May 5th 1815 –

Joseph Correa de Serra

Commenced & display in his quaint & pleasing style the advantages uses & beauties of Botany.

Of the difficulty of drawing the line between the animal & vegetable kingdoms — The centre is clear for we can all say what is an horse – but the frontiers are so united that the boundary line cant be drawn – (Canada Line).

Lady ann Bonsal brought from America the Hydesarum gyrans, which moves its leave is cones (describing cones)

Plants have their habits which require time to break. The Antisi plants will flower in England in their summer and will not conform to our climate until they become acclimatized.

Tremmella Nostoc was supposed to be composed of Dew and the fat of the Land & the Alchemists tortured this substance supposing it very powerful. Is no longer than a pins head and gradually grows – amorphous Gelatinous. propi by seed.

Animals have a mouth & the conformation of the roots may be called mouths — Stomachs — To call & Digest is the commencement of animality –

Animals cant live without gases & Can plants? No? Vegetables are the passage of dead matter to animality — The medium. The materials

The Red colour dyed of India of the Rubiaceæ Roldenia? Umbellata?

Plants are books which speak to you every where without interrogation

Theophrastus works were most excellent altho injured by being brought by a rich man in pieces. & having laid long & finally misconstrued by Gaza who was not great- He describes the Nelumbium, & its plumula which is 1/12 of a pod - small not picros bitter —

The Romans cared not boast of Botany or Bs — &c —

9th — B.A. Gard: at Padua D'Hunt- pilier. Then encouraged by kings — Charles- the Medicies — particularly

Gesner had the first ideas of Generation flowers said he are like caterpillars, not yet perfected —

Tournefort — pronounced

8,000 plants known. Their names & descriptions constitute the inventory of Sciences —

He desire of making picturesque vases & villas arranged plants — and shrubs to England. Their green is very fine and the american plants are different & produce variety. Loses the Leaves Said Banks is not ever green, but never green

Lecture 2d. May 10th 1816.

Rousseau when ald says that the Botanical language is the most emphatic and concise of languages.

Species are by no means constant. A Species of Mercurialis in the Garden of Marchant was pollanded by a pinnifid species. The next year neither appeared but one entirely different. Laciniated & ranging much. The Cynara Acaulis (Artichoke). Above 40° Lat. this plant grows 1 Inch or 2 ft. high & has a small head Species appear & disappear.

Genus likewise inconstant. Cantana is now divided into 9 or 10 and the division is useless and abitrary and only made to facilitate the acquirement of knowledge

Some plant changes in and climate —

The Decrium — Sea? But Marum has a large lipped corolla in Barbary, in Barbara none or very small.

Ray lived 160 years since

The Salix — Herbaceas of the Alps is an herb also Thus trees — The Pavas of South America (Cakranga?) is a very high tree — Andromeda Arborea.

Semifloculose. not radiated. Tanacetum.

Tourne-fort system is beautiful, and easy — Upon the number & shape of the petals were his classes founded, and by the calyx being above & below the fruit he established his orders

Fontanel said that T— t system was a bridge from Tournes to the generality of capacities. Halles examined & arranged with exactness all the plants of Switzerland & his system was compleat for his own

country and the consisted only of 15 Classes

Linnaeus artificial — Botany became too extensive — His orders are imperfect because the number of the pistils were not constant, but that agrees with the general inconstancy of the sex. Icosandria.

Elizabeth of St Petersburg sent to Liberia & a plant was found bearing a head and no flames to appearance but in the fall the professor found seed, which came up, the Opposers of Li — said that it had no stamina and called it Monadria. Linnaeus attained seed and it grew but he cut open the ball & he found it to be Tussilago and he continued the name. Tussilago Monadria, not because that it produced no stamina but because the man / his opponent / could not find them.

Some one said of Linnaeus's system that it was not his fault. Nature would not comply with him.

May 12th. 4 Lectures.

Elementary Botany is the science of distinguishing plants.

The Root is the descending vegetation and the trunck is the ascending Root. — Capillamenta —

all that bring that are disposed to bud under ground are horizontal — Cut them up and each peice will become a seperate plant. They are removeable when we which to propagate them and when cut up the will multiply the faster if needs. The Tortuous Hebens in Italy has been planted up ever since the Romans and even men paid for the privelige of it It was so good food & yet so bountiful & yet it exists.

Arenaria & others repent Plants have been of much services in Holland is confineing the sandy soil. excellent for Dams.

Bulb is a compressed stem, having no intermediate space between the branches & the leaves. squeezed down — Formed of the dilated bases of the leaves — They are all alike composed of Layers leaves forming the Tunicate B— or the imbricate

The Tubers put out radicles all from above — having a seed with a vitellus. Anom. This fact no known until 80 years since The vitellus is contiguous to the radicle but

much connected with it. The animal bile flows is drawn into the body of the chick after exclusion — In the alligator it is near the head and is very gradually absorbed.

The Nelumbium has a vitellus

Roots might be considered under three heads Fibrose — Lardy. Bulbus & Tuberous —

Lavatera is a tree but an herb in England and if injured so as not to flower it will a 2. 3 & 4th — and more.

