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The first British record of *Oxalis corniculata* (Oxalidaceae)

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Abstract
In a letter written to Thomas Penny in the late 1570s or 1580s, the physician William Brewer described a plant which had appeared in his garden in Chard, S. Somerset. Though it occurred throughout his garden, he could not find it elsewhere in the neighbourhood. He identified it as *Oxys flore luteo* of Clusius. His account of the plant, which included an original description of its explosive seed dispersal, is sufficiently detailed to support its identification as the current *Oxalis corniculata* L. It is much the earliest British record of this species.

Keywords: Explosive seed dispersal; Somerset; *Theatrum insectorum*; Thomas Penny; William Brewer; world-wide weed

Introduction

The origin and spread of *Oxalis corniculata* L. (Procumbent Yellow Sorrel) has been reviewed by Groom *et al*. (2019). They concluded that it was originally a south-east Asian species. It had certainly reached Europe by the 16th century, when William Turner (1562) reported it (as *Lotus urbana*) but he said that he had seen it only twice, in gardens in northern Italy. Since then it has attained an almost world-wide distribution, so that it is arguably the third most widespread vascular plant after *Sonchus oleraceus* and *Ricinus communis* (Pyšek *et al*., 2017). One of the ways in which it has spread is as a horticultural weed, "frequently found in gardens and as a hitchhiker in plant pots in nurseries and garden centres" (Groom *et al*., 2019).

It is clear that *O. corniculata* was not known in Britain to Turner (1562), and Johnson (1633, as *Oxys lutea*) also said that he had not as yet found it. The earliest record of its deliberate cultivation here is apparently in Tradescant's *Musaeum* (1656, as *Oxys trifolia flore luteo carniculato [sic]*). It was found in several places in the neighbourhood of Exeter, S. Devon by John Turner of Lympstone (Berkenhout, 1770), the first published record which was (at least by implication) from the wild. This is the source of the first date in the wild given by Preston *et al*. (2002) and Stroh *et al*. (2023).

We had been researching the first dates of British and Irish plants for many years before we came across a published reference to the occurrence of *O. corniculata* almost two centuries before John Turner's record from Exeter. In his paper introducing a BSBI conference on 'The changing flora of Britain', Canon C.E. Raven (1953) reported an early record that surprised him:

"Bound up with the original manuscript of Mouffet's *Theatrum Insectorum*, now in the British Museum, is a holograph letter to Thomas Penny, Mouffet's friend and the principal author of the volume, from his friend, the Somersetshire doctor William Brewer. In this, along with information about insects, is a detailed and exact account of a weed, which had appeared in his garden and which from the description of its seed-vessel and seed-dispersion and from its name, is beyond any doubt *Oxalis corniculata*. It was interesting to discover that this denizen, which is commonly regarded as a recent arrival, was a garden weed in the west country nearly four centuries ago – in or about 1585."

We have looked into this record and concluded that Raven's account is an accurate one. As his report appears to have been completely overlooked since its publication, we think it is worth giving more details of the record and the unusual context in which it appears.

Thomas Penny and William Brewer

Thomas Penny (*c*.1530–1588/89) was born at Gressingham, Lancashire. The outline of his career is clear even if precise dates are sometimes difficult to pin down (Raven, 1947; Allen, 2004; Addyman, 2021). He entered Queens' College, Cambridge in 1546, transferring to Trinity College in 1550. After graduating from Trinity in 1551, he was elected a Fellow of the College in 1553 and Senior Bursar in 1564. He became a canon of St Paul's Cathedral and prebend of Newington in 1560 (the latter providing an income to support the canonry), although he was not ordained as a deacon until 1561. He clearly developed his strong interests in botany and zoology during his Cambridge days, becoming "a man of sound education and brilliant parts, a scholar and an artist" (Raven, 1947, p. 155). Between 1565 and 1569 he travelled widely in mainland Europe, famously visiting Conrad Gessner in 1565 and annotating his set of plant pictures with records of species in Britain and Europe (Funk, 2021). After his return he lived in Leadenhall Street, London, practising as a physician but continuing to travel in England and pursue his interest in natural history. In these years he concentrated on accumulating materials for a book on insects. His health deteriorated in the late 1580s and on his death in 1588 or 1589 he left his rather disorganised mass of papers on this subject to Thomas Mouffet. Mouffet immediately prepared them for publication as the book *Insectorum sive minimorum animalium theatrum* (often abbreviated to *Theatrum insectorum*). Its progress towards publication was complicated and is not fully understood, but it eventually appeared in 1634, long after Mouffet's own death (Salmon, 2000; Allen, 2010). An English translation was appended to Topsell's *The history of four-footed beasts and serpents* (1658).

