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HISTORICAL ARTICLE

A 15th century medical herbal etched in stone

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The medical armamentarium of the 15th century had a very strong reliance to plant products that were often identified as useful by a trial-and-error experimentation process. The corpus of experiential knowledge was passed on by word of mouth from one generation to the next until formal pharmacopoeias in the form of herbals were published. Another form of generational transmission was to etch the time-acquired knowledge in stone. The foliage carved on the Burton Lazar [Leicestershire, England] leprosarium stonework may have been one example of a medical herbal etched in stone.

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The brethren of the Order of Saint Lazarus in Jerusalem first acquired land holdings in Norfolk, England sometime around 1146. This however, on its own, was insufficient for the brothers to establish a functioning preceptory in England. Around 1157, a substantial donation of property was made by Roger of Mowbray consisting of a manor and two carucates of land complete with a mill in Leicestershire. Here the brothers set up their chief house in England that became known as Burton Lazars hosting the master, eight brethren and an unspecified number of lepers. Burton Lazars remained the hub for the administrative activities of the Order of Saint Lazarus throughout England for the next 400 years. As one would expect, the building underwent several structural alterations throughout the centuries. In 1544, after the Order's suppression by King Henry VIII, the building passed on into private holding and abandoned. It fell victim to the ravages of time. An archaeological study conducted in 2001 revealed several carved stonework pieces reused to decorate a garden's rockery.[1]

The Burton House stones include several portions of substantial octagonal structures, possibly chimneys. These, stylistically dated to the 14-15th century, were decorated with naturalistic foliage roundels on all the faces. The foliage depicted has been identified as belonging to a variety of plant species identified as possibly representing the Field Maple [Latin: *Acer campestre* Linnaeus], the White Bryony [Latin: *Bryonia dioica* Linnaeus], the Common Ivy [Latin: *Hedera helix* Linnaeus], the Buttercup or Crowfoot [Latin: *Ranunculus sp.* Linnaeus], the Cuckoo-point [Latin: *Arum maculatum* Linnaeus], and the Mallow [Latin: *Malva sylvestris* Linnaeus].[2] Other mentioned species include the Deadly Nightshade or Belladonna [Latin: *Atropa belladonna* Linnaeus] and Charloch or

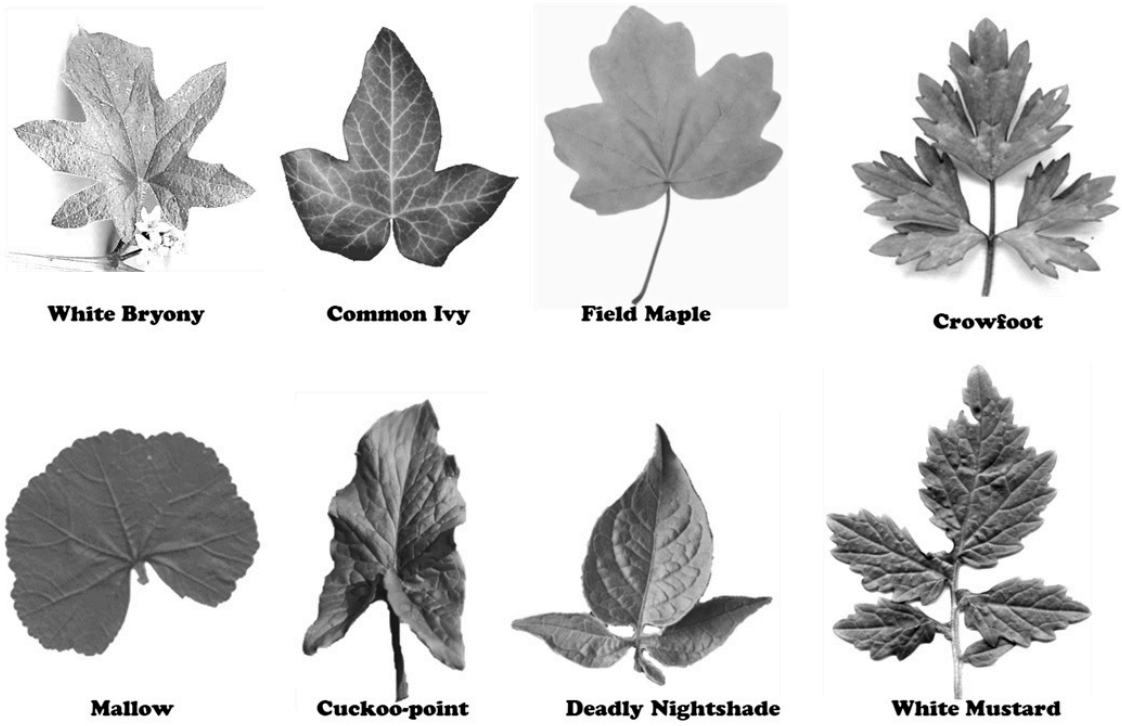

Figure 1 *Foliage of depicted plant species*

White Mustard [Latin: *Sinapis sp.*].[1] All the plant species are commonly found in the English countryside. They were attributed with general or specific medicinal properties in the commonly available 16th century British herbal publications. They may have had special relevance in the management of the leprous state.

