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THE GOOD BOOK.—NUMBER I

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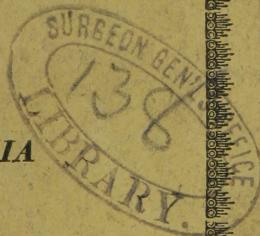
BY C. S. RAFINESQUE A. M.—Ph. D.

Professor of those Sciences &c.

PHILADELPHIA

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THE GOOD BOOK,
AND AMENITIES OF NATURE,
OR ANNALS OF HISTORICAL AND NATURAL
SCIENCES.

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BY C. S. RAFINESQUE A. M—Ph. D.

Prof. of Historical and Natural Sciences, Languages &c, member of 16 Learned Societies in Europe and America, author of 220 Works, Pamphlets, Essays and Tracts . . .

*The works of God to study and explain,
Is happy toil and not to live in vain.*

PHILADELPHIA.

1840.

Printed for the Eleutherium of Knowledge.

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THE GOOD BOOK,
AND AMENITIES OF NATURE,
Or Annals of Historical and Natural Sciences.

Philadelphia January 1840—Number I.
Dedicated to William Swainson, Naturalist.

INTRODUCTION.

The principles that have guided the Author in all his writings are already before the public, and they will continue to be adhered to. They are based on the utmost liberality, and zealous wish to spread and increase knowledge of all kinds; but in this work the historical and natural sciences will be chiefly attended to, which embrace a vast circle of inquiring and improving branches of knowledge, now taking the lead of all others in the most enlightened countries.

This is principally the case where all the improvements and discoveries mutually made every where are speedily and cordially received: where they are not either by delay, apathy or neglect, knowledge is of course more stationary or even retrograde, as with us in some instances. He has ever since 1802 when very young, and since 1816 when his views were more matured, labored and strived to spread and increase this knowledge in America; his lectures, works and travels ever since have been actuated by this desire. This periodical is another attempt, and whatever be its fate, it will deserve if not obtain success.

It will record many unpublished discoveries, historical researches or such as are deserving of general attention. It will be not only a periodical, but also a book of reference, and such as to

be consulted hereafter at all times by all other improvers or teachers of knowledge. The style shall be concise and analytical so as to include much in a few pages. There is no need of other promises and professions, let it speak for itself.

Many figures will be required to illustrate the new objects or researches of this work; but their number and style will depend on the subscriptions received for this iconographical department. If encouraged it will be made creditable to the public and patrons, if not it must be left to the novel, but practicable mode of multiplied original drawings.

Every article and object, every genus or species and their figures will be numbered, in order to be referred to with ease.

The remarks or discoveries of any observer of natural objects or enquirer into historical facts, will never be denied admittance in these pages, but on the contrary gratefully inserted, if sent for the purpose, and neither anonymous nor prolix. If few are sent, the Author has enough of his own to fill many such volumes. All the articles not bearing any other name will be by **PROF. RAFINESQUE**, the Author and Editor.

Every number shall be dedicated to an eminent Naturalist or Philosopher: and it is contemplated to publish in it several interesting letters of Cuvier, Leach, Decandole, Swainson, Jomard, Verneuil, Valdeck, Balbi, Romer, Clinton, Elliot, Torrey, and other eminent men, or writers on historical and natural sciences.

I. Article. CLASSIFICATION OF THE NATURAL SCIENCES AND OBJECTS.

All the natural sciences are also **HISTORICAL**, but all the historical sciences do not apply to natural objects.

Both these series of sciences, are now become so important and crowded with facts, that it has become gradually necessary to divide them into branches, that are assuming also the ranks of sciences.

The former or first division was into 3 great sciences 1, **PHYSICS** or Natural Philosophy, teaching the laws, functions and phenomena of bodies—2, **CHEMISTRY** or Natural Analysis, teaching to decompose and recompose the elements of bodies—3, **COSMOSY**, (**Cosmony** 1815) the most important and primary, and that may almost include the whole. This name derived from *Cosmos*, a greek term for world (and beautiful) was first used by me in 1815; it must not be blended with *Cosmogony*, that inquires into the origin of the world, nor with *Cosmography* that describes it like *Geography*. *Theology* or *Tholosy* synonyms deriving from *Tholos* another term for world, would have been still nearer *Theology* and *Zoology*.

I gave as early as 1815 a complete account of the sciences subordinate to **COSMOSY**, in my *Analysis of Nature*) and I shall now reproduce it in the form of tables, with such improvements as 25 years may have suggested or rendered requisite.

COSMOSY OR NATURAL HISTORY.

I. ASTRONOMY, science of celestial bodies.

1. **URANOLOGY** 2 branches, 1 *Cosmogony* on the origin, 2 *Cosmonomy* on the laws, of the skies.

2. **ASTROGRAPHY**, with many branches, 1 *Astrosy*, 2 *Heliosy*, 3 *Tholosy*, 4 *Selenosy*. 5 *Cometosy*. 6 *Toxosy* &c, applying to the Stars, the Sun, the Planets, the Moons, the Comets and the various *Tixomes* (other bodies) of the Skies.

II. **GEONOMY**, science of terrestrial bodies, with 2 great branches, *Geognosy* the Earth itself, *Somognosy*, the bodies it contains.

SCIENCES OF GEOGNOSY.

I. **ATMOLOGY**, science of the Atmosphere.

1. **Acrology**, science of the air—*Aerognosy*, the physics of it—*Aerography*, description &c.

2. **METEOROLOGY**, science of meteors—*Anemology* of winds—*Nephology* of clouds—*Yetology* of rains—*Phosology* of luminous meteors—*Sterology* of solid meteors &c.

II. **HYDROLOGY**, science of waters & fluids.

1. **THALASSOLOGY**. of the Seas—*Hydrography* and *Thalassography* their descriptions—*Ulography*, the currents, tides, waves &c.

2. **DIMNOLOGY**, science of Lakes—*Dimnosics*, *Dimnography* &c.

3. **POTAMOLOGY**, science of streams and rivers—*Potamosics*, *Potamography*—*Pegegraphy* the springs.

III. **GEOLOGY**, science of the Earth, *Geogony* its origin. Physical Geography the description.

1. **STROMOLOGY**, Sc. of the strata—*Stromosy* and *Stromosics*, their physics—*Stromography* their descriptions including *Spilogy* on rocks, *Stiography* or stones, *Althography* on earthly strata &c—*Stromogony* their origin.

2. **OREOLOGY**, Sc. of mountains—*Oreosy*, *Oreography*, *Oreogony* &c.—*Spilogy*, the Valleys and Cavities—*Geotremosy* the openings and internal Cavities.

3. **VOLCANOLOGY**, Sc. of Volcanos—*Volcanosy*, *Volcanography*, *Volcanogony* &c—including Terrestrial, aquatic and aerial, ignivome, &c, Volcanos.

SCIENCES OF SOMOGNOSY.

I. **ONTOLOGY**, sciences of all the beings—*Uranontosy* and *Astrontosy* of the Celestial Regions—*Geontosy* terrestrial beings, including *Telorontosy* of immense beings, *Paleontosy* of ancient beings, *Pelorontosy* of monstrous beings, *Arontosy* of human beings, *Zoontosy* of animal beings, *Phytontosy* of vegetable beings, *Stiontosy* of stony beings &c—*Phrenomy* the laws and knowledge of the human mind, *Psychology* of the souls, *Pneumology* of the spirits.

II. **STOCOLGY** science of elements or elementary bodies: here begins the classification by classes of bodies.

1. Class. **ETHEROLOGY**, the Ethers or simple subtile elements—1 *Abarialogy*, the Abarials or imponderable—2 *Gazology*, gazes or vapors. 3. *Rutology*, the rutols or fluid elements—the *Aromes* are those perceptible to the sense of smelling, the *sapids* to the tongue or tasting.

2d Class. **STEREOMY**, the stereols, simple solid elements—*Phlogosy*, the *Flogiols* or burning elements—*Metalosy*, the metals.

3d Class. **GAZOMY**, the gazomes, or gaseous compound bodies—*Ablepsoms* or invisible—*Atmisols* or visible.

4th Class. **UXROMY**, the Uxromes liquid compound bodies—waters—mineral or compound waters—snow, hail, ice, &c, saps and vegetable juices—blood and animal fluids.

5th Class. **FLOGOMY**, the flogomes or burning substances—carbonic, sulfuric, naphtha, Bitu-

mens &c—*Eleiology* the fluid kinds, oils and vegetable principles.

6th Class. **CONIOMY**, the Oxides or pulverulent substances—*Oxidology*, simple oxides—*Aiology* the compound oxides, earthy bodies.

III. **ORYCTOLOGY**, the minerals or compound stony bodies, not regular.

1 Class. **LITHOLOGY**, the stones—*Pexolites* simple stones—*Coniolites* earthy stones—*Metalites* metallic stones—*Exolithes* compound stones.

2 Class. **SPOTOLOGY** or *Spilogy* the Rocks, or aggregated stones—*Aerolites* of air—*Neptunites* of water—*Volcanites* of volcanos—*Pyrolites* of fire.

IV **CANOPSOLOGY**, the crystals or regular minerals.

1 Class. **PYRALSOGY** the pyrodagys or volcanic crystals by fire—*Axitans* infusible—*Xytalins* fusible.

2 Class. **ALSOLOGY**, the salts or crystals soluble by liquids—*Physidres* soluble in water—*Misydres* insoluble in waters.

3 Class. **DAGIOLOGY**, fixt crystals commonly metallic. Many orders—*Aplobases* simple, *Diplobases*, *Polybases*—*Adamantines* combustible—*Gems* transparent—*Cristalins* opaque—*Vitrines* vitrifiable or vitrified, &c—*Dagimetry* the measures of crystals.

All these have improperly been called the mineral kingdom, and their collective science chemistry and mineralogy; they must rather bear the collective name of *Somoses* or material bodies, simple or inert---in opposition to the spiritual beings of *Ontology*, and the living organized bodies of the next great series of

V **SOMIOLOGY**, science of living bodies &

Somobians, organized beings, 2 great groups or series, once miscalled kingdoms!

1. **PHYTOLOGY** or **BOTANY** the science of the vegetating bodies---many branches and classes.

1 **LARNOLOGY**, the Larnogens or cellular plants.

2. **ENDOLOGY**, the endogens or vascular plants.

3. **EXOLOGY**, the exogens or concentric plants.

But the subordinate sciences are *Dendrology* of trees, *Agrostology* of grasses, *Liriology* of Lilies, &c. *Phytotomy* or vegetable anatomy---*Botanomy* the laws of vegetation or vegetable physiology---*Glossology* or nomenclature of organs and kinds---*Phytesy* or the uses and properties of plants---*Agriculture*, *Horticulture* and *Floriculture*, their cultivation, collectively called *Agronomy*.

So far we have proceeded from simple to compound, to show the linking of cristals with cellular plants; but in **Zoology**, we may resume the analytical plan, descending from **Ontology** through men, at the head of organized beings.

II **ZOOLOGY**, the science or knowledge of animals or moving organized bodies and beings.

1 Class. **MASTOLOGY**, the sucklers or mammal animals—*Anthropology*, the human beings—*Cetology* the Whales and Cetaceous &c.

2 Class. **ORNITHOLOGY**, the birds and feathery animals, the most distinct of all animal classes.

3d Class. **ERPETOLOGY**, the reptiles and lizards—*Ophiology* the snakes—*Amphibiology*, the Amphibians.

4th Class. **ICHTHYOLOGY**, the fishes or finny animals—*Antaciology*, the antacians or sharks and skates.

5th Class. **PLAXOLOGY**, the crabs or crustaceous animals.

6th Class. ENTOMOLOGY, the insects: the most numerous of animals, whence many divisions---*Aracnology*, the spiders---*Elytology* the beetles---*Psychognosy* the butterflies---*Myology* the flies---*Ixology* the Caterpillars.

7th Class. SEBLOGY, the ringed worms.

8th Class. APALOSY, the mollusca---*Stelmopology*, the cephalopodes,---*Conchology*, the shells---*Spirology* the spiral shells---*Acephalogy* the bivalve shells.

9th Class. POLYPOLOGY, the polyps---*Helminthology* the true worms---*Actinology* the radiant animals---*Zoophytology* the Zoophytes or Corals.

10th Class. ADELOGY, the adeliens or adelostomes or Porostomes---*Microzoology* the microzits or Animalcula.

Zoology has besides the parts relating to special purposes---*Anatomy*, *Physiology*, *Zoonomy*, *Nosology*, with *medical pastoral*, *hunting* and *fishing* arts or pursuits---*Melitosy* or *Simblogy* raising the Bees--*Zooconomy* domestic animals---*Zooresy*, utility of animals---*Osteology* knowledge of bones---*Odontology* of teeth---*Craniology* of skulls &c---*Taxidermy* preservation of animals &c. With few exceptions in these or any other branch to be deemed a science, the greek terminations indicate the purposes---*Logy* applying to treatises in general---*Graphy* to descriptions---*Nomy* to the laws and functions---*Kesy* or *Esy* to the uses---*Metry* to the mensurations and calculations---*Gnosy* or *Osy* implying the knowledge in general---*Gony* or *Geny* the origin and formations---*Tomy* the dissections or analysis.

All these sciences like their objects form concentric circles, linked by numerical affinities

1-2-3-4-5 nary! the Sponges, Alcyons and Zoophytes link the animals to plants! the Nullipores and Stalactites link plants to minerals. Crystals are gradually linked with minerals and metals, these with their elements &c.

Such are the various actual and numerous branches of knowledge; some of which are of modern date, and not a few added by myself. Many are not yet found in our Lexicons and Cyclopedias, nor generally known; but they are gradually getting into use, and are even likely to be increased hereafter.

The historical sciences shall be classified hereafter in a similar manner, and perhaps also *Metrics* or the metrical sciences, that apply to almost every object, and may be called *Sometry*, *Zoometry* just as well as Geometry.

