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THE
BOTANIC GARDEN,

A POEM.

IN TWO PARTS.

PART I.

CONTAINING

THE ECONOMY OF VEGETATION.

PART II.

THE LOVES OF THE PLANTS.

WITH

PHILOSOPHICAL NOTES.

THE FOURTH EDITION.



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CHICAGO, ILL.

1950

B

THE
BOTANIC GARDEN.

PART II.

CONTAINING

THE LOVES OF THE PLANTS,

A P O E M.

WITH

PHILOSOPHICAL NOTES.

VIVUNT IN VENEREM PRONDES; NEMUS OMNE PER ALTUM
FELIX ARBOR AMAT; NUTANT AD MUTUA PALMÆ
FÆDERA, POPULEO SUSPIRAT POPULUS ICTU,
ET PLATANI PLATANIS, ALNOQUE ASSIBILAT ALNUS.

CLAUD. EPITH.

THE
BOTANIC GARDEN

PART II

THE LOSS OF THE PLANTS

A FORM

THE BOTANICAL GARDEN

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P R E F A C E.

LINNEUS has divided the vegetable world into 24 Classes; these Classes into about 120 Orders; these Orders contain about 2000 Families, or Genera; and these Families about 20,000 Species; besides the innumerable Varieties, which the accidents of climate or cultivation have added to these Species.

The Classes are distinguished from each other in this ingenious system, by the number, situation, adhesion, or reciprocal proportion of the males in each flower. The Orders, in many of these Classes, are distinguished by the number, or other circumstances of the females. The Families, or Genera, are characterized by the analogy of all the parts of the flower or fructification. The Species are distinguished by the foliage of the plant; and the

Varieties by any accidental circumstance of colour, taste, or odour; the seeds of these do not always produce plants similar to the parent; as in our numerous fruit-trees and garden flowers; which are propagated by grafts or layers.

The first eleven Classes include the plants, in whose flowers both the sexes reside; and in which the Males or Stamens are neither united, nor unequal in height when at maturity; and are therefore distinguished from each other simply by the number of males in each flower, as is seen in the annexed PLATE, copied from the Dictionnaire Botanique of M. BULLIARD, in which the numbers of each division refer to the Botanic Classes.

CLASS I. ONE MALE, *Monandria*; includes the plants which possess but one Stamen in each flower.

- II. TWO MALES, *Diandria*. Two Stamens.
- III. THREE MALES, *Triandria*. Three Stamens.
- IV. FOUR MALES, *Tetrandria*. Four Stamens.
- V. FIVE MALES, *Pentandria*. Five Stamens.
- VI. SIX MALES, *Hexandria*. Six Stamens.

VII. SEVEN MALES, *Heptandria*. Seven Stamens.

VIII. EIGHT MALES, *Octandria*. Eight Stamens.

IX. NINE MALES, *Enneandria*. Nine Stamens.

X. TEN MALES, *Decandria*. Ten Stamens.

XI. TWELVE MALES, *Dodecandria*. Twelve Stamens.

The next two Classes are distinguished not only by the number of equal and difunited males, as in the above eleven Classes, but require an additional circumstance to be attended to, *viz.* whether the males or stamens be situated on the calyx, or not.

XII. TWENTY MALES, *Icosandria*. Twenty Stamens inserted on the calyx or flower-cup; as is well seen in the last Figure of No. xii. in the annexed Plate.

XIII. MANY MALES, *Polyandria*. From 20 to 100 Stamens, which do not adhere to the calyx; as is well seen in the first Figure of No. xiii. in the annexed Plate.

In the next two Classes, not only the number of stamens are to be observed, but the reciprocal proportions in respect to height.

XIV. TWO POWERS, *Didynamia*. Four Stamens, of which two are lower than the other two; as is seen in the two first Figures of No. xiv.

XV. FOUR POWERS, *Tetradynamia*. Six Stamens; of which four are taller, and the two lower ones opposite to each other; as is seen in the third Figure of the upper row in No. xv.

The five subsequent Classes are distinguished not by the number of the males, or stamens, but by their union or adhesion, either by their anthers, or filaments, or to the female or pistil.

XVI. ONE BROTHERHOOD, *Monadelphica*. Many Stamens united by their filaments into one company; as in the second Figure below of No. xvi.

XVII. TWO BROTHERHOODS, *Diadelphia*. Many Stamens united by their filaments into two companies: as in the uppermost Fig. No. xvii.

XVIII. MANY BROTHERHOODS, *Polyadelphia*. Many Stamens united by their filaments into three or more companies, as in No. xviii.

XIX. CONFEDERATE MALES, *Syngenesia*. Many Stamens united by their anthers; as in the first and second Figures, No. xix.

XX. FEMININE MALES, *Gynandria*. Many Stamens attached to the pistil.

The next three Classes consist of plants, whose flowers contain but one of the sexes; or if some of them contain both sexes, there are other flowers accompanying them of but one sex.

XXI. ONE HOUSE, *Monœcia*. Male flowers and female flowers separate, but on the same plant.

XXII. TWO HOUSES, *Diœcia*. Male flowers and female flowers separate on different plants.

XXIII. POLYGAMY, *Polygamia*. Male and female flowers on one or more plants, which have at the same time flowers of both sexes.

The last Class contains the plants whose flowers are not discernible.

XXIV. CLANDESTINE MARRIAGE, *Cryptogamia*.

The Orders of the first thirteen Classes are

founded on the number of Females, or Pistils, and distinguished by the names, ONE FEMALE, *Mono-gynia*. TWO FEMALES, *Digynia*. THREE FEMALES, *Trigynia*, &c. as is seen in No. i. which represents a plant of one male, one female; and in the first figure of No. xi. which represents a flower with twelve males, and three females; (for, where the pistils have no apparent styles, the summits, or stigmas, are to be numbered) and in the first figure of No. xii. which represents a flower with twenty males and many females; and in the last Figure of the same No. which has twenty males and one female; and in No. xiii. which represents a flower with many males and many females.

The Class of TWO POWERS is divided into two natural Orders; into such as have their seeds naked at the bottom of the calyx, or flower-cup; and such as have their seeds covered; as is seen in No. xiv. Fig. 3. and 5.

The Class of FOUR POWERS is divided also into two Orders; in one of these the seeds are inclosed

in a filicule, as in *Shepherd's-purse*. No. xv. Fig. 5. In the other they are inclosed in a filique, as in *Wall-flower*. Fig. 4.

In all the other Classes, excepting the Classes Confederate Males, and Clandestine Marriage, as the character of each Class is distinguished by the situations of the males; the character of the Orders is marked by the numbers of them. In the Class ONE BROTHERHOOD, No. xvi. Fig. 3. the Order of ten males is represented. And in the Class TWO BROTHERHOODS, No. xvii. Fig. 2. the Order ten males is represented.

In the Class CONFEDERATE MALES, the Orders are chiefly distinguished by the fertility or barrenness of the florets of the disk, or ray of the compound flower.

And in the Class of CLANDESTINE MARRIAGE, the four Orders are termed FERNS, MOSSES, FLAGS, and FUNGUSSES.

The Orders are again divided into Genera, or Families,

Families, which are all natural affociations, and are described from the general resemblances of the parts of fructification, in respect to their number, form, situation, and reciprocal proportion. These are the Calyx, or Flower-cup, as seen in No. iv. Fig. 1. No. x. Fig. 1. and 3. No. xiv. Fig. 1, 2, 3, 4. Second, the Corol, or Blossom, as seen in No. i, ii. &c. Third, the Males or Stamens, as in No. iv. Fig. 1. and No. viii. Fig. 1. Fourth, the Females, or Pistils, as in No. i. No. xii. Fig. i. No. xiv. Fig. 3. No. xv. Fig. 3. Fifth, the Pericarp or Fruit-veffel, as No. xv. Fig. 4, 5. No. xvii. Fig. 2. Sixth, the Seeds.

The illustrious author of the Sexual System of Botany, in his preface to his account of the Natural Orders, ingeniously imagines, that one plant of each Natural Order was created in the beginning; and that the intermarriages of these produced one plant of every Genus, or Family: and that the intermarriages of these Generic, or Family plants, produced all the species: and lastly, that the intermarriages of the individuals of the Species produced the Varieties.

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In the following POEM, the name or number of the Class or Order of each plant is printed in italics; as “*Two* brother swains:” “*One* House contains them:” and the word “*secret*” expresses the Class of Clandestine Marriage.

The Reader, who wishes to become further acquainted with this delightful field of science, is advised to study the works of the Great Master, and is apprized that they are exactly and literally translated into English, by a Society at LICHFIELD, in four Volumes Octavo.

To the SYSTEM OF VEGETABLES* is prefixed a copious explanation of all the Terms used in Botany, translated from a thesis of Dr. ELMSGREEN, with the plates and references from the Philosophia Botanica of LINNEUS.

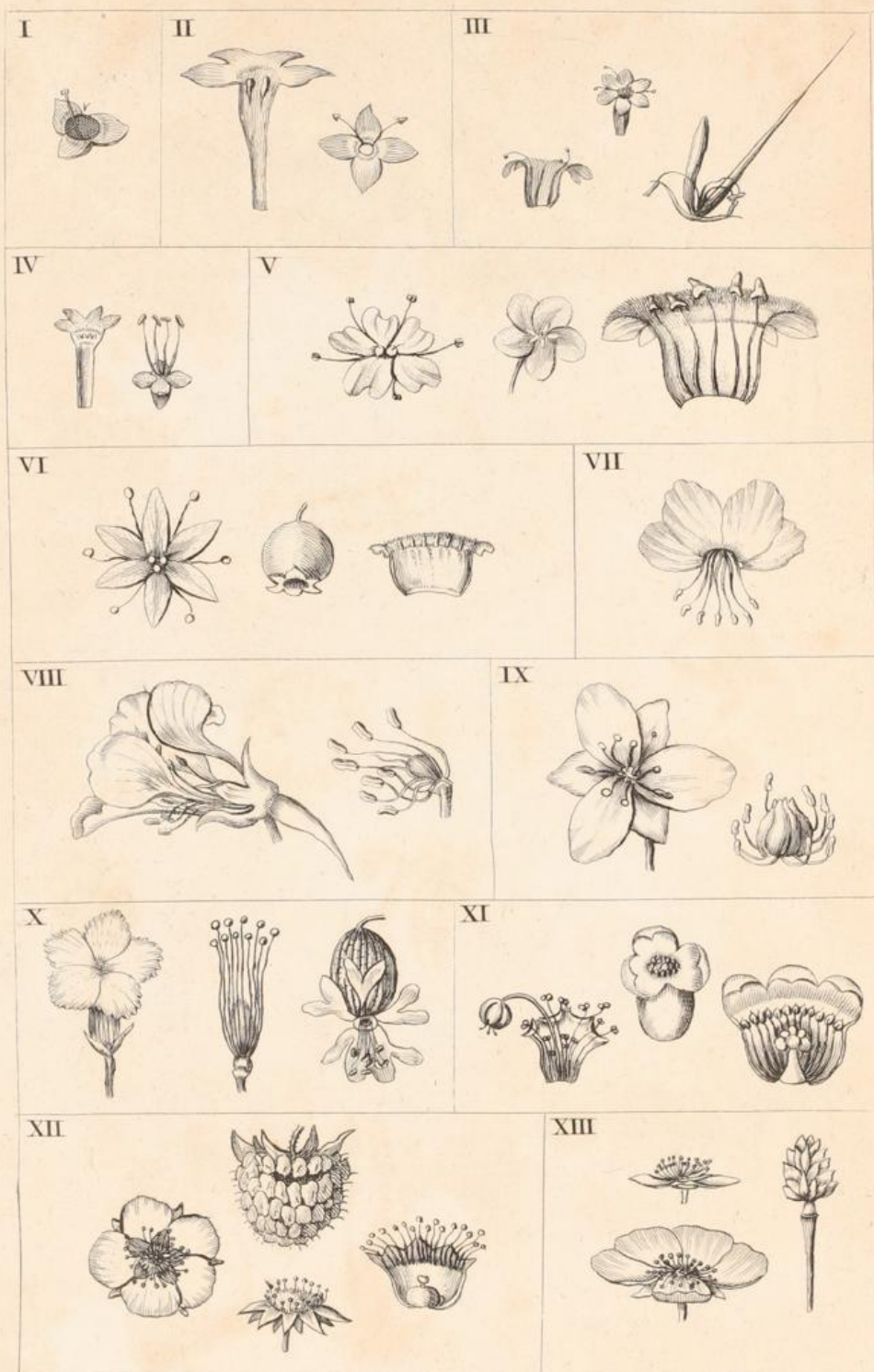
* *The SYSTEM OF VEGETABLES translated from the Systema Vegetabilium, in two Vols. is sold by LEIGH and SOTHEBY, York Street, Covent-Garden: Price eighteen Shillings, in Boards.*

To the *FAMILIES OF PLANTS* * is prefixed a Catalogue of the names of plants, and other Botanic Terms, carefully accented, to shew their proper pronunciation ; a work of great labour, and which was much wanted, not only by beginners, but by proficients in *BOTANY*.

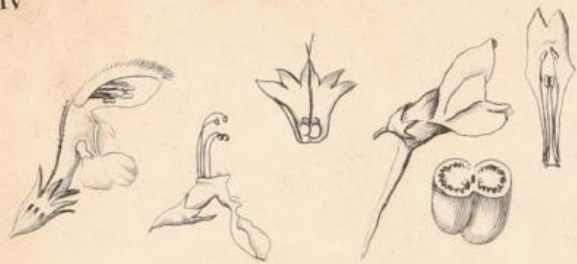
* *The FAMILIES OF PLANTS translated from the Genera Plantarum, in two Vols. by JOHNSON, St. Paul's Church Yard, London: Price sixteen Shillings, in Boards.*

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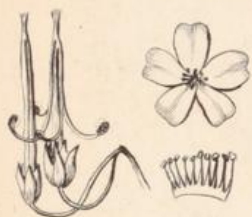
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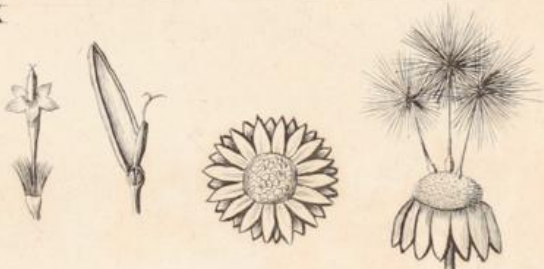
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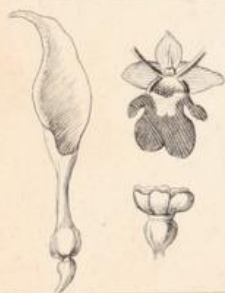
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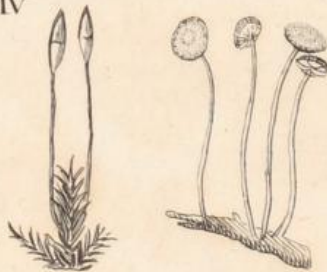
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P R O E M.

GENTLE READER,

LO, here a CAMERA OBSCURA is presented to thy view, in which are lights and shades dancing on a whited canvas, and magnified into apparent life!—if thou art perfectly at leisure for such trivial amusement, walk in, and view the wonders of my INCHANTED GARDEN.

Whereas P. OVIDIUS NASO, a great Necromancer in the famous Court of AUGUSTUS CÆSAR, did by art poetic transmute Men, Women, and even Gods and Goddeses, into Trees and Flowers; I have undertaken by similar art to restore some of them to their original animality, after having remained prisoners so long in their respective vegetable mansions; and have

here exhibited them before thee. Which thou may'ft contemplate as diverſe little pictures ſuſpended over the chimney of a Lady's dressing room, *connected only by a ſlight feſtoon of ribbons.* And which, though thou may'ft not be acquainted with the originals, may amuſe thee by the beauty of their perſons, their graceful attitudes, or the brilliancy of their drefs.

FAREWELL.



THE
LOVES OF THE PLANTS.

CANTO I.

DESCEND, ye hovering Sylphs! aerial Quires,
And sweep with little hands your silver lyres;
With fairy footsteps print your grassy rings,
Ye Gnomes! accordant to the tinkling strings:
While in soft notes I tune to oaten reed
Gay hopes, and amorous sorrows of the mead.—
From giant Oaks, that wave their branches dark,
To the dwarf Moss that clings upon their bark,
What Beaux and Beauties crowd the gaudy groves,
And woo and win their vegetable Loves, 10

Vegetable Loves. 1. 10. Linneus, the celebrated Swedish na-

PART II.

B

How Snowdrops cold, and blue-eyed Harebels
blend

Their tender tears, as o'er the stream they bend;
The love-sick Violet, and the Primrose pale,
Bow their sweet heads, and whisper to the gale;
With secret sighs the Virgin Lily droops,
And jealous Cowslips hang their tawny cups.
How the young Rose in beauty's damask pride
Drinks the warm blushes of his bashful bride;
With honey'd lips enamour'd Woodbines meet,
Clasp with fond arms, and mix their kisses
sweet.—

20

Stay thy soft murmuring waters, gentle Rill;
Hush, whispering Winds; ye rustling Leaves, be
still;
Rest, silver Butterflies, your quivering wings;
Alight, ye Beetles, from your airy rings;

turalist, has demonstrated, that all flowers contain families of
males or females, or both; and on their marriages has con-
structed his invaluable system of Botany.

Ye painted Moths, your gold-eyed plumage furl,
Bow your wide horns, your spiral trunks uncurl;
Glitter, ye Glow-worms, on your mossy beds;
Descend, ye Spiders, on your lengthened threads;
Slide here, ye horned Snails, with varnish'd shells;
Ye Bee-nymphs, listen in your waxen cells! 30

BOTANIC MUSE! who in this latter age
Led by your airy hand the Swedish sage,
Bade his keen eye your secret haunts explore
On dewy dell, high wood, and winding shore;
Say on each leaf how tiny Graces dwell;
How laugh the Pleasures in a blossom's bell;
How infect Loves arise on cobweb wings,
Aim their light shafts, and point their little
stings.

“ First the tall CANNA lifts his curled brow
Erect to heaven, and plights his nuptial vow; 40

Canna. l. 39. Cane, or Indian Reed. One male and one

The virtuous pair, in milder regions born,
 Dread the rude blast of Autumn's icy morn ;
 Round the chill fair he folds his crimson vest,
 And clasps the timorous beauty to his breast.

Thy love, CALLITRICHE, *two* Virgins share,
 Smit with thy starry eye and radiant hair ;—
 On the green margin fits the youth, and laves
 His floating train of tresses in the waves ;
 Sees his fair features paint the streams that pass,
 And bends for ever o'er the watery glafs. 50

female inhabit each flower. It is brought from between the tropics to our hot-houses, and bears a beautiful crimson flower ; the seeds are used as shot by the Indians, and are strung for prayer-beads in some Catholic countries.

Callitriche. l. 45. Fine-hair, Stargrass. One male and two females inhabit each flower. The upper leaves grow in form of a star, whence it is called *Stellaria Aquatica* by Ray and others ; its stems and leaves float far on the water, and are often so matted together, as to bear a person walking on them. The male sometimes lives in a separate flower.

Two brother swains, of COLLIN's gentle name,
The same their features, and their forms the same,
With rival love for fair COLLINIA sigh,
Knit the dark brow, and roll the unsteady eye.
With sweet concern the pitying beauty mourns,
And sooths with smiles the jealous pair by turns.

Sweet blooms GENISTA in the myrtle shade,
And ten fond brothers woo the haughty maid.

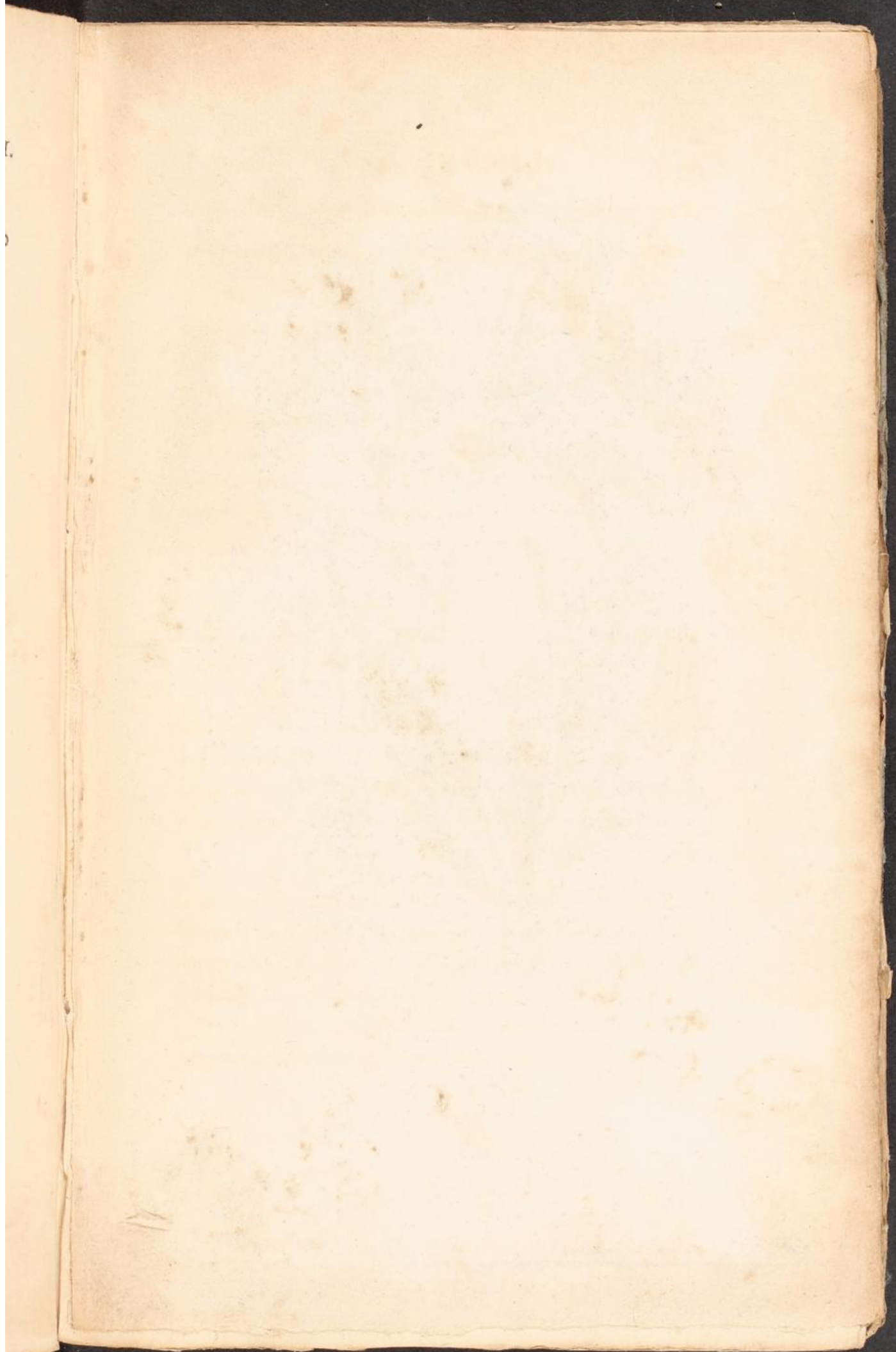
Collinsonia. l. 51. Two males one female. I have lately observed a very singular circumstance in this flower; the two males stand widely diverging from each other, and the female bends herself into contact first with one of them, and after some time leaves this and applies herself to the other. It is probable one of the anthers may be mature before the other. See note on *Gloriosa*, and *Genista*. The females in *Nigella*, devil in the bush, are very tall compared to the males; and bending over in a circle to them, give the flower some resemblance to a regal crown. The female of the *Epilobium Augustifolium*, rose bay willow herb, bends down amongst the males for several days, and becomes upright again when impregnated.

Genista. l. 57. Dyer's broom. Ten males and one female inhabit this flower. The males are generally united at the

Two knights before thy fragrant altar bend,
Adored MELISSA ! and two squires attend.— 60

bottom in two sets, whence Linneus has named the class “two brotherhoods.” In the Genista, however, they are united in but one set. The flowers of this class are called papilionaceous, from their resemblance to a butterfly, as the pea-blossom. In the Spartium Scoparium, or common broom, I have lately observed a curious circumstance, the males or stamens are in two sets, one set rising a quarter of an inch above the other; the upper set does not arrive at their maturity so soon as the lower, and the stigma, or head of the female, is produced amongst the upper or immature set; but as soon as the pistil grows tall enough to burst open the keel-leaf, or hood of the flower, it bends itself round in an instant, like a French horn, and inserts its head, or stigma, amongst the lower or mature set of males. The pistil, or female, continues to grow in length; and in a few days the stigma arrives again amongst the upper set, by the time they become mature. This wonderful contrivance is readily seen by opening the keel-leaf of the flowers of broom before they burst spontaneously. See note on Collinsonia, Gloriosa, Draba.

Melissa. l. 60. Balm. In each flower there are four males and one female; two of the males stand higher than the other two; whence the name of the class “two powers.” I have observed in the Ballota, and others of this class, that the two lower stamens, or males, become mature before the two higher. After they have shed their dust, they turn themselves away out-





Meadia.

CANTO I.
MEADIA
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MEADIA's soft chains *five* suppliant beaux confefs,
And hand in hand the laughing belle address;

wards, and the pistil, or female, continuing to grow a little taller, is applied to the upper stamens. See Gloriosa and Genista.

All the plants of this class, which have naked seeds, are aromatic. The Marum and Nepeta are particularly delightful to cats; no other brute animals seem delighted with any odours but those of their food or prey.

Meadia. 1. 61. Dodecatheon, American Cowslip. Five males and one female. The males, or anthers, touch each other. The uncommon beauty of this flower occasioned Linneus to give it a name signifying the twelve heathen gods; and Dr. Mead to affix his own name to it. The pistil is much longer than the stamens, hence the flower-stalks have their elegant bend, that the stigma may hang downwards to receive the fecundating dust of the anthers. And the petals are so beautifully turned back to prevent the rain or dew-drops from sliding down and washing off this dust prematurely; and at the same time exposing it to the light and air. As soon as the seeds are formed, it erects all the flower-stalks to prevent them from falling out, and thus loses the beauty of its figure. Is this a mechanical effect, or does it indicate a vegetable storge to preserve its offspring? See note on *Ilex*, and *Gloriosa*.

In the *Meadia*, the *Borago*, *Cyclamen*, *Solanum*, and many others, the filaments are very short compared with the style.

Alike to all, she bows with wanton air,
Rolls her dark eye, and waves her golden hair.

Woo'd with long care, CURCUMA, cold and shy,
Meets her fond husband with averted eye :

Hence it became necessary, 1st, to furnish the stamens with long anthers. 2d. To lengthen and bend the peduncle or flower-stalk, that the flower might hang downwards. 3d. To reflect the petals. 4th. To erect these peduncles when the germ was fecundated. We may reason upon this by observing, that all this apparatus might have been spared, if the filaments alone had grown longer; and that thence in these flowers that the filaments are the most unchangeable parts; and that thence their comparative length, in respect to the style, would afford a most permanent mark of their generic character.

Curcuma. l. 65. Turmeric. One male and one female inhabit this flower; but there are besides four imperfect males, or filaments without anthers upon them, called by Linneus eunuchs. The flax of our country has ten filaments, and but five of them are terminated with anthers; the Portugal flax has ten perfect males or stamens; the Verbena of our country has four males; that of Sweden has but two; the genus *Albuca*, the *Bignonia Catalpa*, *Gratiola*, and hemlock leaved *Geranium*, have only half their filaments crowned with anthers. In like manner the florets, which form the rays of the flowers of the

Four beardless youths the obdurate beauty move
With soft attentions of Platonic love.

order frustraneous polygamy of the class syngenesia, or confederate males, as the sun-flower, are furnished with a style only, and no stigma: and are thence barren. There is also a style without a stigma in the whole order diœcia gynandria; the male flowers of which are thence barren. The *Opulus* is another plant, which contains some unprolific flowers. In like manner some tribes of insects have males, females, and neuters among them; as bees, wasps, ants.

There is a curious circumstance belonging to the class of insects which have two wings, or diptera, analogous to the rudiments of stamens above described; viz. two little knobs are found placed each on a stalk or peduncle, generally under a little arched scale; which appear to be rudiments of hinder wings, and are called by Linneus halteres, or poisers, a term of his introduction. A. T. Bladh. *Amæn. Acad.* V. 7. Other animals have marks of having in a long process of time undergone changes in some parts of their bodies, which may have been effected to accommodate them to new ways of procuring their food. The existence of teats on the breasts of male animals, and which are generally replete with a thin kind of milk at their nativity, is a wonderful instance of this kind. Perhaps all the productions of nature are in their progress to greater perfection? an idea countenanced by the modern discoveries and deductions concerning the progressive formation of the solid parts of the terra-

With vain desires the pensive ALCEA burns,
 And, like sad ELOISA, loves and mourns. 70

queous globe, and consonant to the dignity of the Creator of all things.

Alcea. l. 69. Flore pleno. Double hollyhock. The double flowers, so much admired by the florists, are termed by the botanist vegetable monsters; in some of these the petals are multiplied three or four times, but without excluding the stamens, hence they produce some seeds, as Campanula and Stramoneum; but in others the petals become so numerous as totally to exclude the stamens or males; as Caltha, Peonia, and Alcea; these produce no seeds, and are termed eunuchs. Philof. Botan. No. 150.

These vegetable monsters are formed in many ways; 1st. By the multiplication of the petals and the exclusion of the nectaries, as in larkspur. 2d. By the multiplication of the nectaries and exclusion of the petals, as in columbine. 3d. In some flowers growing in cymes, the wheel-shape flowers in the margin are multiplied to the exclusion of the bell-shape flowers in the centre, as in gelder-rose. 4th. By the elongation of the florets in the centre. Instances of both these are found in daisy and feverfew; for other kinds of vegetable monsters, see Plantago.

The perianth is not changed in double flowers, hence the genus or family may be often discovered by the calyx, as in Hepatica, Ranunculus, Alcea. In those flowers, which have many petals, the lowest series of the petals remains unchanged in re-

The freckled IRIS owns a fiercer flame,
And *three* unjealous husbands wed the dame.

CUPRESSUS dark disdains his dusky bride,
One dome contains them, but *two* beds divide.

spect to number; hence the natural number of the petals is easily discovered. As in poppies, roses, and Nigella, or devil in a bush. Phil. Bot. p. 128.

Iris. l. 71. Flower de Luce. Three males, one female. Some of the species have a beautifully freckled flower; the large stigma or head of the female covers the three males, counterfeiting a petal with its divisions.

Cupressus. l. 73. Cypress. One house. The males live in separate flowers, but on the same plant. The males of some of these plants, which are in separate flowers from the females, have an elastic membrane; which disperses their dust to a considerable distance, when the anthers burst open. This dust, on a fine day, may often be seen like a cloud hanging round the common nettle. The males and females of all the cone bearing plants are in separate flowers, either on the same or on different plants; they produce resins, and many of them are supposed to supply the most durable timber: what is called Venice-turpentine is obtained from the larch by wounding the bark about two feet from the ground, and catching it as it exudes; Sandarach is procured from common juniper; and incense from a juniper with yellow fruit. The unperishable chests, which contain the Egyptian mummies, were of Cypress; and the Cedar, with

The proud OSYRIS flies his angry fair,
Two houses hold the fashionable pair.

With strange deformity PLANTAGO treads,
A monster-birth ! and lifts his hundred heads;

which black-lead pencils are covered, is not liable to be eaten by worms. See Miln's Bot. Dict. art. coniferæ. The gates of St. Peter's church at Rome, which had lasted from the time of Constantine to that of Pope Eugene the fourth, that is to say, eleven hundred years, were of Cypress, and had in that time suffered no decay. According to Thucydides, the Athenians buried the bodies of their heroes in coffins of Cypress, as being not subject to decay. A similar durability has also been ascribed to Cedar. Thus Horace,

————— *speramus carmina fingi*
Posse linenda cedro & lævi servanda cupresso.

Osyris. l. 75. Two houses. The males and females are on different plants. There are many instances on record, where female plants have been impregnated at very great distance from their male; the dust discharged from the anthers is very light, small, and copious, so that it may spread very wide in the atmosphere, and be carried to the distant pistils, without the supposition of any particular attraction; these plants resemble some insects, as the ants, and cochineal insect, of which the males have wings, but not the female.

Plantago. l. 77. *Rosea.* Rose-Plantain. In this vegetable

Yet with soft love a gentle belle he charms,
And clasps the beauty in his hundred arms. 80
So hapless *DESDEMONA*, fair and young,
Won by *OTHELLO*'s captivating tongue,
Sigh'd o'er each strange and piteous tale, distress'd,
And sunk enamour'd on his footy breast.

Two gentle shepherds and their sister-wives
With thee, *ANTHOXA*! lead ambrosial lives;

monster the bractes, or divisions of the spike, become wonderfully enlarged; and are converted into leaves. The chaffy scales of the calyx in *Xeranthemum*, and in a species of *Dianthus*, and the glume in some alpine grasses, and the scales of the ament in the *Salix Rosea*, rose willow, grow into leaves; and produce other kinds of monsters. The double flowers become monsters by the multiplication of their petals or nectaries. See note on *Alcea*.

Anthoxanthum. l. 86. Vernal grass. Two males, two females. The other grasses have three males and two females. The flowers of this grass give the fragrant scent to hay. I am informed it is frequently viviparous, that is, that it bears sometimes roots or bulbs instead of seeds, which after a time drop off and strike root into the ground. This circumstance is said to obtain in many

Where the wide heath in purple pride extends,
 And scatter'd furze its golden lustre blends,
 Clos'd in a green recess, unenvy'd lot!
 The blue smock rises from their turf-built cot; 90
 Bosom'd in fragrance blush their infant train,
 Eye the warm sun, or drink the silver rain.

The fair OSMUNDA seeks the silent dell,
 The ivy canopy, and dripping cell;

of the alpine grasses, whose seeds are perpetually devoured by small birds. The *Festuca Dumetorum*, fescue grass of the bushes, produces bulbs from the sheaths of its straw. The *Allium Magicum*, or magical onion, produces onions on its head instead of seeds. The *Polygonum Viviparum*, viviparous bistort, rises about a foot high, with a beautiful spike of flowers, which are succeeded by buds or bulbs, which fall off and take root. There is a bush frequently seen on birch-trees, like a bird's nest, which seems to be a similar attempt of nature to produce another tree; which falling off, might take root in spongy ground.