The Musa Paradisica Banana — is ☿ but it lives a long time in England. As soon as any of these Herbaceous plants flower the next Change of weather kills them.

Rotation of Crops.

Plant such as penetrate deeply first then such as draw nutriment from the surface and then we shall not be obliged to allow the land to grow fallow — In the Dactylis Glomerata the roots are tenacious in England & the Plants small there the plant is luxuriant & large & the Root fibrous.

Which is also true with regard to the Phleum
pratense Timothy Grass.

Bulbous Roots attract water from the
atmosphere as does Pearl Ash. (Lee. Vol.). They may
be nourished alone by water but they produce no
fertile seed — In Cochin China & China keep
the Hyacinth in little baskets and the bulbs
vegetate and flower & produce seed but it is
never fertile. Reverse the Hyacinth & moisture
will be absorbed sufficiently from the air to
produce flowers. They will grow as long as there
is any stock of carbon.

Turnips Onions &c. will grow out
of the ground. The Tea Maize rises so much
as to break off the first range of radicles
and trees rise from the ground and become
angular at the roots. Elmus-

The radicles fall off when the other smaller
parts of the tree does

The leaves of plants coming out of the
earth are more like roots & many remain from
the trees leaves

Yesterday saw Elm Tree with Roots Green.

Take it the best time for the transplantation of trees because the radicles are pulled in the Spring and may be broken off.

In the Indestrious Northern parts they cut down their trees & weave the branches with eachother and by growing they entwine the faster.

Hoeing ground produces no more than it have usually, altho it measure more Ac. according to the botanical measurement.

May.. 16th... 1813. ~~Fourth~~ Lecture.

The radicles under the ground answer the same purpose as the leaves above ground.

The different Species of Roots. Fibrosa — Bulbosa — Tuberosa and Reploides —

When the leaves are opposite the branches are opposite — when alternate, alternate &c —

The petioles of the leaf come from many points & of course the base of the petioles are excavated, In the Eschulus Hippocas. the bundles of vessels which go to the five leaflets. (Palmate Leaf.) may be seen in the petiole

The pasc like substance of the Cashew Nut. Anacardium occidentale is the succulent pedunculus of another fruit of China, used as a preserve.

We never find spines nor prickles in the subterraneous vegetation.

The aculei are analagous to the hair Shaw — the Hair comes from a little bulb perhaps glands & the hair of plants comes from the gland & is a excretory duct —

— miserable enough — much mortification —

6th. Lecture May 17. 1815

Hypnum. Muscus —

All those plants which have the vascular fibres running to the very extremities of the leaves are monocotiledenous and all those in whose leave the fibres ramify are dicotiledonous. The Cupressus Virginica has two seed lobes and the leaves fibres do not ramify. but by examination the second cotyledon is always abortive.

If the petiole be vagenant you have a

grass and if two, one over the other it is Arundo — Bambos. & Canaliculata. we may be certain of the parts knowing some as seed — Large perisperm & little Embryon.

The plants is capable of absorbing gasses from the atmosphere & respiring by the Stipules

Buds belong to the leaf. and it is merely a compressed Branch. The Stipula & the Bractea are essentially leaves — abortive leaves and the bud is nothing by a branch prevented from growing by the coed of vessels & the Stipulae con= tract. They have more ligneous substance. So that every thing in nature is useful, even her failures are makes of design

The fibres of the leaf make its form. By the circumscription is formed & the leaf in, lanceolate in grasses were there is no ramification, but when the doc branch they commence with the linear leaves and gradually become lanceolate ovate round. cordate. Here the commencement of the ternate. Having two large fibres on each side the main stem. They then become Reniformed, then Hastate, the fibres going directly back. Then the peltate and the centrepetate — The divisions of the leaf is the most natural circumstance for a Philos. Nat Arrangement

12.

In speaking of the leaf three things are to be considered. The Circumscription, the Termination and the ~~Termination of the~~ insertion of the Petiole.

When the nerve reaches the edge they are always entire.

All the Rubiacæ all have entire leaves and and Bellonica (Folium Dentatum) having not entire leaves was found not a Rub.ea. They Haustonia Cephalanthus. Catesbea, Cinchona, Rubus, Gallium. Coffea Mitchella

The leaf consist of Epidermis — cortical net. and Cortical Glands with the Parenchymatous matter. The Nerves are different in different species — The glands are either round or Elliptical. and surrounded by a vessel which unites with it. Beautifully in the leaves of the Liliaceæ.

Hydrogen will give colour to plants in the dark, but it may not be the cause. Carbon also supported the colour. The green is in the parenchyma. By excluding oxygen the plant bleaches. The green is not the union of blue & yellow. When it does not emit oxygen they bleach and become very mild. The only argument in favour of carbon being the colouring

matter of vegi is that if not oxygen it must be it.
The greener says Ellis the more alkaline and in
fact the oxygen produces acid and they become
yellow & red &c— &c— But we find no acid
potatics. The young shoots of Rhus radicans &
of Prunus Virginica are red particularly Rhus.
Oil a Leaf & it dies.

