Shakespeare's England
An Account of the Life & Manners of his Age
Volume I

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II. PLANTS

BY

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The study of plants has grown out of the necessities of life. The most primitive peoples learn by experience to use and distinguish the plants which may serve for food, for the various arts, or as remedies for disease. As far as the Greeks and Romans were concerned, their knowledge was summed up in the writings of Dioscorides and of the elder Pliny. And when the revival of learning took place in Europe, a vast and comparatively sterile literature was devoted to commentaries on Dioscorides and Pliny and to the attempt, only moderately successful, to identify in other countries the plants of Eastern and Southern Europe which they had described.

England alone possessed from the earliest times 'a wide knowledge of native plants and garden herbs, which was an original achievement' and independent of tradition. The Anglo-Saxon stock, when rooted in English soil, burst out into literary accomplishment, to which that from which it sprang could produce nothing comparable. Its botany was confined, it is true, to 'herbal medicine'. But it was of purely native manufacture; it was copious, and, unlike the custom on the Continent, for centuries the books in which it was described were written in the native tongue and were not intended merely for the learned, but for popular use. The principal surviving documents have been collected by Cockayne in his Saxon Leechdoms. He includes under the title Herbarium the eleventh-century Anglo-Saxon translation of the De virtutibus herbarum of Apuleius Barbarus, a late writer of obscure origin. According to Payne, 'the therapeutical part belongs to the lowest period of Roman medicine. But it was translated into Anglo-Saxon as the best work available in Europe on natural history in relation to medicine.' The fact that the Latin names were, when possible, replaced by English showed that, as far as botany was concerned, it added little to existing knowledge. Perhaps its chief interest is that it
introduced to English readers the mythical properties of mandragora.

That the actual knowledge of plants at the time was copious is evident. Making all possible deductions from Cockayne's figures, Payne finds that Anglo-Saxon botany had 'about 500 English names of plants in use'. Apuleius has 185, and the earliest German Herbal, the *Herbarius* (1485), enumerates only 150. 'There must have been', says Payne, 'a popular and widespread love of flowers—a national characteristic which may still be recognized in the cottage gardens of the South of England.' All this was unintelligible to the Norman invaders, whose slender equipment in science only found a scanty expression in Latin and was merely literary. The Anglo-Saxons had accumulated a large body of fact and observation. The generalizations which would have followed were summarily quenched, and we may agree with Professor Earle that 'there was a great decadence in botanical knowledge in England between the eleventh and sixteenth centuries'. The development of what might have been an indigenous and independent school of botany was thus completely frustrated. Our later knowledge, as will be shown, was imported from the Continent. Many of the old English names became obsolete. Thus the herb they called 'bishopswort' was identified with the *vettonica* of Pliny and became 'betony'.

The Anglo-Saxon use of herbs for therapeutical purposes was purely empirical. It was superseded by a materia medica of an entirely different origin, which still persists. 'Even in our day', to quote Payne again, 'there exists a popular herbal medicine, strongly combined with the use of charms and magical ceremonies of very ancient origin, which still holds its place in popular belief. In this corrupt and undignified form we may still trace some features of the old Anglo-Saxon medicine.' In Gloucestershire, where this chapter was written, the writer met with a man collecting betony as he might have done a thousand years ago.

Gervinus has said that 'in Shakespeare's time nature had not yet become extinct'. But it was in process of becoming so, and Ellacombe says justly that Shakespeare is 'curiously distinct from all his contemporaries' in the use he makes of the popular botany, which was not literary but traditional. It is obvious that Spenser's language is purely
conventional and that he often did not know the plants he names. But Shakespeare was country-bred, and the atmosphere of his plays is reminiscent of 'the hedgerows and woods of Warwickshire'. If Shakespeare introduces a plant, he does it with faultless inspiration born of observation which no art can supply. No other Elizabethan could have written

\[\ldots\text{ whose perfect white}\]
\[\text{Show'd like an April daisy on the grass.} \quad (\text{Lucr. 394-5})\]
He must have been familiar with the blooming of the wild daffodil in the west which fills the country with a sort of moonlight haze:

\[\ldots\text{daffodils,}\]
\[\text{That come before the swallow dares, and take}\]
\[\text{The winds of March with beauty.} \quad (\text{Wint. Tale iv. iii. 118-20})\]

