THE LOVES OF THE PLANTS.

CANTO IV.

NOW the broad Sun his golden orb unshrouds,
Flames in the west, and paints the parted clouds;
O'er heaven's wide arch refracted lustres flow,
And bend in air the many-colour'd bow.—
—The tuneful Goddess on the glowing sky
Fix'd in mute extacy her glistening eye;

And then her lute to sweeter tones she strung,
And swell'd with softer chords the Paphian[1] song.
Long ailes of Oaks return'd the silver sound,
And amorous Echoes talk'd along the ground;
Pleas'd Lichfield[2] listen'd from her sacred bowers,
Bow'd her tall groves, and shook her stately towers.

"Nymph! not for thee the radiant day returns,
Nymph! not for thee the golden solstice burns,
Refulgent CEREA!—at the dusky hour
She seeks with pensive step the mountain-bower,

Pleas'd Lichfield. l. 11. The scenery described at the beginning of the first part, or economy of vegetation, is taken from a botanic garden about a mile from Lichfield.[3]

Cerea. l. 15. Cactus grandiflorus, or Cereus. Twenty males, one female. This flower is a native of Jamaica and Veracrux.[4] It expands a most exquisitely beautiful corol, and emits a most fragrant odour for a few hours in the night, and then closes to open no more. The flower is nearly a foot in diameter; the inside of the calyx of a splendid yellow, and the numerous petals of a pure white: it begins to open about seven or eight o'clock in the evening, and closes before sun-rise in the morning. Martyn's Letters, p. 294.[5] The Cistus lubdiniferus, and many other flowers, lose their petals after having been a few hours expanded in the day-time; for in these plants the stigma is soon impregnated by the numerous anthers: in many flowers of the Cistus lubdiniferus I observed two or three of the stamens were perpetually bent into contact with the pistil.

The Nyctanthes, called Arabian Jasmine, is another flower, which expands a beautiful corol, and gives out a most delicate perfume during the night, and not in the day, in its native country, whence its name; botanical philosophers have not yet explained

Bright as the blush of rising morn, and warms
The dull cold eye of Midnight with her charms.
There to the skies she lifts her pencill'd brows,
Opes her fair lips, and breathes her virgin vows;
Eyes the white zenyth;[6] counts the suns, that roll
Their distant fires, and blaze around the Pole;[7]
Or marks where Jove[8] directs his glittering car
O'er Heaven's blue vault,—Herself a brighter star.
—There as soft Zephyrs sweep with pausing airs
Thy snowy neck, and part thy shadowy hairs,
Sweet Maid of Night! to Cynthia's[9] sober beams
Glows thy warm cheek, thy polish'd bosom gleams.
In crowds around thee gaze the admiring swains,
And guard in silence the enchanted plains;

this wonderful property; perhaps the plant sleeps during the day as some animals do; and its odoriferous glands only emit their fragrance during the expansion of the petals; that is, during its waking hours: the Geranium triste has the same property of giving up its fragrance only in the night. The flowers of the Cucurbita lagenaria are said to close when the sun shines upon them. In our climate many flow[er]s,[10] as tragopogon, and hibiscus, close their flowers before the hottest part of the day comes on; and the flowers of some species of cucubalus, and Silene, viscous campion, are closed all day; but when the sun leaves them they expand, and emit a very agreeable scent; whence such plants are termed noctiflora.

Drop the still tear, or breathe the impassion'd sigh,
And drink inebriate rapture from thine eye.
Thus, when old Needwood's[11] hoary scenes the Night
Paints with blue shadow, and with milky light;
Where MUNDY pour'd, the listening nymphs among,
Loud to the echoing vales his parting song;
With measured step the Fair Sovereign treads,
Shakes her high plume, and glitters o'er the meads;
Round each green holly leads her sportive train,
And little footsteps mark the circled plain;
Each haunted rill with silver voices rings,
And Night's sweet bird in livelier accents sings.

Ere the bright star, which leads the morning sky,
Hangs o'er the blushing east his diamond eye,
The chaste TROPÆO leaves her secret bed;
A saint-like glory[12] trembles round her head;

Where Mundy. l. 35. Alluding to an unpublished poem by F. N. Mundy, Esq. on his leaving Needwood Forest.

Tropæolum. l.45. Garden Nasturtion, or greater Indian cress. Eight males, one female. Miss E.C. Linneus[13] first observed the Tropæolum Majus to emit sparks or

Eight watchful swains along the lawns of night
With amorous steps pursue the virgin light;
O'er her fair form the electric lustre plays,
And cold she moves amid the lambent[14] blaze.
So shines the glow-fly, when the sun retires,
And gems the night-air with phosphoric fires;

flashes in the mornings before sun-rise, during the months of June or July, and also during the twilight in the evening, but not after total darkness came on; these singular scintillations were shewn to her father and other philosophers; and Mr. Wilcke,[15] a celebrated electrician, believed them to be electric. Lin. Spec. Plantar. p. 490.[16] Swedish Acts for the year 1762.[17] Pulteney's View of Linneus, p. 220.[18] Nor is this more wonderful than that the electric eel and torpedo[19] should give voluntary shocks of electricity; and in this plant perhaps, as in those animals, it may be a mode of defence, by which it harasses or destroys the night-flying insects which infest it; and probably it may emit the same sparks during the day, which must be then invisible. This curious subject deserves further investigation. See Dictamnus.[20] The ceasing to shine of this plant after twilight might induce one to conceive, that it absorbed and emitted light, like the Bolognian Phosphorus,[21] or calcined[22] oyster-shells, so well explained by Mr. B. Wilson, and by T. B. Beccari. Exper. on Phosphori, by B. Wilson. Dodsley.[23] The light of the evening, at the same distance from noon, is much greater, as I have repeatedly observed, that the light of the morning: this is owing, I suppose, to the phosphorescent quality of almost all bodies, in a greater or less degree, which thus absorb light during the sun-shine, and continue to emit it again for some time afterwards, though not in such quantity as to produce apparent scintillations. The nectary of this plant grows from what is supposed to be the calyx; but this supposed calyx is coloured; and perhaps, from this circumstance of its bearing the nectary, should rather be esteemed a part of the cor[o]l.[24] See an additional note at the end of the poem.

So shines the glow-fly.[25] l. 52. In Jamaica, in some seasons of the year, the fire-flies are seen in the evenings in great abundance. When they settle on the ground, the bullfrog greedily devours them; which seems to have given origin to a curious, through cruel, method of destroying these animals: if red-hot pieces of charcoal be thrown towards them in the dusk of the evening, they leap at them, and hastily swallowing them, are burnt to death.

Thus o'er the marsh aërial lights betray,
And charm the unwary wanderer from his way.
So when thy King, Assyria,[26] fierce and proud,
Three human victims to his idol vow'd;
Rear'd a vast pyre before the golden shrine
Of sulphurous coal, and pitch-exsuding pine;—
—Loud roar the flames, the iron nostrils breathe,
And the huge bellows pant and heave beneath;
Bright and more bright the blazing deluge flows,
And white with seven-fold heat the furnace glows.
And now the Monarch fix'd with dread surprize
Deep in the burning vault his dazzled eyes.
"Lo! Three unbound amid the frightful glare,
"Unscorch'd their sandals, and unsing'd their hair!
"And now a fourth with seraph-beauty bright
"Descends, accosts them, and outshines the light!
"Fierce flames innocuous, as they step, retire!
"And slow they move amid a world of fire!"
He spoke,—to Heaven his arms repentant spread,
And kneeling bow'd his gem-incircled head.

Two Sister-Nymphs, the fair AVENAS, lead
Their fleecy squadrons on the lawns of Tweed;[27]
Pass with light step his wave-worn banks along,
And wake his Echoes with their silver tongue;
Or touch the reed, as gentle Love inspires,
In notes accordant to their chaste desires.

I.

"Sweet ECHO! sleeps thy vocal shell,
"Where this high arch o'erhangs the dell;
"While Tweed with sun-reflecting streams
"Chequers thy rocks with dancing beams?—

[A]vena.[28] l. 73. Oat. The numerous families of grasses have all three males, and two females, except Anthoxanthum, which gives the grateful smell to hay, and has but two males. The herbs of this order of vegetables support the countless tribes of graminivorous[29] animals. The seeds of the smaller kinds of grasses, as of aira, poa, briza, stipa, &c. are the sustenance of many sorts of birds. The seeds of the large grasses, as of wheat, barley, rye, oats, supply food to the human species.

It seems to have required more ingenuity to think of feeding nations of mankind with so small a seed, than with the potatoe of Mexico, or the bread-fruit of the southern islands;[30] hence Ceres[31] in Egypt, which was the birth-place of our European arts, was deservedly celebrated amongst their divinities, as well as Osyris,[32] who invented the Plough.

Mr. Wahlborn[33] observes, that as wheat, rye, and many of the grasses, and plantain, lift up their anthers on long filaments, and thus expose the enclosed fecundating dust to be washed away by the rains, a scarcity of corn is produced by wet summers; hence the necessity of a careful choice of seed-wheat, as that, which had not received the dust of the anthers, will not grow, though it may appear well to the eye. The straw of the oat seems to have been the first musical instrument, invented during the pastoral ages of the world, before the discovery of metals. See note on Cistus.

II.

"Here may no clamours harsh intrude,
"No brawling hound or clarion rude;
"Here no fell beast of midnight prowl,
"And teach thy tortured cliffs to howl!

III.

"Be thine to pour these vales along
"Some artless Shepherd's evening song;
"While Night's sweet bird, from yon high spray
"Responsive, listens to his lay.

IV.

"And if, like me, some love-lorn maid
"Should sing her sorrows to thy shade,
"Oh, sooth her breast, ye rocks around!
"With softest sympathy of sound."

From ozier[34] bowers the brooding Halcyons[35] peep,
The Swans pursuing cleave the glassy deep,
On hovering wings the wondering Reed-larks play,
And silent Bitterns[36] listen to the lay.—

Three shepherd-swains beneath the be[e]chen[37] shades
Twine rival garlands for the tuneful maids;
On each smooth bark the mystic love-knot frame,
Or on white sands inscribe the favour'd name.
{Green swells the beech, the widening knots improve,
So spread the tender growths of culture'd love;
Wave follows wave, the letter'd lines decay,
So Love's soft forms neglected melt away.}[38]

From Time's remotest dawn where China brings[39]
In proud succession all her Patriot-Kings;
O'er desert-sands, deep gulfs, and hills sublime,
Extends her massy wall from clime to clime;
With bells and dragons crests her Pagod-bowers,
Her silken palaces, and porcelain towers;
With long canals a thousand nations laves;
Plants all her wilds, and peoples all her waves;
Slow treads fair CANNABIS the breezy strand,
The distaff[40] streams dishevell'd in her hand;

Cannabis. l. 111. Chinese Hemp. Two houses. Five males. A new species of hemp, of which account is given by K. Fitzgerald, Esq.[41] in a letter to Sir Joseph Banks,[42] and which is believed to be much superior to the hemp of other countries. A few seeds of this plant were sown in England on the 4th of June, and grew to fourteen feet seven inches in height by the middle of October; they were nearly seven inches in circumference, and bore many lateral branches, and produced very white and tough fibres. At some parts of the time these plants grew nearly eleven inches in a week. Philos. Trans. Vol. LXXII. p. 46.[43]

Now to the left her ivory neck inclines,
And leads in Paphian[44] curves its azure lines;
Dark waves the fringed lid, the warm cheek glows,
And the fair ear the parting locks disclose;
Now to the right with airy sweep she bends,
Quick join the threads, the dancing spole[45] depends.
—*Five* Swains attracted guard the Nymph, by turns
Her grace inchants them, and her beauty burns;
To each She bows with sweet assuasive smile,
Hears his soft vows, and turns her spole the while.

So when with light and shade, concordant strife!
Stern CLOTHO[46] weaves the chequer'd thread of life;
Hour after hour the growing line extends,
The cradle and the coffin bound its ends;

Paphian curves. l. 114. In his ingenious work, entitled, The Analysis of Beauty, Mr. Hogarth[47] believes that the triangular glass, which was dedicated to Venus in her temple at Paphos, contained in it a line bending spirally round a cone with a certain degree of curvature; and that this pyramidal outline and serpentine curve constitute the principles of Grace and Beauty.

Soft cords of silk the whirling spoles reveal,
If smiling Fortune turn the giddy wheel;
But if sweet Love with baby-fingers twines;
And wets[48] with dewy lips the lengthening lines,
Skein after skein celestial tints unfold,
And all the silken tissue shines with gold.

Warm with sweet blushes bright GALANTHA glows,
And prints with frolic step the melting snows;

Galanthus. l. 133. Nivalis. Snowdrop. Six males, one female. The first flower that appears after the winter solstice. See Stillingfleet's Calendar of Flora.[49]

Some snowdrop-roots taken up in winter, and boiled, had the insipid mucilaginous taste of the Orchis, and, if cured in the same manner, would probably make as good salep.[50] The roots of the Hyacinth, I am informed, are equally insipid, and might be used as an article of food. Gmelin,[51] in his History of Siberia, says the Martigon Lily makes a part of the food of that country, which is of the same natural order as the snowdrop. Some roots of Crocus, which I boiled, had a disagreeable flavour.