A plant dies by perspiration by never
bleeds to death. The Lower side absorbs most

all triangular leaves raise towards the
stem al night and he supposes it mechanical by
they take different positions in different plants —
the absorbing surfaces are more exposed al night
& for this they do it. Portulacca oleracea —
Sid. Phaseolus — Tagetes, Gladitsia. Potatoe &c.

The fibres cross each other at the
petiole & form steamers & this is intended by
nature as the point of seperation. The Bud & the
dying of the vessels cause it to fall.

The Ranunculus Aquatilis has linnered
leaves in the water and cordate in air —

May 19th 1815. 1st Lecture.

The Reba is that part which constitutes the life of the plant. Now come the accessory part.

Fructification.

The covering a part open and shows the other parts. Some has said that the calyx was cuticle. &c. but all these parts are now found in the stems of all plants. Besides where any thing new is to be formed, the vessels of all the plant unite as in the joints & then we have a flower &c.

Aphyka

A plant of Africa Affeta does not vegetate. a Root without any thing else, save the flower coming out of its fibrous root.

Many Monoecous & Dioecous plants are so from abortion, particularly in Polygamia- but not always, because the male & female parts are unlike and cant be imagined living in the same plant or flower. The Chestnut male flowers. Amentum. Female Bear - - oak -

The Pollen

of the Lycopodium is used in fire works. Dissolves in alkohol. When it falls into water it moves and tends to remain still. Salt stops the evaporations, Hence Marine Plants are protected by tough skins. (Tufei). Baron L'Escallier.

The Semen Masculinum yields Lime in Phosphate so does the Pollen and other very similar products.

The Combinations of Phosphoric Acid are very important in the animal & vegetable kingdom.

The Deliscentia Pericarpii

of the Tulip is very curious. The Vibrissæ. They open Thermometrically Barom. & and by a vital principle — Impatiens. The filaments of the Stamens are Spiral and the spring al being touched Kalmia. Vallisneria Spiralis or Americana — The Styles of the Nigella Damascena bend to the anthers — Vesuvia. The mutation of the Fern — fists at the time of impregnation — Fig impregnated by the Insects — Known in Greece Archipelago.

Sprengel published a Quarto upon Impregnation

In the Levant the male flowers of the Date (Phoenix dactylifera) are brought to market for the purpose of fecundating the female and it has proved effectual after a long time and even sent 100 miles by Post, in a letter.

Heat is produced during the fecundation of plants. as in the arum — particularly of the warm climates — may be felt. and the Thermometer shows it. — Heat in coitu —

The Colchicum autumnale flowers in Sweden about the time of the comm.t of the Autumnal frosts.

Salsafy (Tragopogon Porrifolium) is called John go to Bed at noon because it shut at noon. Mirabilis Jalappa / 4 o clock / Mesembryanthemum 2 hour before noon &c.

Ornithogalum Umbellatum is called night Keepers & day wakers

The Gladiolus Tuste is inodorous in day but its pugrance increases during the night. Pelargonium Tuste — also

Gladiolus mutabilis (Andrews Repos.) last 10 or 12 days — changes at every hour. First

is pale, then pink. The next day. The describes of the plants says of it, that it changes before he can write it down.

Ibiscus mutabilis (like Cleas Roses) 1st day white, yellow at night, next morn red evening purple, the next day blue - from the in= flence of light and the graving of the plant. No altogether the light.

Chemical agents effect more changes the mechanical ones.

Lecture 8th 1815 May 22d.

The winged foliaceous leaflets of the Ferns are among vegetables what the flying squirils and Bats are among Animals.

God almighty even Adams schoolmaster now this school is shut

The calyx is eclipsed by the more pompous part the corolla.

The Structura Naturalissima is when the flower is perfect consisting of all the seven parts.

The Proteus only changes appearantly

Linnaeus Tournefort called a plant Gouania after Goudenough, and he said that was not right but was answered that Gouania was Good enough

The Bauhins were noted Botanists and the two brothers always worked together and Linnaeus called a plants after them Bauhinia which has to leaflets, or as they appear seperate leaves upon the same petiole.

Pachalis tenaspisenna from the man being very stubborn.

Browalia after having become clata acted an ambiguous part and Linnaeus met with one of the same genus which was doubtful & he called it B. Ambigua — Plants from New Holland —

Dalbergia was a collector of plants in France and Spain and little pains in collecting them but was considered as avaricious. L. called a plant Dalbergia Anomotavia — monetarius is a mint master. He introduced Dracaena.

The common or old names are frequently made the specific — as Arsenda Bambos — Lobelia Dortmanna — formerly Dortmannia.

Plants have their names writed upon them and we have only to learn the language. We must spell. Every new plant is a riddle which we must unravel — but are paid in another coin the gratifications of our curiosity &c.

Pothusa Cynapium in Boston Peninsulas hill (Loyds house) a white flowered umbelliferous plant and luxuriant with scarce any smell & that pleasant is in Europe smell the umbella subglobose and very stinking —

Dactylis glomerata — — many of the grasses are here tuberous rooted —

May 24.th Lee 9.th

There may be 80.000 plants known.

Plants are like frogs or caterpillars according to Swammerdam changing from the larva to their perfect when they blossom and bear seeds or are fitted to propagate. Tad pole. Man cometh forth like a flower and like a toad. But the insects & the frog

changes their skin.