Shakespeare, when he is drawing on his country knowledge, uses the native English nomenclature as in Dock, Daisy, Elder, Harebell, Hemlock, with occasionally the Old French—which in many names ousted the native tongue—as in Burnet, Camomile, Eglantine, Fleur-de-Luce, Rue. Shakespeare appeals to popular or, at any rate, general knowledge; Spenser to one that is at least scholarly and constantly reminiscent of the Roman poets. Spenser's 'sayling Pine' (Faerie Queene, i. i. 8) simply translates Virgil's 'nautica pinus'. 'Alcides' speckled poplar tree' (An Elegie, 13) recalls Ovid's 'Herculeae populus alba comea', and 'as roses did with lillies interlace' (Faerie Queene, v. iii. 23), Virgil's 'mixta rubent ubi lilia multa Alba rosa'. But if Shakespeare's botany is popular, it could appeal to a quick intelligence on the part of his audience. There could not have been in the Elizabethan Age the sharp division which now exists between urban and rural life, or else his frequent references to things familiar in the country would have been unintelligible. 'Nature study', now a plant of artificial cultivation, had a natural and sturdy growth.

Not that Shakespeare is entirely lacking in echoes of the Roman classics. Such as there are, however,¹ are not like Spenser's, the result of scholarly choice, but belong to

¹ No illustration is necessary here of the almost universal symbolism of such plants as the laurel, the emblem of victory, and the olive, the token of peace.
the literary atmosphere of a time when most educated people could write and even, like the Queen, speak Latin. Doubtless he would get many from Golding's translation of Ovid (1567). Thus,

A purple flower sprung up, chequer'd with white

(Ven. & Ad. i. 168)

recalls Ovid's 'flos e sanguine concolor ortus', Ben Jonson's 'Adonis flower'.

Nothing teems
But hateful docks, rough thistles, kecksies, burs,
Losing both beauty and utility (Hen. V, v. ii. 51-3)
suggests Virgil's

Segnisque horreret in arvis
Carduus: intereunt segetes, subit aspera Silva,
Lappaeque tribulique,

where lappae are burdocks.

Darnel, and all the idle weeds that grow
In our sustaining corn (Lear iv. iv. 5-6)
is not unlike Virgil's

Grandia saepe quibus mandavimus hordea sulcis,
Infelix lolium et steriles nascuntur avenae,

(Virgil, Ecl. v. 36, 37)

where lolium is usually identified with darnel. The marriage of the vine and elm is a purely Roman suggestion:

Thou art an elm, my husband, I a vine
Whose weakness, married to thy stronger state,
Makes me with thy strength to communicate. (Com. of E. ii. ii. 178-80)

Compare Ovid's 'amictae vitibus ulmi'.

It was an old jest that garlic hindered osculation:

Mopsa must be your mistress: marry, garlic,
To mend her kissing with. (Wint. Tale iv. iii. 162-3)

Martial said of leeks, equally obnoxious, 'edisti quoties, oscula clausa dato.'

Describing by comparisons the hardness of Shylock's heart, Antonio says:

You may as well forbid the mountain pines
To wag their high tops . . . (Merch. of V. iv. i. 75-6)

Shakespeare almost certainly never saw them, but an echo of Virgil's 'abies in montibus altis' may have reached him.

To some these suggestions will seem far-fetched. Taken as a whole, they show the way in which classical literature
dominated the language of the Elizabethan Age and the constant appeal that was made to it.

Of biblical plant-references there are very few, if any, that are beyond dispute.

Sow'd cockle reap'd no corn \((Love's\ L.\ L.\ iv.\ iii.\ 383)\) may be reminiscent of the parable of the sower (Matt. xiii), where in the Rheims translation ' cockle ' renders ' zizania ' (tares).

