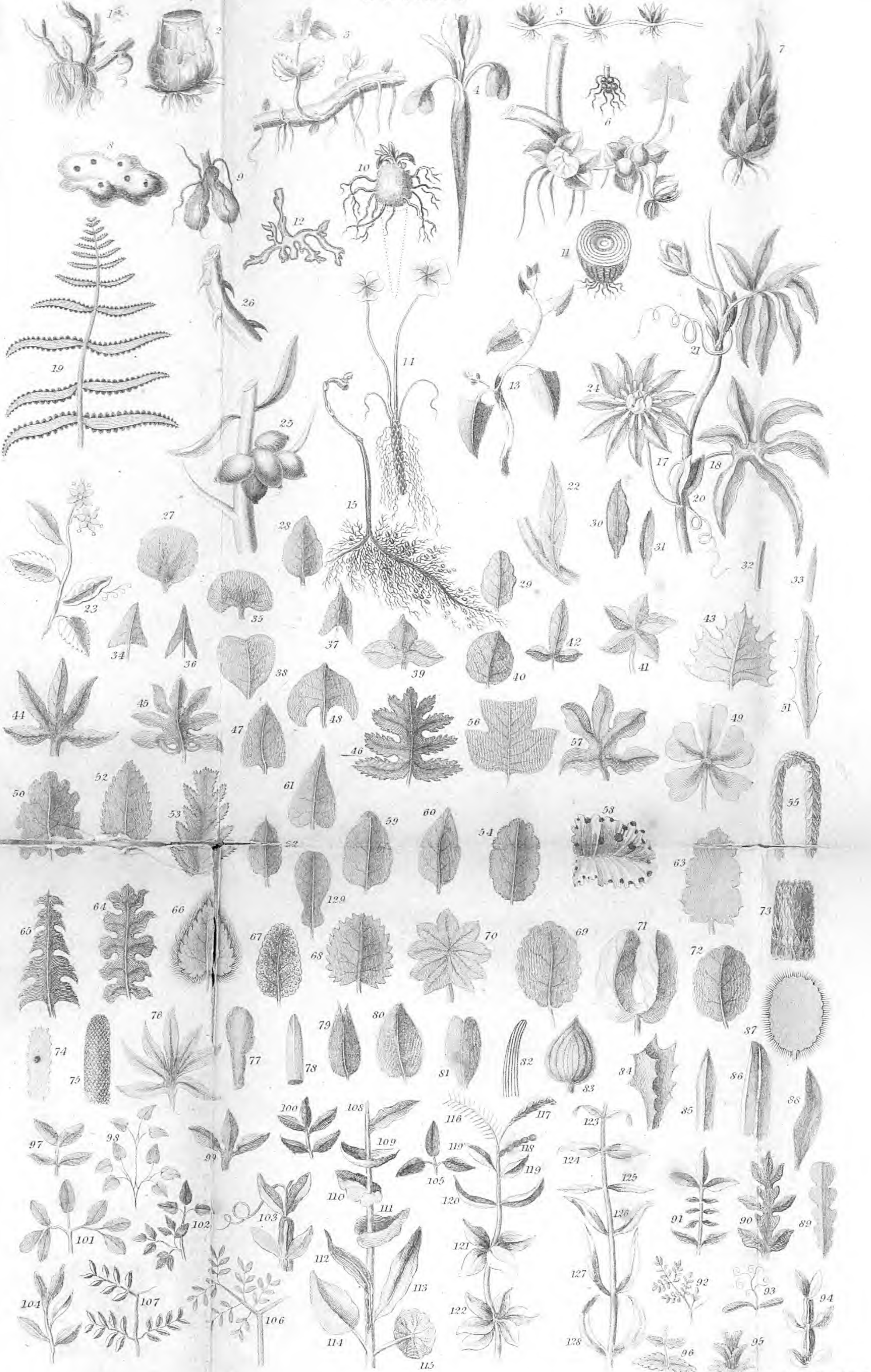