The flower is a compendium of the plant all the vessels are united and all the parts blended in it.

Dr Alexander Garden of Carolina commenced his Botanical Researches with Tournefort's system in America but he found that they would not compose and the numerous accessions thro' this distinguished man destroyed it.

Cactitriche — meaning beautiful hair.

Pedical — Peyanthus. — Expanded leaves at the surface for the purpose of flowering and when they get what they want they sink into their proper habitation.

Syringa belongs to the Nat. Order of the olives — Olea Americana grows in the southern states. That of Europe required engrafting and was not equal in the Berry to ours. The stock improves the fruit. (Jasminoe of Jussieu)

The flower of the grasses is a flower with many membranes — (Plume)

Aromatic Plants yield camphor and it is as good from one plant as another (Laurus Camphora — Sumatra Camphor is from these.

also that from the South of Europe and Barbary

Triandria includes two very natural classes—
The Gramina have a ~~culm~~ with vaginant
leaves — ~~and the~~ Cusa & the pagina Superior
looking towards the axlon and the Cusata having
the leaves retrorse with the stem — Gladiolus
Ixia — Iris &c — Ixia Celestina (Bartram) described by
Mr Bartram sent it to Europe and they named it.

Fraseria Verticillata. American Columba.
seen at Chillicothe.

Lecture 10th. 1815

Notice of Dr. Muhlenbergh. Pennsylvanian. much which
is known in Europe was thro' him, and his labours in
M. S. will be useful but has been published by others
Enthusiastic.

Mr. Gottingen (or something like it a Swiss Minister
published a book upon grasses and Mr. Correa was pre-
sented with one, which he gave to Muhlenbergh a Swiss
clergyman. The grasses called after Muhlenbergh is the
simplicissima graminea, that which has the parts of
the fructification and characters of plants grasses and
no more. In every respect like Dr. Muhlenberg
He had nothing scarcely to work

5 Andria.

Umbelliferous when removed to moist places that
where esculent in dryones become noxious and
have all the pontine qualities increase and
become more verose in the odour / Peter /-
Fœnl. Musci mouse like

The yellow spot in the petals of the
Rochulus Flagpoc. becomes red. when you look
Drosera many plants.

Hydrophillum Virginicum Indian
Lettuce. very good.

The leaves of the Dionea Muscipula
are like the Instrument by which the Raia
Torpedo shocks, and this may be electric-

The serratures of leaves are glandular-
and secretes a fluid which may the globules
of Dew. see to upon the grasses, where the
fibres all terminate in the end of the leaf.
Some say electric.

The Rami bow is reflected light &
the other refracted and the convexity is towards
the Sun.

The Ferns Pelargonium Erodium &
Geranium are names for the same Bird, the
Crane.

The Eroclium has 10 stamina . 5 antic. The Pelargonium 10 — 3 only antic . Geranium has and ~~entire~~ regular Corolla

Lecture 11th .. May 29th 1815.

Icosandria - ~~the stamina~~ come out of the calyx or receptaculum . so inserted into . We insert stamina in making artificial flowers.

The Petals in this class are merely outworks which soon fall off. — deciduous but when doubled the remain because by impregnation the plant seems to exhaust itself.

Nat.l Assemblages — Rosaceae yielding the fruits of the temperate climates. Pyrus - Malus - Amygdalus &c -

Myrtoides — Tropical fruits . Eugenia Jambos . Punica — Cloves — Aromatic plants - yielding the miliary glands which are elaboratories of aroma.

The anthers of the Liriodendron, the Calycanthus & some others, particularly American plant open outward — anthera dehiscentia extrorsum The opposite is introrsum. After Deucalions flood Greece was peopled by stones which were thrown

by Deucalion & his wife over their head & each fell down children. Impregnatiens e tergo (Richard).

Adonis was killed and the drops of his blood grew into the Adonis vernata. What become of Venus's tears?

Polyandria.

Nat^l. Families. Papaveraceæ — Coalitæ, belonging to China and America.

Ranunculaceæ — Umbelliferæ — all poisonous excepting when growing in water. The more lobated the less acrid. The reverse of the umbeliferous plants — Calla palustris —

5. is a predominant number. If over one. 5 — or 10 — where we find 4 is a tendency to be 5. either stamina or flowers & every part.

Capparis (Caper) yeild the caper which is the buds of the flowers not the seed vessels. The first is born on a long receptaculum — thus

Angiospermia = naked seed. aromatics and medicinal. But when the Gymandrous plants have a capsule of many seeds they are poisonous- belles bef is alone — The same remark may be made of Pentandria — Rosae — They are to be put in Quadrantine..

In Deadelphia there is a long string of genus and the difficulty of impregnation is great, and must be long applied since the structure is so peculiar and protected & the flower is a weather cock. The papilionaceous plants of New Holland have but one genus and the filaments are free entirely, not Diadelphous- The people are lean and so is every thing else & all animated beings are contracted.

Lecture 12th 1815 May 31st.