There are several other natural sciences or arts deemed vain or doubtful by many; such are *Alchemy* or the transmutations of metals, *Metamorphism* or that of bodies, *Astrology* or the celestial influences and astral horoscopes, *Phrenology* or *Cranioscopy* the indications of the brain and skulls; *Augury*, *Necromancy*, *Chiromancy*—*Physiognomy* or facial indications, *Proscopy* or foresight, *Acroscopy* or vision of invisible distant objects, *Panscopy* or prognostics and omens, indications of the weather and natural events from the sky, clouds, &c *Zooscopy* or animal indications, a kind of natural Augury and branch of Panscopy &c . . .

Each science has besides its own Philosophy or principles, Nomenclature or terms, *Eutaxy* or classification, history or detail of progress, biography or account of votaries, and these are thus additional subordinate branches.

But this vast circle of science need not ap-

pal the student. They are in fact mere divisions of few subjects, to enable us better to fix their scopes and apply them to the natural objects: thus rather aiding than impeding their collective study.

Those who apply themselves to any of these sciences are called Chemists, Botanists, Zoologists, Ontologists, and so on, the termination being generally in IST; but there are some Anomalies, we say Astronomer, Geographer &c, and thus when the sciences end in *nomy* or *graphy* the term of the men must be in ER—the term of Physists and Cosmist for natural philosopher and natural historian, ought to be introduced; the French say *Physician*, now applied like *Physics* to the medical profession and science by us, erroneously but of too long standing to be altered.

2. *Eutaxy*. THEORY OF CLASSIFICATION and the new science of EUTAXY or Methodology.

Ever since the introduction of order, system and method in the determination of objects, all the sciences to which this mode of study has been applied, whether analytically or synthetically, have made rapid progress. Classification is become as it were the Soul and Spirit of orderly arrangements, and however learned men may differ as to these serial orders, coordinate analogies or respective classes, they all unite to value and use some method or other.

These methods and orderly arrangements have thus been multiplied and varied, extended to all the objects and subjects, becoming peculiar branches of each science, and lastly a science also, which has been called *Methodology* by some French writers, but I prefer my own

term of EUTAXY meaning *well orderly*, and applying not to methods alone; but even to systematic theories, and orderly arrangements, whether serial or circular or reticular, or in any other shape.

These classifications must be viewed under a triple aspect, intimately connected and supporting each other, they are 1 *Orders*, 2 *Nomenclatures*, 3 *Analogies*,—fixed by groups, names and affinities. We have something of the same kind in some similar aspect in all the series of human ideas, pursuits, arts &c, but they chiefly reach a greater scope and perfection in philosophical and natural objects or sciences.

Such orderly methods appear to offer all the numerical combinations, and their selection is optional, although the human mind appears to dwell with pleasure on the ternary and quinary series. There are however also—binary orders quite natural, such as the sexes, and the opposites Hermaphrodite and Neutral.

The ternary arrangements are quite common, we meet them on all sides in nature and art; while by extension or amplification they become quinary or septenary. But the primary and philosophical ternary order of succession or composition by synthesis, are as follow.

1. The Unity, Entity, Object, Subject, Body, Being, Idea, Thing &c.

2. The Groups or Clusters of Types, Relations or Analogies of Unities.

3. The Series of Groups, Aggregations or Compounds of the above, called Orders, Classes.

To study or teach to advantage, it is not always necessary to begin with order. We must rather imitate the natural process of accumulation of ideas or objects, by storing the mind, as

do children when they learn to speak and reflect—but afterwards it is indispensable as we proceed in acquiring knowledge or objects, to put them in order in the mind or study: which operation is performed by synthesis or grouping. We only divide and subdivide by analysis hereafter as we get still richer in thoughts or knowledge—and lastly comes the coordination of both modes by analogies and relative connections, as the highest ultimate result.

Meantime the very names which we must learn or give to the objects of study, may be analysed into words, syllables and letters, or else compounded into Phrases, Paragraphs, Pages, Chapters, Books, forming a Library by accumulation.

The civil classifications proceed by individuals, families, clans, tribes, nations . . . or by houses, wards or villages, towns, or cities, countries or provinces, states or empires—both forms being quinary.

In military groups, we have Soldiers forming Squads, Companies, Batalions, Regiments or Cohorts, Legions or Armies.

In the very vulgar acception and loose manner of speaking or thinking, we have *things or objects*, that become gradually by mere comparison *sorts or kinds*, and next *clusters, heaps or crowds*—a ternary order of very loose acception.

Minerals or inorganic bodies are formed of *atoms* and *elements*, becoming gradually by aggregation and condensation *Molecules, Fragments*, and *Masses*—ternary and quinary.

In organized bodies, where EUTAXY becomes the most perfect, we have the binary order of *Animals* and *Plants*—each with a ternary se-

ries of groups—and the quinary synthesis of *individuals* forming *Species, Genera, Orders* and *Classes*, to which some add *Families* or clusters of Genera, and the 2 kingdoms or main groups of Zoology and Botany.

Therefore the EUTOXY of objects is properly the *Syntax* of Philosophy and Science. It has like the gramatical *Syntax* its rules, principles, nomenclature, evidence, orderly beauty and manifold uses. To speak and write well we must speak and write according to *Syntax*, to teach or write well upon Science and Philosophy, we must follow EUTOXY.

If we deviate from them we fall into disorder and ambiguity. Order is the Soul of every thing mental, terrestrial and celestial: it is of divine origin, nay the very act of God: while disorder is the opposite tendency to evil and disturbance of Celestial Order.

It would be very desirable for learned men to agree upon methods, but it is hardly to be expected. Some clusters of objects are yet in the progress of study and not perfectly known; but when they are or may become, a general assent might be given to the most improved method, provided all the claims of successive *improvers* are duly attended to and valued as they ought. Any other course will utterly fail, since no decision involving injustice could be assented by prosterity or even the liberal and candid of this age.

It is particularly in the nomenclature of EUTOXY, that a wide range and improper liberties have been taken; but this will require peculiar remarks in future. We shall merely observe here that *it is agreed by all the liberal men of Science* every where that priority of discoveries,

names and arrangements are *peremptory rights*; but when the names are improper, uncouth, duplicate or false, *they must be discarded in all cases*. It is with much pleasure we have seen this perfectly well stated by Swainson, Strickland and Wentworth in England, who have opposed with ability the arbitrary system of others who are opposed to rules, and promoters of disorder, introducing bad names and confusion. But the needful rules may be greatly simplified by being reduced to the 3 essential laws of *Justice, Propriety and Euphony*.

3 Analogies. THE CIRCLE OF NATURAL OBJECTS, or collective affinities and analogies of corporeal forms—a new Science.

The study of natural morphic affinities, has been deemed by many Naturalists, the highest degree of philosophical enquiries into the properties of bodies—it had been cultivated chiefly by the French Schools of Botany and Zoology: although quite lately admitted elsewhere; it has caused great interest in England, where even several systems have been framed upon it. Formerly the serial reticular and geographical links of affinities had been proposed: now the Circular, Binary, Tertiary and Quinary Relations, becoming therefore Mathematical and Numerical. These various systems have found able advocates, and Pythagoras would like to see his pentagonal system revised—the *serial* orders are conceded by all to be inadequate breaking too many links; the *Tabular* views may be made plausible but are mere Tables after all; the *Arboreal* like the Genealogic Trees may show the gradual partings, but re-

quire many grafts to show the affinities; the *Geographical* in the form of maps may represent well the groups, their size vicinity &c, but lacks the distant links: while the *reticular* marks all the links, but lacks the convenience of maps--thus reticular maps should appear the nearest to perfection.

But the mathematical idea has been evolved, that material forms are involved in concentric *circles* (or rather *spheres*,) wherein a triangle or a pentagone are inscribed, each side representing a form, and each angle a link; but binary affinities or twin relations are not so well represented by this. It is however idle to contend that all the forms can be reduced to either numerical progression, as 2, 4, 8 &c, or else 3, 6, 9, or else 5, 10, 15; since all these are offered by some groups: while the anomalous numbers 7, 11, 13, &c are very rare indeed.

Although I have always inclined to the *reticular* analogies for groups of plants and animals at least; yet I have a theory of my own, the *Spherical* or *Celestial* or *Constellate*, which I shall try to explain concisely, and is perhaps the most correct.

The Stars constellate, the Planets circulate, the Comets divergate . . . the Earth being a Planet under solar control has produced by modified irradiation, *Minerals* through aggregation, *Strata* thro' condensation, *Mountains* thro' uplifting, *Crystals* thro' cristalization, *Plants*, thro' expansive vegetation, *Animals*, thro' complex organization . . . the organized beings have assumed a certain number of forms, by no means indefinite; but calculable and linked by gradual modifications: therefore reducible to progressions; but not related by any ex-

clusive number in intensity of analogies. These may and do assume the binary, ternary and quinary degrees of affinities (within a circle,) with their compounds, 4nary, 6nary, 10nary. This is equally obvious in the modifications of forms and aspects; the sexes and most of the senses are binary in men, the head, body and limbs may be deemed ternary, while there are 5 fingers and toes the same thro' animals and plants, offering occasionally all the other combinations of numbers, even the Unity, 7nary and multiple or indefinite number, either in limbs or else in organs.

This numeric or mathematic progression prevails then in the organized beings as in mineral compounds and the constellated Stars, including the Planetary and Binary systems. Therefore the *constellate* orders of clusters may best represent them: which may be expressed by this formula—*each form and group or cluster of forms, is united to all its akin by links of unequal length or intensity diverging on all sides*—Thus these groups of forms are related to others *within a sphere*, by links whose lengths are proportionate to the intensity of the analogies!—each link may be compared to the beams of light, that dart from one stellar cluster to another: *light* linking the sidereal groups; while *life* links the organized groups.

Such is the pith or main analysis of my ideas on a subject now occupying much attention, as the result of comprehensive views of the whole creation, and circle of analogies in living forms. It may hereafter become a new Science: one of those that are to link Physics with Metaphysics, and *Ontology* with *Metrics*: thereby the natural bodies with their living energies and calcu-

table forms. I therefore propose for it, the name of **SYNOMORPHY** meaning *united forms*, or **IDOGRAPHY** meaning *shapes described*.

See figure 1 to 3 for the illustrations of this principle or spherical constellate system of forms.

4 *Botany*. ON A NEW NATURAL CLASS OF PLANTS, the **ANTINES** or **Endantines**.

To discover new Genera of plants or animals is by no means uncommon, to ascertain new groups in Botany and Zoology or natural families, is not even difficult, while the study of analogies is still in progress; but all the Natural Classes of organized Being are pretty much ascertained, since the discoveries of the Endogens and Cellular Plants in Botany, and the splitting of the Insects and Worms of Linneus into half a dozen classes. Nevertheless there are yet important researches to be undertaken among some tribes of plants, and it may happen that the Cactoids, or all succulent plants (often leafless) may yet be found to form a class, which I have indicated in 1836 in my *Flora Telluriana*, and proposed to call **SARCOMES**, meaning *fleshy bodies*. They appear to link with the **MALAXYLES** or soft articulated woody trees on one side and with the Endogen Palms on the other.

Meantime in my *Sylva Telluriana* (1838) I ventured to divide the Exogen Trees and Shrubs into a double series, the *Anisantes* and the *Endantines*. This last is what I presume to offer as a natural class, cluster or series; which I had partly indicated since 1820 in my remarks on the Genus *Samolus*; nay I had foreseen the necessity of it since 1814, but dared

not offer the innovation in my Analysis of Nature 1815.

It was I believe Adanson in 1763 and Jussieu in 1789, who were the first to notice that in flowers with a double perigone, some natural families as the *Primulides*, *Berberides*, *Sarmentose* &c had the stamens not opposed to the calix as usual, but to the segments of the corolla: which mode of insertion was at variance with the generality of Exogens, but in accordance with nearly all the Endogens, as was since ascertained, and thus forming a passage between them.

This important fact appears to indicate that all the Genera and Families offering this structure, ought to form a medial class, or at least a peculiar intermediate series. They are more numerous than we were aware of, since the *Gentianides*, *Myrsinides*, true *Rhamnides* and *Convolvulides* belong to it, with many more Genera, such as *Houstonia*, *Samolus* &c. indicating new Families. I shall illustrate them in a peculiar work; but now wish to draw thereon the attention of Botanists, who will probably detect many more, both in the Polypetalous and Monopetalous forms, nay even the Apetalous; when the stamens stand opposite to where the petals *ought to be*, thus alternating with the calicinal segments.

Such a peculiarity is of course excluded from all the flowers with many stamens, or with a double number, or with a lesser number, being confined to the isomeral stamens, equal in number to the segments of the corolla. Yet if the fewer stamens or when many are sterile, the fertile or those few are opposed to them, they will also be of this series; which I called EN-

DANTINES meaning *inside opposed stamens* but may also be called **ANTINES** (or *Antarines*) by abbreviation. This serial splitting of the immense class of Exogens will be found practically useful.

No botanist can now deny that staminal insertions and positions are of the utmost importance, and above all this kind, which links the two great series of Exogens and Endogens, particularly since this mode evinces a peculiar relation to the corolla, and inverse unfolding of radiating parts: this being in a binary succession; while the most perfect Exogens offer a ternary or alternate radiation of parts, subservient to the pistil, which is the only essential and central organ or axis.

The Families that were already ascertained to be **ANTINES** are the Primulides, Sapotides, Berberides, Loranthides, Myrsinides, Mangides, Rhamnides, Menispermides, Sarmentose &c. . . . to which I have added the

GENTIANIDES, all the Genera united thereto that have alternate stamens, must be excluded.

CONVOLVULIDES, the same in this Family. *Cuscuta* has them alternate.

HOUSTONIDES Raf. a new family, all the Rubioides with opposed stamens must be united thereto.

SAMOLIDES Raf. 1815, types Samolus, Bacopa &c.

MONTIDES Raf. types Montia, Claytonia, Cryptina, Leptina &c.

GUANIDES Raf. 1836, types Guania, Ledelia 996 fl. tel. &c.

PECTANTHIDES Raf. 1836, type Pectantia Raf. fl. tel. 261, the *Mitella pentandra* of some. *Glaux* appears of this family.

PLANTAGINES? they appear to belong here, although some deem the corolla an inner calix.

But this is not all; there are no doubt many other Genera blended in the families with isomerical stamens, that will be found on inspection to belong to this Series, and become the types of other families. They must be sought for chiefly among the Solanides, Asclepides, Terebinthides, Euphorbides &c, where many anomalies exist. This search will lead to important results; it would not be amiss even to extend it to all isomerical tribes.

