Scilly eastward as far as Liskerd, and towards the north as far as Camelford. At Plymouth it was just sensible. In several places the houses shook, the windows rattled, the floors lifted, the chamber-bells rung, the pewter, &c. on the shelves were much agitated. Thus was this earthquake felt in towns, houses, and grounds adjacent; but still more particularly alarming in the mines, where there is less refuge, and consequently a greater dread from the tremors of the earth. In these it was heard and felt at all depths, to 70 fathoms or more, and seemed as below them.

LXV. On the Sleep of Plants; and of that Faculty which Linneus calls Vigiliæ Florum; with an Enumeration of several Plants which are subject to that Law. By Mr. Richard Pulteney of Leicester. p. 506.

Acosta and Prosper Alpinus, who both wrote near the conclusion of the 16th century, appear to be the first who recorded that nocturnal change in the leaves of plants, which has since been called somnus. It is an observation indeed as old as Pliny's time, that the leaves of trefoil assume an erect situation on the coming of storms. The same is observable of our wood-sorrel; and Linneus adds, of almost all plants with declinated stamina. In the trifolium pratense album C. B. or common white-flowered meadow-trefoil, it is so obvious, that the common people in Sweden remark, and prognosticate the coming of tempests and rain from it.

The examples of sleeping plants instanced by Alpinus are but few. That author says, it was common to several Egyptian species; but specifies only the Acaciæ, Abrus, Absus, Sesban, and the tamarind-tree. Cornutus some time afterwards remarked this property in the Pseudo-acacia Americana. From that time it has remained almost unnoticed, till Linneus, ever attentive to nature's works, discovered that the same affair was transacted in many other plants; and his observations have furnished us with numerous and obvious examples of it. Mr. Miller mentions it in the medicago arborea Linn. Sp. Pl. 778; and we may add to the list two other common plants not mentioned by Linneus: these are the phaseolus vulgaris, common kidney-bean; and the trifolium pratense purpureum majus, or clover-grass: in both which this nocturnal change is remarkably displayed. Doubtless the same property exists in numberless other species; and future observation will very probably confirm Dr. Hill's sentiment, that no plant or tree is wholly unaffected by it.

It is now more than 20 years since Linneus first attended to this quality in plants. In his Flora Lapponica, when speaking of the trifolium pratense album, as above-mentioned, he remarks, that the leaves of the mimosa, cassia, Bauhinia, Parkinsonia, Guilandina, and others in affinity with them, were subject to this change in the night-time: and he had then carried his observations so far, as to

find that heat and cold were not the cause of this quality; since they were alike influenced by it when placed in stoves, where the temperature of the air was always the same. The merit of reviving this subject is therefore due to the illustrious Swede; and the naturalist is greatly indebted to him for so far extending his observations on it.

The subject of the somnus plantarum cannot but be highly entertaining to the lovers of natural knowledge: and such, I apprehend, cannot be less entertained with that faculty which Linneus calls vigiliæ florum: of which we shall give a brief account.

Previous to our explanation of this affair it is proper to observe, that the flowers of most plants, after they are once opened, continue so night and day, until they drop off or die away. Several others, which shut in the night time, open in the morning either sooner or later, according to their respective situation in the sun or shade, or as they are influenced by the manifest changes of the atmosphere. There are however another class of flowers, which make the subject of these observations, which observe a more constant and uniform law in this particular. These open and shut duly and constantly at certain and determinate hours, exclusive of any manifest changes in the atmosphere; and this with so little variation in point of time, as to render the phenomenon well worth the observation of all whose taste leads them this way. This faculty in the flowers of plants is not altogether a new discovery: but we are indebted to the same hand for additional observations on this head also. It is so manifest in one of our common English plants, the tragopogon luteum, that our country-people long since called it John-go-to-bed-at-noon. Linneus's observations have extended to near 50 species, which are subject to this law. What we find principally on this subject, is in the Philosophia Botanica, p. 273. We will enumerate these plants, and mention the time when the flowers open and shut, that those who have opportunity and inclination may gratify themselves, and probably at the same time extend this branch of botanic knowledge still further.

It is proper to observe, that as these observations were made by Linneus in the academical garden at Upsal, whoever repeats them in this country will very probably find, that the difference of climate will occasion a variation in point of time: at least this will obtain in some species, as our own observations have taught us; in others the time has corresponded very exactly with the account he has given us. Whether this faculty has any connexion with the great article of fecundation in the economy of flowers, Mr. P. cannot determine: in the mean time it is not improbable. Future and repeated observations, and well-adapted experiments, will tend to illustrate this matter, and it may lead the way to a full explanation of the cause.