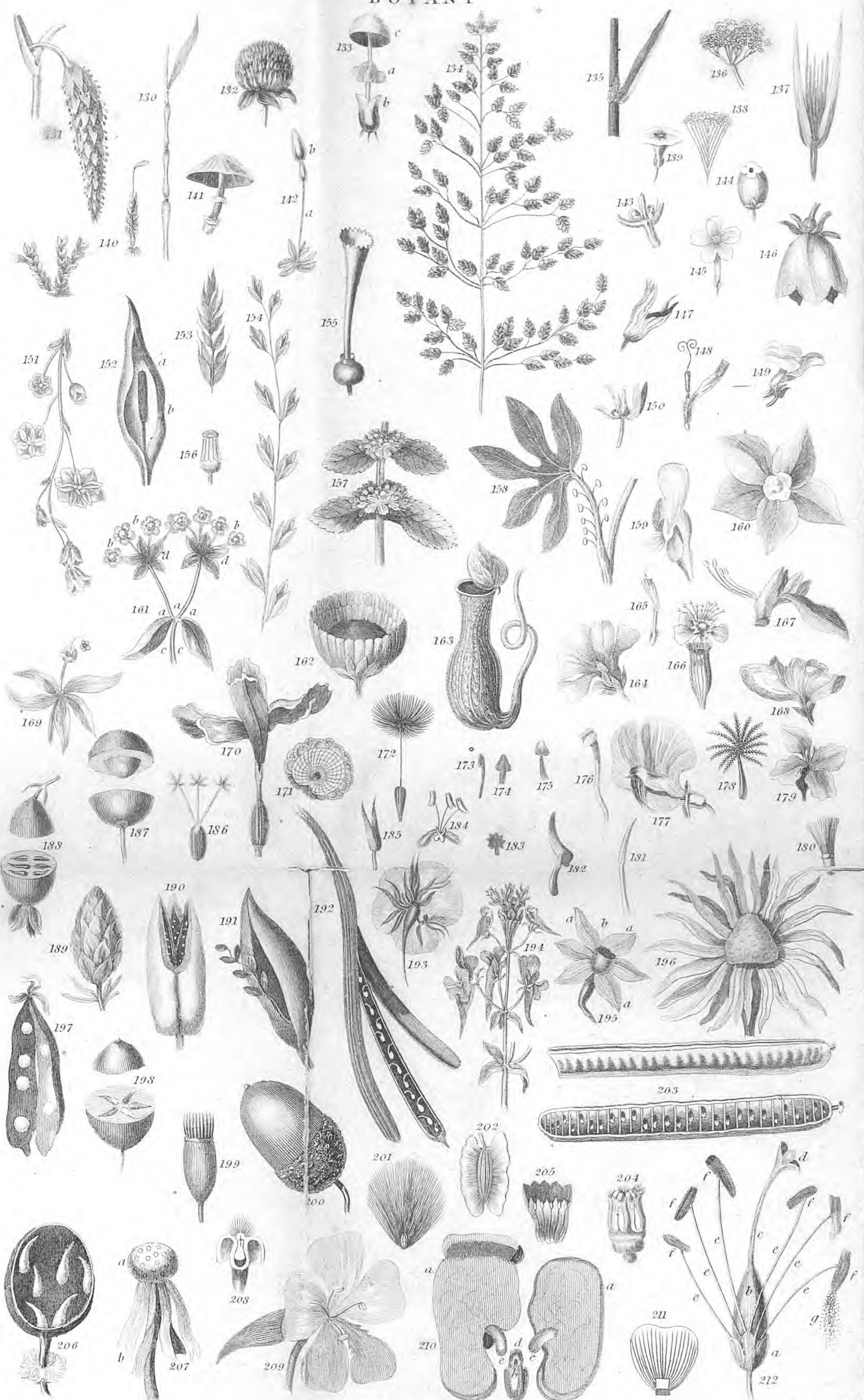