The food that to him now is as luscious as locusts \((Oth.\ i.\ iii.\ 354-5)\) is obscure. It is probably a reference to the food of the Baptist (Matt. iii. 4), which was actually locusts, but was in later times believed to be the fruit of the carob, the ' husks ' of the Prodigal Son, which are certainly not luscious, though perhaps they came to be thought so from their association with ' wild honey ' in the Bible.

Shakespeare names or alludes to more than 180 plants. The uses to which he puts his trees and flowers show nearly always delicate observation or something more than a passing interest. In one place it is an epithet, as in

Usurping ivy, brier, or idle moss; \((Com.\ of\ E.\ ii.\ ii.\ 182)\) in another it is the note of the careful observer, as in

I' the bottom of a cowslip; \((Cymb.\ ii.\ ii.\ 38-9)\) in another it is some traditional belief briefly summed, as in

though the camomile, the more it is trodden on the faster it grows, yet youth, the more it is wasted the sooner it wears. \((r\ Hen.\ IV,\ ii.\ iv.\ 446-8)\)

Again, we have unmistakably a few local touches. Such is the use of ' palm-tree ' \((A.\ Y.\ L.\ iii.\ ii.\ 187)\) for willow, and the mention of the bilberry \((M.\ Wives\ v.\ v.\ 51)\), the common name in the midland counties for the whortleberry, \(Vaccinium\ Myrtillus\), familiar to those who know the hills of the district. Another is ' honey-stalks ' for the stalks of clover:

With words more sweet, and yet more dangerous, Than baits to fish, or honey-stalks to sheep. \((Tit.\ Andr.\ iv.\ iv.\ 89-90)\)

The original application of ' honeysuckle ' was to the red clover, and it survives in Warwickshire and other parts of the Midlands.
Some of Shakespeare's scenes and songs are full of the colour and fragrance of herbs and flowers:

When daisies pied and violets blue
And lady-smocks all silver-white
And cuckoo-buds of yellow hue
Do paint the meadows with delight.

*(Love's L. L. v. ii. 902-5)*

I know a bank whereon the wild thyme blows,
Where oxlips and the nodding violet grows
Quite over-canopied with luscious woodbine,
With sweet musk-roses, and with eglantine:
There sleeps Titania some time of the night,
Lull'd in these flowers with dances and delight.

*(Mid. N. D. ii. i. 249-54)*

The advent of Polixenes and Camillo to the sheep-shearing in *The Winter's Tale* is the occasion of a lovely profusion of garden herbs and plants of the woods and meadows, disposed according to the seasons:

*Perdita.* Give me those flowers there, Dorcas. Reverend sirs, For you there's rosemary and rue; these keep Seeming and savour all the winter long: Grace and remembrance be to you both, And welcome to our shearing! . . . . . . Sir, the year growing ancient, Not yet on summer's death, nor on the birth Of trembling winter, the fairest flowers o' the season Are our carnations, and streak'd gillyvors, . . . Here's flowers for you; Hot lavender, mints, savory, marjoram; The marigold, that goes to bed wi' the sun, And with him rises weeping: these are flowers Of middle summer, and I think they are given To men of middle age. You're very welcome.

*Camillo.* I should leave grazing, were I of your flock, And only live by gazing.

*Perdita.* Out, alas! You'd be so lean, that blasts of January Would blow you through and through. Now, my fair'st friend, I would I had some flowers o' the spring that might Become your time of day. . . . O Proserpina! For the flowers now that frightened thou let'st fall From Dis's waggon! daffodils, That come before the swallow dares, and take The winds of March with beauty; violets dim, But sweeter than the lids of Juno's eyes Or Cytherea's breath; pale primroses,
That die unmarried, ere they can behold
Bright Phoebus in his strength; ... bold oxlips and
The crown imperial; lilies of all kinds,
The flower-de-luce being one. (iv. iii. 73-127)

And in tragedy too the handful of herbs or the bundle of weeds is made to play its part. So Ophelia in her last mad moments upon the stage distributes her symbolic bouquet:

There’s rosemary, that ’s for remembrance; pray, love, remember: and there is pansies, that ’s for thoughts. ... There ’s fennel for you, and columbines; there ’s rue for you; and here ’s some for me; we may call it herb of grace o’ Sundays. O! you must wear your rue with a difference. There ’s a daisy; I would give you some violets, but they withered all when my father died (Haml. iv. vi. 174-84).