As early as 1815, I proposed to divide the Sapotides into 3 families, *Olaixides*, *Hilospermes* and *Inocarpides*: there are other divisions requisite among Rhamnides and Berberides.

This important character of position had been so much neglected that not only *Lisianthus* was united to Gentianides, *Cuscuta* to Convolvulides, *Montia* and *Claytonia* to Portulacoides &c, but even I found *Ledelia* blended in the Genus *Ceanothus*, *Pectantia* in *Mitella*, &c. Therefore a general examination of isomerical flowers will probably yet increase the class of ANTINES.

It might be proper at the same time to verify the staminal position in relation to the pistils when more than one and also isomerical, or of the valves of the single pistil which answer to the definite carpels, binary or 2, 4, 8, ternary, or 3, 6, 9, quinary 5, 10, 15. This has been attended in but few instances, and may offer important results; although not offering bases for new classes, it may for families. I think that in the isomerical Sedoides or G. *Crassula*, *Tillea*, *Septas*, *Sempervivum* &c, the stamens alternate with the pistils equal in number, as sta-

ted by Adanson, and this must be the common position, wherein pistils face the petals, and stamens the calix in alternate quaternary order. This examination (quite conspicuous) will be found more useful and available than the perplexing microscopical search after the position and direction of the embryos in the seed as in Cruciferous and others.

Meantime the ANTINES may be classified under 4 Series.

1. Ovary free, stamens epicorolle or synerman united to corolla.
2. Ovary free, stamens eleutherman free of the corolla.
3. Ovary adherent, stamens eleutherman.
4. Ovary adherent, stamens epicorolle or synerman.

In figures 4 these relative positions will be shown, as found in all the Series that evince isomeral quantities concentric to the central pistil or pistils.

5. *Botany.* The natural family of CAREXIDÆ.

The Genus *Carex* of Linneus preserved entire as yet, altho' I made a family of it as early as 1815, appears to me nearly in the same category as the *G. Conferva*, *Lichen* and *Polypodium* of Linneus, all natural clusters of numerous Genera; which must always be the case in polytype Genera offering many floral disparities.

Linneus had already 45 sp. of his *G. Carex*, 40 others were soon added chiefly by Allioni; while Schkur and Willdenow increased them to 210; now over 300 are known whereof 168 are north American, illustrated by Dewey

Schweinitz and Torrey. Yet they persist in deeming this vast assemblage a Genus! instead of a family! altho' they offer flowers monoical or dioical, 2 or 3 stigmas, fruits of all shapes &c. Only 4 Genera have as yet been proposed out of them, *Uncinia*, *Physiglochis* of Necker for the dioical kinds, my *Scuria* 1815 same as *Vigna* of Beaunais and my *Triplima* 1818 for those with 3 stigmas, *Uncinia* is the only one adopted by all.

As I possess nearly 240 sp. of this group, American, Sibirian and European, and have always deemed it a family, I may at last venture to split it into 22 Genera perfectly distinct, quite as much if not more than those made in the akin family of Cyperoides, from which CAREXIDES is quite distinct by flowers *dicline spicate imbricate*, fruit a *perforate utricule* or *perigynium*. This fruit is quite peculiar and only finds an analogy in the far distant tribe of Dipsacoides according to Decandole.

I shall give the main characters of my Genera, with many examples of the species belonging thereto; but shall reserve further particulars for my *Agrostikon* or figures of Grasses and akin plants. Each Genus includes several sections such as admitted in the whole by sexual division or position. But my characters will be taken from the important shapes of the fruit, whether striate or angular, with entire or oblique openings, with 2 teeth or lobes equal or unequal, also the seed inside or akenā lenticular, oval or trigone.

I. Subfamily. TRISTIMIDES.

1. CAREX. flowers commonly monoical with a single glume or bract, stamens 3, style trifid, stigmas 3, perigynium and fruit ventricose or

tubular not angular, mouth or opening equally bidentate or bifid or bilobe, seed trigone commonly sessile. This G. thus restricted will still comprise nearly 100 species, and protem all those incompletely known, which are not few as yet. It might be divided into many subgenera by the shape of the fruit, terete, oblong, conical, oval, oboval, globose, fusiform, beaked &c; but I prefer to employ the good characters of enerve or nervose, compressed or not compressed.

1. Subg. *Carex*, fruit neither compressed nor nervose. The majority of species as yet.

2. Subg. *Planarex* R. fruit compressed not nervose. Types *C. nigra*, *ustulata*, *ovata*, *indica*, *nemorosa*, *divisa*, *distachya*, *cephalophora*.

3. Subg. *Planeuris* R. fruit compressed nervose or striate. Types *C. extensa*, *lacustris*, *binervis* &c.

4. Subg. *Costularia* R. fruit not compressed but costate or striate or nervose. Types *C. lupulina*, *tentaculata*, *hystericina*, *rostrata*, *conglobata*, *sterophyla*, *aristata*, *folliculata*, *turgescens*, *microdonta* &c.

2. OLOTREMA Raf. (entire hole) differs from *Chrex* by perigynium entire truncate at the end, without teeth—Types the *O.* or *C. juncifolia*, *gebhardi*, *brunnea*, *geminata*, *gynobasis*, *oligocarpa*, *umbellata*, *acuminata*, *leporina*, *filifolia*, *collinsi*, *washingtoniana*, *tetanicca* &c.

3. LOXOTREMA Raf. (obliquial hole) diff. *Carex*, perigynium with opening obliquial unilobe—Types *L.* or *C. tuberosa*, *lusitanica*, *vestita*, *pilosa*, *cuspidata*, *alpestris*, *triflora*, *capillaris*, *davisi*, *castanea* &c—2d subg. fruit nervose, *alba*, *leptostachys*, *halseyi*, *hitchcocki* &c.

4. LOXANISA Raf. (obliquial unequal) diff. *Carex* by fruit with two unequal lobes or lips at

tip—Types L. or C. atrata with fruit compressed rostrate, gracilima with fruit trigone &c. and probably other sp. but this curious character seldom noticed.

5. ANITHISTA Raf. (not strait) diff. Carex, fruit incurved gibbose—2 subg. 1 fruit not sulcate, types A. clavata, latifolia, triticea—2 *Mytiskis* fruit sulcate rostrate, beak curved, flava, patula, riparia, lacustris, littorea &c.

6. EDTRITRIA Raf. (3 sides) diff. Carex, fruit trigone triquetrous, but mouth with 2 divisions probably unequal—many sp. belong here, E or C. mucronata, supina, schkuri, livida, ferruginea pubescens, compressa, paludosa, levigata, petrea, rupestris, linki, parviflora, vulpina, recurva, dasycarpa, glaucescens, concinna, viridula, formosa, sylvatica, digitalis &c.

7. OLAMBLIS Raf. (whole obtuse) diff. Carex, fruit trigome often globose or obovate, mouth entire obtuse as in Olotrema—Types O. or C. virescens, hirsuta, verna, miliacea, laxa, barati, &c—2 subg. fruits nervose striate, fraseri, oakesi &c—3 subg. fruits nervose punctate rostrate ellioti &c.

8. FACOLOS Raf. (lens entire) diff. Carex, fruit biangular lenticular, mouth entire as in Olotrema—Types F. or C. curta, limosa, brunescens, complanata &c.

9. DEWEYA Raf. (or *Meltrema* if Dewey has a G.) diff. Carex fruit trigone variable, but end membranose curved entire—Types D. or C. plantaginea, anceps, oligocarpa, blanda, granularis &c.

II Subfamily. DISTIMIDES.

10. VIGNEA Beauv. diff. Carex, style bifid, stigmas 2, fruit compressed biangular lenticular bidentate or bilobe, seed compressed lenticular

Types V. or C. *setacea*, *disperma*, *exilis*, *hispanica*, *floridana*, *muhlenbergi*, *deweyi*, *muricata*, *straminea* &c—2d subg. fruit *nervose*, *siccata*.

11. **DIEMISA** Raf. (2 half equal) diff. *Vignea*, fruit not compressed *urceolate* or *turgid*, but seed compressed—Types D. or C. *filiformis*, *peltita*, *tenera*, *crinita*, *stricta*, *capitata*, *pubescens*, *splendens*, *rosea*, *remota*, *concolor*, *retroflexa*, *cephalophora* &c.

12. **ONKERMA** Raf. (swelled base) diff. *Vignea*, fruit *globular*, *bifid*—Types O. or C. *globularis*, *spherocharpa*, *rotundata*, *badia*, *rigida*, *oederi* &c.

13. **LONCOPERIS** Raf. (lance around) diff. *Vignea*, fruit *lanceolate* compressed, *marginate* or *bicarinata*, *nervose*, mouth *bidentate*—Types L. or C. *scoparia*, *stipata*, *bromoides* &c.

14. **KOLERMA** Raf. (support base) diff. *Vignea*, fruit *globose* with 2 wings, seed *oval* *stipitate*—Type K. or C. *alata*.

15. **TEMNEMIS** Raf. (half cut) diff. *Vignea*, fruit *dimidiate* one side *convex*, another *flat*, *striate*, mouth *entire*—Type T. or C. *Scouleri*.

16. **NESKIZA** Raf. (not split) diff. *Vignea*, fruit *entire* not *dentate*, commonly *oblong*—Types N. or C. *salina*, *glareosa*, *aquatilis*, *crinita*, *cespitosa*, *loliacea*, *trisperma*, *saxatilis*, *aurea* (fr. *obov.*) &c.

17. **OSCULISA** Raf. diff. *Vignea*, fruit *entire* *oblong* compressed *nervose* (perhaps subg. of last)—types O. or C. *acuta*, *trinervis*, *sudeta*.

18. **PHYSIGLOCHIS** Necker diff. *Vignea*, often *dioical*, fruit *gibbose* or *variable* but always *nervose* *bidentate*, stigmas 2 or 3, seed *oval*.—types Ph. or C. *dioica*, *wormskoldi*, *buxbaumi*, *paniculata*, *teretiuscula* &c.

III. Sbnfam. **UNCINIDES.**

19. *UNCINIA* Persoon, diff. *Carex*, fruit oblong entire not angular, an uncinatè bristle protruding between the perigynium and oblong seed—Types *U. australis*, *jamaicensis*, *gracilis*, *brevicaulis* &c. These 2 last of Thouars, in his figure of *U. gracilis*, the male flowers have also a perigynium! if so *N. G. Fusarina* Raf.

20. *AGISTRON* Raf. (little hook) diff. *Uncinia*, fruit and seed trigone triquetrous—Types *A.* or *U. phleoides*, *erinacea* &c.

21. *ITHETA* Raf. (strait bristle) diff. *Uncinia*, bristle strait, flat without hook, seed angular—Type *I.* or *U. breviseta* &c.

22. *FOREXETA* Raf. (bearing bristle) diff. *Uncinia*, the bristle strait proliferous bearing rudiments of flowers—Type *F.* or *U. nepalensis*, *phylostachys* (*Carex* do Meyer.)

Such are the *Carexides*; the akin family of *Sclerides*, must also be revised in a similar way.

6. Zoology and Geology. The *ADELOSTOMES* and their geological formations, with 45 figures.

Ever since 1832 I had published my anterior observations on the series of organic formations; but hesitated to unfold my ideas upon the formations entirely due to masses of small animals, worms, radiants and animalcules. Lesueur had laughed in 1818 at the idea of fossil medusites, when I described large fossils analogous to the meduses; but since the fine discovery of Ehrenberg upon microscopical fossils, it is evident that I could have foretold these new views, without depriving him of their merit.

But what is my own due, is the discovery announced since 1814, that there were in the Sea, animals similar to the Microscopical of a very large comparative size or over a foot long: to

such the name of *Animalcules* could no longer apply, and I had called them both *Porostomes* since 1814, supposing that they absorbed food by pores all over the body. Ehrenberg has ascertained that many have a stomach; but the mouth is always invisible, shut up, and only opening to swallow their prey. Therefore I have since in 1832 proposed to call them ADELOSTOMES meaning with mouth hardly evident: proposing at the same time the terms of *Zoopores* or *Leptremes* if preferred, but they must have at last a common name applying to all. And the smallest may besides be called *Adelians* (hardly evident) or *Micromes* (minute bodies): while the large and visible must be called *Eudelians* (well evident) or *Megomes*, larger bodies. The fossils *Adelites* and *Eudelites*.

The confined views of some writers that have much lessened the terrestrial formations, are made evident by such observations and discoveries, and now it is quite certain that there are some formations purely organic, to which belong the *Adelic*, the *Oolitic*, *Numilitic* and vegetable *Lignitic*; but by no means the immense alternating *Carbouic* strata, whose interposition with thick gritstones, Shales and Limestones of similar origin, does not permit to blend them with the integral organic.

Ever since 1820 (published 1832) I considered as follows, the *Organic* series compared with the *Inorganic* formations.

I, Series. *Inorganic*, 3 formations, 1, uniform, 2, complicate, 3 volcanic, including the Basaltic, Traptic &c.

II. Series. *Organic*, *Amalgamic*, 3 formations, 1, primary or vetustal (transition) 2 stro-

mic or planial (secondary) 3, luvial including the tertiary, diluvial, alluvial.

III. Series. *Organic Integral*, 3 formations, 1, animal, 2, vegetable, 3, human.

IV. Series. *Anomalous*, 3, formations, 1, atmospheric, 2, meteoric, 3, sideral.

These 12 formations are disposed differently from my 15 of late, being viewed under a different aspect; but these serial dispositions or generalizations are of lesser importance: it is more important to ascertain their real number and periodical ages. Each of them is besides divided in depending or coeval formations, which is also very important to study and describe.

It is among the animal formations that must be included the *Adelic*, of which it appears the *Oolitic* must be included; since instead of considering the various *Oolites* as petrified roes of fishes as formerly, or as globular sands, the actual opinion of many, I incline to believe them (at least in great part) enormous masses of *Adelostome Animals*, and their animalization may be traced by perceptible degrees, with other bodies evidently animalized, such as *Nummulites*, *Tethites*, and the *Microzites* of Ehrenberg.