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SUPPLEMENT

RATTRAY'S BOTANICAL CHART,

THE CRYPTOGRAMOUS PLANTS OF GREAT BRITAIN.

A BRIEF Outline of the Natural Systematic arrangement given by Sir WILLIAM JACKSON HOOKER, in his splendid Work on the Cryptogamous Plants of Great Britain; in which it is made evident, that the clear and comprehensive mind of Linnaeus, so fitted for distribution, definition, and denomination, had never been warmly engaged, or its energies properly called forth, to the Flowerless Plants, which compose his Class Cryptogamia, otherwise he would not have left such scope for improvement to his successors.—This Class is divided into 7 Orders, 17 Families, 3 Sub-Orders, several Sections, Sub-Sections, and Divisions.

ORDER I.

FILICES, OR THE FERNS.

This Order contains 26 genera, thrown into one prime, and 3 sub-orders, from the figure, situation, and arrangement of the parts of fructification, and from the natural structure, habit, or part of the plants.

The prime order Filices (or true Ferns) contains 16 genera, separated into 2 sections, from the structure of the Capsule, its mode of opening, the presence or absence of an elastic ring, and the shape of the sori (or clusters) found on the back of the leaf or frond, or on its margin, and sometimes on a racemous or spike. Example of the 1st Section, Polypodium; of the 2d, Osmunda.

Sub-Order I. Lycopodiaceae.—Character, Fructification among the leaves, Capsule sessile, with 2 or 3 valves, without a ring; contains only one genus, Lycopodium.

Sub-Order II. Marsilicaceae.—Character, Fructification, situated near the root of the plant in Capsules, inclosed by involucre, with a ring; contains 2 genera, Isoetes and Pilularia.

Sub-Order III. Equisetaceae.—Character, Fructification in an amentum or terminal spike, formed of many-sided peltate scales, under which are numerous globular Capsules, with 4 club-shaped filaments, covered by from 4 to 7 Bractes, opening (engitways); stems jointed, sheathed, and leafless; bractes, if present, in whorls; has one genus, Equisetum.

ORDER II.

MUSCI, OR THE MOSSES.

This Order contains 43 genera of plants, very diminutive in size, but of the most varied and beautiful structure, and they serve many wise purposes in the economy of Nature. Their reproductive organs are generally Monocious; the anthers are found among the leaves, and the sporules (or seeds) in Thecae (or capsules) on peduncles termed setae, furnished with an operculum (or lid) and a Calyptra or veil. The genera are thrown into sections, Sub-Sections, and Divisions. The Sections are 2, and formed from the setae, being terminal or lateral. The Sub-Sections depend upon the operculum being adherent or deciduous, and from the presence or absence of a peristoma (or fringe). The Divisions are formed from the peristoma being single or double. This Order is beautifully illustrated by my good friend the ingenious and accurate Mr George Gardner, in his Musci Britannici, or Pocket Herbarium of dried Mosses.

Section I.—Character, Setae Terminal, (some species of the genus Dicranum have lateral setae.) Contains 30 genera, divided into 3 Sub-Sections.

Sub-Section I.—Character, Operculum adhering. Contains 2 genera, having their lids fixed to the capsule, without peristoma, 4 valved, or entire. Andria and Placnum.

Sub-Section II.—Character, Operculum deciduous, capsule without peristoma, contains 5 genera, Sphagnum, Etopodium, Gymnostomum, Anictangium, and Schistoseta.

Sub-Section III.—Character, Operculum deciduous, capsule with a peristoma, contains 23 genera, separated into 2 Divisions, from their peristoma being single or double. In the 2d division the genera are sub-divided from the cilia, being like distinct teeth, like laciniae, or segments.

Section II.—Character, Setae lateral. Contains 9 genera, divided into 2 Sub-Sections, from the capsule being furnished with, or being destitute of, a peristoma.

Sub-Section I.—Character, Capsule destitute of a peristoma. Contains one genus, Hedwigia. Known by its dimidiate Calyptra.

Sub-Section II.—Character, Capsule having a peristoma. Contains 8 genera, separated into 2 divisions, from the peristoma being single or double.

Division I.—Character, Capsule with a single fringe. Has 2 genera, Pterogonium and Lecodon. The first has 16, and the latter 32 teeth in the fringe.

Division II.—Character, Capsule with a double fringe. Contains 6 genera, separated into 2 sub-divisions, from the inner fringe being composed of free or connected cilia.

Sub-Division I.—Character, Cilia of the inner fringe free. Contains 3 genera, Nickertia, Anomodon, and Daltonia.

Sub-Division II.—Character, Cilia of the inner fringe connected by a membrane or by transverse bars. Has 3 genera, Fontinalis, Hookeria, and Hypnum.

ORDER III.

HEPATICE, OR LIVERWORTS.

This Order contains 6 genera of very small plants, mostly Frondose, seldom leaf-bearing, if so, the leaves are not severed, but Gemmae are found on different parts of the leaves and Fronds. They (with the exception of 1 or 2 genera), like the common Mosses, on the application of moisture, after being dried for a length of time, will speedily revive.

The genera are distinguishable into 2 divisions, being with or without a Calyptra to their capsules, which are either 2 or 4 valved, sometimes with many openings at the top; seeds numerous among spiral filaments, without a lid; or somewhat round bodies, filled with very minute granulations, which pass out by a small opening at the top. The names of the genera are, The Riccia, Sphaerocarpus, Anthoceros, Tortonia, Marcania, and Jordermia.