And in the midst of flowers she goes to her end:

There is a willow grows aslant a brook,
That shows his hoar leaves in the glassy stream;
There with fantastic garlands did she come,
Of crow-flowers, nettles, daisies, and long purples,
That liberal shepherds give a grosser name,
But our cold maids do dead men’s fingers call them;
There, on the pendent boughs her coronet weeds
Clambering to hang, an envious sliver broke,
When down her weedy trophies and herself
Fell in the weeping brook. (iv. vii. 167–76)

Cordelia describes her raving father decked with a mad medley of weeds:

Crown’d with rank fumiter and furrow weeds,
With hardocks, hemlock, nettles, cuckoo-flowers,
Darnel, and all the idle weeds that grow
In our sustaining corn. (Lear iv. iv. 3-6)

The Elizabethan Age was pregnant with many things. Amongst them was the rise of scientific botany, but Shakespeare in no wise concerned himself with it. In the contemplation of life in its largest aspects he could disregard what was unessential for his purpose. He was English to the core and could run the risk of even seeming parochial. But the purpose of this chapter is to describe the age as well as the man’s position in relation to its subject. Some account of the origin of modern botany, which was contemporaneous with both, is therefore necessary.

Modern botany found its starting-point in the general revival of learning. But being at first purely literary its
Libellus de
RE HERBARIA NOVVS,
in quo herbarum aliquot no-
mina greca, latina, & Anglica
habes, una cum nomini-
bus officinarum, in
gratiam stu-
diose
iuuentutis nunc pris-
mum in lucem
editus.

Title-page of WILLIAM TURNER'S LIBELLS 1538
method was unscientific. It was subservient to medicine and, as Pulteney remarks, 'no drug used in medicine was esteemed true, unless found in Dioscorides'. The process by which botany gradually emerged in England into something more rational may be traced in his admirable pages, and it is one of the glories of the Elizabethan Age to have seen its foundations securely laid. The men who did the work were notable in many ways. The first and most remarkable of them was perhaps William Turner, who has been called 'the Father of English Botany'. He became a Fellow of Pembroke College, Cambridge, and while at the University bitterly denounced the neglect of botany:

Being yet a student of Pembroke Hall, whereas I could learn never one Greke, neither Latin nor English name, even amongst the physicians of any herbs or tre: such was the ignorance at that time.

He attached himself to Latimer, was imprisoned, and went abroad till the death of Henry VIII. He travelled about, making the acquaintance of many Continental botanists, finally finding his way to Ferrara, where he took the degree of Doctor of Physic. On his return he became physician to the Duke of Somerset, and was loaded with ecclesiastical preferment, ending with the Deanery of Wells. In 1548 he published *The Names of Herbes*, the historical importance of which consists in the fact that it tried to bring the native popular nomenclature into line with that which was current amongst scientific botanists abroad. During the reign of Mary he was in exile again. With Elizabeth, who had made his acquaintance at Sion, he had always been in high favour, and she promptly on her accession restored him to his preferments. He dedicated to her the complete edition of his *New Herball*, published at Cologne in 1568, and took occasion in the preface to compliment the Queen on her fluency in speaking Latin.

