POISON WINE — JOHN KEATS AND THE BOTANIC PHARMACY

by Gareth Evans

'It is a better and a wiser thing to be a starved apothecary than a starved poet; so back to the shop Mr. John, back to the 'plaster, pills and ointment boxes,' &c. But, for Heaven's sake, young Sangrado, be a little more sparing of extenuatives and soporifics in you practice than you have been in you poetry.'

This infamously stinging attack in Blackwood's Edinburgh Review was written by John Gibson Lockhart on the discovery, from an imprudent friend of Keats, that the poet had been a dresser at the United Hospitals of Guy's and St Thomas's, London. Keats's prerequisite to gaining this sought-after position had been his previous year's studentship at the same hospital (1815–16) following a five-year apothecary apprenticeship. Lockhart crowed that the young poet's admirers were medical students 'who chant portions of Endymion, as they walk the hospitals, because the author was once an apothecary'. 'A boy of pretty abilities', Lockhart derided Keats; 'who practises poetry and pharmacy'.

Keats's mature response to this, and the more serious criticism of his first publication, eventually produced from him some of his most admired works. The Eve of St Agnes and the 1819 Odes (including 'on Melancholy' and 'to a Nightingale') are among the products of this fruitful period. In these, as in earlier works, the apothecary shop has in fact had not been abandoned by the poet and Keats does practice poetry and pharmacy to some degree. The apothecary's profession supplied a rich source for his often splintered imagery; which are consciously or unconsciously remembered (or indeed half-remembered) in his great odes.

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1 Special thanks to John Symons, Curator of Early Printed Books at the History of Medicine Library of The Wellcome Trust for his continuity of support; likewise to Robert White, a disembodied companion among the herbal and medical botany texts. The Chelsea Physic Garden has been my university in these matters, and I am pleased to be able to acknowledge the help and encouragement of past and present members of staff. Thanks are also due to David Powell, Cyrilla Rowsell, Richard Sanford and Bjørn Olveeland for sharing with me their individual talents.

2 August 1818.
THE KEATS-SHELLEY REVIEW

The seriousness with which the young Keats pursued his medical education and the influence it had on his work is now well established. The medico-botanical literature of the time adds some detail to this fascinating body of evidence. These are sources that reflect the images, language and allusions that had currency at that time and, if Keats did not plunder them directly, he evidently absorbed them from his social and working milieu. This article focuses particularly on the influential revival of interest in ancient herbs routinely classed as poisons, including hemlock (Conium maculatum) andaconite, or blue monkshood (Aconitum napellus).

In a letter to Shelley in 1820 Keats described the writing he early Eutyphon with a mind like a pack of scattered cards. Although he claimed that it was ‘pick’d up and sort to a pip’ he advised Shelley to be more of an artist and to always ‘load every rife of your subject with ore’. The resulting profusion of images are not as randomly shuffled as Keats suggests, for, like a pack of cards, patterns and associations emerge when their nature is investigated. As Keats uses one image it appears to trigger related ones either immediately or at some later point, such as the ‘coda’ of an ode when there might be a suggestion of a reprise. At their most compelling the associations can direct the whole course of the poem’s narrative.

Although the following subjects are often scientific in nature, sourcing the origins of poetic imagery is inevitably an inexact science. The choice of image or word (even an ‘and’ or an ‘or’) is the function of the poetic aesthetic that is not sacrificed to ‘scientific’ comprehensiveness or a didactic ambition. Hence we have the artistic distance between Keats and his fellow ‘botanical’ versifiers such as Erasmus Darwin and Charlotte Smith. As Hazlitt put it; ‘The poet spreads the colours of fancy, the illusions of his own mind, round every object, ad libitum’.

PESTLEMAN JACK

The Regency apothecary had come a long way from the historic ‘spicers and peppers’ of the ancient manor house and palaces. Against, and perhaps aided by, the élitism of the Colleges of Physicians, the apothecaries had gained the vast middle ground in the provision of medical care. In the previous centuries they had cared ailing monarchs, tended to their plague-ridden subjects, successfully maintained a fledglingivery company and developed well-respected educational standards for their apprentices. To this end the Apothecaries’ Garden at Chelsea (now the Chelsea Physic Garden) was established. Eventually emulating the existing university physic gardens such as Oxford, Edinburgh, Montpelier, Padua and Pisa the garden was available for apprentice demonstrations in medical botany. Botany was a subject pursued and promoted by many interested apothecaries. Among these are Thomas Johnson (editor of the second, and best known, edition of Gerard’s Herbal) and William Curtis. At the Apothecaries’ Garden, William Curtis filled the educational post of Demonstrator of Plants in addition to that of Praefectus Horti between 1772 and 1777. Curtis went on to focus wholly on the management his own gardens and publications until, towards the end of his life, he took on a pupil, William Salisbury. Salisbury was not an apothecary himself but had previously been employed as gardener to a member of the Royal Society; however, Curtis made Salisbury the beneficiary of his botanic garden and library on his death. It has been suggested that Curtis and Salisbury had established the educational side to their garden in competition to the Society of Apothecaries’ traditional herborising excursions. The latter could be time consuming and costly, moreover too exclusive. Apprentices of masters who were not a member of the Society of Apothecaries may not have had the unquestoned access to herborising excursions or the Chelsea garden. Although originally trained as an apothecary, Keats’s apprentice master, Thomas Hammond, was, in fact, a member of the Corporation of Surgeons.