I have not yet seen the works of this writer, but merely fragments of it scattered in Journals, and I do not know how far he may have pushed his discoveries; but I believe he has confined himself to the formations of microcospical animals, and has not yet seen as I did many years ago, that these forms of the most simple animals, offer themselves also under a gigantic aspect or size: since *Adelostome Animals* of one inch or one foot in diameter are giants, the elephants of this animal class. I however discovered these

giants long ago, both alive and fossilized, alive in the Seas of Sicily as early as 1818, and the fossil *Tethites* of Ohio and Kentucky discovered in 1818, confirmed their relative existence.

The *Tethyas* are marine animals of the Mediterranean, 3 or 4 species whereof I noticed in Sicily. They are as yet little known to the Naturalists, altho' the types of the large *Adelostomes*. I have noticed them alive and watched for many days, seen them moving and rolling, since they are free, altho' not swimming. They are simple heavy balls with a thick skin like an orange, without mouths, without stomach, without limbs, but with a radiant centre, the lameller fibres radiating on all directions from the centre to the circumference, contractible in part and giving the rolling motion to the Ball, they are probably fistular and communicate with the pores of the skin; but these pores and hollows are invisible. They link on one side with the compact *Alcyoniums* with visible mouths or pores, but as much fixed as the fibrose Sponges that are real plants, and also with the *Endacrites* that are nearly similar. These *Tethytes* are not gelatinose as the Medusas and most of Adelostomes, but coriaceous like the Alcyons and many radiants.

I described in 1831 in the enumeration of my Cabinet, many fossil Genera of North America, that I then included *protem* with the *Alcyonites*, 2 of them are real *Tethytes*; my *G. Bolactites* differs merely from the living *Tethyas* by the articulated internal fibres and a thinner skin, while my *G. Fibrillites* merely differs by its form not spherical, but lobed and cavernose like the Spongites.

Among the 15 Genera then described as fos-

sil *Alcyonites*, and all of the old western *Paleic* formations, most have no living types; but appear to form graduations of *Adelic* forms, since nearly all have no conspicuous mouths, and thus are not *Alcyonites*. The G. *Dermorites* has the skin of *Tethya*, but no internal visible fibres: while the *Geodites* are reduced to this thick skin, the centre being hollow, which form a passage to the real mineral Geodes, but my *Geodites* were really animal bodies, and some were gigantic of one foot diameter. My *Cavulites* have external and internal Cavities, but not always in communication, which were perhaps mouths and stomachs, thus linking with the *Alcyonites* and *Polygastres*. All these animals appear to have been free, but heavy and creeping, neither floating nor gelatinose, although now all *silicified* in the fossil state like those of Ehrenberg. When thus large they must be called *Megomites* or *Eudelites* by contrast with the *Adelites* or inconspicuous.

The nearest living form to my *Geodites* and *Antrosites* was my G. *Megastoma cedra* (described 1814 in my precis) called *Megatrema ballata* in 1836 (meaning *large opening*) which differs from *Geodites*, merely by a large external opening to the central cavity, and from *Antrosites* by being a fixed animal like the *Alcyons*, while the *Geodites* were free like *Tethya*. It is therefore the type of another family of Eudelians, and its animal nature is not problematical, I had it in my hands for 2 days fixed on a stone, the large cavity and opening neither opens nor shuts, it has no tentacles and no motion. The whole animal is a uniform transparent cartilaginous substance, without any perceptible motion; yet it shrinks some-

What under the hand or the knife. I could cut it like animal cartilage, but it was not akin to any *Fucus*, being quite thick, not green nor fibrose, nor cellular. The general shape was elliptical, the opening obliquial terminal, the external surface bullate rugose, the internal smooth and empty without any Viscera: the size was 6 inches. See the figure 5.

Here then is another link of lowest animal life, and the *Geodites* were similar, but free with the opening closed; while *Antrosites* were exactly alike but apparently free. Among the floating Adelostomes and Eudelians I described in 1814 my *Aproctomus sbromus* (precis G. 37) of Sicily, called *Sbromu* in Sicilian. I now give the figure of it. It was a gelatinose animal 15 to 16 inches long, depressed flat hyaline or transparent, elongate acute at both ends, without external limbs, organs or mouths; but with a narrow central alimentary cavity slightly colored of red. The motion was waving and slow similar to some Medusas.

My G. *Scalenium* of the Atlantic Ocean is somewhat similar by the flat shape and transparency, but it has not even an appearance of stomach, and the shape is a scalene triangle. I described it 1820 in my annals of nature G. 20, and now give the figure.

My G. 19 of same work *Megalisma maculata*, is another singular living type. It is found on the Banks of Newfoundland where it rolls like the *Tethya* at the bottom, being free but heavy: the body cartilaginous as in *Megatrema*, but with an oblong cleft susceptible of being shut, and the internal cavity has lobes and viscera. It is therefore far removed from *Megatrema* and nearer to the *Ascidian* family,

altho' with a single (not double) perforation. Probably type of another family Megalismsals. see the figure 8.

My *Zoocilon levis* of Sicily is also free globular truncate smooth, akin to the Genus *Megalisma*, having a single large opening and cavity, that can be shut or contracted, but it has no viscera. It forms with *Zocodium* (Precis G. 34) another typical family, akin to Polyps, but without tentacules; *Zocodium* is fixed.

In my *Chledristoma pecten* (Precis G. 33) the same form acquires 4 mouths like Stars, the body is flat fixed on shells. In *Polactoma* there are also several mouths and these two link with the Madrepores, but are not stony, quite soft bodies. Both are living types.

Among the akin fossils is my *Coilites striata* differing from *Megatrema* by body one inch long striate, opening smaller crenate. It links with *Antrosites* being apparently free, but it has a single cavity. See figure 12. I described in Atlantic Journal (1832) 2 other living types *Psadiroma* and *Peritrema*, page 69, and at page 70, *Geodites* 16 sp. *Cavulites* 6, *Antrosites* 10, now figured.

Therefore we have many forms of Eudelians or gigantic Adelostomes. without external organs, linking with the Polyps. The tropical Seas will offer many more, there are some already figured as Alcyons, Sponges, Fucus &c. It may often be difficult to decide if a Fossil is Spungite or Fucite and thus vegetable, or else Alcyonite or Tethites, Megatremites and thus Endelite and Animal. Since even the nature of Sponges is yet doubtful; but I have always ranked them as Plants, being fixt, insensible, stupose, fibrose, without organs, stomachs, nor motion.

The Eudelian Genera with organs are numerous also, I will merely refer to the 10 N. G. described in Atlantic Journal page 21; the *Po-lasmus pectinatus* one of them, is floating gelatinous oblong and lamellar beneath, somewhat like the gills of Agaricus and Amanite, but transversely, not in a radiating shape. See figure.

But all such animals when in the fossil state, are scattered in the oldest formations, among the strata, debris and crumblings of the Paleic rocks, where the Cavulites, Geodites &c often form great masses. I have also seen some rocks and small strata entirely formed by such accumulated Animals. The most simple are the true *Oolites* of America, which had been denied to this Continent, but which I have proved in my Memoir on the Oolites, to exist there in many forms. The *Oocoilites* is the most evident being masses of spherical hollow grains similar to fish roes, but with a thicker shell. These rocks are superposed to the Paleic in Tennessee and Kentucky at very different relative heights, in thin strata or broken fragments. The Oolites of the Mts. Alleghany appear a true lithic mineral, my Pantolite being a grey limestone filled with bluish spherical solid grains while the *Oocoilites* are white and without cement. I dare not affirm that the Pantolite be a fossil. I have not yet observed in America the other Oolitic forms, such as Pisolites, Meconites, Psamulites &c; but there are some fossils akin to *Ammites* or Concentric Spheres united by rays, which appear akin to the Tethytes.

If the Nodules and Polymorphous bodies, solid or hollow, but always silicified, which are

scattered in the Chalks and Grits, are also Animal forms, as believed by Patrin and others, they will all be *Eudelic* fossils, certainly without visible mouths; they must have lived in the waters imbibing nourishment by pores. There may be doubts respecting those containing inside shells and other fossils, as it is frequently the case among the Chalks &c.

Figures—5 *Megatrema bullata* R.

6, *Aproctomus sbromus* R.

7, *Scalenium atlanticum* R.

8, *Megalisma maculata* R.

9, *Zoocoilon levis* R.

10, *Zocodium striatum* R.

11, *Chledristoma pecten* R.

12, *Coilites striata* R. fossil.

13, *Psadiroma rubra* R.

14, *Peritrema lobularis* R.

15, *Psadiroma radiata* R.

Figures 16 to 31, *GEODITES* *levigata*, *compressa*, *sulcata*, *globosa*, *phaiops*, *ovoides*, *mammilla*, *erythrea*, *divisa*, *biloba*, *lobata*, *elongata*, *cavernosa*, *amorpha*, *dispar*, *turbinata*, Raf. 16 species, described atl. j. page 70, with the next 2 G.

Figures 32 to 39, *CAVULITES* *amblodes*, *anastoma*, *geodica*, *unica*, *vermicularis*, *amorpha*, *equalis*, *depressa* R.

Figures 40 to 49, *ANTROSITES* *globosa*, *elliptica*, *camerata*, *depressa*, *nodosa*, *magna*, *disphérica*, *ramosa*, *incurva*, *ditrema*, Raf.

7. AMERICAN BOTANY, *remarks on the Flora of North America by Torrey, Grey and Nuttall.*

As early as 1818 I advised Torrey to give up the Linnean sexual system, which he would not do, nor study and adopt the natural system of Botany; he published his compendium and Flora of New York according to Linneus, leaving to Robin, Kunth, Hooker, and Beck, the honor of producing American Floras according to the natural method successively improved by Adanson, Jussieu, Necker, Decandole, Lindley and myself.

In 1828 I suggested to him to publish his observations on our Botany, and produce a *General Flora* of the United States, offering to help him thereto or even write many monographs for it. He was repeatedly urged since this task, but was not able to undertake it till late in 1838, after having seen my immense labors and discoveries of 1802 to 1836, published by me between 1832 and 1836 in various works, Medical Flora, Herbarium Rafinesquianum, Atlantic Journal, New Flora of North America or Mantissa, Flora telluriana, Sylva telluriana and American Trees &c. Instead of availing himself of my profered help and *published labors*, he has preferred taking for colaborators his pupil Gray, and the traveller Nuttall, buying his services and plants, but refusing to buy mine—this shall not prevent me from doing justice to their joint labors, as I am just and impartial with all, even with those who are not so with me.

Of this Flora of Torrey, Gray and Nuttall only two numbers (out of 9 contemplated) have

appeared bearing date July and October 1838, and the work has since been suspended, to be resumed hereafter when Gray returns from Europe, where he was sent at public expence. These two numbers however give us the plan and fair samples of the whole work, and altho' I could write a long review of them, I must now confine myself to some remarks, reserving more ample criticisms and additions for the period when this triumvirate Flora will be completed. The natural method has at last been adopted for it, but under some very erroneous imperfections.

It is a work full of merits and defects sadly blended; of good observations, descriptions and novelties mixt with neglect and omissions, careful synonyms and lack of others: a medley of good and bad things, predilections and prejudices, that would require a volume of corrections and additions. It is as superior to Pursh as Pursh was to Michaux, in point of time and novelties; but equally defective as both in names, precision, and general recapitulation of botanical knowledge at the time.

This book opens without a title page nor preface, by an artificial tubular view of the EXOGENOUS (and) POLYPETALOUS class, which is NOT natural, since many orders of it *are not* Polypetalous! and the key itself is so erroneous that the same orders are repeated twice and thrice. We thought that the natural method was now so far perfected as to preclude such palpable blunders, which are similar to the linnean practice of putting Genera in several sexual classes. But the Linneists now compelled to take up the natural method, are ever trying to encumber it with Linnean errors or precedents and

render it difficult to study: while properly undented it has no such ambiguity nor dilemmas.

But even this artificial and perplexing key is not connected by any means with the serial text, and no one could by it or the long perplexing characters of orders, find out the unknown place of a genus, unless deeply skilled in the science already. In the enunciation of these orders, Decandole and Lindley have been closely followed with all their errors, no notice taken of other improvers even Richard and Agardh, while my own *plain* and *easy* characters of all orders have not even been hinted at, altho' mostly published since 1815. The whole work is in English yet the orders are all with the uncouth latin plural of EÆ, against which I protest as a barbarism, and shall ever use instead the elegant termination of IDES both singular and plural, adapted to the Greek, Latin, English, French and nearly all languages saying AMYRIDES, VITIDES, LINIDES &c instead of Amyridacæ, Vitacæ, Linacæ, &c.

The natural orders of this Flora are deficient in arrangement, precision, names, synonymy & composition, their characters are vague, loose, incorrect, and unfit for study, like those of Adanson in 1763, therefore far behind the actual knowledge of botanical generalization. Great account is taken (as usual with some late Anatomists) of the useless and perplexing internal structure of the seeds, or invisible characters that no one can study nor verify: while some very evident external floral characters are omitted. The natural orders and families of my Analysis of nature 1815, and Flora Telluriana 1838, are not even in the synonyms, although many were previous to those now reproduced.

Torrey or Gray or Nuttall can study the new orders and genera of Blume, Lindley, Fisher, Hilaire and others, but mine and those of Agardh, Spach, Necker, Adanson &c, are above their reach or comprehension. They appear to have never consulted Adanson the father of natural botany.

Respecting the Genera of this Flora, the same omissions and errors take place as to location, affinities, names and sometimes characters. The following erroneous names are reproduced.

Chryseis Lind. (not *Chrysis* L) my *Omonioia* 1836.

Cleomella Dec. (Ceome!) my *Hyponema*.

Cristatella Nut. (same in Zoology) my *Dispara*.

Chame-buxus Dill (from *Buxus*!) my *Triclisperma* 1808.

Solea Ging (name of a Fish) my *Cubelium*, not even quoted in synonymy.

Spher-alcea Hil. (from *Spheria* and *Alcea*!) the *Spheroma* Dec.

Malva-viscus! Dill (2 G. blended) the *Achania* Sw.

Galactia Br. (not *Galactites* of others) is *Bradlea* of Adanson, why adopt his *Agati* rather bad, and not this very good?