Turner's herbal was the first attempt in this country to define accurately familiar native and cultivated plants and to fix their nomenclature. Beyond this it had no scientific aim. But it bridges the gap between the old and the new botany. The names are given in alphabetical order, and the plants are illustrated with woodcuts mostly borrowed from Fuchsius. It is an odd coincidence that Turner had a garden at Kew. But it had no relation to the later one. To him belongs the merit of having intro-
duced lucerne into England. Turner’s herbal was superseded by the *Nieve Herball* of Henry Lyte, ‘of an ancient family of Lytes-Cary in Somersetshire.’ It was published by Gerald Dewes in 1578, but was printed at Antwerp. Unlike Turner’s it was not original, but a translation from the French version by Clusius of the Dutch herbal of Dodoens or Dodonaeus,¹ printed in 1554. Lyte dedicated his work to Queen Elizabeth. There were also complimentary epigrams by W. B., who was probably William Bullein,² an ardent horticulturist who died in 1576, by Thomas Newton, and W. Clowes. Lyte’s herbal describes 1,050 plants, four-fifths of which are illustrated with foreign blocks. It is a better arranged and more attractive book than Turner’s, but is still in method frankly herbalistic. He explains in his preface that his purpose was that even the meanest of my Countriemen (whose skill is not so profounde that they can fetch this knowledge out of strange tongues, nor their habilitie so wealthy, as to entertaine a learned Phisition) may yet in time of their necessitie, have some helpes in their owne, or their neighbours fieldes and gardens at home.

The book must have been popular and served its purpose well; in various forms it held its own for more than a century. If Shakespeare looked into any botanical book at all it was probably Lyte’s book. But whether directly or not, he certainly shows knowledge of its contents. When he says:

> And shrieks like mandrakes torn out of the earth,  
> That living mortals, hearing them, run mad,

*(Rom. & Jul. iv. iii. 48–9)*

he recalls the old myth which the Anglo-Saxons learnt from Apuleius; and Payne is no doubt right in suggesting that Falstaff’s description of Justice Shallow,

for all the world like a forked radish, with a head fantastically carved upon it with a knife *(2 Hen. IV, iii. 2. 337–9)*,

¹ Dodoens was physician for some time to the Emperor Maximilian and his son.
² Bullein for a short time held Church preferment, but subsequently practised as a physician. He was personally acquainted with all the Elizabethan botanists from Turner to Gerarde. Though he wrote a *Booke of Simples* in his *Bulwarke of Defence* (1562), his own knowledge of botany appears to have been slender. His chief merit consists in the efforts he made to improve the cultivation of the land. He complained, as many do to this day, that ‘Kitchen-garden wares were imported from Holland, and fruits from France’, which might equally well have been grown at home.
was reminiscent of some figure in a herbal, for he adds that they ‘called him mandrake’ (ibid. 342)\(^1\). Lyte simply touches on this, but his account is strictly scientific. It was an anodyne, and he revives from Dioscorides its use as an anaesthetic (apparently the earliest), that patients undergoing an operation ‘shall feele no payne’. This would easily suggest Cleopatra’s

Give me to drink mandragora...
That I might sleep out this great gap of time.

\(^{(Ant. & Cleop. i. v. 4\text{-}5)}\)

The influence of Lyte may account for the mention of ‘hebona’ or ‘hebenon’, which has been taken for the yew, but which the writer believes to be henbane:

thy uncle stole
With juice of cursed hebona in a vial,
And in the porches of mine ears did pour
The leperous distilment.

\(^{(Haml. i. v. 61\text{-}4)}\)

As a fact, it has been observed in a fatal case to produce ‘a general congestion of dark-coloured liquid blood in the venous system’.\(^2\) This would explain:

whose effect
Holds such an enmity with blood of man. (ibid. 64\text{-}5)

The pouring into the ears is in Pliny (\textit{Nat. Hist.} xxv. 4. 17):

‘oleum fit ex semine [hyoscyami], quod ipsum auribus infusum temptat mentem.’ The external symptoms of general corruption seem like a poetical version transferred to leprosy of Lyte’s description of the effects of henbane, which itself seems to have no basis in fact.

The ... juyce ... layde to any member or part of the bodie ...
doth mortifie and cause the sayde member to looke blacke, and at last doth putrifie and rot the same, and cause it to fall away.

