

The first part of Linnæus' scheme of plants, including his delightful account of the Princes, Nobles, New-Colonists, Slaves, Vagabonds and many other castes of the vegetable world, appeared in the SCIENCE NEWS-LETTER last week. In this concluding part, the functions of the different parts of the plant are explained, and True Botanists are distinguished from False Botanists.

## PART TWO

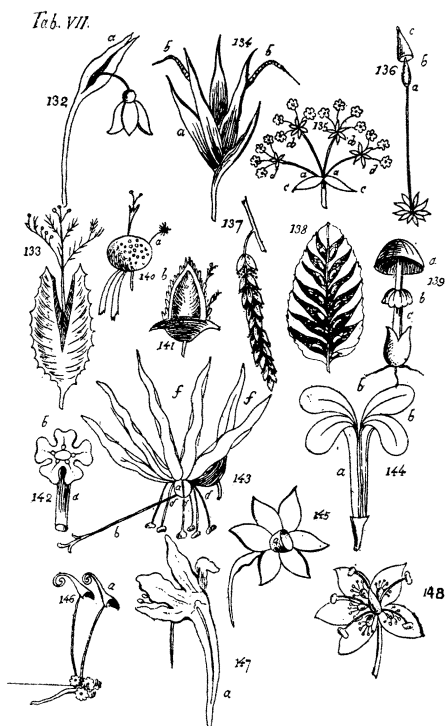
*A SYSTEM OF VEGETABLES. according to their Classes, Orders Genera, Species, with their Characters and Differences. In two volumes. Translated from the Thirteenth Edition (as published by Dr. Murray) of the SYSTEMA VEGETABILUM of the late Professor Linneus; and from the SUPPLEMENTUM PLANTARUM of the present Professor Linneus. By a Botanical Society at Lichfield, London, MDCC-LXXXIII (1783).*

*Vegetable Kingdom Continued*

23. VEGETATION is produced by the *Rootlets* sucking up the aqueous tincture of the Soil; which, by daily addition of heat, is gently driven through the vessels of the external corporeal part; whence the nutrition of the exterior and interior plant, the superfluous moisture exhaling, the *Bark* depositing the *Rind* on its interior surface, which annually changes itself into a *Woody* substance, (in Annual ringlets interspersed with the *Albumen*, which at length almost ossifies as the lower branches decay) this woody substance afterwards sustains the ascending Stock, in the summits of which the living *Pith* advances.

I conceive the *MEDULLA*, or *PITH*, to consist of a bundle of equally diverging Nervous fibres; in which medulla the protrusive vital power breaks the ultimate nerves; which there diverging, penetrate the bark, as yet gelatinous; where these medullary nerves at the summit are in like manner multiplied in the Bud. From the vessel ascending through this nerve being divided, and the ascent of the propelled fluid being impeded beneath, the bark is extended into a *Leaf*.

This *LEAF*, which is agitated by the passing winds, attracts and prepares the fluids (except those of the Parasite-Plants, which are previously prepared), inhales electric matter from the light with its upper surface, perspires



## PARTS OF THE FLOWER

133—Spathe, Spadix; 134—*a* Glume calyx, Fig. 132—Spathe, the Calyx of *Narcissus*; *b* Awn; 135—*a* Universal umbel, *b* Partial one, *c* Universal Involucre, *d* Partial one; 136—*c* Calyptré, *b* Lid, *a* Head; 137—Ament; 138—Strobile; 139—*a* Hat, *b* Volve; *c* Stipe of a Fungus; 140—*a* Common naked Receptacle; 141—Common Receptacle imbricated with chaffi; 142—*a* Tube, *b* Border of a one-petal'd Corol; 143—Flower a Germ, *b* Style, *c* Stigma, *d* Filaments, *e* Anthers, *f* Petals; 144—*a* Claws, *b* Folds of a many petal'd corol; 145—Bell'd Nectary in *Narcissus*; 146—Horn'd Nectaries in *Aconitum*; 147—Horn'd Nectary in the Calyx of *Tropaeolum*; 148—Nectaries in *Parnassia*

a dew from its under surface, and perishes never to be renewed.