As to subgenera many are real Genera, others badly named, Decandole is chiefly followed in this practice; but when subg. are based on floral disparities they are Generic groups.

Of all my numerous New Genera of North America published between 1808 and 1838, all *good, well named* and properly settled, only a few are adopted such as *Enemion, Adlumia, Polanisia, &c.*

As to species, the main bases of local Floras,

this work is quite deficient in their enumeration, having omitted one fifth at least of those *well known* to other botanists, such as Collins, Bartram, Robin, Cleaver, Elliot, Baldwin, Kin, Lyons, and several others besides myself.—But it contains nevertheless many novelties and rare plants chiefly of Florida, Texas and Origen, collected by Chapman, Croom, Drumond and Nuttall. This is the principal merit of this Flora, since each ought to aim to increase our knowledge instead of concealing known objects.

Torrey has avowed that he meant to introduce in this Flora, only such plants as *he has seen* and verified; but this principle, erroneous in itself (since it would lead to burn all the books previously produced, and the next author might burn or disregard those of Torrey himself) has not been strictly followed in this flora, as it never ought to be; but instead of this a partiality or preference for some labors or writers has been followed, while others are less noticed or even totally neglected.

Thus we find the Genera *Braya*, *Ungnodia*, and some others with many species adopted by him, although *he has not seen them*; while many others are inserted on the mere authority of Nuttall, who is not more skilled in Botany than many American writers; nay I have evidences by his own labels of several great former errors of his. Gray is also quite a beginner and taught by Torrey to judge of plants at a mere glance, without studying the characters; he once insisted that the *Evonymus verrucosus* of Europe was our *Ev. atropurpureus*, and our *Ev. angustifolius* a mere variety! yet it is on him that Torrey depends to verify hastily many

plants in Europe, which task he may not fulfil properly.

Having shown many fine plants to Torrey himself and knowing his hasty way of deciding on similarities, while overlooking disparities, I am convinced that the great trouble he has taken to verify his synonyms will be partly useless, since many of his references must be verified again.

He has even forgotten many of my plants verified or yet in his possession, such as my *Discovium*, the *Florkea*, several *Hypericums* and 50 others.

At page 86, he asserts that the plants of Robin, not seen by me, *and of which I know nothing whatever*, cannot even be admitted to the rank of doubtful species—this implies a double error, I have seen some plants of Robin, and of those not seen, *I know a great deal more* than of some of Linneus, Willdenow and Decandole (and even Torrey) not well described, while many of the descriptions of Robin, are as good as those of Lamark, but being in French, they are not understood by english botanists, while my latin translation in *Florula Ludoviciana* is overlooked.

Many plants of Robin, Elliot, Walter &c, are as good as those of Torrey, Gray and Nuttall, and will be found so.

But the plants of Kin. Bartram, Collins, Baldwin, Cleaver, Riddell, Boykin &c, which I possess, *have seen*, and well described, why are they not put even among the doubtful species? and my own plants discovered between 1802 & 1838, *seen, collected, named and described*, why are they not even among them? I can have no objection to any one deeming doubtful what he

has not seen (if he is a skeptic in religion or botany,) but I object to concealing published discoveries, real or presumed. My plants have been offered to the inspection of many, or even to be sold them, but some will neither buy nor look at them; they want the results of 40 years study and travels to be given them.

Torrey has received great helps in that way from his friends and correspondents, and most of his novelties are the results of the labors of others. James, Schweinitz, Croom, Hooker, Nuttall, Chapman, Leavenworth, Pitcher, Curtis, Gates, Hale, with many others. Being however embodied in this Flora and scrutinized by Torrey and Gray, they are now published as theirs! Torrey has also 300 of my plants and has inspected more; if not all, it is because he would not take the trouble: yet few are quoted as found by me.

The most valuable part of his Flora, are the clever and ample Monographs of some Genera, Clematis, Ranunculus, Streptanthus, Vesicaria, Arenaria, Viola, Claytonia, Psoralea, Trifolium, Hosackia &c, but why has he neglected my own similar monographs of *Lechea*, *Amphicarpa*, *Vitis*, *Aesculus*, *Pavia*, *Ceanothus*, and many more.

Of oversights there are many, I shall give 3 instances, I, am not even mentioned for the *Florkea*, altho' found by me 1816 and the best description given in Silliman Journal 1818—2, I discovered a new locality of the rare *Magnolia macrophylla* at the Falls of Cumberland R. I gave a figure of it in my med. flora, both are omitted—3, I published 1832 in atl. j. that the *Malope malacoides* of Elliot was a N. Sp. *M. lutea* with yellow flowers, knowing well the real

plant found by me in Italy, yet Torrey admits the blunder of Elliot and does not even quote my correction—I could give 100 similar instances.

These remarks have not been written with any unkindly feeling, since I consider Torrey as one of the best botanists of this Country, altho' reluctant to admit improvements, and he has been my friend ever since 1816; but in the hope that in the prosecution of this Flora, he will correct such errors and omissions, thereby rendering it more perfect and valuable.

8. *New Flora and Botany of North America or a supplemental Flora, to all the botanical works on the United States, by C. S. Rafinesque, Philad. 1836.*

This work was undertaken to supply the omissions and deficiencies of all the writers on our botany: it includes in 4 parts a multitude of new Genera, species and objects, criticisms, revisions, corrections, &c, and is a complete work by itself, not interfering in the least with the later Flora of Torrey, Gray and Nuttall, since they have made no use of it.

The first part begins by a long introduction or dissertation on American Botany, with an essay on the botanical Geography of North America. Next specimens of Monographs in alphabetical order, including the Genera *Abies*, *Acer*, *Acakia*, *Achillea*, *Acalypha*, *Aconitum*, *Acorus*, *Acnida*, *Acmella*, *Adonis*, &c, with several new Genera, *Abalon*, *Abbotia*, *Abama*, *Acmispon*, *Acroanthes*, *Adike*, *Adlumia*, *Adoketon*, *Adventina*, &c—this plan once contemplated to be pursued throughout, would have swelled the work to many volumes; it was

changed for a selection of peculiar or interesting Genera, of which the following were given in this first part, *Kuhnia* with 9 sp. *Amphicarpa* and *Lobomon* with 12 sp. *Lechea* with 3 subgenera and 21 sp. *Peltandra* 8 sp. *Olsynium* &c.

The second part opens with a historical sketch of American Botany, and has afterwards 300 articles on American Plants, whereof 86 monocotyle—all these are either N. G. or new species, or revised and corrected old ones. The Genera thoroughly revised are *Triosteum* with 8 sp. *Comandra* 5, *Bellis* 4, *Parthenium* 4, *Capsella* 7, *Brunella* 10, *Eclipta* 12 with 3 divided G. *Paleista*, *Cacotanis*, *Clipteria*—*Baptisia* with 17 sp. and 4 N. G. *Eaplosia*, *Lasinia*, *Riparia*, *Pericaulon*—*Crotalaria* 12 sp. in two subg. *locaulon*, *Alatipes*—*Gerardia* divided in many good Genera, *Agalinis* 14sp. *Aureolaria* 6, *Panctenis* 3, *Tomanthera* 2, *Dasistema* 2, *Seymeria* 3, *Dasanthera* 2, *Pageria* 1, *Ovostima* 1, *Russelia* 2, *Macranthera* 2, *Apentostera* 2, *Lep-teiris* 1 . . . all G. akin to *Gerardia*.—There are besides many insulated new Genera *Laxanon*, *Odoglossa*, *Hepatitis*, *Aliseta*, *Peritris*, *Diplostelma*, &c, a pelorian G. *Myctanthes*, with several new sp. of the G. *Lobelia*, *Asarum*, *Hedyotis*, *Urtica*, *Cuphea*, *Phryma*, *Buchnera*, &c.

Among the Monocotyle are the monographs of *Unisema* 10 sp. *Clintonia* 15 sp. *Tradescantia* 15, *Dioscorea* 6, *Iris* 9, *Typha* 5, *Provenzalia* 4 &c.

In the third part called a new *Sylva* are only included over 200 trees and shrubs mostly new ; of which some new Genera are described, *Nestronia*, *Xeromalon*, *Distegia*, *Fusticus*, *Piloblephis*, *Cladrastis*, *Zanthyrasis*, *Agastianis*, &c, with monographs of *Trilopus* or *Hamamelis* 6

sp. *Viscum* 5, *Celtis* 15, *Ulmus* 6, *Morus* 14, *Ceanothus* 15, *Evonymus* 8 sp.—a revision of the frutescent *Spireas* divided in G. *Physocarpa*, *Basilima*, *Schizonotus*, *Epicostorus* with 38 sp.—*Hydrangea* 11 sp. *Fagus* 6, *Castanea* 4, *Forstiera* 12 sp. with N. G. *Carpoxis* and *Nudilus*,—*Fraxinus* divided in 5 G. *Frax.* *Ornanthes*, *Leptalix*, *Aplilia*, *Samarpses* &c—besides several new sp. of G. *Bumelia*. *Chrysophylus*, *Chrysobulanus*, *Sapindus*, *Empetrum*, *Anthelis*, *Caprifolium*, *Celastrus*, *Diospyros*, &c.

In the fourth part called *Neobotanon*, are included very important discoveries, and 1000 articles completed, besides 21 in supplement. It opens with a short introduction and proceeds in the desultory plan to give many monographs and novelties. The new G. are too numerous to be all enumerated, such are *Otamplis*, *Didiplis*, *Discoplis*, *Odacmis*, *Aimora*, *Buinalis*, *Atirsita*, *Nezera*, *Bilamista*, *Riddellia*, *Therefon*, *Neactelis*, *Zalitea*, *Arkezostis* &c.

The new sp. about 200 in number belong chiefly to the Genera, *Plantago* 6, *Melothria* 4, *Lithospermum* 5, *Veronica* 6, *Peutalis* 9, *Polygonum* 3, *Eriogonum* 4, *Liatris* 3, *Verronia* 2, *Marshallia* 2, *Polygala* 4, former *Gentiana* 7 under the G. *Anthopogon*, *Pleienta*, *Sabbatia* &c—*Pycnanthes* 3, *Teucrium* 5, *Mesadenia* 3, *Lactuca* 5, *Houstonia* 3, with many others.

Many Umbelliferous plants are revised and the N. G. *Upopion*, *Streblanthus*, *Mesodiscus*, *Entasikon*, *Phaiosperma*, *Pachiloma*, *Keraskomion* . . . are introduced on good characters, while a monograph of the American *Daucus* is given with 10 sp. and akin G. added *Babiron* 3, *Tiricta* 1, *Visnaga*, *Ballimon* &c.

The G. *Littorella* and *Corispermum* are now

first introduced as American and 2 new sp. described.

Of the *Asclepides* there are *Otanema* 3 sp. *Oligoron* 2, and several new species—of *Convolvulides*, 3 N. G. *Stylisma*, *Darluca*, *Onistis*.

In the supplement is a fine N. G. of Ferns, *Nesoris*, and 5 additional sp. of *Kuhnia*.

All these plants have been described from living or dry specimens, and they are all in the Herbarium of the author with a crowd of other rarities and novelties. Such are the additions to American Botany that are neglected by some careless botanists. They are from all parts of N. Amer. but many from Kentucky, Alabama, the Alleghanies, Florida, Louisiana, Arkansas, Oregon &c, and new localities, some were found 30 to 50 years ago by Kin, Bartram, Cleaver, Baldwin &c, and had long laid dormant in Collins Herbarium, till acquired by the Author.

9. *New Trees and Shrubs of North America.*

The Trees and Shrubs of this continent appear to be still less known or well ascertained than our Plants: besides those made known in the New Flora just noticed, many more have been described or revised in two late works of Prof. Rafinesque.

Sylva Telluriana, Mantissa Synoptica, with trees and shrubs of North America, Philadelphia 1838,—containing 1075 Articles or Genera and Species mostly new or revised, reformed and classed naturally.

Alsographia Americana or American Grove of trees and shrubs—Philad. 1838, being a supplement to the last work 330 similar articles—thus both including 1405 Articles of Novelties on Arborescent Botany.

The whole *Sylva* may be analyzed hereafter;

it extends to the whole Earth and is a treasure of botanical knowledge. We may merely mention now that it contains a complete reform of the polymorphous Linnean Genera of Croton, Melastoma, Capparis, Cleome, Sterculia, Atropa, Cassia, Bauhinia, Bignonia, Cistus, Clusia, Tetracera, Varronia, Cordia, Ziziphus, Rhamnus, Ilex, Phylanthus, Prinos, Spartium, Genista, Laurus, Lantana, Loranthus, Lycium, Rubus, Spirea, Myrtus, Piper, Cissus, Lythrum, Ficus, and many more.

Also a very curious Monograph of 27 sp. or var. of Cotton *Gossypium*, under 3 subgenera—14 sp. of tea shrubs under G. Theaphyla, Kermelia, Desmitus, Sasanqua, Drupifera—20 N. Sp. of Asiatic *Citrus* &c.

But it is now our main intention to notice the new trees or shrubs of North America, or New Genera of them therein described—they are chiefly, among the Rhamnoides, Girtaneria 2 species, Cardiolepis 4, Perfonon 2, Sarcomphalus 2, Afarca, 1, Berchemia 2,—the G. Sclerozus, and Decateles near Sideroxylon—many N. G. of Ilexides and *Ageria* of Adanson restored with 10 sp. Synstima 3, Prinos 7 new sp.—many N. G. near Croton—of Berberis 7 sp.—of Lantana 6—Riddelia N. G. of Cleomides—of Laurines Tamala 4 sp. Damburneya 1, with many other insulated or revised Genera and Species.

In the continuation of these trees in the American Grove American Novelties are still more numerous, the New G. are Lomilis, Geisarina, Telukrama, Ozotis, &c, based on new objects.

