



Linden Hawthorne FLS

Singing the Praises of Natural Latin

The common names of plants are – and will ever be – a fascinating and deeply ingrained part of our linguistic and cultural heritage. If we seem obdurately attached to them, it must be, in part, because they belong to our oral tradition, as often as not learned at grandmother’s knee. Many of our common names are charming, as with Love-in-a-mist, *Nigella damascena*, or Forget-me-not, *Myosotis sylvatica*. Some are reminders of widespread use in folk medicine. Heartsease, *Viola tricolor*, was used as a love charm, and for other disorders of the heart. As for the dandelion, *Taraxacum officinale*, the French vernacular *pissenlit*, which has the blunt English equivalent, piss-the-bed, reflects its efficacy as a diuretic.

Many vernacular names were coined in bawdier, irreverent, and more candid times. There’s Priest’s Pintle – an immodest old English reference to the erect spadix of *Arum maculatum*. The modesty of the Pricke mushroom, *Phallus impudicus*, which John Gerard described as *fungus virilis penis effigie*, was certainly not veiled by euphemism. The common name, dog’s stones (i.e. testicles) referred to several species of hardy orchid, as in the resolutely masculine cullions in *Orchis mascula*, Early-purple Orchid, or Bollockwort. It is suggestive of Dioscorides’ Doctrine of Signatures; the reference is clearly anthropomorphic.

... if men do eat of the great full or fat roots of these kinds of dog’s stones, they cause them to beget male children.

In Thessaly, the women give the tender full root to be drunk in goat’s milk to move bodily lust

Dioscorides, c. 40–90 AD, from *De Materia Medica*



Below: left to right

Viola tricolor, Heartsease, with *V. arvensis*, Plate 227, from *Bilder ur Nordens Flora*, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.

Phallus impudicus, Pricke mushroom, Plate 329, James Sowerby, *Coloured Figures of English Fungi or Mushrooms*. 1803.

Orchis mascula, Early-purple Orchid, Bollockwort, Plate 401, from *Bilder ur Nordens Flora*, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.



Despite their multiplicity, vernacular names have been less susceptible to change than their scientific equivalents. Many have persisted since the first Herbals, which were often the first literature produced in every great civilization over 4,000 years, from China, Ancient Egypt, India, Greece, Rome, and throughout Europe. Herbals were the primary form of plant documentation – a collection of plant descriptions for medicinal purposes – and authors are almost without exception described as botanist and physician, often as botanist, herbalist, physician and apothecary.

Medicine and botany were synonymous.

The common names of plants that had economic, medicinal or decorative virtues, in particular, have been persistent, and translations of many of them have been assimilated into scientific names as we use them today. No doubt they will long continue to enchant, amuse, and, very possibly, to educate.

But the old polynomial names that were customary to describe them in pre-Linnaean texts are problematic for the modern botanist ...

Take the example of Comfrey, illustrated right, from *The Herbal or General History of Plants*, John Gerard, 1597 (1633 Edition). In figure 1, *Consolida major flore purpureo* is what we know today as *Symphytum officinale*, while figure 4, ‘Borage-floured Comfrey’, though recognizably of the borage family, is not comfrey at all. It probably illustrates the plant we know today as *Omphalodes verna*, Blue-eyed Mary. The botanist Lobel (1538-1616) named and described it thus: *Symphytum pumilum repens Borriginis facie, siue Borago minima Herbariorum*.

Not only did the Latin polynomials read like a Latin Mass, matters were further confused by a litany of vernacular names. According to Gerard:

‘Comfrey ... is called in Latine, *Symphytum* and *Solidago*: in shops, *Consolida major*, and *Symphytum majus*: of *Scribonius Largus*, *Inula rustica*, and *Alus gallica*; in High Dutch, Walwurtz: in Low Dutch, Waelwoztel: in Italian, *Consolida maggiore*; in French, *Consire* and *Oreille d’asne*: in English, Comfrey, Comfrey consound ... Knit backe and Blackewoort.

Enter, please, the Latin binomial.

Many of us are familiar with the well-rehearsed reasons for using scientific names rather than the internationally various, vernacular ones for flora and fauna. The Latin binomial is unambiguous, no two species share the same name, scientific names can be understood no matter the native tongue of the speaker, and they leave little room for misinterpretation.



As a scientist, I value the concision and accuracy of the binomial system. As a traveller, a poor linguist, and a former professional horticulturist, I've found the scientific names to be a blessed point of contact in conversations with gardeners abroad. As a writer, I go further.

Latin was for centuries the *lingua franca* of the literate across the diplomatic, legal and ecclesiastical worlds, and of an entire community of naturalists and scientists of every discipline.

Its roots are deeply embedded and entwined in modern daily speech in many European languages. As Professor Stearn suggests, Botanical Latin may fairly be regarded as '... a modern Romance language of special technical application, derived from Renaissance Latin with much plundering of ancient Greek...' ¹ For the scientist and incorrigible Romantic that I am, the study of it has formed a golden filament that connects me to countless generations of botanists, alchemists, herbalists, and physicians, over thousands of years. Aristotle, Cicero, Vergil, Ovid, Columella, and Pliny used many of the terms we now use in scientific Latin, and shared our modern understanding of them. With a modest amount of etymological digging, the meanings of many Latin names become clear when they're cross-referred to modern English, and discovering these threads has become a constant source of gentle pleasure for me.

I will elucidate – from the Latin *elucidare*, to make clear, throw light upon. The verb is related to the scientific epithet *lucidus*, meaning light, bright, shining, and, of course, it appears in the word lucid, meaning both articulate and luminous. It is the specific epithet used to describe the shining leaves of *Ligustrum lucidum*, for example. Note also, Sankta Lucia, Saint Lucy, Patron Saint of Light and Vision.

The same root is seen in Lucifer, meaning light bringing, in reference to the Morning Star:

*... vigil nitido patefecit ab ortu
purpureas Aurora fores et plena rosarum
atria: diffugiunt stellae, quarum agmina cogit
Lucifer et caeli statione novissimus exit*

Ovid, *Metamorphoses* 2.114–115

Aurora, awake in the glowing east, opens wide her bright doors, and her rose-filled courts. The stars, whose ranks are shepherded by Lucifer, the morning star, vanish, and he, last of all, leaves his station in the sky. ²



Above: Lucifer shepherds in Aurora, the dawn.
Venus reflected in the Pacific Ocean.
Photograph by Brocken Inaglory, via
Wikimedia Commons, CC BY-SA 3.0.

It was once applied to lucifer matches, in which phosphorus is the igniting element. Phosphorus (Greek Φωσφόρος *Phōsphoros*) is the Morning Star in Greek too; it's applied to the planet Venus in its morning appearance. And according to Ovid, she and Lucifer are synonymous.

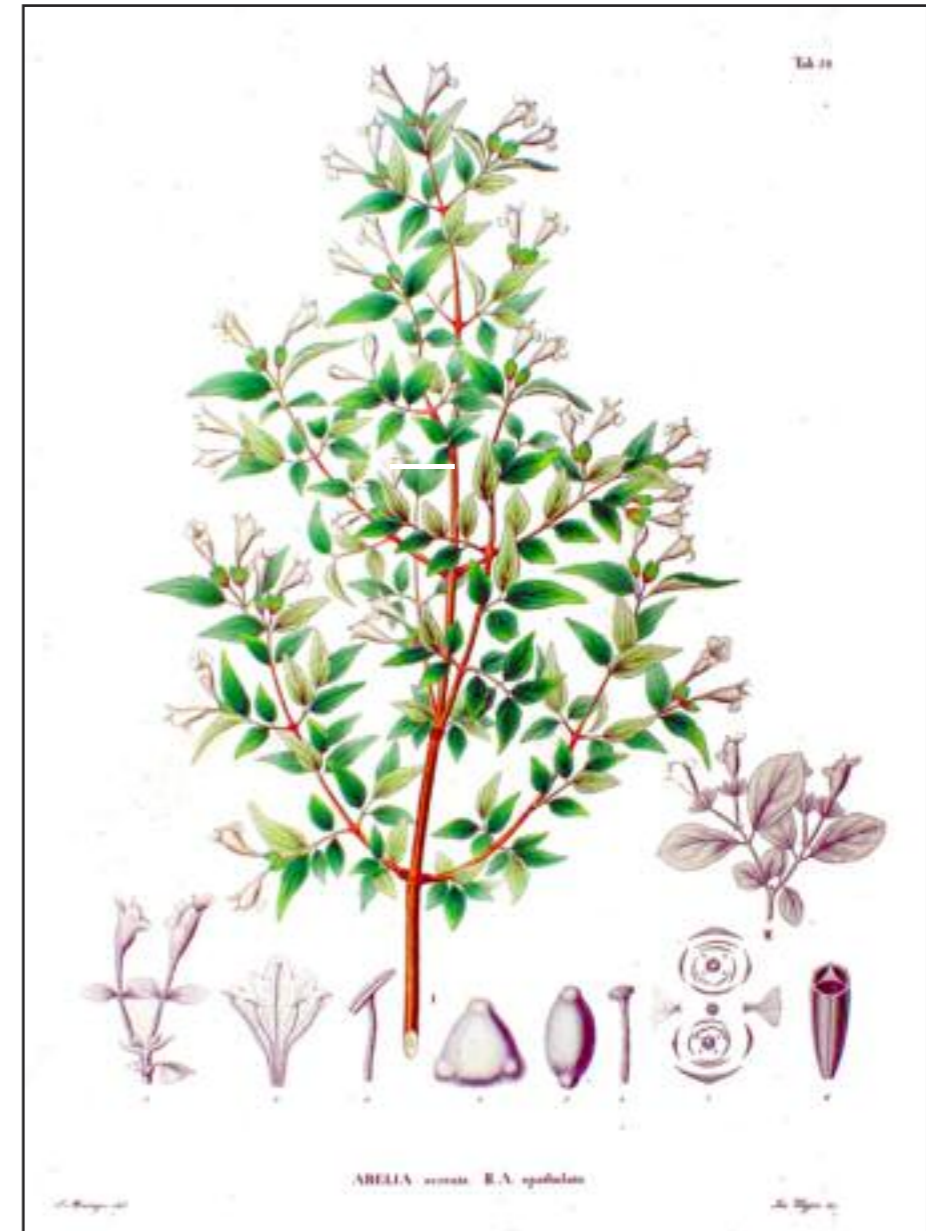
The specific epithets in scientific Latin can be portals to a range of interesting information, and they may be classified into broad categories.

Commemorative epithets

When commemorative, epithets frequently set a plant in an historical context, perhaps as part of the stories of plant collectors. At least thirty taxa bear the names of W.J. and J.D Hooker, as in *Rhododendron hookeri*. Some sixty species and varieties of Chinese plants commemorate Ernest Wilson, as in *Magnolia wilsonii*; Reginald Farrer, as in *Viburnum farreri*, and a dozen others. They include other great explorers, such as Captain Robert Fitzroy of The Beagle, *Fitzroya cupressoides*, the Patagonian Cypress, and for Alexander von Humboldt, naturalist, explorer and father of biogeography, *Quercus humboldtii*; both of them had profound influence on Charles Darwin.

More broadly, commemorative names frequently spin a tale of expansion of Empire and world trade, particularly in the 18th and 19th centuries, when diplomatic and trade sorties so often were required to include naturalists and botanists, who collected and named new species as part of their missions.

The genus *Abelia*, first in any horticultural lexicon, was named for Dr. Clarke Abel, author, physician and naturalist to William, Earl Amherst's abortive diplomatic embassy to the court of the Qing dynasty in China in 1816-17. Amherst's brief was to represent the trade interests of the East India Company. The mission became infamous because Amherst refused to kowtow to the to the Jiaqing Emperor – homage that was expected of all of his supplicants. His refusal, an example of English exceptionalism if ever there was one, resulted in the denial of commercial privileges, a fate not shared by pragmatic Russian and Netherlands Ambassadors, who thereby cleaned up, and divided trade privileges between them. This was the incident that brought into English usage the Chinese term 'kowtow'; it describes kneeling as a token of honour and respect.



Above: *Abelia japonica* from *Flora Japonica*, Philipp Franz von Siebold and Joseph Gerhard Zuccarini, Leiden, 1870.

In more contemporary times, new epithets have been coined that mark respect with a modern sensibility, and often cryptic wit and humour. Recent decades have seen taxonomy enter the realms of rock and roll. The Rolling Stones have been celebrated by paleontologists Adrain and Edgecombe, in the naming of several prehistoric trilobites, presumably without irony: *Aegrotocatellus jaggeri*, *Perirehaedulus richardsi*, and *Aegrotocatellus nankerphelgeorum*, Nankerphelg being a collective pseudonym used by the band members.

The scientific name of the tiny Colombian tree frog, Kaplan's Garagoa tree frog, is *Dendropsophus stingi*, in honour of the conservation efforts of the musician Sting. In 1989, he and his wife, Trudie Styler, set up The Rainforest Foundation with the leader of the Kayapo people of Brazil, Chief Raoni Metuktire; they are committed saving the rainforests and protecting the land and culture of indigenous peoples there.

To mark the 40th anniversary of the conception of the band Queen, four species of damselflies bear the names of the band members: *Heteragion fred-diemercuryi*, *H. brianmayi*, *H. rogeri*, and *H. johndeaconi*. Rather touchingly, the author, FAA Lencioni wrote, 'I name this species after Freddie Mercury, artistic name of Farrokh Bulsara (1946–1991), superb and gifted musician and songwriter whose wonderful voice and talent still entertain millions of people around the world.'

Naturalists of a certain age may have smiled in acknowledgement of the word play in the newly described genus of Velvet Spiders, *Loureedia*, which live in burrows under ground. It was named for Lou Reed, founder member of the Velvet Underground. Frank Zappa would surely have appreciated the naming of the spider, *Pachygnatha zappa*, for him on the grounds that its markings resemble his legendary moustache. It seems to be a recent vogue amongst arachnologists; *Heteropoda davidbowie* was described by Peter Jäger in 2008, and collected by G. Ackermann in 2007 in the Cameron Highlands, in reference to Bowie's Glass Spider, and, of course, The Rise and Fall of Ziggy Stardust and the Spiders from Mars.

I was thrilled to discover that a new species of spider has been named *Myrmecium oompaloompa* (Candiani & Bonaldo, 2017) after the Oompa Loompas, characters from Roald Dahl's, Charlie and the Chocolate Factory (1964). They worked in Willie Wonka's chocolate factory, paid solely in their preferred food, cocoa. The name refers to the fact that most species were collected in cocoa plantations in Southern Bahia.

And there are entomologists who, I guess, must also be of a certain age: Charley Eiseman and Owen Lonsdale. They celebrated the absurdist poet, Ivor Cutler, in 2018, in the naming of a leaf mining fly, *Liriomyza ivorcutleri*, probably on the basis of his famed works *I Believe in Bugs*, 1974, from the album Dandruff,³ and *Yellow Fly*, from his 1975, album, Velvet Donkey⁴ (and yes, *L. ivorcutleri* is indeed yellow). Cutler was a cult figure in my youth. We fell in love with him through the medium of the late, much-missed John Peel. Has anyone named anything for him? It's long overdue if they haven't.

To witness the assimilation of contemporary cultural icons into scientific nomenclature is fascinating. Though traditional taxonomists may disapprove of levity in conferring honorifics, they would surely applaud the naming of fifteen taxa, (genera and species), living and extinct, named for the great naturalist, Sir David Attenborough. And surely none of us could begrudge the naming of a newly discovered beetle from Kenya after one of our youngest conservationists, Greta Thunberg. The Natural History Museum of London has named *Nelloptodes gretae*, in honour of her "outstanding contribution in raising awareness of environmental issues".⁵



Above: *Loureedia annulipes*.
By Martin Forman
CC BY 3.0, Wikimedia Commons.



Right: *Heteropoda davidbowie*.
By K.S.Seshadri
CC BY-SA 4.0, Wikimedia Commons..