BRITISH 16-17th CENTURIES HERBALS

The 16th century saw the publication of several herbals being published in Britain for general use. The first non-illustrated herbal in Britain was published by Richard Banckes in 1525, but this was soon superseded by the illustrated herbals published by Peter Treveris in 1526 and William Turner in 1551. The most famous English herbalist was John Gerard who published his work in 1597. This herbal gives the names and descriptions of the plants with further information on their medicinal, culinary, and toxic properties.[3] Since the medical pharmacopeia during the 16th century was primarily based on plant derivatives, these herbals serve to give an insight into the management of various disease conditions. Later published herbals, such as the 17th century publication by Nicholas Culpeper, were often derivative using material previously published by other authors.[4]

Several of the depicted plant species are also naturally represented in the Maltese Islands notably *Hedera helix*, *Ranunculus sp.*, *Arum sp.*, *Malva sylvestris*, and *Sinapis sp.* [5] Maltese authors have also reported various medicinal uses for these plant species similar to those described in English herbals.[6,7] The Arum plant [sive *anzarutu*] is listed in the 1345 *Capitula Sagati* as one of the imported taxed pharmaceutical items.[8]The *Emplastrum Belladonnae*, made from the Deadly Nightshade plant, and *Charta Sinapis*, made from powdered White Mustard seeds, were still being used in Maltese pharmaceutical practice in the 19th century.[9] The Common Ivy extracts has been shown to contain saponins and phenolics reportedly having anti-inflammatory, antiviral, antifungal, antibacterial, mucolytic, antispasmodic agent and in vitro bronchodilatory effects.[10]

LEPROSY TREATMENT IN THE MEDIEVAL PERIOD

Leprosy is a chronic infective disease caused by the bacteria *Mycobacterium leprae*. The infection damages nerves causing the victim to be unable to feel pain and thus unable to appreciate an injury or infection in the peripheries. This eventually will lead to chronic secondary infections, generally in the peripheries, with local ulceration and tissue

destruction. It is also associated with the development of skin lesions that generally take the form of hypopigmented macules, papules, or nodules. With a prevalent belief that leprosy was a highly contagious disease, the main emphasis in the management of the leprous victim was aimed at social distancing and segregation to protect the healthy members of the community. Before specific treatment with antibiotics was introduced in the 20th century, clinical management of the leprous victim was simply supportive attempting to manage the multiple sores and ulcers and reduce secondary peripheral damage as much as possible. Six of the reportedly depicted plant species on the Burton Lazars stones were during the 16-17th centuries associated with the management of skin lesions including open wounds or ulcers, while White Bryony was directly associated with the management of leprous sores. All the plant species were associated with marked systemic effects that may also have been availed of to modify the individual's Galenic humours believed to be imbalanced.

MANAGEMENT OF SUPERFICIAL LESIONS

The 16th century herbal by John Gerard specifically mentions the fruit of the White Byrony as being 'good against scabs and the *leprie*, if it be applied and anointed on …… The root stamped with salt, is good to be laide upon filthie ulcers and scabbed legs. The fruit is likewise good to the same intent if it be applied in manner aforesaide. The roote of Bryonie and of Wake Robin stamped with some Sulphur or brimstone, and made up into a masse or lump and wrapped in a linen cloth, taketh away the morphewe, freckles, and spots of the face, if it be rubbed with the same being dipped first in vinegar' [p.719-720].[3] Similar advice was given in Nicholas Culpeper's 17th century herbal who writes that 'the leaves, fruit, and root do cleanse old and filthy sores, are good against all fretting and running cankers, gangrenes, and tetters and therefore the berries are by some country people called tetter-berries. The root cleanses the skin wonderfully from all black and blue spots, freckles, morphew, leprosy, foul scars, or other deformities whatsoever; also all running scabs and manginess are healed by the powder of the dried root, or the juice thereof, but especially by the fine white hardened juice' [p.42-43]. The bruised root was also reportedly useful as a cataplasm in the management of splinters or thorns and whitlows, helping to draw out the foreign body or pus.[4]

The Common Ivy was in the 16th century also advocated in the management of ulcers, burns and scald. 'The leaves of the ivy fresh and green, boiled in wine, do heale olde ulcers, and perfectly cure those that have a venomous and malitious qualitie joined with them : and are a remedie likewise against burning and scaldings …. The leaves laide to steepe in water for a day and a night space, helpeth sore and smarting waterish eyes, if they be bathed and washed with the water, wherein they have been infused' [p.708-709].[3] Similarly, the Charloch or White Mustard was used as an external poultice 'with good successe with drawing plaisters, and with such as waste and consume nodes and hard swellings' [p.190-191].[3] Similar advice is given by Culpeper for both the Common Ivy and White Mustard [p.140-141,175-177].[4]