In the year of Keats’s study Salisbury became ‘favoured’ as their botany teacher by the Guy’s Hospital authorities. The previous post of medical botany lecturer had been traditionally filled by physicians who had decamped to botany. Their lectures were given at Guy’s, leaving the practical experience of botany to be gained through attendance at the Society of Apothecaries’ herborising excursions. Up to the end of the eighteenth century, the post was filled by Sir J. E. Smith (1759–1828) who had brought Linnaeus’s herbarium


\[3\] Curtis’s publications include Flora Londinensis (1775–98), and the Botanical Magazine (1787—), which is still in print.

\[4\] J. Symonds (c. 1745–c. 1832) of Paddington. Salisbury had compiled Horae Puddingtonensis (1797).


\[6\] J. Burnby, private communication.
and library to London in 1784. Four years later he became a founder of the Linnean Society of London, of which he was president until his death. He appointed Robert John Thornton as his successor who held the post up to the year of Keats's study. A physician with a successful practise in the use of therapeutic gases, an inheritance had allowed Thornton to pursue his interest in botany. He is remembered for his spectacular folio *The Temple of Flora* whose prints remain sought after. Regarding size and content, the project had somewhat Wagnerian ambitions for botanical illustration and it ruined him. Thornton had been close enough to William Curtis to write a short biography of him on his death. In it he expresses the hope in William Salisbury's abilities in succeeding Curtis, and it could have been Thornton that recommended him to Guy's as a practical botanist. Unlike his predecessors, Salisbury was not a medical man so, in lieu of a post, the authorities at Guy's apparently let him use their names in his advertising for his course.

Mr. William Salisbury, of the Botanic Garden, Sloane-street, at the recommendation of Drs. Babington and Curry, Richard Ogle Esq. And other gentlemen, has lately adopted a mode of teaching Botany by making excursions into the fields near London, as was used to be practised by his late partner, Mr. William Curtis...

Salisbury thought he had something new to bring to the teaching of medical botany at Guy's. He brought out a little *Pocket Compendium of Botany*, *The Botanist's Companion* (1816), and was bullish in promoting its course:

I beg leave to observe, that lectures usually delivered for this purpose, have, in a greatest measure, failed in the intended object. For although first principles may be in that manner explained, yet a perfect and useful acquaintance with this delightful part of natural history can be acquainted only be reading in the book of nature.

At the turn of the century J. E. Smith's lectures appear thorough but perhaps a little dry for the average medical student, despite his 'instructive

and charming manner of lecturing'. Thornton might not have fared better as his pomposity appears to stand out even for his era. With the first examinations looming it might have been pragmatic of the authorities to choose a practical man. The framers of the 1815 Act specified medical botany as an examinable subject. A comment in a 1816 student's guide to Guy's may point to the anxieties: 'A more general attention to this study has been recently awakened, by its forming one of the subjects of examination at Apothecaries' Hall'.

Salisbury intended that his courses were to be given completely through the medium of herborising excursions. The students insisted, however, on some lectures were given at Salisbury's Sloane Street garden, surrounded by the books of Curtis's library. There is no record that Keats enrolled on Salisbury's course (compared to the records of payment for the internal Guy's and Thomas's courses). However the record does shows that Keats paid for courses that were not strictly necessary for the Apothecaries' Hall examination as he appears to have wished to have as full an education as possible.

**THE MEDICAL BACKGROUND**

At the beginning of the eighteenth century apothecaries had legally established their right to practice as medical practitioners, against a background

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9 Robert J. Thornton, preface to *Practical Botany* (1807).
10 A good candidate for the enigmatic folio sized physician 'Thornto out of practice'. Letter to C. W. Dilke, 20, 21 September 1818. Especially so, as William Berwick (1795–1866) was a member of Keats's social circle and had worked with Thornton on engravings for *A New Family Herbal or Popular Account of the Natures and Properties of the Various Plants Used in Medicines, Diet and the Arts* (London, 1810).
11 Robert J. Thornton, *Sketch of the Life and Writings of the Late Mr. William Curtis* (1805).
12 He may have been allowed entry notice within the hospital, as did the following year. *London Medical & Physical Journal* (1817), 37: 534.
13 Ibid. (1815), 34: 285.
14 Ibid. (1816), 35: 516.

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of hope that medicine in general would now follow the tremendous developments of the physical sciences. The mechanistic model set in motion by Isaac Newton's *Principia* (1687) was eagerly applied to natural philosophy. The knowledge of the circulation of the blood explained by Harvey, and the unblinking eye of the anatomists, has been seen as bringing the objectivity of mechanistic physics to the study of the human body in health and disease. The life and work of the influential Leyden physician and professor Herman Boerhaave (1668–1738) represents this mechanistic view of physiology. He adopted 'Newtonian' concepts of force, mass and hydrostatical pressure to explain the varying states of sickness and health. In reaction to this emphasis on the body's vascular system, others were to focus on the nervous system. Such a one was William Cullen (1710–90) who was to become an influential teacher of his times. He and his Edinburgh colleagues saw life as a state of nervous excitement produced by external stimuli of the environment acting on the tissue and muscles. He suggested that disease was the result of disturbances in the nervous system and prescribed medicines that would either stimulate or sedate it. He rejected emetics and purges in favour of agents that he saw as working on the nervous system such as the tincture of Cinchona species (quinine), camphor, or wine. He, like many other physicians, constructed a classification of diseases, in open replication of the success of Linnaeus's botanical system. William Cullen's system had the advantage over its competitors in having a relatively comprehensible structure, and his *First Lines of the Practice Physic* (1777) and also *Lectures on the Materia Medica* (1773) went into many editions. The Edinburgh emphasis on the nervous system also produced the anatomist Charles Bell (1774–1842) who in the course of his work discovered some of the basic functions of the nervous system including the existence of Bell's nerve, and hence the cause of Bell's Palsy. He and his brother wrote many influential books on the nervous system and anatomy in general, including a standard work for art students.

Cullen's pupil John Brown (1735–88) overreached his teacher in the idealisation of a unitary concept of disease. Health, he asserted, was a relative position on a thermometer of excitability that ranged from zero (diseases leading to deadly under-stimulation) to 80 degrees (equally fatal diseases of over-stimulation). Brown advocated treatment by opiates to sedate or alcohol (whisky) to excite, to urge the nervous system towards the middle of the thermometer scale and a healthy equilibrium of character, mood and emotion.