The difficulty of raising the Orchis from seed has, perhaps, been a principal reason of its not being cultivated in this country as an article of food. It is affirmed, by one of the Linnean school, in the Amœnit. Academ. that the seeds of the Orchis will ripen, if you destroy the new bulb; and that Lily of the Valley, Convallaria, will produce many more seeds, and ripen them, if the roots be crowded in a garden-pot, so as to prevent them from producing many bulbs. Vol. VI. p. 120.[52] It is probable either of these methods may succeed with these and other bulbous-rooted plants, as snowdrops, and might render their cultivation profitable in this climate. The root of the asphodelus ramosus, branchy asphodel, is used to feed swine in France; and starch is obtained from the alstromeria licta. Memoires d'Agricult.[53]

O'er silent floods, white hills, and glittering meads
Six rival swains the playful beauty leads,
Chides with her dulcet voice the tardy Spring,
Bids slumbering Zephyr stretch his folded wing,
Wakes the hoarse Cuckoo in his gloomy cave,
And calls the wondering Dormouse[54] from his grave,
Bids the mute Redbreast cheer the budding grove,
And plaintive Ringdove tune her notes to love.

Spring! with thy own sweet smile, and tuneful tongue,
Delighted BELLIS calls her infant throng.
Each on his reed astride, the Cherub-train
Watch her kind looks, and circle o'er the plain;
Now with young wonder touch the sliding snail,
Admire his eye-tipp'd horns, and painted mail;
Chase with quick step, and eager arms outspread,
The pausing Butterfly from mead to mead;

Bellis prolifera. l. 144. Hen and chicken Daisy; in this beautiful monster not only the impletion or doubling of the petals takes place, as described in the note on Alcea; but a numerous circlet of less flowers on peduncles, or footstalks, rise from the sides of the calyx, and surround the proliferous parent. The same occurs in Calendula, marigold; in Heracium, hawk-weed; and in Scabiosa, Scabious. Phil. Botan. p. 82.[55]

Or twine green oziers with the fragrant gale,
The azure harebel, and the primrose pale,
Join hand in hand, and in procession gay
Adorn with votive wreaths the shrine of May.
—So moves the Goddess to the Idalian[56] groves,
And leads her gold-hair'd family of Loves.
These, from the flaming furnace, strong and bold
Pour the red steel into the sandy mould;
On tinkling anvils (with Vulcanian[57] art),
Turn with hot tongs, and forge the dreadful dart;
The barbed head on whirling jaspers grind,
And dip the point in poison for the mind;
Each polish'd shaft with snow-white plumage wing,
Or strain the bow reluctant to its string.
Those on light pinion twine with busy hands,
Or stretch from bough to bough the flowery bands; [58]

The fragrant Gale. l. 151. The buds of the Myrica Gale possess an agreeable aromatic fragrance, and might be worth attending to as an article of the Materia Medica.[59] Mr. Sparman suspects, that the green wax-like substance, with which at certain times of the year the berries of the Myrica cerifera, or candle-berry Myrtle, are covered, are deposited there by insects. It is used by the inhabitants for making candles, which he says burn rather better than those made of tallow. *Voyage to the Cape*, V. I. 345.[60]

Scare the dark beetle, as he wheels on high,
Or catch in silken nets the gilded fly;
Call the young Zephyrs to their fragrant bowers,
And stay with kisses sweet the Vernal Hours.

Where, as proud Masson[61] rises rude and bleak,
And with mishapen turrets crests the Peak,
Old Matlock[62] gapes with marble jaws, beneath,
And o'er scar'd Derwent[63] bends his flinty teeth;
Deep in wide caves below the dangerous soil
Blue sulphurs flame, imprison'd waters boil.

Deep in wide caves. l. 175. The arguments which tend to shew that the warm springs of this country are produced from steam raised by deep subterraneous fires, and afterwards condensed between the strata of the mountains, appear to me much more conclusive, than the idea of their being warmed by chemical combinations near the surface of the earth:[64] for, 1st, their heat has kept accurately the same perhaps for many centuries, certainly as long as we have been possessed of good thermometers; which cannot be well explained, without supposing that they are first in a boiling state. For as the heat of the boiling water is 212, and that of the internal parts of the earth 48, it is easy to understand, that the steam raised from boiling water, after being condensed in some mountain, and passing from thence through a certain space of the cold earth, must be cooled always to a given degree; and it is probable the distance from the exit of the spring, to the place where the steam is condensed, might be guessed by the degree of its warmth.

2. In the dry summer of 1780, when all other springs were either dry or much diminished, those of Buxton[65] and Matlock (as I was well informed on the spot), had suf-

Impetuous steams in spiral colums rise
Through rifted rocks, impatient for the skies;
Or o'er bright seas of bubbling lavas blow,
As heave and toss the billowy fires below;
Condensed on high, in wandering rills they glide
From Masson's dome, and burst his sparry[66] side;
Round his grey towers, and down his fringed walls,
From cliff to cliff, the liquid treasure falls;
In beds of stalactite, bright ores among,
O'er corals, shells, and crystals, winds along;
Crusts the green mosses, and the tangled wood,
And sparkling plunges to its parent flood.
—O'er the warm wave a smiling youth presides,
Attunes its murmurs, its meanders guides,

fered no diminution; which proves that the sources of these warm springs are at great depths below the surface of the earth.

3. There are numerous perpendicular fissures in the rocks of Derbyshire, in which the ores of lead and copper are found, and which pass to unknown depths; and might thence afford a passage to steam from great subterraneous fires.

4. If these waters were heated by the decomposition of pyrites,[67] there would be some chalybeate[68] taste or sulphureous smell in them. See note in part I. on the existence of central fires.[69]

(The blooming FUCUS), in her sparry coves
To amorous Echo sings his *secret* loves,
Bathes his fair forehead in the misty stream,
And with sweet breath perfumes the rising steam.
—So, erst, an Angel o'er Bethesda's springs,[70] 195
Each morn descending, shook his dewy wings;
And as his bright translucent form He laves,
Salubrious powers enrich the troubled waves.

Fucus. l. 191. Clandestine marriage. A species of Fucus, or of Conferva, soon appears in all basons which contain water. Dr. Priestley[71] found that great quantities of pure dephlogisticated air[72] were given up in water at the points of this vegetable, particularly in the sunshine, and that hence it contributed to preserve the water in reservoirs from becoming putrid. The minute divisions of the leaves of subaquatic plants, as mentioned in the note on Trapa, and of the gills of fish, seem to serve another purpose besides that of increasing their surface, which has not, I believe, been attended to, and that is to facilitate the separation of the air, which is mechanically mixed or chemically dissolved in water by their points or edges; this appears on immersing a dry hairy leaf in water fresh from a pump; innumerable globules like quicksilver appear on almost every point; for the extremities of these points attract the particles of water less forcibly than those particles attract each other; hence the contained air, whose elasticity was but just balanced by the attractive power of the surrounding particles of water to each other, finds at the point of each fibre a place where the resistance to its expansion is less; and in consequence it there expands, and becomes a bubble of air. It is easy to foresee that the rays of the sunshine, by being refracted and in part reflected by the two surfaces of these minute air-bubbles, must impart to them much more heat than to the transparent water; and thus facilitate their ascent by further expanding them; that the points of vegetables attract the particles of water less than they attract each other, is seen by the spherical form of dew-drops on the points of grass. See note on Vegetable Respiration in Part I.[73]

Amphibious Nymph, from Nile's[74] prolific bed
Emerging TRAPA lifts her pearly head;
Fair glows her virgin cheek and modest breast,
A panoply of scales deforms the rest;

Trapa. l. 200. Four males, one female. The lower leaves of this plant grow under water, and are divided into minute capillary ramifications; while the upper leaves are broad and round, and have air-bladders in their footstalks to support them above the surface of the water. As the aërial leaves of vegetables do the office of lungs, by exposing a large surface of vessels with their contained fluids to the influence of the air; so these aquatic leaves answer a similar purpose like the gills of fish; and perhaps gain from water or give to it a similar material. As the material thus necessary to life seems to abound more in air than in water, the subaquatic leaves of this plant, and of sisymbrium, [œ]nanthe, ranunculus aquatilis, water crowfoot, and some others, are cut into fine divisions to increase the surface; whilst those above water are undivided. So the plants on high mountains have their upper leaves more divided, as pimpinella, petroselinum, and others, because here the air is thinner, and thence a larger surface of contact is required. The stream of water also passes but once along the gills of fish, as it is sooner deprived of its virtue; whereas the air is both received and ejected by the action of the lungs of land-animals. The whale seems to be an exception to the above, as he receives water and spouts it out again from an organ, which I suppose to be a respiratory one{; and probably the lamprey, so frequent in the month of April both in the Severn[75] and Derwent,[76] inspires and expires water on the seven holes on each side of the neck, which thus perform the office of the gills of other fish.}[77] As spring-water is nearly of the same degree of heat in all climates, the aquatic plants, which grow in rills or fountains, are found equally in the torrid, temperate, and frigid zones, as water-cress, water-parsnip, ranunculus, and many others.

In warmer climates the watery grounds are usefully cultivated, as with rice; and the roots of some aquatic plants are said to have supplied food, as the antient Lotus in Egypt, which some have supposed to be the Nymphæa.—In Siberia the roots of the Butomus, or flowering rush, are eaten, which is well worth further enquiry, as they grow spontaneously in our ditches and rivers, which at present produce no esculent[78] vegetables; and might thence become an article of useful cultivation. Herodotus[79] affirms, that the Egyptian Lotos grows in the Nile, and resembles a Lily. That the natives dry it in the sun, and take the pulp out of it, which grows like the head of a poppy, and bake it for bread. E[u]terpe.[80] Many grit-stones and coals, which I have seen, seem to bear an impression of the roots of the Nymphæa, which are often three or four inches thick, especially the white-flowered one.

Her quivering fins and panting gills she hides,
But spreads her silver arms upon the tides;
Slow as she sails, her ivory neck she laves,
And shakes her golden tresses o'er the waves.
Charm'd round the Nymph, in circling gambols glide
Four Nereid-forms,[81] or shoot along the tide;
Now all as one they rise with frolic spring,
And beat the wondering air on humid wing;
Now all descending plunge beneath the main,
And lash the foam with undulating train;
Above, below, they wheel, retreat, advance,
In air and ocean weave the mazy dance;
Bow their quick heads, and point their diamond eyes,
And twinkle to the sun with ever-changing dyes.

Where Andes,[82] crested with volcanic beams,[83]
Sheds a long line of light on Plata's[84] streams;
Opes all his springs, unlocks his golden caves,
And feeds and freights the immeasurable waves;

Delighted OCYMA at twilight hours
Calls her light car, and leaves the sultry bowers;—
Love's rising ray, and Youth's seductive dye,
Bloom'd on her cheek, and brighten'd in her eye;
Chaste, pure, and white, a zone of silver graced
Her tender breast, as white, as pure, as chaste;—

Ocymum salinum. l. 221. Saline Basil. Class Two Powers. The Abbè[85] Molina, in his History of Chili, translated from the Italian by the Abbè Grewvel,[86] mentions a species of Basil, which he calls Ocymum salinum: he says it resembles the common basil, except that the stalk is round and jointed; and that though it grows 60 miles from the sea, yet every morning it is covered with saline globules, which are hard and splendid, appearing at a distance like dew; and that each plant furnishes about half an ounce of fine salt every day, which the peasants collect, and use as common salt, but esteem it superior in flavour.

As an article of diet, salt seems to act simply as a stimulus, not containing any nourishment, and is the only fossil substance which the caprice of mankind has yet taken into their stomachs along with their food; and, like all other unnatural stimuli, is not necessary to people in health, and contributes to weaken our system; though it may be useful as a medicine. It seems to be the immediate cause of the sea scurvy,[87] as those patients quickly recover by the use of fresh provisions; and is probably a remote cause of scrophula[88] (which consists in the want of irritability in the absorbent vessels), and is therefore serviceable to these patients; as wine is necessary to those whose stomachs have been weakened by its use. The universality of the use of salt with our food, and in our cookery, has rendered it difficult to prove the truth of these observations. I suspect that flesh-meat cut into thin slices, either raw or boiled, might be preserved in coarse sugar or treacle; and thus a very nourishing and salutary diet might be presented to our seamen. See note on Salt-rocks, in Vol. I Canto II.[89] If a person unaccustomed to much salt should eat a couple of red-herrings, his insensible perspiration[90] will be so much increased by the stimulus of the salt, that he will find it necessary in about two hours to drink a quart of water: the effects of a continued use of salt in weakening the action of the lymphatic system may hence be deduced.

By *four* fond swains in playful circles drawn,
On glowing wheels she tracks the moon-bright lawn,
Mounts the rude cliff, unveils her blushing charms,
And calls the panting zephyrs to her arms.
Emerged from ocean spring the vaporous air,
Bathes her light limbs, uncurls her amber hair,
Incrusts her beamy form with films saline,
And Beauty blazes through the crystal shrine.—
So with pellucid studs the ice-flower gems
Her rimy foliage, and her candied stems.
So from his glassy horns, and pearly eyes,
The diamond-beetle[91] darts a thousand dyes;
Mounts with enamel'd wings the vesper gale,
And wheeling shines in adamantine[92] mail.

Thus when loud thunders o'er Gomorrah[93] burst,
And heaving earthquakes shook his realms accurst,
An Angel-guest led forth the trembling Fair
With shadowy hand, and warn'd the guiltless pair;

Ice flower. l. 235. Mesembryanthemum crystallinum.