Descriptive epithets

It is perhaps when epithets are descriptive that they become especially helpful, because this form may also prompt the use of observational skills that are the foundation of botanical knowledge. Take *sericeus*, for example, which in botanical terms means silky-hairy, as in *Daphne sericea*, referring to the very fine silky hairs that clothe the undersides of the leaves, and make the emerging flower buds glisten.



Above: *Daphne sericea*, from Edwards' botanical register, or, Ornamental flower-garden and shrubbery, Edwards, Sydenham; Lindley, John. 1838.

In English it becomes sericeous – the added ‘o’ a common amendment on the transfer from Latin to English – but the meaning is the same – covered with soft hairs, or simply, silky.

What is the technical name for the cultivation of silk? It's sericulture.

And the protein from which silkworms spin their silk? Sericin.

Sericum is silk in Late Latin, and σηρικός (*sērikós*) in Ancient Greek, and there are recognisable cognates in Old English, Middle English, Old Norse and Russian. Its passage into European languages is thought to have followed the Baltic trade routes, but ultimately, it will come as no surprise to learn, its origins are Oriental, as in Chinese 絲, *sī*.

If you follow the same track with *Betula pubescens*, Downy Birch, the specific epithet means ‘downy with short soft hairs’; you have to look very closely to see them. It's not much of a leap to make the connection with the English words pubis, and pubes, the perfectly proper name for the hair which appears on the human lower abdomen at puberty.

Below: *Betula pubescens*, Downy Birch

By Robert Flogaus-Faust. CC BY 4.0, Wikimedia Commons.



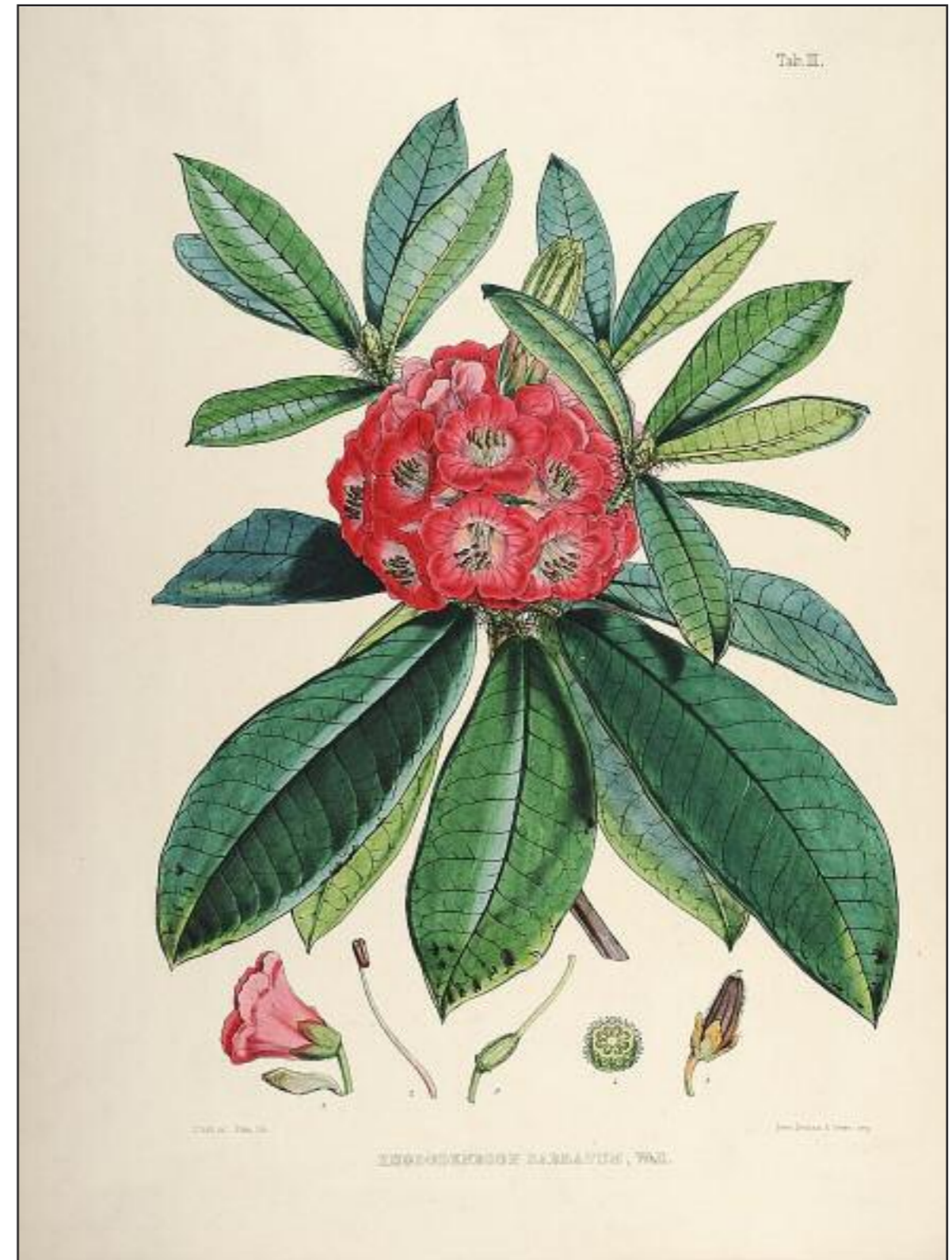
In *Sempervivum arachnoideum*, the little succulent that will prompt thoughts of spiders (arachnids) before you even know its name, *arachnoideum* refers to the cobwebby hair apparently spun between the points of the fleshy leaves.



Above: *Sempervivum arachnoideum* 'Standfieldii'
By magnolia1000. CC BY 2.0, Wikimedia Commons.

Derivations are not always so obvious, but that doesn't make it any the less fun teasing them out. With *Rhododendron barbatum*, you have not only to look closely, but also to know where to look. I confess that I squeaked with delight when I discovered this. There is beard-like array of soft bristles on the leaf stalk, *barbatum* meaning bearded; the English word barber is from the same root.

Right: *Rhododendron barbatum*. The rhododendrons of Sikkim-Himalaya: being an account, botanical and geographical, of the rhododendrons recently discovered in the mountains of eastern Himalaya, from drawings and descriptions made on the spot, during a government botanical mission to that country. By Fitch, W. H.; Hooker, Joseph Dalton; Hooker, William Jackson; Reeve, Benham, and Reeve. 1849. From the Biodiversity Heritage Library.



There are, of course, many descriptors that refer to things other than hair. But in terms of using such examples in improving observational skills, they have the distinct advantage of providing sensory reinforcement. I can think of no plants that bear the epithet *lanatus* that do not demand to be stroked.

In *Holcus lanatus* L., Yorkshire Fog, the leaves and inflorescences are densely and softly woolly – irresistibly soft. Similarly appealing, whole-plant woolliness is found in *Stachys byzantina*, Lamb’s Ears. An earlier synonym for this plant? It was, as I expect you guessed, *Stachys lanata*.

The Latin root of *lanatus*, meaning woolly, is seen in modern English in lanolin, the oil derived from sheep’s wool, and on the multilingual labels of woollen sweaters, as laine and lana, respectively French and Italian for wool.

Below: *Stachys byzantina*, syn. *S. lanata*.

By Quartl, CC BY-SA 3.0, Wikimedia Commons.



Holcus lanatus L., Yorkshire Fog, Plate 464, from *Bilder ur Nordens Flora*, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.

Colour epithets

Many of the simplest descriptors are those pertaining to colour: *caeruleus* for sky blue, as in the caerulean sky; *violaceus* for violet, as in the Chinese Violet-flowered cress, *Orychophragmus violaceus*; *lavandulus* meaning lavender, as in ... well lavender, both a colour and the plant, *Lavandula*. Most botanical scientific names seem to use this modest format.

I am, however, being disingenuous in describing colour epithets as simple. At the most basic, there are 118 colour epithets, which may be expanded to 279, if their qualifiers are included; prefixes such as *sub-* (pale), as in *subviolaceus*, pale violet, and *atro-* (dark), as in *atrolazulinus*, dark true or spectrum blue (*lazulinus* being the colour of lapis lazuli). Many of the terms are used as compounds, so that, for example, *caeruleo-glaucus* describes a glaucous sky-blue, and *flavo-virens*, a yellowish green. When spots, stripes, lines, letters, and lustres are factored into the vocabulary, the number is vastly increased. My own research to date has yielded a vocabulary of 700 colour terms in scientific Latin.

The system of colour names is used in every branch of natural science: mycology, lichenology, botany, mineralogy and soil science, in entomology and each of its specialisms, not only in species' names, but also in their published descriptions in Latin. If you decipher the meanings in the study of any of these disciplines, it's a transferable asset. It confers the ability to describe and visualise over three hundred colours of the earth and its creatures elegantly and precisely, in all their wonder full diversity.

The Latin epithets are ancient. Antonio Telesio published one of the earliest lexicons of colour epithets in 1528, in his *Libellus de Coloribus*⁶, drawing on classical sources spanning a thousand years, from Homer onwards. His aim was to serve 'the philologist who studiously seeks elegance in his Latin prose' rather than 'the painter who seeks to know how they are produced'.

Richard Waller devised his *Tabula Colorum Physiologica* in 1686.⁷ He uses some of the ancient Latin epithets to describe some 71 colours, derived from admixtures of 21 simple pigments, and it is commonly regarded as one of the first published colour charts. The pigments used have been subject to much colour fade.

In the centuries that followed, however, the naming of colours becomes enmeshed with colour theory. Several of the best known chromotaxias, such as those of Werner, as amended by Patrick Symes,⁸ and Robert Ridgway's Nomenclature of Colours,⁹ concern themselves with a palette for identifying the colours of nature, rather than attempting an applied taxonomic lexicon. In both cases, this resulted in a number of what have been referred to as foolish names: Onionskin Pink, Majolica Yellow, Bittersweet Orange, Camellia Rose, Berlin Blue, Broccoli Brown or Warbler Green.

None are useful for naming or describing species formally for publication.



Above: Richard Waller's, *Tabula Colorum, A Catalogue of Simple and Mixt Colours with a Specimen of Each Colour Prefixt Its Properties*. Philosophical Transactions of the Royal Society of London, vol. 6, for the years 1686 and 1687 (London, 1688).

Using Latin epithets for colour in a consistent manner seems to have been the concern of botanists, mycologists and entomologists, several of whom had close associations with Linnaeus. Scopoli, Schiffermüller, Fabricius and Poda, for example, shared their researches with him, corresponded and collaborated with him, and followed his classification system closely in their own works.

Scopoli and Schiffermüller in particular are both noteworthy for their contributions to scientific colour naming. Giovanni Antonio Scopoli (1723–1778) outlines an explanation of his colour usage in the introduction to *Entomologia Carniolica* (1763)¹⁰, incidentally crediting Poda for the method of composing the admixtures of the colours named.

In his *Versuch eines Farbensystems* (1772)¹¹ the Austrian entomologist Schiffermüller was concerned with the need for a standardised nomenclature with which to describe colours in nature. His table, below, illustrating the colour blue, and the key with some 36 terms, clearly demonstrates the abilities

of Latin epithets to name all of the subtle nuances of colour.

But I think that perhaps their collective sensitivity to colour is nowhere more clearly visualised than in the exquisite illustrations on the following pages of some of the species that they named and described:

Onocera semirubella (Scopoli, 1763); *Glaucopsyche alexis* (Poda 1761); *Thetidia smaragdaria* (Fabricius 1787); *Eublemma purpurina* (Dennis & Schiffermüller 1775), and *Pseudoips prasinana* (Linnaeus 1758).

Fig. 55

I. Gatt.	Blau Schattirung.	Color Caeruleus.	Les Nuances du Bleu.
A	a. Weiß. (Schneeweiß.) b. Silberweiß. Perlweiß. ** c. Milchweiß. Milchfarb. Weißlicht.	a. Albus. (Nivus. Candidus. *) b. Argentus. c. Lacteus. Lacteus.	a. Blanc. Blanc pur. b. Blanc d'argent. Blanc arg. c. Blanc de lait. Couleur laite.
B	a. Blauweiß. Blaulicht. Porcellanfarb. b. Perlefarb. c. Blaulichtweiß. Wasserfarb. Tio- manfarb.	a. Laeoceruleus. b. Margaritaceus. c. Alboceruleus. Aquosus.	a. Bleu blanc. Bleuître. b. Couleur de perles. Couch de zaf c. Couleur d'eau.
C	a. Weißlichtblau. b. Silberblau. c. Wasserblau.	Caeruleocent- Subcaeruleus.	Bleu naïfant.
D	a. Mattblau. Magerblau. Schwachblau. Blendblaufarb. b. Graublau. Schornblau. * c. Blausblau. Blauschwarz. (Blau- schwarz.) Bleichblau.	a. c. Pallide caeruleus. (Caeruleus pallens, tab fens, languis, crassus.) b. Caecus. ** Dilute caeruleus.	Bleu mourant. Bleu pâle.
E	a. Feinblau. Scharfblau. Zartblau. b. Achenblau. c. Lichtblau. Sanftblau.	Blande caeruleus. Saviter caeruleus.	Bleu mignon. Azuria.
F	a. Himmelblau. Lichtblau. (Gom- mischblau.) b. Lichtblau. c. Saphirblau. Hellblau.	Caeruleus. Belle, lute caeruleus. (Caelinus. Aeneus.) Saphirinus.	Bleu celeste. Couleur du Ciel.

G	a. Lazurblau. (Saphirblau.) Ultra- marinblau. * b. Blau. Saphir. Mittelblau. Saphirblau. c. Hochblau. Kerulumbilau.	Cyanetus. (Cyanus Cyanus.)	a. Bleu d'azur. (Azur.) Bleu d'outremer. b. Bleu. Bleu complet. c. Bleu-brun. Bleu-Reine.
H	a. Vellblau. Seifblau. Starblau. b. Stahlblau. (Stahlant *) Blau- schwarz. c. Türkblau. ** (Cyanus.)	Inense caeruleus. Saturate caeruleus.	Bleu couvert. Bleu turquin. Couleur de turquoise.
I	a. Dunkelblau. Jantzblau. (Jantzblau.) b. Stahlblau. c. Jantzblau. (Cyanusblau, Jantz.)	Profunde caeruleus. (Cyanus ferus.) Indus.	Bleu de Roi. Bleu foncé. Bleu brun clair. L'Indes.
K	a. Verblau. * Zerkblau. (Dun- kelblau.) b. Schlackenblau. Schmelzblau. Dun- kelblau. c. Braunblau. (Blau von Schilgen. Schwarz von Blau.) Bleichschwarz- blau.	a. Obscure caeruleus. (Ceruleus obscurus.) b. Profunde Cyanus. (Ceruleus subnigricans.) c. Lividus.	a. Bleu pers. Bleu brun. Fleur de Godde. b. Bleu de forge. c. Livide. Bleuchreus.
L	a. Eisenblau. Schwarzlicht. b. Wolfenschwarz. c. Schwarzblau.	Atroceruleus. Caruleo- nigricans. Nigro caeruleus. Atroceruleus. Atrocya- neus.	a. Bleu noirâtre. b. Bleu d'enfer. c. Bleu noir.
M	a. Blauschwarz. Blauschwarz. Kohlenwarz. * b. Sammettschwarz. Kohlenwarz. c. Bogenschwarz. Blauschwarz.	Caeruleoniger. Caeruleonigres. Ater. *	a. Noirbleu. Noirbleuire. Noir de Charbon. b. Noir. Noir velouté. c. Noir de jais.

A	a	b	c
B	a	b	c
C	a	b	c
D	a	b	c
E	a	b	c
F	a	b	c
G	a	b	c
H	a	b	c
I	a	b	c
K	a	b	c
L	a	b	c
M	a	b	c



623. PHALÆNA *Semirubella*.

— long. lin. 6.