1. Anagallis flore phœniceo C. B. pin. 252. Raii Syn. p. 282. Anagallis ar-

vensis Lin. Spec. plant. p. 148. The male pimpernel. The flowers of this plant open about 8 o'clock in the morning, and never close till past noon. This plant is common in kitchen-gardens and in corn-fields; it flowers in June, and continues in flower 3 months.—2. The anagallis cærulea foliis binis ternisve ex adverso nascentibus C. B. pin. p. 252. Raii Hist. Plant. p. 1024. Anagallis monelli Sp. Plant. 148. Blue-flowered pimpernel with narrow leaves. The flowers of this plant observe nearly the same time in opening and shutting as the foregoing.—3. Convolvulus peregrinus cæruleus folio oblongo C. B. pin. 295. Convolvulus tricolor Sp. Plant. 158. Little blue convolvulus, or bind-weed. This opens its flowers between the hours of 5 and 6 in the morning, and shuts them in the afternoon.—4. Phalangium parvo flore ramosum C. B. pin. 29. Raii Hist. Pl. 1193. Branched spider-wort with a small flower. These open about 7 in the morning, and close between 3 and 4 afternoon.—5. Lilium rubrum asphodeli radice C. B. pin. 80. Hemerocallis fulvus Sp. Pl. 324. The day-lilly. The flowers open about 5 in the morning, and shut at 7 or 8 in the evening. —6. Plantago aquatica minor. Park. 1245. Raii Syn. 257. Alisma ranunculoides Sp. Pl. 343. Fl. Suec. 2, N° 325. The lesser water-plantain, during its flower. ing time, only opens its flowers each day about noon.—7. Caryophyllus sylvestris prolifer C. B. pin. 209. Raii Syn. 337. Dianthus prolifer Sp. Pl. 410. Proliferous pink. The flowers expand about 8 in the morning, and close again about 1 afternoon.—8. Spergula purpurea J. B. iii. 722. Raii Syn. p. 351. Arenaria rubra. Sp. Pl. 423. Purple spurrey. These expand between 9 and 10 in the morning, and close between 2 and 3 afternoon. This little plant is common among the corn in sandy soils, and flowers in June.—9. Portulaca latifolia sativa C. B. pin. 288. Portulaca oleracea Sp. Pl. p. 445. Common purslain, opens its flowers about 9 or 10 in the morning, and closes them again in about an hour's time.—10. Ficoides Africana, folio plantaginis undulato micis argenteis adsperso Boerh. Ludg. i. p. 291. Mesembryanthemum chrystallinum Sp. pl. 480. Diamond Ficoides. The flowers of this plant open at 9 or 10, and close at 3 or 4 afternoon.—11. Ficoides Africana folio tereti in villos radiatos abeunte. Tourn. Mesembryanthemum barbatum Sp. Pl. 482. The flowers of this species expand at 7 or 8 in the morning, and close about 2 afternoon.—12. Ficoides folio tereti Neapolitana flore candido Herm. Ludg. 252. Kali crassulæ minoris foliis C. B. pin. 289. Mesembryanthemum nodiflorum Sp. Pl. 480. The flowers of this plant open at 10 or 11 in the morning, and close at 3 afternoon. —13. Mesembryanthemum folio linguiformi latiore Dillen. Hort. Elth. Mesembryanthemum linguiforme Sp. Pl. 488. Ficoides with a tongue-shaped leaf. These open at 7 or 8 in the morning, and are closed about 3 afternoon.—14. Nymphæa alba J. B. iii. 770. Raii Syn. 368. Nymphæa alba Sp. Pl. 510. Fl. Suec. 2. N° 470. White water lily. This plant grows in rivers, ponds,

and ditches, and the flowers lie upon the surface of the water. At their time of expansion, which is about 7 in the morning, the stalk is erected, and the flower more elevated above the surface. In this situation it continues till about 4 afternoon, when the flower sinks to the surface of the water, and closes again.—15. Papaver erraticum nudicaule flore flavo odorato Dillen. Hort. Elth. 302. Papaver nudicaule Sp. Pl. p. 507. Wild poppy with a naked stalk and a yellow sweet-smelling flower. The flower of this plant opens at 5 in the morning, and closes at 7 in the evening.—16. Alyssoides incanum, foliis sinuatis Tourn. Inst. 213. Alyssum sinuatum Sp. Pl. 651. Hoary madwort with sinuated leaves. The flowers of this plant expand between 6 and 8 in the morning, and close at 4 afternoon.—17. Abutilon repens alceæ foliis, flore helvolo Dillen. Hort. Elth. 5. Malva Caroliniana Sp. Pl. 688. Creeping Indian mallow with leaves like vervain mallow, and a flesh-coloured flower. These open at 9 or 10 in the morning, and close at 1 afternoon.—18. Tragopogon luteum Ger. 595. Raii Syn. 171. Tragopogon pratense Sp. Pl. 789. Yellow goats beard, or go-to-bed at-noon. The latter of these names was given to this plant long since, on account of this remarkable property. The flowers open in general about 3 or 4 o'clock, and close again about 9 or 10 in the morning. These flowers will perform their vigiliæ, if set in a phial of water, within doors for several mornings successively; and they are sometimes observed to be quite closed, from their utmost state of expansion, in less than a quarter of an hour. It flowers in June.—19. Tragopogon gramineis foliis, hirsutis. C. B. pin. 275. Raii Hist. Plant. 253. Rose-coloured goats beard. These open between 5 and 6 in the morning, and close about 11. Tragopogon hybridum Sp. Plant. 789. —20. Tragopogon, calycibus corolla brevioribus inermibus, foliis lyrato-sinuatis. Hort. Ups. 244. Sp. Pl. 790. Hall. Hort. Gotting. 2. p. 419. The flowers of this plant open at 6 or 7 in the morning, and shut between the hours of 12 and 4 afternoon.—21. Sonchus Tingitanus papaveris folio. Tourn. Raii Suppl. 137. Scorzonera Tingitana Sp. pl. 791. African sowthistle with a poppy leaf. This plant opens its flowers between 4 and 6 in the morning, and closes them in about 3 hours.—22. Sonchus repens, multis hieracium majus J. B. ii. 1017. Raii Syn. 163. Sonchus arvensis Sp. Pl. 793. Tree sowthistle. These flowers expand about 6 or 7, and close between 11 and 12 in the forenoon. This is common in cornfields, and flowers in June, July, and August.—23. Sonchus lævis Ger. Raii Syn. 162. Sonchus oleraceus Sp. Pl. 794. Smooth or unprickly sowthistle, hares lettuce. These open about 5 in the morning, and close again at 11 or 12.—24. Sonchus lævis laciniatus cæruleus C. B. pin. 124. Raii Hist. pl. 225. Sonchus alpinus Sp. Pl. 794. Blue-flowered mountain sowthistle. These open about 7, and close about noon.—25. Sonchus tricubitalis, folio cuspidato Morr. pin. Raii Syn. 163. Sonchus asper arborescens C. B. pin.