"Haste from these lands of sin, ye Righteous! fly,
"Speed the quick step, nor turn the lingering eye!"—
—Such the command, as fabling Bards indite,[94]
When Orpheus[95] charm'd the grisly King of Night;
Sooth'd the pale phantoms with his plaintive lay,
And led the fair Assurgent into day.—
Wide yawn'd the earth, the fiery tempest flash'd,
And towns and towers in one vast ruin crash'd;—
Onward they move,—loud horror roars behind,
And shrieks of Anguish bellow in the wind.
With many a sob, amid a thousand fears,
The beauteous wanderer pours her gushing tears;
Each soft connection rends her troubled breast,
—She turns, unconscious of the stern behest!—
"I faint!—I fall!—ah, me!—sensations chill
"Shoot through my bones, my shuddering bosom thrill!
"I freeze! I freeze! just Heaven regards my fault,
"Numbs my cold limbs, and hardens into salt!—
"Not yet, not yet, your dying Love resign!—
"This last, last kiss receive!—no longer thine!"—

She said, and ceased,—her stiffen'd form He press'd,
And strain'd the briny column to his breast;
Printed with quivering lips the lifeless snow,
And wept, and gazed the monument of woe.—
So when Æneas[96] through the flames of Troy
Bore his pale sire, and led his lovely boy;
With loitering step the fair Creusa stay'd,
And Death involved her in eternal shade.—
—Oft the lone Pilgrim, that his road forsakes,
Marks the wide ruins, and the sulphur'd lakes;
On mouldering piles amid asphaltic mud
Hears the hoarse bittern,[97] where Gomorrah stood;
Recalls the unhappy Pair with lifted eye,
Leans on the crystal tomb, and breathes the silent sigh.

With net-wove sash and glittering gorget[98] dress'd,
And scarlet robe lapell'd upon her breast,
Stern ARA frowns, the measured march assumes,
Trails her long lance, and nods her shadowy plumes;

Arum. l. 281. Cuckow-pint, of the class Gynandria, or masculine ladies. The

While Love's soft beams illume her treacherous eyes,
And Beauty lightens through the thin disguise.
So erst, when HERCULES,[99] untamed by toil,
Own'd the soft power of DEJANIRA's smile;—
His lion-spoils the laughing Fair demands,
And gives the distaff to his awkward hands;

pistil, or female part of the flower, rises like a club, is covered above or clothed, as it were, by the anthers or males; and some of the species have a large scarlet blotch in the middle of every leaf.

The singular and wonderful structure of this flower has occasioned many disputes among botanists. See Tourniff. Malpig. Dillen. Rivin.[100] &c. The receptacle is enlarged into a naked club, with the germs at its base; the stamens are affixed to the receptacle amidst the germs (a natural prodigy), and thus do not need the assistance of elevating filaments: hence the flower may be said to be inverted. *Families of Plants* translated from Linneus, p. 618.[101]

The spadix[102] of this plant is frequently quite white, or coloured, and the leaves liable to be streaked with white, and to have black or scarlet blotches on them. As the plant has no corol or blossom, it is probable the coloured juices in these parts of the sheath or leaves may serve the same purpose as the coloured juices in the petals of other flowers; from which I suppose the honey to be prepared. See note on Helleborus. I am informed that those tulip-roots which have a red cuticle produce red flowers. See Rubia.

When the petals of the tulip become striped with many colours, the plant loses almost half of its height; and the method of making them thus break into colours is by transplanting them into a meagre or sandy soil, *after they have previously enjoyed a richer soil:* hence it appears, that the plant is weakened when the flower becomes variegated. See note on Anemone. For the acquired habits of vegetables, see Tulipa, Orchis.

The roots of the Arum are scratched up and eaten by thrushes in severe snowy seasons. White's Hist. of Selbourn, p. 43.[103]

O'er her white neck the bristly mane she throws,
And binds the gaping whiskers on her brows;
Plaits[104] round her slender waist the shaggy vest,
And clasps the velvet paws across her breast.
Next with soft hands the knotted club she rears,
Heaves up from earth, and on her shoulder bears.
Onward with loftier step the Beauty treads,
And trails the brinded[105] ermine o'er the meads;
Wolves, bears, and [p]ards,[106] forsake the affrighted groves,
And grinning Satyrs tremble, as she moves.

CARYO's sweet smile DIANTHUS proud admires,
And gazing burns with unallow'd desires;

Dianthus. l. 299. Superbus. Proud Pink. There is a kind of pink called Fairchild's mule, which is here supposed to be produced between a Dianthus superbus, and the Caryophyllus, Clove. The Dianthus superbus emits a most fragrant odour, particularly at night. Vegetable mules supply an irrefragable argument in favour of the sexual system of botany. They are said to be numerous; and, like the mules of the animal kingdom, not always to continue their species by seed. There is an account of a curious mule from the Antirrhinum linaria, Toad-flax, in the Amœnit. Academ. V. I. No. 3.[107] and many hybrid plants described in No. 32.[108] The Urtica alienata is an evergreen plant, which appears to be a nettle from the male flowers, and a Pellitory (Parietaria) from the female ones and the fruit; and is hence between both. Murray, Syst. Veg.[109] Amongst the English indigenous plants, the veronica hybrida mule Speedwel is supposed to have originated from the officinal one; and the spiked one, and the Sibthorpia Euro-

With sighs and sorrows her compassion moves,
And wins the damsel to illicit loves.
The Monster-offspring heirs the father's pride,
Mask'd in the damask beauties of the bride.
So, when the Nightingale in eastern bowers[110]
On quivering pinion woos the Queen of flowers;
Inhales her fragrance, as he hangs in air,
And melts with melody the blushing fair;
Half-rose, half-bird, a beauteous Monster springs,
Waves his thin leaves, and claps his glossy wings;

pæa to have for its parents the golden saxifrage and marsh pennywort. Pulteney's View of Linneus,[111] p. 250.[112] Mr. Graberg,[113] Mr. Schreber,[114] and Mr. Ramstrom,[115] seem of opinion, that the internal structure or parts of fructification in mule-plants resemble the female parent; but that the habit or external structure resembles the male parent. See treatises under the above names in V. VI. Amænit. Academic. The mule produced from a horse and the ass resembles the horse externally with his ears, main[116] and tail; but with the nature or manners of an ass: but the Hinnus, or creature produced from a male ass, and a mare, resembles the father externally in stature, ash-colour, and the black cross, but with the nature or manners of a horse. The breed from Spanish rams and Swedish ewes resembled the Spanish sheep in wool, stature, and external form; but was as hardy as the Swedish sheep; and the contrary of those which were produced from Swedish rams and Spanish ewes. The offspring of the male goat of Angora and the Swedish female goat had long soft camel's hair; but that from the male Swedish goat, and the female one of Angora, had no improvement of their wool. An English ram without horns, and a Swedish horned ewe, produced sheep without horns. Amœn. Academ. V. VI. p. 13.[117]

Long horrent[118] thorns his mossy legs surround,
And tendril-talons root him to the ground;
Green films of rind his wrinkled neck o'espread,
And crimson petals crest his curled head;
Soft-warbling beaks in each bright blossom move,
And vocal Rosebuds thrill the enchanted grove!—
Admiring Evening stays her beamy star,
And still Night listens from his ebon car;
While on white wings descending Houries[119] throng,
And drink the floods of odour and of song.

When from his golden urn the Solstice pours
O'er Afric's sable sons the sultry hours;
When not a gale flits o'er her tawny hills,
Save where the dry Harmattan breathes and kills;

The dry Harmattan. l. 324. The Harmattan is a singular wind blowing from the interior parts of Africa to the Atlantic ocean, sometimes for a few hours, sometimes for several days without regular periods. It is always attended with a fog or haze, so dense as to render those objects invisible which are at the distance of a quarter of a mile; the sun appears through it only about noon, and then of a dilute red, and very minute particles subside from the misty air so as to make the grass, and the skins of negroes appear whitish. The extreme dryness which attends this wind or fog, without dews, withers and quite dries the leaves of vegetables; and is said of[120] Dr. Lind[121] at some seasons to be

When stretch'd in dust her gasping panthers lie,
And writh'd in foamy folds her serpents die;
Indignant Atlas[122] mourns his leafless woods,
And Gambia[123] trembles for his sinking floods;
Contagion stalks along the briny sand,
And Ocean rolls his sickening shoals to land.

fatal and malignant to mankind; probably after much preceding wet, when it may become loaded with the exhalations from putrid marshes; at other seasons it is said to check epidemic diseases, to cure fluxes,[124] and to heal ulcers and cutaneous eruptions;[125] which is probably effected by its yielding no moisture to the mouths of the external absorbent vessels, by which the action of the other branches of the absorbent system is increased to supply the deficiency. *Account of the Harmattan. Phil. Transact. V. LXXI.*[126]

The Rev. Mr. Sterling gives an account of a darkness for six or eight hours at Detroit in America, on the 19th of October, 1762, in which the sun appeared as red as blood, and thrice its usual size: some rain falling, covered white paper with dark drops, like sulphur or dirt, which burnt like wet gunpowder, and the air had a very sulphureous smell. He supposes this to have been emitted from some distant earthquake or volcano. Philos. Trans. V. LIII. p.63.[127]

In many circumstances this wind seems much to resemble the dry fog which covered most parts of Europe for many weeks in the summer of 1780, which has been supposed to have had a volcanic origin, as it succeeded the violent eruption of Mount Hecla,[128] and its neighbourhood. From the subsidence of a white powder, it seems probable that the Harmattan has a similar origin, from the unexplored mountains of Africa. Nor is it improbable, that the epidemic coughs, which occasionally traverse immense tracts of country, may be the products of volcanic eruptions; nor impossible, that at some future time contagious miasmata[129] may be thus emitted from subterraneous furnaces, in such abundance as to contaminate the whole atmosphere, and depopulate the earth!

His sickening shoals. 330. Mr. Marsden[130] relates, that in the island of Sumatra,[131] during the November of 1775, the dry monsoons, or S. E. winds, continued so much longer than usual, that the large rivers became dry; and prodigious quantities of sea-fish, dead

—Fair CHUNDA smiles amid the burning waste,
Her brow unturban'd, and her zone unbrac'd;
Ten brother-youths with light umbrella's[132] shade,
Or fan with busy hands the panting maid;
Loose wave her locks, disclosing, as they break,
The rising bosom and averted cheek;

and dying, were seen floating for leagues on the sea, and driven on the beach by the tides. This was supposed to have been caused by the great evaporation, and the deficiency of fresh water rivers having rendered the sea too salt for its inhabitants. The season then became so sickly as to destroy great numbers of people, both foreigners and natives. Phil. Trans. V. LXXI. p.384.[133]

Chunda. l. 331. Chundali Borrum is the name which the natives give to this plant; it is the Hedysarum gyrans,[134] or moving plant; its class is two brotherhoods, ten males. Its leaves are continually in spontaneous motion; some rising and others falling; and others whirling circularly by twisting their stems; this spontaneous movement of the leaves, when the air is quite still and very warm, seems to be necessary to the plant, as perpetual respiration is to animal life. A more particular account, with a good print of the Hedysarum gyrans is given by M. Broussonet in a paper on vegetable motions in the Histoire de l'Academie des Sciences. Ann. 1784, p. 609.[135]

There are many other instances of spontaneous movements of the parts of vegetables. In the Marchantia polymorpha some yellow wool proceeds from the flower-bearing anthers, which moves spontaneously in the anther, while it drops its dust like atoms. Murray, Syst. Veg.[136] See note on Collinsonia for other instances of vegetable spontaneity. Add to this, that as the sleep of animals consists in a suspension of voluntary motion, and as vegetables are likewise subject to sleep, there is reason to conclude, that the various actions of opening and closing their petals and foliage may be justly ascribed to a voluntary power: for without the faculty of volition, sleep would not have been necessary to them.

[Figure: Hedysarum gyrans. Engrav'd by FP Nodder[137]]

Clasp'd round her ivory neck with studs of gold
Flows her thin vest in many a gauzy[138] fold;
O'er her light limbs the dim transparence plays;
And the fair form, it seems to hide, betrays.

{Cold from a thousand rocks, where Ganges[139] leads
The gushing waters to his sultry meads;
By moon-crown'd mosques with gay reflections glides,
And vast pagodas trembling on his sides;
With sweet loquacity NELUMBO sails,
Shouts to his shores, and parleys with his gales;
Invokes his echoes, as she moves along,
And thrills his ripling surges with her song.
—As round the Nymph her listening lovers play,
And guard the Beauty on her watery way;
Charm'd on the brink relenting tygers gaze,
And pausing buffaloes forget to graze;
Admiring elephants forsake their woods,
Stretch their wide ears, and wade into the floods;
In silent herds the wondering sea-calves[140] lave,
Or nod their slimy foreheads o'er the wave;
Poised on still wing attentive vultures sweep,
And winking crocodiles are lull'd to sleep.}[141]

Where leads the northern Star his lucid train
High o'er the snow-clad earth, and icy main,
With milky light the white horizon streams,
And to the moon each sparkling mountain gleams—
Slow o'er the printed snows with silent walk
Huge shaggy forms across the twilight stalk;
And ever and anon with hideous sound
Burst the thick ribs of ice, and thunder round.—

There, as old Winter flaps his hoary wing,
And lingering leaves his empire to the Spring,
Pierced with quick shafts of silver-shooting light
Fly in dark troops the dazzled imps of night.—

{*Nelumbo*. l. 349.[142] Nymphæa Nelumbo. A beautiful rose-red flower on a receptacle as large as an artichoke. The capsule is perforated with holes at the top, and the seeds rattle in it. Perfect leaves are seen in the seeds before they germinate. Linneus,[143] who has enlisted all our senses into the service of botany, has observed this rattling of the Nelumbo; and mentions what he calls an electric murmur, like distant thunder in hop-yards, when the wind blows, and asks the cause of it. We have one kind of pedicularis in our meadows, which has obtained the name of rattle-grass, from the rattling of its dry seed-vessels under our feet.}

Burst the thick ribs of ice. l. 348. The violent cracks of ice heard from the Glaciers seem to be caused by some of the snow being melted in the middle of the day; and the water thus produced running down into vallies of ice, and congealing again in a few hours, forces off by its expansion large precipices from the ice-mountains.