There is an instance of this double mode of production in the animal kingdom, which is equally extraordinary, the same species of *Aphis* is viviparous in summer, and oviparous in autumn. A. T. Bladh. Amæn. Acad. V. 7.

Osmunda. l. 93. This plant grows on moist rocks; the parts

There hid in shades *clandestine* rites approves,
Till the green progeny betrays her loves.

With charms despotic fair CHONDRILLA reigns
O'er the soft hearts of *five* fraternal swains;
If sighs the changeful nymph, alike they mourn;
And, if she smiles, with rival raptures burn. 100

of its flower or its seeds are scarce discernible; whence Linneus has given the name of clandestine marriage to this class. The younger plants are of a beautiful vivid green.

Chondrilla. l. 97. Of the class Confederate Males. The numerous florets, which constitute the disk of the flowers in this class, contain in each five males surrounding one female, which are connected at top, whence the name of the class. An Italian writer, in a discourse on the irritability of flowers, asserts, that if the top of the floret be touched, all the filaments which support the cylindrical anther will contract themselves, and that by thus raising or depressing the anther the whole of the prolific dust is collected on the stigma. He adds, that if one filament be touched after it is separated from the floret, that it will contract like the muscular fibres of animal bodies; his experiments were tried on the *Centaurea Calcitrapoides*, and on artichokes, and globe-thistles. Discourse on the irritability of plants. Dodfley.

So, tun'd in unison, Eolian Lyre!
 Sounds in sweet symphony thy kindred wire;
 Now, gently swept by Zephyr's vernal wings,
 Sink in soft cadences the love-sick strings;
 And now with mingling chords, and voices higher,
 Peal the full anthems of the ærial choir.

Five sister-nymphs to join Diana's train
 With thee, fair LYCHNIS! vow,—but vow in
 vain;

Beneath one roof resides the virgin band,
 Flies the fond swain, and scorns his offer'd hand;
 But when soft hours on breezy pinions move, III
 And smiling May attunes her lute to love,

Lychnis. l. 108. Ten males and five females. The flowers which contain the five females, and those which contain the ten males, are found on different plants; and often at a great distance from each other. Five of the ten males arrive at their maturity some days before the other five, as may be seen by opening the corol before it naturally expands itself. When the females arrive at their maturity, they rise above the petals, as if looking abroad for their distant husbands; the scarlet ones contribute much to the beauty of our meadows in May and June.

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Gloriosa Superba.

Each wanton beauty, trick'd in all her grace,
Shakes the bright dew-drops from her blushing
face ;

In gay undress displays her rival charms,
And calls her wondering lovers to her arms.

When the young Hours amid her tangled hair
Wove the fresh rose-bud, and the lily fair,
Proud GLORIOSA led *three* chosen swains,
The blushing captives of her virgin chains.— 120

Gloriosa. l. 119. *Superba*. Six males, one female. The petals of this beautiful flower with three of the stamens, which are first mature, stand up in apparent disorder ; and the pistil bends at nearly a right angle to insert its stigma amongst them. In a few days, as these decline, the other three stamens bend over, and approach the pistil. In the *Fritillaria Persica*, the six stamens are of equal lengths, and the anthers lie at a distance from the pistil, and three alternate ones approach first ; and, when these decline, the other three approach : in the *Lithrum Salicaria*, (which has twelve males and one female) a beautiful red flower, which grows on the banks of rivers, six of the males arrive at maturity, and surround the female some time before the other six ; when these decline, the other six rise up,

—When Time's rude hand a bark of wrinkles
spread

Round her weak limbs, and silver'd o'er her head,
Three other youths her riper years engage,
The flatter'd victims of her wily age.

So, in her wane of beauty, NINON won
With fatal smiles her gay unconscious son.—
Clasp'd in his arms she own'd a mother's name,—
“ Desist, rash youth ! restrain your impious flame,
“ First on that bed your infant form was press'd,
“ Born by my throes, and nurtured at my breast.”
Back as from death he sprung, with wild amaze
Fierce on the fair he fix'd his ardent gaze ; 132

and supply their places. Several other flowers have in a similar manner two sets of stamens of different ages, as *Adoxa*, *Lychnis*, *Saxifraga*. See *Genista*. Perhaps a difference in the time of their maturity obtains in all these flowers, which have numerous stamens. In the *Kalmia* the ten stamens lie round the pistil like the radii of a wheel ; and each anther is concealed in a nich of the corol to protect it from cold and moisture ; these anthers rise separately from their niches, and approach the pistil for a time, and then recede to their former situations.

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Dropp'd on one knee, his frantic arms outspread,
And stole a guilty glance toward the bed ;
Then breath'd from quivering lips a whisper'd vow,
And bent on heaven his pale repentant brow ;
“ Thus, thus !” he cried, and plung'd the furious
 dart,
And life and love gush'd mingled from his heart.

The fell *SILENE*, and her sisters fair, 139
Skill'd in destruction, spread the viscous snare,

Silene. l. 139. Catchfly. Three females and ten males inhabit each flower ; the viscous material, which surrounds the stalks under the flowers of this plant, and of the *Cucubalus Otites*, is a curious contrivance to prevent various insects from plundering the honey, or devouring the seed. In the *Dionæa Muscipula* there is a still more wonderful contrivance to prevent the depredations of insects : the leaves are armed with long teeth, like the antennæ of insects, and lie spread upon the ground round the stem ; and are so irritable, that when an insect creeps upon them, they fold up, and crush or pierce it to death. The last professor Linneus, in his *Supplementum Plantarum*, gives the following account of the *Arum Muscivorum*. The flower has the smell of carrion ; by which the flies are invited to lay their eggs in the chamber of the flower, but in vain endeavour to escape, being prevented by the hairs pointing in-

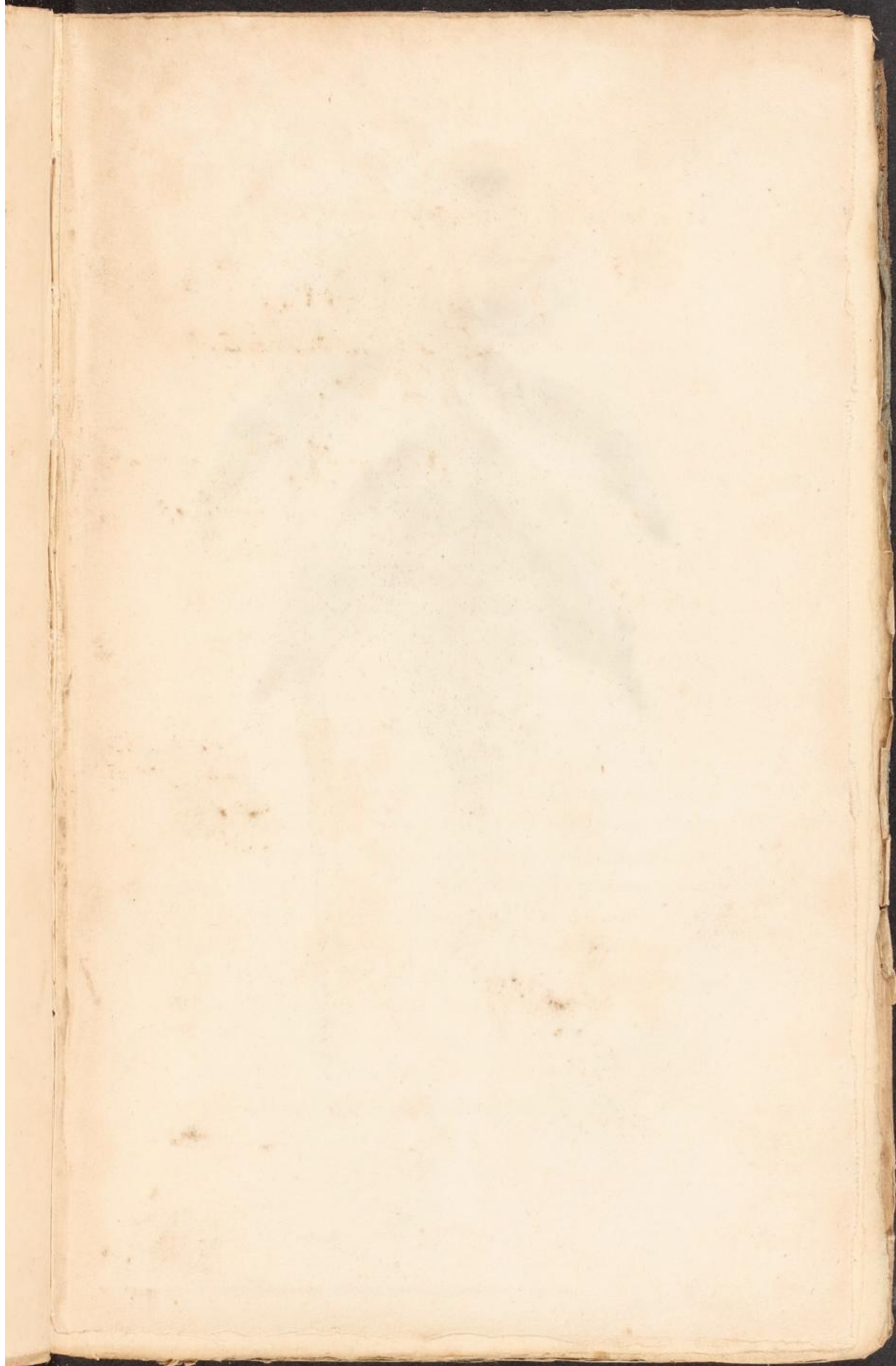
The harlot-band *ten* lofty bravoës screen,
 And, frowning, guard the magic nets unseen.
 Haste, glittering nations, tenants of the air,
 Oh, steer from hence your viewless course afar!
 If with soft words, sweet blushes, nods, and
 smiles,
 The *three* dread Syrens lure you to their toils,
 Limed by their art, in vain you point your stings,
 In vain the efforts of your whirring wings!—
 Go, seek your gilded mates and infant hives, 149
 Nor taste the honey purchas'd with your lives!

When heaven's high vault condensing clouds
 deform,

Fair AMARYLLIS flies the incumbent storm,

wards; and thus perish in the flower, whence its name of fly-
 eater. P. 411. In the *Dypfacus* is another contrivance for this
 purpose, a basin of water is placed round each joint of the stem.
 In the *Drosera* is another kind of fly-trap. See *Dypfacus* and
Drosera; the flowers of *Silène* and *Cucúbalus* are closed all day,
 but are open and give an agreeable odour in the night. See
Cerea. See additional notes at the end of the poem.

Amaryllis: l. 152. *Formosissima*. Most beautiful *Amaryllis*!





Amaryllis formosissima.

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Seeks with unsteady step the shelter'd vale,
And turns her blushing beauties from the gale.—

lis. Six males, one female. Some of the bell-flowers close their apertures at night, or in rainy or cold weather, as the convolvulus, and thus protect their included stamens and pistils. Other bell-flowers hang their apertures downwards, as many of the lilies; in those the pistil, when at maturity, is longer than the stamens; and by this pendant attitude of the bell, when the anthers burst, their dust falls on the stigma; and these are at the same time sheltered as with an umbrella from rain and dews. But, as a free exposure to the air is necessary for their fecundation, the style and filaments in many of these flowers continue to grow longer after the bell is open, and hang down below its rim. In others, as in the Martagon, the bell is deeply divided, and the divisions are reflected upwards, that they may not prevent the access of air, and at the same time afford some shelter from perpendicular rain or dew. Other bell flowers, as the *Hemerocallis* and *Amaryllis*, have their bells nodding only, as it were, or hanging obliquely towards the horizon; which, as their stems are slender, turn like a weathercock from the wind, and thus very effectually preserve their inclosed stamens and anthers from the rain and cold. Many of these flowers, both before and after their season of fecundation, erect their heads perpendicular to the horizon, like the *Meadia*, which cannot be explained from mere mechanism.

The *Amaryllis Formosissima* is a flower of the last mentioned kind, and affords an agreeable example of *art* in the vegetable economy. 1. The pistil is of great length compared with the

Six rival youths, with soft concern impress'd,
 Calm all her fears, and charm her cares to rest.—
 So shines at eve the sun-illumin'd fane,
 Lifts its bright cross, and waves its golden vane ;
 From every breeze the polish'd axle turns,
 And high in air the dancing meteor burns. 160

Four of the giant brood with ILEX stand,
 Each grasps a thousand arrows in his hand;

stamens ; and this I suppose to have been the most unchangeable part of the flower, as in Meadia, which see. 2. To counteract this circumstance, the pistil and stamens are made to decline downwards, that the prolific dust might fall from the anthers on the stigma. 3. To produce this effect, and to secure it when produced, the corol is lacerated, contrary to what occurs in other flowers of this genus, and the lowest division with the two next lowest ones are wrapped closely over the style and filaments, binding them forcibly down lower towards the horizon than the usual inclination of the bell in this genus, and thus constitutes a most elegant flower. There is another contrivance for this purpose in the Hemerocallis Flava : the long pistil often is bent somewhat like the capital letter N, with design to shorten it, and thus to bring the stigma amongst the anthers.

Ilex. l. 161. Holly. Four males, four females. Ma ny

A thousand steely points on every scale
Form the bright terrors of his bristly mail.—

plants, like many animals, are furnished with arms for their protection; these are either aculei, prickles, as in rose and barberry, which are formed from the outer bark of the plant; or spinæ, thorns, as in hawthorn, which are an elongation of the wood, and hence more difficult to be torn off than the former; or stimuli, stings, as in the nettles, which are armed with a venomous fluid for the annoyance of naked animals. The shrubs and trees, which have prickles or thorns, are grateful food to many animals, as gooseberry and gorse; and would be quickly devoured, if not thus armed; the stings seem a protection against some kinds of insects, as well as the naked mouths of quadrupeds. Many plants lose their thorns by cultivation, as wild animals lose their ferocity; and some of them their horns. A curious circumstance attends the large hollies in Needwood forest; they are armed with thorny leaves about eight feet high, and have smooth leaves above, as if they were conscious that horses and cattle could not reach their upper branches. See note on Meadia, and on Mancinella. The numerous clumps of hollies in Needwood forest serve as land-marks to direct the travellers across it in various directions; and as a shelter to the deer and cattle in winter; and in scarce seasons supply them with much food. For when the upper branches, which are without prickles, are cut down, the deer crop the leaves and peel off the bark. The bird-lime made from the bark of hollies seems to be

So arm'd, immortal Moore uncharm'd the spell,
 And slew the wily dragon of the well.—
 Sudden with rage their *injur'd* bosoms burn,
 Retort the insult, or the wound return ;
Unwrong'd, as gentle as the breeze that sweeps
 The unbending harvests or undimpled deeps, 170
 They guard, the Kings of Needwood's wide do-
 mains,
 Their sister-wives and fair infantine trains ;
 Lead the lone pilgrim through the trackless glade,
 Or guide in leafy wilds the wandering maid.

So WRIGHT's bold pencil from Vesuvio's hight
 Hurls his red lavas to the troubled night ;

a very similar material to the elastic gum, or Indian rubber, as it is called. There is a fossile elastic bitumen found at Matlock in Derbyshire, which much resembles these substances in its elasticity and inflammability. The thorns of the Mimosa Cornigera resemble cow's horns in appearance as well as in use. System of Vegetables, p. 782.

Hurls his red lavas. l. 176. Alluding to the grand paintings of the eruptions of Vesuvius, and of the destruction of the

From Calpe starts the intolerable flash,
Skies burst in flames, and blazing oceans dash;—
Or bids in sweet repose his shades recede,
Winds the still vale, and slopes the velvet mead;
On the pale stream expiring Zephyrs sink, 181
And Moonlight sleeps upon its hoary brink.

Gigantic Nymph! the fair KLEINHOVIA reigns,
The grace and terror of Orixá's plains;

Spanish vessels before Gibraltar; and to the beautiful landscapes
and moonlight scenes, by Mr. Wright of Derby.

Kleinbovia. l. 183. In this class the males in each flower
are supported by the female. The name of the class may be
translated "Viragoes," or "Feminine Males."

The largest tree perhaps in the world is of the same natural
order as *Kleinbovia*; it is the *Adansonia*, or Ethiopian Sour-
gourd, or African Calabash-tree. Mr. Adanson says the diame-
ter of the trunk frequently exceeds 25 feet, and the horizon-
tal branches are from 45 to 55 feet long, and so large that each
branch is equal to the largest trees of Europe. The breadth of
the top is from 120 to 150 feet; and one of the roots bared only
in part by the washing away of the earth from the river, near

O'er her warm cheek the blush of beauty swims,
And nerves Herculean bend her sinewy limbs;
With frolic eye she views the affrighted throng,
And shakes the meadows as she towers along;
With playful violence displays her charms,
And bears her trembling lovers in her arms. 190
So fair THALESTRIS shook her plummy crest,
And bound in rigid mail her jutting breast;
Poised her long lance amid the walks of war,
And Beauty thunder'd from Bellona's car;
Greece arm'd in vain, her captive heroes wove
The chains of conquest with the wreaths of love.

When o'er the cultured lawns and dreary wastes
Retiring Autumn flings her howling blasts,
Bends in tumultuous waves the struggling woods,
And showers their leafy honours on the floods,
In withering heaps collects the flowery spoil, 201
And each chill insect sinks beneath the soil;

which it grew, measured 110 feet long; and yet these stupen-
dous trees never exceed 70 feet in height. Voyage to Senegal.

Quick flies fair TULIPA the loud alarms,
And folds her infant cloſer in her arms ;
In ſome lone cave, ſecure pavilion, lies,
And waits the courtſhip of ſerener ſkies.—

Tulipa. l. 203. Tulip. What is in common language called a bulbous-root, is by Linneus termed the Hybernacle, or Winter-lodge of the young plant. As theſe bulbs in every reſpect reſemble buds, except in their being produced under ground, and include the leaves and flower in miniature, which are to be expanded in the enſuing ſpring. By cautiously cutting in winter through the concentric coats of a tulip-root, longitudinally from the top to the baſe, and taking them off ſucceſſively, the whole flower of the next ſummer's tulip is beautifully ſeen by the naked eye, with its petals, piſtil, and ſtamens ; the flowers exiſt in other bulbs, in the ſame manner, as in Hyacinths, but the individual flowers of theſe being leſs, they are not ſo eaſily diſſected, or ſo conſpicuous to the naked eye.

In the ſeeds of the *Nymphæa Nelumbo*, the leaves of the plant are ſeen ſo diſtinctly, that Mr. Ferber found out by them to what plant the ſeeds belonged. *Amæn. Acad. V. vi. No. 120.* He ſays that Mariotte firſt obſerved the future flower and foliage in the bulb of a Tulip ; and adds, that it is pleaſant to ſee in the buds of the *Hepatica* and *Pedicularis hircuta*, yet lying in the earth ; and in the gems of *Daphne Mezereon* ; and at the baſe of *Oſmunda Lunaria*, a perfect plant of the future year complete in all its parts. *Ibid.*

So, six cold moons, the Dormouse charm'd to rest,
 Indulgent Sleep! beneath thy eider breast,
 In fields of Fancy climbs the kernel'd groves,
 Or shares the golden harvest with his loves.— 210
 Then bright from earth amid the troubled sky
 Ascends fair COLCHICA with radiant eye,

Colchicum autumnale. L. 212. Autumnal Meadow-saffron. Six males, three females. The germ is buried within the root, which thus seems to constitute a part of the flower. Families of Plants, p. 242. These singular flowers appear in the autumn without any leaves, whence in some countries they are called Naked Ladies: in the March following the green leaves spring up, and in April the seed-vessel rises from the ground; the seeds ripen in May, contrary to the usual habits of vegetables, which flower in the spring, and ripen their seeds in the autumn. Miller's Dict. The juice of the root of this plant is so acrid as to produce violent effects on the human constitution, which also prevents it from being eaten by subterranean insects, and thus guards the seed-vessel during the winter. The defoliation of deciduous trees is announced by the flowering of the Colchicum; of these the ash is the last that puts forth its leaves, and the first that loses them. Phil. Bot. p. 275.

The Hamamelis, Witch Hazel, is another plant which flowers in autumn; when the leaves fall off, the flowers come out in clusters from the joints of the branches, and in Virginia

Warms the cold bosom of the hoary year,
 And lights with Beauty's blaze the dusky sphere.
Three blushing Maids the intrepid Nymph attend,
 And *six* gay Youths, enamour'd train! defend.
 So shines with silver guards the Georgian star,
 And drives on Night's blue arch his glittering car;
 Hangs o'er the billowy clouds his lucid form, 219
 Wades through the mist, and dances in the storm.

GREATHELIANTHUS guides o'er twilight plains
 In gay solemnity his Dervise-trains;

ripen their seed in the ensuing spring; but in this country their seeds seldom ripen. Lin. Spec. Plant. Miller's Dict.

Helianthus. l. 221. Sun flower. The numerous florets which constitute the disk of this flower, contain in each five males surrounding one female, the five stamens have their anthers connected at top, whence the name of the class "confederate males;" see note on *Chondrilla*. The sun-flower follows the course of the sun by nutation, not by twisting its stem. (Hales veg. stat.) Other plants, when they are confined in a room, turn the shining surface of their leaves, and bend their whole branches to the light. See *Mimosa*.

Marshall'd in *fives* each gaudy band proceeds,
 Each gaudy band a plumed Lady leads;
 With zealous step he climbs the upland lawn,
 And bows in homage to the rising dawn;
 Imbibes with eagle eye the golden ray,
 And watches, as it moves, the orb of day. 228

QUEEN of the marsh imperial *DROSERA* treads
 Rush-fringed banks, and moss-embroider'd beds;

A plumed Lady leads. l. 224. The seeds of many plants of this class are furnished with a plume, by which admirable mechanism they are disseminated by the winds far from their parent stem, and look like a shuttlecock, as they fly. Other seeds are disseminated by animals; of these some attach themselves to their hair or feathers by a gluten, as mistletoe; others by hooks, as cleavers, burdock, hounds-tongue; and others are swallowed whole for the sake of the fruit, and voided uninjured, as the hawthorn, juniper, and some grasses. Other seeds again disperse themselves by means of an elastic seed-vessel, as Oats, Geranium, and Impatiens; and the seeds of aquatic plants, and of those which grow on the banks of rivers, are carried many miles by the currents, into which they fall. See Impatiens. *Zostera*. *Cassia*. *Carlina*.

Drosera. l. 229. Sun-dew. Five males, five females. The

Redundant folds of glossy filk furround
Her slender waist, and trail upon the ground ;
Five sister-nymphs collect with graceful ease,
Or spread the floating purple to the breeze ;
And *five* fair youths with duteous love comply
With each soft mandate of her moving eye.
As with sweet grace her snowy neck she bows,
A zone of diamonds trembles round her brows ;

leaves of this marsh-plant are purple, and have a fringe very unlike other vegetable productions. And, which is curious, at the point of every thread of this erect fringe stands a pellucid drop of mucilage, resembling an earl's coronet. This mucus is a secretion from certain glands, and like the viscous material round the flower-stalks of *Silene* (catchfly) prevents small insects from infesting the leaves. As the ear-wax in animals seems to be in part designed to prevent fleas and other insects from getting into their ears. See *Silene*. Mr. Wheatly, an eminent surgeon in Cateaton-street, London, observed these leaves to bend upwards when an insect settled on them, like the leaves of the *Muscipula Veneris*, and pointing all their globules of mucus to the centre, that they completely intangled and destroyed it. M. Broussonet, in the *Mem. de l'Acad. des Sciences* for the year 1784, p. 615, after having described the motion of the *Dionæa*, adds, that a similar appearance has been observed in the leaves of two species of *Drosera*.

Bright shines the silver halo, as she turns ;

And, as she steps, the living lustre burns. 240

Fair LONICERA prints the dewy lawn,
And decks with brighter blush the vermil dawn ;

Lonicera. l. 241. *Caprifolium*, Honeyfuckle. Five males, one female. Nature has in many flowers used a wonderful apparatus to guard the nectary or honey gland from insects. In the honeyfuckle the petal terminates in a long tube like a cornucopiæ, or horn of plenty ; and the honey is produced at the bottom of it. In *Aconitum*, monks-hood, the nectaries stand upright like two horns covered with a hood, which abounds with such acrid matter that no insects penetrate it. In *Helleborus*, hellebore, the many nectaries are placed in a circle like little pitchers, and add much to the beauty of the flower. In the columbine, *Aquilegia*, the nectary is imagined to be like the neck and body of a bird, and the two petals standing upon each side to represent wings ; whence its name of columbine, as if resembling a nest of young pigeons fluttering whilst their parent feeds them. The importance of the nectary in the economy of vegetation is explained at large in the notes on part the first.

Many insects are provided with a long and pliant proboscis for the purpose of acquiring this grateful food, as a variety of bees, moths, and butterflies : but the Sphinx *Convolvuli*, or unicorn moth, is furnished with the most remarkable proboscis in this climate. It carries it rolled up in concentric circles under its

Winds round the shadowy rocks, and fancied vales,
And scents with sweeter breath the summer-gales,
With artless grace and native ease she charms,
And bears the horn of plenty in her arms.

Five rival Swains their tender cares unfold,
And watch with eye askance the treasured gold.

chin, and occasionally extends it to above three inches in length. This trunk consists of joints and muscles, and seems to have more versatile movements than the trunk of the elephant; and near its termination is split into two capillary tubes. The excellence of this contrivance for robbing the flowers of their honey, keeps this beautiful insect fat and bulky; though it flies only in the evening, when the flowers have closed their petals, and are thence more difficult of access; and at the same time the brilliant colours of the moth contribute to its safety, by making it mistaken by the late sleeping birds for the flower it rests on.

Besides these there is a curious contrivance attending the Ophrys, commonly called the Bee-orchis, and the Fly-orchis, with some kinds of the Delphinium, called Bee-larkspurs, to preserve their honey; in these the nectary and petals resemble in form and colour the insects which plunder them; and thus it may be supposed, they often escape these hourly robbers, by having the appearance of being pre-occupied. See note on Rubia, and *Conserva Polymorpha*, and on *Epidendrum*.

Where rears huge Tenerif his azure crest,
 Aspiring DRABA builds her eagle nest; 250
 Her pendant eery icy caves surround,
 Where erst Volcanoes mined the rocky ground.
 Pleased round the Fair *four* rival Lords ascend
 The shaggy steeps, *two* menial youths attend.
 High in the setting ray the beauty stands,
 And her tall shadow waves on distant lands.

Draba. l. 250. Alpina. Alpine Whitlow-grafs. One female and six males. Four of these males stand above the other two; whence the name of the class "four powers." I have observed in several plants of this class, that the two lower males arise, in a few days after the opening of the flower, to the same height as the other four, not being mature as soon as the higher ones. See note on *Gloriosa*. All the plants of this class possess similar virtues; they are termed acrid and antiscorbutic in their raw state, as mustard, watercress; when cultivated and boiled, they become a mild wholesome food, as cabbage, turnep.

There was formerly a Volcano on the Peak of Tenerif, which became extinct about the year 1684. *Philos. Trans.* In many excavations of the mountain, much below the summit, there is now found abundance of ice at all seasons. *Tench's Expedition to Botany Bay*, p. 12. Are these congelations in consequence of the daily solution of the hoar-frost, which is produced on the summit during the night?

Oh, stay, bright habitant of air, alight,
Celestial VISCA, from thy angel-flight!—

— Scorning the fordid foil, aloft she springs,
Shakes her white plume, and claps her golden
wings; 260

High o'er the fields of boundless ether roves,
And seeks amid the clouds her soaring loves!

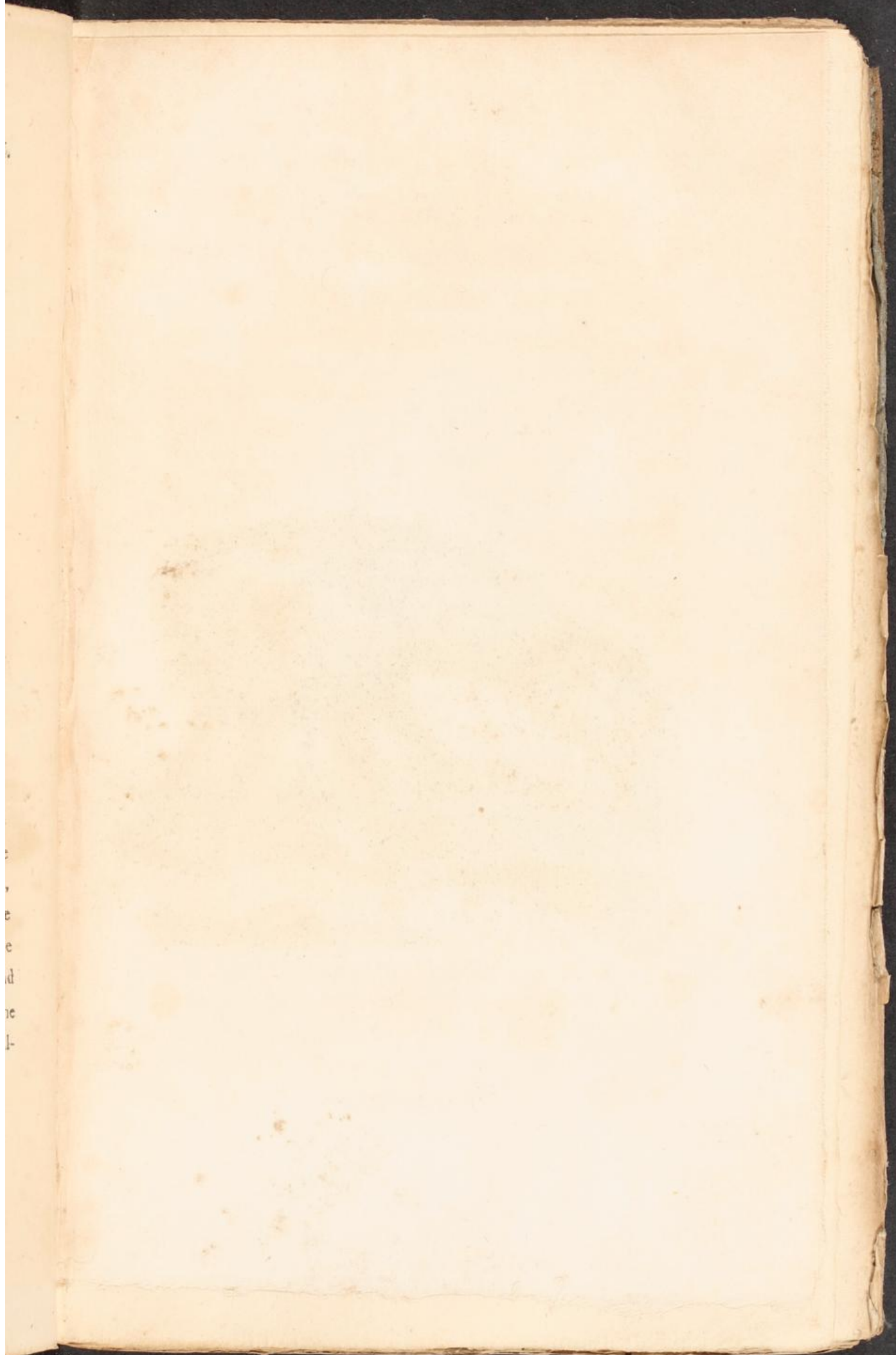
Stretch'd on her mossy couch, in trackless deeps,
Queen of the coral groves, ZOSTERA sleeps;

Viscum. l. 258. Mistletoe. Two houses. This plant never grows upon the ground; the foliage is yellow, and the berries milk-white; the berries are so viscous, as to serve for bird-lime; and when they fall, adhere to the branches of the tree, on which the plant grows, and strike root into its bark, or are carried to distant trees by birds. The *Tillandsia*, or wild pine, grows on other trees, like the Mistletoe, but takes little or no nourishment from them, having large buckets in its leaves to collect and retain the rain water. See note on *Dypfacus*. The mosses, which grow on the bark of trees, take much nourishment from them; hence it is observed that trees, which are annually cleared from moss by a brush, grow nearly twice as fast. (Phil. Transact.) In the cyder countries the peasants brush their apple-trees annually. See *Epidendrum*.

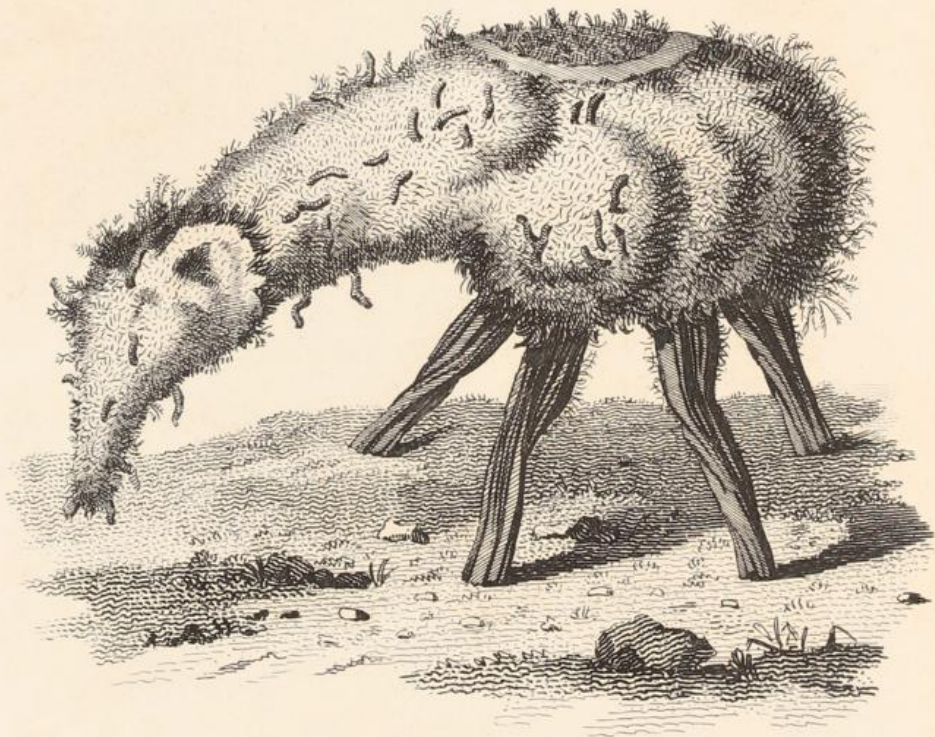
Zostera. l. 264. Grass-wrack. Class, Feminine Males. Or-

The silvery sea-weed matted round her bed,
And distant surges murmuring o'er her head.—
High in the flood her azure dome ascends,
The crystal arch on crystal columns bends;

der, many Males. It grows at the bottom of the sea, and rising to the surface when in flower, covers many leagues; and is driven at length to the shore. During its time of floating on the sea, numberless animals live on the under surface of it; and being specifically lighter than the sea-water, or being repelled by it, have legs placed as it were on their backs for the purpose of walking under it. As the Scyllœa. See Barbut's *Genera Vermium*. It seems necessary that the marriages of plants should be celebrated in the open air, either because the powder of the anther, or the mucilage on the stigma, or the reservoir of honey might receive injury from the water. Mr. Needham observed, that in the ripe dust of every flower, examined by the microscope, some vesicles are perceived, from which a fluid had escaped; and that those, which still retain it, explode if they be wetted, like an eolipile suddenly exposed to a strong heat. These observations have been verified by Spallanzani and others. Hence rainy seasons make a scarcity of grain, or hinder its fecundity, by bursting the pollen before it arrives at the moist stigma of the flower. Spallanzani's *Dissertations*, v. II. p. 321. Thus the flowers of the male *Vallisneria* are produced under water, and when ripe detach themselves from the plant, and rising to the surface are wafted by the air to the female flowers. See *Vallisneria*.