ORDER IV.

LICHENES.

This Order contains a very extensive and intricate tribe of plants, which are the first among vegetable productions to clothe the bare rocks and stones with a soil suited to support the more highly organised plants. Some of them are used in the Arts, and others in Medicine, as the Cetacia Islandica, used in coughs and pectoral affections, consumptions, &c.; and when, by maceration in water, the bitter and cathartic principle is extracted, after being dried it is powdered, and baked into bread, or boiled with milk into an agreeable nutritious article of diet; as the poorer inhabitants of Iceland and Norway eat it as a luxury, and gratefully pour out their thankfulness to a bountiful Providence, which sends them bread out of the very stones. While the Cladonia rangiferina (or Lichen rangiferinus of Linnaeus) grows in soils and situations in abundance where no other vegetable will live; and by forming the principal article of support for the Reindeer during the long winter of Lapland, it renders that country habitable to the human species.—This numerous tribe of plants vary much in shape, soil, and situation, growing out

the ground, on rocks, on stones, on living trees, or on dead timber. In consistency they are coriaceous, membranaceous, filamentous, or like fine powder. Some of them lie flat on the soil, and are variously lobed, while others are curiously branched, and erect themselves like little shrubs. They are generally furnished with a Thallus, crust, or Frond (universal receptacles), in which an indeterminate mass of sporules, knobs, spangles, puffs, nodules, &c., are found in tubes or Thecae.

There are 39 genera in this Order, formed into 17 distinct Families, from the appearance and consistency of the Thallus, Apothecia, &c.—Pseudo Fungi.

FAMILY I.—Bacillariae, Thallus crustaceous, Apothecia stipitate.

FAM. II.—Calicioidae, Apothecia shaped like a goblet.

FAM. III.—Graphididae, Apothecia sessile and linear.

FAM. IV.—Verrucariae, Apothecia half round, tubercle with a nucleus. (True Lichens)

FAM. V.—Liparidae, Apothecia, naked sporules.

FAM. VI.—Variatoidae, depressed or hollow shields.

FAM. VII.—Lecanorae, Apothecia sitting with a border and disk.

FAM. VIII.—Squamariae, Thallus somewhat leafy, scales connected more or less together, Apothecia sitting with a disk and border.

FAM. IX.—Parmulaceae, Thallus slightly attached by a small base, or by fibres.

FAM. X.—Collemae, Thallus moist, or in a gelatinous state, Apothecia shield-like.

FAM. XI.—Peltigerae, Thallus somewhat like the human nail, without or with a very slight border.

FAM. XII.—Umbilicariae, Thallus attached by its centre, somewhat round.

FAM. XIII.—Rumicariae, Thallus compressed and jagged, Apothecia shield-shaped.

FAM. XIV.—Usneae, Thallus with a thread in the centre, Apothecia shield-shaped, fringed, without a rim.

FAM. XV.—Corniculariae, Thallus without a thread in the centre, slightly compressed occasionally.

FAM. XVI.—Sphaerophorae, Thallus somewhat round, erect, branched, and shrub-like. Apothecia round, and either solid or filled with a black powder.

FAM. XVII.—Cladoniae, Thallus (or Padetia) tubular, Apothecia succulent and round.

ORDER V.

CHARAE.

This Order contains but one genus, viz. Chara, which has about 8 species of submersed, leafless, aquatic plants, formed of straight tubes, transparent, or covered with the carbonate of lime, having verticillate branches. These plants have never been applied to any purpose, and regarding their properties there is nothing ascertained. Sir J. Edward Smith, and several others, place this genus in Monandra Monogynia.

ORDER VI.

ALGAE, OR SEA WEEDS.

This Order contains few or none but aquatic plants, singular in their figure and texture, and considered by some as the lowest on the scale of vegetable beings; yet they approximate so closely to some of the less perfectly organised animals, as to render it difficult to draw the line of distinction between them. The Fucus, Ulva, and Conferva of Linnaeus, embrace nearly all the numerous genera into which this Order is now separated by Woodward, Agardh, Lamouroux, and particularly by Dr Groville of Edinburgh, by whose devotional attachment, close attention, and invaluable labours, most steady light has been thrown upon this abstruse part of Botany. There are 112 genera, and 507 species enumerated in this Order, separated into 4 divisions, and grouped into 25 Tribes.