But the Larva of the herb is DISPLAYED, when the protrusion of the Medulla is greater than the retention of the including Body; when the substance of the *Bark* is expanded in the Calyx, that of the *Rind* in the Corol, that of the *Wood* in the Stamens, that of the *Medulla* in the Pistil; the vegetation thus terminates in new life, the threads of life being collected into the ultimate Seeds of the Medulla.

24. The PROLEPSIS exhibits the mystery of the Metamorphosis of Plants, in which the Larva of the Herb is changed into a Displayed Fructification; for it is the office of a Plant to produce

either a leafy *Herb* or a *Fructification*.

A genuine Bud is the compendium in its bosom the principle of a multiplying Branch, either such actually or potentially; and since the Leaf is produced for this cause, and no other, a Leaf cannot exist, unless this principle has previously perforated the bark, from which it arose, although the effect appears before the cause.

A genuine Bud is the compendium of a future Branch, into which it is at length unfolded. A Bud always consists of Scales, which are so many rudiments of Leaves, and are pressed together till the future branchlet becomes elongated. And since the Leaf cannot exist without the Bud, it follows that buds lie concealed in the bosom of every bud-scale, and this is evident to the eye, whence every bud can be nothing more than a body composed of leaves and Budlets. It follows therefore that every Bud consists of Leaves with their Budlets, and these Budlets in the like manner of less scales or budlets, and so forward even to the fifth generation (as in the *Volvox*), nor further, as appears in the metamorphosis. Therefore a leafy Branch of the present year is pregnant with all the branchlets to be produced through five years, new ones always succeeding at the extreme summits, in the place, at the base, of those fallen off, that the five series may be perpetual. This happens in *Trees*, where the medulla is delayed by the harder woody substance; but in annual *Plants*, where the resistance of the less compact body against the medulla is less, it can sooner pass into Flower without the delay in the bud; for whatever increases the protrusion of the Medulla, and weakens the power of the including Body, promotes the florescence.

When a Tree produces a FLOWER, Nature anticipates the progenies of five years, then all coming forth together; in forming from the bud-leaves the *Bractes* of the next year, the *Calyx* of the following one, the *Corol* of that succeeding it, the *Stamens* of the fourth, (*Turn to next page*)

## Linnæus' Classification—Continued

and *Pistil* of the fifth; which is filled with the granulated Medulla of the *Seed*, the termination of vegetable life.

25. FLORESCENCE exhibits the *Esponsals* of Plants in the Flower, and the *Nuptials* in the Anthesis.

The FLOWER, the unclad Larva of the Herb, comes forth from the displayed, internal plant, naked and perfect, like the above mentioned flying *Insect*; *Wing-sheathed* in respect to the Calyx, *Winged* in respect to the Corol, consisting alone of the *Organs* of Reproduction: In the *Males* the stamens have their Anthers connected with the Prolific Powder containing the vivifying *Fovilla*: In the *Females* the Pistils have their *Ovarium* terminated with a tubular and moist *Stigma*.

The ANTHESIS takes place, when the burst Anthers scatter their bags of *Dust* upon the *Stigma*, when this dust gives out the included male *Fovilla*, to be absorbed by the prolific *Lymph* of the *Stigma*; so that the male corporeal part and the Female medullary one, produces the seed, or *Egg*, which is nourished in the Ovary to its due maturity.

26. The PRINCIPLE of Fructification, the Foundation of Botany, should be traced higher.

Problem: We may suppose God at the beginning to have proceeded from simple to compound, from few to many! and therefore at the beginning of Vegetation to have created just so many different plants, as there are *Natural Orders*. That He then so intermixed the plants of these orders by their marriages with each other; that as many plants were produced as there are now distinct *Genera*. That Nature then intermixed these Generic plants, by reciprocal marriages (which did not change the structure of the flower), and multiplied them into all possible existing *Species*; excluding, however, from the number of *Species*, the *Mule-plants* produced from these marriages, as being barren.