Syngenesia, not individuals but they may be considered as many inhabiting the same ground or receptacle & surrounded by the same wall, the calyx.

organized societies

The Syngenesians plants numerous in all countries particularly the Cape of Good Hope & N th America.

Syn. Diplogamia well abolished because the coalescence of the anthers is produced by their being forced together and they all open outward. but in the Syngen.ª the anthers form a membrane & the locustments open by two valves which curling over and meeting one another gives the appearance of the anthers being alternate with the filaments.

Gymandria

Include - Amalgamous unites - Salop &c

The stamina appear as if borne on the pistillum but in fact the filaments & the Style has coalesced -

Produce Hybrides between the Salix Babylonica and some others

Χρυπτος - a grotto -

Cryptogamia. Lindsay an British officer introduced some of the German forms into Engd by the powder of the capsules and was honored by the name of the new genus Lindsea.

Kosmogany.

The ferns found in the shistus have the apex to the north, and all our cape are towards the south proving the the flux of the waters at the flood were from the south. The ferns confirm it — Antedeluvian Ferns.

The arborcous Ferns are large trees.

Mosses

Neither ligneous nor herbaceous. The transverse section does not shew any thing — The are Hydrometric — curling and contracting with the moisture which does not happen to the fibres of the trunk — (delbrious)

Calyptra — Ivy —

The. mosses are very useful — the Lichens covers the rocks of trees & the plants of the frigid Zones and by their burn saves their lives, and also the bark of trees, particularly the South side.

The Lichen Rangiferinus (Jersey) feeds the Rein-deer and upon him lives the inhabitants of these cold regions.

Lord Dunmore rec'd 4000 £ for dis-
covery how to extract a gum from the
Lichens, which in arts is as good as Gum-
Arabic

Red colours produced from the Lichens
& is a great trade in the Islands of the
Archipelago and Iceland proved in a
very curious work that they all contained
a red colour of different intensity.

Lectures 13th June 3d 1815.

Hebrydes, Mules, The Habitus received from the
female - as for example the weeping willow is female
and we should have the gracefully dependent branches
and the leaves of any of our american species with
which we may Hybridize it. Hulmutter in the
transactions of St Petersburg Academy details his
numerous experiments proving these facts.

In many animals the Mules as the Equus
caballus & Asinus will not propagate. Others
will for a few years and others for several. The
Cardinalis and the finch will for several years.
Mixtures of species produces imperfect animals

All the species of plants were produced originally from perhaps one genus — or from a few only of that genus. In countries abounding with many species of the same genus as in the Asters of America they run into each other so that they are difficultly distinguished. Viola &c the Cyprianthemum of Cape of Good Hope.

The Elements of Botany is Analitic Botany. Now we must find out the groups into which nature has disposed them — from their similarity of parts.

Look — as the beginning of the new plant.

Point. and the form of the Receptaculum. & the Flower —

The Evolution of the seed. It germinates according to its structure — Cotelydons — seminal leaves &c..

Caulescentia. the manner of stem bearing.

Foliation of bearing leaves —

The contrariety distinguishes

The Symetry is of great importance, Some change and others are constant

Stipulae and Bracteæ are abortive leaves — Even natures failing and designed and subservie some useful purpose — Examples — Buds — Spines.

Brotea Stipulae - Cauline bulbs - &c. &c -

The families of plants are not a series - but a net - Reticulation & Zonation. -

A beautiful idea. Examine one and you will find there which resemble another on one side - another, on another, and so on all sides as in the net - we pass one meets connect with all those about it.

Lecture 11th. 1815

Nat.l Families. established upon Synechia, which is a general similarity of parts and their relations to one another

The Monocotyledons have no branching of leaves & if you cut off a transverse section, the vessels appear irregularly disposed, and the Longitudinal section shows nothing but fibres which have no connection with one another.

The Dycotl.s have branches vessels and regular circles of annual growths. An example of Peals of a section of wood where the early part checked the growth and yet Autumn leaves formed and new wood afterwards.

The leaves of the monocotyledonous plants are always alternate. So true Zonanthems.

Spathaceous grapes & Lilies. The leaves of the calyx or the lacerations of the parts of the flowers are by 3's. or the multiples of three. Trillium sessile -

In the Dicotolydenous plants the multiples of two or 5 — . Tetrandria become octandria & vice versa — Monandrous plants became . Diandrous &c — Lobelias . Carduus — Tons is apt to become pine . Grandria — Lysimachia barbarous. Euonymus &c —

The flower begins at the receptaculum or the erosion of the vessels, the reticulation. It is the blending of these parts

now Apios tuberosa

Glycine frutescens. a singular instance of the coalescence of the leaves of the Trillium sessile Italicum when they should be entire & bifoliate. The 3 petals of the Teucrium are regular and the calyceal flowers . irregular

The Aquilegia seem like D. Delphinii & the Peloria is like 5 of the Peloria.

Anterrhinum Majus.

Canda Pistillaris is the peculiar vessels which run up the centre marking the columella & the pedicles of the seeds — The partition are made of the cellular matter & the other part of the receptaculum becomes the seed vessel.