The Tartarian Lamb.



Barometz.

Roof'd with translucent shell the turrets blaze,
 And far in ocean dart their colour'd rays; 270
 O'er the white floor successive shadows move,
 As rise and break the ruffled waves above.—
 Around the nymph her mermaid-trains repair,
 And weave with orient pearl her radiant hair;
 With rapid fins she cleaves the watery way,
 Shoots like a silver meteor up to day;
 Sounds a loud conch, convokes a scaly band,
 Her sea-born lovers, and ascends the strand.

E'en round the pole the flames of Love aspire,
 And icy bosoms feel the *secret* fire!— 280
 Cradled in snow and fann'd by arctic air
 Shines, gentle BAROMETZ! thy golden hair;

Barometz. l. 282. Polypodium Barometz. Tartarian Lamb.
 Clandestine Marriage. This species of Fern is a native of China,
 with a decumbent root, thick, and every where covered with the
 most soft and dense wool, intensely yellow. Lin. Spec. Plant.

This curious stem is sometimes pushed out of the ground in
 its horizontal situation by some of the inferior branches of the
 root, so as to give it some resemblance to a Lamb standing on
 four legs; and has been said to destroy all other plants in its vi-

Rooted in earth each cloven hoof descends,
And round and round her flexile neck she bends;

cinity. Sir Hans Sloane describes it under the name of Tartarian Lamb, and has given a print of it. *Philos. Transf. abridged*, v. 11, p. 646. but thinks some art had been used to give it an animal appearance. Dr. Hunter, in his edition of the *Terra of Evelyn*, has given a more curious print of it, much resembling a sheep. The down is used in India externally for stopping hemorrhages, and is called golden moss.

The thick downy clothing of some vegetables seems designed to protect them from the injuries of cold, like the wool of animals. Those bodies, which are bad conductors of electricity, are also bad conductors of heat, as glass, wax, air. Hence either of the two former of these may be melted by the flame of a blow-pipe very near the fingers which hold it without burning them; and the last, by being confined on the surface of animal bodies, in the interstices of their fur or wool, prevents the escape of their natural warmth; to which should be added, that the hairs themselves are imperfect conductors. The fat or oil of whales, and other northern animals, seems designed for the same purpose of preventing the too sudden escape of the heat of the body in cold climates. Snow protects vegetables which are covered by it from cold, both because it is a bad conductor of heat itself, and contains much air in its pores. If a piece of camphor be immersed in a snow-ball, except one extremity of it, on setting fire to this, as the snow melts, the water becomes absorbed into the surrounding snow by capillary attraction; on this account, when living animals are buried in snow, they are not moistened by it;

Crops the gray coral moss, and hoary thyme,
 Or laps with rosy tongue the melting rime.
 Eyes with mute tendernefs her distant dam,
 Or seems to bleat, a *Vegetable Lamb*.
 —So, warm and buoyant in his oily mail,
 Gambols on seas of ice the unwieldy Whale; 290
 Wide waving fins round floating islands urge
 His bulk gigantic through the troubled surge;
 With hideous yawn the flying shoals he seeks,
 Or clasps with fringe of horn his massy cheeks;
 Lifts o'er the tossing wave his nostrils bare,
 And spouts pellucid columns into air;
 The silvery arches catch the setting beams,
 And transient rainbows tremble o'er the streams.

Weak with nice sense the chaste MIMOSA
 stands,
 From each rude touch withdraws her timid
 hands; 300

but the cavity enlarges as the snow dissolves, affording them both
 a dry and warm habitation.

Mimosa. l. 299. The sensitive plant. Of the class Polygamy,

Oft as light clouds o'erpass the summer-glade,
Alarm'd she trembles at the moving shade ;

one house. Naturalists have not explained the immediate cause of the collapsing of the sensitive plant; the leaves meet and close in the night during the sleep of the plant, or when exposed to much cold in the day-time, in the same manner as when they are affected by external violence, folding their upper surfaces together, and in part over each other like scales or tiles, so as to expose as little of the upper surface as may be to the air; but do not indeed collapse quite so far, since I have found, when touched in the night during their sleep, they fall still farther; especially when touched on the foot-stalks between the stems and the leaflets, which seems to be their most sensitive or irritable part. Now, as their situation after being exposed to external violence resembles their sleep, but with a greater degree of collapse, may it not be owing to a numbness or paralysis consequent to too violent irritation, like the faintings of animals from pain or fatigue? I kept a sensitive plant in a dark room till some hours after day-break; its leaves and leaf-stalks were collapsed as in its most profound sleep, and on exposing it to the light, above twenty minutes passed before the plant was thoroughly awake and had quite expanded itself. During the night the upper or smoother surfaces of the leaves are appressed together; this would seem to shew that the office of this surface of the leaf was to expose the fluids of the plant to the light as well as to the air. See note on *Helianthus*. Many flowers close up their petals during the night. See note on vegetable respiration in Part I.

And feels, alive through all her tender form,
The whisper'd murmurs of the gathering storm;
Shuts her sweet eye-lids to approaching night,
And hails with freshen'd charms the rising light.
Veil'd, with gay decency and modest pride,
Slow to the mosque she moves, an eastern bride;
There her soft vows unceasing love record,
Queen of the bright seraglio of her lord.— 310
So sinks or rises with the changeful hour
The liquid silver in its glassy tower.
So turns the needle to the pole it loves,
With fine librations quivering, as it moves.

All wan and shivering in the leafless glade
The sad ANEMONE reclin'd her head;

Anemone. l. 316. Many males, many females. Pliny says this flower never opens its petals but when the wind blows; whence its name: it has properly no calyx, but two or three sets of petals, three in each set, which are folded over the stamens and pistil in a singular and beautiful manner, and differs also from ranunculus in not having a melliferous pore on the claw of each petal.

Grief on her cheeks had paled the roseate hue,
 And her sweet eye-lids dropp'd with pearly dew.
 —“ See, from bright regions, born on odorous
 gales

“ The Swallow, herald of the summer, fails; 320

The Swallow. l. 320. There is a wonderful conformity between the vegetation of some plants, and the arrival of certain birds of passage. Linneus observes that the wood anemone blows in Sweden on the arrival of the swallow; and the marsh mary-gold, *Caltha*, when the cuckoo sings. Near the same coincidence was observed in England by Stillingfleet. The word *Coccux* in Greek signifies both a young fig and a cuckoo, which is supposed to have arisen from the coincidence of their appearance in Greece. Perhaps a similar coincidence of appearance in some part of Asia gave occasion to the story of the love of the rose and nightingale, so much celebrated by the eastern poets. See *Dianthus*. The times however of the appearance of vegetables in the spring seem occasionally to be influenced by their acquired habits, as well as by their sensibility to heat: for the roots of potatoes, onions, &c. will germinate with much less heat in the spring than in the autumn; as is easily observable where these roots are stored for use; and hence malt is best made in the spring. 2d. The grains and roots brought from more southern latitudes germinate here sooner than those which are brought from more northern ones, owing to their acquired habits. For-

“ Breathe, gentle AIR! from cherub-lips impart
“ Thy balmy influence to my anguish'd heart ;

dyce on Agriculture. 3d. It was observed by one of the scholars of Linneus, that the apple trees sent from hence to New England blossomed for a few years too early for that climate, and bore no fruit ; but afterwards learnt to accommodate themselves to their new situation. (Kalm's Travels.) 4th. The parts of animals become more sensible to heat after having been previously exposed to cold, as our hands glow on coming into the house after having held snow in them ; this seems to happen to vegetables ; for vines in grape-houses, which have been exposed to the winter's cold, will become forwarder and more vigorous than those which have been kept during the winter in the house. (Kennedy on Gardening.) This accounts for the very rapid vegetation in the northern latitudes after the solution of the snows.

The increase of the irritability of plants in respect to heat, after having been previously exposed to cold, is farther illustrated by an experiment of Dr. Walker's. He cut apertures into a birch-tree at different heights ; and on the 26th of March some of these apertures bled, or oozed with the sap-juice, when the thermometer was at 39 ; which same apertures did not bleed on the 13th of March, when the thermometer was at 44. The reason of this I apprehend was, because on the night of the 25th the thermometer was as low as 34 ; whereas on the night of the 12th it was at 41 ; though the ingenious author ascribes it to another cause. Transf. of the Royal Soc. of Edinburgh, v. 1. p. 19.

“Thou, whose soft voice calls forth the tender
“blooms,

“Whose pencil paints them, and whose breath
“perfumes;

“Oh chase the Fiend of Frost, with leaden mace

“Who seals in death-like sleep my hapless race;

“Melt his hard heart, release his iron hand,

“And give my ivory petals to expand.

“So may each bud, that decks the brow of
“spring, 329

“Shed all its incense on thy wafting wing!”—

To her fond prayer propitious Zephyr yields,

Sweeps on his sliding shell through azure fields,

O'er her fair mansion waves his whispering wand,

And gives her ivory petals to expand!

Gives with new life her filial train to rise,

And hail with kindling smiles the genial skies.

So shines the Nymph in beauty's blushing pride,

When Zephyr wafts her deep calash aside,

Tears with rude kiss her bosom's gauzy veil,

And flings the fluttering kerchief to the gale. 340

So bright, the folding canopy undrawn,
Glides the gilt Landau o'er the velvet lawn,
Of beaux and belles displays the glittering throng,
And soft airs fan them, as they roll along.

Where frowning Snowden bends his dizzy brow
O'er Conway, listening to the furge below;
Retiring LICHEN climbs the topmost stone,
And drinks the aerial solitude alone.— 348
Bright shine the stars unnumber'd o'er her head,
And the cold moon-beam gilds her flinty bed;
While round the rifted rocks hoarse whirlwinds
breathe,
And dark with thunder sail the clouds *beneath*.—

Lichen. l. 347. *Calcareum.* Liver-wort. *Clandestine Marriage.* This plant is the first that vegetates on naked rocks, covering them with a kind of tapestry, and draws its nourishment perhaps chiefly from the air; after it perishes, earth enough is left for other mosses to root themselves; and after some ages a soil is produced sufficient for the growth of more succulent and large vegetables. In this manner perhaps the whole earth has been gradually covered with vegetation, after it was raised out of the primeval ocean by subterraneous fires.

The steepy path her plighted swain pursues,
 And tracks her light step o'er the imprinted dews;
 Delighted Hymen gives his torch to blaze,
 Winds round the craggs, and lights the mazy
 ways;
 Sheds o'er their *secret* vows his influence chaste,
 And decks with roses the admiring waste.

High in the front of heaven when Sirius glares,
 And o'er Britannia shakes his fiery hairs: 360
 When no soft shower descends, no dew distills,
 Her wave-worn channels dry, and mute her rills;
 When droops the sickening herb, the blossom fades,
 And parch'd earth gapes beneath the withering
 glades;

—— With languid step fair *DYPSACA* retreats,
 “Fall, gentle dews!” the fainting nymph repeats,

Dypsacus. l. 365. Teasel. One female, and four males.
 There is a cup around every joint of the stem of this plant,
 which contains from a spoonful to half a pint of water; and
 serves both for the nutriment of the plant in dry seasons, and to

Seeks the low dell, and in the fultry shade

Invokes in vain the Naiads to her aid.—

Four sylvan youths in crystal goblets bear

The untasted treasure to the grateful fair; 370

Pleased from their hands with modest grace she
sips,

And the cool wave reflects her coral lips.

prevent insects from creeping up to devour its seed. See Silene. The *Tillandsia*, or wild pine, of the West Indies has every leaf terminated near the stalk with a hollow bucket, which contains from half a pint to a quart of water. Dampier's *Voyage to Campeachy*. Dr. Sloane mentions one kind of aloe furnished with leaves, which, like the wild pine and Banana, hold water; and thence afford necessary refreshment to travellers in hot countries. *Nepenthes* has a bucket for the same purpose at the end of every leaf. *Burm. Zeyl.* 42. 17.

Silphium perfoliatum has a cup round every joint to reserve water after rain. It rises during the summer twelve or fourteen feet high on a slender stem, which is square, and thus is stronger to resist the winds than if it had been made round with the same quantity of materials.

The most curious plant of this kind is the *Sarracenia purpurea*, which resembles the *Nymphœa*, an aquatic plant, but catches so much water in its sessile cup-like leaves, as to enable

With nice selection modest RUBIA blends
Her vermil dyes, and o'er the cauldron bends;

it to live on land, a wonderful provision of nature! System.
Plant. a Reichard. Vol. II. p. 577.

Rubia. l. 373. Madder. Four males and one female. This plant is cultivated in very large quantities for dying red. If mixed with the food of young pigs or chickens, it colours their bones red. If they are fed alternate fortnights, with a mixture of madder, and with their usual food alone, their bones will consist of concentric circles of white and red. Belchier. Phil. Transf. 1736. Animals fed with madder for the purpose of these experiments were found upon dissection to have thinner gall. Comment. de rebus. Lipsiæ. This circumstance is worth farther attention. The colouring materials of vegetables, like those which serve the purpose of tanning, varnishing, and the various medical purposes, do not seem essential to the life of the plant; but seem given it as a defence against the depredations of insects or other animals, to whom these materials are nauseous or deleterious. The colours of insects and many smaller animals contribute to conceal them from the larger ones which prey upon them. Caterpillars which feed on leaves are generally green; and earth-worms the colour of the earth which they inhabit; butterflies which frequent flowers are coloured like them; small birds which frequent hedges have greenish backs like the leaves, and light coloured bellies like the sky, and are hence less visible

Warm mid the rising steam the Beauty glows,
As blushes in a mist the dewy rose.

With chemic art *four* favour'd youths aloof

Stain the white fleece, or stretch the tinted woof;

O'er Age's cheek the warmth of youth diffuse,

Or deck the pale-ey'd nymph in roseate hues.

So when MEDEA to exulting Greece 381

From plunder'd COLCHIS bore the golden fleece;

On the loud shore a magic pile she rais'd,

The cauldron bubbled, and the faggots blaz'd;

to the hawk, who passes under them or over them. Those birds which are much amongst flowers, as the goldfinch, (*Fringilla Carduelis*) are furnished with vivid colours. The lark, partridge, hare, are the colour of dry vegetables, or earth on which they rest. And frogs vary their colour with the mud of the streams which they frequent; and those which live on trees are green. Fish, which are generally suspended in water, and swallows, which are generally suspended in air, have their backs the colour of the distant ground, and their bellies of the sky. In the colder climates many of these become white during the existence of the snows. Hence there is apparent design in the colours of animals, whilst those of vegetables seem consequent to the other properties of the materials which possess them.

PART II.

E

Pleased on the boiling wave old ÆSON fwims,
And feels new vigour stretch his fwelling limbs;
Through his thrill'd nerves forgotten ardors dart,
And warmer eddies circle round his heart;
With fofter fires his kindling eye-balls glow,
And darker trefles wanton round his brow. 390

Pleased on the boiling wave. l. 385. The story of Æson becoming young, from the medicated bath of Medea, seems to have been intended to teach the efficacy of warm bathing in retarding the progress of old age. The words *relaxation and bracing*, which are generally thought expressive of the effects of warm and cold bathing, are mechanical terms, properly applied to drums or strings; but are only metaphors when applied to the effects of cold or warm bathing on animal bodies. The immediate cause of old age seems to reside in the inirritability of the finer vessels or parts of our system; hence these cease to act, and collapse, or become horny or bony. The warm bath is peculiarly adapted to prevent these circumstances by its increasing our irritability, and by moistening and softening the skin, and the extremities of the finer vessels, which terminate in it. To those who are past the meridian of life, and have dry skins, and begin to be emaciated, the warm bath, for half an hour twice a week, I believe to be eminently serviceable in retarding the advances of age.

Where Java's isle, horizon'd with the floods,
Lifts to the skies her canopy of woods;
Pleased EPIDENDRA climbs the waving pines,
And high in heaven the intrepid beauty shines,
Gives to the tropic breeze her radiant hair,
Drinks the bright shower, and feeds upon the air.
Her brood delighted stretch their callow wings,
As poised aloft their pendent cradle fwings,
Eye the warm sun, the spicy zephyr breathe,
And gaze unenvious on the world beneath. 400

As dash the waves on India's breezy strand,
Her flush'd cheek press'd upon her lily hand,

Epidendrum flos aeris. l. 393. Of the class of gynandria, or feminine males. This parasite plant is found in Java, and is said to live on air without taking root in the trees on which it grows; and its flowers resemble spiders. Syst. Veg. a Reichard. Vol. IV. p. 35. By this curious similitude the bees and butterflies are supposed to be deterred from plundering the nectaries. See Visca.

VALLISNER fits, up-turns her tearful eyes,
 Calls her lost lover, and upbraids the skies;
 For him she breathes the silent sigh, forlorn,
 Each setting day; for him each rising morn.—
 “ Bright orbs, that light yon high ethereal plain,
 “ Or bathe your radiant tresses in the main;
 “ Pale moon, that silver’st o’er night’s sable
 “ brow;—
 “ For ye were witness to his parting vow! 410
 “ Ye shelving rocks, dark waves, and founding
 “ shore,—
 “ Ye echoed sweet the tender words he swore!—

Vallisneria. l. 403. This extraordinary plant is of the class Two Houses. It is found in the East Indies, in Norway, and various parts of Italy. Lin. Spec. Plant. They have their roots at the bottom of the Rhone; the flowers of the female plant float on the surface of the water, and are furnished with an elastic spiral stalk, which extends or contracts as the water rises and falls; this rise or fall, from the rapid descent of the river, and the mountain torrents which flow into it, often amounts to many feet in a few hours. The flowers of the male plant are produced under water, and as soon as their farina, or dust, is mature,

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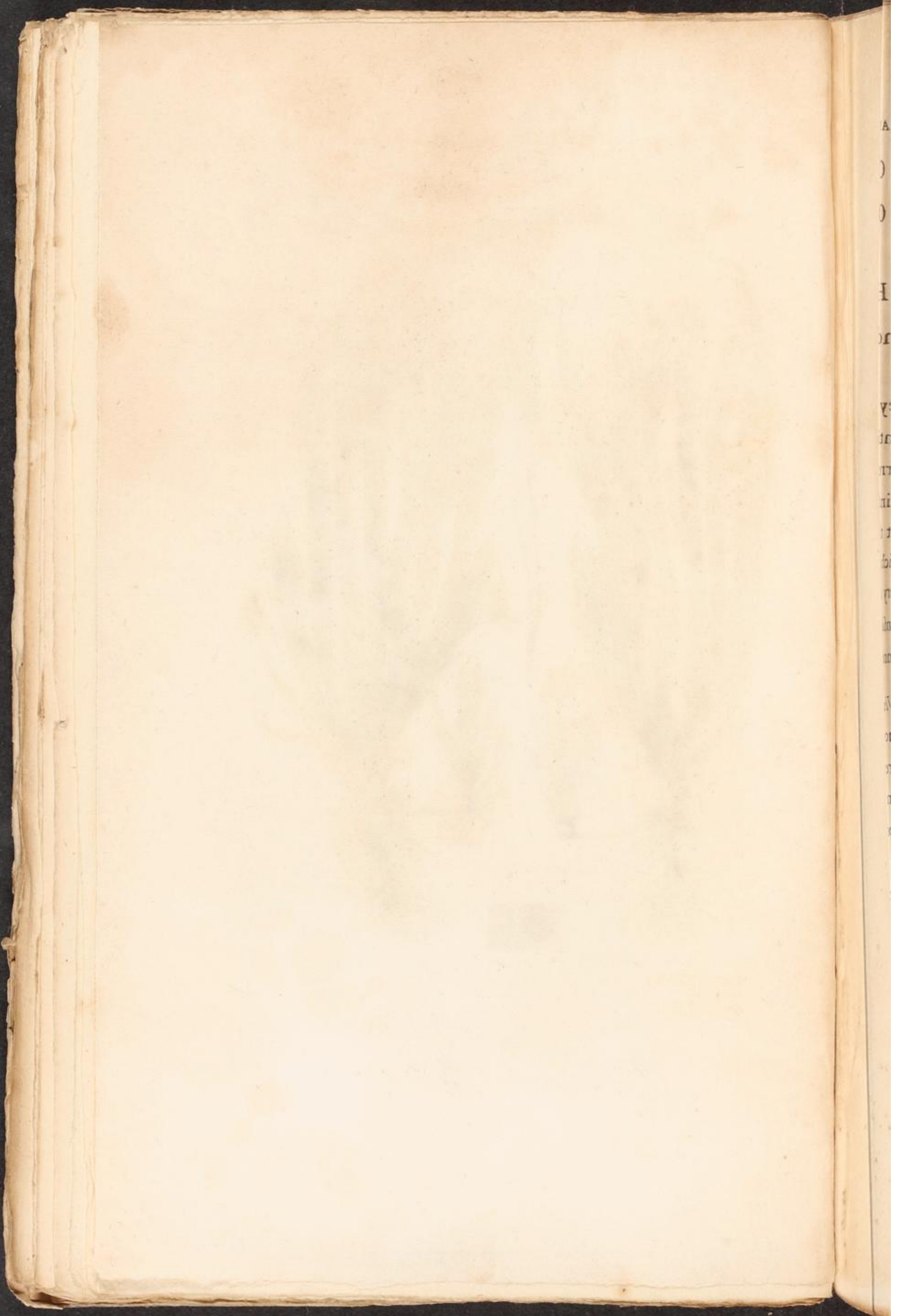
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Vallisneria Spiralis.



“ Can stars or seas the sails of love retain ?

“ O guide my wanderer to my arms again !”

Her buoyant skiff intrepid ULVA guides,
And seeks her Lord amid the trackless tides ;

they detach themselves from the plant, and rise to the surface, continue to flourish, and are wafted by the air, or borne by the currents to the female flowers. In this resembling those tribes of insects, where the males at certain seasons acquire wings, but not the females, as ants, Coccus, Lampyris, Phalæna, Brumata, Lichanella. These male flowers are in such numbers, though very minute, as frequently to cover the surface of the river to considerable extent. See Families of Plants, translated from Linneus, p. 677.

Ulva. l. 415. *Clandestine marriage*. This kind of sea-weed is buoyed up by bladders of air, which are formed in the duplicatures of its leaves, and forms immense floating fields of vegetation ; the young ones, branching out from the larger ones, and borne on similar little air-vessels. It is also found in the warm baths of Patavia, where the leaves are formed into curious cells or labyrinths for the purpose of floating on the water. See *Ulva labyrinthi-formis* Lin. *Spec. Plant.* The air contained in these cells was found by Dr. Priestley to be sometimes purer than common air, and sometimes less pure ; the air bladders of fish seem to be similar organs, and serve to render them

Her *secret* vows the Cyprian Queen approves,
And hovering Halcyons guard her infant-loves;

buoyant in the water. In some of these, as in the Cod and Haddock, a red membrane, consisting of a great number of leaves or duplicatures, is found within the air-bag, which probably secretes this air from the blood of the animal. (Monro. *Physiol. of Fish*, p. 28.) To determine whether this air, when first separated from the blood of the animal or plant, be dephlogisticated air, is worthy inquiry. The bladder-fena (*Colutea*) and bladder-nut (*Staphylæa*) have their seed-vessels distended with air; the *Ketmia* has the upper joint of the stem immediately under the receptacle of the flower much distended with air; these seem to be analogous to the air-vessel at the broad end of the egg, and may probably become less pure as the seed ripens; some, which I tried, had the purity of the surrounding atmosphere. The air at the broad end of the egg is probably an organ serving the purpose of respiration to the young chick, some of whose vessels are spread upon it like a placenta, or permeate it. Many are of opinion that even the placenta of the human fetus, and cotyledons of quadrupeds, are respiratory organs rather than nutritious ones.

The air in the hollow stems of grasses, and of some umbelliferous plants, bears analogy to the air in the quills, and in some of the bones of birds; supplying the place of the pith, which shrivels up after it has performed its office of protruding the young stem or feather. Some of these cavities of the bones are said to communicate with the lungs in birds. *Phil. Transf.*

Each in his floating cradle round they throng,
And dimpling Ocean bears the fleet along.— 420
Thus o'er the waves, which gently bend and
 fwell,

Fair GALATEA steers her silver shell ;
Her playful Dolphins stretch the silken rein,
Hear her sweet voice, and glide along the main.
As round the wild meandring coast she moves
By gushing rills, rude cliffs, and nodding groves ;

The air-bladders of fish are nicely adapted to their intended purpose ; for though they render them buoyant near the surface without the labour of using their fins, yet, when they rest at greater depths, they are no inconvenience, as the increased pressure of the water condenses the air which they contain into less space. Thus, if a cork or bladder of air was immersed a very great depth in the ocean, it would be so much compressed, as to become specifically as heavy as the water, and would remain there. It is probable the unfortunate Mr. Day, who was drowned in a diving-ship of his own construction, miscarried from not attending to this circumstance: it is probable the quantity of air he took down with him, if he descended much lower than he expected, was condensed into so small a space as not to render the ship buoyant when he endeavoured to ascend.

Each by her pine the Wood-nymphs wave their
locks,

And wondering Naiads peep amid the rocks!

Pleased trains of Mermaids rise from coral cells;

Admiring Tritons found their twisted shells; 430

Charm'd o'er the car pursuing Cupids sweep,

Their snow-white pinions twinkling in the deep;

And, as the lustre of her eye she turns,

Soft sighs the Gale, and amorous Ocean burns.

On DOVE's green brink the fair TREMELLA
stood,

And view'd her playful image in the flood;

Tremella. l. 435. *Clandestine marriage.* I have frequently observed fungusses of this Genus on old rails and on the ground to become a transparent jelly, after they had been frozen in autumnal mornings; which is a curious property, and distinguishes them from some other vegetable mucilage; for I have observed that the pottage, made by boiling wheat-flour in water, ceases to be adhesive after having been frozen. I suspected that the Tremella Nostoc, or star-gelly, also had been thus produced; but have since been well informed, that the Tremella Nostoc is a mucilage

To each rude rock, lone dell, and echoing grove
Sung the sweet sorrows of her *secret* love. 438

voided by Herons after they have eaten frogs; hence it has the appearance of having been pressed through a hole; and limbs of frogs are said sometimes to be found amongst it; it is always seen upon plains, or by the sides of water, places which Herons generally frequent.

Some of the fungusses are so acrid, that a drop of their juice blisters the tongue; others intoxicate those who eat them. The Ostiacks in Siberia use them for the latter purpose; one fungus of the species *Agaricus Muscarum*, eaten raw, or the decoction of three of them, produces intoxication for 12 or 16 hours. History of Russia, V. I. Nichols. 1780. As all acrid plants become less so, if exposed to a boiling heat, it is probable the common mushroom may sometimes disagree from not being sufficiently stewed. The Ostiacks blister their skin by a fungus found on Birch-trees; and use the *Agaricus officin.* for Soap. lb.

There was a dispute whether the fungusses should be classed in the animal or vegetable department. Their animal taste in cookery, and their animal smell when burnt, together with their tendency to putrefaction, insomuch that the *Phallus impudicus* has gained the name of stink-horn; and lastly, their growing and continuing healthy without light, as the *Licoperdon tuber* or truffle, and the fungus *vinosus* or *mucor* in dark cellars, and the esculent mushrooms on beds covered thick with straw, would seem to shew that they approach towards the animals, or make a kind of isthmus connecting the two mighty kingdoms of animal and of vegetable nature.

“ Oh, stay!—return!”—along the founding shore
Cry'd the sad Naiads,—she return'd no more!—
Now girt with clouds the fullen Evening frown'd,
And withering Eurus swept along the ground;
The misty moon withdrew her horned light,
And sunk with Hesper in the skirt of night;
No dim electric streams, (the northern dawn)
With meek effulgence quiver'd o'er the lawn;
No star benignant shot one transient ray
To guide or light the wanderer on her way.

Round the dark crags the murmuring whirlwinds
blow, 449

Woods groan above, and waters roar below;
As o'er the steeps with pausing foot she moves,
The pitying Dryads shriek amid their groves.
She flies—she stops—she pants—she looks behind,
And hears a demon howl in every wind.
—As the bleak blast unfurls her fluttering vest,
Cold beats the snow upon her shuddering breast;
Through her numb'd limbs the chill sensations
dart,

And the keen ice-bolt trembles at her heart.

“ I sink, I fall ! oh, help me, help ! ” she cries,
Her stiffening tongue the unfinish'd sound denies;
Tear after tear adown her cheek succeeds, 461
And pearls of ice bestrew the glittering meads;
Congealing snows her lingering feet surround,
Arrest her flight, and root her to the ground;
With suppliant arms she pours the silent prayer;
Her suppliant arms hang crystal in the air;
Pellucid films her shivering neck o'erspread,
Seal her mute lips, and silver o'er her head;
Veil her pale bosom, glaze her lifted hands, 469
And shrined in ice the beauteous statue stands.
—DOVE'S azure nymphs on each revolving year
For fair TREMELLA shed the tender tear;
With rush-wove crowns in sad procession move,
And found the sorrowing shell 'to hapless love.”

Here paused the MUSE,—across the darken'd
pole,
Sail the dim clouds, the echoing thunders roll;
The trembling Wood-nymphs, as the tempest
lowers,
Lead the gay goddesses to their inmost bowers; 478

Hang the mute lyre the laurel shade beneath,
And round her temples bind the myrtle wreath.
—Now the light swallow with her airy brood
Skims the green meadow, and the dimpled flood;
Loud shrieks the lone thrush from his leafless thorn,
Th' alarmed beetle sounds his bugle horn;
Each pendant spider winds with fingers fine
His ravel'd clue, and climbs along the line;
Gay Gnomes in glittering circles stand aloof
Beneath a spreading mushroom's fretted roof;
Swift bees returning seek their waxen cells, 489
And Sylphs cling quivering in the lily's bells.
Through the still air descend the genial showers,
And pearly rain-drops deck the laughing flowers.

INTERLUDE.

Bookfeller. YOUR verses, Mr. Botanist, consist of *pure description*, I hope there is *sense* in the notes.

Poet. I am only a flower-painter, or occasionally attempt a landscape; and leave the human figure with the subjects of history to abler artists.

B. It is well to know what subjects are within the limits of your pencil; many have failed of success from the want of this self-knowledge. But pray tell me, what is the essential difference between Poetry and Prose? is it solely the melody or measure of the language?

P. I think not solely; for some prose has its melody; and even measure. And good verses,

well spoken in a language unknown to the hearer, are not easily to be distinguished from good prose.

B. Is it the sublimity, beauty, or novelty of the sentiments?

P. Not so; for sublime sentiments are often better expressed in prose. Thus when Warwick, in one of the plays of Shakespear, is left wounded on the field after the loss of the battle, and his friend says to him, "O, could you but fly!" what can be more sublime than his answer, "Why then, I would not fly." No measure of verse, I imagine, could add dignity to this sentiment. And it would be easy to select examples of the beautiful or new from prose writers, which, I suppose, no measure of verse could improve.

B. In what then consists the essential difference between Poetry and Prose?

P. Next to the measure of the language, the principal distinction appears to me to consist in

this: that Poetry admits of but few words expressive of very abstracted ideas, whereas Prose abounds with them. And as our ideas derived from visible objects are more distinct than those derived from the objects of our other senses, the words expressive of these ideas belonging to vision make up the principal part of poetic language. That is, the Poet writes principally to the eye, the Prose-writer uses more abstracted terms. Mr. Pope has written a bad verse in the Windsor Forest:

“ And Kennet swift for silver Eels *renown'd.*”

The word *renown'd* does not present the idea of a visible object to the mind, and is thence prosaic. But change this line thus:

“ And Kennet swift, where silver Graylings *play,*”

and it becomes poetry, because the scenery is then brought before the eye.

B. This may be done in prose.

P. And when it is done in a single word, it animates the prose; so it is more agreeable to read in Mr. Gibbon's History, "Germany was at this time *over-shadowed* with extensive forests; than Germany was at this time *full* of extensive forests." But where this mode of expression occurs too frequently, the prose approaches to poetry; and in graver works, where we expect to be instructed rather than amused, it becomes tedious and impertinent. Some parts of Mr. Burke's eloquent orations become intricate and enervated by superfluity of poetic ornament; which quantity of ornament would have been agreeable in a poem, where much ornament is expected.

B. Is then the office of Poetry only to amuse?

P. The Muses are young Ladies; we expect to see them dressed; though not like some modern beauties, with so much gauze and feather, that "the Lady herself is the least part of her." There are however didactic pieces of poetry, which are much admired, as the Georgics of Virgil, Mason's English Garden, Hayley's Epistles; never-

theless Science is best delivered in Prose, as its mode of reasoning is from stricter analogies than metaphors or similes.

B. Do not Personifications and Allegories distinguish Poetry?

P. These are other arts of bringing objects before the eye; or of expressing sentiments in the language of vision; and are indeed better suited to the pen than the pencil.