The Monographs of new or revised sp. are, Calycanthus 5 sp. Myrica 12 under several new

Genera—Salix 8 Sp. with a complete revision of the Genus divided in 20 generic groups—of Oaks not less than 28 sp. mostly new, with a revision of the G, including Dryopsila 9 sp. and many exotic Genera once all Oaks.—A complete Monograph of Fraxinus and akin Genera, most of the N. American are of cluster *Leptaliax* whereof 43 species, Ornantes 4 &c—of Populus 5 new sp. and as many subgenera—of Tilia 9 new sp.—of Sambucus 12 sp.—of Viburnum 30 sp. mostly of clusters Lentago and Opulus—of Cornus 22 sp. in several subgenera—of Hickory trees or *Hicoria* Raf. 1808, 4 subg. and 4 new sp.—of *Æsculus* 10 sp. under subg. Nebropsis and Hippocastanum, with 12 sp. of Pavia and 2 Macrothyrsus. The whole ending with 2 Chiococas.

This will be sufficient to evince the importance of these works: altho' Botanists may differ as to opinions on Genera, Species and Varieties, they cannot be blind (or pretend to be) to good comparative Monographs, with distinctive essential characters of perspicuous evolutions of forms, that constitute specific distinctions, and which can be verified on the existing specimens,

10. *Scadiography* or 100 G. of OMBELLIFEROUS plants chiefly new, with their types &c.

I have already greatly enlarged the Gen. of this order, Decandole has done the same: I now mean to indicate many additional generic groups that I had mostly ascertained before 1815. The Linnean Genera were the perfection of absurdity! nearly all my names are classical and grecian for similar or akin genera, see Adanson.

1, **LAOBERDES** Raf. differs from *Sium*, calix obsolete, involucre and involucels poliphylous nervous, *ombels opposite to leaves*—type *L. repens* Raf. *Sium* do Lin. &c.

2, **LAVERA** Raf. calix obsolete, petals expanding acute, stamens long, seeds ovate submarginate, with 3 furrowed ribs, involucre 1-3 uneq. reflexed or lacking, involucels 6-8ph. persistent, *ombels opposite to leaves*—type *L. nodiflora* Raf. *Sium* flo L. O.

3, **DARION R.** *Arduina* Ad. (since employed) cal. 5dent. fruit oblong, ombelules 1-3fl. ineq. invol. poliphyl. linear, *flowers yellow*—type *D. siculum* R. *Sium* do auct.

4, **TROCDARIS R.** cal. obsolete, invol. 5-6ph. involucels 6-10phyl. both ovate reflexed, fruit rounded compressed—type *Tr. verticillatum* R. *Sium* do Lin. *Sium* do Sm. &c.

5, **SIUMIS** Raf. *Sium* L. *Sium* Ad. both too short limbs of *Carpesium*, *Mnassium* &c, the real types have calix 5dent. invol. and involucels linear poliphyl. fruit ovate not striate. they are *S. latif.* *angustif.* *filifolium*, *Sisarum*, *lineare* &c. Smith says *S. longifolium* has the invol. obsolete, ombels geminate, a subg. *Discadia* Raf.

6, **SESELI L.** the real types are *S. striatum*, *junceum*, *saxifragum*, *ammoides*, *pimpinelloides* &c that have seeds ovate striate 5nerved, ombels globose, involucre 1 or 2, involucels poliphyl—the Linnean G. had many anomalies that must form Genera.

7, **LEIOTELIS** Raf. diff. *Seseli*, involucre poliph. seeds elliptic smooth convex tricostate.—type *L. annua* R. *Seseli* ann. L.

8, **OREOTELIA** Raf. diff. *Seseli*, seeds obovate

sillose striate,—types *O. montana* and *glauca* Raf. Seseli do L. 2 sp.

9, ITASINA R. diff. Seseli, involucre 4ph. unequal nervose, seeds oblong, calix 5dentate subulate—type *I. filifolia* R. Seseli do auct.

10, ÆGOKERAS Raf. diff. Seseli, seeds cylindrical striate—type *A. cespitosa* Raf. Seseli do Sri. fl. greca, leaves cespitose—pinnate, odd leaf trifid decurrent.

11, BAKEROS R. diff. Seseli, seeds ovate gibbose punctate, involucre none, involucels membranose—type *B. elatum* R. Seseli L.

12, EPIKEROS R. diff. Seseli, seeds orbiculate smooth, centre tricostate, involucre none, involucels 1 setaceous—type *E. pyrenaicus* R. Seseli do auct.

13, TURBITHA Raf. diff. Seseli, seeds ovate villose stylose, involucre 1-2ph. subulate, involucels membranose—type *T. emulans* Raf. Seseli turbith L.

14, HIPPATON Raf. Hippomarathrum Dec. Ammoides Ad. diff. Seseli, petals inflexed subirregular, seeds elliptic sulcate smooth, flowers sessile, involucre ovate or spathiform, involucels united into a multifid cup.—types *P. hippomarathrum*, *gummifer*, *tortuosum* R. all Seseli of Authors.

15, SILERIUM Raf. seeds large rounded incurved costate, petals cordate inflexed, involucels none, a central flower in the umbel—Type *S. nodiflorum* Raf. Smyrnum do Allioni, Vitm. Ligusticum do Villars, Angelica panicul. Lam.

16, CHABREA Raf. diff. Selinon, no involucre involucels 1 or 0, petals oblong—Type *Ch. carvifolia* Raf. Selinon do Jaq. t. 72 non *Selinon* L. &c.

17, PINASGELON Raf. diff. Selinon, seeds with

5 membranose wings, involucre setaceous—
—Type *P. monniera* Raf. Selinon do L.

18, *THYSELIMUM* Raf. diff. Selinon, seeds emarginate, involucre polyph. ciliate reflexed large—type *Th. palustre* Raf. Selinon do L.

19, *RAZULIA* Raf. diff. Angelica, seeds ovato-blong, involucre 1 setaceous, involucels 4-5—type *R. alpina* Raf. Angelica razuli Gouan &c.

20, *KARSTHIA* Raf. diff. *Œnanthe*, seeds round striate, involucre oligophyl. involucels polyph. setaceous—type *K. carniolica*, Raf. *Œn. Karstia* Hacquet Vitm. &c.

21, *ANISUM* Ad. diff. Pimpinella, seeds ovate striate hispid invol. 1 or few—Types 1 *A. odoratum* Raf. Pimpin. anisum L. 2 *A. italicum* R. Pimp. peregrina L.

22, *APINELLA* Necker, differ Pimpinella, dioical, seeds round smooth striate, petals lanceol. incurved—type *A. pumila* Raf. put in 2 G. by Lin. Pimpinella dioica, *Seseli pumilum*!

23, *PIMPINELLA* L. the type is *P. saxifraga* with seeds oblong smooth striated, no involucre, petals cordate unequal. Adanson shifted this name to *Poterium* of L.

24, *TOBION* Raf. diff. Pimp. seeds villose, invol. polyph.—type *T. bubonoides* Raf. Pimpin. do Brotex, Sm. *Apium lusitanicum*. Grisl. fol. 2-3pinn. foliolis subrot. obt. villosis crenatis, caule panicul. umbellis villosis—Lusit. Maroco.

25, *STOIBRAX* Raf. diff. Pimpinella, petals incurved emarginate subglobose striate scabrose *omb. oppositiflore*—type *St. dichotomum* R. Pimp. do L.

26, *ANTRISCUS* Pers. diff. Scandix, Myrrhis, seeds ovate rostrate hispid, flowers uniform—type *A. fetidus* Raf. Scandix antriscus L. 3 sp. in Persoon.

27, *MYRRHIS* Ad. Necker, Crantz, Pers.

Dec. type *M.* or *Scandix odorata* L. seeds sulcate angular rostrate smooth.

28, *OSMORHIZA* Raf. Dec. &c. *Uraspermum* Nut. type *O.* vel *Myrrhis dulcis* and other Amer. sp. with oblong angular seeds not sulcate, the *O. berteri* Dec. or *Spermatura* Reich must be a peculiar G. by seeds with silky hairs, no involucre &c.

29, *SCANDIX* L. type *Sc. pecten* with seeds subulate long rostrate.

30, *CONILARIA* Raf. diff. *Cachrys* seeds elliptic not rostrate rough, medial flower male—type—*C. cretica* Raf. *Cachrys* do Lam. *Scandix latifolium* Sm. fl. gr. t. 284.

31, *ACULARIA* Raf. diff. *Scandix*, seeds subulate terete hispid or villose.---type *Ac. trichosperma*, *nodosa*, *australis* &c all *Scandix* L.

32, *POLGIDON* Raf. diff. *Cherophyllum*, petals unequal radiate as in *Scandix*, seeds oblong smooth involucre. 1 to 7---types *P. bulbosum* & *temulum* Raf.---*Cheroph.* do L.

33, *SIKIRA* Raf. diff. *Cheroph.* petals equal inflexed cordate seeds semiterete striate, involucre none, involucels 5-lanceol. reflexed---types *S. hirsuta*, and *aromatica* Raf. *Cheroph.* L.

34, *CROASPILA* Raf. diff. *Cheroph.* petals unequal cordate, seeds fusiform smooth not striate, involucre 1 ph. invol. 5-6 ph. colorate reflexed---types *Cr. aurea*, and *colorata* R. *Cheroph.* L.

35, *HACQUETIA* Necker, diff. *Astrantia*, petals lanceol. seeds round tuberculate striate, involucre 5 phyl. foliose, *scapose fl. polyg.*---type *H. epipactis* Raf. *Astrantia* do L.

36, *ETOXOE* Raf. diff. *Astrantia*, petals inflexed cordate, seeds oval, flat or convex, smooth or muricate, involucre 2-3 ph. involucels 6-12 colorate---type *E. aromatica* Raf, *Astrantia carnio-lica* L. O.

37, **PERFOLISA** Raf. diff. *Buplevrum*, seeds ovate gibbose striate, involucre none, involucels 5ph. unequal---type *P. obtusifolia* Raf. *Buplevrum* rotundifol. L.

38, **TEPSO** Raf. diff. *Buplevrum*, petals oblong bifid. seeds terete smooth, involucre 5ph. equal, involucels 4-5ph. unequal---type *T. odontites* Raf. *Bupl.* do L.

30, **BUPLEVRUM** R. types *B. stellatum*, *petreum*, *rigidum*, *gerardi*, *pyreneum* &c, with seeds commonly oblong striate or costate, invol. 3-5ph. often coadunate.

40, **ZIGARA** Raf. diff. *Bupl.* seeds oblong trigone rugose, involucels setaceous small---type *Z. tenuis* Raf. *Bupl.* do L.

42, **PTERATON** Raf. diff. *Buplevr.* seeds with 5 wings---type *Pt. fragrans* Raf. shrub with many synonyms *B. coriaceum* W. *arborescens* Jaq. *obliq.* Vahl. *gibraltarium* Lam.

43, **TORILIS** Ad. Gaertner, type *Caucalis* or *Tordylium antriscus* of Authors, with seeds compressed muricate, bristles curved, no involucre.

44, **MUITIS** Raf. diff. *Caucalis*, flowers not radiate, involucre none, involucels 3ph. seeds oblong coronate, bristles uncinata---type *M. daucoides* Raf. *Caucalis* do L.

45, **PULLIPES** Raf. diff. *Caucalis*, flowers not radiate, involucre obsolete, involucels 5ph. seeds ovate, bristles verticillate trihamose at end---type *P. leptophylla* R. *Caucalis* do L.

46, **OZOTRIX** Raf. diff. *Caucalis*, petals inflexed cordate subunequal, seeds ovate, bristles ramose---type *O. helvetica* Raf. *Cauc.* do L.

47, **DAUCUS** L. this G. was divided into 7, in my new flora, and many new sp. added. See till 53.

48, **TIRICTA** *daucoides* Raf. n. fl. 777, 8.

49, BABIRON *pusillum*, *divaricatum*, *dichotomum* Raf. new fl. 779 to 782, including *Spermolepis* R. neog. 1825.

50, VISNAGA *vera* and *meoides* Raf. n. fl. 793. Gohoria? Necker.

51, BALLIMON *muricatum*, *maritimum* Raf. n. fl. 784.

52, PELTACTILA Raf. 4 sp. of *Daucus*, n. fl. 795.

53, STAFLINUS *setifolius* and *crinitus* Raf. n. fl. 796.

54, MESODISCUS Raf. n. fl. 769, N. G. dioical, 2 types M. *simplex*, 770, *proliferus* 771.

55, SATARIA R. n. fl. 772, type *S. linearis* R. *Peucedanum ternatum* Nut.

56, KERASKOMION R. n. fl. 774, type *K. bulbiferum*, *Cicuta* L.

57, ENTASIKON R. n. fl. 797, 2 types E. *tenuifolium* and *tuberosum* R. blended in *Athamanta*, *Phellandrium*, *Trepocarpus*!

58, UPOPION R. n. fl. 800, G. shuffled in *Thapsia*, *Cnidium*, *Thaspium*, *Smyrnum*! 5 sp. described Up. *pinnatum*, *lobatum*, *trifoliatum*, *heterophyllum*, *cordatum*, n. fl. till 805.

59, PHAIOSPERMA R. n. fl. 808, 2 sp. *trifida*, *pulverulenta*.

60, PACHILOMA R. n. fl. 811, P. *verticillata* Raf. *Tordyl. Americanum* Nut.

61, ORIMARIA *filiformis* Raf. atl. j. near *Buplevrum*, page 149.

62, PTILIMNIUM Raf. neog. 1825 *Discopleura* Dec. 1830.

63, LOMATIUM *athamantoides* Raf. 1818, *Cogsvellia villosa* Sprengel, *Ferula feniculacea*, N. Dec.

64, ADORIUM *crassifolium* Raf. 1820 (*Marathrum* 1819 non Kunth) is *Seseli divaricatum* Pursh.

65, *CYMOPTERUS acaulis* or *glomeratus* Raf. Dec. Thapsia and Selinum N. O.

66, *SCADIASIS* Raf. 1820, types *Ferula villosa* Auct. and *Angelica triquinata*.

67, *STREBLANTHUS* Raf. 1833 and new fl. 813, near *Eryngium*, several sp. *auriculatus*, *heterophylus*, *humilis* &c.

68, *KLONION* Raf. n. fl. 817, near *Eryngium*, 2 types *Kl. gracile*, *tenuifolium*.

69, *OSMATON* Raf. diff. *Bubon*, petals equal inflexed cordate, seeds ovate minute 5 rough ribs, invol. 6ph. subulate, involucels 2-3ph. elongate—type *O. aromaticum* Raf. *Bubon* do W.