The attractively simple Brunonian system gained much popularity abroad and among some radical medical men in the England, who went on to interpret the theory in their own way. This Brunonian concept of an excitability scale appears to have been subverted for creative purposes by Keats in his conceit of the 'pleasure thermometer'. Keats's concept was the product of a moment of insight into human nature and its perception of happiness (or, in fact, Keats's own) which revealed to him 'the gradations of the pleasure thermometer — and is my first step towards the chief attempt in the drama — the playing of different natures with Joy and Sorrow'.

Keats felt his definition of happiness gave him a 'scientific' tool for his creative tasks. Although Keats made a conscious break from the mechanistic flavour of English science, he appears to have fallen back on quantitave methods when he recognised a problem. This was despite the fact that part of his identification of himself as a poet was to reject the reductionism view of the Newtonian rainbow dismantlers (as Goethe and Blake had done). Keats was particularly interested in contemporary reviews for his lack of characterization skills. He seems to have recognised this weakness of technique in himself and devised the 'pleasure thermometer' to help in his task of studying 'different natures'. Likewise, he wished to adopt the 'calmness of a Botanist' in order to classify the observed 'differences in human character'.

How successful these concepts were to Keats is another question.

Despite the medical theorising of the eighteenth century it was openly commented that little had been achieved to find simple and specific cures for most serious diseases. The physician and political radical Thomas Beddoes (1760–1808) lamented that medicine was remote from the 'perfection' of experimental physics or chemistry. The few exceptions that were successful fuelled the aspirations of the medical professions. One such success was the use of the quinine-containing Jesuit's Bark (*Cinchona* species) for malaria; a simple and effective treatment, if only for the few that could afford it.

**THE APOTHECARY AND THE APPENTICE**

An apothecary was clearly a decent and respectable living for a middle-class gentleman with a certain amount of business acumen. Of course one had to have an apprentice, maybe more than one, to delegate some of the imperative tasks. Although druggists could supply the wholesale preparations, there

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20 Letter to John Taylor, 30 January 1818.
21 See letter to J. H. Reynolds, 31 September 1817.
23 Letter to Mary Ann Jeffrey, 9 June 1819.
was some ‘making up’ no doubt to do, messages were to be taken and the shop kept while the apothecary was called out. William Chamberlaine’s *Tirocinium medicum; or a dissertation on the duties of youth apprenticed to the medical profession* (1812) reads as a catalogue of misfortune in the hiring of apprentices. The danger of losing business through their thicknees is repeatedly testified. Capitalisation is reserved for the worst crime — the receipt of ‘SAUCY ANSEWRS’ from the ungrateful boys. The personal stresses of running what could be seen as the equivalent of a modern general practitioner might explain Keats’s recollection of ‘clenching his hand’ to his apothecary master, Thomas Hammond, early in his apprenticeship.

The desire of the Worshipful Society of Apothecaries to license apothecaries was achieved by the establishment of the 1815 Apothecaries Act, and Keats was one of the first students to be examined under the new ordinances. On 25 July 1816 he produced evidence that he studied the required courses in anatomy, physiology, chemistry and *materia medica*. Keats’s success at the examination cannot be taken for granted, two of Keats’s contemporaries failed on the same day. Although successful in his education, he never stretched his practice beyond informal advice to friends and family. His unhappiness with surgery is well recorded. The grimness of the dissecting room appears to be used as imagery in *Hyperion* — ‘O effigies of pain’ — an image that has a visual record in a chalk drawing by Charles Landseer dated 3 May 1815 at Charles Bell’s anatomy school at Great Windmill Street, London. 25 A flayed torso has been flung over a block to taut its superficial muscles. J. E. Smith looked back on his physician’s training with no regret at leaving it.

In botany all is elegance and delight. No painful, disgusting, unhealthy experiments or inquiries are to be made. Its pleasures spring up under our feet, and as we pursue them, reward us with health and serene satisfaction. 26

As we shall see, when it came to medical botany these divisions of taste where not so exact.

The *materia medica* of the Regency was a mixture of substances derived from animal, vegetable and inorganic kingdoms — a jumble of items and

25 *Chalk Drawing, by Charles Landseer, 3 May (1815), Wellcome Institute Library. Charles and his brother Thomas Bell were pupils of Haydon along with the engraver Thomas Berwick. Keats was to help raise money for a joint exhibition by the three. Haydon had previous studies anatomy with Charles Bell in 1806, striking up a friendship that lead to Haydon assisting Bell with dissections of human and animal remains.

26 J. E. Smith, *Introduction to Physiological and Systematic Botany* (1807).
early nineteenth century list of species (and the 1815 London *Pharmacopoeia*) from their pedigree alone, but also from a contemporary episode in the history of the *materia medica*.

**BARON STÖRCK & THE 1819 ODES**

My heart aches, and a drowsy numbness pains
My sense, as though of hemlock, I had drunk,
Or emptied some dull opiate to the drains
One minute past, and Lethe-wards had sunk:

Chamberlaine recorded the literary pursuits of his apprentices with some irritation. In preparation for their 'private theatricals' they were in the habit of hiding copies of Restoration plays within their *materia medica* textbooks that they were meant to be studying. 'Instead of the works of Cullen and Bell' he is studying the works of Otway and Congreve.' Despite distractions such as these it was perhaps knowledge of the *materia medica* that the apothecary apprentice came away best equipped with. A student's guide even suggested such apprentices were so well versed in the subject that they could omit the *materia medica* course when they came to Guy's at the end of their indentures.22

Perhaps it was in emulation of the evident and powerful effects of the heavy metal and mineral salt therapy that prompted Anton Stöck of Vienna (1731–1803) to investigate the use of certain poisonous plants as curatives.23 He claimed that his attention had been brought to these plants by their use as an external application for painful schirrusses and cancers in 'ancient times'. However some work had been done earlier by German investigators as part of the trend in the use of extracts of single plants rather than complex mixtures of the previous era.24 Stöck decided to investigate their internal use, not only on cancers but a range of serious conditions.