"Awake, my Love!" enamour'd MUSCHUS cries,
"Stretch they fair limbs, refulgent Maid! arise;
"Ope thy sweet eye-lids to the rising ray,
"And hail with ruby lips returning day.
"Down the white hills dissolving torrents pour,
"Green springs the turf, and purple blows the flower;
"His torpid wing the Rail exulting tries,
"Mounts the soft gale, and wantons in the skies;
"Rise, let us mark how bloom the awaken'd groves,
"And 'mid the banks of roses *hide* our loves."

Muschus. l. 353. Corallinus, or lichen rangiferinus, Coral-moss. Clandestine-marriage. This moss vegetates beneath the snow, where the degree of heat is always about 40; that is, in the middle between the freezing point, and the common heat of the earth; and is for many months of the winter the sole food of the rain-deer, who digs furrows in the snow to find it: and as the milk and flesh of this animal is almost the only sustenance which can be procured during the long winters of the higher latitudes, this moss may be said to support some millions of mankind.

The quick vegetation that occurs on the solution of the snows in high latitudes appears very astonishing; it seems to arise from two causes, 1. the long continuance of the approaching sun above the horizon; 2. the increased irritability of plants which have been long exposed to the cold. See note on Anemone.

All the water-fowl on the lakes of Siberia are said by Professor Gmelin to retreat southwards on the commencement of the frosts, except the Rail, which sleeps buried in the snow. Account of Siberia.[144]

Night's tinsel beams on smooth Lock-lomond[145] dance,
Impatient ÆGA views the bright expanse;—
In vain her eyes the passing floods explore,
Wave after wave rolls freightless to the shore.
—Now dim amid the distant foam she spies
A rising speck,—"'tis he! 'tis he!" she cries;
As with firm arms he beats the streams aside,
And cleaves with rising chest the tossing tide,
With bended knee she prints the humid sands,
Up-turns her glistening eyes, and spreads her hands;
—"'Tis he, 'tis he!—My Lord, my life, my love!—
"Slumber, ye winds; ye billows, cease to move!
"Beneath his arms your buoyant plumage spread,
"Ye Swans! ye Halcyons! hover round his head!"—

Ægа l. 364. Conferva ægagropila. It is found loose in many lakes in a globular form, from the size of a walnut to that of a melon, much resembling the balls of hair found in the stomachs of cows; it adheres to nothing, but rolls from one part of the lake to another. The Conferva vagabunda dwells on the European seas, travelling along in the midst of the waves; (Spec. Plant.)[146] These may not improperly be called itinerant vegetables. In a similar manner the Fucus natans (swimming) strikes no roots into the earth, but floats on the sea in very extensive masses, and may be said to be a plant of passage, as it is wafted by the winds from one shore to another.

—With eager step the boiling surf she braves,
And meets her refluent lover in the waves;
Loose o'er the flood her azure mantle swims,
And the clear stream betrays her snowy limbs.

So on her sea-girt tower fair HERO[147] stood
At parting day, and mark'd the dashing flood;
While high in air, the glimmering rocks above,
Shone the bright lamp, the pilot-star of Love.
—With robe outspread the wavering flame behind
She kneels, and guards it from the shifting wind;
Breathes to her Goddess all her vows, and guides
Her bold LEANDER o'er the dusky tides;
Wrings his wet hair, his briny bosom warms,
And clasps her panting lover in her arms.

Deep, in wide caverns and their shadowy ailes,
Daughter of Earth, the chaste TRUFFELIA smiles;[148]

Truffelia. l. 392. (Lycoperdon Tuber) Truffle. Clandestine marriage. This fungus never appears above ground, requiring little air, and perhaps no light. It is found by

On silvery beds, of soft asbestus wove,
Meets her Gnome-husband,[149] and avows her love.
—*High* o'er her couch impending diamonds blaze,
And branching gold the crystal roof inlays;
With verdant light the modest emeralds glow,
Blue sapphires glare, and rubies blush, *below*;
Light piers of lazuli the dome surround,
And pictured mochoes[150] tesselate[151] the ground;
In glittering threads along reflective walls[152]
The warm rill murmuring twinkles, as it falls;
Now sink the Eolian[153] strings, and now they swell,
And Echoes woo in every vaulted cell;
While on white wings delighted Cupids play,
Shake their bright lamps, and shed celestial day.[154]

dogs or swine, who hunt it by the smell. Other plants, which have no buds or branches on their stems, as the grasses, shoot out numerous stoles[155] or scions[156] underground; and this the more, as their tops or herbs are eaten by cattle, and thus preserve themselves.

Closed in an azure fig by fairy spells,

Bosom'd in down, fair Capri-fica dwells;—

Caprificus. l. 408. Wild fig. The fruit of the fig is not a seed-vessel, but a receptacle inclosing the flower within it. As these trees bear some male and others female flowers, immured on all sides by the fruit, the manner of their fecundation was very unintelligible, till Tournefort[157] and Pontedera[158] discovered, that a kind of gnat produced in the male figs carried the fecundating dust on its wings, (Cynips Psenes Syst. Nat. 919.),[159] and, penetrating the female fig, thus impregnated the flowers; for the evidence of this wonderful fact, see the word Caprification, in Milne's Botanical Dictionary.[160] The figs of this country are all female, and their seeds not prolific; and therefore they can only be propagated by layers and suckers.[161]

Monsieur de la Hire[162] has shewn in the Memoir. de l'Academ. de Science, that the summer figs of Paris, in Provence, Italy, and Malta, have all perfect stamina, and ripen not only their fruits, but their seed; from which seed other fig-trees are raised; but that the stamina of the autumnal figs are abortive, perhaps owing to the want of due warmth. Mr. Milne, in his Botanical Dictionary (art. Caprification), says, that the cultivated fig-trees have a few male flowers placed above the female within the same covering or receptacle; which in warmer climates perform their proper office, but in colder ones become abortive. And Linneus observes, that some figs have the navel of the receptacle open; which was one reason that induced him to remove this plant from the class Clandestine Marriage to the class Polygamy. Lin. Spec. Plant.[163]

From all these circumstances I should conjecture, that those female fig-flowers, which are closed on all sides in the fruit or receptacle without any male ones, are monsters, which have been propagated for their fruit, like barberries, and grapes without seeds in them; and that the Caprification is either an antient process of imaginary use, and blindly followed in some countries, or that it may contribute to ripen the fig by decreasing its vigour, like cutting off a circle of the bark from the branch of a pear-tree. Tournefort seems inclined to this opinion; who says, that the figs in Provence and at Paris ripen sooner, if their buds be pricked with a straw dipped in olive-oil.[164] Plumbs and pears punctured by some insects ripen sooner, and the part round the puncture is sweeter. Is not the honey-dew[165] produced by the puncture of insects? will not wounding the branch of a pear-tree, which is too vigorous, prevent the blossoms from falling off; as from some fig-trees the fruit is said to fall off unless they are wounded by caprification? I had last spring six young trees of the Ischia fig with fruit on them in pots in a stove; on removing them into larger boxes, they protruded very vigorous shoots, and the figs all fell off; which I ascribed to the increased vigour of the plants.

So sleeps in silence the Curculio,[166] shut
In the dark chambers of the cavern'd nut,
Erodes with ivory beak the vaulted shell,
And quits on filmy wings its narrow cell.
So the pleased Linnet in the moss-wove nest,
Waked into life beneath its parent's breast,
Chirps in the gaping shell, bursts forth erelong,
Shakes its new plumes, and tries its tender song.—
—And now the talisman she strikes, that charms
Her husband-Sylph,[167]—and calls him to her arms.—
Quick, the light Gnat her airy Lord bestrides,
With cobweb reins the flying courser guides,
From crystal steeps of viewless ether springs,
Cleaves the soft air on still expanded wings;
Darts like a sunbeam o'er the boundless wave,
And seeks the beauty in her *secret* cave.
So with quick impulse through all nature's frame
Shoots the electric air its subtle flame.
So turns the impatient needle to the pole,
Tho' mountains rise between, and oceans roll.

Where round the Orcades[168] white torrents roar,
Scooping with ceaseless rage the incumbent shore,
Wide o'er the deep a dusky cavern bends
Its marble arms, and high in air impends;
Basaltic piers the ponderous roof sustain,
And steep their massy sandals in the main;
Round the dim walls, and through the whispering ailes
Hoarse breathes the wind, the glittering water boils.
Here the charm'd BYSSUS with his blooming bride
Spreads his green sails, and braves the foaming tide;
The star of Venus gilds the twilight wave,
And lights her votaries to the *secret* cave;
Light Cupids flutter round the nuptial bed,
And each coy sea-maid hides her blushing head.

Basaltic piers. l. 433. This description alludes to the cave of Fingal in the island of Staffa.[169] The basaltic columns, which compose the Giants Causeway[170] on the coast of Ireland, as well as those which support the cave of Fingal, are evidently of volcanic origin, as is well illustrated in an ingenious paper of Mr. Keir,[171] in the Philos. Trans. who observed in the glass, which had been long in a fusing heat at the bottom of the pots in the glass-houses at Stourbridge, that crystals were produced of a form similar to the parts of the basaltic columns of the Giants Causeway.

Byssus. 437. Clandestine Marriage. It floats on the sea in the day, and sinks a little during the night; it is found in caverns on the northern shores, of a pale green colour, and as thin as paper.

Where cool'd by rills, and curtain'd round by woods,
Slopes the green dell to meet the briny floods,
The sparkling noon-beams trembling on the tide,
The PROTEUS-LOVER[172] woos his playful bride,
To win the fair he tries a thousand forms,
Basks on the sands, or gambols in the storms.
A Dolphin now, his scaly sides he laves,
And b[ear]s[173] the sportive damsel on the waves;
She strikes the cymbal as he moves along,
And wondering Ocean listens to the song.
—And now a spotted Pard the lover stalks,
Plays round her steps, and guards her favour'd walks;

The Proteus-lover. l. 446. Conferva polymorpha. This vegetable is put amongst the cryptogamia, or clandestine marriages, by Linneus; but, according to Mr. Ellis, the males and females are on different plants. Philos. Trans. Vol. LVII.[174] It twice changes its colour, from red to brown, and then to black; and changes its form by losing its lower leaves, and elongating some of the upper ones, so as to be mistaken by the unskilful for different plants. It grows on the shores of this country.

There is another plant, Medicago polymorpha, which may be said to assume a great variety of shape; as the seed-vessels resemble sometimes snail-horns, at other times caterpillars with or without long hair upon them; by which means it is probable they sometimes elude the depredations of those insects. The seeds of Calendula, Marygold, bend up like a hairy caterpillar, with their prickles bristling outwards, and may thus deter some birds or insects from preying upon them. Salicornia also assumes an animal similitude. Phil. Bot. p. 87.[175] See note on Iris in additional notes; and Cypripedia in Vol. I.[176]

As with white teeth he prints her hand, caress'd,
And lays his velvet paw upon her breast,
O'er his round face her snowy fingers strain
The silken knots, and fit the ribbon-rein.
—And now a Swan, he spreads his plumy sails,
And proudly glides before the fanning gales;
Pleas'd on the flowery brink with graceful hand
She waves her floating lover to the land;
Bright shines his sinuous neck, with crimson beak
He prints fond kisses on her glowing cheek,
Spreads his broad wings, elates his ebon crest,
And clasps the beauty to his downy breast.

A *hundred* virgins join a *hundred* swains,
And fond ADONIS leads the sprightly trains;

Adonis. l. 468. Many males and many females live together in the same flower. It may seem a solecism in language, to call a flower, which contains many of both sexes, an individual; and the more so to call a tree or shrub an individual, which consists of so many flowers. Every tree, indeed, ought to be considered as a family or swarm of its respective buds; but the buds themselves seem to be individual plants; because each has leaves or lungs appropriated to it; and the bark of the tree is only a congeries[177] of the roots of all these individual buds. Thus hollow oak-trees and willows are often seen

Pair after pair, along his sacred groves
To Hymen's[178] fane[179] the bright procession moves;
Each smiling youth a myrtle garland shades,
And wreaths of roses veil the blushing maids;
Light joys on twinkling feet attend the throng,
Weave the gay dance, or raise the frolic song;
—Thick, as they pass, exulting Cupids fling
Promiscuous arrows from the sounding string;
On wings of gossamer soft Whispers fly,
And the sly Glance steals side-long from the eye.
—As round his shrine the gaudy circles bow,
And seal with muttering lips the faithless vow,
Licentious Hymen joins their mingled hands,
And loosely twines the meretricious bands.—
Thus where pleased VENUS,[180] in the southern main,
Sheds all her smiles on Otaheite's[181] plain,

with the whole wood decayed and gone; and yet the few remaining branches flourish with vigour; but in respect to the male and female parts of a flower, they do not destroy its individuality any more than the number of paps of a sow, or the number of her cotyledons, each of which includes one of her young.