70, *DASISPERMUM* Necker diff. *Conium*, umbels radiate petals equal lanceol. involute, seeds bristly, invol. 5ph. unequal, involucels polyph. crenate—Type *D. maritimum* Raf. *Conium rigens* L. shrub—Necker has wrongly stated that sp. of *Ammi*, *Scandix* and *Tordylium* must be united to his Genus, they all are peculiar Genera.

71, *ABIOTON* Raf. diff. *Conium*, petals ovate flat, seeds muricate, involucels polyph. concave.—type *A. africanum* Raf. *Conium* do L.

72, *AGEOMORON* Raf. diff. *Conium*, seeds radiate spinose! type *A. royeri* R. *Con.* do L.

73, *ANGINON* Raf. diff. *Conium*. seeds rugose angular striate, involucels 3-5ph. short, Shrub—type *A. rugosum* Raf. *Con.* do Thunb. *suffruticosum* Berg. *Vitm.*

74, *TIMORON* Raf. diff. *Conium*, seeds oblong compressed deeply sulcate tuberculate—type *T. dichotomum* R. *Conium* do Desf.

75, *OREOSELIS* Raf. *Oreoselinon* Ad. *Killingia* Ad. *Supl.* too near *Kylingia*, diff. *Athamantha*, seeds smooth ovate bialate 3costate, petals inflexed unequal, invol. polyph.—types 1 *O. di-*

varicata Raf. Atham. oreoselinum L. 2 *O. cerveraria* R. Ath. do L. 3 *O. pisana* Raf. Ath. do Savi &c.

76, **ATHAMANTHA** L. the types *A. libanotis*, *cretensis*, *annua* &c, with hairy oblong seeds, invol. often obsolete &c: the first is G. Dela of Ad. subgenus?

77, **GOLATTA** Raf. diff. Athamanta, petals equal ovate inflexed, seeds clavate smooth, no wings nor ribs, invol. polyph. laciniate undulate, involucels 3-5ph.—type *G. carniolica* Raf. Atham. golatta Hacq. Vitm.

78, **KREIDION** Raf. diff. Athamanta, seeds with 5 membranose wings---type *Kr. chinensis* R. Ath. do L.

79, **DARDANIS** Raf. diff. Peucedanum, petals inflexed, styles persistent, invol. none, involucels polyph. setaceous—type *D. sibirica* Raf. Peuced. do W.

80, **APSEUDES** Raf. diff. Peuced. petals equal, seeds oblong, flat, with membranose margins, tristriate, involucre obsolete, involucels 3-4ph—type *A. caspica* Raf. Peuced. redivivum Pallas, Vitm.

81, **SILAUS** Raf. diff. Peuced. petals inflexed at tip, seeds not winged, 4sulcate, 3costate, invol. 0-1, involucels polyph—type *S. pratensis* Raf. Peuced. silaus L. put in G. Seseli or Ligusticum by others; in Phelandrium by Adanson!

82, **APOLGUSA** Raf. diff. Cachrys seeds sulcate warty or muricate—types *A. taurica* and *cretica* R. Cachrys do W. Lam.

83, **AGASULIS** Raf. diff. Ferula, petals oblong subinflexed, seeds compressed subgibbose smooth 5striate, involucre none, involucels scaly fuscate

—type *A. tingitana* Raf. Ferula do L. is Fer. sibirica without invol. of same Genus?

84, ARPITIUM Necker, diff. Laserpitium, ombel subradiate, central fl. male, invol. and involucels monoph. seeds subulate winged—types the Laserp. aquilegif? halleri? &c.

85, LASESPITIUM L. types L. latif. silaifol. prutenicum, dauricum, siler, simplex, ferulaceum &c, with oblong winged seeds, fl. all fertile, inv. and involucels polyph. petals inflexed &c.

86, MASPETON Raf. diff. Laserp. invol. colored reflexed, involucels filiiform, petals flat spreading—type *M. chironium* Raf. Laserp. do L.

87, GALBANON Ad. Galbanophorum Neck. types Bubon macedonicum and galbanon L. or *G. officinale* Raf.

88, ALACOSPERMA Necker, Deringa Ad (since employed) Cyrtospermum Raf. Cryptotenidia Dec. type *Sison canadense* L. put in 4 or 5 Genera and 4 names as a Genus!

89, PRIONITIS Ad. diff. Sium, seeds elliptic striate invol. and involucels polyph. slender elongate—type *Pr. falcaria* R. Sium do L.

90, SAGAPENON Raf. Danae Allioni non Moench, diff. Ligusticum, petals ovate caudate, seeds smooth not striate but with green stripes, involucre 8ph. unequal linear aristate, involucels 3phyl—type *S. aquilegifol.* R. Ligust. do W. Danae do Allioni.

91, MAGDARIS Raf. diff. Ligust. petals cordate inflexed, seeds large not acum. costate, involucre monophyl. involucels obsolete—type *M. nodiflora* Raf. Ligust. do Villars, Vitm. Smyrnum do Allioni—*Angelica paniculata* Lam.

92, KATAPSUXIS Raf. diff. Ligust. petals inflexed, seeds ovate sulcate, involucre none, in-

yo ucels polyph. linear—type *K. cicutefolia* R. Laserp. do Villars, flowers white.

93, *LIGUSTICUM* L. types *L. levisticum*, scoticum, balearicum, peregrinum, &c, with yellow flowers, seeds ovate acum. 5costate, inv. and involucels polyph.

94, *NABADIUM* Raf. diff. Ligust. fl. white, involucre none, involucels dimidiate, seeds tricostate—type *N. pyrenaicum* Raf. Ligust. do L.

95, *TROPENTIS* Raf. (5 keels) diff. Ligust. petals lanceol. involute entire carinate white, seeds trigone, involucre 2-3ph. laciniate, involucels polyph. linear—type *Tr. retzi* Raf. Lig. do Vitm. peloponense Retz non L. a second sp. *Tr. sibiricum* is figured by Gmelin 1 t. 45.

96, *BIROSTULA* Raf. diff. Scandix, seeds scabrous with very long beaks, involucre 8ph. pinnatifid—*B. pinnatifida* Raf. Scandix do Vent.

97, *BLEPHIXIS* Raf. diff. Cherophyllum, petals semibifid, obcordate, involucre none, involucels 7ph. reflexed ciliate—type *Bl. unifolia* Raf. Cher. minimum Vandelli, Vitm.

98, *MEONITIS* Raf. Meon Ad. Meum Mench Neck. Pers. diff. Aethusa fl. polyg. petals concave, equal, end inflexed, seeds acute—type *M. chloranthes* Raf. Aethusa meum L. *Mutellina* a subg..

99, *ANIDRUM* Neck. Bifora Hofm. Dec. diff. Coriandrum, fl. not radiate, seeds globose geminate, involucels none—*A. didymum* Raf. Cor. testiculat. L.

100, *OXIPOLIS* Raf. neog. 1825, Archemora Dec. 1830, calix entire, petals acum. anthers adnate or lateral, seeds compressed 3 ribs, edges marginate or winged, both involucre subulate often deciduous—this G. included many American Plants shuffled in the G. Angelica, Sium,

Sison, Pastinaca, Oenanthe &c, that require yet to be studied, and perhaps include more than one G. the types are the 4 Siums of Elliot, Oenanthe filiformis is Tiedemanianteretif. Dec. probably a Genus, the others are put in Arche-mora by Dec.

Such are the numerous Genera blended by Linneus and often yet Decandole in this tribe of plants, by not attending to definite exclusive characters quite plain, instead of mere habit and minute organs. The whole labors of Decandole must be revised, and the essential forms of the common and partial involucre no longer neglected, since they are as important as those of the perianthe of compound flowers, being both bracts assuming a floral importance, when the flowers are so much alike.

It is the same for the bracteal glumes of Grasses that give generic characters, and wherever the bracts offer more diversities than the uniform flowers.

Some G. of Decandole have received improper compound names, and must be changed, such are

Agathorhiza Raf. Arch-angelica Dec.

Paxiactes Raf. Tordyliopsis Dec.

Melanaton Raf. Melano-Selinon Dec.

Those are yet some G. of Adanson and Necker requiring to be verified, as they omitted (as usual with them) to state their specific types. Such are

Tragoselinum Ad rather Tragolium Raf.

Apsadus Ad. near Echinophora, perhaps Arctopus.

Celeri and *Foeniculum* Ad. for our Cellery and Fennel, appear good.

Bradlea Neck. (not of Adanson which is Ga-

lactia Br.) a G. out of Laserpitium, if good substitute *Alsaton*..

Mauchartia N. out of Sium.

Allinum N. out of Selinon.

11. On the 5 Genera TORREYA &c.

Arnott in describing lately another *Torreya*, thought it was only a 2d, not being aware of 3 others; but we have 5 *TORREYAS*, standing in the following order of time.

1. *Torreya* Raf. 1817 for the Diandrous Cyperus—2. *Torreya* Raf. 1818 which is the *Synandra* of Nuttal 1818.

3, *Torreya* Sprengel 1821, near *Clerodendron*.

4, *Torreya* Eaton 1833, for my *Nuttalia*, the *Bartonia* of Pursh not of Willdenow.

5. *Torreya* Arnott 1838, coniferous tree near *Podocarpus*.

Such ambiguity and exuberance of synonymy happens by botanists not consulting the works of improvers like myself. Torrey himself would not admit of my *Torreya*, because he was deceived like many others, in not deeming the staminal disparities Generic in Grasses and Cyperoides; but this opinion is absurd, since the stamens and pistils form the main floral organs of these plants, the glumes being mere bracts, therefore of secondary importance. It was to indulge him that I made my 2d *Torreya*, but Nuttal happened to publish it as *Synandra* the same year.

In my reform of Grasses I have established Genera with all the sp. with 1, 2, 4, 5, 6 stamens instead of 3 the usual member: nay I have like Jussieu, based thereon my families or clusters of Genera. Those who opine otherwise, must at least deem them subgenera (protem)

and the names given them must not be repeated. I dedicated this *Torreya* to my young friend as early as 1817 in my reviews of American Genera, as he was very partial to the Cyperoides, and in fact he has since produced a good monograph of this tribe, where however he denies the staminal importance! my G. is therefore appropriate, correct and anterior to all, it will include all the sp. of *Cyperus* with 2 stamens only

2. That of Sprengel is united to *Clerodendron* by Arnott, but rather improperly, being nearer *Salpianthus*, and having 5 stamens instead of 4 &c. I presume it will be found peculiar, and must form a Genus, that I propose to call *Patulix*.

3. That of Eaton is based on a mistake, since it is applied to my previous *Nuttalia* of Hooker, which was the *Calirhoe* Nut. (changed because there is a *Calirhoe* in Zoology) since united to *Malva* by Torrey, I do not assent to this, because this G. has a simple calix, and is as near *Sida* as *Malva*, I have proposed for it the name of *Aigosplen*. As to my original *Nuttalia* it is very good, and it is absurd to call it *Bartonia* while a previous *Bartonia* has the priority—but such are the ambiguity and perplexity thrown on names, by not attending in all cases to priority.

4. It is obvious therefore that the last *Torreya* of Arnott, has no chance to stand, even if it be a real Genus, of which there may be some doubts: the minute description of Arnott appearing to prove it at most a subg. of *Podocarpus*, differing by subsesile fruits; as to the anatomical ruminant albumen, it is no more a generic character than the inside of the eggs of Birds. But whether a G. or subg. the name

must be changed and I propose *Tumion* a Grecian name of Dioscorides for the *Taxus*.

Therefore these 5 Genera stand thus

1. *Torreyia* Raf. 1817 (my 2d *Synandra* N.
3. *Torreyia* Spr.—is *Patulix* Raf.
4. *Torreyia* Eat. is *Nuttalia* Raf.
5. *Torreyia* Arn. is *Tumion* Raf.

12. *On the 3 Genera of Cephalopodes,*
OCYTHOE, TODARUS and ANISOCTUS.

My G. *Ocythoe* altho' adopted by Leach and others, is yet a problematical animal for many, and I find even in late Journals discussions on its being or not the animal of the *Argonauta* shell—it would be wiser to ask me (the original discoverer) for my opinion or experience—I once wrote to Leach about it, but it was during his sickness, and I believe he omitted to publish my remarks, which were at variance with his. It is time therefore to settle this question, or rather throw new doubts on it perhaps; my recollections of my *Ocythoe* are quite vivid as a very remarkable animal.

I omitted in my short account of the Genus (in my precis of 1814) to state the size of this animal, and thence have originated many wrong surmises. I did not state that it was the animal of the *Argonauta* since I never dreamt of such a thing, knowing the *Todarus* as the animal often found in it, (in Sicily,) while the *Ocythoe* never could dwell in it, *being larger than a man's head, and weighing 15 pounds.*

Such was my *Ocythoe tuberculata* type of the genus and certainly not the same as that of Leach: this animal was brought to me alive in 1811 as a rare kind of *Octopus*, it was ferocious endeavoring to bite and wound the holder, although out of water for one hour: *it changed*

color like a Chameleon from white to red in its angry and dying moments. It was killed as usual with the Octopus by turning its head, a process well known to the Fishermen of the Mediterranean: else they will live long out of the water and are dangerous till dead. I did eat this *Ocythoe* which afforded a meal for many, and it was as good as usual with the Octopus. The Fishermen never told me that it dwelt in the Argonauta, while all deemed their *Todarua* the animal of it, calling the shell and animal by the same name, while the *Ocythoe* was called *Pulpu*.

I do therefore aver that my *Ocythoe* is not the animal of the Argonauta, and could never be, by its size and thick spherical body, unfit even to enter it.

Not so with the *Todarua*, which was merely indicated in my precis as the *Loligo todarus*; but I have since deemed it a Genus, called *Todarua argo*, as it differs from *Loligo* by the 2 superior Antenopes having a cuneiform wing or broad membrane, yet it has the body of *Loligo*, with 2 posterior round wings, and an internal Aploste, linear subulate thin and flexible.

This animal is exactly of the size and flexible shape suitable to enter the Argonauta and dwell therein: although I never was sure that it was the real producer of the shell—the fishermen asserted it, it is met floating with it and using its 2 winged feet as sails, I had it caught and brought to me with its black eggs filling the bottom of the shell—and yet I never was positive as to being the real mysterious Argonauta. I was once inclined to believe it, but the animal was so different from that described by Montford and others, its body was so unlike the fluted shell, that I always had great doubts.