Stöck was in a good position to undertake this investigation, as he was a senior figure in the medical school of Vienna. He rose in the course of his career to become an Imperial court physician under Gerhard van Swieten. Stöck's reputation could not be higher as van Swieten had been the star pupil and faithful disciple of the father of Enlightenment medicine, Herman Boerhaave, whose theories, as we have seen, encouraged a mechanistic and experimental view of the human body. A physician-in-ordinary to Empress Maria Theresa, Stöck apparently cured her of smallpox in 1767. Appointed a high-ranking member of influential Imperial bodies he continued many medical and educational reforms in Austria in his lifetime. Ennobled, he became Baron Stöck in 1775, a contrast to his early upbringing as an orphaned son of a blacksmith living in a poorhouse.25

Despite the fact that many potent species had been incorporated into medical use from varied parts of the world and were readily available, if expensive, each of the species that Stöck chose to work with was a native to Europe.

- hemlock (*Conium maculatum*)
- hembane (*Hyoscyamus niger*)
- aconite (*Aconitum napellus*)
- autumn crocus (*Colchicum autumnale*)
- meadow anemone (*Pulsatilla vulgaris, previously Anemone pulsatilla*)
- cleomatis (*Cleomatis alba*)
- bastard or false dittany (*Dictamnus albus*)
- stramonium (*Datura stramonium*)

The species on this list has engaged the interest of scientists up to today. The potent constituent compounds of hembane and the autumn crocus in particular have important use in modern medicines. Stöck widely disseminated his work, and it was read and acted upon around Europe, particularly the account of hemlock. This species, he claimed, had wide curative properties, but was a specific for cancerous growths and this appeared to be

22 Some teachers have thought it necessary to add *materia medica* as a separate course; but this seems to be an unnecessary addition to an expensive education. The Apothecary Company in their examination in this branch require nothing more than what every apprentice must have learned, and what every course of pharmaceutical chemistry could contain. *London Physical and Medical Journal*, No. 192, 'Advice to Medical Students on their Arrival in London' (September 1816).
24 C. Habrich, 'Characteristic Features of Eighteenth-Century Therapeutics in Germany', *Chir medica* 22 (1991). Georg Wolfgang Wiedl (1645–1721) had worked on autumn crocus, and Johann Jakob Wegfer (1620–95) on water/hemlock, wolfbane and helterbeore, who had experimented on animals including wolves, cats, dogs and mice.
26 The latter was an introduction from the American continent that had been naturalised to Europe by this time.
the key on which the reputation of the rest of Ströck’s work hung. Little
could be done in this period to differentiate between benign or malignant
cancers, let alone cure the suffering patients — ‘Were it in my choice I
would reject a petrarchal coronation … because women have cancers’, is a
bleak observation from Keats’s medical experience.

The dramatic Dr Robert Thornton, ambitious botanic publisher and
lecturer in botany at Guy’s Hospital until the year Keats arrived there, deals
concisely its history:

Immediately on the arrival of this publication in Great Britain, large
quantities of the extract, made according to Dr Störck’s directions, were
prepared by private apothecaries, and at most hospitals within the kingdom,
and practitioners congratulated each other on a remedy for this most terrible
distemper having been at last discovered. But alas! how were they disap-
pointed when they found, after the ciutia [hemlock] had been administered
to many hundreds of unhappy patients, not one true cancer had been cured
by any practitioner whatever.

This appears typical of the more critical accounts of the use of hemlock
that derived from its use in Britain. However, the Vienna school and Störck
were highly respected and several sources for the failures were suggested. The
identity of the exact Conium species, the nature and strength of the extract
prepared and, most importantly, the inaccurate diagnoses of the disease itself
were all blamed. Störck continued publishing more case histories (some of
which recorded the inefficacy of hemlock in some patients). Addressing
the variability of the prepared extract, he went to the lengths of sending his own
hemlock extract from Vienna. Meanwhile his English supporters defended
him, and elucidated his methods further in the London press. ‘Some few
persons have … accused him of asserting more than be observed, and of
meaning more than he asserted’. This persistence appeared to somewhat
irritate some quarters of the medical profession who described Störck as a man
violently attached to the medicine he considered a specific in all
diseases’. However, even they had to concede that the successful cases of its
application could not be ignored:

As an external application of painful cancerous sores, it [hemlock] deserves
our regard; it seldom fails to allay the excruciating pain, and gives a blissful
period of ease and rest unknown to the unhappy patient before its use. The
plant possesses a strong narcotic power, but, unlike opium it does not cause
constipation etc.

As with many drugs, the dose is all. Socrates was prevented by his executioner
from pouring a libation to the Gods from his cup of hemlock. It was explained
to him that the cup held the correct amount. The nerve-paralysing alkaloid
constituent conine first numbed the feet then gradually worked up the body
to the respiratory system, at which point the victim was asphyxiated. Too
little, it seems, would make the patient comatose, too much would cause
convulsions.

Störck started his investigations by experimenting on a hungry dog. The
next step for a rational doctor of mechanistic pedigree, such as Störck, was to
observe its functional effects on a healthy individual. To give it to another
would have been potentially ‘criminal’, so Störck prepared some hemlock
leaf extract, drank it and washed it down with a cup of tea. He continued the
dose twice a day for eight days, and coolly observed himself carrying out his
normal routine ‘without perceiving the least inconvenience from it’. A
problem did arise when he dropped some milky sap on his tongue, which
swelled hard and very painfully; ‘This untowards event frightened me, gave
me great apprehension of the consequences’. He recorded case histories of the
many patients he treated with these potent herbs, most of them suffering with
chronic and painful problems who had been referred to him by his brother
physicians including van Sweiten. On publication of his work Störck hoped
other physicians would make their own further experiments, undertaken with
due care. He advised that dosages started very small and increased until the
treatment had some effect. In this cautious fashion practitioners were
sometimes tempted to experiment on themselves, following Störck’s lead.
Curtis described some eminent London apothecaries progressively eating
hemlock root to discover if it had any effect on themselves. The ambiguity of
the plant and indeed the whole variable Apiceae (Umbelliferae) family may be demonstrated in the finding of one of the party who went as far as to find it 'agreeable eating at dinner with meat as carrots'.44 The influential Joseph Orfila (1787–1853)45 continued the hemlock-swallowing tradition in an act designed to highlight the dubious preparation of hemlock by an apothecary; 'to prove to him that the medicine was badly prepared ... we swallowed a draught. We felt no ill effect'.46