The society, called the Areoi,[182] in the island of Otaheite, consists of about 100 males and 100 females, who form one promiscuous marriage.

Wide o'er the isle her silken net she draws,
And the Loves laugh at all, but Nature's laws."

Here ceased the Goddess,—o'er the silent strings
Applauding Zephyrs swept their fluttering wings;
Enraptur'd Sylphs[183] arose in murmuring crowds
To air-wove canopies and pillowy clouds;
Each Gnome[184] reluctant sought his earthy cell,
And each bright Floret clos'd her velvet bell.
Then, on soft tiptoe, NIGHT approaching near
Hung o'er the tuneless lyre his sable ear;
Gem'd with bright stars the still etherial plain,
And bad his Nightingales repeat the strain.

[Figure: Apocynum androsæmifolium. Drawn & Engrav'd by F.P. Nodder,[185] Botanic Painter to her Majesty.[186]]

[1] Paphos in Cyprus was believed to be the birthplace of Aphrodite / Venus; Paphian thus means relating to (the goddess of) love, sexual desire, and beauty.
[2] A city in Staffordshire, north of Birmingham; ED lived there from 1756 to 1781.
[3] ED refers to his own botanic garden. Around 1777 he bought land a mile from his house in Lichfield and made the garden over the following years. ED's friend Anna Seward (1742–1809) describes the garden and its creation in her *Memoirs of the Life of Dr. Darwin* (1804). She wrote a poem about the garden which ED used, with alterations and additions, and without crediting her, for the opening lines of *The Economy of Vegetation*. See Appendix 4.
[4] There are many cities called Veracruz, but as ED refers to a larger area here, he likely means the state of Veracruz in New Spain, located in what is now east central Mexico, along the coast of the Gulf of Mexico.
[5] Thomas Martyn (1735–1825), botanist and clergyman in the Church of England, was professor of botany at the University of Cambridge (as was his father before him, John Martyn (1699–1768)). His *Letters on the Elements of Botany, Addressed to a Lady* (1785) are a translation and continuation of Rousseau's *Lettres Élémentaires sur la Botanique*, which appeared posthumously in the 1782 *Collection Complète des Œuvres de J. J. Rousseau*. ED's description (from "The flower" to "morning") is taken almost verbatim from Letter 21.
[6] The highest point in the celestial sphere as viewed from any particular place.
[7] Poetic name for the sky; or, either of the two points in the celestial sphere, north and south, around which the stars appear to revolve.
[8] Jupiter/Zeus in Greco-Roman mythology, associated with the sky, storms, and lightning.
[9] A name for Artemis/Diana, virgin goddess of the moon; the name comes from Mount Cynthus on the island of Delos where she and her twin brother Apollo are from.
[10] 1789: "In our climates many flowers,"; 1790: "In our climate many flowres,"; 1791, 1794, 1799: "In our climate many flowers,"
[11] Needwood Forest was located in East Staffordshire, near Lichfield where ED lived from 1756 to 1781. It was the subject of a poem, *Needwood Forest* (1776), by ED's friend Francis Noel Clarke Mundy (1739–1815), which protested the felling of its trees. In later editions of *LOTP* (1791, 1794, 1799), ED appended the passage from *Needwood Forest* referred to here (Part 2*,* pp. 15–18); see Additional Notes. Mundy's poem was privately printed in Lichfield along with verses written in response, which by the initials given seem to be by ED ("Address to Swilcar Oak"), his friends Anna Seward (1742–1809) ("A Rural Coronation") and Brooke Boothby (1744–1824) ("Sonnet"), and ED's son Erasmus Darwin, Jr. (1759–1799) ("On Mr. Mundy's Needwood Forest"). However, according to Seward, they were all written by ED (see Appendix 4.2). In a 1777 letter, Seward claimed that *Needwood Forest* itself was a collaborative composition: "I dress'd the Furies, [ED] gave them their music […] The description of the witches,

all but the last couplet, and that of *Murder*, are *mine,*" and she also wrote the description of Lichfield as seen from the forest (qtd. in Teresa Barnard, *Anna Seward: A Constructed Life* (2009), p. 110).

[12] A circle of light; a halo. The OED also cites Thomas Martyn (1735–1825) using the word as a botanical term for a corona, a crown-like appendage inside the corolla (*Letters on the Elements of Botany* 27).

[13] Elisabeth Christina Linnaeus (1743–1782), known as Lisa Stina, daughter of Carl Linnaeus.

[14] Of a flame that plays over a surface without burning it; like a tongue of fire (from the Latin *lambere*, to lick).

[15] Johan Carl Wilcke (1732–1796), Swedish physicist; his interests were primarily in the study of electricity and of heat. He was a professor, and the secretary, of the Royal Swedish Academy of Sciences.

[16] Linnaeus, *Species Plantarum* (first published 1753). *Tropæolum majus*, including the note, "*Flores ante crepusculum fulminant, observante E. C. Linnæa*" [flowers glitter before twilight, observed by E. C. Linnaeus (feminine form of the name)], can be found on p. 490 in Vol. 1 of the 2nd edition (1762) and 3rd edition (1764).

[17] "Om Indianska krassens blickande. Af Elisabet Christina Linnæa. Med tillägg af Carl Linnæus. (Herr Lector Wilckes anmärkning vid föregående Rön.)" [On the twinkling of the Indian cress, by Elisabeth Christine Linnaeus, with supplement by Carl Linnaeus. (Lecturer Wilckes' remarks about the preceding findings).] *Kongliga Vetenskaps Akademiens Handlingar* [Documents of the Royal Swedish Academy of Sciences] Series 1, Vol. 23 (1762), pp. 284–87. (For a translation of E. C. Linnaeus's article and supplement, see Fred Blick, "Flashing Flowers and Wordsworth's 'Daffodils,'" *Wordsworth Circle* 48.2 (2017): pp. 110–15.)

[18] Richard Pulteney (1730–1801), botanist and physician, published *A General View of the Writings of Linnaeus* in 1781. It was the first biography of Linnaeus in English and was instrumental in disseminating knowledge of Linnaeus in Britain. ED closely paraphrases Pulteney in the passage from "during the twilight" to "electric." Pulteney's report includes the detail that the sparks are "like those of electricity, or rather such as arise from a fulminating powder."

[19] The electric ray, a flat fish that emits electric discharges.

[20] The rest of this note does not appear in 1789; instead, there is the sentence, "The nectary of this plant grows from what is supposed to be the calyx, and not from the corol."

[21] Barium sulfide, also known as bologna stone.

[22] Reduced to a powder by burning.

[23] *A Series of Experiments relating to Phosphori and the Prismatic Colours they are found to exhibit in the Dark. By B. Wilson, F.R.S. and Member of the Royal Academy at Upsal, together with A Translation of Two Memoirs, from the Bologna Acts, upon the same Subject, By J. B. Beccari, Professor of Philosophy at Bologna* was published in 1775 by J. Dodsley. Jacopo Bartolomeo Beccari (1682–1766) of Bologna was a chemist. Benjamin Wilson (bap. 1721, d. 1788) was a portrait painter and scientist; his other researches were mainly on electricity. Wilson describes repeating Beccari's experiment testing whether phosphori emit only the light they receive (pp. 76–81).

[24] Misspelled "coral" here and in 1791; 1794 and 1799: "corol"

[25] In 1789, this note appears with the Additional Notes.
[26] Nebuchadnezzar II (ca. 630–562 BCE) was king of Babylon from 605–562 BCE. He built the city's fortification walls and Hanging Gardens. In the biblical book of Daniel, he set up a golden image and commanded the people to worship it. The Jewish leaders Shadrach, Meschach, and Abed-nego refused, and were cast into a fiery furnace. Nebuchadnezzar said, "Lo, I see four men loose, walking in the midst of the fire, and they have no hurt; and the form of the fourth is like the Son of God." The three walked out of the fire "nor was an hair of their head singed, neither were their coats changed, nor the smell of fire had passed on them." Then the king said, "Blessed be the God of Shadrach, Meschach, and Abed-nego, who hath sent his angel, and delivered his servants that trusted in him, and have changed the king's word, and yielded their bodies, that they might not serve nor worship any god, except their own God" (Daniel 3:1–28).
[27] The river Tweed rises at Tweed's Wells in the Lowther Hills, flows through the Border region in Scotland eastward into Northumberland in the north of England, and into the North Sea at Berwick-upon-Tweed.
[28] 1799: "*Avena*"; misspelled "*Ovena*" in all other editions.
[29] That feeds on grass.
[30] The islands of the South Pacific, where breadfruit originated. William Dampier (1651–1715), one of the first Europeans to encounter breadfruit, described it among the produce of Guam in in *A New Voyage Round the World* (1697). The breadfruit tree was imported to the Caribbean to feed plantation slaves; Joseph Banks (1743–1820), naturalist, patron of science, and President of the Royal Society (1778–1820), planned its importation from Tahiti, initially attempted on the 1787–1789 expedition of the HMS Bounty (of the famous mutiny). It was successfully imported in 1793.
[31] Roman goddess of grain, identified with the Greek goddess Demeter. As to her location here, ED sees Egypt as the origin of Greco-Roman mythology as well as "the birth-place of our European arts." He writes in the "Apology" to *The Economy of Vegetation*, "The Egyptians were possessed of many discoveries in philosophy and chemistry before the invention of letters; these were then expressed in hieroglyphic paintings of men and animals; which after the discovery of the alphabet were described and animated by the poets, and became first the deities of Egypt, and afterwards of Greece and Rome." See Appendix 1.4. In *The Temple of Nature* (1803) I:137n., ED writes, "The Eleusinian mysteries were invented in Egypt, and afterwards transferred into Greece along with most of the other early arts and religions of Europe." The Eleusinian mysteries were rituals performed at the town of Eleusis, near Athens; they originated in fertility rituals dedicated to Demeter and her daughter Persephone. Demeter's quest to retrieve Persephone from the underworld parallels Isis seeking and reviving the dead Osiris in Egyptian myth. ED also seems to associate Ceres with Egypt because of the fertility of the Nile, as expressed in *The Temple of Nature* I:401–08:

> Creative Nile, as taught in ancient song,
> So charm'd to life his animated throng;
> O'er his wide realms the slow-subsiding flood
> Left the rich treasures of organic mud;

While with quick growth young Vegetation yields
Her blushing orchards, and her waving fields;
Pomona's hand replenish'd Plenty's horn,
And Ceres laugh'd amid her seas of corn.—

Pomona is the Roman goddess of fruit.

[32] Osiris, Egyptian god of the dead and of resurrection. He was murdered by his brother Seth, but his body was preserved, and he was restored to life by the goddess Isis and her sister Nephthys. He is depicted holding a crook and flail, implements of the harvest.

[33] "Sponsalia Plantarum" [The Betrothal of the Plants], a dissertation proposed by Johann Gustav Wahlbom (1724–1808), no. XII in *Amœnitates Academicæ* Vol. 1 (1749), pp. 327–80; this observation is discussed in relation to rye (Secale) on p. 364. *Amœnitates Academicæ* [Academic Delights] (1749–1790) was a series directed by Linnaeus that published dissertations in Latin by scholars of natural history at the University of Uppsala. Most of these dissertations were written primarily by Linnaeus, with the student acting as an assistant.

[34] A name applied to several kinds of willow.

[35] A bird fabled to breed in a nest floating on the sea around the time of the winter solstice and possess the power to calm the wind and waves. Associated with the kingfisher.

[36] A wading bird, related to the heron but smaller.

[37] Corrected as indicated in the Errata.

[38] See Additional Notes where it is explained that these "lines were by mistake omitted." 1794 and 1799 read "growths of living love;" and "forms uncultured melt away."

[39] Lines IV:103–32 (from "Green swells" to "shines with gold") and the notes on Cannabis and Paphian curves do not appear in 1789.

[40] A tool used in spinning: it holds the fibers to be spun.

[41] Keane Fitzgerald (1748–1831) had a career in law and was a fellow of the Royal Society, publishing in *Philosophical Transactions* on such subjects as botany, engines, and thermometers.

[42] Joseph Banks (1743–1820), naturalist, patron of science, and president of the Royal Society from 1778 to 1820. He was a correspondent of ED's.

[43] Keane Fitzgerald, "Experiments with Chinese Hemp Seed. In a Letter from Keane Fitzgerald, Esq. to Sir. Joseph Banks, Bart. F. R. S.," *Philosophical Transactions of the Royal Society of London* 72 (1782: pp. 46–9. Slightly different from ED's details here, Fitzgerald reports "several of the plants measuring in height more than fourteen feet, and seven inches nearly in circumference," and that he "found, on measuring the plants at different times, that they had grown nearly eleven inches *per* week" (pp. 47–8).

[44] Paphos in Cyprus was believed to be the birthplace of Aphrodite/Venus; Paphian thus means relating to (the goddess of) love and sexual desire.

[45] Or spool, on which the thread is wound as it is spun.

[46] In Greek mythology, one of the three Fates. She spun the thread of life, which was measured by the Fate called Lachesis, and cut by the Fate called Atropos. Clotho's name derives from the Greek *klōthein*, to spin.