B. That is strange, when you have just said they are used to bring their objects before the eye.

P. In poetry the personification or allegoric figure is generally indistinct, and therefore does not strike us so forcibly as to make us attend to its improbability; but in painting, the figures being all much more distinct, their improbability becomes apparent, and seizes our attention to it. Thus the person of Concealment is very indistinct, and therefore does not compel us to attend

to its improbability, in the following beautiful lines of Shakespear :

“ — She never told her love ;
But let Concealment, like a worm i' th' bud,
Feed on her damask cheek.”—

But in these lines below the person of Reason obtrudes itself into our company, and becomes disagreeable by its distinctness, and consequent improbability :

“ To Reason I flew, and intreated her aid,
Who paused on my case, and each circumstance weigh'd;
Then gravely reply'd in return to my prayer,
That Hebe was fairest of all that were fair.
That's a truth, reply'd I, I've no need to be taught,
I came to you, Reason, to find out a fault.
If that's all, says Reason, return as you came,
To find fault with Hebe would forfeit my name.”

Allegoric figures are on this account in general less manageable in painting and in statuary than in poetry; and can seldom be introduced in the two former arts in company with natural figures, as is evident from the ridiculous effect of many

of the paintings of Rubens in the Luxemburgh gallery; and for this reason, because their improbability becomes more striking, when there are the figures of real persons by their side to compare them with.

Mrs. Angelica Kauffman, well apprised of this circumstance, has introduced no mortal figures amongst her Cupids and her Graces. And the great Roubiliac, in his unrivalled monument of Time and Fame struggling for the trophy of General Wade, has only hung up a medallion of the head of the hero of the piece. There are, however, some allegoric figures, which we have so often heard described or seen delineated, that we almost forget that they do not exist in common life; and thence view them without astonishment; as the figures of the heathen mythology, of angels, devils, death, and time; and almost believe them to be realities, even when they are mixed with representations of the natural forms of man. Whence I conclude, that a certain degree of probability is necessary to prevent us from revolting with distaste from unnatural images; unless we are other-

wife so much interested in the contemplation of them as not to perceive their improbability.

B. Is this reasoning about degrees of probability just?—When Sir Joshua Reynolds, who is unequalled both in the theory and practice of his art, and who is a great master of the pen as well as the pencil, has asserted in a discourse delivered to the Royal Academy, December 11, 1786, that “the higher styles of painting, like the higher kinds of the Drama, do not aim at any thing like deception; or have any expectation that the spectators should think the events there represented are really passing before them.” And he then accuses Mr. Fielding of bad judgment, when he attempts to compliment Mr. Garrick in one of his novels, by introducing an ignorant man, mistaking the representation of a scene in Hamlet for a reality; and thinks, because he was an ignorant man, he was less liable to make such a mistake.

P. It is a metaphysical question, and requires more attention than Sir Joshua has bestowed upon

it.—You will allow that we are perfectly deceived in our dreams: and that even in our waking reveries, we are often so much absorbed in the contemplation of what passes in our imaginations, that for a while we do not attend to the lapse of time or to our own locality; and thus suffer a similar kind of deception, as in our dreams. That is, we believe things present before our eyes, which are not so.

There are two circumstances which contribute to this complete deception in our dreams. First, because in sleep the organs of sense are closed or inert, and hence the trains of ideas associated in our imaginations are never interrupted or dissevered by the irritations of external objects, and cannot therefore be contrasted with our sensations. On this account, though we are affected with a variety of passions in our dreams, as anger, love, joy, yet we never experience surprize.—For surprize is only produced when any external irritations suddenly obtrude themselves, and dissever our passing trains of ideas.

Secondly, because in sleep there is a total suspension of our voluntary power, both over the muscles of our bodies, and the ideas of our minds; for we neither walk about, nor reason in complete sleep. Hence, as the trains of our ideas are passing in our imaginations in dreams, we cannot compare them with our previous knowledge of things, as we do in our waking hours; for this is a voluntary exertion, and thus we cannot perceive their incongruity.

Thus we are deprived in sleep of the only two means by which we can distinguish the trains of ideas passing in our imaginations, from those excited by our sensations; and are led by their vivacity to believe them to belong to the latter. For the vivacity of these trains of ideas, passing in the imagination, is greatly increased by the causes above mentioned; that is, by their not being disturbed or disordered either by the impulses of external bodies, as in surprise; or by our voluntary exertions in comparing them with our previous knowledge of things, as in reasoning upon them.

B. Now to apply.

P. When by the art of the Painter or Poet a train of ideas is suggested to our imaginations, which interests us so much by the pain or pleasure it affords, that we cease to attend to the irritations of common external objects, and cease also to use any voluntary efforts to compare these interesting trains of ideas with our previous knowledge of things, a complete reverie is produced: during which time, however short, if it be but for a moment, the objects themselves appear to exist before us. This, I think, has been called by an ingenious critic, "the ideal presence" of such objects. (Elements of Criticism by Lord Kames.) And in respect to the compliment intended by Mr. Fielding to Mr. Garrick, it would seem that an ignorant Rustic at the play of Hamlet, who has some previous belief in the appearance of Ghosts, would sooner be liable to fall into a reverie, and continue in it longer, than one who possessed more knowledge of the real nature of things, and had a greater facility of exercising his reason.

B. It must require great art in the Painter or Poet to produce this kind of deception ?

P. The matter must be interesting from its sublimity, beauty, or novelty; this is the scientific part; and the art consists in bringing these distinctly before the eye, so as to produce (as above mentioned) the ideal presence of the object, in which the great Shakespear particularly excels.

B. Then it is not of any consequence whether the representations correspond with nature ?

P. Not if they so much interest the reader or spectator as to induce the reverie above described. Nature may be seen in the market-place, or at the card-table; but we expect something more than this in the play-house or picture-room. The farther the artist recedes from nature, the greater novelty he is likely to produce; if he rises above nature, he produces the sublime; and beauty is probably a selection and new combination of her most agreeable parts. Yourself will be sensible of the truth of this doctrine, by recollecting over in

your mind the works of three of our celebrated artists. Sir Joshua Reynolds has introduced sublimity even into his portraits; we admire the representation of persons, whose reality we should have passed by unnoticed. Mrs. Angelica Kauffman attracts our eyes with beauty, which I suppose no where exists; certainly few Grecian faces are seen in this country. And the daring pencil of Fuseli transports us beyond the boundaries of nature, and ravishes us with the charm of the most interesting novelty. And Shakespear, who excels in all these together, so far captivates the spectator, as to make him unmindful of every kind of violation of Time, Place, or Existence. As at the first appearance of the Ghost of Hamlet, "his ear must be dull as the fat weed which roots itself on Lethe's brink," who can attend to the improbability of the exhibition. So in many scenes of the Tempest we perpetually believe the action passing before our eyes, and relapse with somewhat of distaste into common life at the intervals of the representation.

B. I suppose a poet of less ability would find

such great machinery difficult and cumbersome to manage?

P. Just so, we should be shocked at the apparent improbabilities. As in the gardens of a Sicilian nobleman, described in Mr. Brydone's and in Mr. Swinburn's travels, there are said to be six hundred statues of imaginary monsters, which so disgust the spectators, that the state had once a serious design of destroying them; and yet the very improbable monsters in Ovid's *Metamorphoses* have entertained the world for many centuries.

B. The monsters in your Botanic Garden, I hope, are of the latter kind?

P. The candid reader must determine.

THE
LOVES OF THE PLANTS.

CANTO II.

AGAIN the Goddess strikes the golden lyre,
And tunes to wilder notes the warbling wire ;
With soft suspended step Attention moves,
And Silence hovers o'er the listening groves ;
Orb within orb the charmed audience throng,
And the green vault reverberates the song.

“ Breathe soft, ye Gales !” the fair CARLINA
cries,

“ Bear on broad wings your Votress to the skies.

Carlina. 1. 7. Carline Thistle. Of the class Confederate

“ How sweetly mutable yon orient hues, 9
“ As Morn’s fair hand her opening roses strews ;
“ How bright, when Iris blending many a ray,
“ Binds in embroider’d wreath the brow of Day ;

Males. The seeds of this and of many other plants of the same class are furnished with a plume, by which admirable mechanism they perform long aerial journies, crossing lakes and deserts, and are thus disseminated far from the original plant, and have much the appearance of a Shuttlecock as they fly. The wings are of different construction, some being like a divergent tuft of hairs, others are branched like feathers, some are elevated from the crown of the seed by a slender foot-stalk, which gives them a very elegant appearance, others fit immediately on the crown of the seed.

Nature has many other curious vegetable contrivances for the dispersion of seeds: see note on Helianthus. But perhaps none of them has more the appearance of design than the admirable apparatus of Tillandsia for this purpose. This plant grows on the branches of trees, like the mistleto, and never on the ground ; the seeds are furnished with many long threads on their crowns ; which, as they are driven forwards by the winds, wrap round the arms of trees, and thus hold them fast till they vegetate. This is very analogous to the migration of Spiders on the gossamer, who are said to attach themselves to the end of a long thread, and rise thus to the tops of trees or buildings, as the accidental breezes carry them.

“ Soft, when the pendant Moon with lustres pale

“ O'er heav'n's blue arch unfurls her milky veil ;

“ While from the north long threads of silver

“ light

“ Dart on swift shuttles o'er the tissued night !

“ Breathe soft, ye Zephyrs ! hear my fervent

“ sighs,

“ Bear on broad wings your Votrefs to the

“ skies !”

—Plume over plume in long divergent lines

On whale-bone ribs the fair Mechanic joins ; 20

Inlays with eider down the filken strings,

And weaves in wide expanse Dædalian wings ;

Round her bold sons the waving pennons binds,

And walks with angel-step upon the winds.

So on the shoreless air the intrepid Gaul

Launch'd the vast concave of his buoyant ball.—

Journeying on high, the filken caffle glides

Bright as a meteor through the azure tides ;

O'er towns, and towers, and temples, wins it's way,
Or mounts sublime, and gilds the vault of day. 30
Silent with upturn'd eyes unbreathing crowds
Pursue the floating wonder to the clouds;
And, flush'd with transport or benumb'd with
fear,

Watch, as it rises, the diminish'd sphere.

—Now less and less—and now a speck is seen;—
And now the fleeting rack obtrudes between!
With bended knees, raised arms, and suppliant
brows,

To every shrine they breathe their mingled vows.

“ Save him, ye Saints! who o'er the good
“ preside;

“ Bear him, ye Winds! ye Stars benignant!
guide.”

40

—The calm Philosopher in ether fails,
Views broader stars, and breathes in purer gales;
Sees, like a map, in many a waving line
Round Earth's blue plains her lucid waters shine;

Sees at his feet the forky lightnings glow,
And hears innocuous thunders roar below.

—Rise, great MONGOLFIER! urge thy venturous
flight

High o'er the Moon's pale ice-reflected light;
High o'er the pearly Star, whose beamy horn
Hangs in the east, gay harbinger of morn; 50
Leave the red eye of Mars on rapid wing,
Jove's silver guards, and Saturn's crystal ring;
Leave the fair beams, which, issuing from afar,
Play with new lustres round the Georgian star;
Shun with strong oars the Sun's attractive throne,
The sparkling Zodiac, and the milky zone;
Where headlong Comets with increasing force
Thro' other systems bend their blazing course.—
For thee Cassiope her chair withdraws,
For thee the Bear retracts his shaggy paws; 60

For thee the Bear. l. 60. Tibi jam brachia contrahit ardens
Scorpius. Virg. Georg. l. 1. 34. A new star appeared in Cas-
siope's chair in 1572. Herschel's Construction of the Heavens.
Phil. Transf. V. 75. p. 266.

High o'er the North thy golden orb shall roll,
 And blaze eternal round the wondering pole.
 So Argo, rising from the southern main,
 Lights with new stars the blue ethereal plain;
 With favouring beams the mariner protects,
 And the bold course, which first it steer'd, di-
 rects.

Inventress of the Woof, fair LINA flings
 The flying shuttle through the dancing strings;
 Inlays the broider'd web with flowery dyes,
 Quick beat the reeds, the pedals fall and rise; 70
 Slow from the beam the lengths of warp unwind,
 And dance and nod the massy weights behind.—

Linum. l. 67. Flax. Five males and five females. It was first found on the banks of the Nile. The *Linum Lusitanicum*, or Portugal flax, has ten males: see the note on *Curcuma*. Isis was said to invent spinning and weaving: mankind before that time were clothed with the skins of animals. The fable of Arachne was to compliment this new art of spinning and weaving, supposed to surpass in fineness the web of the Spider.

Taught by her labours, from the fertile soil
Immortal ISIS clothed the banks of Nile ;
And fair ARACHNE with her rival loom
Found undeserved a melancholy doom.—
Five Sister-nymphs with dewy fingers twine
The beamy flax, and stretch the fibre-line ;
Quick eddying threads from rapid spindles reel,
Or whirl with beating foot the dizzy wheel. 80
—Charm'd round the busy Fair *five* shepherds
 prefs,
Praise the nice texture of their snowy dress,
Admire the Artists, and the art approve,
And tell with honey'd words the tale of love.

So now, where Derwent rolls his dusky floods
Through vaulted mountains, and a night of woods,
The Nymph, GOSSYPHA, treads the velvet sod,
And warms with rosy smiles the watery God ;

Gossypia. l. 87. *Gossypium.* The cotton plant. On the river Derwent, near Matlock, in Derbyshire, SIR RICHARD

His ponderous oars to slender spindles turns,
And pours o'er maffy wheels his foamy urns ; 90

ARKWRIGHT has erected his curious and magnificent machinery for spinning cotton, which had been in vain attempted by many ingenious artists before him. The cotton-wool is first picked from the pods and seeds by women. It is then carded by *cylindrical cards*, which move against each other, with different velocities. It is taken from these by an *iron hand* or comb, which has a motion similar to that of scratching, and takes the wool off the cards longitudinally in respect to the fibres or staple, producing a continued line loosely cohering, called the *Rove* or *Roving*. This Rove, yet very loosely twisted, is then received or drawn into a *whirling canister*, and is rolled by the centrifugal force in spiral lines within it, being yet too tender for the spindle. It is then passed between *two pairs of rollers*; the second pair moving faster than the first elongate the thread with greater equality than can be done by the hand; and it is then twisted on spoles or bobbins.

The great fertility of the Cotton-plant in these fine flexible threads, while those from Flax, Hemp, and Nettles, or from the bark of the Mulberry-tree, require a previous putrefaction of the parenchymatous substance, and much mechanical labour, and afterwards bleaching, renders this plant of great importance to the world. And since Sir Richard Arkwright's ingenious machine has not only greatly abbreviated and simplified the labour and art of carding and spinning the Cotton-wool, but performs both these circumstances *better* than can be done by hand,

With playful charms her hoary lover wins,
 And wields his trident,—while the Monarch spins.
 —First with nice eye emerging Naiads cull
 From leathery pods the vegetable wool;
 With wiry teeth *revolving cards* release
 The tangled knots, and smooth the ravell'd fleece;
 Next moves the *iron hand* with fingers fine,
 Combs the wide card, and forms the eternal
 line;
 Slow, with soft lips, the *whirling Can* acquires
 The tender skeins, and wraps in rising spires; 100
 With quicken'd pace *successive rollers* move,
 And these retain, and those extend the *rove*;

it is probable that the clothing of this small seed will become the principal clothing of mankind; though animal wool and silk may be preferable in colder climates, as they are more imperfect conductors of heat, and are thence a warmer clothing.

Emerging Naiads. l. 93.

—eam circum Milesia vellera Nymphæ
 Carpebant, hyali saturo fucata colore.

Vir. Georg. IV. 334.

Then fly the spoils, the rapid axles glow,
 And slowly circumvolves the labouring wheel
 below.

PAPYRA, throned upon the banks of Nile,
 Spread her smooth leaf, and waved her silver
 style.

Cyperus, Papyrus. l. 105. Three males, one female. The leaf of this plant was first used for paper, whence the word *paper*; and leaf, or folium, for a fold of a book. Afterwards the bark of a species of mulberry was used; whence *liber* signifies a book, and the bark of a tree. Before the invention of letters mankind may be said to have been perpetually in their infancy, as the arts of one age or country generally died with their inventors. Whence arose the policy, which still continues in Hindostan, of obliging the son to practise the profession of his father. After the discovery of letters, the facts of Astronomy and Chemistry became recorded in written language, though the ancient hieroglyphic characters for the planets and metals continue in use at this day. The antiquity of the invention of music, of astronomical observations, and the manufacture of Gold and Iron, are recorded in Scripture.

About twenty letters, ten cyphers, and seven crotchets, represent by their numerous combinations all our ideas and sensations! the musical characters are probably arrived at their per-

—The storied pyramid, the laurel'd bust,
The trophy'd arch had crumbled into dust;
The sacred symbol, and the epic song,
(Unknown the character, forgot the tongue,) 110
With each unconquer'd chief, or fainted maid,
Sunk undistinguished in oblivion's shade.
Sad o'er the scatter'd ruins Genius sigh'd,
And infant Arts but learn'd to lisp and died.
Till to astonish'd realms PAPHYRA taught
To paint in mystic colours Sound and Thought.

fection, unless emphasis, and tone, and swell, could be expressed, as well as note and time. Charles the Twelfth, of Sweden, had a design to have introduced a numeration by squares, instead of by decimation, which might have served the purposes of philosophy better than the present mode, which is said to be of Arabic invention. The alphabet is yet in a very imperfect state; perhaps seventeen letters could express all the simple sounds in the European languages. In China they have not yet learned to divide their words into syllables, and are thence necessitated to employ many thousand characters; it is said above eighty thousand. It is to be wished, in this ingenious age, that the European nations would accord to reform our alphabet.

With Wisdom's voice to print the page sub-
lime,

And mark in adamant the steps of Time,

—*Three* favour'd youths her soft attention share,

The fond disciples of the studious Fair, 120

Hear her sweet voice, the golden process
prove;

Gaze, as they learn; and, as they listen, love.

The first from Alpha to Omega joins

The letter'd tribes along the level lines;

Weighs with nice ear the vowel, liquid, furd,

And breaks in syllables the volant word.

Then forms *the next* upon the marshal'd plain

In deepening ranks his dexterous cypher-train;

And counts, as wheel the decimating bands,

The dews of Ægypt, or Arabia's sands. 130

And then *the third* on four concordant lines

Prints the lone crotchet, and the quaver joins;

Marks the gay trill, the solemn pause inscribes,

And parts with bars the undulating tribes.

Pleas'd round her cane-wove throne, the applaud-
ing crowd

Clapp'd their rude hands, their swarthy foreheads
bow'd;

With loud acclaim "a present God!" they cry'd,
"A present God!" rebellowing shores reply'd.—

Then peal'd at intervals with mingled swell 139
The echoing harp, shrill clarion, horn, and shell;
While Bards ecstatic, bending o'er the lyre,
Struck deeper chords, and wing'd the song with
fire.

Then mark'd Astronomers with keener eyes
The Moon's refulgent journey through the skies:
Watch'd the swift Comets urge their blazing cars,
And weigh'd the Sun with his revolving Stars.
High rais'd the Chymists their Hermetic wands,
(And changing forms obey'd their waving hands,)
Her treasured Gold from Earth's deep chambers
tore,

Or fused and harden'd her chalybeate ore. 150

All with bent knee from fair PAPHIA claim
Wove by her hands the wreath of deathless fame.
—Exulting Genius crown'd his darling child,
The young arts clasp'd her knees, and Virtue
smiled.

So now DELANY forms her mimic bowers,
Her paper foliage, and her filken flowers ;

So now Delany. l. 155. Mrs. Delany has finished nine hundred and seventy accurate and elegant representations of different vegetables with the parts of their flowers, fructification, &c. according with the classification of Linneus, in what she terms paper mosaic. She began this work at the age of 74, when her sight would no longer serve her to paint, in which she much excelled: between her age of 74 and 82, at which time her eyes quite failed her, she executed the curious Hortus ficus above mentioned, which I suppose contains a greater number of plants than were ever before drawn from the life by any one person. Her method consisted in placing the leaves of each plant with the petals, and all the other parts of the flowers on coloured paper, and cutting them with scissors accurately to the natural size and form, and then pasting them on a dark ground; the effect of which is wonderful, and their accuracy less liable to fallacy than drawings. She is at this time (1788) in her 89th

Her virgin train the tender scissars ply,
Vein the green leaf, the purple petal dye:
Round wiry stems the flaxen tendril bends,
Moss creeps below, and waxen fruit impends. 160
Cold Winter views amid his realms of snow
DELANY's vegetable statues blow;
Smooths his stern brow, delays his hoary wing,
And eyes with wonder all the blooms of spring.

The gentle LAPSANA, NYMPHÆA fair,
And bright CALENDULA with golden hair,

year, with all the powers of a fine understanding still unimpaired. I am informed another very ingenious lady, Mrs. North, is constructing a similar Hortus ficcus, or Paper-garden; which she executes on a ground of vellum with such elegant taste and scientific accuracy, that it cannot fail to become a work of inestimable value.

Lapsana, Nymphaea alba, Calendula. l. 165. And many other flowers close and open their petals at certain hours of the day; and thus constitute what Linneus calls the Horologe, or Watch of Flora. He enumerates 46 flowers, which possess this kind of sensibility. I shall mention a few of them with their respective hours of rising and setting, as Linneus terms them. He

Watch with nice eye the Earth's diurnal way,
Marking her solar and sidereal day,

divides them into *meteoric* flowers, which less accurately observe the hour of unfolding, but are expanded sooner or later, according to the cloudiness, moisture, or pressure of the atmosphere. 2d. *Tropical* flowers open in the morning and close before evening every day; but the hour of the expanding becomes earlier or later, as the length of the day increases or decreases. 3dly. *Æquinoctial* flowers, which open at a certain and exact hour of the day, and for the most part close at another determinate hour.

Hence the Horologe or Watch of Flora is formed from numerous plants, of which the following are those most common in this country. *Leontodon taraxacum*, Dandelion, opens at 5—6, closes at 8—9. *Hieracium pilosella*, mouse-ear hawkweed, opens at 8, closes at 2. *Sonchus lœvis*, smooth Sow-thistle, at 5 and at 11—12. *Lactuca fativa*, cultivated Lettice, at 7 and 10. *Tragopogon luteum*, yellow Goatsbeard, at 3—5 and at 9—10. *Lapsana*, nipplewort, at 5—6 and at 10—11. *Nymphæa alba*, white water lily, at 7 and 5. *Papaver nudicaule*, naked poppy, at 5 and at 7. *Hemerocallis fulva*, tawny Day-lily, at 5 and at 7—8. *Convolvulus*, at 5—6. *Malva*, Mallow, at 9—10 and at 1. *Arenaria purpurea*, purple Sandwort, at 9—10 and at 2—3. *Anagallis*, pimpernel, at 7—8. *Portulaca hortensis*, garden Purslain, at 9—10, and at 11—12. *Dianthus prolifer*, proliferous Pink, at 8 and at 1. *Cichorium*, Succory, at 4—5. *Hypochæris*, at 6—7, and at 4—5. *Crepis*,

Her flow nutation, and her varying clime, 169
 And trace with mimic art the march of Time;
 Round his light foot a magic chain they fling,
 And count the quick vibrations of his wing.—
 First in its brazen cell reluctant roll'd
 Bends the dark spring in many a steely fold.
 On spiral brass is stretch'd the wiry thong
 Tooth urges tooth, and wheel drives wheel along;
 In diamond-eyes the polish'd axles flow,
 Smooth slides the hand, the balance pants below.
 Round the white circlet in relieveo bold,
 A Serpent twines his scaly length in gold; 180
 And brightly pencil'd on the enamel'd sphere
 Live the fair trophies of the passing year.
 —Here *Time's* huge fingers grasp his giant mace,
 And dash proud Superstition from her base;

at 4—5, and at 10—11. *Picris*, at 4—5, and at 12. *Calen-*
dula field, at 9, and at 3. *Calendula* African, at 7, and at
 3—4.

As these observations were probably made in the botanic gar-
 dens at Upsal, they must require farther attention to suit them
 to our climate. See Stillingfleet's Calendar of Flora.

Rend her strong towers and gorgeous fanes, and
shed

The crumbling fragments round her guilty head.
There the gay *Hours*, whom wreaths of roses deck,
Lead their young trains amid the cumberous wreck,
And, slowly purpling o'er the mighty waste, 189
Plant the fair growths of Science and of Taste.
While each light *Moment*, as it dances by
With feathery foot and pleasure-twinkling eye,
Feeds from its baby-hand, with many a kiss,
The callow nestlings of domestic Bliss.

As yon gay clouds, which canopy the skies,
Change their thin forms, and lose their lucid dyes;
So the soft bloom of beauty's vernal charms
Fades in our eyes, and withers in our arms.
—Bright as the silvery plume, or pearly shell,
The snow-white rose, or lily's virgin bell, 200
The fair HELLEBORAS attractive shone,
Warm'd every Sage, and every Shepherd won.—

Helleborus. l. 201. Many males, many females. The

Round the gay sisters press the *enamour'd bands*,
 And seek with soft sollicitude their hands.
 —Erewhile how chang'd!—in dim suffusion lies
 The glance divine, that lighten'd in their eyes;
 Cold are those lips, where smiles seductive hung,
 And the weak accents linger on their tongue;
 Each roseate feature fades to livid green—
 —Disgust with face averted shuts the scene. 210

So from his gorgeous throne, which awed the
 world,
 The mighty Monarch of Assyria hurl'd,

Helleborus niger, or Christmas rose, has a large beautiful white flower, adorned with a circle of tubular two lipp'd nectaries. After impregnation the flower undergoes a remarkable change, the nectaries drop off, but the white corol remains, and gradually becomes quite green. This curious metamorphose of the corol, when the nectaries fall off, seems to shew that the white juices of the corol were before carried to the nectaries, for the purpose of producing honey; because when these nectaries fall off, no more of the white juice is secreted in the corol, but it becomes green, and degenerates into a calyx. See note on *Lonicera*. The nectary of the *Tropæolum*, garden nasturtion, is a coloured horn growing from the calyx.

Sojourn'd with brutes beneath the midnight storm,
Changed by avenging Heaven in mind and form.
—Prone to the earth He bends his brow superb,
Crops the young floret and the bladed herb;
Lolls his red tongue, and from the reedy side
Of slow Euphrates laps the muddy tide.
Long eagle plumes his arching neck invest, 219
Steal round his arms, and clasp his sharpen'd breast;
Dark brinded hairs, in bristling ranks, behind,
Rise o'er his back, and rustle in the wind;
Clothe his lank sides, his shrivel'd limbs furround,
And human hands with talons print the ground.
Silent in shining troops the Courtier-throng
Pursue their monarch, as he crawls along;
E'en Beauty pleads in vain with smiles and tears,
Nor Flattery's self can pierce his pendant ears.

*Two Sister-Nymphs to Ganges' flowery brink
Bend their light steps, the lucid water drink, 230*

Two Sister-Nymphs. l. 229. Menispermum, Cocculus. Indian

Wind through the dewy rice, and nodding canes,
(As *eight* black Eunuchs guard the sacred plains),
With playful malice watch the scaly brood,
And shower the inebriate berries on the flood.—
Stay in your crystal chambers, silver tribes!
Turn your bright eyes, and shun the dangerous
 bribes;
The tramell'd net with less destruction sweeps
Your curling shallows, and your azure deeps;
With less deceit, the gilded fly beneath, 239
Lurks the fell hook unseen,—to taste is death!
—Dim your flow eyes, and dull your pearly coat,
Drunk on the waves your languid forms shall float,
On useless fins in giddy circles play,
And Herons and Otters seize you for their prey.—

berry. Two houses, twelve males. In the female flower there are two styles and eight filaments without anthers on their summits; which are called by Linneus eunuchs. See the note on Curcuma. The berry intoxicates fish. Saint Anthony of Padua, when the people refused to hear him, preached to the fish, and converted them. Addison's Travels in Italy.

So, when the Saint from Padua's graceless land
 In silent anguish fought the barren strand,
 High on the shatter'd beech sublime He stood,
 Still'd with his waving arm the babbling flood;
 "To Man's dull ear," He cry'd, "I call in vain,
 "Hear me, ye scaly tenants of the main!"—
 Mishapen Seals approach in circling flocks, 251
 In dusky mail the Tortoise climbs the rocks,
 Torpedoes, Sharks, Rays, Porpus, Dolphins, pour
 Their twinkling squadrons round the glittering shore;
 With tangled fins, behind, huge Phocæ glide,
 And Whales and Grampi swell the distant tide.
 Then kneel'd the hoary Seer, to Heav'n address'd
 His fiery eyes, and smote his founding breast;
 "Bless ye the Lord," with thundering voice he
 cry'd, 259
 "Bless ye the Lord!" the bending shores reply'd;
 The winds and waters caught the sacred word,
 And mingling echoes shouted "Bless the Lord!"
 The listening shoals the quick contagion feel,
 Pant on the floods, inebriate with their zeal,

Ope their wide jaws, and bow their slimy heads,
And dash with frantic fins their foamy beds.

Sopha'd on silk, amid her charm-built towers,
Her meads of asphodel, and amaranth bowers,
Where Sleep and Silence guard the soft abodes,
In fullen apathy PAPAVER nods. 270

Faint o'er her couch in scintillating streams
Pafs the thin forms of Fancy and of Dreams;

Papaver. l. 270. Poppy. Many males, many females. The plants of this class are almost all of them poisonous; the finest opium is procured by wounding the heads of large poppies with a three-edged knife, and tying muscle-shells to them to catch the drops. In small quantities it exhilarates the mind, raises the passions, and invigorates the body: in large ones it is succeeded by intoxication, languor, stupor, and death. It is customary in India for a messenger to travel above a hundred miles without rest or food, except an appropriated bit of opium for himself, and a larger one for his horse at certain stages. The emaciated and decrepid appearance, with the ridiculous and idiotic gestures, of the opium-eaters in Constantinople is well described in the Memoirs of Baron de Tott.

Froze by enchantment on the velvet ground,
Fair youths and beauteous ladies glitter round;
On crystal pedestals they seem to sigh,
Bend the meek knee, and lift the imploring eye.
—And now the Sorceress bares her shrivel'd
hand,
And circles thrice in air her ebon wand;
Flush'd with new life descending statues talk,
The pliant marble softening as they walk; 280
With deeper sobs reviving lovers breathe,
Fair bosoms rise, and soft hearts pant beneath;
With warmer lips relenting damsels speak,
And kindling blushes tinge the Parian cheek;
To viewless lutes aerial voices sing,
And hovering loves are heard on rustling wing.
—She waves her wand again!—fresh horrors seize
Their stiffening limbs, their vital currents freeze;
By each cold nymph her marble lover lies,
And iron slumbers seal their glassy eyes. 290
So with his dread Caduceus HERMES led
From the dark regions of the imprison'd dead,

Or drove in silent shoals the lingering train
To Night's dull shore, and PLUTO's dreary reign.

So with her waving pencil CREWE commands
The realms of Taste, and Fancy's fairy lands;
Calls up with magic voice the shapes, that sleep
In earth's dark bosom, or unfathom'd deep;
That shrined in air on viewless wings aspire,
Or blazing bathe in elemental fire. 300

As with nice touch her plastic hand she moves,
Rise the fine forms of Beauties, Graces, Loves;
Kneel to the fair Inchantress, smile or sigh,
And fade or flourish, as she turns her eye.

Fair CISTA, rival of the rosy dawn,
Call'd her light choir, and trod the dewy lawn;

So with her waving pencil. l. 295. Alluding to the many beautiful paintings by Miss EMMA CREWE, to whom the author is indebted for the very elegant Frontispiece, where Flora, at play with Cupid, is loading him with garden-tools.

Cistus labdaniferus. l. 305. Many males, one female. The

Hail'd with rude melody the new-born May,
As cradled yet in April's lap she lay.

I.

“Born in yon blaze of orient sky,
“Sweet MAY! thy radiant form unfold, 310

petals of this beautiful and fragrant shrub, as well as of the *Cenothera*, tree-primrose, and others, continue expanded but a few hours, falling off about noon, or soon after, in hot weather. The most beautiful flowers of the *Cactus grandiflorus* (see *Cereia*) are of equally short duration, but have their existence in the night. And the flowers of the *Hibiscus trionum* are said to continue but a single hour. The courtship between the males and females in these flowers might be easily watched; the males are said to approach and recede from the females alternately. The flowers of the *Hibiscus sinensis*, mutable rose, live in the West Indies, their native climate, but one day; but have this remarkable property, they are white at their first expansion, then change to deep red, and become purple as they decay.

The gum or resin of this fragrant vegetable is collected from extensive underwoods of it in the East by a singular contrivance. Long leathern thongs are tied to poles and cords, and drawn over the tops of these shrubs about noon; which thus collect the dust of the anthers, which adheres to the leather, and is occasionally scraped off. Thus in some degree is the manner imitated, in which the bee collects on his thighs and legs the same material for the construction of his combs.

“ Unclose thy blue voluptuous eye,
“ And wave thy shadowy locks of gold.

II.

“ For Thee the fragrant zephyrs blow,
“ For Thee descends the sunny shower ;
“ The rills in softer murmurs flow,
“ And brighter blossoms gem the bower.

III.

“ Light Graces dress'd in flowery wreaths,
“ And tiptoe Joys their hands combine ;
“ And Love his sweet contagion breathes,
“ And laughing dances round thy shrine. 320

IV.

“ Warm with new life the glittering throngs
“ On quivering fin and rustling wing
“ Delighted join their votive songs,
“ And hail thee, GODDESS OF THE SPRING.”

O'er the green brinks of Severn's oozy bed,
In changeful rings, her sprightly troops She led ;

PAN tripp'd before, where Eudnefs shades the mead,
 And blew with glowing lip his sevenfold reed ;
 Emerging Naiads swell'd the jocund strain,
 And aped with mimic step the dancing train.— 330
 “ I faint, I fall!”—*at noon* the Beauty cried,
 “ Weep o'er my tomb, ye Nymphs!”—and sunk
 and died.

—Thus, when white Winter o'er the shivering
 clime

Drives the still snow, or showers the silver rime ;
 As the lone shepherd o'er the dazzling rocks
 Prints his steep step, and guides his vagrant flocks ;
 Views the green holly veil'd in net-work nice,
 Her vermil clusters twinkling in the ice ;
 Admires the lucid vales, and slumbering floods,
 Suspended cataracts, and crystal woods, 340
 Transparent towns, with seas of milk between,
 And eyes with transport the refulgent scene :

Sevenfold reed. l. 328. The sevenfold reed, with which Pan is frequently described, seems to indicate, that he was the inventor of the musical gamut.