Each GENUS therefore is natural, Nature assenting to it, if not making it.

The CHARACTER therefore never constitutes the genus, but is itself diligently to be constructed according to the Genus of Nature.

Kindred PLANTS of the same mother are to be known in respect to the Genus by the flower, or displayed plant, when the reciprocal unadulterated marriage leaves the Fructification intire; but in the species are to be distinguished from their sister-companions, produced by a different father, according to the Herb.

Thus the DIAGNOSIS of a plant consists in the affinity of the *Genus*, and in the difference of the *Species*.

The NAME of a plant therefore, that it may refer to each diagnosis, is double: the *Generic* Family Name,

And the *Specific* trivial Name, under which latter are the vague *Synonymies* of authors.

The BOTANIST, in following the *Classifications*, is led to the named *Genus* by the *Characters* of the displayed plant or flower; to the appellation of the *Species* by the *Differences* of the Larva or herb; and thence to its *Synonymies*; from these to *Authors*, and thence to *every thing*, which has come to us from our ancestors on the subject. Thus the plant itself tells its Name, and its History amid such a multitude of species, and of individuals; this is the great purpose of Botany, the invention of the present age, to the completion of which all true Botanists will contribute their labor.

27. True BOTANISTS will labour to increase this lovely Science: will construct Fundamental DESCRIPTIONS in characteristic words, particularly of obscure, rare and new Plants, according to the rule of Delineation of a plant; as is done by my *Son*, and *Schreberus* in *Decuriis*.

Will add FIGURES, if they are able, which represent the perfect Plant, such as are given by *Vaillant*, *Dillenius*, *Ehret*, *Jacquin*, *Trew*, *Schmiedel*, etc.

Will discover the most compendious and most proper specific DIFFERENCES.

Will enquire the SYNONYMIES of authors, particularly the best, as *Haller*.

Will always prefix the natural GENUS to the Species; and when new, will define it by its natural character from the situation, figure, number, proportion, of all

the parts of fructification.

Will refer the vague and new SPECIES to certain genera; as *Tournefort*, *Plumier*, *Brown*, *Jacquin*.

Will point out the natural Order, where it appears.

Will mark the native STATIONS of each plant, and will therefore produce more Floras, where there is opportunity, particularly *Southern* or *Exotic ones*.

Will observe their PROPERTIES, as their *Duration*, *Semination*, *Germation*, *Vernation*, *Aestivation*, *Nuptials*, *Fruorescence*, *Calendar*, *Horologue*, *Sleep*, *Qualities*.

Will add their USES; whatever uses of *Nature* (of the Pan and of the Pandora) the *Physician* the *Oeconomist*, etc., have discovered, and of these whatever contributes most to the glory of the Author of all, and to the advantage of Human Life; that at length our posterity may enjoy the meridian light of the science.

False BOTANISTS proclaim the Laws of the Art before they have learned them:

Extol absurd Authors, and are jealous of the excellent ones:

Steal from others, producing nothing of their own:

Boast much of a little knowledge: Pretend they have discovered a natural Method:

Assert the Genera to be arbitrary.

**Carl Linné** was born in Roshult, Sweden, May 13 (O. S.) 1707, and died January 10, 1778 at Upsala. At the age of 20, destined by his family for holy orders, his teachers advised his father to apprentice him to a shoemaker, as he had no aptitude for his studies. His friend, Dr. Rothman, recognized his scientific ability, and turned him to the study of medicine. At the age of 25 he went on a scientific exploration of Lapland. At 28, in Holland to get his M.D., he showed the MS of the "Systema Naturae" to Gronovius, who enthusiastically published it at his own expense. In the next 30 years Linnæus wrote nearly 200 works on Botany. He became Professor of Botany at Upsala at 34, where he continued to teach for the rest of his active life.

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In 1778, there were about 500 cattle in California; by the end of that century there were 74,000.

A method of measuring and recording the exact shade of a color, based on the principle of spectrum analysis, makes it possible to match colors by cable.