[47] William Hogarth (1697–1764), painter and engraver. Among his best-known works is *A Rake's Progress*, a narrative series of paintings

(1732–1734) and engravings (1734–1735). *The Analysis of Beauty* (1753) is a work of art theory which takes an empirical and methodical approach, concentrating on what the eye sees. In it, Hogarth develops and advocates his idea of the "Line of Beauty": a "serpentine line" which curves, or spirals, just the right amount to embody ideal beauty and grace; he gives numerous examples of its form found in nature and art. The "triangular glass" ED mentions is discussed by Hogarth on p. xvii, and also adorns the title page of the book. The line spiralled around the cone is mentioned on p. 49 and pictured in Plate 1, Fig. 26. ED again refers to Hogarth, the line of beauty, and the temple of Venus in a passage in *The Temple of Nature* (III:187–222 and note) that associates the pleasure of such shapes with "the nice curves, which swell the female breast."

[48] Dampening the fiber aids spinning.

[49] Benjamin Stillingfleet (1702–1771), botanist and writer. His *Miscellaneous Tracts* (1759) includes translations of selected essays from the *Amœnitates Academicæ* [Academic Delights] (1749–1790), a series that published dissertations in Latin by scholars of natural history at the University of Uppsala. Most of these dissertations were written primarily by Linnaeus, with the student acting as an assistant. In the second edition of *Miscellaneous Tracts* (1762), the *Calendar of Flora* is added (pp. 229–337), in which Stillingfleet presents his own observations of English flowers and birds in 1755 alongside observations in Sweden from the same year that were published in *Amœnitates Academicæ* in a dissertation proposed by A. M. Berger ("Calendarium Floræ," no. LXVII, Vol. 4 (1756), pp. 387–414). Stillingfleet extracts the English native plants from those listed and finds their English names. (He also adds "A Sibirian or Lapland Year" and a "Calendar of Flora, by Theophrastus, at Athens.") The snowdrop is listed in the Introduction as the first bulbous plant to bloom (p. 256); it is also listed in the Calendar of Flora as in full bloom on Jan. 26 (p. 289).

[50] A nutritive meal, starch, or jelly made from the dried tubers of various plants of the Orchid family.

[51] Johann Georg Gmelin (1709–1755) was from Germany and became professor of chemistry and natural history at the University of St. Petersburg. Later he returned to Germany and became professor of medicine, botany, and chemistry, and director of the botanic garden, at the University of Tübingen. From 1733–1743, he was the natural historian on the Second Kamchatka Expedition, also known as the Great Northern Expedition, organized by the explorer Vitus Bering (1681–1741) for whom the Bering Strait is named. Gmelin's botanical research from this expedition was published in *Flora Sibirica, sive Historia Plantarum Sibiriae* [Siberian Flora, or An Account of Siberian Plants] (4 vols., 1747–1769). The Martagon Lily (Lilium foliis verticillatis, floribus reflexis, corollis revolutis; cf. Linnaeus, *Species Plantarum* (1753), Vol. 1, p. 303), with a note on its being eaten, is found in Vol. 1, pp. 44–5. It is also mentioned several times as a food in his *Reise durch Sibirien von dem Jahre 1738 bis zum Ende 1740* [Journey through Siberia from the year 1738 to the end of 1740] (1751–1752), translated into French by Louis-Félix Guinement de Kéralio (1731–1793) as *Voyage en Sibérie* (1767) (Ch. 24, 32, and 75).

[52] ED seems to be referring not to page 120 but to article CXX in *Amœnitates Academicæ* Vol. 6 (1763), pp. 365–83, entitled "De Prolepsi Plantarum" [Of the prolepsis of plants; prolepsis in the botanical sense of the capacity to produce shoots, flowers, etc. in future or after dormancy], a dissertation proposed by Johan Jakob Ferber (1743–1790). This article notes that the seed of bulbiferous plants does not mature unless the bulb is destroyed, giving as examples Lilium bulbiferum and Dentaria (now called Cardamine, bittercresses and toothworts), but not Orchis (p. 382n.). It also mentions increasing flowering by restricting roots in a container, but does not apply this method to a specific plant (p. 368). *Amœnitates Academicæ* [Academic Delights] (1749–1790) was a series directed by Linnaeus that published dissertations in Latin by scholars of natural history at the University of Uppsala. Most of these dissertations were written primarily by Linnaeus, with the student acting as an assistant.
[53] *Mémoires d'Agriculture, d'Économie Rurale et Domestique* [Reports on Agriculture, Rural and Domestic Economy] was published by the Royal Society of Agriculture of Paris. ED refers to pp. viii-ix of "Extraits des Séances tenues pendant les mois de Mai & Juin 1786" [Extracts of sessions held during the months of May and June 1786] (Spring 1786), pp. iii–xvi. The report on alstromeria licta comes from Peru where "cet amidon est employé à faire des biscuits qu'on donne sur-tout aux convalescens & aux malades, pour lesquels c'est une nourriture très-saine & très-agréable" [this starch is used to make biscuits that are given mainly to convalescents and the ill, for whom it is a very healthy and very pleasant food]. The roots of the asphodelus ramosus are "très-communes dans les Provinces méridionales du Royaume; elles sont employées quelquefois à la nourriture des cochons; on les leur donne écrasées" [very common in the southern provinces of the kingdom; they are sometimes used as food for pigs; they are given to them crushed].
[54] A small rodent known for its hibernation.
[55] Linnaeus's *Philosophia Botanica* (1751), an elaboration on his previous *Fundamenta Botanica* (1736) in which he had presented his botanical theories in the brief form of aphorisms.
[56] Relating to the ancient town of Idalium in Cyprus where Aphrodite/Venus was worshipped.
[57] Relating to Vulcan, the Roman god of fire and the forge, identified with the Greek god Hephaestus.
[58] 1789: "Those on light wing, above, with busy hands / From bough to bough extend the flowery bands;"
[59] The substances and preparations used as medical remedies.
[60] Anders Sparrman (1748–1820), Swedish naturalist. He was educated as a physician and studied under Linnaeus. He and Carl Peter Thunberg (1743–1828) travelled to South Africa in 1772 to study the region's natural history; he was also part of James Cook's (1728–1779) second voyage (1772–1775). *A Voyage to the Cape of Good Hope, towards the Antarctic Polar Circle, and Round the World, but chiefly into the Country of the Hottentots and Caffres, from the year 1772, to 1776*, "translated from the Swedish original", was published in 1785. ED paraphrases closely, except Sparrman says the substance "is probably formed by insects."
[61] Masson Hill in Derbyshire, in the Peak District.

[62] Town in Derbyshire, in the Peak District.
[63] River in Derbyshire, in the Peak District; Matlock is on the river.
[64] ED writes about "the natural history of the Buxton and Matlock waters," elaborating on the points made here in a letter of 5 February 1788 to James Pilkington (1752?–1804); the letter was published in Pilkington's *Of the Present State of Derbyshire* (1789), Vol. 1, pp. 256–75.
[65] A town in Derbyshire, about twenty miles northwest of Matlock.
[66] Spar is a general term for several crystalline minerals that have a lustrous appearance and are easily split.
[67] An iron sulphide mineral, also known as "fool's gold."
[68] Impregnated with iron.
[69] *The Economy of Vegetation*, Additional Note VI.—Central Fires. Section 3 particularly deals with the origination of warm springs from subterraneous fires rather than chemical solution.
[70] In the Bible, the gospel of John describes "a pool, which is called in the Hebrew tongue Bethesda, having five porches. In these lay a great multitude of impotent folk, of blind, halt, withered, waiting for the moving of the water. For an angel went down at a certain season into the pool, and troubled the water: whosoever then first after the troubling of the water stepped in was made whole of whatsoever disease he had" (John 5:2–4).
[71] Joseph Priestley (1733–1804) was a natural philosopher, dissenting clergyman and reformer, and a fellow member with ED of the Lunar Society. He published in the areas of English grammar, history, politics, and theology, as well as various branches of science. Among his many endeavours, he is known for the discovery of what would come to be called oxygen by isolating it in its gaseous state. ED refers to Priestley's experiments with what he first called "green matter," detailed in *Experiments and Observations relating to various branches of Natural Philosophy; with a Continuation of the Observations on Air* (1779), Section 33, "Of the spontaneous Emission of dephlogisticated Air from Water in certain Circumstances" (pp. 335–60), and also discussed in the second volume of that work published in 1781, especially in Section 3, "Farther observations on the Green Vegetable Matter with which many experiments in the preceding volume were made," where Priestley suggests the green matter could be classified as conferva (p. 32).
[72] When Priestley isolated oxygen, he named it dephlogisticated air. Phlogiston was a hypothetical substance believed to exist in all combustible bodies and to be released upon combustion. It was French chemist Antoine Laurent Lavoisier (1743–1794) who, in opposition to phlogiston theory, would originate the term "oxygen," and ED would be among the first to espouse the new terminology in English, in *The Economy of Vegetation* (1791).
[73] *The Economy of Vegetation*, Additional Note XXXVII.—Vegetable Respiration.
[74] The Nile River in eastern Africa flows northwards through Sudan and Egypt to the Mediterranean.
[75] The river Severn begins on Mount Plynlimon in western Wales, flows northeast to Shrewsbury in the west of England, then southeast, then southwest where it becomes the Severn Estuary and flows into the Bristol Channel.

[76] River in Derbyshire, in the Peak District.
[77] Inserted 1799.
[78] Edible.
[79] Herodotus (5th century BCE), Greek historian. His *History* is the founding work of historical writing in European tradition; its subject is the Persian empire, the Greek city-states, and the conflict between them. Each book of the *History* is named after one of the nine muses; ED's reference is to Book II, titled Euterpe, in which Herodotus describes the geography, flora and fauna, society, and politics of Egypt.
[80] 1799: "Euterpe." Misspelled "Enterpe" in all other editions.
[81] In Greco-Roman mythology, nereids are sea nymphs.
[82] Mountain chain that extends down the length of the west coast of South America.
[83] Lines IV:217–79 (from "where Andes" to "silent sigh.") and the notes on Ocymum salinum and Ice flower do not appear in 1789.
[84] Estuary in southeast South America, formed by the confluence of the Paranà and Uruguay rivers.
[85] 1791, 1794, 1799: "Abbe" in both instances.
[86] Juan Ignacio Molina (1740–1829), Jesuit born in Chile and sent by his order to Italy in 1767. He was also a natural scientist, historian, and geographer of Chile whose *Saggio sulla storia naturale del Chili* (1782) was translated into German, French, and Spanish. ED refers to p. 110 of the French translation by M. l'Abbé Gruvel, *Essai sur l'histoire naturelle du Chili* (1789).
[87] Scurvy is a disease characterized by general debility, tenderness in the gums, foul breath, eruptions under the skin, and pains in the limbs; sea-scurvy is the form of the disease that is related to shipboard living conditions.
[88] A constitutional disease characterized by enlargement and degeneration of the lymphatic glands.
[89] *The Economy of Vegetation* II:119n. A portion of the second paragraph of that note originally appeared in *LOTP* 1789. See editor's note to *LOTP* IV:406.
[90] Perspiration that is not visible because it evaporates immediately, versus sensible perspiration which can be seen as drops on the skin.
[91] A South American beetle, of the species Curculio imperialis, whose wing casing is studded with brilliant points; or, other beetles with splendid markings.
[92] Unbreakable; having the qualities of adamant, a poetic name for an extremely hard substance.
[93] In the biblical book of Genesis, when two angels come to the sinful cities of Sodom and Gomorrah, Lot invites them to stay the night in his house. The men of Sodom come to the door, apparently with the intention to rape the angels, demanding, "bring them out unto us, that we may know them." Lot refuses, and the angels save Lot from the mob whom they strike with blindness: "And when the morning arose, then the angels hastened Lot, saying, Arise, take thy wife, and thy two daughters, which are here; lest thou be consumed in the iniquity of the city." They are warned, "Escape for thy life; look not behind thee." When the Lord rains fire and brimstone on Sodom and Gomorrah, Lot's "wife looked back from behind him, and she became a pillar of salt" (Genesis 19:1–26).