It was in Heidelberg in 1569, while Penny was travelling in Europe, that he met and made friends with two English students who had (or who developed under Penny's influence) a keen interest in natural history, William Brewer and Peter Turner. William Brewer (d. 1618) matriculated with Turner at the University of Heidelberg in April 1566 and graduated BA in 1568 and MA in 1569 (Toepke, 1886; Raven, 1947). The field observations the three made together in Heidelberg on the savage (and, to later naturalists, rather mysterious) *Buprestis* are mentioned in *Theatrum insectorum* (Mouffet, 1634, p. 142; Topsell, 1658, p. 1001). Brewer returned to Britain to live in Chard, S. Somerset (v.c.5), where he practised as a physician. He married Deanes Baker *c*.1574. She died in 1614 and a magnificent

memorial to the couple in Chard parish church, erected by their children, commemorates their forty years of happy wedlock and their six sons and five daughters, all of whom apparently survived to adulthood (Fig. 1).

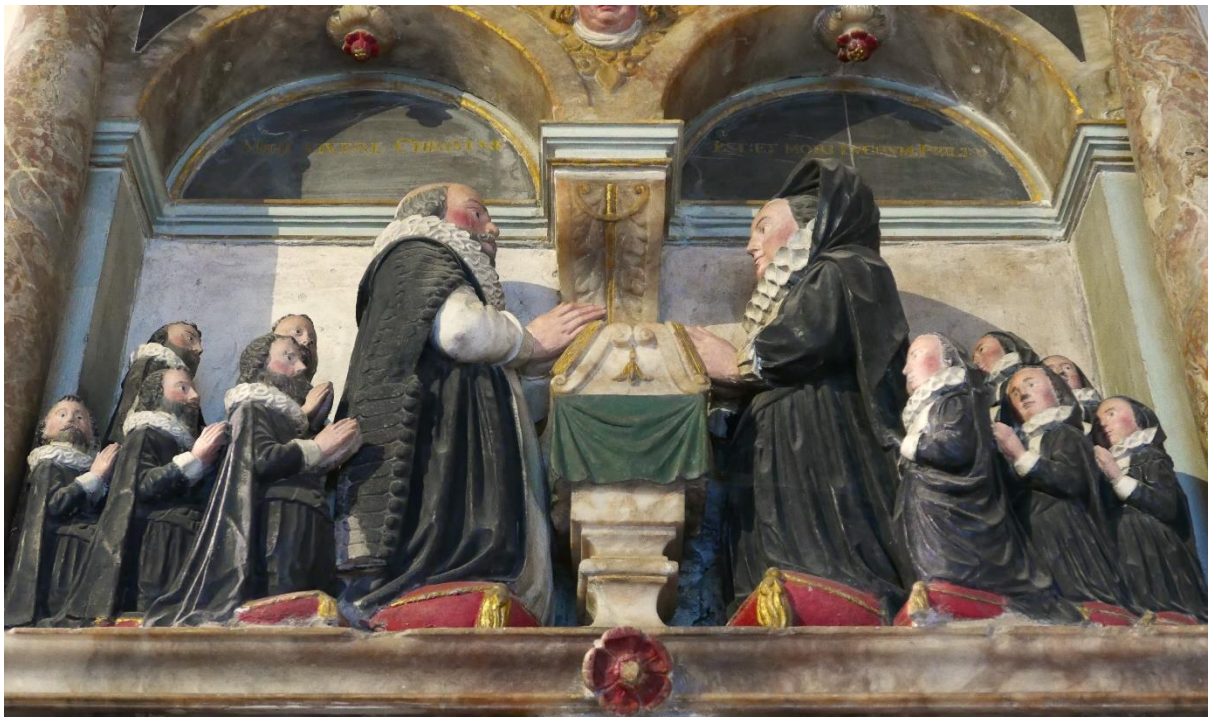

Figure 1. William and Deanes Brewer with their children, shown on their monument in the church of St Mary the Virgin, Chard, Somerset. Image: Fred Rumsey

Brewer remained in contact with Penny after their return to England and in *Theatrum insectorum* (p. 110) Penny described him *vir doctissimus & amicus meus summus*, a phrase perhaps inadequately translated by Topsell (p. 976) as "a learned man and my good friend" and more accurately by Raven (1947, p. 163) as "a man of great learning and my closest friend". Several of the observations on insects Brewer sent to Penny were later published in *Theatrum insectorum*. These cover subjects as varied as a fly that creeps into an apple; the techniques of fly-fishing; an insect found in a filthy ditch; the copulation of glow worms; a luminous myriapod (which Brewer dried and sent to Penny); the habit of shrikes impaling crickets on thorns for later consumption; and a long story about his lustful nephew, a rich matron and a spider (Mouffet, 1634, pp. 69, 73, 84–85, 110, 113, 136, 237; Topsell, 1658, pp. 943, 946, 955, 976, 979, 997, 1073–74).

Brewer's letter to Penny

The manuscript of *Theatrum insectorum* survives (British Library Sloane MS 4014), no doubt retained after publication of the book because of the many fine illustrations of insects it includes. A single letter, in Latin, from Brewer to Penny, is bound into the manuscript (*f.* 103) within Chapter 14, *De Papilionibus*, in a position in the text (equivalent to p. 106 of the printed book) that bears no relation to any of the mentions of Brewer in the text. The letter is damaged with the loss of some text at

the right-hand margin, a tear along the length of the letter and a large hole towards the bottom; all this makes it impossible to give a complete transcription of the relevant content. We have kindly been provided with a clear image of the letter by the British Library.