Diagn. Alæ anticæ vinaceæ, semipaleaceæ.

Habitat cum priore.

Alæ superiores dimidia interna parte longitudinaliter paleaceæ. Palpi surrecti. Thorax paleaceus: latere vinosus.

Onocera semirubella (Scopoli, 1763), by Robin Howard, with kind permission.

An accomplished entomologist, Scopoli was known as the Linnaeus of the Austrian Empire, and shared all of his research with Linnaeus. His original description, as *Phalaena semirubella*, is taken from *Entomologia Carniolica*.



Glaucopsyche alexis (Poda 1761) Green-underside Blue, by Anne Sorbes, CC BY-SA 3.0, Wikimedia Commons.

Nikolaus Poda von Neuhaus (1723 –1798) was a Viennese entomologist: his treatise, *Insecta Musei Graecensis*, 1761, was the first purely entomological work to use Linnaean binomial nomenclature.



Thetidia smaragdaria (Fabricius 1787) Essex Emerald.
By Robin Howard, with kind permission.

At the age of nineteen, Johann Christian Fabricius was a student of Linnaeus at Uppsala; he was to become one of the most eminent entomologists of the 18th century. It was his account that I describe on page 37 that told of the joys of Linné's summer Saturday Botanical forays at Uppsala.

Eublemma purpurina (Dennis & Schiffermüller 1775), Beautiful Marbled.
By Robin Howard, with kind permission.

Beneath: From the Dennis and Schiffermüller listing as *Noctua purpurina*, in the first index of the Lepidoptera of the Viennese region *das Systematische Verzeichnis der Schmetterlinge der Wienergegend herausgegeben von einigen Lehrern am k. k. Theresianum* (1775).





Pseudoips prasinana (Linnaeus 1758) Green Silver-lines.
By Robin Howard, with kind permission.

Below: The description by Linnaeus, from Carolus Linné, *Systema Naturae*, Tom 1, Pars. II, *Regnum Insecta*, 12th Edition, 1767.

prasinus means leek green, a bright and lively green; it is described as being a lightly and moderately greyed tint of *Viridis*, which is true or emerald green, and *viridis* is synonymous with *smaragdinus* – emerald, both the gemstone and the colour.



Geographical epithets

When epithets are geographical, they provide information as to where an organism hails from, or at least from where it was first described.

For example: *californicus*, as in *Eschscholzia californica*, California Poppy, and *Amblyseius californicus* (*Neoseiulus californicus*), a predatory mite used for biological control of spider mites; *Astyanax mexicanus*, the Mexican Tetra, a blind cave fish from eastern and central Mexico; *Sorbus thibetica*, Tibetan Whitebeam, from southwestern China and the Himalayas, and *Pinus yunnanensis*, Yunnan pine, from the mountains of China's southwestern Yunnan province.

More modern coinages are usually self-explanatory: *americanus*, *australiensis*, *brasiliensis*, *japonicus*, *quebecensis*, and so on. There are traps for the unwary here though. The names of countries, regions and their boundaries may not now be the same as when they were first coined. For example, *canadensis*, used as a Linnaean epithet, does not apply to Canada as we know it today, but rather to that part of northeastern America where Pehr Kalm, one of the foremost of Linnaeus' Apostles, explored and collected. It refers to that region bounded by Philadelphia and New York, north to Montreal and Quebec, and from Albany west to Lake Ontario and the Niagara Falls. It was, as far as they knew then, the natural range of Bloodroot, or Canada Puccoon, *Sanguinaria canadensis* L. 1753. Kalm found sixty new species there, and described thirty more, for which Linnaeus cited him in *Species Plantarum* (1753)¹²; they included the eponymous *Kalmia*, the Mountain Laurels.



Some geographical epithets resemble obscure crossword clues that only the geographically literate historian might hope to solve. Who would ever guess the relationship of the Malesian bramble, *Rubus neo-ebudicus*, to the Scottish Hebrides? The epithet *ebudicus* derives from Ebudae Insulae, the Latinized name for the Hebrides (as in *Dactylorhiza ebudensis*, The Hebridean Marsh-orchid). The prefix neo- means new, so the New Hebrides – the colonial name for the island group in the South Pacific Ocean that has been Vanuatu since 1980. Most of the Scottish Islands have Latinized names: Zetlandia for Shetland, hence the Shetland wren, *Troglodytes troglodytes zetlandicus*. Its cousin, the Fair Isle Wren, *Troglodytes troglodytes fridariensis* acquires its Latinized epithet from Friðarey, the Old Norse name for the island. Linguistic fair play there then.

Below left: *Sanguinaria canadensis*, photographed in Guelph, Ontario, Canada, by Ryan Hodnett, CC BY-SA 4.0, Wikimedia Commons.

Below: *Troglodytes troglodytes zetlandicus*, Shetland Wren.

By Mike Pennington, CC BY-SA 2.0, Wikimedia Commons. Mike comments that the Shetland race of Wren is larger and usually darker than the mainland British race, but this rather bleached adult feeding what is presumably its second brood of the summer (that's a spider in its beak), is rather paler than usual.



There are estimated to be in excess of 15,000 Latin or Latinized place names that appear in Classical literature.¹³ They were conferred by conquerors, invaders, traders, merchants and explorers, from the times of Alexander the Great (356–323 BCE), and the occupations of the Roman Empire, and seldom with any regard for indigenous names. They represent the rolling ebbs and flows of rising and falling empires, and expanding world trade. While few of them are recognizable to the modern naturalist or geographer, they persist nevertheless. Linnaeus used over seven hundred Classical epithets in *Species Plantarum*, 1753, and they remain in use because of the International Code for Botanical Nomenclature (ICBN) rule on the priority of their publication. That is, the earliest applicable, properly published name is the correct one.

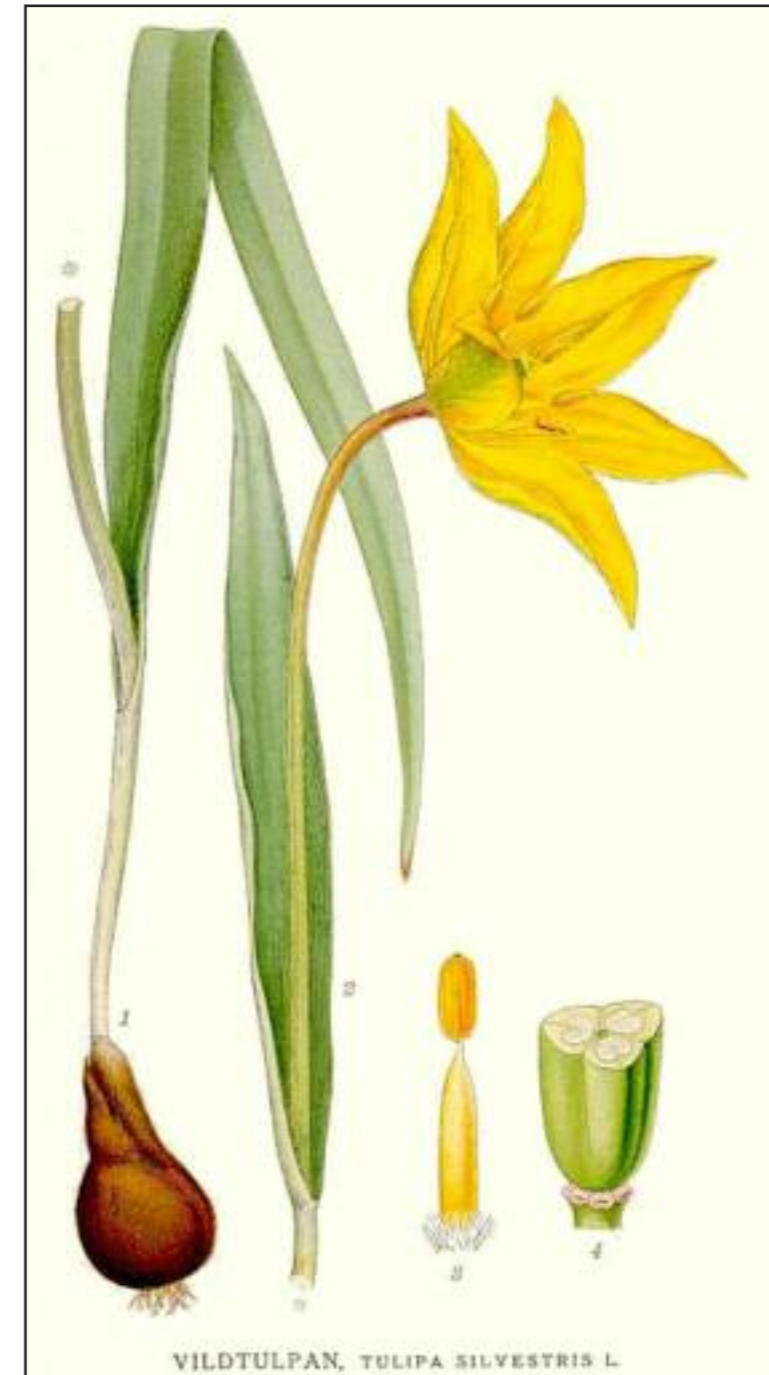
Habitat, Ecology, and Related Matters

Geographical epithets may provide clues to the broad climatic conditions in which flora occur, thereby giving suggestions of likely hardiness to the botanist and cultivator, but perhaps are generally less useful than those with a finer focus that are specifically descriptive of habitat. These can be excellent indications of a plant's needs in cultivation, and, along with climatic considerations, habitat information has always been my starting point when writing cultivation notes.

One can reasonably expect a plant with the epithet *sylvestris* – of woods, to tolerate the dappled shade of sylvan glades, as with the woodland tulip, *Tulipa sylvestris* L. 1753. And if *littoralis* – of the sea shore, to thrive in coastal gardens – even in the littoral zone, as with the salt-and-wind-tolerant New Zealand native *Griselinia littoralis*, first choice for seaside hedging, or *Lathyrus littoralis*, Silky Beach Pea, a denizen of beaches and dunes on the coasts of western North America.

J.D. Hooker, amongst many other things one of the fathers of geographic botany, commented on such epithets in his *Himalayan Journals* (1854), and clearly valued the ecological detail such names can provide.¹⁴

... there were few mosses, but crustaceous lichens were numerous, and nearly all of them Scotch, Alpine, European and Arctic kinds. The names of these, given by the classical Linnaeus and Wahlenberg, tell in some cases of their birth-places, in others of their hardihood, their lurid colours, and weather beaten aspects; such as *tristis*, *gelida*, *glacialis*, *arctica*, *alpina*, *saxatilis*, *polaris*, *frigidus*, and numerous others equally familiar to the Scotch botanist.



Above: *Tulipa sylvestris*. Plate 401, from *Bilder ur Nordens Flora*, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.

The Glasgow-educated Hooker may well have been referring to himself there as the ‘Scotch botanist’. He accepted a position as botanist to the Geological Survey of Great Britain in 1846, would have been well acquainted with the mosses and lichens to which he alludes, and understood the meanings of the specific names.

Tristis, meaning sad, dull coloured, as in *Lichen tristis*, L. 1753, Dull Horn Moss, or Brittle Bootstrap Lichen, with deep, dull brown fronds, is now *Cornicularia normoerica* (Gunnerus) Du Rietz, 1926 [syns. *Cornicularia normoerica* Gunnerus, 1776; *Cornicularia tristis* (Weber ex F.H. Wigg.) Hoffm. 1794].

Hooker (J.D.) will have known *Lichen gelidus* L. 1753, though probably as described by W.J. Hooker, his father, as *Squamaria gelida* (L.) Hook. It is now *Placopsis gelida* (L.) Linds., 1866, Northern Bull’s-eye Lichen. It occurs in icy, frequently wetted habitats, seepage cracks or streambeds.

The word *gelid* came into English usage in the 16th century, meaning extremely cold or icy, used literally as a descriptor of cold waters – as in, for example, the gelid waters of the moorland tarn – and figuratively, as a description of an icy cold stare.. It seems to be enjoying a currently fashionable literary vogue:

Ungainly in looks, but a natural for work – each hoof a snowshoe, with hollow fur for warmth and to buoy them across gelid Arctic rivers.

Christopher Solomon, describing the caribou ¹⁵.

It shares a root word, *gelu*, meaning frost or cold in Latin, with the edible jelly, gelatin, and has been adopted in the family name of the Gelidiaceae, a group of red-green algae, some of which, like *Gelidium amansii*, are used in the manufacture of agar gel.

Linnaeus described the foliose Salted Shield Lichen, or Crotal, as *Lichen saxatilis* in 1753. This is the lichen used to dye traditional Scottish and Irish Tweeds those warm, foxy-russet shades. It is typically a rock dweller, as its specific epithet implies (and, incidentally, Saxa Table salt is rock salt). Such an elegant binomial, describing it thus in two words brings joy to my editor’s heart. Oh, but wait ... it is now correctly – or should I say currently – called *Parmelia saxatilis* (L.) Ach. (1803).

There is a pattern of many changes emerging here.



saxatilis. 19. L. imbricatus, foliolis sinuatis scabris lacunosis, scutellatis badiis.

Parmelia saxatilis, Crotal or Salted Shield Lichen. By Jason Hollinger. This image is Image Number 238751 at Mushroom Observer, a source for mycological images, CC BY-SA 3.0, Wikimedia Commons.

The description from Linnaeus, as *Lichen saxatilis*, from Carola a Linné, *Systema Naturae*, Tom II, *Regnum Vegetabile*, 12th Edition, 1767.

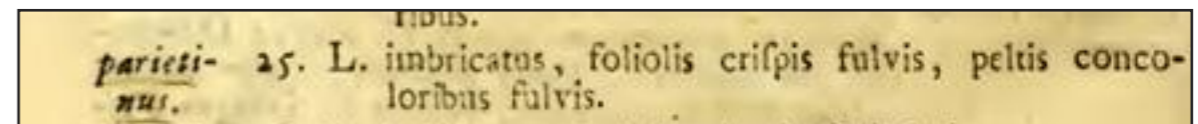
The names that Linnaeus gave to the lichen ‘species’ he described are appealing in their simplicity, and when he wrote them up they had been recognized as distinct species for hundreds of years. But these simple names lack the taxonomic accuracy and sophistication that this group demands.

Linnaeus had no idea that lichens were a fungal-algal partnership. It wasn’t until 1867 that the Swiss botanist, Simon Schwendener, suggested his Dual Hypothesis of Lichens,¹⁶ in which he proposed that lichens are a symbiotic partnership between a fungi and an algae or cyanobacteria that forms a stable dual organism. It took a further seventy years before Eugen Thomas obtained experimental proof of the theory, in 1939.¹⁷ And as recently as the 2010s, Toby Spribille *et al*¹⁸ discovered that many lichens that had been thought to be ascomycete-algae pairs were actually ascomycete-basidiomycete-algae trios.

There are now considered to be 20,000 lichen species (or more), taxonomic changes are on going, and it isn’t a done deal even now. The sheer magnitude of the taxonomic changes since Linnaeus named a mere 109 species leaves me breathless. Imagine the headaches for the publishers in page design, layout and typesetting.

Lichen is now *nomen rejiciendum*, defunct as a genus name. I may have grieved a little at discovering this, as do we all when taxonomic changes are imposed upon us, but this case illustrates so clearly one of the main reasons that name changes happen.

If our understanding of a species changes, so must its name.



Xanthoria parietina, (L.) Th.Fr (1860), *Lichen parietinus*, L.1783.

imbricatus, foliolis, crispis fulvis, peltis concoloribus fulvis.

The name has changed, but his description still reads like a poem to me. *Fulvus* means tawny, the colour of the pelt of deer and lions.

Photograph by Mark Powell, with kind permission.

Ecological Epithets

Habitat, meaning it dwells, became part of the Latin technical description of a species as an inclusion even before Linnaeus made it standard. It is still found in the summary information on modern collectors' labels. It was assimilated into common English usage, understood as 'home or home environment', long before Sir Terence Conran brought it onto the high street.