Division I.—Inarticulate. Char. Leafy, thread-like plants, without joints. Contains 55 genera, arranged into 13 Tribes, from their colour, structure, vesicles, fructification, &c.

Division II.—Confervoides. Char. Plants jointed, or seemingly so, without gelatine. Contains 29 genera, arranged into 4 Tribes, from their colour being olive, green, red, brown, or purple—from their fructification being Monocious or Dicoious, undivided, in granular masses,

or separated by transverse septa into round or lenticular sporules. Some of them related to the Fungi, composed of filaments with capsules—growing in the sea, in fresh water, on land, or on rotten wood.

Division III.—Gloiocladiae. Char. Plants composed of globules or filaments, covered with distinct gelatinous matter. Contains 12 genera, arranged into 3 Tribes, from the Plants being thread-form, or globular, jointed or branched, gelatinous or fleshy, in salt or fresh water.

Division IV.—Diatomeae. Char. Very minute Plants, formed of variously shaped granules, flat, or compressed in circles or in parallel lines, embedded in mucus or gelatin, ending in distinct segments—in salt or fresh water—generally found floating in masses, combined with other aquatic Plants.

There are several species of the Algae eaten, and considered as delicacies. At certain seasons of the year, cattle feeding on the sea coast browse on them with greediness. Iodine, Kelp, and a substitute for isinglass is obtained from some of them; while others of them have obtained a place in our pharmacopoeias for their vermifuge properties.

ORDER VII.

FUNGI, OR THE MUSHROOM TRIBES.

This Order consists of Plants formed of cellular and fibrous matter, differing considerably in figure, texture, and duration. Most frequently soft, spongy, and moist, of short duration; others are hard, coriaceous, or cortical, and last for years. Some of them possess, and others are destitute of, a central nucleus of gelatinous matter, while some are dry and powdery. They grow from decaying and decayed organised bodies; immersion in water prevents their reproductive spordia ripening to perfection. Their sporules are found in some externally, in others internally, naked, or in cells, requiring frequently the concurrence of many of them to produce a single individual. Their qualities are extremely various, some of them being used, and much lauded as articles of food; others are alleged to possess valuable medicinal properties; while the greater number of them are indigestible, and poisonous to the human species, and truly destructive to timber, fruit-trees, and corn fields, by the dry-rot, &c. Some of them give out hydrogen, others carbonic acid gas, and inhale oxygen. In the great scale of Nature they apparently perform an important purpose, by facilitating the decomposition of dead organised matter. The Rev. M. T. Berkeley has enumerated and described upwards of 3000 species, and arranged them into 4 Sub-Orders, 22 Tribes, and 154 Genera, three of which genera, the Agaricus, Peziza, and Spharia, are divided into 77 Sub-Genera, embracing about 630 species.

Sub-Order I.—Hymenomyces. Char. Hymenium, naked. Contains 46 genera, arranged into 6 Tribes, from the figure and direction of the receptacle, and from the Hymenium being superior or inferior. Names of the Tribes, Pelati, Clavati, Mitrati, Cupulati, Tremellini, Sclerotia.

Sub-Order II.—Gasteromyces. Char. Hymenium, contained in a utriform bag. Contains 59 genera, arranged into 5 Tribes, from the receptacle being distinct or confluent with the uterus, with arrangement of the spordia, or from the capsules being single or double—from the texture being vesiculose or floccose, and from the capsule being scarcely distinct from the nucleus, &c. The names of the Tribes, Angiostromes, Phymomyces, Trichospori, Trichodermaceae, and Pyrenomyces.

Sub-Order III.—Hyphomyces. Char. Spordia on distinct naked threads, or joined in a common trunk. Contains 33 genera, arranged into 5 Tribes, from the nature of the spordia, their size, situation, and manner of support—from the spordia being on threads, horizontal or perpendicular in tubes or septa, or being without any distinct filaments bearing the spordia. The names of the Tribes, Cephalotrichi, Mucorini, Dematii, Mucedines, and Sepsidini.

Sub-Order IV.—Coniomycetes. Char. Spordia naked, within the utriform bag, or under the outer bark of Plants. Contains 16 genera, arranged into 4 Tribes, from their spordia being glued together into a disc, or into a nucleus, or chained into filaments, unattached, or stipitate; mostly under the cuticle of plants. The names of the Tribes are Tubercularini, Stilbospori, Spordismiei, and Hypodermiei.