Brewer's letter is informal and friendly. There is no explicit mention of Penny as addressee, but it is confirmed by the inclusion in the letter of the information on the fly that creeps into an apple, which we know from *Theatrum insectorum* (Mouffet, 1634, p. 69; Topsell, 1658, p. 943) was sent from Brewer to Penny. Brewer signs himself 'Wilhelmus Bruerius' rather than, as one would expect, Gulielmus, the normal Latin translation of William, perhaps looking back affectionately to a name by which he was known in Heidelberg. The letter was written in November but if the year was added it has been lost to damage at the foot of the page. It was certainly written after 1576, as it cites Clusius' *Rariorum aliquot stirpium per Hispanias observatarum historia*, published in that year, and it must predate Penny's death in 1588 or 1589. At the start of the letter Brewer appears to say that rumours warning him of or foretelling Penny's death had reached him, though some words here have been lost at the end of the lines. This perhaps suggests a date in the 1580s. Brewer then reports that a little son has been born to him earlier in the month. There is a reference to "the fertility of little men" [*faecunditatem homuncionum*]; the start of this sentence has been lost but it suggests that he had by then fathered several children and thus that the letter must have been written some years after his marriage *c.*1574. Raven's date of *c.*1585 therefore seems to be as good an estimate as it is possible to give from the available information.

Description of *Oxalis corniculata*

After the personal introduction Brewer continues "Now to the little observations of those things about which you write" [*Nunc ad observatiunculas earum rerum de quibus scribis*]. The first of these are entomological. He then turns to the botanical information. "That foreign plant about which you write, grown up spontaneously in my little garden, is *Oxys aurea sive lutea*" [*Herba illa peregrina de qua scribis, spontè in meo hortulo enata, Oxys est aurea sive lutea*]. He cites two works which describe and illustrate the species, Clusius (1576, pp. 475–476) as *Oxys flore luteo* and L'Obel (1576, p. 495) as *Oxys lutea corniculata repens* with the synonym *Oxys lutea* of Clusius. Both books were printed by Christophe Plantin in Antwerp and they used the same illustration of the species (Fig. 2). However, Brewer continued, neither of these authors had observed that the mature pods, when first touched, burst apart, scattering the seeds with great force, like the pods of those plants usually called touch-me-not for that reason. He included some of the seeds in his letter. [*Sed quòd ipsorum neuter observasse videtur, siliquae quibus eius semen continetur cum ipsum maturuerit primo contactu non aliter dissiliunt disiectis magna vi seminibus, quam siliquae eius herbae quam illam per causam noli me tangere appellitant. Mitto ad te eius aliquot semina his literis inclusa.*] He also described the golden flower colour, the heart-shaped leaves and the sharp and pleasing taste. [*Floris color aureus, folia cordis effigium referentia, sapor acetosus et gratus …*]. He says that it is remarkable that this little plant, a stranger to England, should have come up everywhere in his garden, though he had never previously seen it, nor is there any trace of it in the entire neighbourhood, except in his garden alone. [*Mirum est, haec plantula Angliae peregrina sua sponte … in horto meo passim enata est,*

prius mihi nunquam visa, nic in tôta vicinia vallum eius est vestigium, meo solo horto excepto].

Figure 2. *Oxalis corniculata* depicted by L'Obel (1576, p. 495). Image courtesy of Linnean Society of London

Discussion

The evidence provided in Brewer's letter supports his identification of the plant he describes as the current *Oxalis corniculata*. As Groom *et al*. (2019) conclude, early records of yellow-flowered, caulescent *Oxalis* species in Europe can be assumed to be this species. Whereas *O. corniculata* was reported from southern Europe in the second half of the 16th century, there is no evidence for the presence of other species in sect. *Corniculatae* until the late 17th century. Furthermore, the distinctive procumbent habit of *O. corniculata* was clearly described and illustrated by Clusius (1576) and L'Obel (1576), the works to which Brewer refers, whereas the North American species *O. stricta* L. and *O. dillenii* Jacq. have an erect habit. The small, procumbent *O. exilis* A. Cunn. originates in Australasia and is a much later introduction.

It is by mere chance that the evidence for the presence of *O. corniculata* in Brewer's garden survives, in a letter preserved because of its entomological content. It is apparently the sole survivor from what was clearly a sequence of letters between the two friends. It has been bound into a manuscript which would not be expected to be consulted by botanists, and it was only discovered in the mid-20th century by Canon Charles Raven, whose wide-ranging interest in the history of natural history, ability to read the Latin text and expertise as a botanist led him to find the letter and appreciate its contents. Although Raven referred to his find in a brief paper published in 1953, this too has been overlooked for over 70 years.

The presence of *O. corniculata* in Britain in the 1580s is perhaps less surprising than the absence of any further records for almost 200 years afterwards. It is possible, though perhaps unlikely, that it became established locally in S.W. England but escaped the notice of botanists until it was reported from the Exeter area by John Turner (Berkenhout, 1770). The absence of records between Brewer and Turner perhaps suggests that the alternative scenario is more likely, a failure to persist in and spread from Brewer's locality, even though the species has now become notorious as an invasive weed worldwide.

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