[94] 1794, 1799: "recite,"
[95] In Greco-Roman mythology, Orpheus was the greatest human musician, whose songs had irresistible power. Soon after they married, his wife Eurydice died from a snake bite. Orpheus descended to the underworld to rescue her. He charmed everyone in the underworld with his music, and the king and queen of the underworld agreed that Eurydice could return, as long as Orpheus did not look back. Just as they were coming into the upper world, Orpheus looked back at Eurydice, and she faded away. The story is told in Ovid's *Metamorphoses*, 10:1–85, and also in Virgil's *Georgics*, 4:453–27.
[96] In Virgil's *Aeneid*, Book 2:705–95, the hero Aeneas tells how, fleeing the burning city of Troy, he carried his father Anchises on his shoulders and led his son Ascanius (also known as Iulus) by the hand; his wife Creusa followed behind, but was lost. Aeneas did not know what happened to her and did not look back until he had brought his father and son to safety. Upon returning to look for her, he only found her ghost, who foretold to him his destiny. Aeneas then tried to embrace her, but she disappeared.
[97] A wading bird, related to the heron but smaller; it has a booming call.
[98] An ornament, or a piece of armour, for the neck.
[99] The Roman name for the Greek mythological hero Heracles. Deianira was his wife. As punishment for a crime, Zeus sold Heracles as a slave to Omphale, queen of Lydia. She dressed him as a woman and made him do the domestic work of spinning while she took on his lion's skin and club. (It was not an ordinary lion's skin, but that of the monstrous Nemean lion slain by Heracles as the first of his twelve labors.) The story is told by Ovid in *Heroides*, in an imaginary letter from Deianira to Hercules (9:101–18).
[100] Joseph Pitton de Tournefort (1656–1708), French botanist and physician, was a pioneer of botanical classification. Marcello Malpighi (1628–1694), Italian physician and biologist known for his research on microscopic anatomy. He was an honorary member of the Royal Society of London. Johann Jacob Dillenius (1687–1747), German botanist who came to England in 1721, and in 1728 became the first professor of botany at the University of Oxford. Augustus Quirinus Rivinus, also known by the surname Bachmann, (1652–1723), German physician and botanist. The controversy ED refers to is encapsulated in Dillenius's *Catalogus Plantarum Sponte Circa Gissam Nascentium* [Catalogue of plants that grow of themselves around Giessen (a town in west central Germany, north of Frankfurt)] (1719) which discusses Arum on pp. 56–8 and debates with Tournefort, Malpighi, and Rivinus on the plant's structure. Dillenius refers specifically to Tournefort's *Elemens de botanique, ou Methode pour connoître les plantes* [Elements of botany, or method for recognizing plants] (1694) and its illustration of Arum (Vol. 5, Tab. 69; corresponding text in Vol. 1, pp. 130–31), and to Rivinus's *Ordo Plantarum, qvæ sunt Flore Irregulari Monopetalo* [Order of plants which are irregular and single-petalled in flower] (1690) which discusses Arum on p. 22. Dillenius does not give a specific reference for Malpighi, but Rivinus references the illustration and discussion of Arum in Malipighi's *Anatome Plantarum* (Vol. 1, 1675; Tab. 31, Fig. 184; corresponding text on p. 49).

[101] *The Families of Plants* (1787) is an English translation of the 1778 edition of Linnaeus's *Genera Plantarum* (first published 1737), largely by ED and credited to the Botanical Society of Lichfield, which also included Brooke Boothby (1744–1824) and William Jackson (1735–1798). *The Families of Plants* also draws on Linnaeus's two *Mantissæ Plantarum* ("mantissa" means "supplement") (1767, 1771), Carl Linnaeus Jr.'s *Supplementum Plantarum* (1781), and works by botanists Carl Peter Thunberg and Charles Louis L'Heritier de Brutelle (1746–1800). See *LOTP* Preface vii–viii and editor's notes. ED's reference is found in Vol. 2.

[102] A thick fleshy spike bearing flowers, enveloped by a large sheathing leaf.

[103] Gilbert White (1720–1793), naturalist, and cleric in the Church of England. He was born in Selborne and spent most of his life there. He kept a detailed, near-daily record of his gardening activities and observations from 1751 until shortly before his death. *The Natural History and Antiquities of Selborne*, written in the form of letters, was published in 1789. ED's reference is to Letter 15.

[104] 1789: "Fits"

[105] Tawny with streaks of a different color.

[106] All editions read "pards," except 1790 and 1791 which have the amusing error "bards,".

[107] "Peloria," a dissertation proposed by Daniel Rudberg (c. 1724–1797), no. III in *Amœnitates Academicæ* Vol. 1 (1749), pp. 55–73. *Amœnitates Academicæ* [Academic Delights] (1749–1790) was a series directed by Linnaeus that published dissertations in Latin by scholars of natural history at the University of Uppsala. Most of these dissertations were written primarily by Linnaeus, with the student acting as an assistant.

[108] "Plantæ hybridæ," proposed by Johan Johansson Haartman (1725–1787), no. XXXII in *Amœnitates Academicæ* Vol. 3 (1756), pp. 28–62.

[109] Linnaeus's *Systema Vegetabilium* is the botanical portion of *Systema Naturæ*, first published separately in 1774. Johan Andreas Murray (1740–1791) was a student of Linnaeus and edited the 13th (1774) and 14th (1784) editions of *Systema Vegetabilium*.

[110] ED may be thinking of Mary Wortley Montagu (bap. 1689, d. 1762), whose *Letters Written during her Travels*, often called *The Turkish Embassy Letters*, were published in 1763. She gives a sample of "Turkish Verses" which begin with a couplet on the nightingale's passion for roses (Vol. 2, p. 48). ED may also have in mind the fable of "The Gardener and the Nightingale" (in which both adore a rose), translated and analyzed in *Grammar of the Persian Language* (1771; pp. 109–19) by orientalist and philologist William Jones (1746–1794). Verses from the poet Hafiz (d. c. 1390) are part of his translation. These sources, however, do not involve the kind of transformation ED describes here.

[111] Richard Pulteney (1730–1801), botanist and physician, published *A General View of the Writings of Linnaeus* in 1781. It was the first biography of Linnaeus in English, and summarizes all of Linnaeus's works in detail, including *Amœnitates Academicæ*. Pulteney's book was instrumental in disseminating knowledge of Linnaeus in Britain. ED's reference is found on p. 251.

[112] 1791, 1794, 1799: "p. 253."

[113] "Fundamentum Fructificationis" [Foundation of Fructification], proposed by Johan Martin Gråberg (1741–1793), no. CXVI in *Amœnitates Academicæ* Vol. 6 (1763), pp. 279–304.
[114] "Theses Medicæ," proposed by Johann Christian Daniel von Schreber (1739–1810), no. CIII in *Amœnitates Academicæ* Vol. 6 (1763), pp. 40–3.
[115] "Generatio ambigena" [Hybrid Generation], proposed by Christian Ludvig Ramström (1740–1782), no. CI in *Amœnitates Academicæ* Vol. 6 (1763), pp. 1–16.
[116] 1799: "mane"
[117] "Generatio ambigena" [Hybrid Generation], proposed by Christian Ludvig Ramström (1740–1782), no. CI in *Amœnitates Academicæ* Vol. 6 (1763), pp. 1–16.
[118] Standing up as bristles.
[119] Beautiful women of the Muslim paradise.
[120] 1794, 1799: "by"
[121] James Lind (1716–1794), naval surgeon and physician. He discusses the harmattan in the second edition of *An Essay on the Most Effectual Means of Preserving the Health of Seamen, in the Royal Navy* (1762; pp. 79–81).
[122] In Greek mythology, a Titan who holds up the heavens. He is associated with the Atlas Mountains in northwest Africa as described in Herodotus's (5th century BCE) *Histories* 4:184, and in Virgil's *Aeneid* (29–19 BCE) 4:246–51.
[123] The River Gambia in West Africa, which flows from Guinea through Senegal and the Gambia to the Atlantic Ocean.
[124] An excessive flow of blood, excrement, or other matter from the bowels or other organs.
[125] Skin rashes.
[126] "An Account of the Harmattan, a singular African wind," by Matthew Dobson, "communicated by John Fothergill," *Philosophical Transactions of the Royal Society of London* 71 (1781): pp. 46–57. Matthew Dobson (1732–1784), physician and natural philosopher, published mainly in the areas of medicine and chemistry, and also meteorology. This article draws on reports made by Robert Norris (bap. 1724?–d. 1791) who made several journeys to West Africa between 1770 and 1777; Norris also wrote about the Harmattan in his *Memoirs of the Reign of Bossa Ahadee, King of Dahomy* (1789; pp. 113–22). All of ED's points in this paragraph, including the reference to Lind, come from Dobson's article, except the medical hypothesis about the absorbent vessels.
[127] "An Account of a remarkable Darkness at Detroit, in America: In a Letter from the Rev. Mr. James Stirling, to Mr. John Duncan: communicated by Samuel Mead," *Philosophical Transactions of the Royal Society of London* 53 (1763): pp. 63–4.
[128] The phenomena described here actually happened in the summer of 1783, as recounted by Gilbert White (1720–1793) in *The Natural History of Selborne* (1789), Letter 64. Mount Hekla is an active volcano in southwest Iceland, but it was actually the volcanic fissure Laki, also in southern Iceland, that erupted in 1783.
[129] Plural of miasma, noxious vapor.
[130] William Marsden (1754–1836), orientalist and coin collector. He worked for the East India Company in Sumatra from 1771 to 1779,

when he went to London, attended Royal Society meetings and joined in the circle of Joseph Banks (1743–1820), naturalist, patron of science, and President of the Royal Society (1778–1820). Among Marsden's works is *History of Sumatra* (1783).

[131] Island in west Indonesia.

[132] 1799: "umbrellas"

[133] "Account of a Phenomenon Observed upon the Island of Sumatra. By William Marsden, Esq.; communicated by Sir Joseph Banks, P. R. S.". *Philosophical Transactions of the Royal Society of London* 71 (1781): pp. 383–85. ED's information comes from pp. 383–84.

[134] 1789: "Hedysarum movens"

[135] Pierre-Marie-Auguste Broussonet (1761–1807), French physician and naturalist, known primarily as a zoologist and ichthyologist; he also researched practical uses of plants. He visited London in the early 1780s and came into contact with the naturalist, patron of science, and President of the Royal Society (1778–1820), Joseph Banks (1743–1820), whose collection of specimens of fish he classified. ED's reference is to "Essai de comparaison entre les mouvemens des animaux et ceux des plantes. Et description d'une espèce de Sainfoin, dont les feuilles sont dans un mouvement continuel" [Essay comparing the movements of animals and of plants. And description of a kind of Sainfoin, of which the leaves are in continual movement]. *Histoire de l'Académie royale des sciences* (1784), pp. 609–21.

[136] Linnaeus's *Systema Vegetabilium* is the botanical portion of *Systema Naturæ*, first published separately in the 13th edition in 1774. Johan Andreas Murray (1740–1791) was a student of Linnaeus and edited the 13th (1774) and 14th (1784) editions of *Systema Vegetabilium*.

[137] Botanical artist and publisher Frederick Polydore Nodder (*fl*. 1773–1800). He also designed and etched the illustrations for *Thirty-Eight Plates with Explanations* (1788) and *Flora Rustica* (1792) by Thomas Martyn (1735–1825).

[138] 1789: "silky"

[139] A river of northern India, sacred to Hindus. It flows from the Himalayas into the Bay of Bengal.

[140] Seals.

[141] Inserted 1794, 1799

[142] The line number refers to the 1794 and 1799 editions.

[143] In the second edition of *Species Plantarum* (1762–1763, Vol. 2, p. 1457), there is this note on Humulus lupulus: "Murmur electricum, quasi remotissimum tonitru, vento exagitante Humili palos, quid?", which ED roughly translates here ("an electric […] cause of it"). The preceding sentences also roughly translate Linnaeus. In the 13th (1774) and 14th (1784) editions of Linnaeus's *Systema Vegetabilium* edited by Johan Andreas Murray (1740–1791), there is this note on Nymphæa nelumbo: "Capsula dehiscit stigmate variis poris perforato pro totidem seminibus; matura his tinnitat. Semina continent aliquot folia, antequam germinant, intra se perfecta" ("The capsule […] germinate").

[144] Johann Georg Gmelin (1709–1755) was from Germany and became professor of chemistry and natural history at the University of St. Petersburg. Later he returned to Germany and became professor of medicine, botany, and chemistry, and director of the botanic garden,

at the University of Tübingen. From 1733–1743, he was the natural historian on the Second Kamchatka Expedition, also known as the Great Northern Expedition, organized by the explorer Vitus Bering (1681–1741) for whom the Bering Strait is named. Gmelin's *Reise durch Sibirien von dem Jahre 1738 bis zum Ende 1740* [Journey through Siberia from the year 1738 to the end of 1740] (1751–1752) was translated into French by Louis-Félix Guinement de Kéralio (1731–1793) as *Voyage en Sibérie* (1767). Chapter 65 remarks on rails that do not fly from hunters and cannot fly away in winter, but does not mention their sleeping in snow; the locals recount that migrating cranes take them on their backs to warmer climes.

[145] Loch Lomond is a lake in west central Scotland, northwest of Glasgow; it drains the River Leven into the Firth of Clyde.

[146] This sentence translates Linnaeus's note on Conferva vagabunda in *Species Plantarum* (first published 1753), found in Vol. 2, p. 1167.

[147] In Greco-Roman mythology, priestess of Aphrodite/Venus at Sestus. She and Leander were in love; he lived at Abydus on the other side of the Hellespont (the strait dividing Europe from Asia). He swam across each night, guided by a light Hero would keep lit for him in a tower. One night a storm put out the light; he drowned, and when Hero discovered his body washed up on the shore, she threw herself into the sea. Their story is most fully told in an epic poem by Musaeus (late 5th century) but also referred to by Virgil in *Georgics* (3:258–63); Ovid in *Heroides* writes imaginary letters from Leander to Hero (18) and Hero to Leander (19).

[148] 1789: "Deep, in wide caverns and unfathom'd cells, / Daughter of Earth, the chaste TRUFFELIA dwells;"

[149] Gnome: an elemental spirit of earth, in the system of the alchemist Paracelsus (1493–1541). See editor's note to *LOTP* I:1.

[150] Mochas, moss agates, or similar chalcedony stones with branching markings.

[151] To make into a mosaic.