The exposure of Keats to Störek's work is made clear by the active interest take in it by Dr Alexander Marret, onto whose Chemistry courses Keats's enrolled at Guy's. On 25 June 1816 he read a paper to the Medico-Chirurgical Society of London, 'On the Medicinal Properties of Stramonium', the new medicine of 'Dr. Storck [sic] of Vienna'.47 Like the 'modern German practitioners' Marret had been using it in his own practice, and like most Störek's nominal poisons it is described as a great pain reliever.

Hemlock's position in the contemporary materia medica is made clear in both Salisbury and Curtis's arguments for importance of training medical students in botany. In what appears to be an inversion of our perception of a healing herb, the botanists are concerned that a harmless plant such as cow parsley will be mistaken by the working apothecary for the potent hemlock. Incidentally it should be pointed out that these pharmaceutical entities were real plants to Keats, as is obvious to anyone reading his work. For example, in Endymion he uses the characteristic growth of hemlock to set the scene where Pan loses Syrinx:

And through whole solemn hours dost sit, and harken  
The dreary melody of becided reeds  
In desolate places, where rank moisture breeds  
The pipy hemlock to strange overgrowth;48

By the time of Keats's study, hemlock's usefulness as a narcotic appears to have been its most common recommended application of the herb, a classification that would bring it in comparison to opium.

44 William Curtis. Flora Londinensis (1755–98). The uniquely identifying purple-spotted stems of Canthium maculatum do not appear until the plants are mature in high summer. Up to then it can be largely indistinguishable from such harmless species as sweet cicely (Myrrhis odorata).
45 Author of Traité des poisons (1814).
46 Quoted in John Lindley's Flora Medica (1838).
manufacturing towns'. She then continues to personally extol its use as a
gentle sedative and the 'inducer of oblivious delirium from the cares of life'.

The attention-grabbing opening of the Nightingale ode has been referenced
to Keats's contemporary reading of Robert Burton's *The Anatomy of
Melancholy* (1621). Not that precisely though, as a section of fourteen
pages covers the cures of wine and opium to deaden 'painful melancholy'
in this erudite book. In fact, Burton's 'natural history' of melancholy has a
considerable amount of 'Pharmacoeutic' within it. His lists of 'seeds, spices,
herbs, roots' would have reminded Keats of his apprenticeship, and it give
witness to us of the historic use of henbane (*Hyoscyamus niger*), mandrake
(*Mandragora officinarum*) and deadly nightshade to procure sleep.

Contemporary medical authors were evidently anxious that they had not
learned all they could from the ancient past. Medical botany texts combined
the ancient, historic, as well as contemporary knowledge of plant medicines.
A notable testament to this curiosity was the academic career of John
Sibthorpe (1758–96), the much-absent Oxford professor of botany. Sibthorpe
travelled to Greece for three years in 1784 to investigate the medicinal plants
recorded by the ancient Greco-Roman Dioscorides, author of *De Materia
Medica* (about AD 60). This was the first systematic book of medicines in the
Western tradition; it contained the long centuries of Dark Ages by taking
sanctuary on monastery shelves. It's 're-launch' in the sixteenth century
revived interest in ancient use of plant medicine. The resulting great herbalists
of the European tradition such as Turner, Fuchs, Brunfels, Gerard, had
brought up more questions than they answered on the identification of many
plants. By botanising in the region where Dioscorides had known them,
Sibthorpe hoped to make the herb-lore of ancient Greece available to modern
medicine through taxonomy.

In 1790 William Woodville, then physician in the Middlesex dispensary,
published his *Medical Botany* as a rationalising project. It became a standard
work describing all the medical plants in the catalogues published by the

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John Keats and the Botanic Pharmacy

Royal Colleges of Physicians of both London and Edinburgh, its third and
last edition being edited in 1832. Referring to the state of pharmacy, Robert
Thomson proclaimed the achievement: 'The Medical Botany of the ingenious
& able Woodville cleared much rubbish from this Augustan stable...'. Yet,
Woodville, like other such authors, continued to footnote potentially useful
references to ancient and historic authors. In the monograph on hemlock
Woodville quotes Theophrastus (371–c. 287 BC), disciple and successor to
Aristotle at the Athens School. Cited in Latin in order to veil it from
unprofessional eyes. Theophrastus reports on a 'remedium of Thrasyas of
Manisa' which can save life without pain (absque dolore) which consisted of
'cen Cnica 25 et Papaveris succo mistum' — the juices of hemlock and poppy
[opium] mixed.

The expectation of a humane response from a doctor to a terminally ill
patient must have been pressing at a time of little pain relief. Such a cryptically
described 'remedium' may have been part of the unofficial and untested
repertoire of the medical practitioner, the sort of 'in-house' knowledge that
could have had some sort of currency among medical students.

The opening two lines of the Nightingale ode clearly have myriad cultural
references. It would have possibly invoked, at least for Keats, the ancient
execution, the power of opium and his experience of the recent *matera
medica*. Nevertheless, the image also holds something of the dramatic
moment of self-experimentation; first derived from Enlightenment medicine,
it has now gained a Romantic element of dread. An action when even the
most rational person can be forcibly thrown on their feeble senses, and in
Keats's words, live 'on the pulses'.