Although the \textit{Oxford Dictionary} fails to trace any other use of the name, there can be hardly any doubt that the ‘insane root’ is identical with henbane:

have we eaten on the insane root
That takes the reason prisoner? \(^{(Macb. i. iii. 84\text{-}5)}\)

The name is reminiscent of the \textit{Emmanes} of Apuleius, with its Latin synonym \textit{Insana} (which Gerarde also gives). A case

\(^1\) Bacon mentions ‘Mandrakes; whereof Witches and Impostors make an ugly Image, giving it the form of a Face on the top of the Root’. The writer has been consulted about the authenticity of similar objects for the late Sultan of Turkey.

is cited where monks who had eaten the roots for supper by mistake ‘were seized in the night with the most extraordinary hallucinations, so that the place became like a lunatic asylum’. Shakespeare might take ‘as bitter as colo-quintida’ (Oth. i. iii. 355-6) from Lyte, who has: ‘The fruit ... in taste very bitter,’ and he might well get from him such knowledge of southern vegetation as would amplify what he took from Ovid. ‘The soft myrtle’ (Meas. for M. ii. ii. 117) is not a very apt description of the somewhat harsh foliage; but Lyte explains how ‘certaine Herboristes ... with greate heede and diligence ... preserve it from the colde of winter: for it cannot endure the colde of the Countrie’. Most of what Shakespeare has so superbly amplified about the cedar is to be found in Lyte:
The great Cedar waxeth very stowte and tall. ... His limmes and branches be long and stretched out into length and breadth. ... The great Cedar growth ... uppon the high mountaynes and places that be colde and moist, which are commonly covered with snow. One passage will suffice for comparison:

He shall flourish,
And, like a mountain cedar, reach his branches
To all the plains about him. (Hen. VIII, v. v. 53-5)

‘Long heath’ (for which ‘ling, heath’ is an unnecessary emendation of Hanmer’s) makes another point of contact with Lyte, who gives two species, long heath and small heath, the first of which bears its flowers along the stems. Gonzalo on the sinking ship exclaims:

Now would I give a thousand furlongs of sea for an acre of barren ground; long heath, brown furze, any thing (Temp. i. i. 70-2).

It is not necessary to go beyond Lyte for such equipment as Shakespeare needed for any reference to exotic plants. He would find there, for example, all that he needed about the date palm or the pomegranate. He was content with the common and available knowledge of his own day and did not trouble about curious or recondite allusions. There is scarcely a trace of any use of the later botanical literature of his time. A brief account of this is therefore all that is necessary.

From a scientific point of view, the greatest luminary in the botanical world of the time was Matthias Lobel, a countryman of Dodoens, who was born at Lille in 1538

1 Taylor, loc. cit. 759.
A NIEVVE HERBALL,
OR HISTORIE OF PLANTES:

Wherin is contain'd

the whole discourse and perfect description of all sortes of Herbes and Plantes: their Divine and sundry kindes: their strange Figures, Fashions, and Shapes; their Names, Nature, Operation, and Usoes: and that not onely of those whiche are growing in this our Coutrie of Englande, but of all others also of foreigne Realmes, commonly use in Physicke.

First set forth in the Dought or Almaine tongue, by that learned D. Rembert Do-
doens, Physitian to the Emperour: And nowe first translated out of French into English, by Hen.
ry Lyte Esquier.

AT LONDON

by me Gerard Dewes, dwelling in Pawles Churchyarde at the signe of the Swanne.

1578.
and died, it is said, in London, in 1616, the same year as Shakespeare. He was physician to William, Prince of Orange. Little is known of his history or why or when he came to England. The study of botany still had its headquarters on the Continent, yet Lobel printed and published his *Adversaria* in London in 1571. It is in Latin and was dedicated to the Queen. It preceded Lyte's *Herball*, but is on an entirely different plane from works intended for merely popular consumption. It was intended for serious students, and one may wonder where they were to be found. But the scientific history of the Elizabethan Age still needs probing. Perhaps Turner left a school of which little other trace survives. Lobel's work is at any rate a landmark in the history of botany, for it contains the first attempt at a classification of plants on the basis of natural affinity. He appears to have been attached to the mission to Denmark in 1598 conducted by Lord Zouche, who was the patron of Ben Jonson, and he was superintendent of a physic-garden, as it was called, maintained by Lord Zouche at Hackney. In the second edition of the *Adversaria* (1605) Lobel calls himself botanist to King James.