[152] In 1789, lines 4:401–4 (from "In glittering" to "cell;") do not appear and the following lines read "O'er the gay ailes delighted Cupids stray, / And shed from odorous lamps celestial day.—"

[153] Of an Aeolian harp, an instrument that produces music when a breeze passes over the strings.

[154] At this point in the text, the following lines and note appear only in 1789 (as Darwin explains in the 1790 Advertisement, they were "removed to the first poem on the Economy of Vegetation"):

> So, cavern'd round in vast Polandish mines,
> With crystal walls a gorgeous city shines;
> Scoop'd in the briny rock long streets extend
> Their hoary course, and glittering domes ascend.
> Down the bright steeps, emerging into day,
> Impetuous fountains burst their headlong way,
> O'er milk-white vales in ivory channels spread,
> And wondering seek their subterranean bed.
> Form'd in pellucid salt with chissel nice,
> The pale lamp glimmering through the sculptur'd ice,
> With wild reverted eyes fair LOTTA stands,
> And spreads to heaven, in vain, her glassy hands;
> Cold dews condense upon her pearly breast,

> And the big tear rolls lucid down her vest.
> Far-gleaming o'er the town, transparent fanes
> Rear their white towers, and wave their golden vanes;
> Long lines of Lustres pour their trembling rays,
> And the bright vault returns the mingled blaze.
>
> *Scoop'd in the briny rock* l. 311. There is a town in the immense salt-mines of Crackow in Poland, with a market-place, a river, a church, and a famous statue, (here supposed to be of Lot's wife) by the moist or dry appearance of which the subterranean inhabitants know, when the weather is fair above ground, these immense masses of rock salt seem to have been produced by the evaporation of sea-water in the early periods of the world by subterranean fires. Dr. Hutton's Theory of the Earth.
>
> Salts of various kinds are produced from the recrements of animal and vegetable bodies, such as phosphoric, ammoniacal, marine salt, and others; these are washed from the earth by rains, and carried down our rivers into the sea; they seem all here to decompose each other except the marine salt; which has therefore from the beginning of the habitable world been perpetually accumulating; as an article of diet it seems to be simply a stimulus, not containing any nourishment; and like all other unnatural stimuli is not necessary to people in health, and contributes to weaken our system; though it may be useful as a medicine. It seems to be an immediate cause of the sea-scurvy, as these patients get well by the use of fresh provisions; and is probably a remote cause of the scrophula, (which consists in the want of irritability of the absorbent system,) and is therefore useful to these patients; as wine is necessary to those whose stomachs have been weakened by its use. The universality of the use of salt with our food and in our cookery has rendered it difficult to prove the truth of these observations. (*LOTP* 1789, IV:309–26, pp. 157–59)

The verses are found in *The Economy of Vegetation* (1791) II:125–42, with some small alterations: the first line reads "Thus, cavern'd round in CRACOW'S mighty mines," and "subterranean bed." becomes "subterraneous bed." The first paragraph of the note, with additions, appears in the note to *The Economy of Vegetation* II:119. The rest of the content of the 1789 note, from "as an article of diet" on, appears with slight variations in wording in the note on Ocymum salinum (IV:221n.), inserted in all editions of *LOTP* after 1789. "Lotta" is a fanciful name for Lot's wife, on whom see editor's note to *LOTP* IV:241. On "Dr. Hutton's Theory of the Earth," see editor's note to III:90n.

[155] Also "stolon"; a reclined branch which roots at the tip and grows upwards to become an independent plant.

[156] A shoot from the main stock or root; or, a stolon or runner.

[157] Joseph Pitton de Tournefort (1656–1708), French botanist and physician, was a pioneer of botanical classification. His "Observations sur les Maladies des Plantes," *Histoire de l'Academie Royale des Sciences* (1705), pp. 332–45, discusses caprification on pp. 340–43.

[158] Giulio Pontedera (1688–1757), Italian botanist, known for his *Anthologia, sive De floris natura* (1720), in which he discusses plant

morphology to argue against the sexuality of plants. Book 2, Chapter 33, "De Caprificatione" (pp. 170–72) is on the subject of caprification and quotes Tournefort's "Observations sur les Maladies des Plantes."

[159] Linnaeus's *Systema Naturae* (first published 1735). Cynips psenes is first included in the 1758 edition. In the 1767 edition printed in Vienna, the entry for Cynips psenes appears on p. 919, as cited by ED; it references Pontedera who in turn references Tournefort.

[160] Colin Milne (c.1743–1815), clergyman and botanist. ED refers to his work *A Botanical Dictionary, or, Elements of Systematic and Philosophical Botany* (1770). (The title of the entry is "Caprificatio.") Milne also published *The Institutes of Botany* (1771–1772), a translation of Linneus's *Genera Plantarum*.

[161] To propagate by layers, shoots are bent and fastened down and partly covered in earth so that they root while still attached to the parent plant. Suckers are shoots that come out from the base or root of a plant, which are divided from the plant to propagate it.

[162] Jean-Nicolas La Hire (1685–1727), botanist and physician. "Observations sur les Figues," *Histoire de l'Academie Royale des Sciences* (1712) pp. 275–78 and Tab. 15.

[163] Linnaeus, *Species Plantarum* (first published 1753). Caprificus is found under the name Ficus carica in Vol. 2, p. 1059.

[164] Joseph Pitton de Tournefort (1656–1708), "Observations sur les Maladies des Plantes," *Histoire de l'Academie Royale des Sciences* (1705), pp. 332–45; ED's reference is to p. 343.

[165] A sugary liquid sometimes found on the leaves and stems of plants, previously believed to come from the atmosphere like dew, and subsequently thought to be excreted by insects, plant galls, and fungi.

[166] A genus of weevils, including the plum curculio that punctures the skin of fruit.

[167] Sylph: an elemental spirit of air, in the system of the alchemist Paracelsus (1493–1541). See editor's note to *LOTP* I:1.

[168] Roman name for the Orkney and Shetland Islands off the north coast of Scotland.

[169] The island of Staffa is in the Hebrides off the west coast of Scotland. Fingal's Cave is one of several sea caves on the island, known for the basaltic columns ED describes. Joseph Banks (1743–1820), naturalist, patron of science, and President of the Royal Society (1778–1820), was the first to fully describe the cave; his description, from a visit made in 1772, was published in Thomas Pennant's *A Tour in Scotland, and Voyage to the Hebrides; MDCCLXXII* (1774; Vol. 1, pp. 299–309). Banks writes: "The mind can hardly form an idea more magnificent than such a space, supported on each side by ranges of columns; and roofed by the bottoms of those, which have been broke off in order to form it." When asked the name of the cave, "Said our guide, the cave of *Fhinn*; what is *Fhinn?* said we. *Fhinn Mac Coul*, whom the translator of *Ossian*'s works has called *Fingal*. How fortunate that in this cave we should meet with the remembrance of that chief, whose existence, as well as that of the whole *Epic* poem is almost doubted in *England*" (pp. 301–02). Banks refers to the epic *Fingal* (1762), part of the *Poems of Ossian* (1760–1763) by James Macpherson (1736–1796) that became an international sensation. Though Macpherson loosely based his poems on traditional sources, there was a lasting controversy over their authenticity.

[170] A promontory of thousands of basalt columns of different heights, located on the northern coast of Northern Ireland in County Antrim.
[171] "On the Crystallizations observed on Glass. By James Keir, of Stourbridge. Communicated by G. Fordyce," *Philosophical Transactions of the Royal Society of London* 66 (1776): pp. 530–42. James Keir (1735–1820), Scottish chemist and industrialist, studied medicine at Edinburgh where he became friends with ED. After a few years serving in the West Indies in the army, he settled in the Birmingham area and in 1770 established a glass factory in Stourbridge, where he also had a chemistry laboratory. In the 1780s he designed and was chemical engineer for the world's first soap factory. He was a fellow member with ED of the Lunar Society. ED sent him a draft of *LOTP* in 1787, on which he offered comments (King-Hele, *Life*, p. 222).
[172] In Greco-Roman mythology, Proteus is a shape-shifting, all-knowing sea-god, known as the Old Man of the Sea. In the *Odyssey* (4:349–570), Menelaus tells of meeting him on his return from Troy: Proteus changed forms to try to escape and avoid questioning, but Menelaus held him fast until he returned to his true shape. Proteus is similarly questioned, on how to save a colony of bees, in Virgil's *Georgics* (4:315–530).
[173] Corrected as indicated in the Errata.
[174] John Ellis (c. 1710–1776), zoologist, was particularly interested in marine animals such as the zoophytes (including sponges), arguing for their animal nature and against the idea that they were a link between animals and plants. He published *Natural History of the Corallines* in 1755. In his botanical work, he promoted the importation of tropical plants for use in colonial agriculture; he wrote books on *Coffee* (1774) and *Mangosteen and Breadfruit* (1775). ED refers to p. 424 of "Extract of a Letter from John Ellis, Esquire, F. R. S. to Dr. Linnæus, of Upsal, F. R. S. on the Animal Nature of the Genus of Zoophytes, called Corallina," *Philosophical Transactions of the Royal Society of London* 57 (1767): pp. 404–27.
[175] Linnaeus's *Philosophia Botanica* (1751), an elaboration on his previous *Fundamenta Botanica* (1736) in which he had presented his botanical theories in the brief form of aphorisms. ED's reference is to no. 132.
[176] *The Economy of Vegetation* (1791) IV:505 and note, in which the flower of Cyprepedium mimics a spider to protect its nectar from hummingbirds; an illustration of the flower is included. In the note, there is a cross-reference to the note on Lonicera in *LOTP* (I:143n).
[177] A collection of things massed together.
[178] Greek and Roman god of marriage, represented as a young man carrying a torch. He is associated with the hymn (*hymenaios*) sung as the bride's train accompany her to the groom's house.
[179] Temple.
[180] Here, referring to the Roman goddess of love, sexual desire, and beauty, and also to the planet. The main purpose of the expedition of the HMS Endeavour (1768–1771), led by James Cook (1728–1779), was to observe the transit of Venus (its passage across the sun's disc) on 3 June 1769 from the South Pacific, specifically the island of Tahiti. (The observation would enable the calculation of the distance between the earth and the sun.) The naturalist Joseph Banks (1743–

1820) was part of the expedition. As well as studying the flora and fauna of Tahiti, he learned the language, studied the society, participated in local customs including getting tattooed, and had romances with local women. He wrote in his journal about Tahitian customs, particularly sexual mores, comparing them to European ones (published in 1963 as *The Endeavour Journal of Joseph Banks, 1768–1771*, ed. J. C. Beaglehole). Much gossip and satire circulated in London society about Banks's exploits, particularly his sexual adventures.

[181] Tahiti's.

[182] The Areoi are discussed in Vol. 2, Book 1, Chapter 17 of *An Account of the Voyages Undertaken by the Order of His Present Majesty for Making Discoveries in the Southern Hemisphere* (1773), "drawn up" by John Hawkesworth "from the Papers" of James Cook and Joseph Banks.

> A very considerable number of the principal people of Otaheite, of both sexes, have formed themselves into a society, in which every woman is common to every man; thus securing a perpetual variety as often as their inclination prompts them to seek it, which is so frequent, that the same man and woman seldom cohabit together more than two or three days.
>
> These societies are distinguished by the name of *Arreoy*, and the members have meetings, at which no other is present, where the men amuse themselves by wrestling, and the women, notwithstanding their occasional connection with different men, dance the Timorodee in all its latitude, as an incitement to desires which it is said are frequently gratified upon the spot. This however is comparatively nothing. If any of the women happen to be with child, which in this manner of life happens less frequently than if they were to cohabit only with one man, the poor infant is smothered the moment it is born, that it may be no incumbrance to the father, nor interrupt the mother in the pleasures of her diabolical prostitution. It sometimes indeed happens, that the passion which prompts a woman to enter into this society, is surmounted when she becomes a mother, by that instinctive affection which Nature has given to all creatures for the preservation of their offspring; but even in this case, she is not permitted to spare the life of her infant, except she can find a man who will patronise it as his child: if this can be done, the murder is prevented; but both the man and woman, being deemed by this act to have appropriated each other, are ejected from the community, and forfeit all claim to the privileges and pleasures of Arreoy for the future; the woman from that time being distinguished by the term *Whannownow*, 'bearer of children', which is here a term of reproach; though none can be more honourable in the estimation of wisdom and humanity, of right reason, and every passion that distinguishes the man from the brute. (Vol. 2, pp. 206–07).

The *Timorodee* dance mentioned "is performed by young girls, whenever eight or ten of them can be collected together, consisting of

motions and gestures beyond imagination wanton, in the practice of which they are brought up from their earliest childhood, accompanied by words, which, if it were possible, would more explicitly convey the same ideas. […] But the practice which is allowed to the virgin, is prohibited to the woman from the moment that she has put these hopeful lessons in practice, and realized the symbols of the dance" (Vol. 2, p. 206).

[183] Elemental spirits of air, in the system of the alchemist Paracelsus (1493–1541). See editor's note to *LOTP* I:1.

[184] An elemental spirit of earth, in the system of the alchemist Paracelsus (1493–1541). See editor's note to *LOTP* I:1.

[185] Botanical artist and publisher Frederick Polydore Nodder (fl. 1773–1800). He also designed and etched the illustrations for *Thirty-Eight Plates with Explanations* (1788) and *Flora Rustica* (1792) by Thomas Martyn (1735–1825).

[186] Queen Charlotte (1744–1818), who was an amateur botanist.