Linnaeus is often referred to as pioneer ecologist, and, indeed, it was he who wrangled most of ecological epithets that we use today into the binomial system. But Linné was standing on the shoulders of giants, perhaps most notably John Ray, whose *Synopsis Methodica Stirpium Britannicarum*¹⁹, 1690, contains exquisitely detailed descriptions of the British Flora, with their habitats expressed in what we might term explicitly ecological terms. Linné gained most of his knowledge of the British flora from the third, 1724 edition of *Synopsis*, as revised by John Jacob Dillenius, and put it to use in his *Flora Anglica*, 1754 and 1759.²⁰ They met at the Oxford Botanic Garden, and he and Dillenius became lifelong friends and correspondents. Dillenius is cited extensively in *Species Plantarum*.

Linnaeus's introduction of consistent binomial nomenclature for species in 1753 may have made Ray's polynomials archaic and obsolete. Nevertheless, botanists continued to consult the *Synopsis* for information over the subsequent fifty years. It withstands perusal today, even if with some heartache, since it is a catalogue describing so many lost plants and habitats that have been degraded through the enclosure of common land, the drainage of marsh, fens and mosses, urban and industrial development, and intensification of farming.

What delights me about the range of ecological epithets is their subtlety in distinguishing the habitats to which they refer. But they also make me wonder, since many of them are the simple appropriation of Latin terms that are descriptive of land types, how pertinent the use of these differential descriptions might once have been to the historic practices of cultivation, stewardship and husbandry.

These are, perhaps, the most elemental forms of engagement with the natural world: Columella, (*De Re Rustica*, On Agriculture)²¹, and Virgil (*Georgics*)²² write in detail concerning on the suitability of, and differential management for various land types for agriculture, arboriculture and horticulture.

The point is not, of course, that they used Linnaean nomenclature, but that they would certainly have recognised the types of plants that grew there, and

probably used them to identify the 'ecotypes' in which they were found. And when I use the Linnaean ecological epithets now, it becomes akin to painting a linguistic map of the landscape.

It also brings to my mind a picture of Linné 'at his most benign, most human'²³ on the botanical excursions that he held every summer Saturday afternoon with his students, when he was Rector of Uppsala University in the 1750s. It gives a quite different impression from that gleaned if you read only the rather dry catalogue to which they contributed, *Species Plantarum*. They were such joyous, laughter-filled occasions – and those of us who botanise in good company today can identify completely with that.

His teaching of his Apostles, of Fabricius, and the other international students there can fairly be regarded among his most enduring contributions to natural science. His Apostles travelled all over the world on expeditions, collecting new specimens for him, and as with all of his students, they spread the Linnaean taxonomic system wherever they went. Many of 12,000 species he named still bear the names he gave them – they bear his authorial moniker; L. for flora, and Linnaeus for fauna.

He was at the centre of a network, a world wide web that has expanded over two hundred and fifty hundred years, and his work has captured the imagination of each of the naturalists I have named in these ramblings.

There's a wide, wide world of ... lovely landscapes to discover **
Rambling ... from the shore to the far horizon

At the margins of the sea, the epithet *littoralis* is applied, from *littus* meaning seashore. On the salty fringe, the rocks of the littoral zone are often coated and made slippery with the golden-brown, velvety filaments of the Sea Felt, *Conferva littoralis* L. (now *Pylaiella littoralis*) – its habitat described as in *Europae marinus rupibus* – the marine rocks of Europe.

Atriplex littoralis L., Grassleaf Orache, once almost exclusively a denizen of the littoral zone, is found on sea walls, on the brackish banks of estuaries, and growing densely on saltmarsh drift lines. Since the 1980s, however, it has used its tolerances to advantage in its colonization of salt-treated road verges, and now may be more frequently encountered in inland populations.



Left: *Atriplex littoralis*, Grassleaf Orache, from *Flora Batava*, Volume 5. Jan Kops, Herman Christiaan van Hall. Jan Christiaan Sepp, Amsterdam, (1828).

Above right: *Centaurium littorale*, Seaside Centaury, Hermann Schachner, CC0, Wikimedia Commons.

Right: *Lobesia littoralis*, by Donald Hobern, CC BY 2.0, Wikimedia Commons.



Centaurium littorale, Seaside Centaury, is confined to coastal dunes, the upper zones of saltmarshes and open, grazed turf near the sea. It has narrower, more leathery leaves, and more intensely coloured flowers than *C. erythraea*, Common Centaury. Both species are variable, and they can hybridise where they grow together on coastal dunes – *C. x intermedium*, as they do on the dunes of South and West Lancashire.

The tiny micromoth, *Lobesia littoralis*, dwells in the littoral zone too, dependent on the flowers and seedheads of *Armeria maritima*, Sea Thrift, and *Lotus corniculatus*, Bird's-foot Trefoil, as a larval food source, which often occur together just beyond the littoral zone, but still within the saline influence of oceanic winds.





Above, left: Stained glass, Jo Tinney, Alpha Stained Glass Studio Derry, Our Lady, Star of the Sea, at Donegal Bay. By Andreas F. Borchert, CC BY-SA 4.0, Wikimedia Commons.



Sea Thrift, *Armeria maritima*, clothes coastal cliffs, grassland, and salt marshes throughout the northern hemisphere. *Maritima*, and indeed, the English word, maritime, are rooted in *mare*, the sea, as in *Stella Maris*, Our Lady, The Star of the Sea, to whom many coastal churches are dedicated.

And *stella* – a star – is familiar to botanists in many guises: it describes the stellate hairs on the leaves and young stems of *Hedera helix*, Common Ivy, on the underside of leaves of *Quercus petraea*, Sessile Oak, or beneath the leaves of some of the Whitlow grasses, such as *Draba muralis*, Wall Whitlow Grass. And the whole genus *Stellaria*, the Stitchworts, is beloved for the many shining, white, starry flowers they bear in spring and early summer.

*Stella mia, cuore mio, amore mio,
Shall I gather stars from the firmament
and fling them at your feet?*



Above, centre: *Armeria maritima*, Sea Thrift, on the coastal cliffs at Cill Fhearghasa, (Kilfarassy) Near Tramore, County Waterford.

Above right: *Stellaria holostea*, L., Greater Stitchwort.



Above the high tide line, on shingle beaches, *Crambe maritima* L., Sea Kale, or Seacole, can be found, often in company with similarly glaucous *Eryngium maritimum*, L., Sea Eryngo, and *Glaucium flava*, Sea Poppy, more frequently in the past than is true now; the two last are Near threatened in England. Gerard refers to *Crambe* as Sea Colewoort, and describes its foliage as ‘an overworne greene colour, tending to greynesse’ which is a good description. It belongs to the Brassicaceae, or Cabbage family; *Crambe* is Latin for cabbage. The term glaucous describes a grey-blue, grey-green, waxy leaf surface, which is common across the family, and it is a feature that is noticeable in many denizens of the maritime fringes.



A poppy grows upon the shore,
 Bursts her twin cups in summer late:
 Her leaves are glaucous-green and hoar,
 Her petals yellow, delicate.
 She has no lovers like the red,
 That dances with the noble corn:
 Her blossoms on the waves are shed,
 Where she stands shivering and forlorn.

Robert Bridges

Far left: *Crambe maritima*, Sea Kale, Plate 201.
 Left: *Glaucium flavum*, Sea Poppy, Plate 185.
 From *Bilder ur Nordens Flora*, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.

It is an adaptation often also seen in plants growing in conditions of multiple climatic stressors; in arid deserts, montane altitudes, cliffs, fens, shingles, or dunes. Although they seem so different, all of these habitats may experience conditions of high UV light, strong winds, extremes of moisture availability and temperature. The leaf waxes in glaucous plants are ecologically significant. They are light reflective, so help to control temperature, and protect against UV damage to internal cell structures; they reduce transpiration, assist in the conservation and regulation of moisture, and therefore in the salt/ nutrient balance within plant. Although we associate a glaucous appearance with drought-stressed environments, it also occurs

in wetland species, as with sedges, such as *Carex riparia* and *C. rostrata*. Cuticular waxes are hydrophobic in the extreme; they keep the plants dry in the water. Not only that, but such repellence causes the formation of globular water droplets that roll off leaves rapidly, taking dust, soot, spores and bacteria with them. Glaucous leaves are essentially self-cleaning, and dirt-free leaves photosynthesise more efficiently. It is a smart form of protection from the fungal and bacterial pathogens that proliferate in humid and wet environments. Oh, and they can also reduce drag under water – so conferring a degree of flood resistance, which must be useful in both riparian and coastal habitats. Such an amazing multifunctional adaptation. But I digress.

Eryngium maritimum, Sea Eryngo, disappeared from many sites in the north east of England and Scotland before 1930, for reasons that are not entirely clear (which means it's complicated). The same pattern of loss is also true for *Artemisia maritima* L., [*Seriphidium maritimum* (L.) Poljakov] Sea Wormwood, which is Near Threatened in England, whilst two other denizens, *Achillea maritima*, Cotton Weed, and *Carex maritima*, Curved Sedge, have become extinct in England between 1930 and the present day.

Although *Eryngium maritimum* can still be found on many of the coastal dunes of England, both the area of occupancy and extent of its occurrence have declined by about 30%.²⁴ Habitat loss is a major factor.

Coastal dunes are by nature dynamic systems, subject to cycles of erosion and deposition by the natural forces of wind, tide and storm surge. But they are also vulnerable to a range of human pressures, and probably have been since Victorian times when coastal villas became so fashionable. Throughout the twentieth century, the human pursuit of sand, sun, and sea air led to a proliferation tourism-related construction: roads, car parks, chalet and caravan parks, and golf courses. It has continued with increased recreational use – pedestrian trampling, footpath construction, and off-roading. Add to this ground water extraction, land conversion for farming and forestry, waste disposal, dune mining for sand, and it would appear that the unfortunate flora has been subject to the whole gamut of anthropogenic change.

The magnificent dune systems of the Sefton Coast (SAC, Special Area of Conservation) are still an excellent place to see Sea Eryngo. As a whole, the SAC includes five distinct dune types, and supports a huge diversity of habitat specialists. Further examination of these habitats is fascinating; see Natural England's NCA Profile 57, Sefton Coast²⁵, and JNCC SAC assessment for Sefton Coast²⁵.

But to continue my etymological theme, these habitat specialists include

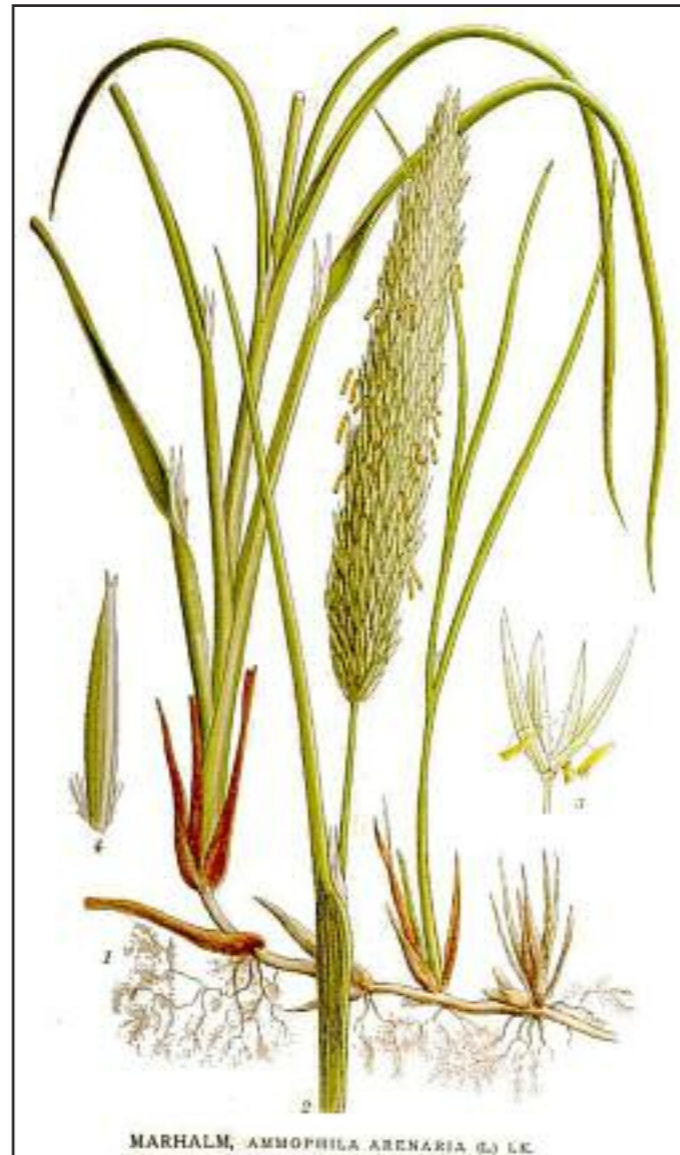


Above left: *Eryngium maritimum* on the Sefton Dunes.

Above right: *Artemisia maritima*, Sea Wormwood. Plate 38. From *Bilder ur Nordens Flora*, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.



Carex arenaria L., Sand Sedge, *Leymus arenarius* (L.) Hochst., Lyme grass, *Ammophila arenaria* (L.) Link., Dune Grass or Marram, and *Salix arenaria* L., Creeping Willow, now *S. repens* var. *argentea*. The last has given its name to *Salicion arenariae*, a dune community dominated by creeping willow. The term describes a plant alliance in the European system of phytosociology, according to classification of Braun-Blanquet. The EU Habitats Directive lists a category of ‘Dunes with *Salix repens* ssp. *argentea*, or *Salicion arenariae*’ among the habitats of European conservation concern. I had little idea at the outset of my researches what a cascade of knowledge the examination of an epithet that is usually defined as ‘sand-dwelling’ could inspire. Neither did I realize that there were common morphological characteristics in those that



Above: left to right,
Carex arenaria, Sand Sedge, Plate 432.
Ammophila arenaria, Marram, Plate 468.
Elymus arenarius, (*Leymus arenarius*)
 Lyme grass, Plate 477.

from *Bilder ur Nordens Flora*,
 Carl Axel Magnus Lindman, Stockholm,
 Sweden, 1901–1917.

share the name, obvious though that may be. All are extensively rhizomatous – of course they are – it’s an essential adaptation to the sand-shifting life. Less obvious perhaps is that most also have specific mycorrhizal associations: arbuscular mycorrhizal fungi (AMF) associated with *Ammophila arenaria*, Marram, are diverse, and include species of *Glomus*, *Scutellospora* and *Acaulospora*. Ectomycorrhizal fungi (EcMF) associated with creeping willow include the Red List (Endangered) *Inocybe inodora*, *Inocybe vulpinella*, Foxy Fibrecap, and *Russula laccata*, Willow Brittlepill. Other species of conservation concern associated with Creeping Willow include *Tulostoma melanocyclum*, Scaly Stalkball, only found in coastal dunes, the fibrecap *Inocybe agardhii*, and the brittlepill, *Russula persicina*, (most of the English records of this species on the Sefton Coast). There are several herbs that are symbiotic with the ectomycorrhizal fungi associated with creeping willow, such as *Pyrola rotundifolia*, Round-leaved Wintergreen, and *Epipactis dunensis*, Dune Helleborine – so you get these 3-way trophic associations. The functional significance of mycorrhizal associations is the manner in which they permit the vascular plants assimilation of nutrients in such a nutrient-poor substrate. It probably also highlights the ecological complexities of dune restoration, and the complex webs of connection on which these very vulnerable habitats depend.

Arenarius, derived from arena, meaning the centre of an amphitheatre, or more specifically a sand-strewn place of combat. The sand in the arena, presumably, mopped up all that gladiatorial blood.

The subtle beauties of the heath ...