The opium use of poisons, and the consequent coma-induced dream appear
to be a concept that Keats found useful. In a letter to his friend
Benjamin Bailey in 1817 he debated with himself the imagination and its
ability to produce poetic truth: that is, a truth that is universally
recognisable and inclusive, by which a work of art can attain immortality:

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50 Elizabeth Kent, *Flora Domestica* (1823). See Molly Tashell, 'Elizabeth Kent and Flora
Domestica', *Keats-Shelley Memorial Bulletin*, 27 (1976), and Ann B. Sheir, *Cultivating Women,
Cultivating Science — Flora's Daughters and Botany in England 1760 to 1860* (John Hopkins
Memorial Association, 1971).
52 Sibthorpe's *Flora Graeca* (1806–40) was published posthumously by J. E. Smith. That
Sibthorpe's mission was not just an excuse to botanise may be testified by his breaking his
journey to Greece to study the earliest extant complete copy of Dioscorides work, *Codex
Vindobonensis*, in Vienna.
53 Robert J. Thornton (1810), op. cit.
55 *Cnica, cica* — pre-Linnaean names for the hemlock (also the archaic apothecaries' Latin
for hemlock), but the Linnaean and post-Linnaean botanical names for other members of the
Apoaceae (*Unbellefereae*) family.
56 In the middle of 1819 an imminent financial crisis forced Keats to think of working on an
Indianman as a ship's doctor, shielding his identity as a poet. He colours his potential dilemma by
the imagery self-dosage: '...I have the choice as it were of two poisons (yet I ought not to call
this a Poison) — the one is voyaging to and from India for a few years: the other is leading a
fearful life alone with Poetry'... (Letter to Sarah Jefferies, 9 June 1819).
of nominal poisons must be one the high points of 'rational' medicine. As in
the performance of pre-anaesthetic surgery, there were certain instincts to
supress when you gave a poison (at least in name) as a curative. Students
were admonished 'to be fearful and apprehensive in administering this active
plant [hemlock] betrays a weakness of mind almost incompatible with
medical practice'.\textsuperscript{57} Given the uncertainty of the preparation it was perhaps
natural to be apprehensive (somewhat less perhaps when one had made
the preparation oneself). The withering injunction sounds like a pharmaceutical
parallel to the fear and apprehension Keats felt during the small amount
of surgery he performed. As his friend Brown reported: 'He ascribes his inability
[to operate] to an overwrought apprehension of every possible chance of
doing evil in the wrong direction of the instrument.'\textsuperscript{58} Both the Stôck poisons
episode and the increasing reliance of surgery in medical care are both
indicators that 'heroic' medicine was well emergent.\textsuperscript{59} As has been argued by
Robert White, the role of a warrior fighting disease with the patient as a
battleground would have been far from Keats's idea of himself as a medical
man.\textsuperscript{60}

\[\ldots\] THERE IS RICHEST JUICE IN POISON-FLOWERS\textsuperscript{61}\]

In some aspects the Theophrastian, wine-based, herbal infusions of the
ancients can be said to be surprisingly unaltered in Keats's time. \textit{Vinum}, or an
extract of a herb in wine, was still included in the 1815 London \textit{Pharmacoepoia}
that Keats would have been examined on (an edition which had expunged
from its pages such archaic preparations as lozenges).\textsuperscript{62} Distillation and other
techniques, of course, had been advanced especially as technology produced
better laboratory equipment. In addition to preparing purer distillates than
in the past, alcohol could be used instead of the wine to extract the active
principles from the plant material more efficiently. However, due to the sheer
number of chemical substances found in organic material, this simple process
did not yet result in a single chemically pure substance. Complex organic
molecules resisted segregation from each other and were not so easily

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\textsuperscript{57} Hyde Mathis Brown, op. cit. Stôck's case studies report reluctant patients, some of whom
terminated its use before the frequently long course was over.

\textsuperscript{58} C.A. Brown, \textit{Life of John Keats}, ed. Dorothy Hyde Bohurtua and William B. Pope (Oxford
University Press, 1937).

\textsuperscript{59} As used by Oliver Wendell Holmes (1809–94).

\textsuperscript{60} Robert S. White, 'Keats and the Crisis of Medicine in 1815', \textit{Keats-Shelley Review}, No. 13.

\textsuperscript{61} Isabella: or, the \textit{Pot of Basil}, 1: 104

\textsuperscript{62} \textit{Pharmacoepoia}, Collegii Regalis Medicorum Londinensis, MDCCXIX (Editio altera).
identified as their inorganic counterparts. The notorious laudanum was simply a tincture of opium — the dried exudation of the opium poppy (Papaver somniferum) extracted in alcohol. The developing science of pharmacy can be said to have been driven by the quest for opium’s active principle: ‘Of all the popular vegetable drugs opium was one more than any other tortured to yield up its essence’.\(^{62}\) It was only as Keats was studying at Guy’s in 1816 that it was first publicised that the alkaloid Morphin (morphine) had been isolated some time before in Germany.\(^{64}\) This was the first plant alkaloid to be produced in large scale, and many others followed in the first decades of the nineteenth century. Familiar alkaloids now yielded themselves to investigation such as strychnine, quinine, caffeine, nicotine and codeine among others. Whether this is considered a list of potent drugs or distressing poisons depended on their dose and application, the study of which was now fuel the new subject of pharmacology.

This may be considered a moment when pharmacy started to become untethered from the ancient past. What was the use of quoting Theophrastus and Dioscorides when you had conquered plant chemistry (at least to the point where you could isolate active principles) as these chemically pure plant drugs were unavailable in the ancient world? The new medical botany texts produced in the following decades appear not only with less frequently but, like John Lindley’s Flora Medica (1838), they are a poor source for the creation of sensuous imagery.