124. Sonchus palustris Sp. Pl. 793. The greatest marsh-tree sowthistle. It expands its flowers about 6 or 7, and closes about 2 afternoon.—26. Lactuca sativa C. B. pin. 122. Sp. Pl. 795. Garden lettuce, opens its flowers about 7, and closes them about 10 forenoon.—27. Dens leonis Ger. 228. Raii Syn. 170. Leontodon taraxacum Sp. Pl. 798. Dandelion. It expands at 5 or 6, and closes at 8 or 9 in the forenoon. This flowers early in the spring, and again in the autumn.—28. Dens leonis hirsutus leptocaulos, hieracium dictus. Raii Syn. 171. Leontodon hispidum Sp. Pl. 799. Rough dandelion, or dandelion hawkweed. This plant opens its flower about 4 in the morning, and keeps it expanded till 3 afternoon. In May.—29. Hieracium minus præmorsa radice. Park. 794. Raii Syn. 164. Leontodon autumnale. Sp. Pl. 799. Hawkweed with bitten roots, or yellow Devil's-bit. The flowers open about 7, and keep in an expanded state till about 3 afternoon. It flowers in July and August.—30. Pilosella repens Ger. 573. Raii Syn. 170. Hieracium pilosella Sp. Pl. 800. Common creeping mouse-ear. It opens about 8 in the morning, and closes about 2 afternoon. Very common on dry pastures, flowering in June and July.—31. Hieracium murorum folio pilosissimo C. B. pin. 129. Raii Syn. 168. Hieracium murorum Sp. Pl. 802. The flowers of this plant expand about 6 or 7, and close about 2 in the afternoon. Upon old walls, flowering in June and July. This is called in English French or golden lungwort.—32. Hieracium fruticosum angustifolium majus. C. B. pin. 129. Hieracium umbellatum Sp. Pl. 804. Narrow-leaved bushy hawkweed. The flowers of this species expand about 6 in the morning, and remain open till 5 afternoon.—33. Hieracium fruticosum latifolium hirsutum C. B. pin. 129. Raii Syn. p. 167. Hieracium sabaudum Sp. Pl. 804. Bushy hawkweed with broad rough leaves. These flowers are in their expanded state from about 7 in the morning till 1 or 2 afternoon. In woods, flowering in June and July.—34. Hieracium montanum cichorii folio. Raii. Syn. p. 166. Hieracium paludosum Sp. Pl. 638. Fl. Suec. 2. N° 702. Succory-leaved mountain hawkweed. The flowers expand about 6 in the morning, and close about 5 afternoon.—35. Hieracium hortense floribus atro-purpurascentibus C. B. pin. 128. Hieracium aurantiacum Sp. Pl. 801. Garden hawkweed with deep purple flowers, or sweet Indian mouse-ear. The flowers are in their expanded state from 6 or 7 in the morning till 3 or 4 afternoon.—36. Hieracium luteum glabrum, sive minus hirsutum. J. B. Raii Syn. 165. Crepis tectorum Sp. Pl. 807. Smooth succory hawkweed. The flowers of this plant expand about 4 in the morning, and close about noon.—37. Hieracium alpinum scorzoneræ folio. Tourn. Inst. 472.—Crepis alpina Sp. Pl. 806. Mountain hawkweed with a vipers-grass leaf. These open about 5 or 6, and close at 11 in the forenoon.—38. Hieracium dentis leonis folio, flore suave-rubente, C. B. pin. 127. Raii Hist. pl. 231. Crepis rubra Sp. Pl. 806. Hawkweed of Apulia with