*The great inviolate place had an ancient permanence
which the sea cannot claim ...*

From *The Return of the Native* (1878) Thomas Hardy Bk. I, ch. 1

We might traverse the blasted heath quickly, for the bleak terrain is not to my taste. The cool-temperate heathlands that we are familiar with in the UK have a fairly restricted shrub flora – predominantly heaths, heathers and gorse.

There are relatively few species that bear the epithet *ericatorum* – of heaths, of heathlands. The root of the epithet is *Erica*, ἐρείκη; ereíkē, applied to the genus of c. 700 species of heath, which includes the British and Irish natives: *Erica ciliaris*, Dorset Heath; *E. cinerea*, Bell heather; *E. mackayana*, Mackay's Heath; *E. erigena*, Irish Heath; *E. tetralix*, Cross-leaved Heath, and *E. vagans*, Cornish Heath. Most *Erica* species are South African, and on the heathland habitats of the Fynbos, in marked contrast to our own depauperate heath flora, there are a dizzying 650 species.

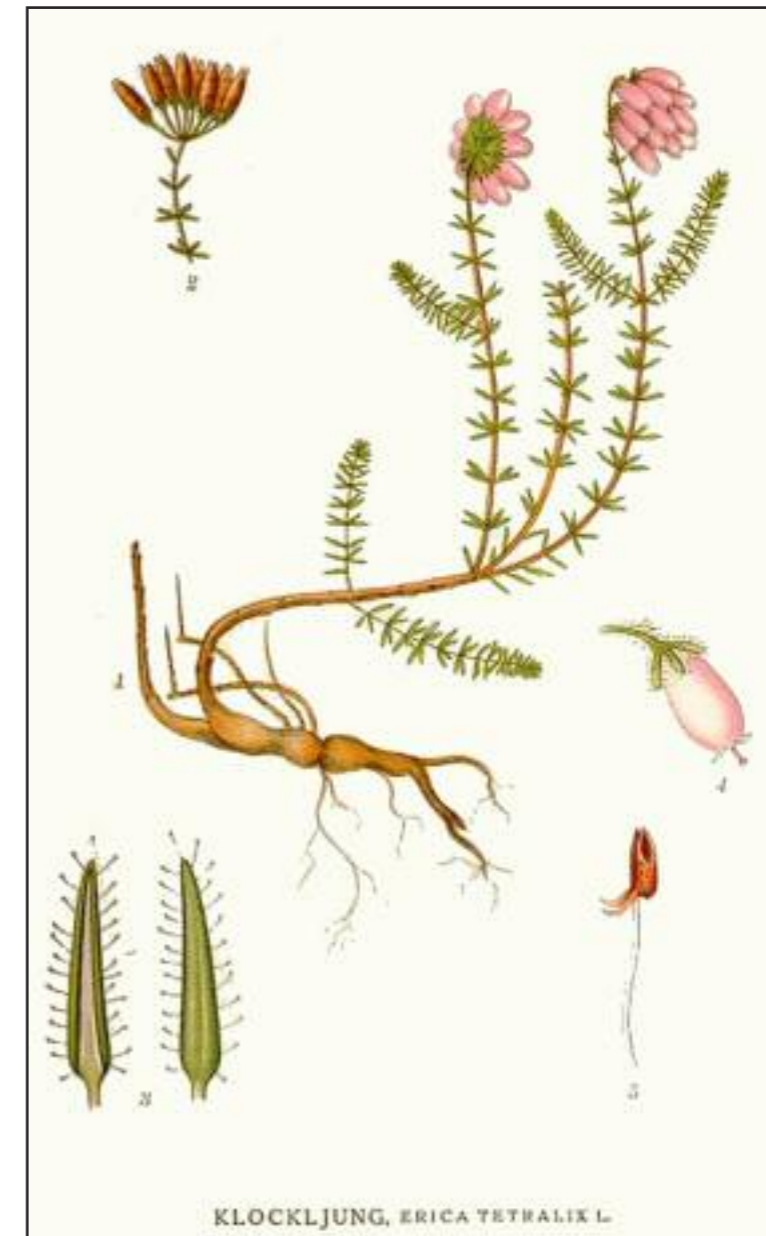
One of the earliest considerations of heath as a plant appears in Theophrastus' *Enquiry into Plants*,²⁷ c. 350–287 BC.

But bearing fruit at the top is less common in trees than in other plants, as among grains in those which have an ear, among shrubby plants in ἐρείκη (heath) privet chaste tree and certain others, and among pot-herbs in those with a bulbous root.

(*Historia Plantarum*. 1,14,2)

The heather he refers to here is the spring blooming *Erica arborea*, Briar Root, the tree heather of the Greek maquis, where it is called ρεϊκι (reiki) or ερεϊκη (Ereiki). It is the source of the Greek honey known as Spring ereikomelo, literally heather honey. The Autumn reikomelo comes from *Erica manipuliflora*, which blooms in late summer and autumn. (see over, p.50, 51.)

The *Historia* is one of the most important surviving Classical botanical works, not least for its influence on Linnaeus, who thought of Theophrastus as the father of botany. Linné studied *Historia Plantarum*, as well as Aristotle's *Historia Animālium* (History of Animals) – his own annotated copy of the 15th century translation of this by Theodōrus Gazēs, is in the Linnean Library.



Erica tetralix, Cross-leaved Heath, Plate 46.
Bilder ur Nordens Flora, Carl Axel Magnus Lindman,
Stockholm, Sweden, 1901–1917.

Theophrastus and Aristotle, the former the student and later collaborator of the latter, laid the groundwork for the classification of all living things. Their precise and painstaking empirical observations, defining and refining, testing and revising, are all tools of the systematic search for sense and order in the natural world. It has been a scientific continuum from their times to ours. Along, alas, with the generational cycle of forgetting and discovering anew.



Left: *Erica arborea*.
Right: *Erica manipuliflora*.



Illustrations from *Flora Graeca*, Sibthorp, John, Bauer, Ferdinand, Illustrator, engraver. London, 1806-1840. From the Biodiversity Heritage Library.

In the British Isles, there are some exceptional beauties that bear the epithet: *Dactylorhiza maculata* ssp. *ericatorum*, the Heath Spotted-orchid, which is the representative of the species in England.

And from northern boreal forests and montane regions, the very beautiful lichen, *Icmadophila ericetorum*, which does indeed grow in heathy habitats,



Above: two colour variants of *Dactylorhiza maculata* ssp. *ericatorum*, Heath Spotted-orchid. Photographs by kind permission of Dr Richard Bate.

Above right: *Icmadophila ericetorum*, Photograph by Daniel Mosquin, CCL. .University of British Columbia Botanical Garden.

on peat, rotting wood, turf, and decaying mosses and other humus-rich substrates that are found there in abundance.

The habitat of *Carex ericatorum*, Rare Spring-sedge, is usually described as short, dry *calcareous* grassland rather than specifically on heaths. Since heaths are usually thought of as shrubland habitats on free-draining infertile, *acidic*



soils, the epithet does, at first sight, seem anomalous.

The discrepancy, however, arises in the definition of heath. One of the last strongholds of *C. ericatorum* has been on the **Chalk** Heaths of Cambridgeshire – remnants of which occur in at least 33 parishes in South Cambridgeshire. The clues, as is often the case, are in place names: Newmarket *Heath*, Horseheath, Balsham *Heath*, Royston *Heath* and Thriplow *Heath*. Chalk heaths stretch all the way to the Brecklands, where sadly there have been no records since 1990, according to the Suffolk Rare Plant Register.²⁸

But there are remnant populations in Lakenheath, Foxhole Heath, and Knettisheath. By nature a poor competitor, *C. ericatorum* fallen victim to habitat loss due to ploughing, lack of grazing and nutrient enrichment from adjoining arable land. It is classed as Vulnerable on the England Red list.

Moths of the Heath

A number of moths – some 37 species of macromoths, for example – are closely associated with heathlands. Their key requirements are usually served by the microclimates of the warmer, drier, sheltered, low-lying terrain, rather than by Ericaceous plant species under discussion here. A few, however, do herald their association in their specific epithet:

The Heath Rivulet, *Perizoma minorata*, Treit 1828, is a northern species of macromoth found on moors, heaths, upland pasture and limestone grassland, which uses the flowers and seed capsules of eyebright, *Euphrasia* species, as a larval food source. The subspecies *P. minorata* ssp *ericetata*, Stephens 1831, is the only form known from Scotland.

The Nationally Scarce *Crambus ericella*, Hübner 1813, Heath Grass Veneer, uses grasses as a larval food source: *Festuca ovina*, *Deschampsia*, *Aira* and *Corynephorus* species. In this case, the epithet refers to its specialism in heathland habitats. Hübner seems often to have used epithets to highlight the ecological niche of species he described, as in *C. dumetella*, (of thickets),

and *C. nemorella* (of woodland glades/open woodland).

The heathland species *Aristotelia ericinella*, Zeller 1839, Heather Neb, is thought to feed only on *Calluna* and *Empetrum nigrum*, Crowberry, rather than *Erica* in the UK, although it does use *E. carnea*, Winter Heath, in continental Europe. The larvae shelter in silken tubes among the leaves. *Neofaculta ericatella*, Geyer 1832, Heather Groundling, uses *Erica cinerea*, Bell Heather, and *Calluna vulgaris*, Ling, Common Heather, as a larval food plant, feeding on the shoots encased in larval spinings. It feeds on the flowers as an adult.

Below, left to right:

Crambus ericella.

By Ilia Ustyantsev, CC BY-SA 2.0.

Aristotelia ericinella.

By Patrick Clement, CC BY 2.0.

Neofaculta ericatella.

By Ben Sale, CC BY 2.0.

Wikimedia Commons.



If I could speak words of water ... ***

I might begin with *aquatica*. Its derivatives in plain English (and in Romance languages) need no explanation. *Ranunculus aquatilis* L., Common Water Crowfoot; *Oenanthe aquatica* (L.) Poir., Fine-leaved Water Dropwort; *Alisma plantago-aquatica* L., Water Plantain; and *Saxifraga aquatica*, a Pyrenean saxifrage, which grows in damp places, along streams or seeps. All declare their habitat in their names, though 'aquatic' is rather a general term. The Highland species, *Saxifraga rivularis* L., Highland Saxifrage, with a circumpolar distribution, occurs on wet mountain rocks, where mountain brooks arise – the epithet means brook loving. *Rivale* means growing by streams – as *Geum rivale* L., Water Avens, frequently does.

Below: left to right.

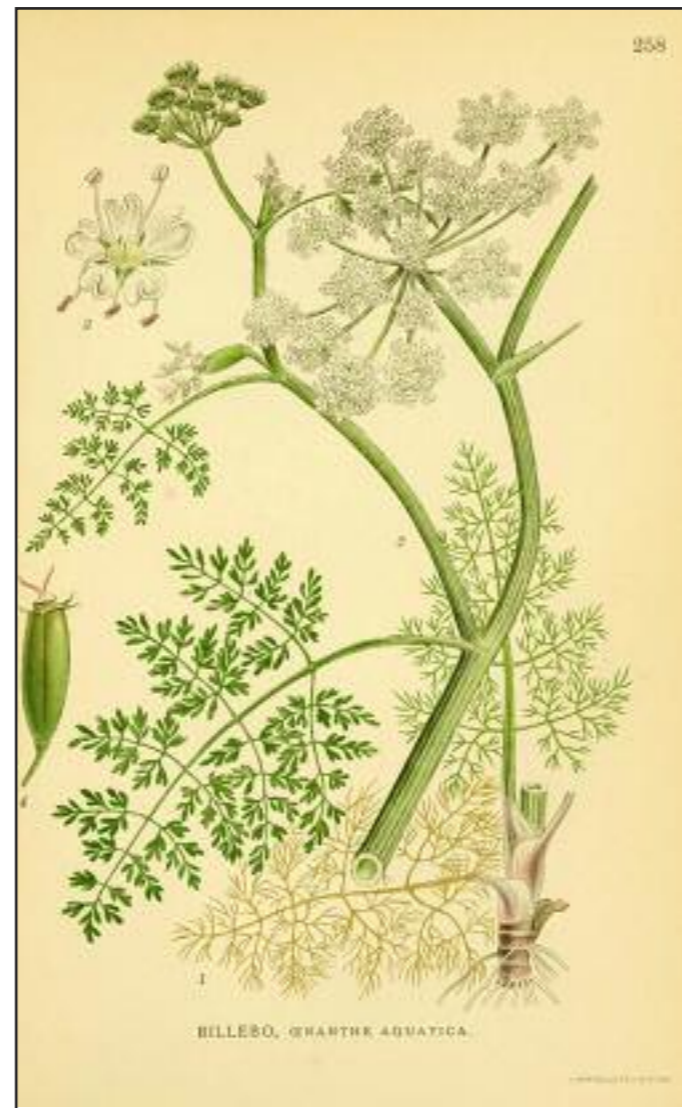
Ranunculus aquatilis L., Common Water Crowfoot. Plate 167.

Oenanthe aquatica (L.) Poir., Fine-leaved Water Dropwort. Plate 258.

Alisma plantago-aquatica L., Water Plantain. Plate 484.

Geum rivale L., Water Avens. Plate 304.

Bilder ur Nordens Flora, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.

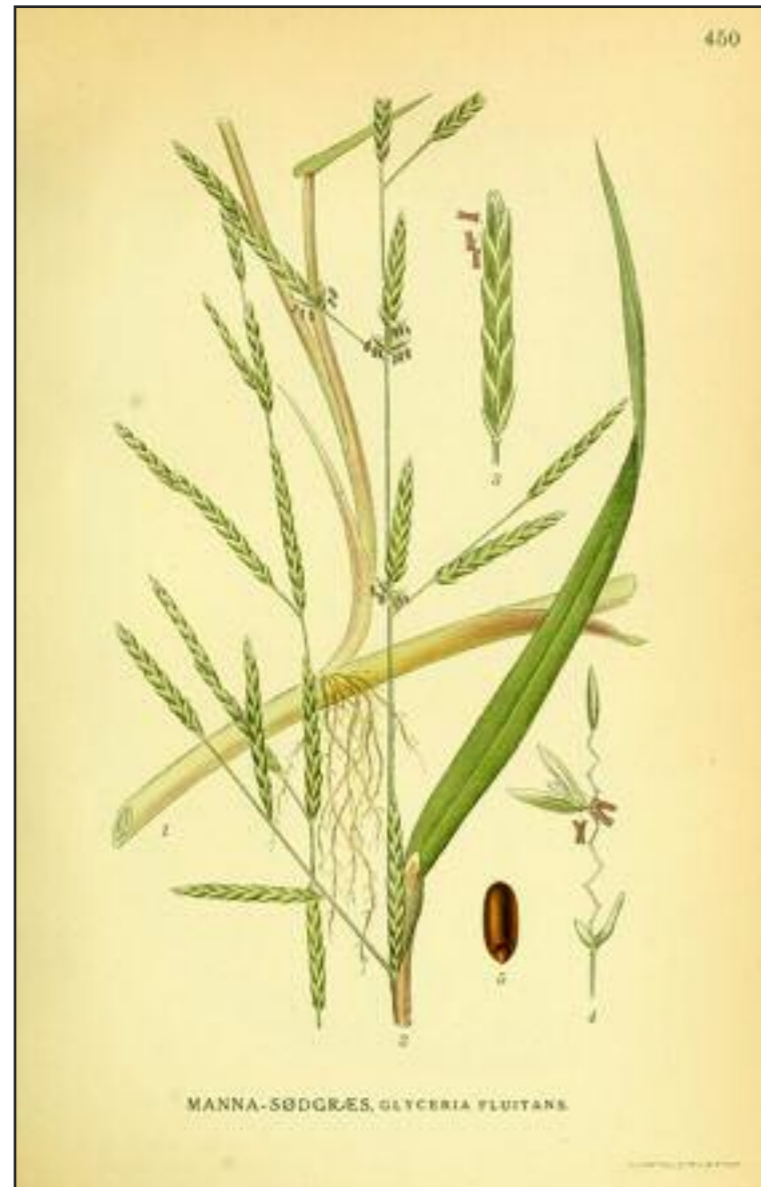


Those that make their home by quietly flowing rivers, such as *Glyceria fluitans*, (L.) R.Br., Floating Sweet grass, *Schoenoplectus fluviatilis*, River Bulrush, and *Oenanthe fluviatilis*, River Water-Dropwort, take their name from the Latin *fluvius*, a river, flowing water.