If breaks the sunshine o'er the spangled trees,
Or flits on tepid wing the western breeze,
In liquid dews descends the transient glare,
And all the glittering pageant melts in air.

Where Andes hides his cloud-wreath'd crest in
snow,

And roots his base on burning sands below ;

CINCHONA, fairest of Peruvian maids,

To Health's bright Goddess in the breezy glades

On Quito's temperate plain an altar rear'd, 351

Trill'd the loud hymn, the solemn prayer pre-
ferr'd :

Each balmy bud she cull'd, and honey'd flower,

And hung with fragrant wreaths the sacred bower ;

Cinchona. l. 349. Peruvian bark-tree. Five males, and one female. Several of these trees were felled for other purposes into a lake, when an epidemic fever of a very mortal kind prevailed at Loxa in Peru, and the woodmen, accidentally drinking the water, were cured; and thus were discovered the virtues of this famous drug.

Each pearly sea she search'd, and sparkling mine,
 And piled their treasures on the gorgeous shrine;
 Her suppliant voice for sickening Loxa raised,
 Sweet breath'd the gale, and bright the censor
 blazed.

“ —Divine HYGEIA! on thy votaries bend
 “ Thy angel-looks, oh, hear us, and defend! 360
 “ While streaming o'er the night with baleful
 “ glare
 “ The star of Autumn rays his misty hair;
 “ Fierce from his fens the Giant AGUE springs,
 “ And wrapp'd in fogs descends on vampire wings;
 “ Before, with shuddering limbs cold Tremor
 “ reels,
 “ And Fever's burning nostril dogs his heels;
 “ Loud claps the grinning Fiend his iron hands,
 “ Stamps with black hoof, and shouts along the
 “ lands;
 “ Withers the damask cheek, unnerves the strong,
 “ And drives with scorpion-lash the shrieking
 “ throng. 370

“ Oh, Goddess! on thy kneeling votaries bend

“ Thy angel-looks, oh, hear us, and defend!”

—HYGEIA, leaning from the blest abodes,

The crystal mansions of the immortal gods,

Saw the sad Nymph uplift her dewy eyes,

Spread her white arms, and breathe her fervid

 sighs;

Call'd to her fair associates, Youth and Joy,

And shot all radiant through the glittering sky;

Loose waved behind her golden train of hair,

Her sapphire mantle swam diffused in air.— 380

O'er the grey matted moss, and pansied sod,

With step sublime the glowing Goddess trod,

Gilt with her beamy eye the conscious shade,

And with her smile celestial blest'd the maid.

“ Come to my arms, with seraph voice she

 cries,

“ Thy vows are heard, benignant Nymph! arise;

“ Where yon aspiring trunks fantastic wreath

“ Their mingled roots, and drink the rill be-

 neath,

“ Yield to the biting axe thy sacred wood,
“ And strew the bitter foliage on the flood.” 390

In silent homage bow'd the blushing maid,—

Five youths athletic hasten to her aid,

O'er the scar'd hills re-echoing strokes resound,

And headlong forests thunder on the ground.

Round the dark roots, rent bark, and shatter'd
boughs,

From ocherous beds the swelling fountain flows ;

With streams austere its winding margin laves,

And pours from vale to vale its dusky waves.

—As the pale squadrons, bending o'er the brink,

View with a sigh their alter'd forms, and drink ;

Slow-ebbing life with refluent crimson breaks

O'er their wan lips, and paints their haggard cheeks :

Through each fine nerve rekindling transports

dart,

403

Light the quick eye, and swell the exulting heart.

—Thus ISRAEL'S heav'n-taught chief o'er track-

less sands

Led to the fultry rock his murmuring bands.

Bright o'er his brows the forky radiance blazed,
And high in air the rod divine He raised.—
Wide yawns the cliff!—amid the thirsty throng
Rush the redundant waves, and shine along;
With gourds, and shells, and helmets, press the
bands, 411
Ope their parch'd lips, and spread their eager hands,
Snatch their pale infants to the exuberant flower,
Kneel on the shatter'd rock, and bless the Al-
mighty Power.

Bolster'd with down, amid a thousand wants,
Pale Dropsy rears his bloated form, and pants;
“Quench me, ye cool pellucid rills!” he cries,
Wets his parch'd tongue, and rolls his hollow eyes.
So bends tormented TANTALUS to drink,
While from his lips the refluent waters shrink;
Again the rising stream his bosom laves, 421
And Thirst consumes him 'mid circumfluent waves.
—Divine HYGEIA, from the bending sky
Descending, listens to his piercing cry;

Affumes bright DIGITALIS' dress and air,
Her ruby cheek, white neck, and raven hair ;

Digitalis. l. 425. Of the class Two Powers. Four males, one female. Foxglove. The effect of this plant in that kind of Dropsy, which is termed anasarca, where the legs and thighs are much swelled, attended with great difficulty of breathing, is truly astonishing. In the ascites accompanied with anasarca of people past the meridian of life, it will also sometimes succeed. The method of administering it requires some caution, as it is liable, in greater doses, to induce very violent and debilitating sickness, which continues one or two days, during which time the dropical collection, however, disappears. One large spoonful, or half an ounce, of the following decoction, given twice a day, will generally succeed in a few days. But in more robust people, one large spoonful every two hours, till four spoonfuls are taken, or till sickness occurs, will evacuate the dropical swellings with greater certainty, but is liable to operate more violently. Boil four ounces of the fresh leaves of purple Foxglove (which leaves may be had at all seasons of the year) from two pints of water to twelve ounces ; add to the strained liquor, while yet warm, three ounces of rectified spirit of wine. A theory of the effects of this medicine, with many successful cases, may be seen in a pamphlet, called "Experiments on Mucilaginous and Purulent Matter," published by Dr. Darwin, in 1780. Sold by Cadell, London.

Four youths protect her from the circling throng,
And like the Nymph the Goddess steps along.—
O'er him She waves her serpent-wreathed wand,
Cheers with her voice, and raises with her hand,
Warms with rekindling bloom his visage wan,
And charms the shapeless monster into man. 432

So when Contagion with mephitic breath
And wither'd Famine urged the work of death;
Marseilles' good Bishop, London's generous Mayor,
With food and faith, with medicine and with
prayer,

Marseilles' good Bishop. l. 435. In the year 1720 and 1722, the Plague made dreadful havock at Marseilles; at which time the Bishop was indefatigable in the execution of his pastoral office, visiting, relieving, encouraging, and absolving the sick with extreme tenderness; and though perpetually exposed to the infection, like Sir John Lawrence, mentioned below, they both are said to have escaped the disease.

London's generous Mayor. l. 435. During the great Plague at London in the year 1665, Sir John Lawrence, the then Lord Mayor, continued the whole time in the city; heard complaints

Down many a winding step to dungeons dank,
Where anguish wails aloud, and fetters clank ;
To caves bestrew'd with many a mouldering bone,
And cells, whose echoes only learn to groan; 450
Where no kind bars a whispering friend disclose,
No sunbeam enters, and no zephyr blows,
HE treads, inemulous of fame or wealth,
Profuse of toil, and prodigal of health,
With soft assuasive eloquence expands
Power's rigid heart, and opes his clenching hands ;
Leads stern-ey'd Justice to the dark domains,
If not to sever, to relax the chains ;
Or guides awaken'd Mercy through the gloom,
And shews the prison, sister to the tomb!— 460
Gives to her babes the self-devoted wife,
To her fond husband liberty and life!—
—The Spirits of the Good, who bend from high
Wide o'er these earthly scenes their partial eye,
When first, array'd in VIRTUE's purest robe,
They saw her HOWARD traversing the globe ;

Saw round his brows her fun-like Glory blaze
 In arrowy circles of unwearied rays;
 Mistook a Mortal for an Angel-Guest, 469
 And ask'd what Seraph-foot the earth imprest.
 —Onward he moves!—Disease and Death retire,
 And murmuring Demons hate him, and admire.”

Here paused the Goddess—on HYGEIA'S shrine
 Obsequious Gnomes repose the lyre divine;
 Descending Sylphs relax the trembling strings,
 And catch the rain-drops on their shadowy wings.
 —And now her vase a modest Naiad fills
 With liquid crystal from her pebbly rills;
 Piles the dry cedar round her silver urn,
 (Bright climbs the blaze, the crackling faggots
 burn), 480
 Culls the green herb of China's envy'd bowers,
 In gaudy cups the steamy treasure pours;
 And, sweetly smiling, on her bended knee
 Presents the fragrant quintessence of Tea.

INTERLUDE II.

Bookseller. THE monsters of your Botanic Garden are as surprising as the bulls with brazen feet, and the fire-breathing dragons, which guarded the Hesperian fruit; yet are they not disgusting, nor mischievous: and in the manner you have chained them together in your exhibition, they succeed each other amusingly enough, like prints of the London Cries, wrapped upon rollers, with a glass before them. In this at least they resemble the monsters in Ovid's *Metamorphoses*; but your similes, I suppose, are Homeric?

Poet. The great Bard well understood how to make use of this kind of ornament in Epic Poetry. He brings his valiant heroes into the field with much parade, and sets them a fighting with great fury; and then, after a few thrusts and parries, he introduces a long string of similes. During this

the battle is supposed to continue: and thus the time necessary for the action is gained in our imaginations; and a degree of probability produced, which contributes to the temporary deception or reverie of the reader.

But the similes of Homer have another agreeable characteristic; they do not quadrate, or go upon all fours (as it is called), like the more formal similes of some modern writers; any one resembling feature seems to be with him a sufficient excuse for the introduction of this kind of digression; he then proceeds to deliver some agreeable poetry on this new subject, and thus converts every simile into a kind of short episode.

B. Then a simile should not very accurately resemble the subject?

P. No; it would then become a philosophical analogy, it would be ratiocination instead of poetry: it need only so far resemble the subject, as poetry itself ought to resemble nature. It should have so much sublimity, beauty, or novelty, as to interest the reader; and should be expressed in

picturesque language, so as to bring the scenery before his eye; and should lastly bear so much veri-similitude as not to awaken him by the violence of improbability or incongruity.

B. May not the reverie of the reader be dissipated or disturbed by disagreeable images being presented to his imagination, as well as by improbable or incongruous ones?

P. Certainly; he will endeavour to rouse himself from a disagreeable reverie, as from the nightmare. And from this may be discovered the line of boundary between the Tragic and the Horrid; which line, however, will veer a little this way or that, according to the prevailing manners of the age or country, and the peculiar association of ideas, or idiosyncrasy of mind, of individuals. For instance, if an artist should represent the death of an officer in battle, by shewing a little blood on the bosom of his shirt, as if a bullet had there penetrated, the dying figure would affect the beholder with pity; and if fortitude was at the same time expressed in his countenance, admiration

would be added to our pity. On the contrary, if the artist should chuse to represent his thigh as shot away by a cannon ball, and should exhibit the bleeding flesh and shattered bone of the stump, the picture would introduce into our minds ideas from a butcher's shop, or a surgeon's operation room, and we should turn from it with disgust. So if characters were brought upon the stage with their limbs disjointed by torturing instruments, and the floor covered with clotted blood and scattered brains, our theatric reverie would be destroyed by disgust, and we should leave the play-house with detestation.

The Painters have been more guilty in this respect than the Poets; the cruelty of Apollo in flaying Marfyas alive is a favourite subject with the antient artists: and the tortures of expiring martyrs have disgraced the modern ones. It requires little genius to exhibit the muscles in convulsive action either by the pencil or the chissel, because the interstices are deep, and the lines strongly defined: but those tender gradations of muscular action, which constitute the graceful attitudes of the body, are difficult to conceive or to execute,

except by a master of nice discernment and cultivated taste.

B. By what definition would you distinguish the Horrid from the Tragic?

P. I suppose the latter consist of Distress attended with Pity, which is said to be allied to Love, the most agreeable of all our passions; and the former in Distress, accompanied with Disgust, which is allied to Hate, and is one of our most disagreeable sensations. Hence, when horrid scenes of cruelty are represented in pictures, we wish to disbelieve their existence, and voluntarily exert ourselves to escape from the deception: whereas the bitter cup of true Tragedy is mingled with some sweet consolatory drops, which endear our tears, and we continue to contemplate the interesting delusion with a delight, which is not easy to explain.

B. Has not this been explained by Lucretius, where he describes a shipwreck; and says, the

Spectators receive pleasure from feeling themselves safe on land? and by Akenfide, in his beautiful poem on the Pleasures of Imagination, who ascribes it to our finding objects for the due exertion of our passions?

P. We must not confound our sensations at the contemplation of real misery with those, which we experience at the scenical representations of tragedy. The spectators of a shipwreck may be attracted by the dignity and novelty of the object; and from these may be said to receive pleasure; but not from the distress of the sufferers. An ingenious writer who has criticised this dialogue in the English Review for August, 1789, adds, that one great source of our pleasure from scenical distress arises from our, at the same time, generally contemplating one of the noblest objects of nature, that of Virtue triumphant over difficulty and oppression, or supporting its votary under every suffering: or, where this does not occur, that our minds are relieved by the justice of some signal punishment awaiting the delinquent. But, besides this, at the exhibition of a good tragedy, we

are not only amused by the dignity and novelty, and beauty, of the objects before us; but, if any distressful circumstance occur too forcibly for our sensibility, we can voluntarily exert ourselves, and recollect, that the scenery is not real: and thus not only the pain, which we had received from the apparent distress, is lessened, but a new source of pleasure is opened to us, similar to that which we frequently have felt on awaking from a distressful dream; we are glad that it is not true. We are at the same time unwilling to relinquish the pleasure which we receive from the other interesting circumstances of the drama; and on that account quickly permit ourselves to relapse into the delusion; and thus alternately believe and disbelieve, almost every moment, the existence of the objects represented before us.

B. Have those two sovereigns of poetic land, HOMER and SHAKESPEAR, kept their works entirely free from the Horrid?—or even yourself in your third Canto?

P. The descriptions of the mangled carcases

of the companions of Ulysses, in the cave of Polypheme, is in this respect certainly objectionable, as is well observed by Scaliger. And in the play of Titus Andronicus, if that was written by Shakespear (which from its internal evidence I think very improbable,) there are many horrid and disgustful circumstances. The following Canto is submitted to the candour of the critical reader, to whose opinion I shall submit in silence.

Poly-
able,
play
by
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and
anto
ader,

THE
LOVES OF THE PLANTS.

CANTO III.

AND now the Goddess founds her silver shell,
And shakes with deeper tones the enchanted dell;
Pale, round her grassy throne, bedew'd with tears,
Flit the thin forms of Sorrows, and of Fears;
Soft Sighs responsive whisper to the chords,
And Indignations half-unsheath their swords.

“ Thrice round the grave CIRCÆA prints her
tread,
And chaunts the numbers, which disturb the dead ;

Circæa. l. 7. Enchanters Nightshade. Two males, one female. It was much celebrated in the mysteries of witchcraft,

Shakes o'er the holy earth her fable plume,
Waves her dread wand, and strikes the echoing
tomb! 10

and for the purpose of raising the devil, as its name imports. It grows amid the mouldering bones and decayed coffins in the ruinous vaults of Sleaford church in Lincolnshire. The superstitious ceremonies or histories belonging to some vegetables have been truly ridiculous; thus the Druids are said to have cropped the Mistleto with a golden axe or sickle; and the Bryony, or Mandrake, was said to utter a scream when its root was drawn from the ground; and that the animal which drew it up became diseased and soon died: on which account, when it was wanted for the purpose of medicine, it was usual to loosen and remove the earth about the root, and then to tie it by means of a cord to a dog's tail, who was whipped to pull it up, and was then supposed to suffer for the impiety of the action. And even at this day bits of dried root of Peony are rubbed smooth, and strung, and sold under the name of Anodyne necklaces, and tied round the necks of children, to facilitate the growth of their teeth! add to this, that in Price's History of Cornwall, a book published about ten years ago, the *Virga Divinatoria*, or Divining Rod, has a degree of credit given to it. This rod is of hazel, or other light wood, and held horizontally in the hand, and is said to bow towards the ore whenever the Conjuror walks over a mine. A very few years ago, in France, and even in England, another kind of divining rod has been used to discover

—Pale shoot the stars across the troubled night,
The tim'rous moon withholds her conscious light;
Shrill scream the famish'd bats, and shivering
owls,

And loud and long the dog of midnight howls!—
—Then yawns the bursting ground!—*two* imps
obscene

Rise on broad wings, and hail the baleful queen;
Each with dire grin salutes the potent wand,
And leads the Sorcerers with his footy hand;
Onward they glide, where sheds the sickly yew
O'er many a mouldering bone its nightly dew; 20
The ponderous portals of the church unbar,—
Hoarse on their hinge the ponderous portals jar;
As through the colour'd glass the moon-beam falls,
Huge shapeless spectres quiver on the walls;

springs of water in a similar manner, and gained some credit.
And in this very year, there were many in France, and some
in England, who underwent an enchantment without any di-
vining rod at all, and believed themselves to be affected by an
invisible agent, which the Enchanter called Animal Magnetism!

Low murmurs creep along the hollow ground,
 And to each step the pealing ailes resound;
 By glimmering lamps, protecting faints among,
 The shrines all trembling as they pass along,
 O'er the still choir with hideous laugh they move,
 (Fiends yell below, and angels weep above!) 30
 Their impious march to God's high altar bend,
 With feet impure the sacred steps ascend;
 With wine unblest'd the holy chalice stain,
 Assume the mitre, and the cope profane:
 To heaven their eyes in mock devotion throw,
 And to the cross with horrid mummery bow;
 Adjure by mimic rites the powers above,
 And plight alternate their Satanic love.

Avaunt, ye Vulgar! from her sacred groves
 With maniac step the Pythian LAURA moves; 40

Laura. l. 40. Prunus Lauro-cerasus. Twenty males, one female. The Pythian priestess is supposed to have been made drunk with infusion of laurel-leaves when she delivered her oracles. The intoxication or inspiration is finely described by Virgil

Full of the God her labouring bosom sighs,
Foam on her lips, and fury in her eyes,
Strong writhe her limbs, her wild dishevell'd hair
Starts from her laurel-wreath, and swims in air.—
While *twenty* Priests the gorgeous shrine sur-
round
Cinctur'd with ephods, and with garlands crown'd,
Contending hosts and trembling nations wait
The firm immutable behests of Fate ;

Æn. L. vi. The distilled water from laurel-leaves is, perhaps, the most sudden poison we are acquainted with in this country. I have seen about two spoonfuls of it destroy a large pointer dog in less than ten minutes. In a smaller dose it is said to produce intoxication : on this account there is reason to believe it acts in the same manner as opium and vinous spirit ; but that the dose is not so well ascertained. See note on Tremella. It is used in the Ratifia of the Distillers, by which some dram-drinkers have been suddenly killed. One pint of water, distilled from fourteen pounds of black cherry stones bruised, has the same deleterious effect, destroying as suddenly as laurel-water. It is probable Apricot-kernels, Peach-leaves, Walnut-leaves, and whatever possesses the kernel-flavour, may have similar qualities.

—She speaks in thunder from her golden throne
With words *unwill'd*, and wisdom not her own. 50

So on his NIGHTMARE through the evening fog
Flits the squab Fiend o'er fen, and lake, and bog;
Seeks some love-wilder'd Maid with sleep op-
press'd,

Alights, and grinning fits upon her breast.

—Such as of late amid the murky sky

Was mark'd by FUSELI'S poetic eye;

Whose daring tints, with SHAKESPEAR'S happiest
grace,

Gave to the airy phantom form and place.—

Back o'er her pillow sinks her blushing head, 59

Her snow-white limbs hang helpless from the bed;

While with quick sighs, and suffocative breath,

Her interrupted heart-pulse swims in death.

—Then shrieks of captur'd towns, and widows'
tears,

Pale lovers stretch'd upon their blood-stain'd biers,

ro III.
rone
n. 50

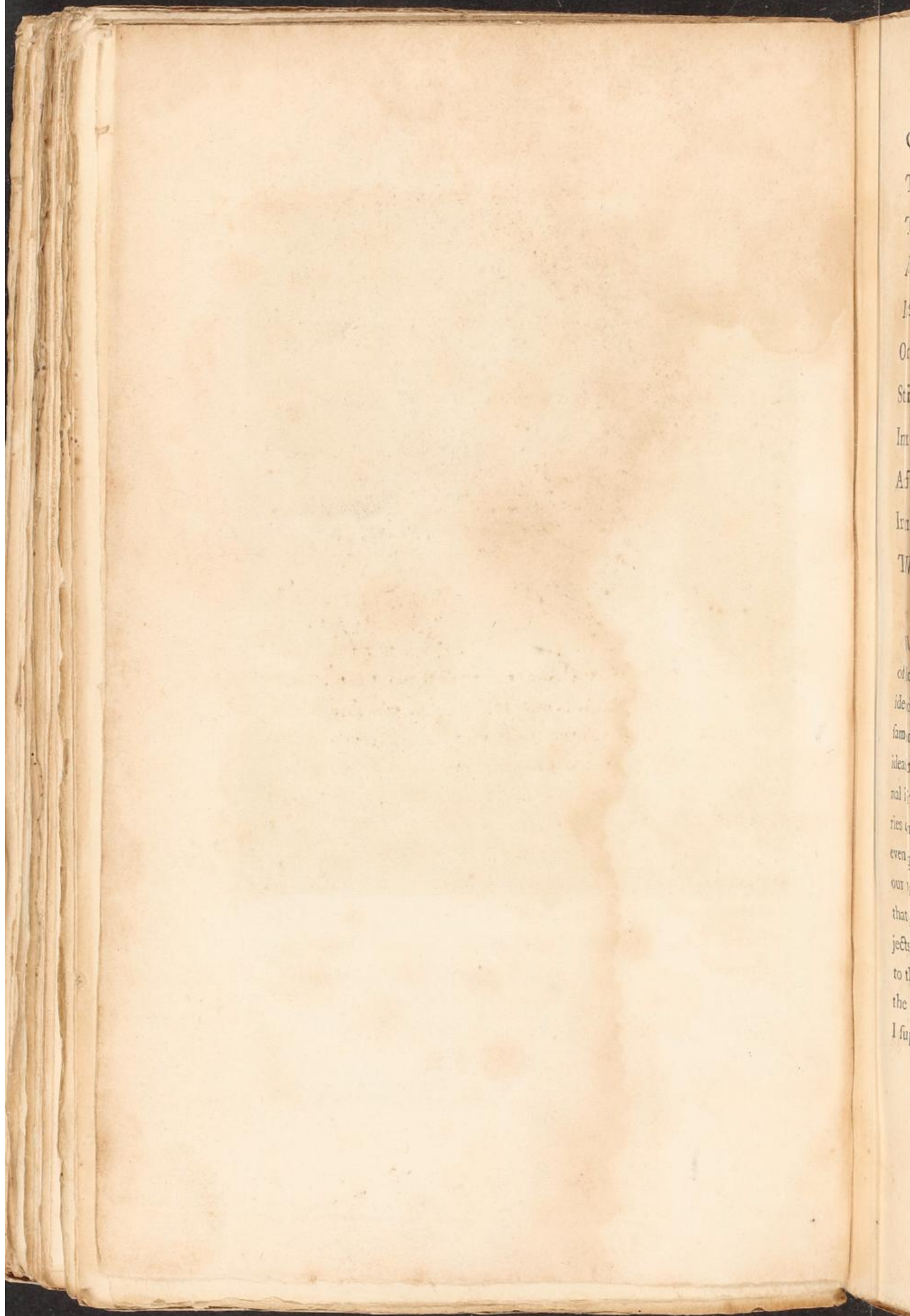


J. Fuseli del. Pinxit.

J. Hollaway sculp^t

Nightmare.

London, Published June 1. 1791. by J. Johnson, 8th Pauls Church Yard.



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The headlong precipice that thwarts her flight,
The trackless desert, the cold starless night,
And stern-eye'd Murderer with his knife behind,
In dread succession agonize her mind.
O'er her fair limbs convulsive tremors fleet,
Start in her hands, and struggle in her feet; 70
In vain to scream with quivering lips she tries,
And strains in palsy'd lids her tremulous eyes;
In vain she *wills* to run, fly, swim, walk, creep;
The WILL presides not in the bower of SLEEP.

The Will presides not. l. 74. Sleep consists in the abolition of all voluntary power, both over our muscular motions and our ideas; for we neither walk nor reason in sleep. But at the same time, many of our muscular motions, and many of our ideas continue to be excited into action in consequence of internal irritations and of internal sensations; for the heart and arteries continue to beat, and we experience variety of passions, and even hunger and thirst in our dreams. Hence I conclude, that our nerves of sense are not torpid or inert during sleep; but that they are only precluded from the perception of external objects, by their external organs being rendered unfit to transmit to them the appulses of external bodies, during the suspension of the power of volition; thus the eyelids are closed in sleep, and I suppose the tympanum of the ear is not stretched, because they

—On her fair bosom fits the Demon-Ape
 Erect, and balances his bloated shape;
 Rolls in their marble orbs his Gorgon-eyes,
 And drinks with leathern ears her tender cries.

Arm'd with her ivory beak, and talon-hands,
 Descending FICA dives into the sands; 80

are deprived of the voluntary exertions of the muscles appropriated to these purposes; and it is probable something similar happens to the external apparatus of our other organs of sense, which may render them unfit for their office of perception during sleep: for milk put into the mouths of sleeping babes occasions them to swallow and suck; and, if the eyelid is a little opened in the day-light by the exertions of disturbed sleep, the person dreams of being much dazzled. See first Interlude.

When there arises in sleep a painful desire to exert the voluntary motions, it is called the Nightmare or Incubus. When the sleep becomes so imperfect that some muscular motions obey this exertion of desire, people have walked about, and even performed some domestic offices in sleep; one of these sleep-walkers I have frequently seen: once she smelt of a tube-rose, and sung, and drank a dish of tea in this state; her awaking was always attended with prodigious surprise, and even fear; this disease had daily periods, and seemed to be of the epileptic kind.

Ficus indica. l. 80. Indian Fig-tree. Of the class Polygamy.

—Erst, fires volcanic in the marble womb
Of cloud-wrapp'd WERTON raised the massy dome;

feat of John Port, Esq. about three miles below. Where these rivers rise again there are impressions resembling Fish, which appear to be of Jasper bedded in Limestone. Calcareous Spars, Shells converted into a kind of Agate, corallines in Marble, ores of Lead, Copper, and Zinc, and many strata of Flint, or Chert, and of Toadstone, or Lava, abound in this part of the country. The Druids are said to have offered human sacrifices inclosed in wicker idols to Thor. Thursday had its name from this Deity.

The broken appearance of the surface of many parts of this country; with the Swallows, as they are called, or basons on some of the mountains, like volcanic Craters, where the rain-water sinks into the earth; and the numerous large stones, which seem to have been thrown over the land by volcanic explosions; as well as the great masses of Toadstone or Lava; evince the existence of violent earthquakes at some early period of the world. At this time the channels of these subterraneous rivers seem to have been formed, when a long tract of rocks were raised by the sea flowing in upon the central fires, and thus producing an irresistible explosion of steam; and when these rocks again subsided, their parts did not exactly correspond, but left a long cavity arched over in this operation of nature. The cavities at Castleton and Buxton in Derbyshire seem to have had a similar origin, as well as this cavern termed Thor's house. See Mr. Whitehurst's and Dr. Hutton's Theories of the Earth.

Rocks rear'd on rocks in huge disjointed piles
Form the tall turrets, and the lengthen'd ailes;
Broad ponderous piers sustain the roof, and wide
Branch the vast rain-bow ribs from side to side.
While from above descends in milky streams
One scanty pencil of illusive beams,
Suspended crags and gaping gulfs illumes, 99
And gilds the horrors of the deepen'd glooms.

—Here oft the Naiads, as they chanced to stray
Near the dread Fane on THOR'S returning day,
Saw from red altars streams of guiltless blood
Stain their green reed-beds, and pollute their
flood;

Heard dying babes in wicker prisons wail,
And shrieks of matrons thrill the affrighted Gale;
While from dark caves infernal Echoes mock,
And Fiends triumphant shout from every rock!
—So still the Nymphs emerging lift in air 109
Their snow-white shoulders and their azure hair;
Sail with sweet grace the dimpling streams along,
Listening the Shepherd's or the Miner's song;

With fierce distracted eye IMPATIENS stands,
Swells her pale cheeks, and brandishes her hands,

Impatiens. l. 131. Touch me not. The seed vessel consists of one cell with five divisions; each of these, when the seed is ripe, on being touched, suddenly folds itself into a spiral form, leaps from the stalk, and disperses the seeds to a great distance by its elasticity. The capsule of the geranium and the beard of wild oats are twisted for a similar purpose, and dislodge their seeds on wet days, when the ground is best fitted to receive them. Hence one of these, with its adhering capsule or beard fixed on a stand, serves the purpose of an hygrometer, twisting itself more or less according to the moisture of the air.

The awn of barley is furnished with stiff points, which, like the teeth of a saw, are all turned towards one end of it; as this long awn lies upon the ground, it extends itself in the moist air of night, and pushes forwards the barley corn, which it adheres to; in the day it shortens as it dries; and as these points prevent it from receding, it draws up its pointed end; and thus, creeping like a worm, will travel many feet from the parent stem. That very ingenious Mechanic Philosopher, Mr. Edgeworth, once made on this principle a wooden automaton; its back consisted of soft Fir-wood, about an inch square, and four feet long, made of pieces cut the cross-way in respect to the fibres of the wood, and glued together: it had two feet before, and two behind, which supported the back horizontally; but were placed with their extremities, which were armed with sharp points of iron, bending backwards. Hence, in moist weather the back lengthened, and

With rage and hate the astonish'd groves alarms,
 And hurls her infants from her frantic arms.
 —So when MEDÆA left her native foil,
 Unaw'd by danger, un subdued by toil;
 Her weeping fire and beckoning friends withstood,
 And launch'd enamour'd on the boiling flood;
 One ruddy boy her gentle lips carefs'd,
 And one fair girl was pillowed on her breast; 140
 While high in air the golden treasure burns,
 And Love and Glory guide the prow by turns.
 But, when Theffalia's inauspicious plain
 Received the matron-heroine from the main;
 While horns of triumph found, and altars burn,
 And shouting nations hail their Chief's return;
 Aghast, She saw new-deck'd the nuptial bed,
 And proud CREUSA to the temple led;

the two foremost feet were pushed forwards; in dry weather the
 hinder feet were drawn after, as the obliquity of the points of the
 feet prevented it from receding. And thus, in a month or two,
 it walked across the room which it inhabited. Might not this
 machine be applied as an Hygrometer to some meteorological
 purpose?

Saw her in JASON'S mercenary arms
Deride her virtues, and insult her charms; 150
Saw her dear babes from fame and empire torn,
In foreign realms deserted and forlorn;
Her love rejected, and her vengeance braved,
By Him her beauties won, her virtues faved.—
With stern regard she eyed the traitor-king,
And felt, Ingratitude! thy keenest sting;
“Nor Heaven,” she cried, “nor Earth, nor Hell
 can hold
“A Heart abandon'd to the thirst of Gold!”
Stamp'd with wild foot, and shook her horrent
 brow,
And call'd the furies from their dens below. 160
—Slow out of earth, before the festive crowds,
On wheels of fire, amid a night of clouds,
Drawn by fierce fiends arose a magic car,
Received the Queen, and hovering flam'd in
 air.—
As with raised hands the suppliant traitors kneel,
And fear the vengeance they deserve to feel,

Thrice with parch'd lips her guiltless babes she
 press'd,

And thrice she clasp'd them to her tortur'd breast;
Awhile with white uplifted eyes she stood,

Then plung'd her trembling poniards in their
 blood. 170

“Go, kiss your fire! go, share the bridal mirth!”

She cry'd, and hurl'd their quivering limbs on
 earth.

Rebellowing thunders rock the marble towers,
And red-tongued lightnings shoot their arrowy
 showers;

Earth yawns!—the crashing ruin sinks!—o'er all
Death with black hands extends his mighty Pall;
Their mingling gore the Fiends of Vengeance
 quaff,

And Hell receives them with convulsive laugh.

Round the vex'd isles where fierce tornadoes
 roar,

Or tropic breezes sooth the fultry shore; 180

What time the eve her gauze pellucid spreads
O'er the dim flowers, and veils the misty meads;
Slow o'er the twilight sands or leafy walks,
With gloomy dignity *Dictamna* stalks;

Dictamnus. 1. 184. *Fraxinella*. In the still evenings of dry seasons this plant emits an inflammable air or gas, and flashes on the approach of a candle. There are instances of human creatures who have taken fire spontaneously, and been totally consumed. *Phil. Transf.*

The odours of many flowers, so delightful to our sense of smell, as well as the disagreeable scents of others, are owing to the exhalation of their essential oils. These essential oils have greater or less volatility, and are all inflammable; many of them are poisons to us, as those of Laurel and Tobacco; others possess a narcotic quality, as is evinced by the oil of cloves instantly relieving slight tooth-achs; from oil of cinnamon relieving the hiccup; and balsam of peru relieving the pain of some ulcers. They are all deleterious to certain insects, and hence their use in the vegetable economy, being produced in flowers or leaves to protect them from the depredations of their voracious enemies. One of the essential oils, that of turpentine, is recommended, by M. de Thosse, for the purpose of destroying insects which infect both vegetables and animals. Having observed that the trees were attacked by multitudes of small insects of different colours (*pucins* ou *pucerons*) which injured their young branches, he destroyed them all entirely in the following manner: he put

In sulphurous eddies round the weird dame
 Plays the light gas, or kindles into flame.
 If rests the traveller his weary head,
 Grim MANCINELLA haunts the mossy bed,

into a bowl a few handfuls of earth, on which he poured a small quantity of oil of turpentine; he then beat the whole together with a spatula, pouring on it water till it became of the consistence of soup; with this mixture he moistened the ends of the branches, and both the insects and their eggs were destroyed, and other insects kept aloof by the scent of the turpentine. He adds, that he destroyed the fleas of his puppies by once bathing them in warm water impregnated with oil of turpentine. Mem. d'Agriculture, An. 1787, Tremest. Printemp. p. 109. I sprinkled some oil of turpentine, by means of a brush, on some branches of a nectarine tree, which was covered with the aphid; but it killed both the insect and the branches: a solution of arsenic much diluted did the same. The shops of medicine are supplied with resins, balsams, and essential oils; and the tar and pitch, for mechanical purposes, are produced from these vegetable secretions.