Lost the 15 Lecture which was upon the Leguminosæ & Papilionaceous plants & the Cruciferæ. The Gymnocladus the only regular American Genus. — In the Red Bud & Cercis canadensis we find a swelled part which is at the base of the Pedicels & the base of the leaves which is most like in fibres the muscles of animals, and may influence the motion of the leaves. Phaseolus — &c — only one of this Class poisonous. and Two doubtful but they shew it because they are not true Legu= Plants — Balsams — & Dyes — Indigofera

The Graminæ are very weak plants —

Rosaceæ — anthers globose. Resinous pollen Germen above & below but essentially the same only the rose is a concave receptaculum & the strawberry a convex. One is the inside of the other. In the rose the receptacle is outwards & the seed line it & in the strawberry the receptaculum is turned out & the seeds appear on the out=side — Rasberry & apple —

Char: 5 — calyx — erect. stamina 5= stamina many. fruit of one or more cells. —

The apple. Cor 5 — fasciculi of vessels 10 — Spines. no pulpy part. Potentum was doubtful

in Europe having no petals; and the Rosaceas have 5 — ~~the~~ seeds dubious — But Solander & Banks discovered two species which were petalous and the seeds precisely that of the Rosa &c — This class is given to Adultering — Primus for the Spinosa is the origin of all the plumbs & the Prunus Avium of all the European cherries Mespilus Oxycea & others & the Chuccan Plumb is better than the origin fruit of the same kind in Europe — Like Nectar in comparison. Primus Virginiana — Poisonous seeds Prunus Lauro Cerasus — kills Swine — Laws &c. &c. the Prussic acid killed by contact of the Skin & diluted kills slowly so that the time may be calculated.

Iridæ 3 & the multiples.

a Cylindrical Embryon in a perisperm — Cape of Good Hope famous for this class and produce the Gladiolus tuste which is odoriferous at night & the Viscolor which changes continually three times a day from white to deep — varying in intensity — all Narcissus & Pinguicula Swine will eat — & monkeys —

June 13th 1815. Lec: 16th.

Coniferæ.

Abieteæ — Pineæ — Taxeæ —

Pinus — Larix — has five leaves from the sheath.
Pinus Picea only two

The Larix has a fasciculus —

Thuja — The leaves are imbricate and
vertical — cones fleshy.

Juniperus Virginiana — imbricate conjest
disposed generally by threes

Abies Canadensis . foliis teretis — omnibus
patentibus — —

The Coniferæ are all stimulants
excitantiæ . Sempervirens —

Larix? separates from Pinus —

Algæ —

Tubercle which opening shows a coloured
part. in which is the seed — Lichens
The division of Linneus excellent & cant be
better — Others are all arbitrary. Rangiferinus
Was support of the Icelanders

Musci.

~~Inclusification~~ — a seta supporting an urna covered with a calyptra or veil of the newest fashion — under it the the Operculum & Peristoma which are ciliate or dentate —

Polytrichum communis — many hairs.
None of them have true leaves — Minium comes nearest them but they do not appear vascular but like the cotyledonous covering of leaves.

June 14th 1815 Lec 17th 10

The mosses for the colder regions and the Ferns for the Tropics — to the Nat^e order Pomaceæ. —

The diseases Epigenous and a monophyllus calyx — dentate — fruit spherical composed of a rind without and perceptible cuticle, between by maceration — The Corda pistillaris to which the seed are attached & the membranous dissepiments — The pulpy matter composed of utricles — Orange (Citrus Aurantium) a Genera Leaves compound Pinnate; the Citrus — articulated: compound deciduous (foliolus). one leaflet. .. the Arthrologia of this Class is into Genus & species — Some exceptions. in Genera

The abound in Citric acid and aroma & cannot but be agreeable and never noxious — The Exceptions are those which runs into Distaeae — The exceptions to the Nat.: Characters —

They are not fit for this climate but because the cold of February will kill the orange in Charlestown (as it is called by Dr. Ramsay the Orange kill month — Beyond the Athens they are luxuriant: Charlestowns suffers more heat than the torrid Zone.

Ferns — Trees for every climate

Polypodium of South America 10. 12 high: & the stalk does not perish in one year but becomes hard & black as Ebony & some are only an inch high — They all come up Caespital-wise —

Asplenium are all in Tufts — Pinnas rolled edges — Adiantum is rolled crena

Asplenium acrostichoides — Capsule of two valves & a very elastic. Explodeing like a besieged town

The stamina & other parts may be absorbed as in the Allulana, a genus nearly allied to the Felices.

The Polypodium of Scathaca the Scythean Lamb is the Root & is covered by a down hairs soft & beautiful. Said to eat all about it.

The dust of the Ferns proved by Mr Lindsea to be the seed, They at first appear like cotyledons, but changes very much in different Species. They have four appendages by the elasticity they move like the wild oat. Pile them up and they will crawl away like lice.

The Osmunda Struthiopteris — Like the ostrich feather is esculent — a dainty

Superstitions with regard to them as external remedies

Madame Nesfent prepared her patients by Diet & gave Felix Mas and afterwards a Bolus of Scammony & Mercury (corrosive Sublimate) which carried away the tenea forcably then Felix Mas cleaned off the slime. By this means they did wasting. She was paid high for the secret.

