instead of dung, and thereby they make ye earth most fruitful which was barren before, Now if lime (which is nothing else but a baked or burnt stone within those fierie furnaces, and whose moisture is altogether exhaled, so as there remaineth therein nothing else, but the terrestriall parts replenished with a fierie vertue) be found so rich a soile, I know not why the heat of marle may not much better be endured'.⁴

An understanding of the chemical action of marl is implicit in Plat's recognition that marling does not last for ever, keeping ground 'some 10 or 12 yeares in hart, and in some countries for 30 yeares' and also in his warning that the amount to be applied must be discovered by experiment, 'for too little of the best Marle can doe but little good, and too much thereof hath beene alreadie founde to bee verie hurtfull to the Corne'.⁵

Plat's essay was reprinted in 1653, probably edited by Arnold de Boate, a correspondent of the agricultural reformer Samuel Hartlib. Hartlib was impressed with Plat's work on soil chemistry, and an anonymous writer in the *Philosophical Transactions of the Royal Society* in 1675 thought that Plat 'advanced the Agriculture of England by Marle, Saline materials,... and by other Soyles'. Dr

¹ *Ag Hist Rev*, 41, 1993, pp 97-110.

² Sir Hugh Plat, *Diverse New Sorts of Soyle not brought into any Publique Use*, 1594, p 9; A. G. Debus, 'Palissy, Plat, and English agricultural chemistry in the sixteenth and seventeenth centuries', *Archives Internationales d'Histoire des Sciences*, 21, 1968, pp 67-88.

³ Plat, *Diverse New Sorts of Soyle*, pp 23-4.

⁴ *Ibid*, pp 21-2.

⁵ *Ibid*, p 30.

A G Debus in 1968 concluded that 'Plat's work was reprinted, read widely and commented on by mid-seventeenth century scholars', and I possess an annotated copy of Plat's work which supports this view. My copy of the 1594 edition of *Diverse New Sorts of Soyle* has margin notes in a neat seventeenth-century hand. The notes make cross references to Gervaise Markham's *A Way to get Wealth* (probably, from the page numbers referred to, the 1660 edition), and Hartlib's *Legacy* of 1651. The annotator

was particularly interested in Plat's views on the nature of marl and its affinity with chalk and lime, underlining these passages. In view of the work of Plat on marl, and the renewed interest in this work in the second half of the seventeenth century it is the more puzzling that most British historians have not discussed the chemical aspects of marling.⁶

⁶Debus, 'Palissy, Plat', pp 82-7.

Notes and Comments

(continued from page 155)

REQUESTS FOR HELP

As part of our service to readers, *Notes and Comments* now includes a section under this heading. This is designed for all members of the BAHS, but particularly those who are not attached to an academic institution. We hope this will provide assistance for two types of problem. Firstly, those thinking of carrying out research and who have chosen a topic, but are not too sure where to begin, or want to know who else has worked on that particular subject. And secondly, those who are well into a project but need further information to fill in gaps, or require advice on methodology. From time to time we have published lists of research in progress, but as there are intervals of some time between their appearance it is hoped this spot will fill the gap where someone wants information in the short term. This service is open to all members and, if you feel it might be of some help to yourself, you are urged to send your name and address, along with your request, to the Secretary of the BAHS, Dr Richard Perren, Department of History and Economic History, Taylor Building, University of Aberdeen, Old Aberdeen, AB9 2UB.

£105,000 FOR RURAL HISTORY CENTRE

The Duke of Westminster, through his charitable trust, the Westminster Foundation, has generously donated £105,000 to the Rural History Centre appeal Fund at the University of Reading. The appeal aims to raise £4.4 million to provide new

buildings on the university campus. This will rehouse the centre's outstanding research collection of books, archives, photographs and objects relating to the history of farming, food, the rural economy, land and environment. These resources are already of national importance, but the redevelopment will allow the full international potential of the centre to be realized, especially in terms of providing global information.

The Duke, who is a member of the centre's advisory board for fund-raising, visited the Rural History Centre in October 1993 and was shown something of its resources and activities. As a landowner deeply committed to the sound management of agricultural estates, he was clearly impressed by the wealth of historical material on this subject, as well as on farming tools and techniques. Some of these he was familiar with from his experience of his father's land in Ireland. The Rural History Centre project is one in which the Duke has a keen interest. He considers it to be immensely worthwhile because the centre's resources and scholarship are relevant not only to historical but also to contemporary countryside issues. With this in mind the award from the Westminster Foundation will be used in support of a lecture room within the new complex, to be called The Westminster Room. At present the appeal has raised almost £1 million, and once this sum has been attained the university intends to proceed with the first phase of development towards the end of 1994.