Mancinella. l. 188. Hippomane. With the milky juice of this tree the Indians poison their arrows; the dew-drops which fall from it are so caustic as to blister the skin, and produce dangerous ulcers; whence many have found their death by sleeping under its shade. Variety of noxious plants abound in all coun-

Brews her black hebenon, and, stealing near,
 Pours the curst venom in his tortured ear.— 190
 Wide o'er the mad'ning thron'g URTICA flings
 Her barbed shafts, and darts her poison'd stings.

tries; in our own the deadly night-shade, henbane, houndstongue, and many others, are seen in almost every high road untouched by animals. Some have asked, what is the use of such abundance of poisons? The nauseous or pungent juices of some vegetables, like the thorns of others, are given them for their defence from the depredations of animals; hence the thorny plants are in general wholesome and agreeable food to granivorous animals. See note on Ilex. The flowers or petals of plants are perhaps in general more acrid than their leaves; hence they are much seldomer eaten by insects. This seems to have been the use of the essential oil in the vegetable economy, as observed above in the notes on Dictamnus and Ilex. The fragrance of plants is thus a part of their defence. These pungent or nauseous juices of vegetables have supplied the science of medicine with its principal materials, such as purge, vomit, intoxicate, &c.

Urtica. l. 191. Nettle. The sting has a bag at its base, and a perforation near its point, exactly like the stings of wasps and the teeth of adders; Hook, Microgr. p. 142. Is the fluid contained in this bag, and pressed through the perforation into the wound, made by the point, a caustic essential oil, or a concentrated vegetable acid? The vegetable poisons, like the animal

And fell LOBELIA's suffocating breath

Loads the dank pinion of the gale with death,

ones, produce more sudden and dangerous effects, when instilled into a wound, than when taken into the stomach; whence the families of Marfi and Pfilli, in antient Rome, sucked the poison without injury out of wounds made by vipers, and were supposed to be indued with supernatural powers for this purpose. By the experiments related by Beccaria, it appears that four or five times the quantity, taken by the mouth, had about equal effects with that infused into a wound. The male flowers of the nettle are separate from the female, and the anthers are seen in fair weather to burst with force, and to discharge a dust, which hovers about the plant like a cloud.

Lobelia. 1. 193. *Longiflora*. Grows in the West Indies, and spreads such deleterious exhalations around it, that an oppression of the breast is felt on approaching it at many feet distance when placed in the corner of a room or hot-house. Ingenhousz, *Exper. on Air*, p. 146. *Jacquini hort. botanic. Vindeb.* The exhalations from ripe fruit or withering leaves are proved much to injure the air in which they are confined; and, it is probable, all those vegetables which emit a strong scent may do this in a greater or less degree, from the Rose to the Lobelia; whence the unwholesomeness in living perpetually in such an atmosphere of perfume as some people wear about their hair, or carry in their handkerchiefs. Either Boerhave or Dr. Mead have affirmed they were acquainted with a poisonous fluid whose vapour would

—With fear and hate they blast the affrighted
groves,
Yet own with tender care their *kindred Loves!*—

So, where PALMYRA 'mid her wasted plains,
Her shatter'd aqueducts, and prostrate fanes,
(As the bright orb of breezy midnight pours 199
Long threads of silver through her gaping towers,
O'er mouldering tombs, and tottering columns
gleams,
And frosts her deserts with diffusive beams),

presently destroy the person who sat near it. And it is well known, that the gas from fermenting liquors, or obtained from lime-stone, will destroy animals immersed in it, as well as the vapour of the Grotto del Cani near Naples.

So, where Palmyra. l. 197. Among the ruins of Palmyra, which are dispersed not only over the plains but even in the deserts, there is one single colonnade above 2600 yards long, the bases of the Corinthian columns of which exceed the height of a man: and yet this row is only a small part of the remains of that one edifice! Volney's Travels.

Sad o'er the mighty wreck in silence bends,
Lifts her wet eyes, her tremulous hands extends.—
If from lone cliffs a bursting rill expands
Its transient course, and sinks into the sands;
O'er the moist rock the fell Hyæna prowls,
The Leopard hisses, and the Panther growls;
On quivering wing the famish'd Vulture screams,
Dips his dry beak, and sweeps the gushing
streams; 210
With foaming jaws, beneath, and sanguine tongue,
Laps the lean Wolf, and pants, and runs along;
Stern stalks the Lion, on the rustling brinks
Hears the dread Snake, and trembles as he drinks;
Quick darts the scaly Monster o'er the plain,
Fold, after fold, his undulating train;
And, bending o'er the lake his crested brow,
Starts at the Crocodile, that gapes below.

Where seas of glass with gay reflections smile
Round the green coasts of Java's palmy isle; 220

A spacious plain extends its upland scene,
 Rocks rise on rocks, and fountains gush between;
 Soft zephyrs blow, eternal summers reign,
 And showers prolific bless the soil,—in vain!
 —No spicy nutmeg scents the vernal gales,
 Nor towering plaintain shades the mid-day vales;
 No grassy mantle hides the fable hills,
 No flowery chaplet crowns the trickling rills;
 Nor tufted moss, nor leathery lichen creeps
 In ruffet tapestry o'er the crumbling steeps. 230
 —No step retreating, on the sand impress'd,
 Invites the visit of a second guest;
 No refluent fin the unpeopled stream divides,
 No revolant pinion cleaves the airy tides;
 Nor handed moles, nor beaked worms return,
 That mining pass the irremeable bourn.—
 Fierce in dread silence on the blasted heath
 Fell UPAS sits, the HYDRA-TREE of death.

Upas. l. 238. There is a poison-tree in the island of Java,
 which is said by its effluvia to have depopulated the country for

Lo; from one root, the envenom'd soil below,
A thousand vegetative serpents grow; 240
In shining rays the scaly monster spreads
O'er ten square leagues his far-diverging heads;
Or in one trunk entwists his tangled form,
Looks o'er the clouds, and hisses in the storm.

12 or 14 miles round the place of its growth. It is called, in the Malayan language, Bohun-Upas; with the juice of it the most poisonous arrows are prepared; and, to gain this, the condemned criminals are sent to the tree with proper direction both to get the juice and to secure themselves from the malignant exhalations of the tree; and are pardoned if they bring back a certain quantity of the poison. But by the registers there kept, not one in four are said to return. Not only animals of all kinds, both quadrupeds, fish, and birds, but all kinds of vegetables also are destroyed by the effluvia of the noxious tree; so that, in a district of 12 or 14 miles round it, the face of the earth is quite barren and rocky, intermixed only with the skeletons of men and animals, affording a scene of melancholy beyond what poets have described or painters delineated. Two younger trees of its own species are said to grow near it. See London Magazine for 1784 or 1783. Translated from a description of the poison-tree of the island of Java, written in Dutch by N. P. Foersch. For a further account of it, see a note at the end of the work.

Steep'd in fell poison, as his sharp teeth part,
 A thousand tongues in quick vibration dart;
 Snatch the proud Eagle towering o'er the heath,
 Or pounce the Lion, as he stalks beneath;
 Or strew, as marshall'd hosts contend in vain,
 With human skeletons the whiten'd plain. 250

—Chain'd at his root two scion-demons dwell,
 Breathe the faint hiss, or try the shriller yell;
 Rise, fluttering in the air on callow wings,
 And aim at insect-prey their little stings.

So Time's strong arms with sweeping scythe erase
 Art's cumberous works, and empires, from their
 base:

While each young Hour its fickle fine employs,
 And crops the sweet buds of domestic joys!

With blushes bright as morn fair ORCHIS
 charms,

And lulls her infant in her fondling arms; 260

Orchis. l. 259. The *Orchis morio* in the circumstance of the

Soft plays *Affection* round her bosom's throne,
And guards his life, forgetful of her own.

parent-root shrivelling up and dying, as the young one increases, is not only analogous to other tuberous or knobby roots, but also to some bulbous roots, as the tulip. The manner of the production of herbaceous plants from their various perennial roots, seems to want further investigation, as their analogy is not yet clearly established. The caudex, or true root, in the orchis lies above the knob; and from this part the fibrous roots and the new knob are produced. In the tulip the caudex lies below the bulb; from whence proceed the fibrous roots and the new bulbs; the root, after it has flowered, dies like the orchis-root; for the stem of the last year's tulip lies on the outside, and not in the center of the bulb; which I am informed does not happen in the three or four first years when raised from seed, when it only produces a stem, and slender leaves without flowering. In the tulip-root, dissected in the early spring, just before it begins to shoot, a perfect flower is seen in its center; and between the first and second coat the large next year's bulb is, I believe, produced; between the second and third coat, and between this and the fourth coat, and perhaps further, other less and less bulbs are visible, all adjoining to the caudex at the bottom of the mother bulb; and which, I am told, require as many years before they will flower, as the number of the coats with which they are covered. This annual reproduction of the tulip-root induces some florists to believe that tulip-roots never die naturally, as they lose so few of them; whereas the hyacinth-roots, I am in-

So wings the wounded Deer her headlong flight,
Pierced by some ambush'd archer of the night,

formed, will not last above five or seven years after they have flowered.

The hyacinth-root differs from the tulip-root, as the stem of the last year's flower is always found in the center of the root, and the new off-sets arise from the caudex below the bulb, but not beneath any of the concentric coats of the root, except the external one: hence Mr. Eaton, an ingenious florist of Derby, to whom I am indebted for most of the observations in this note, concludes, that the hyacinth-root does not perish annually after it has flowered like the tulip. Mr. Eaton gave me a tulip-root which had been set too deep in the earth, and the caudex had elongated itself near an inch, and the new bulb was formed above the old one, and detached from it, instead of adhering to its side. See addit. Notes to Vol. 1. No. XIV.

The caudex of the ranunculus, cultivated by the florists, lies above the claw-like root; in this the old root or claws die annually, like the tulip and orchis, and the new claws, which are seen above the old ones, draw down the caudex lower into the earth. The same is said to happen to Scabiosa, or Devil's bit, and some other plants, as valerian and greater plantain; the new fibrous roots rising round the caudex above the old ones, the inferior end of the root becomes stumped, as if cut off, after the old fibres are decayed, and the caudex is drawn down into the earth by these new roots. See Arum and Tulipa.

Shoots to the woodlands with her bounding fawn,
And drops of blood bedew the conscious lawn ;
There hid in shades she shuns the cheerful day,
Hangs o'er her young, and weeps her life away.

So stood Eliza on the wood-crown'd height,
O'er Minden's plain, spectatress of the fight, 270
Sought with bold eye amid the bloody strife
Her dearer self, the partner of her life;
From hill to hill the rushing host pursued,
And view'd his banner, or believed she view'd.
Pleased with the distant roar, with quicker tread
Fast by his hand one lisping boy she led ;
And one fair girl amid the loud alarm
Slept on her kerchief, cradled by her arm ;
While round her brows bright beams of Honour
dart, 279
And Love's warm eddies circle round her heart.
—Near and more near the intrepid Beauty press'd,
Saw through the driving smoke his dancing crest;

Saw on his helm, her virgin-hands inwove,
Bright stars of gold, and mystic knots of love;
Heard the exulting shout, "They run! they
run!"

"Great God!" she cried, "He's safe! the bat-
tle's won!"

—A ball now hisses through the airy tides,
(Some Fury wing'd it, and some Demon guides!)
Parts the fine locks, her graceful head that
deck,

Wounds her fair ear, and sinks into her neck; 290
The red stream, issuing from her azure veins,
Dyes her white veil, her ivory bosom stains.—

—"Ah me;" she cried, and sinking on the
ground,

Kiss'd her dear babes, regardless of the wound;

"Oh, cease not yet to beat, thou Vital Urn!

"Wait, gushing Life, oh, wait my Love's return!

"Hoarse barks the wolf, the vulture screams
from far!—

"The angel, Pity, shuns the walks of war!—

“ Oh, spare, ye War-hounds, spare their tender
age!—

“ On me, on me,” she cried, “ exhaust your
rage!”— 300

Then with weak arms her weeping babes carefs'd,
And, fighting, hid them in her blood-stain'd vest.

From tent to tent the impatient warrior flies,
Fear in his heart, and frenzy in his eyes;
Eliza's name along the camp he calls,
Eliza echoes through the canvas walls;
Quick through the murmuring gloom his foot-
steps tread,
O'er groaning heaps, the dying and the dead,
Vault o'er the plain, and in the tangled wood,
Lo! dead Eliza weltering in her blood!— 310
—Soon hears his listening son the welcome
sounds,

With open arms and sparkling eyes he bounds:—
“ Speak low,” he cries, and gives his little hand,
“ Eliza sleeps upon the dew-cold sand;

“ Poor weeping babe with bloody fingers press’d,
 “ And tried with pouting lips her milkless breast;
 “ Alas! we both with cold and hunger quake—
 “ Why do you weep?—Mamma will soon awake.”
 —“ She’ll wake no more !” the hopeless mourner
 cried,

Upturn’d his eyes, and clasp’d his hands, and
 figh’d: 320

Stretch’d on the ground awhile entranc’d he lay,
 And press’d warm kisses on the lifeless clay;
 And then upsprung with wild convulsive start,
 And all the Father kindled in his heart ;
 “ Oh, Heavens!” he cried, “ my first rash vow
 “ forgive ;
 “ These bind to earth, for these I pray to live!”—
 Round his chill babes he wrapp’d his crimson vest,
 And clasp’d them sobbing to his aching breast.

Two Harlot-Nymphs, the fair CUSCUTAS, please
 With labour’d negligence, and studied ease ; 330

Cuscuta. 1. 329. Dodder. Four males, two females. This

In the meek garb of modest worth disguised,
The eye averted, and the smile chastised,

parasite plant (the seed splitting without cotyledons) protrudes a spiral body, and not endeavouring to root itself in the earth, ascends the vegetables in its vicinity, spirally W. S. E. or contrary to the movement of the sun; and absorbs its nourishment by vessels apparently inserted into its supporters. It bears no leaves, except here and there a scale, very small, membraneous, and close under the branch. Lin. Spec. Plant. edit. a Reichard. Vol. I. p. 352. The Rev. T. Martyn, in his elegant letters on botany, adds, that, not content with support, where it lays hold, there it draws its nourishment; and, at length, in gratitude for all this, strangles its entertainer. Letter xv. A contest for air and light obtains throughout the whole vegetable world; shrubs rise above herbs, and, by precluding the air and light from them, injure or destroy them; trees suffocate or incommode shrubs; the parasite climbing plants, as Ivy, Clematis, incommode the taller trees; and other parasites, which exist without having roots on the ground, as Mistletoe, Tillandsia, Epidendrum, and the mosses and fungusses, incommode them all.

Some of the plants with voluble stems ascend other plants spirally east-south-west, as Humulus, Hop, Lonicera, Honey-suckle, Tamus, black Bryony, Helxine. Others turn their spiral stems west-south-east, as Convolvulus, Corn-bind, Phaseolus, Kidney-bean, Basella, Cynanche, Euphorbia, Eupatorium. The proximate or final causes of this difference have not been investigated. Other plants are furnished with tendrils for the purpose of climbing: if the tendril meets with nothing to lay hold

With fly approach they spread their dangerous
 charms,

And round their victim wind their wiry arms.

So by Scamander when LAOCOON flood,

Where Troy's proud turrets glitter'd in the flood,

Raised high his arm, and with prophetic call

To shrinking realms announced her fated fall;

Whirl'd his fierce spear with more than mortal

force,

339

And pierced the thick ribs of the echoing horse;

of in its first revolution, it makes another revolution; and so on till it wraps itself quite up like a cork-screw: hence, to a careless observer, it appears to move gradually backwards and forwards, being seen sometimes pointing eastward and sometimes westward. One of the Indian grasses, *Panicum arborescens*, whose stem is no thicker than a goose-quill, rises as high as the tallest trees in this contest for light and air. *Spec. Plant. a Reichard, Vol. I. p. 161.* The tops of many climbing plants are tender from their quick growth; and, when deprived of their acrimony by boiling, are an agreeable article of food. The Hop-tops are in common use. I have eaten the tops of white Bryony, *Bryonia alba*, and found them nearly as grateful as Asparagus, and think this plant might be profitably cultivated as an early garden-vegetable. The Tamus (called black Bryony) was less agreeable to the taste when boiled. See *Galanthus*.

Two Serpent-forms incumbent on the main,
Lashing the white waves with redundant train,
Arch'd their blue necks, and shook their tower-
ing crests,

And plough'd their foamy way with speckled
breasts;

Then, darting fierce amid the affrighted throngs,
Roll'd their red eyes, and shot their forked
tongues.—

—Two daring youths to guard the hoary fire,
Thwart their dread progress, and provoke their ire.
Round fire and fons the scaly monsters roll'd,
Ring above ring, in many a tangled fold, 350
Close and more close their writhing limbs fur-
round,

And fix with foamy teeth the envenom'd wound.

—With brow upturn'd to heaven the holy Sage
In silent agony sustains their rage;
While each fond Youth, in vain, with piercing
cries

Bends on the tortured Sire his dying eyes.

“ Drink deep, sweet youths,” seductive VITIS
cries,

The maudlin tear-drop glittering in her eyes;
Green leaves and purple clusters crown her head,
And the tall Thyrsus stays her tottering tread. 360
—*Five* hapless swains with soft assuasive smiles
The harlot meshes in her deathful toils;
“ Drink deep,” she carols, as she waves in air
The mantling goblet, “ and forget your care.”—
O’er the dread feast malignant Chemia scowls,
And mingles poison in the nectar’d bowls;

Vitis. 1. 357. Vine. Five males, one female. The juice of the ripe grape is a nutritive and agreeable food, consisting chiefly of sugar and mucilage. The chemical process of fermentation converts this sugar into spirit; converts food into poison! And it has thus become the curse of the Christian world, producing more than half of our chronical diseases; which Mahomet observed, and forbade the use of it to his disciples. The Arabians invented distillation; and thus by obtaining the spirit of fermented liquors in a less diluted state, added to its destructive quality. A Theory of the Diabetes and Dropsy, produced by drinking fermented or spirituous liquors, is explained in a Treatise on the inverted motions of the lymphatic system, published by Dr. Darwin. Cadell.

Fell Gout peeps grinning through the flimsy scene,
 And bloated Dropsy pants behind unseen;
 Wrapp'd in his robe white Lepra hides his stains,
 And silent Frenzy writhing bites his chains. 370

So when PROMETHEUS brav'd the Thunderer's
 ire,
 Stole from his blazing throne ethereal fire,

Prometheus. l. 371. The ancient story of Prometheus, who concealed in his bosom the fire he had stolen, and afterwards had a vulture perpetually gnawing his liver, affords so apt an allegory for the effects of drinking spirituous liquors, that one should be induced to think the art of distillation, as well as some other chemical processes (such as calcining gold), had been known in times of great antiquity, and lost again. The swallowing drams cannot be better represented in hieroglyphic language than by taking fire into one's bosom; and certain it is, that the general effect of drinking fermented or spirituous liquors is an inflamed, scirrhus, or paralytic liver, with its various critical or consequential diseases, as leprous eruptions on the face, gout, dropsy, epilepsy, insanity. It is remarkable, that all the diseases from drinking spirituous or fermented liquors are liable to become hereditary, even to the third generation, gradually increasing, if the cause be continued, till the family becomes extinct.

And, lantern'd in his breast, from realms of day,
 Bore the bright treasure to his Man of clay;—
 High on cold Caucasus by VULCAN bound,
 The lean impatient Vulture fluttering round,
 His writhing limbs in vain he twists and strains
 To break or loose the adamantine chains.
 The gluttonous bird, exulting in his pangs,
 Tears his swollen liver with remorseless fangs. 380

The gentle CYCLAMEN with dewy eye
 Breathes o'er her lifeless babe the parting sigh;

Cyclamen. l. 181. Shew-bread, or Show-bread. When the seeds are ripe, the stalk of the flower gradually twists itself spirally downwards, till it touches the ground, and forcibly penetrating the earth lodges its seeds, which are thought to receive nourishment from the parent root, as they are said not to be made to grow in any other situation.

The *Trifolium subterraneum*, subterraneous trefoil, is another plant which buries its seeds, the globular head of the seed penetrating the earth; which, however, in this plant may be only an attempt to conceal its seeds from the ravages of birds; for there is another trefoil, the *Trifolium Globosum*, or globular woolly-headed trefoil, which has a curious manner of conceal-

And, bending low to earth, with pious hands

Inhumes her dear Departed in the sands.

“ Sweet Nurfling! withering in thy tender hour,

“ Oh, sleep,” she cries, “ and rise a fairer flower!”

—So when the Plague o'er London's gasping crowds
Shook her dank wing, and steer'd her murky
clouds ;

When o'er the friendless bier no rites were read,
No dirge flow-chaunted, and no pall out-spread ;
While Death and Night piled up the naked throng,
And Silence drove their ebon cars along ; 392

Six lovely daughters, and their father, swept
To the throng'd grave CLEONE saw, and wept ;
Her tender mind, with meek Religion fraught,
Drank all-refign'd Affliction's bitter draught ;
Alive and listening to the whisper'd groan
Of other's woes, unconscious of her own!—

ing its feeds ; the lower florets only have corols, and are fertile ;
the upper ones wither into a kind of wool, and, forming a
head, compleatly conceal the fertile calyxes. Lin. Spec. Plant.
Reichard.

One smiling boy, her last sweet hope, she warms
Hush'd on her bosom, circled in her arms.— 400
Daughter of woe! ere morn, in vain carefs'd,
Clung the cold babe upon thy milkless breast,
With feeble cries thy last sad aid required,
Stretch'd its stiff limbs, and on thy lap expired!—
—Long with wide eye-lids on her child she
gazed,
And long to Heaven their tearless orbs she
rais'd;
Then with quick foot and throbbing heart she
found
Where Chartreuse open'd deep his holy ground;

Where Chartreuse. l. 408. During the plague in London, 1665, one pit to receive the dead was dug in the Charter-house, 40 feet long, 16 feet wide, and about 20 feet deep; and in two weeks received 1114 bodies. During this dreadful calamity there were instances of mothers carrying their own children to those public graves, and of people delirious, or in despair from the loss of their friends, who threw themselves alive into these pits. Journal of the plague-year in 1665, printed for E. Nutt, Royal Exchange.

Bore her last treasure through the midnight gloom,
 And kneeling dropp'd it in the mighty tomb; 410
 "I follow next!" the frantic mourner said,
 And living plung'd amid the festering dead.

Where vast Ontario rolls his brineless tides,
 And feeds the trackless forests on his sides,
 Fair CASSIA trembling hears the howling woods,
 And trusts her tawny children to the floods.—

Rolls his brineless tide. l. 413. Some philosophers have believed that the continent of America was not raised out of the great ocean at so early a period of time as the other continents. One reason for this opinion was, because the great lakes, perhaps nearly as large as the Mediterranean Sea, consist of fresh water. And as the sea-salt seems to have its origin from the destruction of vegetable and animal bodies, washed down by rains, and carried by rivers into lakes or seas; it would seem that this source of sea-salt had not so long existed in that country. There is, however, a more satisfactory way of explaining this circumstance; which is, that the American lakes lie above the level of the ocean, and are hence perpetually desalinated by the rivers which run through them; which is not the case with the Mediterranean, into which a current from the main ocean perpetually passes.

Cassia. l. 415. Ten males, one female. The seeds are

Cinctured with gold while *ten* fond brothers stand,
And guard the beauty on her native land,

black, the stamens gold-colour. This is one of the American fruits, which are annually thrown on the coasts of Norway; and are frequently in so recent a state as to vegetate, when properly taken care of. The fruit of the anacardium, cashew-nut; of cucurbita lagenaria, bottle-gourd; of the mimosa scandens, cocoons; of the piscidia erythrina, log-wood-tree; and cocoa-nuts are enumerated by Dr. Tonning, (Amæn. Acad. 149.) amongst these emigrant seeds. The fact is truly wonderful, and cannot be accounted for but by the existence of under currents in the depths of the ocean; or from vortexes of water passing from one country to another through caverns of the earth.

Sir Hans Sloane has given an account of four kinds of seeds which are frequently thrown by the sea upon the coasts of the islands of the northern parts of Scotland. Phil. Trans. abridged, Vol. III. p. 540, which seeds are natives of the West Indies, and seem to be brought thither by the gulf-stream described below. One of these is called, by Sir H. Sloane, Phaseolus maximus perennis, which is often thrown also on the coasts of Kerry in Ireland; another is called in Jamaica Horse-eye-bean; and a third is called Niker in Jamaica. He adds, that the Lenticula marina, or Sargosso, grows on the rocks about Jamaica, is carried by the winds and current towards the coasts of Florida, and thence into the North-America ocean, where it lies very thick on the surface of the sea.

Thus a rapid current passes from the gulf of Florida to the

Soft breathes the gale, the current gently moves,
And bears to Norway's coasts her infant loves.

N. E. along the coast of North-America, known to seamen by the name of the GULF-STREAM. A chart of this was published by Dr. Franklin in 1768, from the information principally of Capt. Folger. This was confirmed by the ingenious experiments of Dr. Blagden, published in 1781, who found that the water of the gulf-stream was from six to eleven degrees warmer than the water of the sea through which it ran; which must have been occasioned by its being brought from a hotter climate. He ascribes the origin of this current to the power of the trade-winds, which, blowing always in the same direction, carry the waters of the Atlantic ocean to the westward, till they are stopped by the opposing continent on the west of the Gulf of Mexico, and are thus accumulated there, and run down the Gulf of Florida. *Philos. Transf. V. 71, p. 335.* Governor Pownal has given an elegant map of this Gulf-stream, tracing it from the Gulf of Florida northward as far as Cape Sable in Nova Scotia, and then across the Atlantic ocean to the coast of Africa, between the Canary Islands and Senegal, increasing in breadth, as it runs, till it occupies five or six degrees of latitude. The Governor likewise ascribes this current to the force of the trade-winds *protruding* the waters westward, till they are opposed by the continent, and accumulated in the Gulf of Mexico. He very ingeniously observes, that a great eddy must be produced in the Atlantic ocean between this Gulf-stream and the

—So the sad mother at the noon of night 421
 From bloody Memphis stole her silent flight;
 Wrapp'd her dear babe beneath her folded vest,
 And clasp'd the treasure to her throbbing breast,
 With soothing whispers hush'd its feeble cry,
 Press'd the soft kifs, and breath'd the secret sigh.—
 —With dauntless step she seeks the winding
 shore,
 Hears unappal'd the glimmering torrents roar;

westerly current protruded by the tropical winds, and in this eddy are found the immense fields of floating vegetables, called Saragosa weeds, and Gulf weeds, and some light woods, which circulate in these vast eddies, or are occasionally driven out of them by the winds. Hydraulic and Nautical Observations by Governor Pownal, 1787. Other currents are mentioned by the Governor in this ingenious work, as those in the Indian Sea, northward of the line, which are ascribed to the influence of the Monsoons. It is probable, that in process of time the narrow tract of land on the west of the Gulf of Mexico, may be worn away by this elevation of water dashing against it, by which this immense current would cease to exist, and a wonderful change take place in the Gulf of Mexico and West-Indian islands, by the subsiding of the sea, which might probably lay all those islands into one, or join them to the continent.

With Paper-flags a floating cradle weaves,
And hides the smiling boy in Lotus-leaves; 430
Gives her white bosom to his eager lips,
The salt-tears mingling with the milk he sips;
Waits on the reed-crown'd brink with pious guile,
And trusts the scaly monsters of the Nile.—
—Erewhile majestic from his lone abode,
Embassador of Heaven, the Prophet trod;
Wrench'd the red scourge from proud Oppres-
sion's hands,
And broke, curst Slavery! thy iron bands.

Hark! heard ye not that piercing cry,
Which shook the waves and rent the sky?— 440

E'en now, e'en now, on yonder Western shores
Weeps pale Despair, and writhing Anguish roars:
E'en now in Afric's groves with hideous yell
Fierce SLAVERY stalks, and slips the dogs of hell;
From vale to vale the gathering cries rebound,
And fable nations tremble at the sound!

Shine with such lustre as the tear, that flows
Down Virtue's manly cheek for others' woes."

Here ceased the MUSE, and dropp'd her tune-
ful shell,

Tumultuous woes her panting bosom swell,
O'er her flush'd cheek her gauzy veil she throws,
Folds her white arms, and bends her laurel'd brows;
For human guilt awhile the Goddess sighs,
And human sorrows dim celestial eyes. 479

I N T E R L U D E III.

Bookfeller. POETRY has been called a sister-art both to Painting and to Music; I wish to know, what are the particulars of their relationship?

Poet. It has been already observed, that the principal part of the language of poetry consists of those words, which are expressive of the ideas, which we originally receive by the organ of sight; and in this it nearly indeed resembles painting; which can express itself in no other way, but by exciting the ideas or sensations belonging to the sense of vision. But besides this essential similitude in the language of the poetic pen and pencil, these two sisters resemble each other, if I may so say, in many of their habits and manners. The painter, to produce a strong effect, makes a few parts of his picture large, distinct, and luminous,

and keeps the remainder in shadow, or even beneath its natural size and colour, to give eminence to the principal figure. This is similar to the common manner of poetic composition, where the subordinate characters are kept down, to elevate and give consequence to the hero or heroine of the piece.

In the south aisle of the cathedral church at Lichfield, there is an antient monument of a recumbent figure; the head and neck of which lie on a roll of matting in a kind of niche or cavern in the wall; and about five feet distant horizontally in another opening or cavern in the wall are seen the feet and ankles, with some folds of garment, lying also on a matt; and though the intermediate space is a solid stone-wall, yet the imagination supplies the deficiency, and the whole figure seems to exist before our eyes. Does not this resemble one of the arts both of the painter and the poet? The former often shows a muscular arm amidst a group of figures, or an impassioned face; and, hiding the remainder of the body behind other objects, leaves the imagination to complete it. The latter, describing a single feature or

attitude in picturesque words, produces before the mind an image of the whole.

I remember seeing a print, in which was represented a shrivelled hand stretched through an iron grate, in the stone floor of a prison-yard, to reach at a mess of porrage, which affected me with more horrid ideas of the distress of the prisoner in the dungeon below, than could have been perhaps produced by an exhibition of the whole person. And in the following beautiful scenery from the *Midsummer-night's Dream*, (in which I have taken the liberty to alter the place of a comma), the description of the swimming step and prominent belly bring the whole figure before our eyes with the distinctness of reality.

When we have laugh'd to see the sails conceive,
 And grow big-bellied with the wanton wind ;
 Which she with pretty and with swimming gate,
 Following her womb, (then rich with my young
 squire),
 Would imitate, and sail upon the land.

There is a third sister-feature, which belongs both to the pictorial and poetic art ; and that is

the making sentiments and passions visible, as it were, to the spectator; this is done in both arts by describing or portraying the effects or changes which those sentiments or passions produce upon the body. At the end of the unaltered play of Lear, there is a beautiful example of poetic painting; the old King is introduced as dying from grief for the loss of Cordelia; at this crisis, Shakspeare, conceiving the robe of the King to be held together by a clasp, represents him as only saying to an attendant courtier in a faint voice, "Pray, Sir, undo this button,—thank you, Sir," and dies. Thus by the art of the poet, the oppression at the bosom of the dying King is made visible, not described in words.

B. What are the features, in which these Sister-arts do not resemble each other?

P. The ingenious Bishop Berkeley, in his treatise on Vision, a work of great ability, has evinced, that the colours which we see, are only a language suggesting to our minds the ideas of solidity and extension, which we had before re-

ceived by the sense of touch. Thus when we view the trunk of a tree, our eye can only acquaint us with the colours or shades; and from the previous experience of the sense of touch, these suggest to us the cylindrical form, with the prominent or depressed wrinkles on it. From hence it appears, that there is the strictest analogy between colours and sounds; as they are both but languages, which do not represent their correspondent ideas, but only suggest them to the mind from the habits or associations of previous experience. It is therefore reasonable to conclude, that the more artificial arrangements of these two languages by the poet and the painter bear a similar analogy.

But in one circumstance the Pen and the Pencil differ widely from each other, and that is the quantity of Time which they can include in their respective representations. The former can unravel a long series of events, which may constitute the history of days or years; while the latter can exhibit only the actions of a moment. The Poet is happier in describing successive scenes; the Painter in representing stationary ones: both have their advantages.

Where the passions are introduced, as the Poet, on one hand, has the power gradually to prepare the mind of his reader by previous climacteric circumstances; the Painter, on the other hand, can throw stronger illumination and distinctness on the principal moment or catastrophe of the action; besides the advantage he has in using an universal language, which can be *read* in an instant of time. Thus when a great number of figures are all seen together, supporting or contrasting each other, and contributing to explain or aggrandize the principal effect, we view a picture with agreeable surprise, and contemplate it with unceasing admiration. In the representation of the sacrifice of Jephtha's Daughter, a print done from a painting of Ant. Coypel, at one glance of the eye we read all the interesting passages of the last act of a well-written tragedy; so much poetry is there condensed into a moment of time.

B. Will you now oblige me with an account of the relationship between Poetry, and her other sister, Music?

P. In the poetry of our language I don't

think we are to look for any thing analogous to the notes of the gamut: for, except perhaps in a few exclamations or interrogations, we are at liberty to raise or sink our voice an octave or two at pleasure, without altering the sense of the words. Hence, if either poetry or prose be read in melodious tones of voice, as is done in recitativo, or in chaunting, it must depend on the speaker, not on the writer: for though words may be selected which are less harsh than others, that is, which have fewer sudden stops or abrupt consonants amongst the vowels, or with fewer sibilant letters, yet this does not constitute melody, which consists of agreeable successions of notes referable to the gamut; or harmony, which consists of agreeable combinations of them. If the Chinese language has many words of similar articulation, which yet signify different ideas, when spoken in a higher or lower musical note, as some travellers affirm, it must be capable of much finer effect, in respect to the audible part of poetry, than any language we are acquainted with.

There is however another affinity, in which poetry and music more nearly resemble each other

than has generally been understood, and that is in their measure or time. There are but two kinds of time acknowledged in modern music, which are called *triple time*, and *common time*. The former of these is divided by bars, each bar containing three crotchets, or a proportional number of their subdivisions into quavers and femiquavers. This kind of time is analogous to the measure of our heroic or iambic verse. Thus the two following couplets are each of them divided into five bars of *triple time*, each bar consisting of two crotchets and two quavers; nor can they be divided into bars analogous to *common time* without the bars interfering with some of the crotchets, so as to divide them.