Before this fundamental change in drug therapy, one of the most reliable forms of extract was the expressed juice. This was particularly suitable for sappy species and was the form of preparation used by Stöck. His first description of the preparation of the hemlock extract was much repeated and clarified as it was felt that the apothecaries’ careless preparation was one reason for the erratic results: ‘I therefore, pressed out the juice from this herb, and evaporated it with a very gentle heat in an earthen vessel, to the

\(^{62}\) A.C. Wootton, Chronicles of Pharmacy (Macmillan & Co., 1910).
\(^{64}\) Friedrich Wilhelm Adam Sertorius of Eimbek in Hanover had first announced it in 1806, but it received more attention when he named it Morphin and re-published the work in 1816. Sertorius in France was also working and writing on the composition of opium at the same time. The distance that separated morphin from its eventual medical use is shown in one of the controversies over the 1815′ corrected edition of the 1809 London Pharmacopoeia. The contemporary ambiguities over the preparation of extracts from plant material is at the heart of the discussion over the best way to make an extract of opium; with water, rectified spirit (alcohol), or both. See Richard Phillips, An experimental examination of the last edition of the Pharmacopoeia Londinensis, with remarks on Dr. Powell’s translation and annotations (London, 1811).

consistence of an extract’. He later made pills by mixing the extract with an inert powder. The emphasis that subsequent texts gave to the accurate identification of hemlock and the preparations of Stöck’s extract reflects the confusion and accusations that the followed its first British trials.

Stöck’s repertoire also included an extract of blue monkshood or ‘wolf’sbane’ (Aconitum napellus) ‘EXTRACTUM ACONTI’ mostly succeeded with ‘invertebrate gonorrhoea’ and ‘pains that were obstinate’.\(^{65}\) As with hemlock he is credited to be the first to give wolfbane as an internal medicine. Stöck’s name would have been known to any student of Keats’s generation as even new textbooks still referred to his work. William Salisbury describes preparation of wolfbane in the year of Keats’s study; ‘This plant has been generally prepared as a extract or impissated [evaporated] juice, after the manner directed in the Edinburgh, and many of the Pharmacopoeias, and, like all virulent medicines, it should be first administered in small doses. Stöck […] recommends two grains of the extract to be rubbed into a powder 2 or 3 times a day’.\(^{66}\) The Edinburgh New Dispensatory of 1804 defined ‘expression’ as ‘a species of filtration assisted by mechanical force which is performed by means of a screw press with plates of wood, iron or tin’. As we shall see, it appears that the image of this process left a lasting impression of Keats.

It is these strongly characterised plants of renewed medical interest, that colour the opening of ‘Ode on Melancholy’ (1819).

\begin{quote}
No, no, go not to Lethie, neither twist
Wolf’s-bane, tight rooted, for its poison wine;
Nor suffer thy pale forehead to be kiss’d
By nightshade, ruby grape of Proserpine
\end{quote}

Tight-rooted ‘wolf’s-bane’ was the common name for Aconitum napellus, also known as blue monkshood. Although now considered a native wildflower which has been introduced into the garden, this specific species may have been introduced into Britain during medieval times for its powerful properties.

We know it was not Keats’s first choice as the original manuscript of the ode survives. From this we can see that Keats had in mind the poisonous medicines, as he begins the second line with ‘henbane’, Hyoscyamus niger; henbane has had a history of attempted anaesthesia intermittently for centuries, perhaps more than any species in Stöck’s repertoire. Mixed with

\(^{65}\) Hyde Mathis Browne, op. cit.
\(^{66}\) William Salisbury, The Botanist’s Companion (1816).
the juices of mandrake and opium, it either put you into death-like sleep or a
sleep that was in fact death.

However appealing the images of henbane were to Keats, poetry is about
words. We see in the manuscript that henbane is struck out in favour of
‘wolfs-bane’, having a more suitable resonance. ‘Searching around the poles’
for dreadful imagery Keats moves from the area of Burton’s Anatomy (where
wolfsbane is not mentioned) and moves towards his floral-cum-
pharmacological knowledge. Salisbury describes an origin for the name, in the
death of wolves that ate it while rummaging for more succulent roots. Keats
seems to pick up on this and focuses on a characteristic feature of this
particular species. The epithet ‘nepetius’ of the Latin name signifies a little
turnip, an illusion to the shape of its root, an otherwise hidden feature that
the poet shows us he was familiar with or, at least, with its Linnaean name.

A source of poison since ancient times, wolfsbane’s most active constituent
aconitine is now known to be one of the most powerful of naturally found
poisons. Salisbury crops Woodville explaining that ‘every part of the fresh
plant is poisonous’. But, Salisbury adds, ‘the root is unquestionably the most
powerful’. Salisbury evidently liked to pepper his botanical discourse with
vivid accounts of accidental poisoning, usually gleaned from the Gentlemen’s
Magazine. We are told of a weaver of Spitfields accidentally eating some in
a salad; ‘his teeth appeared loose and ... although a looking-glass was
produced ... yet he imagined that his face was swelled to twice its usual size’.
The venom of the plant was invoked by Keats when passionately writing to his
fiancée Fanny Brawne; ‘If we love we must not live as other men and
women do — cannot brook the wolfsbane of fashion and folly and tattle.

Whatever the exact herbal reference, the anguished image of twisting out
its poisonous wine (which starts in the first line of the ode) points to the
preparation of these pharmaceutical juices. (This is one of many such vinous
references in his poetry and letters at this time.) Robert Thornton in his
popular account of the medicinal plants gives a descriptive account. ‘Bruise
the leaves of wolf’s bane and enclosing them in a hempen bag, compress them
strongly till they yield their juice’. As we have seen, the press was a part of
traditional equipment of the apothecary and Keats converts twisting vector of
the screw into a more literary image; that of the expression of the poisonous
wine by wringing hands.

Even if the wholesale druggist was by then maicing the bulk of preparations,
it was all part of the same endeavour as the apothecaries, who may have

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preferred to make such potentially dangerous drug themselves. One would
want to be assured, as much as was possible, about the strength of the extract,
and the importance of its freshness had been emphasised. At the very least
the pressing of the literal ‘poison wine’ would have been a known process to
Keats. It is after all the same technology that was to mesmerise the personified
autumn in the Ode to Autumn, written later that year:

Or by a cider-press, with patient look,
They watchest the last ebbing hours by hours.