It's the root of fluent, fluency and flux.

Those that dwell on the shores and banks of rivers and streams, are denoted by derivation from *ripae* – hence riparian in English – such as *Astragalus riparius*, Riverbank Wild Rye.

And the denizens of the lakes take their names from *lacus*, a lake, as in the lacustrine *Iris lacustris*, Dwarf Lake Iris, *Schoenoplectus lacustris* (L.) Palla., which Linné called *Scirpus lacustris* L., Common Club Rush, and *Isoetes lacustris*, L., Quillwort.



Above, left to right:

Glyceria fluitans L., Floating Sweet grass. Plate 450.

Scirpus lacustris L., Common Club Rush. Plate 423.

Isoetes lacustris L., Quillwort. Plate 519.

Bilder ur Nordens Flora, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.

The bogs, marshes and fens that so frequently conjoin these water bodies, and which once helped form part of a more connected landscape than is now the case, before they were drained or otherwise compromised by agricultural change, were among the most botanically diverse of habitats. The very few extant pockets and patches that encompass such assemblages are a botanically thrilling, but desperately sad, reminder of all we have lost.

My most frequent haunt is classified as a woodland-grassland-mire complex. There is damp pasture amid remnant fragments of alder woods, with calcareous marsh and wetter grassland, and clear streams running through it. On either side of the valley bottom lie hanging woods. To the west, on acidic soil, mainly oak and birch; to the east, calcareous woodland of ash, wych elm, hazel and some small-leaved lime. Many of the plants therein declare the overall ecology in their specific epithet, which is derived from epithet, which is derived from *palus*, a marsh ... *palustris*.

Below: *Pedicularis palustris*, L., Marsh Lousewort.



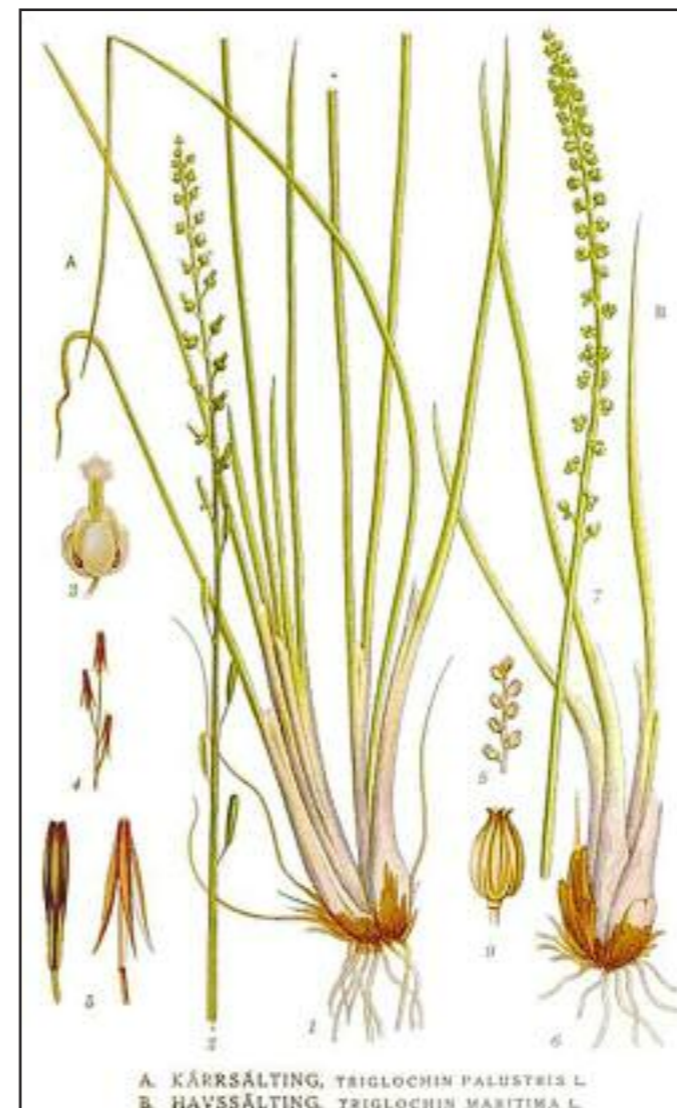
The English word, paludal – yes, there is such a word – is from the same root; it means pertaining to marshes. As in *Crepis paludosa*, Marsh Hawk's-beard, and *Tipula paludosa*, Marsh Crane-fly.

Some of its denizens, such as *Caltha palustris* L., Marsh Marigold, and *Cirsium palustre* (L.) Scop., Marsh Thistle, are of Least Concern on the England Red List.

Some have disappeared: *Hottonia palustris* L., Water Violet, hasn't been recorded on my patch since the 1940s, and *Potentilla palustris* (L.) Scop. (syn. *Comarum palustre* L.) hasn't been seen there since the 1980s.

Though I will keep looking and hoping. A few precious survivors hang on by the skin of their teeth: *Pedicularis palustris* L., Marsh Lousewort, Near Threatened; *Triglochin palustris* L., Marsh Arrow Grass, Near Threatened; *Epipactis palustris* (L.) Crantz, Marsh Helleborine, Near Threatened; *Parnassia palustris* L., Grass of Parnassus, Vulnerable.

Below: *Triglochin palustris* L., Marsh Arrow Grass.





Above: *Epipactis palustris* (L.) Crantz, Marsh Helleborine.



Above: *Parnassia palustris* L., Grass of Parnassus.

Note on illustrations:

Throughout this essay, I have illustrated many of the species I mention with the works of Carl Axel Magnus Lindman. *Bilder ur Nordens Flora* is his best known work. First published 1901–1905, with a second amended edition in 1917, it encompassed some 800 illustrations of the Swedish flora. Although often listed as Botanical Illustrator, he was a professional botanist and zoologist who followed closely in Linnaeus' footsteps. He was first a student of Botany and Zoology at Uppsala University, studying pollination and systematics during his doctoral studies at Bergius Botanic Garden, University of Sweden in Stockholm. He was appointed Professor at the Botany Department at the Swedish Museum of Natural History in 1905, and filled this chair until his retirement in 1923. His botanist author abbreviation is Lindm. His works have been made available by Wikimedia Commons and the Biodiversity Heritage Library.

Now let me tread the meadow paths ...

So many of the meadow flowers that John Clare loved and named in his verse, bear the epithet derived from *pratis*, a meadow; *pratensis*, of meadows. He was familiar with the Cuckooflower of damp pasture, *Cardamine pratensis* L., and knew that its full blooming was coincident – and remarkably consistent – with the return of the cuckoo in May.

*cuckoo's in the wood,
And pasture cuckoo's too*

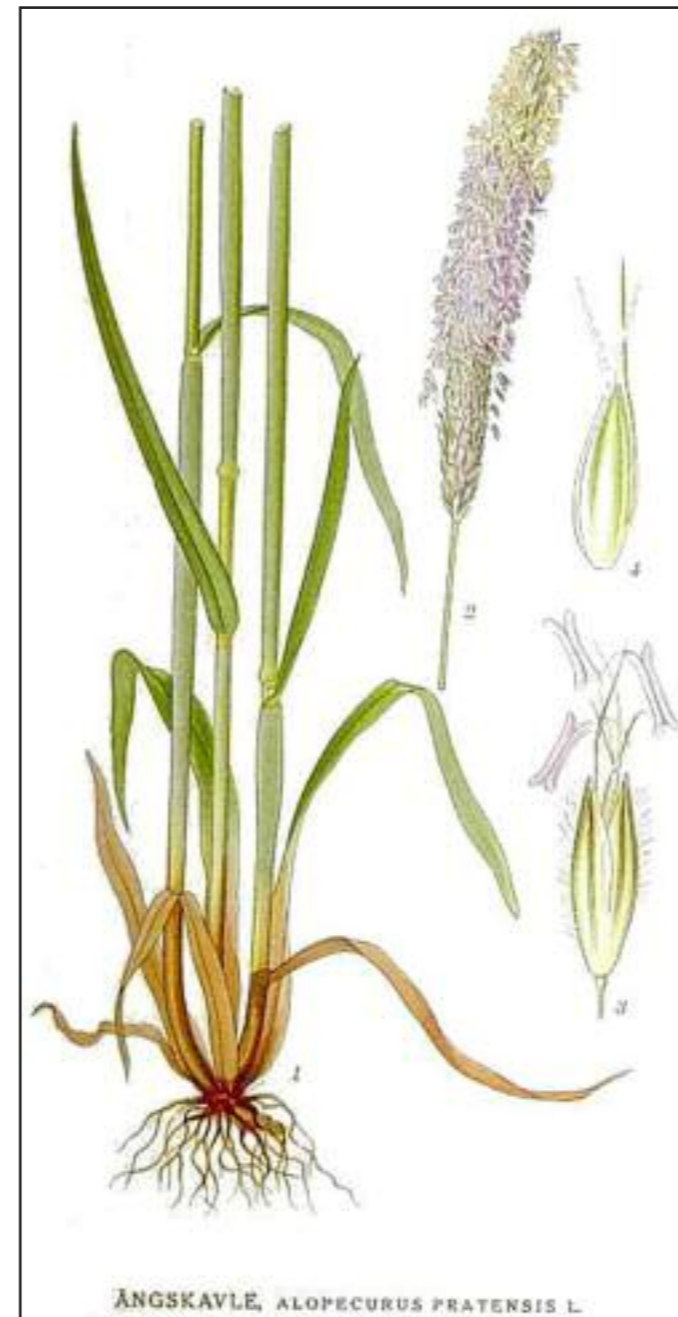
Wild Flowers, John Clare, May, 1864

Alopecurus pratensis, L., Meadow Foxtail Grass, one of the earliest of the meadow grasses to flower, also favours damp pastures and floodplain meadows. It is commonly found with *Cardamine*; both are tolerant of seasonally wet soils. *Geranium pratense*, L. Meadow Crane's-bill, once was common in hay meadows and damp grassland. It is tough and adaptable, and still occurs in some abundance, although in recent decades, it is more often seen lining road verges, because of declines in its meadow habitats. The name of its sibling species, *G. sylvaticum* L., Wood Crane's-bill, suggests a woodland species. But both transgress their boundaries – the former is also found in woods, the latter also in upland meadows. John Clare loved them both. He would share my distress that the Wood Crane's-bill is now Near Threatened in England, as is the meadow-loving *Succisa pratensis*, Devil's-bit Scabious, and his namesake, *Salvia pratensis* L., Meadow Clary.

Each individual species of meadow flora supports multiple invertebrates, not only in the general provision of nectar and pollen, but crucially also in the larval food plants that allow them to complete their life cycles. We often use the pollenating species as indicators of the health of an ecosystem, and cataloguing their declines has become a rolling obituary.

But although each individual species' decline is tragic, sometimes, a single-species focus disguises the greater losses at an ecosystem level. A meadow, as with other ecosystem, comprises multiple trophic levels, an interconnected array of herbivores and detritivores as primary consumers, with the carnivores that prey upon them. The plants are at the base of that pyramid.

The ploughing up of permanent grasslands, meadows and pastures in favour of grass leys, and the changes in patterns of managed grazing, has fatally compromised the habitats they formerly shared, and this, in consequence, has threatened the diverse fauna that depended upon them.



Left: *Alopecurus pratensis* L., Meadow Foxtail Grass. Plate 472.

Right: *Cardamine pratensis* L., Cuckooflower, with *Cardamine dentata*, Schult. Plate 192.

[*C. dentata* Schult. is *Cardamine pratensis* subsp. *paludosa* (Knaf) Celak, syn. *Cardamine pratensis* subsp. *dentata* (Schult.) Celak.]

Bilder ur Nordens Flora, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.

The figures are probably underestimated, but, since the 1930s, over 7.5 million acres – more than 97 per cent – of our permanent grasslands have been lost. These rich and diverse ecosystems now comprise just 1 per cent of the land area in the UK.

That habitat loss is a primary driver of species' decline is a universal truth; it has happened across most of the world's ecosystems and biomes at the hand of humankind.



Geranium pratense L., Meadow Crane's-bill.



G. sylvaticum L., Wood Crane's-bill.
Near Threatened in England.



Succisa pratensis, Devil's-bit Scabious, Near Threatened in England, with *Betonica officinalis*, Betony (*Stachys betonica*).



Above: One of the twelve upland hay meadows around the village of Muker, in Swaledale, Yorkshire.

The Muker area is designated as the Northern Pennine Dales Special Area of Conservation, and several of the Muker meadows are Sites of Special Scientific Interest. These upland hay meadows hold a huge diversity of plant species including *Geranium sylvaticum*, Wood Crane's-bill; *Persicaria bistorta*, Common Bistort; *Cirsium heterophyllum*, Melancholy Thistle; *Rhinanthus minor*, Yellow Rattle; *Conopodium majus*, Pignut; *Alchemilla xanthochlora* and *A. glabra*, Lady's Mantles; *Leontodon hispidus*, Rough Hawkbit; *Hypochaeris radicata*, Cat's-ear; *Ranunculus acris*, Meadow buttercup; *Lathyrus pratensis*, Meadow Vetchling; *Vicia sepium*, Bush Vetch; *Ajuga reptans*, Bugle, and *Cardamine pratensis*, Cuckoo Flower. The grass species in the sward include: *Anthoxanthum odoratum*, Sweet Vernal-grass; *Avenula pubescens*, Downy Oat-grass; *Festuca rubra*, Smooth Red Fescue; *Poa pratensis*, Meadow-grass; and *Dactylis glomerata* Cock's-foot.

The traditional hay cut is usually around mid-July, to provide winter fodder for livestock, followed by after grazing between autumn and early spring. They are now also used as donor meadows to provide seed for the restoration of other meadows, and the creation of new ones.

Without consistent and long-standing management – over centuries and generations – the floral diversity would be lost very rapidly. Hay meadows like this may contain a hundred or more species, and the maintenance of their diversity is entirely dependent on this ancient stewardship and careful husbandry. Indeed, it is ecosystems such as this that prompt me to believe we should reframe the notion of management as interference with nature, and instead, in some cases, regard it as an asset that reflects a benign human relationship with nature that is as old as farming itself.

Woods, meadows, hedge-rows, corn-fields, all around ...

At the margins of cultivated fields dwells another suite of plants, which have, in past times, been referred to as arable weeds. Dwellers on arable land, their epithet will be *arvensis*, derived from *arvis*, meaning cultivated fields, or *agrestis* – growing in the fields. There is a clue to life style implied by the epithet *arvensis*; many of them are hardy annual species that are reliant on soil disturbance and light for germination – and so are well adapted to agricultural life – and they commonly have long persistent seeds that are resistant to long burial in the earth. A significant number of them are also archaeophytes, that is, non-native but introduced in ancient times, which can mean pre-Roman or earlier. They were introduced with the spread of agriculture, frequently as contaminants of grain.

They include common and persistent species such as *Anagallis arvensis* ssp. *arvensis* L., Scarlet Pimpernel; the archaeophyte, *Anchusa arvensis*, L., Bugloss; *Aphanes arvensis* L., Parsely Piert; *Asperula arvensis* L., Blue Woodruff, *Sherardia arvensis* L., Field Madder, and the archaeophyte *Viola arvensis*, Field Pansy.