The Ferns yield alkali, by the Cincination of the ashes

The beautiful China enamels is produced by the Ferns alkali Boras & Lime —

The Plenis Equelina covers acres in Europe and is a pest — The English cut it for Litter & so do the French but they turn them boys in and the root out completly, besides ploughing. The Ferns are not supprisingly abundant.

Lec. 18th

June 16th, 1815

Nat. orders. Ranunculaceæ — Asperatæ — & Liliaceæ —

of the orange the respiculæ comes from the bird & may be turned from it & the seed is attached to the cauda Pistillaris, from which comes the the dissepiments. In the Tropical climate there is no suspension of vegetation and no bud are formed so that the plants of the Hesperde Oranges will not indure our climate

Buds are abortive branches & so are spines many times but not in the orange the cone but above the leaf.

They are sometimes — grown Stipulæ

as in the Nymphæa lonigera they are very large and hollow & are really stipulæ grown together — They a perforate

Two natural orders formed of the Hypericæ Hypericaceæ & ~~Aquifoliaceæ~~ Rotaceæ the first of which belongs to the tropical climates — They all have resinous glands producing an essential oil

Symetry is Cal — 5 - generally Pet: alternate 5 — Tila: indeterminate — anthers like the Rosaceæ —

Rotaceæ

~~Aquifoliaceæ~~ — Inflorescence the same — anthers only differing — being adnata. — neither have any perisperm — Aquat: all connections in all their parts — Produce the

Gum Agouti

Hypericums produces the Gum Resin of a yellow colour one only red. — Some plant called androsæmum or something like it from its having red blood like Caryophyllaceæ

Climate may have produced the difference between these to Nat orders — altho they are essentially the same — Aromatic plants lose entirely or partial the aroma by being removed into colder climates. But the plant improves in beauty & the fragrance diminishes by

being brought & cultivated here. The Roses of this city are not so fragrant as those of Boston

The Ranunculace more common in temperate climates.

Sympetry Cal - gen^y 5. Pet: 5 alternate - in Ranunculus nectariferous scale at the base Stam: Pol: Pis: Pol: Unilocular Capsule - monospermous - Caudia Persistent - Perisperm - Embryon very small & when examined is dicotyledonous (distinctly) by the glass thus

Some of the genera have a nectariferous Fovea others a scale as in Ranun: - Counted it double in Delphinium - Two in the Aconitum & 5 in the ~~Delphinium~~ Aquilegia

Delphinium Kills Lice

Clematis Erecta.

Wherever where water is in the state of primative rock is a Basalic formation were found among the last vegetables - Ranunculs (as the Sulphurious) - None of the Nat. Orders - are shrubs nor trees - but only as Ligneous Leaves are alternate & vessels spread.

none esculent — poisonous — Ranunculus
Bulbosus eaten by cattle in New England
by horses when wetted — The R. Aquatilis
is esculent & good fodder, when it grows in
water. The May apple is of a wrecked gen=
eration — Beware of the fruit. Ist of this
Nat.l order. Caltha palustris called
the Ranuk. Fricaria — R. bulbosus hated in
Scotland. The acid dissolves in water.

~~Coronariæ~~ Helenieæ

These plants are caustic in the taste
and leave petals — Vesicatory — inflama=
and even gangrene — one is called the
Black guard weed because the beggars in
France produce most dreadful sores by it &
beg with pitteous tales & they go home
and wash and are quite well the next
day. Clematis / Cimicifuga
remedy against bugs, a Siberian genus —

Aconitum affects the nerves & ~~is glacous in~~
produces madness — kills horses with staggers
in the western country. Helleborus is given in
Madness to cure.

Lilliaceæ. Monocotyledonaous.
Leaves in 3 or their multiples — Seed
with Perosperm. Embryon cylindrical
& not divided.

Two division of the Lilliaceæ — Fruit
below Amaryllis — Narcissus
Fruit above Lilium &c

The asphodelus — fil.s dilated & covering
the seed vessels — in which it is affinis to
ornithogalum — allium — many
flowered — capitulum with a Spathe. When
the spathe is shut not seeds are produced but
bulbs — all innocent but one — which
squints — Tuberiana Imperialis — having a
nurose smell & is similar in its effect to
the Cicuta aquatica.

The British have been at great
expence to introduce the Stonia into
Botany Bay from New Zealand. The fibre is
white soft and beautiful. elastic — most
of all plants as a dress.

Lecture 19th June 19. 1815.

The Vaccinium has all the leaves horizontal
& the stem rises thus with the leaves

of the angles the stem makes. Noticeable

Lycopodium Denticulatum which is supposed a Myrium.

Labiatæ Verticcalate —

Having tube tips. Symetry. Cal. monop: 5 den: Cor. monopet. two lipped. Receptaculum plenum 4 Gymnospermum, Seed a testa — Embryo. cylin: Dicotyledonous — No perisperm. Filaments two & 4 Style simple — Stigmas 1 or 2 fid. Germen quadrilobum — Semi: erectum abque perisperm. Caulis quad angulares, Oppos: ramosus plerunque herbaceous aut interdum frutescens. Folia Opposita — Flores Oppo. sæpe bracteati aut setis stipati solitarii vel verticillati, vel cymbosi. vel spicati terminales or axillares. Seed three Testa suberous. Chemically they yeild a Bitter and an Aroma (peculiar) agreable seasoner. Diffused thro' many climates & pleasing to man & beast, particularly cats with the Nepeta Catania & Teucrium Marum. which last it is necessary to potect in the gardens against your own & your neighbours cats.