It is evident from the life of Lord Herbert of Cherbury that the new herbalistic art, which was of foreign origin and quite independent of the older but still persistent vulgar sort, was popular amongst the Elizabethan gentry. He not merely thinks that 'it will become a gentleman to have some knowledge in medicine', but would have him 'know how to make ... medicine himself, and afterwards prepare them with his own hands'. He does not approve of 'chemic medicines', but thinks they are 'much more happily and safely performed by vegetables'. In a passage too long to quote in full, he says: 'I conceive it is a fine study, and worthy a gentleman to be a good botanic, that so he may know the nature of all herbs and plants, being our fellow-creatures and made for the use of man.' For the purpose he recommends to 'cull out of some good herbal all the icones together'. By taking these into the fields, 'one may presently find out every herb he meets withal.' Lobel had in fact anticipated this by publishing in 1581, in a portable form, which became very popular, the illustrations from his work with indexes of names in seven languages.
In 1577 John Frampton, a merchant who had long resided at Seville and also translated Marco Polo, published a translation of the *Historia Medicinal* of Nicolas Monardes under the title of *Joyfull Newes out of the Newe founde Worlde*, which gives a good account of all its most valuable vegetable productions. This must have been a notable revelation, but Shakespeare wholly ignores it. Even to tobacco he makes no allusion. The Potato may seem an exception. But in Shakespeare the potato of 'his fat rump and potato finger' (*Troilus* v. ii. 53–4), and 'Let the sky rain potatoes' (*M. Wives* v. v. 20–1) was what is now called the Sweet Potato, which was found by the Spaniards in the West Indies as early as 1500. Gerarde called it the Common Potato, and that now familiar, the Virginia Potato. This epithet was erroneous, as the plant was neither native to Virginia nor cultivated there at the time. It was apparently brought by the Spaniards to Europe from Quito about 1580, and gradually found its way northwards. Gerarde had it in cultivation in 1596, but it was doubtless still a rarity.

Whatever may have been the condition of the political atmosphere, the domestic life of England breathes the air of secure and ordered prosperity. To quote W. B.:

> Elizabetha potens cuius moderamine solo,
> Pax iucunda Anglis, atque arbor pacis oliva
> Sic viget, ut passim per apricum incedere possit
> Gens Britonum, tuto fragrantes carpere flores.

Such conditions would favour gardening, and this was the date of its systematic beginning, and it is coincident with the time at which botany ceased to be merely subservient to medicine. Plants were cultivated for their own sake and not as mere materia medica.

Lord Burghley had a fine collection of plants of which Gerarde had the superintendence, and he had also a large physic garden of his own at Holborn, which Pulteney thinks 'was probably the first of the kind in England, for the number and variety of its productions'. A passion for

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1 This is the more remarkable as Bacon (*History of Life and Death*, 305) says: 'Tobacco in our age is immediately grown into use.' Elsewhere (*Sylva Sylvarum*, 184) he describes the cultivation as extremely profitable, but notices that 'English Tobacco hath small credit, as being too dull and earthy'. This shows a cultivated taste. He discusses the remedy and comes very near the truth in finding it in heat.
collecting had grown up, and new plants were eagerly sought in every direction. Lord Zouche brought plants and seeds from Constantinople. Gerarde mentions Nicholas Lete, a London merchant, as 'greatly in love with rare and faire flowers, for which he doth carefully send into Syria, having a servant there at Aleppo, and in many other countries; for which myself and the whole land are much bound unto him'. He speaks also of Lord Hunsdon, the Queen's first cousin, as 'worthy of triple honour for his care in getting, as also for his curious keeping, such rare and strange things from the farthest parts of the world'. England, as it has often done, repaid its debt to foreign learning, and the Continental botanists began to visit it for the sake of studying the new acquisitions.\(^1\)