Other species that share the epithet have not been so fortunate. They have fallen victim to the more intensive use of arable margins, the ploughing right up to hedge or field edge, and widespread use of broad-spectrum herbicides. On the Red List for England, *Clinopodium acinos*, syn. *Acinos arvensis*, Basil Thyme, is Vulnerable; *Anthemis arvensis*, Corn Chamomile, and *Ranunculus arvensis* L., Corn Buttercup are both Endangered.

The positive role that they can play in agricultural settings is becoming more recognised, and in recent years they have increasingly been sown in conservation headlands, at field margins, in wildflower strips, and on un-cropped, cultivated land. They create a food source for pollinating insects and other invertebrates that prey on them, and farmland birds benefit both from the insects and seed.

Right: clockwise from top left

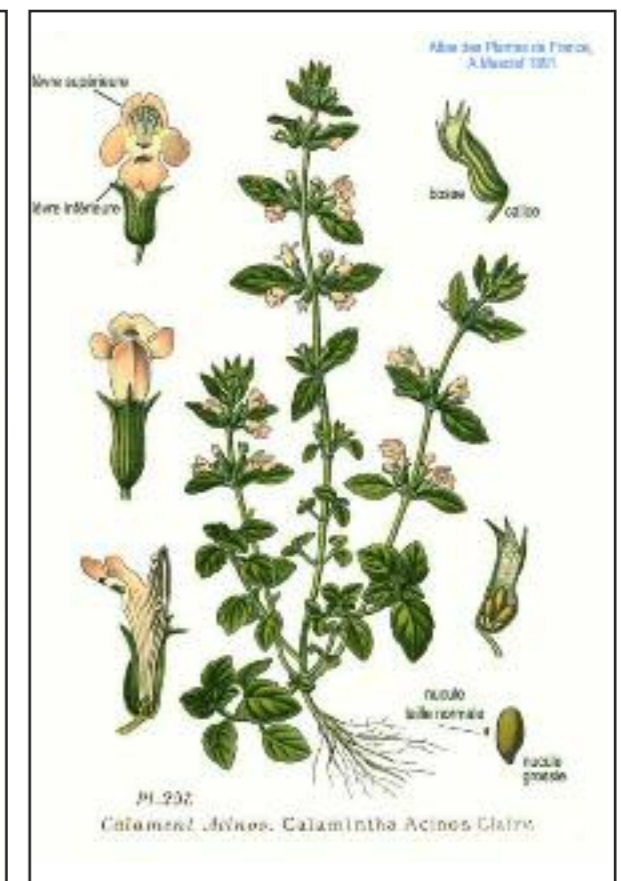
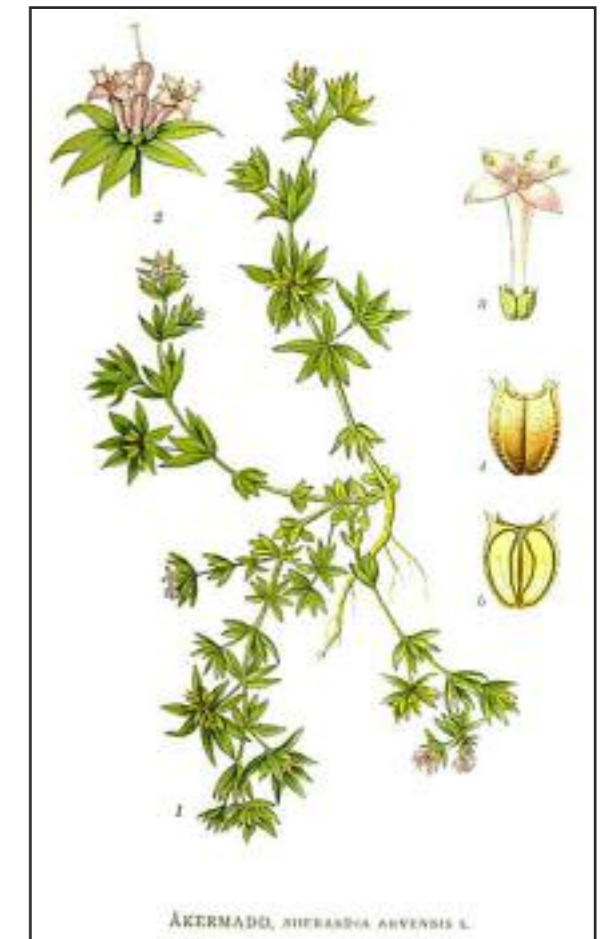
Anagallis arvensis L., Scarlet Pimpernel, Plate 133.

Sherardia arvensis L., Field Madder, Plate 72.

Bilder ur Nordens Flora, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.

Anthemis arvensis, Corn Chamomile, Franz Köhler, *Medizinal-Pflanzen, Atlas zur Pharmacopoea germanica*. Wikimedia Commons.

Clinopodium acinos, as *Calamintha acinos*, Amédée Masclef, *Atlas des plantes de France*, 1891. Wikimedia Commons.



Thickets and Hedges

The hedges and thickets that once formed extensive networks of transitional zones and connecting elements across the landscape, making passage between the meadows and the woods seamless for their inhabitants, were also recognized and named by the ancient authors. Their words do not appear to make clear distinction between thicket and hedge, and other bosky domains; *dumetorum* denotes both hedge and thicket, as in *Fallopia dumetorum*, Cope Bindweed (*Polygonum dumetorum* L.). This climbing, lowland annual is listed as Vulnerable on the England Red List, presumably victim of a decline in woodland management – it is known to flush into growth following felling, thinning or coppicing. As an annual it is likely to be long persistent in the seed bank, ready to germinate as soon as conditions permit.

The genus name is a commemorative one, which I discovered by chance when my spell checker wanted to change it to fallopian.

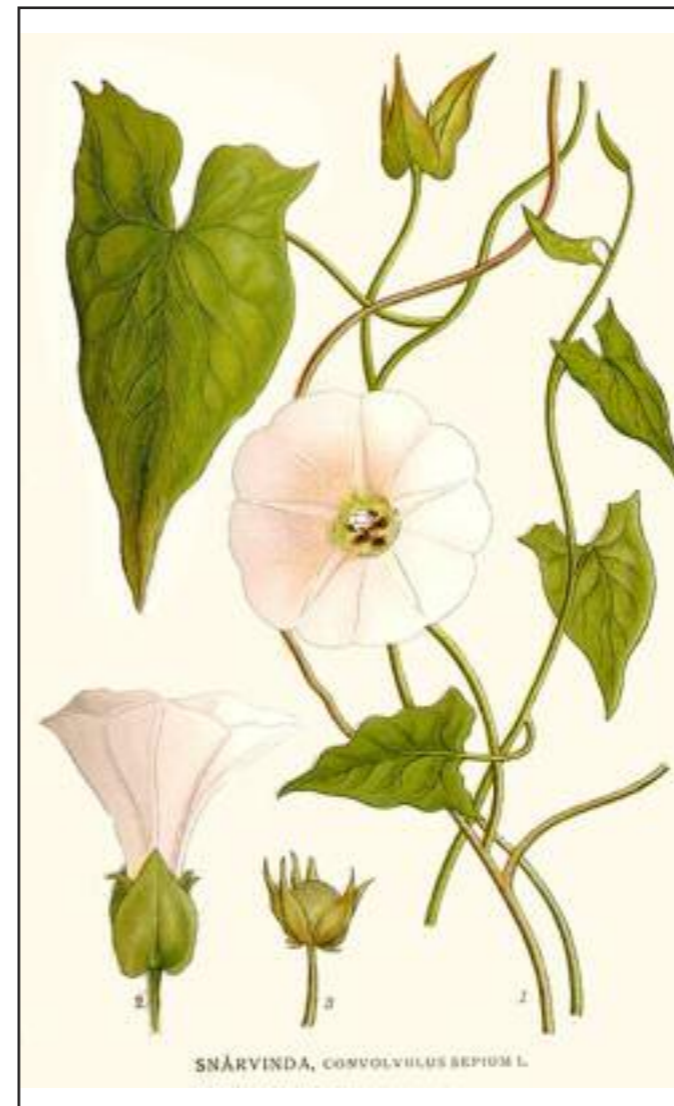
Gabriele Falloppio (1523 –1562) was a priest, physician, and anatomist at the University of Padua; he discovered the fallopian tubes. It is no surprise to discover that he was also a considerable botanist; he was Professor of Botany with charge of the Orto Botanico di Padova. Founded in 1545, it is the oldest academic botanical garden in the world. It was devoted to the cultivation of medicinal plants, and to the education of medical students in their correct identification and uses.

Left to right:

Fallopia dumetorum, Cope Bindweed, (*Polygonum dumetorum* L.). Flora von Deutschland, Österreich und der Schweiz, Prof. Dr. Otto Wilhelm Thomé, 1885, Gera, Germany.

Calystegia sepium (L.) R.Br., Hedge Bindweed. Plate 105.

Vicia sepium L., Bush Vetch. Plate 76. Bilder ur Nordens Flora, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.



Hedge dwellers take their name from *saepes* – a hedge – as in *Calystegia sepium* (L.) R.Br., Hedge Bindweed. *Vicia sepium* L., Bush Vetch; once upon a time I thought its vernacular name curious because it's a sprawling or climbing species, and not at all bushy. Its common name refers to the habitat (hedges, scrub, thickets, and woodland edges) rather than the habit.

The delightfully named Shining Smoke, a bagworm moth, *Bacotia claustrilla* (Bruand, 1845) has had a number of previous synonyms that refer to its habitat, including *Bacotia sepium* and *Psyche sepium*. It builds its larval case of lichen and bark, making it almost indistinguishable from the hedge twiglets to which it is attached.

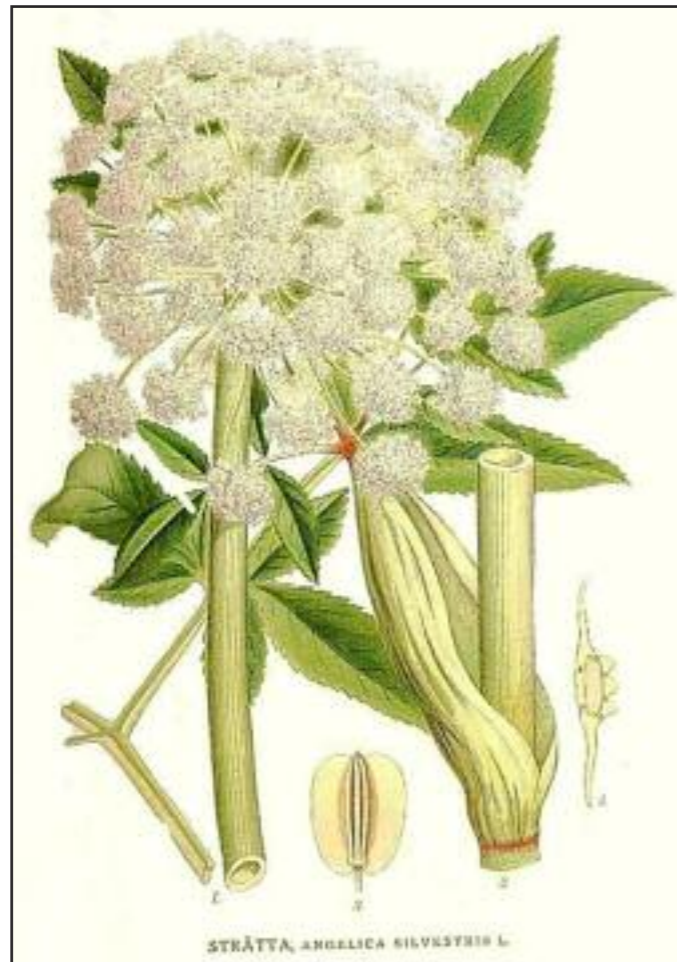
Rather disappointingly (at least to me) the Hedge Sparrow or Dunnock is now named *Prunella modularis*, but in pre-Linnaean times it was known as *Passer sepiarius*, described thus by William Turner in *A Short and Succinct History of the Principal Birds noticed by Pliny and Aristotle*, 1544.

The connection, however, is maintained in the colloquial names for it in Northumberland – hedgie, and in Scotland – dykie, a dyke being a hedge.

And so to the woods ...

Plants that have associations with woods usually bear variants of the epithet *sylvatica*, *silvatica*, from *silva*, a wood, a woodland, a bush, a tree; in Latin it also has the implication of wild, tangled growth. It seems to be a very unspecialised term, which may explain the frequent exclamation from botanists that ‘this one hasn’t read the flora!’

Anemone sylvestris, L., Snowdrop Anemone, for example, inhabits both meadows and dry, deciduous woodlands in Central and Western Europe.



Angelica sylvestris L. Wild Angelica, is found in fields, hedgerows, open woods, marshes and fens.

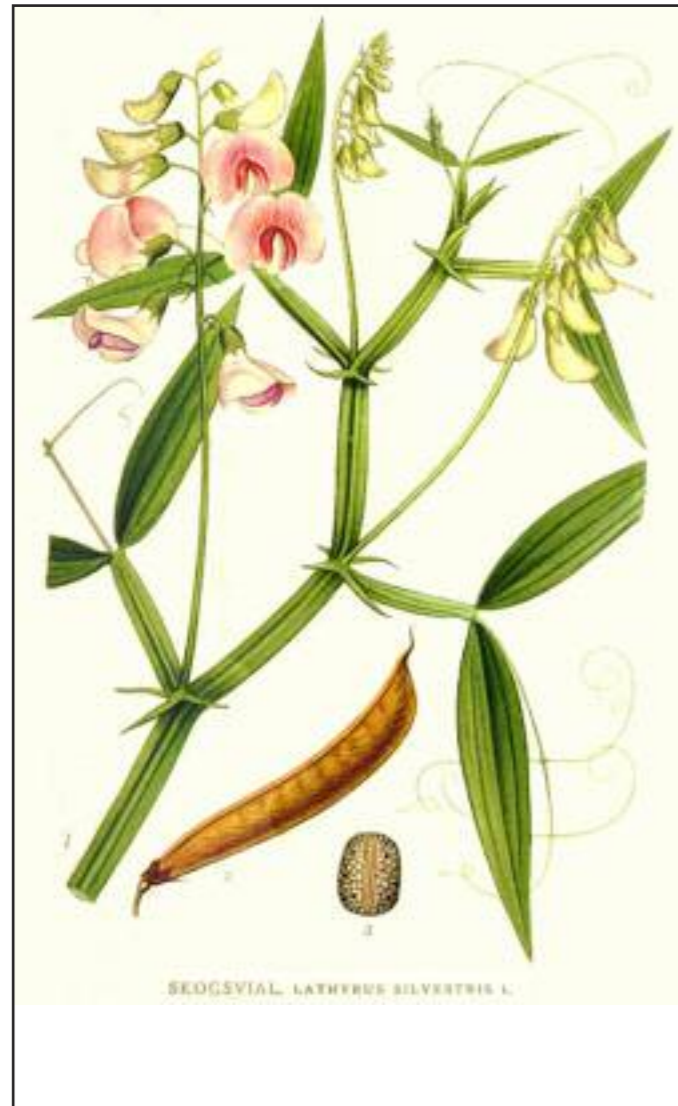
Plate 255. *Bilder ur Nordens Flora*, Carl Axel Magnus Lindman.



Anthriscus sylvestris (L.) Hoffm., Cow Parsley, *above left*, occurs in grassy places, hedgerows, and at woodland margins. Plate 263.



Stachys sylvatica L., Hedge Woundwort, *above, right*, occurs in woods, hedgerows and on waste ground; it may be thought almost ubiquitous, especially by gardeners who consider it a pernicious weed – it can spread by far reaching rhizomes, by seed, and every little piece of rhizome left *in situ* will sprout. Stinksyska is an excellent name for it too. Plate 97. *Bilder ur Nordens Flora*, Carl Axel Magnus Lindman.



Lathyrus silvestris L., Narrow-Leaved Everlasting Pea, is found at woodland margins, in scrub, scrambling through hedges, but also thrives in old railway sidings and cuttings, and on sea cliffs.