The Lamiums ordered Bonnella has the anthers covered with hears points which Linnæus makes the generic character.

The vessels of the stem cross each other forming a grille which is the reason why the leaves are alternate. Stachys Lanata. Bonnella candensis

Lamium amplexicaule. Mentha in Sweden to aromatize the food of man & animals. Some spe for nourishment. Prasium bears only a small berry.

Salvia Pomifera a beer a gall produced by insects eating as a spec by the Turks. They are not fruits but co=agulated juices drawn by insects. the leaves of these plant only fit for use and from them the water are more as they yield essential oil which is distilled from many plants forming Peppermint water &c.

Dracocephalon has catalepsy. The leaves are like lead, place them as you please and they will grow so.

Pengent / Personate flowers- Embryon Perspermum cylindrical - None of the plants quadrangular - Leaves never opposite - Many have five stamina - Taste and smell disagreable and when taken inter=nally diminishes the circulation of the blood

The Stimulus (Arundinaceus ? has large stigmas which close upon irritation to the M: Pinnens.

Lec. 20th. June 21st

Bignoniæ Juss: Effecting the number 5. Didy. with abortive filament. — 8 Ned with maintaneous descipiment which which the seeds were exclusively attached. The Disc: is the proafoot Corda Pistilaris. Leed Dreely: bilobate

The Labiate Corolyon is thus

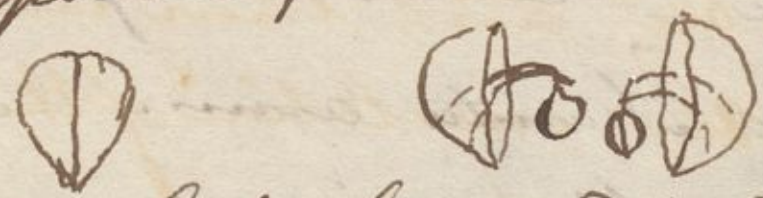
of the Bignoniæ thus

Never herbaceous. uses not known but deserve attention Inflorescence Racemes — never axillary, but Terminal Pentandrous is herbaceous. Sesmond produces the oil Benniu. use in Homer for cooking are known by the Arabs & Mohammedans

Plants of hot climates should be germinated in hot house and shaded be in perfection at mid summer

Acanthi —

Corenthian capital — Has a bridle like the Labiate and opposite parts. — Leed vessel in two valves thus



Two cluster tooth like processes to which the seed is attached. Has been elongedly the India Company —

Vitices

Lantana — Verbena — Agnos: leaves. bridle. internally verging to regular tin — acuecna —

Pedicularis —

a Denudation from the Labiate —

Bartsia — Seed vessels differ from the personate.

Palmæ —

Tree lillies. fruit diff.t varied in form
inflor: — Berries & nuts, but appearance the
same — Unicotyledons — No branches —
Feathers in the Chamærops contracted but in
the Phenix dactilefera the Fan is estendaet
into a feather — Leaves are essentially the
same — Plicate. — They resist water more
than any other plants — Tina or Cheroo
is the vessels of the palms — — sharp. very
durable — article of Commerce. Roots of
tents — Mats — &c. Supposed to contain
silecious which makes them so durable.

This juice contain sugar and is nutricious

Penspenn. Aracha — Three holes but two abort
Entyon cylindrical — Cocos nucifera. Dates
Palms oil. Sago Manita ainn. Corypha —
Fan leaves 16 to 18. ft in diameter: an umbella
for many hence Corypha Umbellifera. Pollen
many. Fan carried miles, in letters by mail
& to Nectural. The analysis & made from

and of Palms of Dates Pollen gives similar result.

Germination of the Phenix Dactilifera

Papilla umbellifera Cocoa & Arachis

have three embryons — two abort: — Monocotyledons

Fungi

near approaches to animals. The pollen or dust of them will move in the water per se. They hasten the putrefaction of every animal substance.

Mould — Mucor Septicus propagates along the layers of wood & Power abaxe or pushes thro' it.

Many of the fungi like under ground & we see little of them save the part which bear flowers

They poisonously in two way one chemically the other by their enormous osmoticity swelling the stomach and stoping the motors of life

The Peziza is a cup of Lenticular seeds imbedded in a Spermatic jelly shining.

They propagate by threads called mush. room. Spawn. which Worms destroy.

a gardener in Paris burned land under the city and produced the mush Rooms in the cavern of Paris. They bury dust from Italy containing Spawn

An agaricus in Kentucky which is excellent
graving upon Victory ——— Truffles —
Tuckahoe — Tuber — used by Indians as
Bread.

Ustilago is the rust of wheat. Usti=
lago cerealis

agaricus more poisonous as this
growth is rapid —

Boletus is Fistulous —