It is not surprising that they needed an illustrator; Lyte's *Herball* had become wholly inadequate. As in our own day, a speculative bookseller saw his chance. He engaged Dr. Priest to make a translation of the latest work of Dodoens. Priest died and Gerarde was then employed. He appears to have had neither the scholarship nor the necessary botanical knowledge. He had, however, the assistance of Lobel, and using Dodoens as a foundation, he produced a book (1597) which was more comprehensive than anything existing. It was also the most copiously illustrated. Norton procured some 2,000 German blocks from Frankfort, and Gerarde had some others cut in this country. Gerarde died in 1612, and in 1633 Norton brought out a new edition, in which Gerarde's shortcomings were amended by Thomas Johnson, a thoroughly competent botanist. In its later form the book maintained a not undeserved reputation for at least a century.

So far botany had been occupied with the collection and nomenclature of plants and with some attempt at their classification. The plant itself as a living organism now began to be studied. The first attempt, by Cesalpino in his *De Plantis* (1583), was, as usual, built on the foundations

\(^1\) Only two novelties in the later herbals are recognized by Shakespeare. One is the Crown Imperial (*Wint. Tale* iv. iii. 126); it was first described from Belgian gardens by Lobel in 1576, and is said to have been obtained from Constantinople. It soon found its way to England and became a popular plant. The other is the Sweet Potato, also described by Lobel, with 'Potades' as the English name. Shakespeare may have learnt something about both from Gerarde.
laid by classical writers. Its influence did not reach England till the next century. But it would not be difficult to show, even from Shakespeare himself, that the eager curiosity of the Elizabethan Age was alive to the problem. It is the subject of much elaborate, if unsystematic, speculation by Lord Bacon in his *Sylva Sylvarum*, a book which, perhaps on account of its unsystematic character, has been completely ignored by botanists. Bacon peeled off effect from cause till he reached a core of general principle, and he hoped by combining such principles to arrive at a complete theory of the order of nature. But, though he must have the credit of first using experiment, his method was sterile since he rejected hypothesis. William Rawley, Bacon's chaplain, who published the book in 1627, quotes 'an usuall Speech of his Lordship; That this Worke of his Naturall History, is the World as God made it, and not as Men have made it; For that it hath nothing of Imagination'. The book, though now forgotten, must have had a wide popularity, for it reached the tenth edition. It contains much shrewd observation, but its chief value is the evidence that it affords of the trend of scientific speculation at the time at which it was written.

Shakespeare and Bacon were both attracted by a horticultural problem which doubtless was a subject of much interest at the time. Bacon tells us:

Take Gilliflowers seed, . . . and sow it, and there will come up Gilliflowers, some of one colour, and some of another, casually as the seed meeteth with nourishment in the Earth; so that the Gardinners find that they have two or three Roots amongst an hundred that are rare and of great price, as Purple Carnations of several stripes.

He recommends that the 'experiment' should be tried on other plants. Here Bacon was on the track of variation, the great discovery which had to wait for Darwin. But his explanation was futile, and he split on the same rock as Herbert Spencer in finding it in the environment.

Shakespeare makes Perdita and Polixenes discuss the question in *The Winter's Tale* (iv. iii. 81–97), and lifts it at once to a higher plane.

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1 'He that looketh attentively into them, shall finde that they have a secret Order' (*Sylva Sylvarum*, To the Reader).
Of Potatoes of Virginia.  

Potatoes of Virginia.

Virginia hollo trail three square kneed in fur distances, conneth made of differ ler, & other upon a fat of a swart to rednes, bling those at the first ward sharp from the be come foot footstalks, faire and pl of one entire folded or p sort, that it made of six which cant except the The colour express. The light purple with a light shew of yellownes, as though purple and yellow were mixed of the flower thursteth foorth a thicke fat pointell, yellow as golde, with pricke or point in the middeft thereof. The fruite succeddeth the flowers, bignes of a little bullesse or wilde Plum, greene at the first, and blacke whe