RUBY GRAPE OF PROSERPINE — THE BITTERSWEET FRUIT

In his typical cascading of related images Keats moves on to another species
in the fourth line of the ode. If not as poisonous as wolfsbane, or the seeded yew
berries that follow, in fact few plants are, it cannot be regarded as a benign
herb. The ‘ruby grape of Proserpine’ is probably not Atropa belladonna, the
deadly nightshade, but the woody nightshade (Solanum dulcamara), or
bittersweet. This is a plant that could produce ‘very dangerous symptoms’ in
large enough quantities.

A native wildflower that still held its place in the Pharmacopoeia,
bittersweet was a common presence in the countryside and suburbs, the flora
of which Keats was familiar with. Indeed it was one on list of thirty-nine
species recorded by Salisbury that were found flowering on Hampstead Heath
on 14 June 1816 by his field trip, this herbarising excursion being one of the
early summer rendezvous which Keats most likely to have attended. (Keats
gained his licentiate in July that year and probably felt it unnecessary to
attend and bear the expense of further courses.)

Bittersweet, like deadly nightshade, is a member of the alkaloid-rich
Solanaceae family, as its striking yellow and purple flowers testify. Later in
the year the characteristic small ‘bunches’ of oval translucent brilliant red
fruit ripen. The epithet dulcamara refers to the change of taste of the fruit and
stalk as they are chewed, whether from bitter to sweet or vice versa (even
simultaneously) seems to be a matter of opinion.

‘Bitter sweet’ may be too poetic a concept to need a botanical inspiration. However,
the concept of dulcamara does appear to return in the final ambivalent stanza. The ‘taste’
of potential harm or distress in the midst of

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67 William Salisbury, op. cit.
68 Robert J. Thornton (1810), op. cit.
69 Gareth Evans, op. cit.
70 London Medical & Physical Journal (1816), 35: 85.
71 ‘The bitter sweet of this Shakespeare fruit’, On Kings Lear, 8. ‘The hand was serpent, but oh
bitter sweet!’, Lamia, 1:59.
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sweetest parallels Keats expression of the temporal nature of beauty and its pleasure; 'joy's grape' can be a deceptively bittersweet experience.

... and aching Pleasure nigh
Turning to Poison while the bee-mouth sips:
Ay, in the very temple of Delight
Veil'd Melancholy has her sovran shrine,
Though seen of none save him whose strenuous tongue
Can burst joy's grape against his palate fine;
His soul shall taste the sadness of her might
And be among her cloudy trophies hung.

The odes effectively make use the imagery of potent plants with Shakespearean vividness and confidence, with the help of Keats's floral knowledge and of his modern apothecary and botanical training.

AFTER STÖRCK

The Störck episode disturbed the medical profession as it revealed vulnerability in their methods. In their private practice and within their hospitals desperate patients supplied readily available 'guinea pigs', but the methods and techniques of analysis and diagnoses developing on the Continent had yet to be imported. The visible wake of Störck's work appears in the emerging sciences being born in the progressive universities of the German states and France. His unique list of species acting like a fingerprint of his influence.

Morphine was the first of many plant alkaloids to be isolated. Much ground was covered by Philip Lorenz Geiger (1785–1836) in purifying the alkaloids in all of the unique collection of herbs selected by Störck. Other workers in the field refined codeine, quinine, cocaine, ephedrine, atropine, etc. The pharmacist and physician now had active principles of known purity and strength, which they could use as drugs. This new study of pharmacology was to change the apothecary into a 'chemist' and his shop into a laboratory.

Sixty years after Keats's training at Guy's, hemlock's active constituent conine became the first alkaloid to be synthesised by chemists (a process where a substance is created in the laboratory by the reaction of, often simpler, chemical materials).

Homeopathy, the innovative therapy of the physician Samuel Hahmman, was developed at this time gaining popular support as the nineteenth century developed. Its popularity has not waned and its core repertoire has maintained the collection of metal, mineral and potential poisons that were contained in the materia medica at the time of its conception. Hahmman was the 'prince' of self-experimenters as all ninety-nine entities in his materia medica were 'proved' either on himself or by his pupils. Homeopathy it has been suggested as the source for Keats's references to poisonous plants. It might be more accurate to say that the work of Störck is perhaps a source of both. Hahmnan went to study clinical medicine in Vienna in 1777, and five of the eight species used by Störck were among Hahmman's first therapeutic 'provings' between 1805 and 1828. Certainly, the 'invisibility' of the homeopathic dose was a reaction to the dreadful risks of potentially toxic remedies, such as Störck's poisons and the heavy metal salts.

The conclusion of the Störck episode as penned by William Cullen was blunt — it was all down to 'a partiality to his Störck's own discovery, and from false information given in complaisance and adulation to the rank he holds'. However the failures appear to be due to the then difficult diagnosis of cancer. As Störck perceptively puts it:

Now... hemlock is sometimes of service, but at other times does nothing in the same disease; it is certain there must be some latent difference, the diagnostic signs of which are yet unknown to us.

Certainly the successful application of his treatments resulted in his name surfacing throughout the nineteenth century. The alkaloids of colchicum, stramonium and henbane became popular drugs and their chemical constituents are used in medicine today (the later being abused by the doctor-turned-homeopath-turned-murderer Crippen in 1910 to dispose of his wife).

For half his career Keats pursued studies that still had some therapeutic reference to the ancient past, filled with sensuous allusion and images for a poet. But, as Keats was studying, developments were well afoot and subsequent nineteenth century apothecary apprentices were to find themselves accelerated down the comparatively sterile corridors of the emerging medical sciences and their consequent specialisms.

JOHN KEATS AND THE BOTANIC PHARMACY

32 Rima Houlden, In Search of the Late Hahmnan (Beaconsfield Publishers Ltd).
33 Continuing into the twentieth century in A Modern Herbal (1931). Maud Grieve's herbal monographs edited by Hilda Leyel.