$\frac{3}{4}$ Soft-warbling beaks | in each bright blof | som move,
 4 And vo | cal rofebuds thrill | the enchanted grove. |

In these lines there is a quaver and a crotchet alternately in every bar, except in the last, in which *the in* make two femiquavers; the *e* is supposed by Grammarians to be cut off, which any one's ear will readily determine not to be true.

$\frac{3}{4}$ Life buds or breathes | from Indus to | the poles,
 4 And the | vast surface kind | les, as it rolls. |

In these lines there is a quaver and a crotchet alternately in the first bar; a quaver, two crotchets, and a quaver, make the second bar. In the third bar there is a quaver, a crotchet, and a rest after the crotchet, that is after the word *poles*, and two quavers begin the next line. The fourth bar consists of quavers and crotchets alternately. In the last bar there is a quaver, and a rest after it, viz. after the word *kindles*; and then two quavers and a crotchet. You will clearly perceive the truth of this, if you prick the musical characters above mentioned under the verses.

The *common time* of musicians is divided into bars, each of which contains four crotchets, or a proportional number of their subdivision into quavers and femiquavers. This kind of musical time is analogous to the dactyle verses of our language, the most popular instances of which are in Mr. Anstie's Bath-Guide. In this kind of verse the bar does not begin till after the first or second syllable; and where the verse is quite complete,

and written by a good ear, these first syllables added to the last complete the bar, exactly in this also corresponding with many pieces of music ;

$\frac{2}{4}$ Yet | if one may guess by the | size of his calf, Sir,
 $\frac{2}{4}$ He | weighs above twenty-three | stone and a half, Sir.

$\frac{2}{4}$ Master | Mamozet's head was not | finished so soon,
 $\frac{2}{4}$ For it | took up the barber a | whole afternoon.

In these lines each bar consists of a crotchet, two quavers, another crotchet, and two more quavers : which are equal to four crotchets, and, like many bars of *common time* in music, may be subdivided into two in beating time without disturbing the measure.

The following verses from Shenstone belong likewise to common time :

$\frac{2}{4}$ A | river or a sea |
 $\frac{2}{4}$ Was to him a dish | of tea,
 And a king | dom bread and butter.

The first and second bars consist each of a crotchet, a quaver, a crotchet, a quaver, a crotchet.

The third bar consists of a quaver, two crotchets, a quaver, a crotchet. The last bar is not complete without adding the letter A, which begins the first line, and then it consists of a quaver, a crotchet, a quaver, a crotchet, two quavers.

It must be observed, that the crotchets in triple time are in general played by musicians slower than those of common time, and hence minuets are generally pricked in triple time, and country dances generally in common time. So the verses above related, which are analogous to *triple time*; are generally read slower than those analogous to *common time*; and are thence generally used for graver compositions. I suppose all the different kinds of verses to be found in our odes, which have any measure at all, might be arranged under one or other of these two musical times; allowing a note or two sometimes to precede the commencement of the bar, and occasional rests, as in musical compositions: if this was attended to by those who set poetry to music, it is probable the sound and sense would oftener coincide. Whether these musical times can be applied to the lyric and heroic verses of the Greek and Latin poets, I do

not pretend to determine; certain it is, that the dactyle verse of our language, when it is ended with a double rhyme, much resembles the measure of Homer and Virgil, except in the length of the lines.

B. Then there is no relationship between the other two of these sister-ladies, Painting and Music?

P. There is at least a mathematical relationship, or perhaps I ought rather to have said a metaphysical relationship, between them. Sir Isaac Newton has observed, that the breadths of the seven primary colours in the Sun's image refracted by a prism, are proportional to the seven musical notes of the gamut, or to the intervals of the eight sounds contained in an octave, that is, proportional to the following numbers:

Sol.	La.	Fa.	Sol.	La.	Mi.	Fa.	Sol.
Red.	Orange.	Yellow.	Green.	Blue.	Indigo.	Violet.	
$\frac{1}{9}$	$\frac{1}{16}$	$\frac{1}{10}$	$\frac{1}{9}$	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{9}$	

Newton's Optics, Book I. part 2. prop. 3. and 6.
Dr. Smith, in his Harmonics, has an explanatory
note upon this happy discovery, as he terms it, of
Newton. Sect. 4. Art. 7.

From this curious coincidence, it has been pro-
posed to produce a luminous music, consisting of
successions or combinations of colours, analogous
to a tune in respect to the proportions above men-
tioned. This might be performed by a strong
light, made by means of Mr. Argand's lamps,
passing through coloured glasses, and falling on a
defined part of a wall, with moveable blinds be-
fore them, which might communicate with the
keys of a harpsichord, and thus produce at the
same time visible and audible music in unison with
each other.

The execution of this idea is said by Mr. Guyot
to have been attempted by Father Caffel, without
much success.

If this should be again attempted, there is ano-
ther curious coincidence between sounds and co-
lours, discovered by Dr. Darwin, of Shrewsbury,
and explained in a paper on what he calls *Ocular*

Spectra, in the Philosophical Transactions, Vol. LXXVI. which might much facilitate the execution of it. In this treatise the Doctor has demonstrated, that we see certain colours, not only with greater ease and distinctness, but with relief and pleasure, after having for some time contemplated other certain colours; as green after red, or red after green; orange after blue, or blue after orange; yellow after violet, or violet after yellow. This, he shews, arises from the *ocular spectrum* of the colour last viewed coinciding with the *irritation* of the colour now under contemplation. Now as the pleasure we receive from the sensation of melodious notes, independent of the previous associations of agreeable ideas with them, must arise from our hearing some proportions of sounds after others more easily, distinctly, or agreeably; and as there is a coincidence between the proportions of the primary colours, and the primary sounds, if they may be so called; he argues, that the same laws must govern the sensations of both. In this circumstance, therefore, consists the sisterhood of Music and Painting; and hence they claim a right

to borrow metaphors from each other; musicians to speak of the brilliancy of sounds, and the light and shade of a concerto; and painters of the harmony of colours, and the tone of a picture. Thus it is not quite so absurd, as was imagined, when the blind man asked if the colour scarlet was like the sound of a trumpet. As the coincidence or opposition of these *ocular spectra*, (or colours which remain in the eye after we have for some time contemplated a luminous object) are more easily and more accurately ascertained, now their laws have been investigated by Dr. Darwin, than the *relicts* of evanescent sounds upon the ear; it is to be wished that some ingenious musician would further cultivate this curious field of science: for if visible music can be agreeably produced, it would be more easy to add sentiment to it by representations of groves and Cupids, and sleeping nymphs amid the changing colours, than is commonly done by the words of audible music?

B. You mentioned the greater length of the verses of Homer and Virgil. Had not these poets

great advantage in the superiority of their languages compared to our own?

P. It is probable, that the introduction of philosophy into a country must gradually affect the language of it; as philosophy converses in more appropriated and abstracted terms; and thus by degrees eradicates the abundance of metaphor, which is used in the more early ages of society. Otherwise, though the Greek compound words have more vowels in proportion to their consonants than the English ones, yet the modes of compounding them are less general; as may be seen by variety of instances given in the preface of the Translators, prefixed to the *SYSTEM OF VEGETABLES* by the Lichfield Society; which happy property of our own language rendered that translation of Linneus as expressive and as concise, perhaps more so than the original.

And in one respect, I believe, the English language serves the purpose of poetry better than the antient ones, I mean in the greater ease of producing personifications; for as our nouns have in

general no genders affixed to them in prose-compositions, and in the habits of conversation, they become easily personified only by the addition of a masculine or feminine pronoun, as,

Pale Melancholy sits, and round *her* throws
A death-like silence, and a dread repose.

Pope's Abelard.

And secondly, as most of our nouns have the article *a* or *the* prefixed to them in prose-writing and in conversation, they in general become personified even by the omission of these articles; as in the bold figure of Shipwreck in Miss Seward's Elegy on Capt. Cook :

But round the steepy rocks and dangerous strand
Rolls the white surf, and SHIPWRECK guards the land.

Add to this, that if the verses in our heroic poetry be shorter than those of the ancients, our words likewise are shorter; and in respect to their measure or time, which has erroneously been called melody and harmony, I doubt, from what

has been said above, whether we are so much inferior as is generally believed; since many passages, which have been stolen from antient poets, have been translated into our language without losing any thing of the beauty of the versification. The following line translated from Juvenal by Dr. Johnson, is much superior to the original:

Slow rises Worth by Poverty depress'd.

The original is as follows:

Difficile emergunt, quorum virtutibus obstat
Res angusta domi.

B. I am glad to hear you acknowledge the thefts of the modern poets from the antient ones, whose works I suppose have been reckoned lawful plunder in all ages. But have not you borrowed epithets, phrases, and even half a line occasionally from modern poets?

P. It may be difficult to mark the exact

boundary of what should be termed plagiarism: where the sentiment and expression are both borrowed without due acknowledgment, there can be no doubt;—single words, on the contrary, taken from other authors, cannot convict a writer of plagiarism: they are lawful game, wild by nature, the property of all who can capture them;—and perhaps a few common flowers of speech may be gathered, as we pass over our neighbour's inclosure, without stigmatizing us with the title of thieves; but we must not therefore plunder his cultivated fruit.

The four lines at the end of the plant *Upas* are imitated from Dr. Young's *Night Thoughts*. The line in the episode adjoined to *Cassia*, "The salt tear mingling with the milk he sips," is from an interesting and humane passage in Langhorne's *Justice of Peace*. There are probably many others, which, if I could recollect them, should here be acknowledged. As it is, like exotic plants, their mixture with the native ones, I hope, adds beauty to my Botanic Garden: and such as it is, *Mr. Bookseller*, I now leave it to you to de-

fire the Ladies and Gentlemen to walk in; but please to apprise them, that, like the spectators at an unskilful exhibition in some village-barn, I hope they will make Good-humour one of their party; and thus themselves supply the defects of the representation.

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 ecstasy her glistening eye;
And then her lute to sweeter tones she strung,
And swell'd with softer chords the Paphian song;
Long ailes of Oaks return'd the silver sound, 9
And amorous Echoes talk'd along the ground;

Pleas'd Lichfield 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.

Cerea. l. 15. *Cactus grandiflorus*, or *Cereus*. Twenty males, one female. This flower is a native of Jamaica and Veracruz. 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. The *Cistus labdaniferus*, 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

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, 19
Opes her fair lips, and breathes her virgin vows;
Eyes the white zenith; counts the suns that roll
Their distant fires, and blaze around the Pole;

flowers of the *Cistus labdaniferus* 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 coun-
try, whence its name; botanical philosophers have not yet ex-
plained 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, dur-
ing 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 flowers, 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*.

Or marks where Jove 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 sober beams
Glow thy warm cheek, thy polish'd bosom gleams.
In crowds around thee gaze the admiring swains,
And guard in silence the enchanted plains; 30
Drop the still tear, or breathe the impassion'd sigh,
And drink inebriate rapture from thine eye.
Thus when old Needwood's 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 Fairy Sovereign treads,
Shakes her high plume, and glitters o'er the
meads;

Where Mundy. l. 35. Alluding to an unpublished poem by F. N. C. Mundy, Esq. on his leaving Needwood-Forest. See the passage in the notes at the end of this volume.

Round each green holly leads her sportive train,
 And little footsteps mark the circled plain; 40
 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 faint-like glory trembles round her head:

Tropæolum. l. 45. Majus. Garden Nasturtion, or greater Indian cress. Eight males, one female. Miss E. C. Linneus first observed the *Tropæolum Majus* to emit sparks or 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, a celebrated electrician, believed them to be electric. *Lin. Spec. Plantar.* p. 490. *Swedish Acts* for the year 1762. *Pulteney's View of Linneus*, p. 220. Nor is this more wonderful than that the electric eel and torpedo 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

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 blaze. 50
 So shines the glow-fly, when the sun retires,
 And gems the night-air with phosphoric fires ;

same sparks during the day, which must be then invisible. This curious subject deserves further investigation. See Dictamnus. The ceasing to shine of this plant after twilight might induce one to conceive, that it absorbed and emitted light, like the Bolognian Phosphorus, or calcined oyster-shells, so well explained by Mr. B. Wilson, and by T. B. Beccari. Exper. on Phosphori, by B. Wilson, Doddsley. The light of the evening, at the same distance from noon, is much greater, as I have repeatedly observed, than 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 corol. See an additional note at the end of the poem.

So shines the glow-fly. l. 51. In Jamaica, in some seasons of

Thus o'er the marsh aerial lights betray,
 And charm the unwary wanderer from his way.
 So when thy King, Assyria, 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-exfuding pine;—
 —Loud roar the flames, the iron nostrils breathe,
 And the huge bellows pant and heave beneath; 60
 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 surprife
 Deep in the burning vault his dazzled eyes.
 “Lo! Three unbound amid the frightful glare,
 “Unscorch'd their sandals, and unsing'd their hair!

the year, the fire-flies are seen in the evenings in great abundance. When they settle on the ground, the bull-frog greedily devours them; which seems to have given origin to a curious, though 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.

“ 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 !” 70
 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 ;

Avena. 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 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; hence Ceres in Egypt, which was the birth-place of our European arts, was deservedly celebrated amongst their divinities, as well as Osyris, who invented the Plough.

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; 80
 “ While Tweed with sun-reflecting streams
 “ Chequers thy rocks with dancing beams ?—

II.

“ Here may no clamours harsh intrude,
 “ No brawling hound or clarion rude ;

Mr. Wahlborn 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.

“ 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. 90

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

Three shepherd-swains beneath the beechen shades
 Twine rival garlands for the tuneful maids; 100

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 im-
prove,
So spread the tender growths of living love ;
Wave follows wave, the letter'd lines decay,
So Love's soft forms uncultured melt away.

From Time's remotest dawn where China brings
In proud succession all her Patriot-Kings ;
O'er desert-sands, deep gulfs, and hills sublime,
Extends her massy wall from clime to clime ; 110
With bells and dragons crests her Pagod-bowers,
Her filken 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 streams dishevell'd in her hand ;

Cannabis. l. 115. Chinese Hemp. Two houses. Five
males. A new species of hemp, of which an account is given

Now to the left her ivory neck inclines,
And leads in Paphian curves its azure lines;
Dark waves the fringed lid, the warm cheek glows,
And the Fair ear the parting locks disclose; 120
Now to the right with airy sweep she bends,
Quick join the threads, the dancing spole depends.
—*Five* Swains attracted guard the Nymph, by turns
Her grace enchants them, and her beauty burns;

by K. Fitzgerald, Esq. in a letter to Sir Joseph Banks, 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. Transf. Vol. LXXII. p. 46.

Paphian curves. l. 118. In his ingenious work, entitled, *The Analysis of Beauty*, Mr. Hogarth 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.

To each she bows with sweet affuasive smile,
 Hears his soft vows, and turns her spole the while.

So when with light and shade, concordant strife!
 Stern CLOTHO weaves the chequer'd thread of
 life;

Hour after hour the growing line extends,
 The cradle and the coffin bound its ends; 130
 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 with dewy lips the lengthening lines,
 Skein after skein celestial tints unfold,
 And all the filken tissue shines with gold.

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

Galanthus. l. 137. *Nivalis*. Snowdrop. Six males, one
 female. The first flower that appears after the winter solstice.
 See Stillingfleet's Calendar of Flora.

O'er silent floods, white hills, and glittering
meads,

Six rival swains the playful beauty leads, 140

Chides with her dulcet voice the tardy Spring,

Bids slumbering Zephyr stretch his folded wing,

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. The roots of the Hyacinth, I am informed, are equally insipid, and might be used as an article of food. Gmelin, in his history of Siberia, says the Martagon 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 Linnæan School, in the *Amœnit. Academ.* that the seeds of 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. 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; the starch is obtained from the *alstromeria licta*. *Mémoires d'Agricult.*

Wakes the hoarse Cuckoo in his gloomy cave,
And calls the wondering Dormouse 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 tunc-
ful tongue,

Delighted BELLIS calls her infant throng.

Each on his reed astride, the Cherub-train 149

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. 148. 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.

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 groves,
 And leads her gold-hair'd family of Loves. 160
 These, from the flaming furnace, strong and bold
 Pour the red steel in many a fandy mould;
 On tinkling anvils (with Vulcanian art),
 Turn with hot tongs, and forge the dreadful dart;

The fragrant Gale. l. 155. The buds of the Myrica Gale possess an agreeable aromatic fragrance, and might be worth attending to as an article of the Materia Medica. 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. p. 345. Du Valde gives an account of a white wax made by small insects round the branches of a tree in China in great quantity, which is there collected for medical and economical purposes. The tree is called Tong-tsin. Descript. of China. Vol. I. p. 230.

Impetuous steams in spiral columns rise
Through rifted rocks, impatient for the skies;

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; 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 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 and Matlock (as I was well informed on the spot) had suffered 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 py-

Or o'er bright seas of bubbling lavas blow ;
 As heave and tofs the billowy fires below ;
 Condensed on high, in wandering rills they glide
 From Masson's dome, and burst his sparry 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, 189
 O'er corals, shells, and crystals, winds along ;
 Crufts 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,
 (The blooming Fucus) in her sparry coves
 To amorous Echo sings his *secret* loves,

rites, there would be some chalybeate taste or sulphureous smell in them. See note in part I. on the existence of central fires.

Fucus. l. 195. Clandestine marriage. A species of *Fucus*, or of *Conferva*, soon appears in all basons which contain water. Dr. Priestley found that great quantities of pure dephlogisticated air were given up in water at the points of this vegetable, particularly in the sunshine, and that hence it contributed to pre-

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, 199
Each morn descending, shook his dewy wings;

serve 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, find 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; and 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.

And as his bright translucent form He laves,
Salubrious powers enrich the troubled waves.

Amphibious Nymph, from Nile's prolific bed
Emerging TRAPA lifts her pearly head ;

Trapa. l. 204. 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 aerial 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*, *Oenanthe*, *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

Fair glows her virgin cheek and modest breast,
A panoply of scales deforms the rest ;

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 and Derwent, 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. 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 ancient 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 vegetables; and might thence become an article of useful cultivation. Herodotus affirms that the Egyptian Lotus 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. Euterpe. 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 fails, her ivory neck she laves,
And shakes her golden tresses o'er the waves. 210
Charm'd round the Nymph, in circling gambols
glide

Four Nereid-forms, 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, 219
And twinkle to the sun with ever-changing dyes.

Where Andes, crested with volcanic beams,
Sheds a long line of light on Plata's 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 fultry bow-
ers;—

Ocymum salinum. l. 225. Saline Bafil. Class Two Powers. The Abbe Molina, in his History of Chili, translated from the Italian by the Abbe Grewel, mentions a species of Bafil, which he calls *Ocymum salinum*: he says it resembles the common bafil, except that the stalk is round and jointed; and that though it grows sixty 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, as those patients quickly recover by the use of fresh provisions; and is probably a remote cause of scrofula (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

So with pellucid studs the ice-flower gems
 Her rimy foliage and her candied stems. 240
 So from his glassy horns, and pearly eyes,
 The diamond-beetle darts a thousand dyes;
 Mounts with enamel'd wings the vesper gale,
 And wheeling shines in adamantine mail.

Thus when loud thunders o'er Gomorrah 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;
 "Haste from these lands of sin, ye Righteous! fly,
 "Speed the quick step, nor turn the lingering
 eye!"— 250

—Such the command, as fabling Bards recite,
 When Orpheus 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;—

Ice-flower. l. 239. *Mesembryanthemum crystallinum.*

Onward they move,—loud Horror roars behind,
And shrieks of Anguish bellow in the wind.

With many a sob, amid a thousand fears, 259

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 bos-
som 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; 270

Printed with quivering lips the lifeless snow,

And wept, and gazed the monument of woe.

So when Æneas through the flames of Troy

Bore his pale fire, 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 forfakes,
 Marks the wide ruins, and the fulphur'd lakes;
 On mouldering piles amid asphaltic mud 279
 Hears the hoarse bittern, where Gomorrah flood;
 Recals the unhappy Pair with lifted eye,
 Leans on the crystal tomb, and breathes the filent
 figh.

With net-wove fafh and glittering gorget drefs'd,
 And fcarlet robe lapell'd upon her breast,
 Stern ARA frowns, the meafured march affumes,
 Trails her long lance, and nods her shadowy
 plumes;

Arum. l. 285. Cuckow-pint, of the clafs Gynandria, or mafculine ladies. The pistil or female part of the flower, rifes like a club, is covered above or clothed, as it were, by the anthers or males; and fome of the fpecies have a large fcarlet blotch in the middle of every leaf.

The fingular and wonderful ftructure of this flower has occafioned many difputes amongst botanifts. See Tournef. Malpig. Dillen. Riven. &c. The receptacle is enlarged into a naked club, with the germs at its bafe; the ftamens are affixed to the receptacle amidft the germs (a natural prodigy), and thus

While Love's soft beams illumine her treacherous
 eyes,

And Beauty lightens through the thin disguise.

So erst, when HERCULES, untamed by toil,

Own'd the soft power of DEJANIRA's smile;— 290

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.

The spadix 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.

With sighs and sorrows her compassion moves,
And wins the damsel to illicit loves.

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.* and many hybrid plants described in No. 32. 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.* 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 Europæa* to have for its parents the golden saxifrage and marsh pennywort. Pulteney's *View of Linneus*, p. 253. Mr. Graberg, Mr. Schreber, and Mr. Ramstrom, 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. Amœnit. Academic.* The mule produced from a horse and the ass resembles the horse externally with his ears, mane, 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

The Monster-offspring heirs the father's pride,
Mask'd in the damask beauties of the bride.
So, when the Nightingale in eastern bowers 309
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;
Long horrent thorns his mossy legs surround,
And tendril-talons root him to the ground;
Green films of rind his wrinkled neck o'erspread,
And crimson petals crest his curled head;
Soft warbling beaks in each bright blossom move,
And vocal Rosebuds thrill the enchanted grove!—

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 from 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. Acad. Vol. VI. p. 13.

Admiring Evening stays her beamy star, 321

And still Night listens from his ebon car ;

While on white wings descending Houries throng,

And drink the floods of odour and of song.

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

The dry Harmattan. l. 328. 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 by Dr. Lind at some seasons to be 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, and to heal ulcers and cutaneous eruptions ; which

When stretch'd in dust her gasping panthers lie,
And writh'd in foamy folds her serpents die; 330

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. Transf. Vol. LXXI.*

The Reverend 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. Transf. Vol. LIII. p. 63.*

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, 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 may be thus emitted from subterraneous furnaces, in such abundance as to contaminate the whole atmosphere, and depopulate the earth!

CANTO IV.

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Hedysarum gyrans.

Indignant Atlas mourns his leafless woods,
And Gambia trembles for his sinking floods;
Contagion stalks along the briny sand,
And Ocean rolls his sick'ning shoals to land.
—Fair CHUNDA smiles amid the burning waste,
Her brow unturban'd, and her zone unbrac'd;

His sickening shoals. l. 334. Mr. Marsden relates, that in the island of Sumatra, 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 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. Transf. Vol. LXXI. p. 384.

Chunda. l. 335. Chundali Borrum is the name which the natives give to this plant; it is the *Hedyfarum gyrans*, 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

Ten brother-youths with light umbrellas shade,
 Or fan with busy hands the panting maid ;
 Loose wave her locks, disclosing, as they break,
 The rising bosom and averted cheek ; 340
 Clasp'd round her ivory neck with studs of gold
 Flows her thin vest in many a gauzy fold ;
 O'er her light limbs the dim transparence plays,
 And the fair form, it seems to hide, betrays.

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'Académie des Sciences*. Ann. 1784, p. 609.

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.* 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.

Cold from a thousand rocks, where Ganges
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 fails,
Shouts to his shores, and parleys with his gales;
Invokes his echoes, as she moves along, 351
And thrills his rippling farges with her song.
—As round the Nymph her listening lovers play,
And guard the Beauty on her watery way;

Nelumbo. l. 349. *Nymphaea 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, 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.

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 lave,
 Or nod their slimy foreheads o'er the wave; 360
 Poised on still wing attentive vultures sweep,
 And winking crocodiles are lull'd to sleep.

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 369
 Burst the thick ribs of ice, and thunder round.—

Burst the thick ribs of ice. l. 370. 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

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.—

“Awake, my Love!” enamour’d MUSCHUS cries,
 “Stretch thy fair limbs, refulgent Maid arise;

a few hours, forces off by its expansion large precipices from the ice-mountains.

Muschus. 1. 375. 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 rein-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.

" 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; 380
 " 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."

Night's tinsel beams on smooth Loch-lomond
 dance,
 Impatient ÆGA views the bright expanse;

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

Æga. l. 386. *Conserva 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

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; 390
 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!”
 —With eager step the boiling surf she braves,
 And meets her refluent lover in the waves; 400

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.*) 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.

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 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; 410
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;

Truffelia. l. 414. (Lycoperdon Tuber) Truffle. Clandes-
tine marriage. This fungus never appears above ground, re-
quiring little air, and perhaps no light. It is found by 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 nume-

On silvery beds, of soft asbestos wove,
 Meets her Gnome-husband, 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*; 420
 Light piers of lazuli the dome surround,
 And pictured mochoes tessellate the ground:
 In glittering threads along reflective walls
 The warm rill murmuring twinkles, as it falls;
 Now sink the Eolian 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,

Closed in an azure fig by fairy spells,
 Bosom'd in down, fair CAPRI-FICA dwells; — 430

rous stoles or scions under ground: and this the more, as their
 tops or herbs are eaten by cattle, and thus preserve themselves.

Caprificus. l. 430. Wild fig. The fruit of the fig is not a
 seed-vessel, but a receptacle inclosing the flower within it. As

So sleeps in silence the Curculio, shut
 In the dark chambers of the cavern'd nut,

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 and Pontedera discovered, that a kind of gnat produced in the male figs carried the fecundating dust on its wings, (*Cynips Pfenés Syst. Nat. 919.*), 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*. The figs of this country are all female, and their seeds not prolific; and therefore they can only be propagated by layers and suckers.

Monfieur de la Hire has shewn in the *Mémoir. de l'Académ. des Sciences*, 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.*

From all these circumstances I should conjecture, that those

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 ere long,
Shakes its new plumes, and tries its tender
song,—

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 ancient 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. Plums and pears punctured by some insects ripen sooner, and the part round the puncture is sweeter. Is not the honey-dew 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

Light Cupids flutter round the nuptial bed,
And each coy Sea-maid hides her blushing head.

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 woos his playful bride,

The Proteus-lover. l. 468. *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. Transf. Vol. LVII.* 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 shapes; 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 af-

To win the fair he tries a thousand forms,
 Basks on the sands, or gambols in the forms. 470

A Dolphin now, his scaly sides he laves,
 And bears 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;

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 filken knots, and fit the ribbon-rein. 480

—And now a Swan, he spreads his plummy 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,

fumes an animal similitude. Phil. Bot. p. 87. See note on Iris
 in additional notes; and Cyprædia in Vol. I.

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; 490
Pair after pair, along his sacred groves
To Hymen's fane the bright procession moves;

Adonis. l. 490. 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 of the roots of all these individual buds. Thus hollow oak-trees and willows are often seen 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*, in the island of *Otaheite*, consists of about 100 males and 100 females, who form one promiscuous marriage.

Enraptur'd Sylphs arose in murmuring crowds
To air-wove canopies and pillowy clouds ;
Each Gnome reluctant sought his earthy cell,
And each chill Floret clos'd her velvet bell.
Then, on soft tiptoe, NIGHT approaching near
Hung o'er the tuneless lyre his fable ear ;
Gem'd with bright stars the still ethereal plain,
And bade his Nightingales repeat the strain.

CANTO IV.
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ADDITIONAL NOTES.

ADDITIONAL note to Curcuma. Canto I. l. 65. These antherless filaments seem to be an endeavour of the plant to produce more stamens, as would appear from some experiments of Mr. Reynier, instituted for another purpose: he cut away the stamens of many flowers, with design to prevent their fecundity, and in many instances the flower threw out new filaments from the wounded part of different lengths, but did not produce new anthers. The experiments were made on the *geum rivale*, different kinds of mallows, and the *æchinops citro*. Critical Review for March, 1788.

Addition to the note on Iris. Canto I. l. 71. In the Persian Iris the end of the lower petal is purple, with white edges and orange streaks, creeping, as it were, into the mouth of the flower like an insect; by which deception

in its native climate it probably prevents a similar insect from plundering it of its honey: the edges of the lower petal lap over those of the upper one, which prevents it from opening too wide on fine days, and facilitates its return at night; whence the rain is excluded, and the air admitted. See Polymorpha, Rubia, and Cypripedia, in Vol. I.

Additional note on Chondrilla. Canto I. l. 97. In the natural state of the expanded flower of the barberry, the stamens lie on the petals; under the concave summits of which the anthers shelter themselves, and in this situation remain perfectly rigid; but on touching the inside of the filament near its base with a fine bristle, or blunt needle, the stamen instantly bends upwards, and the anther, embracing the stigma, sheds its dust. Observations on the Irritation of Vegetables, by T. E. Smith, M. D.

Addition to the note on Silene. Canto I. l. 139. I saw a plant of the *Dionæa Muscipula*, Fly-trap of Venus, this day, in the collection of Sir B. Boothby, at Ashburn-Hall, Derbyshire, Aug. 20th, 1788; and on drawing a straw along the middle of the rib of the leaves as they lay upon the ground round the stem, each of them, in about a second of time, closed and doubled itself up, crossing the

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Apocynum androsaemifolium.

thorns over the opposite edge of the leaf, like the teeth of a spring rat-trap: of this plant I was favoured with an elegant coloured drawing, by Miss Maria Jackson, of Tarporly, in Cheshire, a Lady who adds much botanical knowledge to many other elegant acquirements.

In the *Apocynum Androsæmifolium*, one kind of Dog's-bane, the anthers converge over the nectaries, which consist of five glandular oval corpuscles surrounding the germ; and at the same time admit air to the nectaries at the interstice between each anther. But when a fly inserts its proboscis between these anthers to plunder the honey, they converge closer, and with such violence as to detain the fly, which thus generally perishes. This account was related to me by R.W. Darwin, Esq. of Elston, in Nottinghamshire, who shewed me the plant in flower, July 2d, 1788, with a fly thus held fast by the end of its proboscis, and was well seen by a magnifying lens, and which in vain repeatedly struggled to disengage itself, till the converging anthers were separated by means of a pin: on some days he had observed that almost every flower of this elegant plant had a fly in it thus entangled; and a few weeks afterwards favoured me with his further observations on this subject.

“ My *Apocynum* is not yet out of flower. I have often visited it, and have frequently found four or five

“ flies, some alive, and some dead, in its flowers; they
 “ are generally caught by the trunk or proboscis, some-
 “ times by the trunk and a leg; there is one at present
 “ only caught by a leg: I don't know that this plant
 “ sleeps, as the flowers remain open in the night; yet the
 “ flies frequently make their escape. In a plant of Mr.
 “ Ordoyno's, an ingenious gardener at Newark, who is
 “ possessed of a great collection of plants, I saw many
 “ flowers of an Apocynum with three dead flies in each;
 “ they are a thin-bodied fly, and rather less than the
 “ common house-fly; but I have seen two or three other
 “ sorts of flies thus arrested by the plant. Aug. 12,
 “ 1788.”

Additional note on Ilex. Canto I. l. 161. The effi-
 cient cause, which renders the hollies prickly in Need-
 wood Forest only as high as the animals can reach them,
 may arise from the lower branches being constantly crop-
 ped by them, and thus shoot forth more luxuriant foliage:
 it is probable the shears in garden-hollies may produce
 the same effect, which is equally curious, as prickles are
 not thus produced on other plants.

Additional note on Ulva. Canto I. l. 415. M. Hubert
 made some observations on the air contained in the cavi-

ties of the bambou. The stems of these canes were from 40 to 50 feet in height, and 4 or 5 inches in diameter, and might contain about 30 pints of elastic air. He cut a bambou, and introduced a lighted candle into the cavity, which was extinguished immediately on its entrance. He tried this about 60 times in a cavity of the bambou, containing about two pints. He introduced mice at different times into these cavities, which seemed to be somewhat affected, but soon recovered their agility. The stem of the bambou is not hollow till it rises more than one foot from the earth; the divisions between the cavities are convex downwards. *Observ. sur la Physique, par M. Rozier, l. 33. p. 130.*

Addition to the note on Tropæolum. Canto IV. l. 45. In Sweden a very curious phenomenon has been observed on certain flowers, by M. Haggren, Lecturer in Natural History. One evening he perceived a faint flash of light repeatedly dart from a Marigold; surpris'd at such an uncommon appearance, he resolv'd to examine it with attention; and, to be assur'd that it was no deception of the eye, he plac'd a man near him, with orders to make a signal at the moment when he observ'd the light. They both saw it constantly at the same moment.

The light was most brilliant on Marigolds of an

orange or flame colour, but scarcely visible on pale ones.

The flash was frequently seen on the same flower two or three times in quick succession, but more commonly at intervals of several minutes; and when several flowers in the same place emitted their light together, it could be observed at a considerable distance.

This phenomenon was remarked in the months of July and August, at sun-set, and for half an hour after, when the atmosphere was clear; but after a rainy day, or when the air was loaded with vapours, nothing of it was seen.

The following flowers emitted flashes, more or less vivid, in this order:

1. The Marigold, (*Calendula officinalis*).
2. Garden Nasturtion, (*Tropæolum majus*).
3. Orange Lily, (*Lilium bulbiferum*).
4. African Marigold, (*Tagetes patula et erecta*).

Sometimes it was also observed on the Sun-flowers, (*Helianthus annuus*). But bright yellow, or flame-colour, seemed in general necessary for the production of this light; for it was never seen on the flowers of any other colour.

To discover whether some little insects, or phosphoric worms, might not be the cause of it, the flowers were carefully examined even with a microscope, without any such being found.

From the rapidity of the flash, and other circumstances, it might be conjectured, that there is something of electricity in this phenomenon. It is well known, that when the *pistil* of a flower is impregnated, the *pollen* bursts away by its elasticity, with which electricity may be combined. But M. Haggren, after having observed the flash from the Orange-lily, the *anthers* of which are a considerable space distant from the *petals*, found that the light proceeded from the *petals* only; whence he concludes, that this electric light is caused by the *pollen*, which in flying off is scattered upon the *petals*. Obser. Physique par M. Rozier, Vol. XXXIII. p. 111.