According to Culpeper, a poultice made from Mallow leaves 'boiled and bruised, with some bean or barley flower, and oil of Roses added, is an especial remedy against all hard tumours and inflammations, or imposthumes, or swellings of the privities, and other parts, and eases the pains of them; …… The juice of Mallows boiled in old oil and applied, takes away all roughness of the skin, as also the scruff, dandruff, or dry scabs in the head, or other parts if they be anointed therewith, or washed with the decoction….' [p.156-157].[4] The leaves of the Cuckoo-point 'either green or dry, or the juice of them, doth cleanse all manner of rotten and filthy ulcers, in what part of the body soever; and heals the stinking sores in the nose, called Polypus. ……. The fresh roots bruised and distilled with a little milk, yields a most sovereign water to cleanse the skin from scruff, freckles, spots, or blemishes whatsoever therein' [p.84-86].[4]

Gerard considered the Buttercup or Crawfoot useful to manage superficial skin lesions writing "The leaves or rootes of Crawfoote stamped and applied unto any part of the body, causeth the skin to swell and blister, and raiseth up wheales, bladders, causeth scar, crusts, and uglie ulcers : it is laide upon cragged warts, corrupt nails, and such like excrescence, to cause then to fall away. The leaves stamped and applied unto any pestelentiall or plague sore, or carbuncle, staieth the spreading nature of the same, and causeth the venomous or pestilential matter to breath forth, by opening the pores and passages of the skin.' [p.815].[3]

SYSTEMIC TREATMENT

However, the added belief that the disease process was influenced by humoral characteristics, attributing its origin primarily to an increasing flow of

black bile impregnating the organs via blood and phlegm, led to attempts to manage the infection using humoral theory principles.[11] The humoral principles for managing leprosy had been put forward by the ancient Greek physician Aretaeus of Cappadocia [presumed flourished 1st century CE] who wrote the most complete description of leprosy in the ancient world. Aretaeus' work was first translated into Latin and published in 1552. In this early work, Aretaeus comments that in the management of the disease, referred to as *elephas*, it 'is proper to apply every medicine and method of diet, - even iron and fire, and these, indeed, if you apply to a recent disease there is hope of a cure. But if fully developed, and if it has firmly established itself in the inward parts, and, moreover, has attacked the face, the patient is in a hopeless condition.' In the latter state, Aretaeus promotes the application of repeated venesection 'to evacuate the blood frequently and copiously, as being the nutriment of the disease.' Furthermore, he promotes the frequent stimulation of medical purgation using emetics and purgatives to expel the bad humours.[12] Later medieval medical thought in the Latin world continued to be strongly influenced by the writings of the ancient Greek and Roman physicians including Aretaeus.

The depicted eight plant species on the Burton Lazars stones were ascribed with systemic biological effects particularly when taken internally – effects that are very relevant to the principles of humoral therapeutic management prevalent at the time. The juice or decoction of the pressed root of White Bryony taken in mead or honeyed water was a strong violent purgative that was generally recommended in individuals suffering from dropsy, the falling sickness, dysentery, and giddiness. It would have served just as well in promoting purgation in the management of leprosy. The clustered berries of the Common Ivy had diuretic effects useful in managing urinary stones and kidney disease. The berries were also useful in the management of haemoptysis and jaundice [p.708-709].[3] The Field Maple root when pounded and applied was supposedly a singular remedy for liver pain, while an infusion in wine useful to relieve pain in the sides [p.1300].[3] Water or wine-based concoctions made from the leaves or roots of the Mallow were said to help 'void hot, choleric, and other offensive humours' and to ease 'the pains and torments of the belly coming thereby' [p.157].[4]The root of the Cuckoo-point was reportedly useful to alleviate respiratory symptomatology helping to break down, digest, and clear phlegm from the stomach, chest and lungs [p.84-85].[4]The seeds of the White Mustard pounded in vinegar taken as a sauce helped digestion [p.719-720].[3]

The Deadly Nightshade was reported to have a wide array of medicinal properties serving as a narcotic, diuretic, sedative, antispasmodic, and mydriatic. Because of its potential deadly side effects, Gerard strongly advised to 'banish' it from gardens and to avoid using it. The leaves laid on the temples promoted sleep, especially if imbibed or moistened in wine vinegar. It was also useful to relieve severe headaches [p.269-270].[3] Likewise, the Buttercup was considered as being poisonous when eaten causing bloody diarrheal, excessive salivation, colic, and severe blistering of the mouth, mucous membranes and gastrointestinal tract. Culpeper [p.83-84] advised that 'this fiery and hot-spirited herb of Mars is no way fit to be given inwardly'.[4]

CONCLUSIONS

The stonework decorations at Burton Lazars depict a series of plant species common in the region. The depictions of these plant species may have been accidental with the master stone mason using local plants as inspiration to work upon the naturalistic foliage carvings. However, the majority of the depicted species were associated with medicinal properties that may have been used in the management of the superficial lesions of leprosy; while the systemic effects of these plants would have been considered useful local remedies to help purge the 'bad humours' contributing towards the clinical progression of the leprous state and to relieve the sufferer from the distressing symptomatology association with the severe leprous state. It is therefore possible that the choice of the plant species depicted on the roundels was intentional to highlight the prevailing pharmaceutical treatment in use within the Burton Lazar leprosarium.

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