Above, *left*. Plate 317.

And as for *Gnaphalium sylvestris* L. Heath Cudweed, its scientific and vernacular names are either a contradiction in terms, or a model of inclusivity. It occurs both on heaths, and in woodland rides.

Above, *right*. Plate 527.



The beech, though – the loveliest of trees – it cannot be denied that *Fagus sylvatica* L., is appropriately named.

...the beechen woods in summer, the far-up cloud of green, translucent leaves, with open spaces full of green, shifting sunlight and shadow.

From W.H. Hudson, *Birds and Man*, Ch.5., *A Wood Wren at Wells*.

Fagus sylvatica L., Plate 367. *Bilder ur Nordens Flora*, Carl Axel Magnus Lindman, Stockholm, Sweden, 1901–1917.

The groves, the glades, the dappled rides

... And so tenderly the light descends,
And blesses with its gentle-falling fingers
All the leaves unto the valley's ends

From Max Eastman, *Autumn Light*

The epithet *nemorosa* is more specific than *sylvestris*, but only slightly so. Derived from *nemus*, *nemoris*, a grove, a glade, *nemoralis* means growing in groves and woods, and it carries the implication of open woodland. *Anemone nemorosa* L., Wood Anemone, is indeed common in glades in shady woods, where it often appears in greater abundance where light levels have risen after coppicing, and from whence it often disappears if the canopy becomes closed.



Above: *Anemone nemorosa* L., Wood Anemone, in profusion on an open, sunny dale side on the North Yorkshire Moors.

Right: *Euphrasia nemorosa*, Common Eyebright, in Finland.
Photo by By Matti Virtala, CC0, Wikimedia Commons.



But it is also recorded from stream banks, hedge banks, beneath bracken, in heath grassland, open moorland and on limestone pavement – the common denominator in its success there may be the higher light levels that pertain in those niches. It shares them with *Euphrasia nemorosa*, Common Eyebright. They're both inhabitants of sun-dappled spaces, with light and shade that shifts throughout the day. As is the handsome Crambid moth, *Agrotera nemoralis* (Scopoli, 1763) Beautiful Pearl, whose larvae feed on hornbeam,

hidden among leaves that they spin together to provide safe shelter while they pupate. The adult livery seems perfectly suited to blending in conditions of dappled light.

Its name perfectly illuminates my reasons for loving etymology, especially that of entomological persuasion. The specific epithet enlightens us to its habitat. The genus name is derived from the Greek, ἀγροτερος (agroteros) meaning rustic, which speaks of its preferred bucolic environment.³⁰

But oh, how they delight me, these moth namers; their whole world is populated by the Divine. For Ἀγροτέρα is also an epithet of Diana, the Huntress, who first stalked those sacred, sunlit glades and groves at Agrae.

Across the Ilisus is a district called Agrae and a temple of Artemis Agrotera (the Huntress). They say that Artemis first hunted here when she came from Delos [where she was born], and for this reason the statue carries a bow.

Pausanias, Description of Greece (I.19.6)

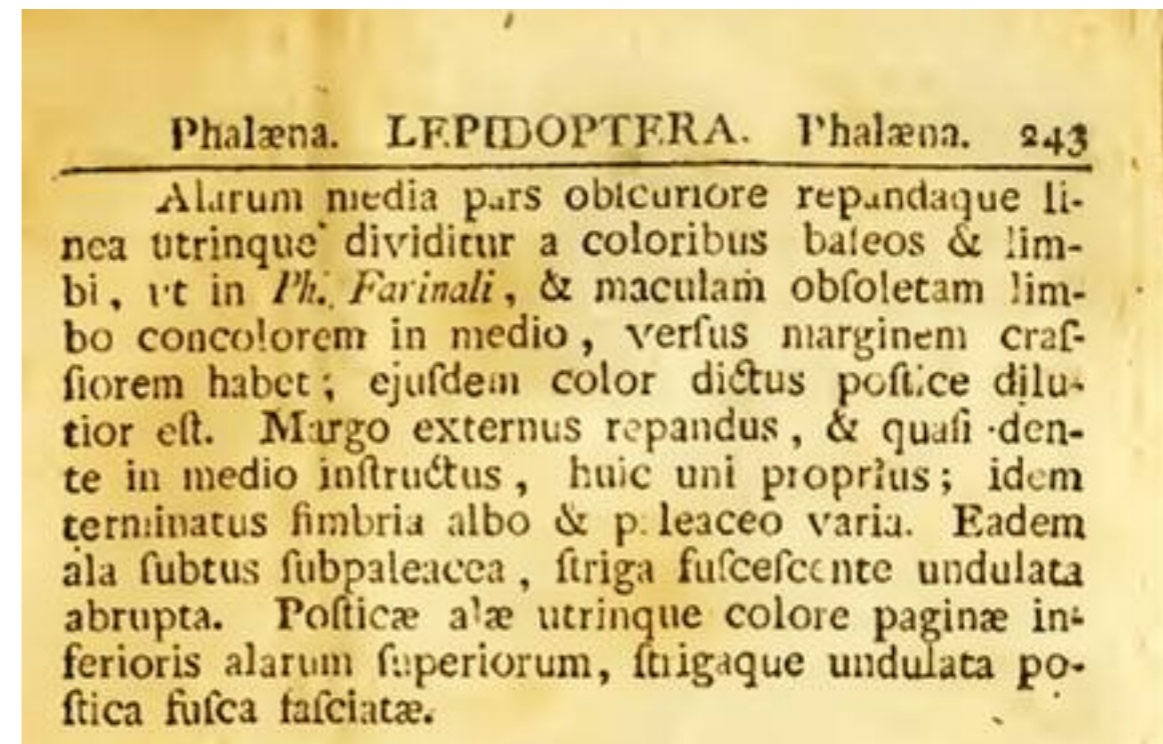
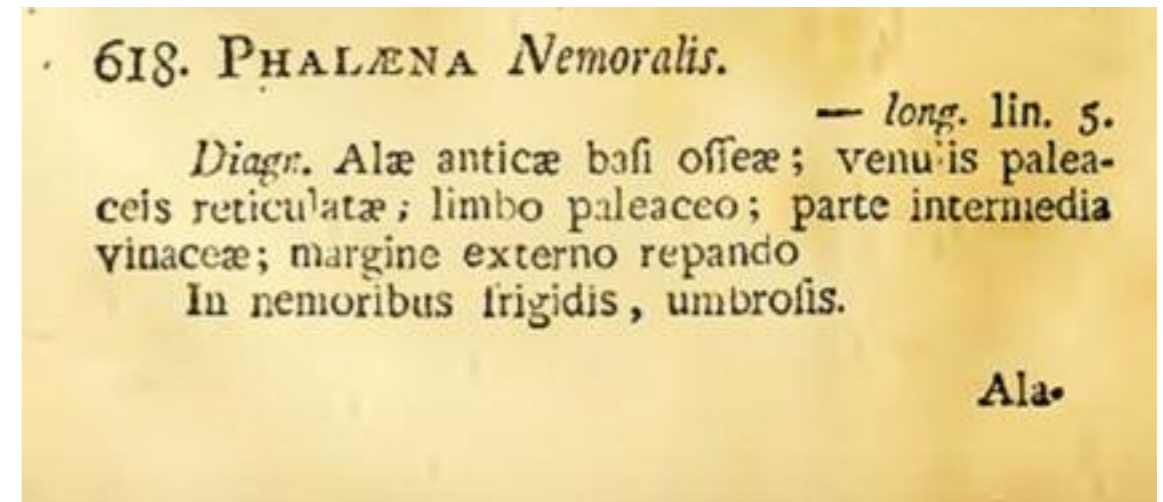


Above: *Agrotera nemoralis* (Scopoli, 1763) Beautiful Pearl, in the cool, dappled shade of hornbeam woodland in the Lot.

In nemoribus frigidis, umbrosis.

Photograph by kind permission of Robin Howard.

Agrotera nemoralis was first described by Giovanni Antonio Scopoli, in his *Entomologia Carniolica* of 1763³¹, one of the earliest works to use Linné's binomial nomenclature. And throughout his work he cites the 10th edition of *Systema Naturae* (1758) and *Fauna Suecica* (1761) by Carl Linnaeus, and *Insecta Musei Graecensis* (1761) by Nikolaus Poda von Neuhaus. What a generation. What a time that must have been to be alive.



Everything is Connected

The layers in our landscapes, from the stratified rocks beneath, through ice-sculpted hills and mountains, hags and hollows, to the generous earths that arise from them, might all be described in scientific Latin by the geologists, the geographers, the mineralogists, the soil scientists that work with them. All those of us who study the plants and vegetation that clothes them, and those who study the creatures that inhabit them – we all share the descriptive language of scientific Latin.

The layers of language, both scientific and vernacular, have formed deep veins of connection to the living world for thousands of years, and their roots live on in the language we speak today. It links us to countless generations of naturalists that came before us. In our times, we may have come to regard as foremost among them Carl Linnaeus, Carl von Linné, *Naturae minister et interpretes* – servant and interpreter of nature – but, as we have seen, there were giants before him, contemporary with him, and many more who followed in his footsteps. A cycle of generations through the ages, and we have learned from all of them.

To remember and celebrate the utility and beauty of scientific Latin – Natural Latin – is, for me, an exploration of those connections, a means of sustaining my relationship with the natural world, and with the legions of other naturalists who have walked the same bounds over millennia. It is a language of love, an ode to joy.

Acknowledgements

These are those to whom thanks are due – for inspiration, encouragement, education, discussion, botanical companionship, and sometimes just for winding me up and pointing me in the right direction.

Robin Howard and Richard Bate, for their beautiful photographs; Martin Allen, Philip Amies, Andrea Belloli, Brian Eversham, Graham Featherstone, Phil Gates, Simon Goodenough, Martin Hammond, Barry Jobson, Moira O'Donnell, Mark Powell, Jan-Arnout Rossenar, Mark Spencer, David Steere, Joshua Styles, Markus Wagner, and Rebecca Wheeler.

I would also like to mention of the Biodiversity Heritage Library (BHL) whose teams have done so much to make our heritage so readily available – *Inspiring discovery through free access to biodiversity knowledge*. (<https://www.biodiversitylibrary.org>)

And to the Wikimedia Foundation for their commitment to free access to knowledge. In that context I would like especially to thank Ben Sales and Patrick Clement, who generously share their excellent photographs of moths there for use under license.

Singing the Praises of Natural Latin

© Linden Hawthorne 2020

References:

1. Stearn, William T. (3rd Edition, 1992). *Botanical Latin: history, grammar, syntax, terminology and vocabulary*. Newton Abbott, Devon: David & Charles. p. 6.
2. Ovid, *Metamorphoses* 2.114–115; trs. A. S. Kline.
3. I Believe in Bugs, 1974, from the album Dandruff, Ivor Cutler.
<https://www.youtube.com/watch?v=jlUvfJnREO8>
4. Yellow Fly, 1975, from the album, Velvet Donkey, Ivor Cutler.
<https://www.youtube.com/watch?v=sbkHqFtt7AY>
5. *Museum scientists described 412 new species this year*. 25 October 2019. Press release. www.nhm.ac.uk.
6. Telesio, Antonio, *Libellus de Coloribus*, Venice, Bernardino Vitali, 1528.
7. Richard Waller, *Tabula Colorum, A Catalogue of Simple and Mixt Colours with a Specimen of Each Colour Prefixt Its Properties*. Philosophical Transactions of the Royal Society of London, vol. 6 for the years 1686 and 1687 (London, 1688). After page 32.
8. Syme, Patrick, *Werner's Nomenclature of Colours*. 1814, (2nd Edition, 1821.) William Blackwood, Edinburgh, Murray, Baldwin, London, 1814. Abraham Gottlob Werner was a mineralogist, whose original work was a descriptive catalogue of mineral colours, not illustrated. Syme compiled the 110 colour plates matching each to the mineral from which it was derived.
9. Ridgway, Robert, *Nomenclature of Colors*, 1886.
Ridgway, Robert, *Color Standards and Nomenclature*. Washington DC. 1912. The final version of this work, amended in 1937, maps 1096 names to 1602 colors, with hand-painted colour chips. The original work (above) comprised only 200 colours, but did have a glossary of colour terms in seven languages, which is lacking in the later version.
10. Scopoli, Giovanni Antonio, *Entomologia Carniolica exhibens insecta Carnioliae indigena et distributa in ordines, genera, species, varietates*. Johann Thomas von Trattner, Vienna, 1763.
11. Schiffermüller, Ignaz, *Versuch eines Farbensystems*, Verlegts Augustin Bernardi, Buchhändler. Vienna. 1772. p.25.
12. Carl Linnaeus, *Species Plantarum* (1753). Laurentius Salvius, 1st May, 1753. Stockholm, Sweden.
13. Stearn, *ibid.*, p.208.
14. Hooker, J.D., *Himalayan Journals: Or, Notes of a Naturalist in Bengal, the Sikkim and Nepal Himalayas, the Khasia Mountains, &c.* London, J. Murray, 1854. Vol I, p. 352.
15. Christopher Solomon, describing the caribou, in New York Times, *Exploring a Timeless Wilderness, Before the Drilling Begins*, 13 Sep. 2019.
16. Honegger R. (2000). *Simon Schwendener (1829–1919) and the dual hypothesis in lichens*. *Bryologist*. 103 (2): 307–313.
17. Honegger. *ibid.*
18. Spribille, Toby; Tuovinen, Veera; Resl, Philipp; Vanderpool, Dan; Wolinski, Heimo; Aime, M. Catherine; Schneider, Kevin; Stabentheiner, Edith; Toome-Heller, Merje (21 July 2016). *Basidiomycete yeasts in the cortex of ascomycete macrolichens*. *Science*. 353 (6298): 488–92.
19. *Synopsis Methodica Stirpium Britannicarum*, 1690, (Editio tertia. Londini : Impensis Gulielmi & Joannis Innys Regiae Societatis Typographorum, in Area Occidentali D. Pauli 1724. *
20. Linnaeus, Carl and Grufberg, Isaac Olaf. *Flora Anglica*. Uppsala, Sweden. 1754. *
* In Ray Society Volume: John Ray, "Synopsis Methodica Stirpium Britannicarum" 1724 / Carl Linnaeus, "Flora Anglica" 1754 & 1759 Facsimile of the Third Edition 1724. Ray Society Monographs. Volume 148. 1973. By: William T Stearn (Introduction By), John Ray(Author), Carl Linnaeus (Author), JE Dandy(Contributor).
21. Columella III, *De Re Rustica*, (On Agriculture), Books X–XII, Trees. Ed., Trs., E.S. Forster, E.H. Heffner. Harvard University Press. 1993.
22. Virgil, *The Georgics*. Trs. L.P. Wilkinson. 1982. Penguin. London.
23. Blunt, Wilfrid. Linnaeus, *The Compleat Naturalist*. Francis Lincoln, London, 2004. pp. 173–174.
24. A Vascular Plant Red List for England. https://bsbi.org/wp-content/uploads/dlm_uploads/England_Red_List_1.pdfEngland Red List
25. <http://publications.naturalengland.org.uk/publication/6710782733582336>
26. <https://sac.jncc.gov.uk/site/UK0013076>
27. Theophrastus: *Enquiry into Plants*, Volume I, Books 1-5 (Loeb Classical Library No. 70). Trans. Sir Arthur Hort. Harvard University Press. 1916.
28. Sandford, Martin, Suffolk Rare Plant Register. *Suffolk Nat. Hist.*, Vol. 41, (2005) p.127. 2016.
30. Maitland Emmet, A., *The Scientific Names of British Lepidoptera*. Harley Books. Colchester, Essex, England. 1991.
31. Scopoli, Giovanni Antonio, *Entomologia Carniolica*. *ibid.*

** Joni Mitchell From Song for Sharon, Hejira, 1976. Asylum Records

*** Spike Milligan From his poem If I could write words.