Addition to the note on Upas. Canto III. l. 238.

*Description of the Poison-Tree in the Island of
JAVA. Translated from the Original Dutch of
N. P. Foerfch.*

THIS destructive tree is called in the Malayan language *Bobun-Upas*, and has been described by naturalists; but their accounts have been so tinged with the *marvellous*, that the whole narration has been supposed to be an ingenious fiction by the generality of readers. Nor is this in the least degree surprising, when the circumstances which we shall faithfully relate in this description are considered.

I must acknowledge, that I long doubted the existence of this tree, until a stricter inquiry convinced me of my error. I shall now only relate simple unadorned facts, of which I have been an eye-witness. My readers may depend upon the fidelity of this account. In the year 1774, I was stationed at Batavia, as a surgeon, in the service of the Dutch East-India Company. During my residence there I received several different accounts of the *Bobun-Upas*, and the violent effects of its poison. They

all then seemed incredible to me, but raised my curiosity in so high a degree, that I resolved to investigate this subject thoroughly, and to trust only to *my own observations*. In consequence of this resolution, I applied to the Governor-General, Mr. Petrus Albertus van der Parra, for a pass to travel through the country: my request was granted; and, having procured every information, I set out on my expedition. I had procured a recommendation from an old Malayan priest to another priest, who lives on the nearest inhabitable spot to the tree which is about fifteen or sixteen miles distant. The letter proved of great service to me in my undertaking, as that priest is appointed by the Emperor to reside there, in order to prepare for eternity the souls of those who for different crimes are sentenced to approach the tree, and to procure the poison.

The *Bobun-Upas* is situated in the island of *Java*, about twenty-seven leagues from *Batavia*, fourteen from *Souracharta*, the seat of the Emperor, and between eighteen and twenty leagues from *Tinkjoe*, the present residence of the Sultan of Java. It is surrounded on all sides by a circle of high hills and mountains; and the country round it, to the distance of ten or twelve miles from the tree, is entirely barren. Not a tree nor a shrub, nor even the least plant or grass is to be seen. I have made the tour

all around this dangerous spot, at about eighteen miles distant from the centre, and I found the aspect of the country on all sides equally dreary. The easiest ascent of the hills is from that part where the old ecclesiastic dwells. From his house the criminals are sent for the poison, into which the points of all warlike instruments are dipped. It is of high value, and produces a considerable revenue to the Emperor.

Account of the manner in which the Poison is procured.

The poison which is procured from this tree is a gum that issues out between the bark and the tree itself, like the *camphor*. Malefactors, who for their crimes are sentenced to die, are the only persons who fetch the poison; and this is the only chance they have of saving their lives. After sentence is pronounced upon them by the judge, they are asked in court, whether they will die by the hands of the executioner, or whether they will go to the *Upas* tree for a box of poison? They commonly prefer the latter proposal, as there is not only some chance of preserving their lives, but also a certainty, in case of their safe return, that a provision will be made for them in future by the Emperor. They are also permitted to ask a favour from the Emperor, which is generally of a trifling

nature, and commonly granted. They are then provided with a silver or tortoise-shell box, in which they are to put the poisonous gum, and are properly instructed how to proceed while they are upon their dangerous expedition. Among other particulars, they are always told to attend to the direction of the winds; as they are to go towards the tree before the wind, so that the effluvia from the tree is always blown from them. They are told likewise, to travel with the utmost dispatch, as that is the only method of insuring a safe return. They are afterwards sent to the house of the old priest, to which place they are commonly attended by their friends and relations. Here they generally remain some days, in expectation of a favourable breeze. During that time the ecclesiastic prepares them for their future fate by prayers and admonitions.

When the hour of their departure arrives, the priest puts them on a long leather-cap, with two glasses before their eyes, which comes down as far as their breast; and also provides them with a pair of leather-gloves. They are then conducted by the priest, and their friends and relations, about two miles on their journey. Here the priest repeats his instructions, and tells them where they are to look for the tree. He shews them a hill, which they are told to ascend, and that on the other side they will find a

rivulet, which they are to follow, and which will conduct them directly to the Upas. They now take leave of each other; and, amidst prayers for their success, the delinquents hasten away.

The worthy old ecclesiastic has assured me, that during his residence there, for upwards of thirty years, he had dismissed above seven hundred criminals in the manner which I have described; and that scarcely two out of twenty have returned. He shewed me a catalogue of all the unhappy sufferers, with the date of their departure from his house annexed; and a list of the offences for which they had been condemned: to which was added, a list of those who had returned in safety. I afterwards saw another list of these culprits, at the jail-keeper's at *Soura-Charta*, and found that they perfectly corresponded with each other, and with the different informations which I afterwards obtained.

I was present at some of these melancholy ceremonies, and desired different delinquents to bring with them some pieces of the wood, or a small branch, or some leaves of this wonderful tree. I have also given them silk cords, desiring them to measure its thickness. I never could procure more than two dry leaves that were picked up by one of them on his return; and all I could learn from him, concerning the tree itself, was, that it stood on the border of

a rivulet, as described by the old Priest; that it was of a middling size; that five or six young trees of the same kind stood close by it; but that no other shrub or plant could be seen near it; and that the ground was of a brownish sand, full of stones, almost impracticable for travelling, and covered with dead bodies. After many conversations with the old Malayan priest, I questioned him about the first discovery, and asked his opinion of this dangerous tree; upon which he gave me the following answer:

“ We are told in our new Alcoran, that, above an hundred years ago, the country around the tree was inhabited by a people strongly addicted to the sins of Sodom and Gomorrah; when the great prophet Mahomet determined not to suffer them to lead such detestable lives any longer, he applied to God to punish them: upon which God caused this tree to grow out of the earth, which destroyed them all, and rendered the country for ever uninhabitable.”

Such was the Malayan opinion. I shall not attempt a comment; but must observe, that all the Malayans consider this tree as an holy instrument of the great prophet to punish the sins of mankind; and, therefore, to die of the poison of the Upas is generally considered among them as an honourable death. For that reason I also ob-

served, that the delinquents, who were going to the tree, were generally dressed in their best apparel.

This however is certain, though it may appear incredible, that from fifteen to eighteen miles round this tree, not only no human creature can exist, but that, in that space of ground, no living animal of any kind has ever been discovered. I have also been assured by several persons of veracity, that there are no fish in the waters, nor has any rat, mouse, or any other vermin, been seen there; and when any birds fly so near this tree that the effluvia reaches them, they fall a sacrifice to the effects of the poison. This circumstance has been ascertained by different delinquents, who, in their return, have seen the birds drop down, and have picked them up *dead*, and brought them to the old ecclesiastic.

I will here mention an instance, which proves the fact beyond all doubt, and which happened during my stay at Java.

In 1775 a rebellion broke out among the subjects of the Massay, a sovereign prince, whose dignity is nearly equal to that of the Emperor. They refused to pay a duty imposed upon them by their sovereign, whom they openly opposed. The Massay sent a body of a thousand troops to disperse the rebels, and to drive them, with their families, out of his dominions. Thus four hundred families, con-

sisting of above sixteen hundred souls, were obliged to leave their native country. Neither the Emperor nor the Sultan would give them protection, not only because they were rebels, but also through fear of displeasing their Neighbour, the Massay. In this distressful situation, they had no other resource than to repair to the uncultivated parts round the Upas, and requested permission of the Emperor to settle there. Their request was granted, on condition of their fixing their abode not more than twelve or fourteen miles from the tree, in order not to deprive the inhabitants already settled there at a greater distance of their cultivated lands. With this they were obliged to comply; but the consequence was, that in less than two months their number was reduced to about three hundred. The chiefs of those who remained returned to the Massay, informed him of their losses, and intreated his pardon, which induced him to receive them again as subjects, thinking them sufficiently punished for their misconduct. I have seen and conversed with several of those who survived soon after their return. They all had the appearance of persons tainted with an infectious disorder; they looked pale and weak, and from the account which they gave of the loss of their comrades, and of the symptoms and circumstances which attended their dissolution, such as convulsions, and other signs of a violent death, I was fully convinced that they fell victims to the poison.

This violent effect of the poison at so great a distance from the tree, certainly appears surprising, and almost incredible: and especially, when we consider that it is possible for delinquents who approach the tree to return alive. My wonder, however, in a great measure, ceased, after I had made the following observations:

I have said before, that malefactors are instructed to go to the tree with the wind, and to return against the wind. When the wind continues to blow from the same quarter while the delinquent travels thirty, or six and thirty miles, if he be of a good constitution, he certainly survives. But what proves the most destructive is, that there is no dependence on the wind in that part of the world for any length of time.—There are no regular land-winds; and the sea-wind is not perceived there at all, the situation of the tree being at too great a distance, and surrounded by high mountains and uncultivated forests. Besides, the wind there never blows a fresh regular gale, but is commonly merely a current of light, soft breezes, which pass through the different openings of the adjoining mountains. It is also frequently difficult to determine from what part of the globe the wind really comes, as it is divided by various obstructions in its passage, which easily change the direction of the wind, and often totally destroy its effects.

I, therefore, impute the distant effects of the poison, in a great measure, to the constant gentle winds in those parts,

which have not power enough to disperse the poisonous particles. If high winds were more frequent and durable there, they would certainly weaken very much, and even destroy the obnoxious effluvia of the poison; but without them the air remains infected and pregnant with these poisonous vapours.

I am the more convinced of this, as the worthy ecclesiastic assured me, that a dead calm is always attended with the greatest danger, as there is a continual perspiration issuing from the tree, which is seen to rise and spread in the air, like the putrid steam of a marshy cavern.

Experiments made with the Gum of the UPAS-TREE.

In the year 1776, in the month of February, I was present at the execution of thirteen of the Emperor's concubines, at *Soura-Charta*, who were convicted of infidelity to the Emperor's bed. It was in the forenoon, about eleven o'clock, when the fair criminals were led into an open space within the walls of the Emperor's palace. There the judge passed sentence upon them, by which they are doomed to suffer death by a lancet poisoned with Upas. After this the Alcoran was presented to them, and they were, according to the law of their great prophet Mahomet, to acknowledge and to affirm by oath, that

the charges brought against them, together with the sentence and their punishment, were fair and equitable. This they did, by laying their right hand upon the Alcoran, their left hands upon their breast, and their eyes lifted towards heaven; the judge then held the Alcoran to their lips, and they kissed it.

These ceremonies over, the executioner proceeded on his business in the following manner:—Thirteen posts, each about five feet high, had been previously erected. To these the delinquents were fastened, and their breasts stripped naked. In this situation they remained a short time in continual prayers, attended by several priests, until a signal was given by the judge to the executioner; on which the latter produced an instrument, much like the spring lancet used by farriers for bleeding horses. With this instrument, it being poisoned with the gum of the Upas, the unhappy wretches were lanced in the middle of their breasts, and the operation was performed upon them all in less than two minutes.

My astonishment was raised to the highest degree, when I beheld the sudden effects of that poison, for in about five minutes after they were lanced they were taken with a *tremor* attended with a *subfultus tendinum*, after which they died in the greatest agonies, crying out to God and Mahomet for mercy. In sixteen minutes by my watch,

which I held in my hand, all the criminals were no more. Some hours after their death, I observed their bodies full of livid spots, much like those of the *Petechiæ*, their faces swelled, their colour changed to a kind of blue, their eyes looked yellow, &c. &c.

About a fortnight after this, I had an opportunity of seeing such another execution at Samarang. Seven Malayans were executed there with the same instrument, and in the same manner; and I found the operation in the poison, and the spots in their bodies, exactly the same.

These circumstances made me desirous to try an experiment with some animals, in order to be convinced of the real effects of this poison; and as I had then two young puppies, I thought them the fittest objects for my purpose. I accordingly procured with great difficulty some grains of Upas. I dissolved half a grain of that gum in a small quantity of arrack, and dipped a lancet into it. With this poisoned instrument I made an incision in the lower muscular part of the belly in one of the puppies. Three minutes after it received the wound the animal began to cry out most piteously, and ran as fast as possible from one corner of the room to the other. So it continued during six minutes, when all its strength being exhausted, it fell upon the ground, was taken with convulsions, and died in the eleventh minute. I repeated this experiment

with two other puppies, with a cat and a fowl, and found the operation of the poison in all of them the same: none of these animals survived above thirteen minutes.

I thought it necessary to try also the effect of the poison given inwardly, which I did in the following manner. I dissolved a quarter of a grain of the gum in half an ounce of arrack, and made a dog of seven months old drink it. In seven minutes, a retching ensued, and I observed, at the same time, that the animal was delirious, as it ran up and down the room, fell on the ground, and tumbled about; then it rose again, cried out very loud, and in about half an hour after was seized with convulsions, and died. I opened the body, and found the stomach very much inflamed, as the intestines were in some parts, but not so much as the stomach. There was a small quantity of coagulated blood in the stomach; but I could discover no orifice from which it could have issued; and therefore supposed it to have been squeezed out of the lungs, by the animal's straining while it was vomiting.

From these experiments I have been convinced that the gum of the Upas is the most dangerous and most violent of all vegetable poisons; and I am apt to believe that it greatly contributes to the unhealthiness of that island. Nor is this the only evil attending it: hundreds of the natives of Java, as well as Europeans, are yearly destroyed

and treacherously murdered by that poison, either internally or externally. Every man of quality or fashion has his dagger or other arms poisoned with it; and in times of war the Malayans poison the springs and other waters with it; by this treacherous practice the Dutch suffered greatly during the last war, as it occasioned the loss of half their army. For this reason, they have ever since kept fish in the springs of which they drink the water, and sentinels are placed near them, who inspect the waters every hour, to see whether the fish are alive. If they march with an army or body of troops into an enemy's country, they always carry live fish with them, which they throw into the water some hours before they venture to drink it; by which means they have been able to prevent their total destruction.

This account, I flatter myself, will satisfy the curiosity of my readers, and the few facts which I have related will be considered as a certain proof of the existence of this pernicious tree, and its penetrating effects.

If it be asked why we have not yet any more satisfactory accounts of this tree, I can only answer, that the object of most travellers to that part of the world consists more in commercial pursuits than in the study of Natural History and the advancement of Sciences. Besides, Java is so universally reputed an unhealthy island, that rich tra-

vellers seldom make any long stay in it; and others want money, and generally are too ignorant of the language to travel, in order to make inquiries. In future, those who visit this island will now probably be induced to make it an object of their researches, and will furnish us with a fuller description of this tree.

I will therefore only add, that there exists also a sort of Cajoe-Upas on the coast of Macasser, the poison of which operates nearly in the same manner, but is not half so violent or malignant as that of Java, and of which I shall likewise give a more circumstantial account in a description of that island.—*London Magazine.*

Another Account of the Boa Upas, or Poison-Tree of Macaffer, from an inaugural Dissertation published by Christ. Aejmelæus, and approved by Professor Thunberg, at Upsal.

DOCTOR AEJMELÆUS first speaks of poisons in general, enumerating many virulent ones from the mineral and animal, as well as from the vegetable kingdoms of Nature. Of the first he mentions arsenical, mercurial, and antimonial preparations; amongst the second he mentions the poisons of several serpents, fishes, and insects; and amongst the last the Curara on the bank of the Oronoko, and the Woorara on the banks of the Amazonas, and many others. But he thinks the strongest is that of a tree hitherto undescribed, known by the name of Boa Upas, which grows in many of the warmer parts of India, principally in the islands of Java, Sumatra, Borneo, Bali, Macaffer, and Celebes.

Rumphius testifies concerning this Indian poison, that it was more terrible to the Dutch than any warlike instrument; it is by him styled Arbor toxicaria, and mentions two species of it, which he terms male and female; and describes the tree as having a thick trunk, with spreading

branches, covered with a rough dark bark. The wood, he adds, is very solid, of a pale yellow, and variegated with black spots, but the fructification is yet unknown.

Professor Thunberg supposes the Boa Upas to be a *Cestrum*, or a tree of the same natural family; and describes a *Cestrum* of the Cape of Good Hope, the juice of which the Hottentots mix with the venom of a certain serpent, which is said to increase the deleterious quality of them both.

The Boa Upas tree is easily recognised at a distance, being always solitary, the soil around it being barren, and as it were burnt up; the dried juice is dark brown, liquifying by heat, like other resins. It is collected with the greatest caution, the person having his head, hands, and feet carefully covered with linen, that his whole body may be protected from the vapour as well as from the droppings of the tree. No one can approach so near as to gather the juice, hence they supply bamboos, pointed like a spear, which they thrust obliquely, with great force, into the trunk; the juice oozing out gradually fills the upper joint; and the nearer the root the wound is made, the more virulent the poison is supposed to be. Sometimes upwards of twenty reeds are left fixed in the tree for three or four days, that the juice may collect and harden in the cavities; the upper joint of the reed is then cut off

from the remaining part, the concreted juice is formed into globules or sticks, and is kept in hollow reeds, carefully closed, and wrapped in tenfold linen. It is every week taken out to prevent its becoming mouldy, which spoils it. The deleterious quality appears to be volatile, since it loses much of its power in the time of one year, and in a few years becomes totally effete.

The vapour of the tree produces numbness and spasms of the limbs, and if any one stands under it bare-headed, he loses his hair; and if a drop falls on him, violent inflammation ensues. Birds which sit on the branches a short time, drop down dead, and can even with difficulty fly over it; and not only no vegetables grow under it, but the ground is barren a stone cast around it.

A person wounded by a dart poisoned with this juice feels immediately a sense of heat over his whole body, with great vertigo, to which death soon succeeds. A person wounded with the Java poison was affected with tremor of the limbs, and starting of the tendons in five minutes, and died in less than sixteen minutes, with marks of great anxiety; the corpse, in a few hours, was covered with petechial spots, the face became tumid and lead-coloured, and the white part of the eye became yellow.

The natives try the strength of their poison by a singular test; some of the expressed juice of the root of Amo-

mum Zerumbet is mixed with a little water, and a bit of the poisonous gum or resin is dropped into it; an effervescence instantly takes place, by the violence of which they judge of the strength of the poison.—What air can be extricated during this effervescence?—This experiment is said to be dangerous to the operator.

As the juice is capable of being dissolved in arrack, and is thence supposed to be principally of a resinous nature, the Professor does not credit that fountains have been poisoned with it.

This poison has been employed as a punishment for capital crimes in Macassar and other islands; in those cases some experiments have been made, and when a finger only had been wounded with a dart, the immediate amputation of it did not save the criminal from death.

The poison from what has been termed the female tree, is less deleterious than the other, and has been used chiefly in hunting; the carcases of animals thus destroyed are eaten with impunity. The poison-juice is said to be used externally as a remedy against other poisons, in the form of a plaster; also to be used internally for the same purpose; and is believed to alleviate the pain, and extract the poison of venomous insects sooner than any other application.

The author concludes that these accounts have been

exaggerated by Mahomedan priests, who have persuaded their followers that the Prophet Mahomet planted this noxious tree as a punishment for the sins of mankind.

An abstract of this Dissertation of C. Aejmelæus is given in Dr. Duncan's Medical Commentaries for the Year 1790, Decad. 2d. Vol. V.

Fairy-scene from Mr. Munday's Needwood Forest.

Referred to in Canto IV. l. 35.

HERE, seen of old, the *elfin* race
With sprightly vigils mark'd the place ;
Their gay processions charm'd the sight,
Gilding the lucid noon of night ;
Or, when obscure the midnight hour,
With glow-worm lanterns hung the bower.
—Hark !—the soft lute !—along the green
Moves with majestic step the QUEEN !
Attendant Fays around her throng,
And trace the dance or raise the song ;
Or touch the shrill reed, as they trip,
With finger light and ruby lip.

High, on her brow sublime, is borne
One scarlet woodbine's tremulous horn ;
A gaudy Bee-bird's* triple plume
Sheds on her neck its waving gloom ;

* The *humming-bird*.

With silvery goffamer entwin'd
 Stream the luxuriant locks behind.
 Thin folds of tangled network break
 In airy waves adown her neck;—
 Warp'd in his loom, the spider spread
 The far-diverging rays of thread,
 Then round and round with shuttle fine
 Inwrought the undulating line;—
 Scarce hides the woof her bosom's snow,
 One pearly nipple peeps below.
 One rose-leaf forms her crimson vest,
 The loose edge crosses o'er her breast;
 And one translucent fold, that fell
 From the tall lily's ample bell,
 Forms with sweet grace her snow-white train,
 Flows, as she steps, and sweeps the plain.
 Silence and Night enchanted gaze,
 And Hesper hides his vanquish'd rays!—
 Now the waked reed-finch swells his throat,
 And night-larks trill their mingled note:
 Yet hush'd in moss with writhed neck
 The blackbird hides his golden beak;
 Charm'd from his dream of love, he wakes,
 Opes his gay eye, his plumage shakes,

And, stretching wide each ebon wing,
First in low whispers tries to sing;
Then sounds his clarion loud, and thrills
The moon-bright lawns, and shadowy hills.
Silent the choral Fays attend,
And then their silver voices blend,
Each shining thread of sound prolong,
And weave the magic woof of song.
Pleased Philomela takes her stand
On high, and leads the Fairy band,
Pours sweet at intervals her strain,
And guides with beating wing the train.
Whilst interrupted Zephyrs bear
Hoarse murmurs from the distant wear;
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AN ADDITION,

*To be inserted near the end of the Additional Note XXXIII.
P. 433, of the first volume, immediately before the last
sentence.*

The following circumstance, which I observed this week, is sufficiently curious to be here inserted.

On the fifth of April 1799 the wind, which had blown for several days from the N. E. and a great part of that time was very violent, became due E. The barometer funk nearly an inch, clouds were produced, and much snow fell during the whole day; and on the next day the wind became again N. E. and the barometer rose again. The same circumstances exactly recurred on the eighth of April; the wind again changed from N. E. to due E. the barometer funk, and snow and afterwards rain were the consequence.

Which is thus to be explained. On April the fifth the atmosphere became lighter, I suppose, because no more air was supplied from the arctic circle, and the snow was produced from some of the southern air over this country falling down, I suppose, on the lowered current of northern air. But why did the N. E. wind on both these days change to due E.? To this it may be answered, that as no new air was now brought from the N. and in consequence the barometer funk; and as air from the S. evidently became mixed with that from the N. whence the clouds and consequent snow; the further progress of the N. E. air towards the S. was stopped by the opposing

ADDITIONAL NOTE.

air from the S. but its easterly direction was not stopped; and as this only remained, it became due E. This idea was further countenanced, because the wind on both days became a few points on the southerly side of the E. for an hour or two before the snow ceased.

*Directions to the Binder for placing the Plates in
Part II.*

Please to place the print of Flora at play with Cupid opposite the Title Page.

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ERRATUM.

Part I. Canto II. l. 324, p. 102, for *state* read *fate*.

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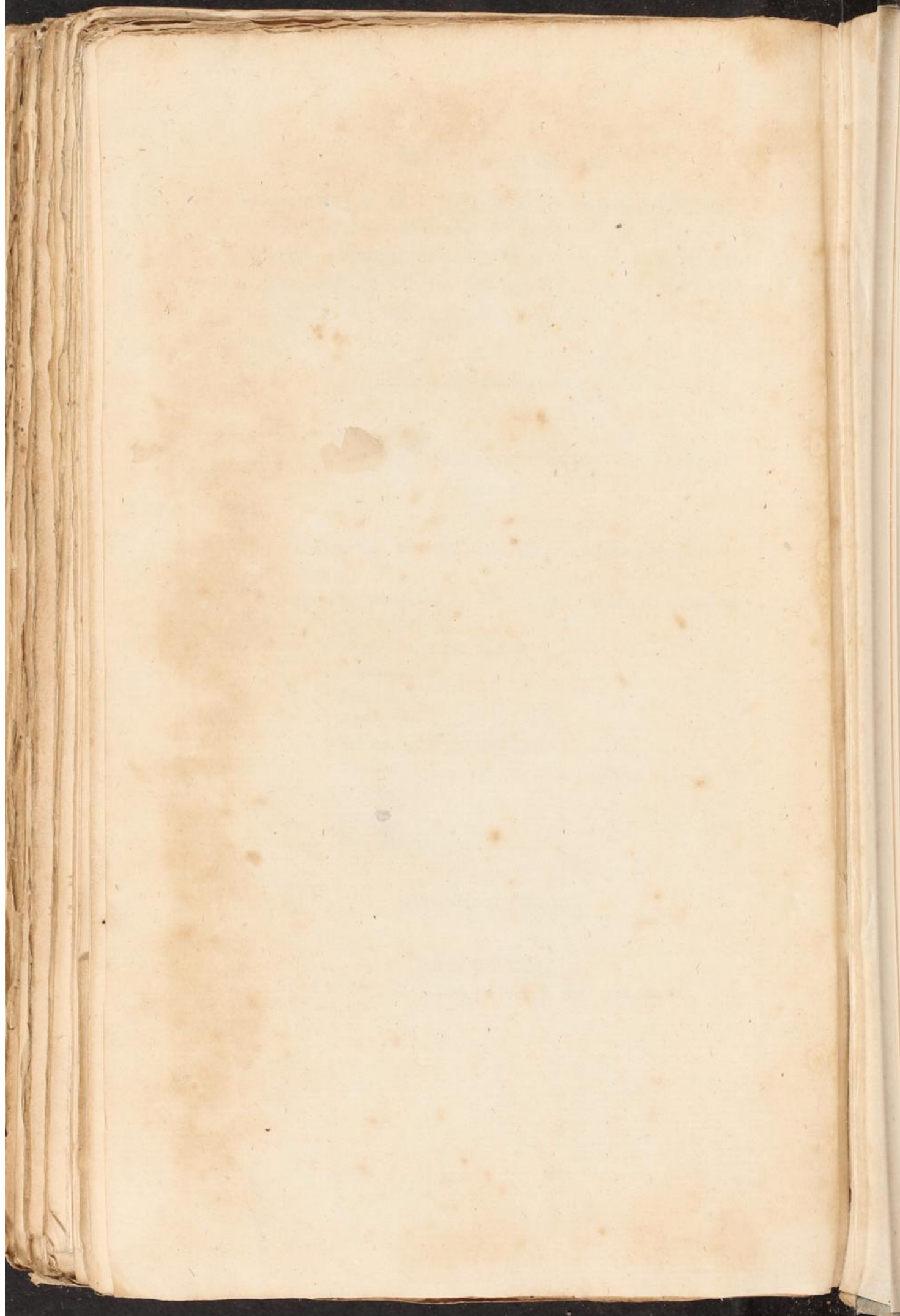
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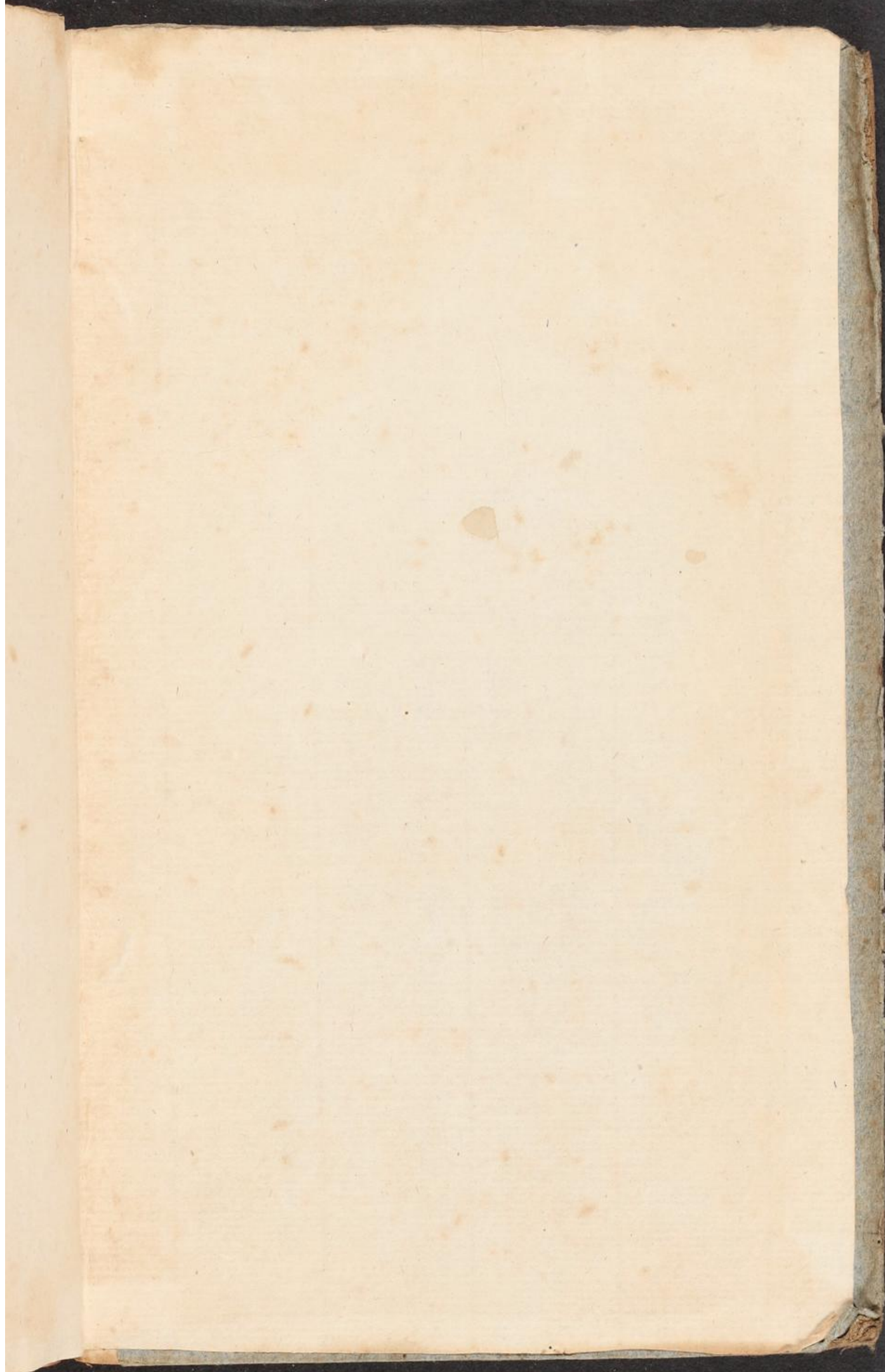
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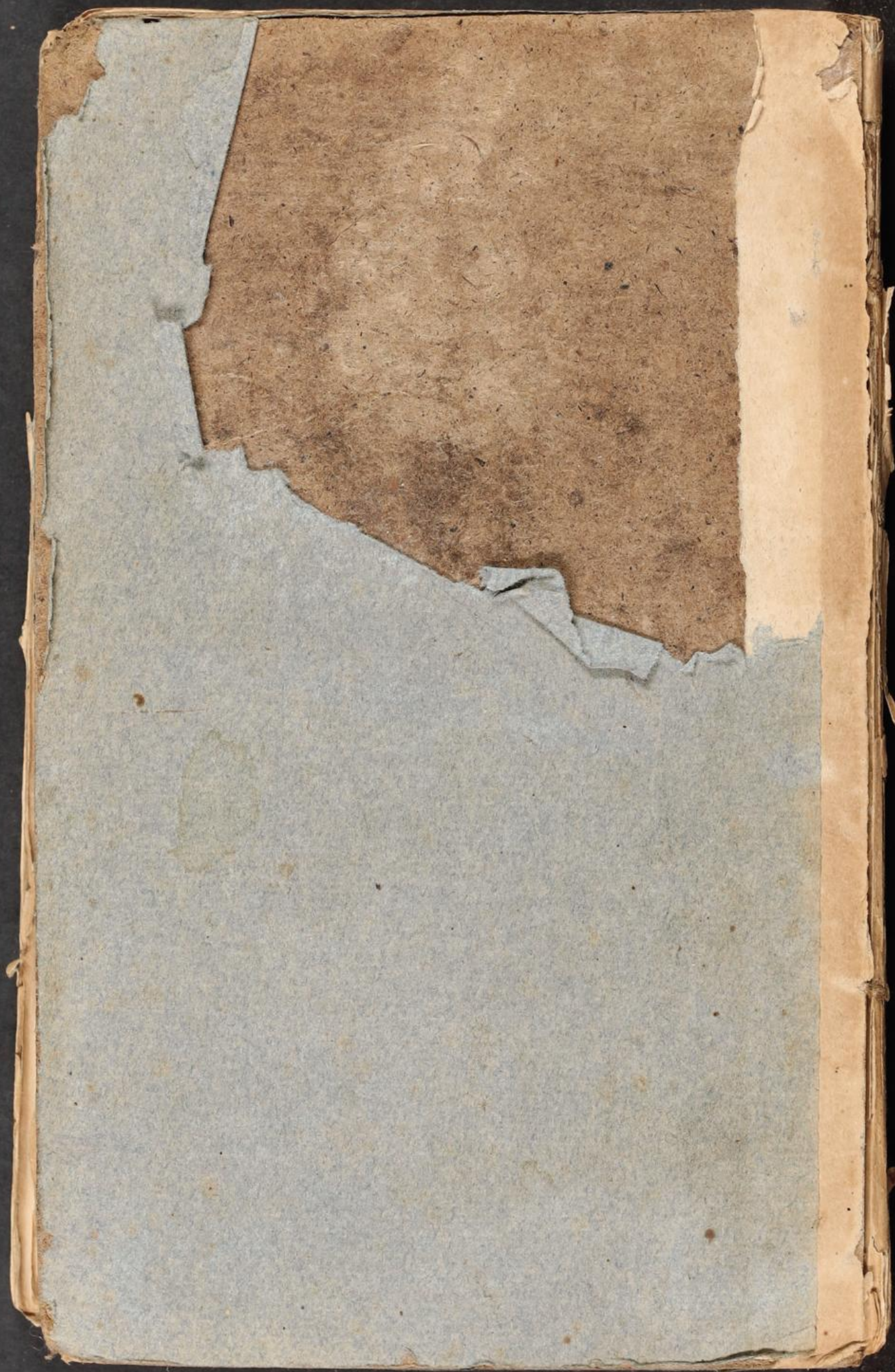
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DARWIN
BOTANIC GARDEN

PART II.

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THE
BOTANIC GARDEN,



PART I.

CONTAINING

THE ECONOMY OF VEGETATION.

PART II.

THE LOVES OF THE PLANTS.

WITH

PHILOSOPHICAL NOTES.



Colour & Grey Control Chart

Danes Picta