It is well known that many shells of *Argonauta* are blackened in their inner apex: this happens by the black eggs laying there, although the *Todarus* has not the ink bag of the real *Loligos*, yet it emits a kind of dark liquor and its eggs are blackened by it. I incline to believe that it uses the shell as a home, boat and nest, at the time of laying eggs, and changes the shell yearly. It has no kind of adhesion to it, and may be entirely withdrawn with ease.

I give here the figures of both *Ocythoe* and *Todarus argo*. This last is fulvous grey above, white beneath, body oblong smooth, 2 rows of alternate cupules on the antenopes that are shorter than body, but promuscides as long without cupules.

A third Genus medial between these two was found by me in the Atlantic Ocean in 1815, and I procured 2 sp. of it, both pelagic, floating at the surface. I called it *Canopus* then, but this name being employed I have changed it to *Anisoctus* mg 8 unequal.

G. ANISOCTUS Raf. differing from *Octopus* by body as *Loligo* with a very small subulate aploste (internal bone) but 8 unequal Antenopes, as in *Octopus*.

1. *Anisoctus punctatus* Raf. L. body whitish dotted of brown, Antenopes cylindrical coiled at the end, 2 longer, 2 shorter, cupules alternate—5 inches long.

2. *Anisoctus bicolor* Raf. body bay above, white beneath, antenopes trigone acute nearly equal cupules alternate—7 inches long.

Figure 50, *Ocythoe tuberculata*.

Figure 51, *Todarus argo*.

Fig. 52, 53, *Anisoctus punctatus* and *bicolor*.

13. *DITAXOPUS PARADOXUS*, a new Fossil G.
of Cephalopodes, discovered 1819—Figure
54 and 55, Shell and Animal.

This was one of my most remarkable discovery in fossil Zoology, among the Wasioto hills of Central Kentucky. While breaking many fossiliferous flints of that Region, I fell upon one having in the centre, a perfect hollow mould of a Univalve shell, shaped between *Haliotis* and *Carinaria*, and containing inside a delicate flinty Animal almost perfect, of the most extraordinary shape. It was however evidently a Cephalopode, since the cupules were conspicuous on the Antenopes; but these were not around the head, but in two rows on an elongation of the head or body, somewhat as in the *Cirrhipedes* or *Terebratules* although not articulated as in these. It is difficult to convey a proper idea of this strange animal, but the figures will explain it better.

I carefully put up the fragments of the Stones together, and presented this unique specimen (worth 50 dollars) to my friend John D. Clifford for his Museum, where it was preserved, and is perhaps yet in this collection, (since gone thro' 2 or 3 hands) if not stolen or broken. I sent descriptions and figures of it to Cuvier and Brongniart, but have not heard if they published them.

This discovery is of double importance, because it links with the rare G. *Carinaria*, of which the animal is as mysterious as that of the *Argonauta*, and may lead us to detect a new order of the Cephalopodes class, distinguished by a single elongate branched antenope. I gave it the name of *Ditaxopus*, meaning 2 rows of feet.

Description, Shell univalve ovate patent smooth with a small obtuse knob of spire at base, and an obtuse keel behind,—Animal, body amorphous in the fossil state, ending in a long curved limb with above about 6 pairs of antenopes in 2 rows, opposite curved or coiled. the upper longer, all obtuse cylindrical with 2 rows of alternate cupules or tubercles inside.

Found near Estil, Gritstone hills of Central Kentucky imbeded in fragments of flint or chert. Size over one inch. The shell was destroyed; the fossil being of the very oldest formation.

14. *The new Quadrupeds of North America, described in my Atlantic Journal of 1832.*

I propose to recall to the memory of the learned the discoveries recorded in that work, which contains 160 original articles or essays on all the historical and natural sciences. And I begin with the new Quadrupeds.

1. *Felis dorsalis* Raf. a new sp. or var. of Jaguar shot in lat. 42d near Lake Erie, and account of 2 Mexican Jaguars shot in Kentucky lat. 38d—see page 18.

2, Five varieties of Cougar, page 19.

3, Domestic animals of the American Nations before Columbus, page 57.

4, Five new moles of North America, *Talpa cupreatá* (1814) *Spalax vittata*, *Astromycter prasinatus*, *Talpa macrina*, *Talpa sericea*, page 61.—figured here figures 56 to 60.

5, *Lutra concolor* R. Asiatic, p. 62.

6, *Felis macrura* R. and 2 var. of Cougars, p. 62.

7, *Odocoileus speleus* R. fossil animal p. 109 with a figure of the teeth.

8, Remarks on the supposed *Rhinoceroïdes* a fabulous fossil animal page 110.

9, *Sorex dicrurus* R. page 175—figure here 61.

15. *Etymology of the Origon Mountains.*

These Mountains forming the back bone of N. America and giving rise to a dozen mighty Rivers, had been absurdly called Rocky Mts. Stony Mts. Chepewyan Mts. The original name of *Origon* written Oregon by some, appears now to prevail, and it is right it should be so, as they form geological and botanical regions, and will hereafter give name to a Nation perhaps.

But all are at a loss to know the meaning of that name, some deeming it was derived from the R. Origon or Columbia, called also the great River of the West; but *Origon* has no such meaning in any language that I know of: while we find the mountains called *Origon* and *Oligon* in the Linapi dialects and traditions, and this name derives from *Ori-gonunk* and *Oligonung*, both meaning the Hollow Mountains, a name appropriated not so much for their valleys as for the hollow noises and explosions so often heard there—*Origon* means then *hollow-sound Mountains*. This name must be pronounced *Horeegon* in English.

16. HISTORICAL and ETHNOGRAPHICAL PALINGENESY &c.

This may be the title of a work of mine, contemplated for many years, but delayed because it will find but few readers, although it might be *quite equal* to the works of Cuvier and Champollion on the palingenesy of animals and Egyp-

tian Antiquities; but such are intended for the most learned men, who do not easily admit of rivals.

I have laid the foundation of it in my *History of the American Nations*, *Memoirs on Black Nations*, and in my Atlantic Journal, where they are yet dormant, and I ask who has perceived them? the learned Ethnographers and Philologists are so few that the query is not useless.

Palingenesy means restoration to life or existence or knowledge. The modern science of *Paleontology* is chiefly a Zoological Palingenesy. Cuvier either created or greatly improved this science; he took bones of extinct animals and restored them out of many or even a few! *I take scattered words of extinct Nations and Languages, and out of a few or any number, I restore them to our historical knowledge.* Therefore I imitate or rather emulate Cuvier; he has been greatly praised! shall I be?

I lay claim to the evolution of a new branch of historical knowledge by this process, which I have applied to 100 lost Nations of both Hemispheres, having already published the results for the *Tainos* of Hayti, and the *Gagos* or old Japanese, as samples for the 2 Hemispheres: besides the *Obri* or ancient Hebrew. But my researches on the old Nations of both Americas, Europe, Asia, Polynesia and Africa, exceed whatever may be surmised on the subject, and shall be partly unfolded in this collection. I discovered this new branch of science in 1828 and published the principles of it in 1832.

Give me but a single *genuine word* of an ancient or extinct Language, and I can find out its analogies with all others. Give me 2 or 3 or a few, and I can trace its alliances. Give me several, and all its origins, parentage, filiation, claims,

affinities, peculiarities &c can be traced. The larger the Vocabulary collected out of any source the better can we proceed in the investigation—and the whole leads to know the migrations, contests, habits, manners, civilization, religion &c of the extinct Nation and cluster of human beings of Yore : which knowledge may be confirmed or increased by the study of their Antiquities, Monuments, traditions and annals of extinct Nations.

I directed at first my attention to the old American Nations; but I have since been led to embrace the whole of mankind, and have collected immense materials in many books (nearly 50) called TELLUS or *the earth and mankind*: shall I ever publish the whole? I can hardly tell; but they exist, and may be embodied after me by any one inspired by the genius of a Cuvier . . . or mine!

I must mention in order to excite the curiosity if not the surprize of the *learned few*, that even for European extinct Nations, I shall be able to restore partly our knowledge of the ancient CANTES, TURES, BETICANS and LUSITANIANS of Spain, the LIGURES, OSCANS, ETRUSCANS, APULIANS, VENETES, LUCANIANS of Italy, the CYRNEANS of Corsica, the SARDAS of Sardinia, CYCLOPS and SICANIANS of Sicily, CRETANS of Creta, HYANTES PELAGIANS, THRACIANS of Greece, besides the *Pannonians, Aquitans, Daciens, Sarmatians* and 20 other extinct Nations of Europe.

But these labors of mine, may be like many others, unnoticed, unvalued, unrewarded . . . until too late

17. *Monument of the ATLANTES, with an inscription 4000 years old—with figures 62 to 68.*

I have been favored by John Howard Payne Esq. of New York, with the loan of a most interesting engraving of this Monument given him by Admiral Sir Sidney Smith, who had it engraved at his own expense soon after the discovery. I shall endeavor to give an account of it, not having seen any in print.

It consists of two parts, an ancient slab with a very curious Atlantic or Phenician Inscription on it, and the fac simile of a latin inscription on the edge of it: both found in digging a well at Medina in the center of the Island of Malta, on the top of a hill.

The latin inscription is in large uncial letters old, rough and unequal, but quite legible—as follows:

T. SEMPRON. COS. HOC. MAGNI. ATHLANTIS. ET
SOVBMERSAE. ATHLANTIDIS. RELIQUIOM. VEDIT.
EIDEMQ. SERVARI. COERAVIT. AN. VR. DXXXVI.
OLYMP. CXL. AN. III.

From which it appears that the original inscription had been already found by the consul Tiberius Sempronius in the 536th year of Rome, or third year of 140th Olympiad, deemed then a relic of the submerged Atlantis, and buried again to preserve it as a curious relic even so long ago, being 217 years before our Era.

This ATLANTIC inscription which is deemed *Phenician* by Sir S. Smith, and at least as old as the deluge of Ogyges 2298 years bef. Chr. is of the most extraordinary kind, with peculiar shape. emblems, letters, ornaments &c. It was copied by George Grouguet, and no one appears to have

been able to read it or explain it, although many of the letters are not unsimilar to the Pelagic, Etruscan and Cantabrian; but the word **ATLAS** at the head of it in very large letters two inches long, has been made out: yet even the letter taken for **T**. is much more like our **b**, which reversed becomes **d**, and the **S** is rather **Z**, therefore **ADLAZ**. This word however standing in a tablet below the head, shows how the writing must be read, which otherwise would have been puzzling; and is confirmed by the strange animal near it, half *Goat* before and half *Seal* behind, that stands upright on the left corner.

This Slab or flat Stone was pyramidal, the base truncate 60 centimetres wide (about 2 feet,) nearly double in length with the apex rounded: the engraving is reduced to one fourth of length, or 1-16th of total size. The surface may be divided in 5 compartments, the base, the two sides, the apex, and the central inscription in a large parallelogram divided in 18 perpendicular lines including 420 letters or characters without any separation of words, but with the large tablet of **ADLAZ** at the top, half sunk in the upper lines.

To describe properly the objects and emblems surrounding the inscription would be difficult, they may be best understood at a glance by inspection; yet I shall try to convey a slight idea of them.

1. The bottom is formed by a pretty border of arabesk, meant to represent coiling waves, with a triangular ornament beneath each.

2. On each side there is a Dolphin with head downwards, and above it an anchor of rude primitive form with a shaft, a side handle and two prongs quite reversed—the Dolphins are pretty much as usual in antique designs, but with a big head with 2 fins, a beaked mouth, a scaly belly,

a flexuose body, and a wide tail quite trilobe, each lobe with 3 prongs so as to have 9 points.

3. The emblems of the apex are numerous and intricate, there are sideways 2 other Dolphins similar to the lateral, but with the head upwards and spouting water. In the centre stands a Trident with the handle hooked, and the 3 prongs downwards, the middle with an arrow head, the sides have only half head; at the apex stand two large human eyes, from which protrude downwards between the Trident and Dolphins, two nameless objects, perhaps hatchets with a spiral handle (they are like some weapons of the Tulans or Atlantes in the Sculptures of Otolum or Palenque in Tabasco). At the bottom standing upon the ADLAZ tablet are two emblematical Animals, on the right a perfect Crab, on the left the Monster half Goat, half Seal. While intermixt with all these, are 7 Hexagon Stars, each with a letter or character, and the smallest at the very apex. These appear to represent the Great Bear Constellation and Polar Star: the sign affixed to this is exactly like our cypher 2! while the other Stars have the signs of A, M, or akin to 8, E, F, and Greek Digama: which may stand for numbers 1 to 7.

As all these Emblems, the Waves, Dolphins, Anchors, Trident, Eyes, Stars, Crab &c. appear to be Nautical Objects, it is very probable that they apply and allude to a maritime Event or Navigation by a Neptune Atlas; but I do not perceive the least trace or allusion to a flood, or the destruction of the Atlantis.

Inscription. This is of course the paramount portion of this Monument, and if it *could be read in any language* would reveal the import of the

whole. I think that nearly all the letters could be made out with the help of cognate alphabets; but even then, we may not know the Language, which is probably not Phenician, but ATLANTIC or LYBIAN.

Of its great antiquity there can be no doubt; but the date will be very uncertain, since it does not appear to agree with any in the position of letters, not even the Chinese, being the reverse of it, since the letters are written alternatively *from bottom to top* in the first line to the right, with a capital reversed E at the very beginning in a monogram tablet, and the 2d line *from top to bottom* as in Chinese, and so on alternately, each line being divided by a *plain stroke*, interrupted at the top or bottom, where the reading is to continue: and the last line not reaching quite the bottom ends by a zigzag dash.

As to the number and shape of the characters, they could be reckoned, but appear to exceed the usual small number of Oriental and Pelagic Alphabets. Some are so similar to them as to be easily known, although still under a peculiar modification of slanting form. Such are A, E, O, S, X, P, L, I, besides some near b, or d, m, n, t, f, g, in the Greek form at least; 4 are quite like our numerals 2, 4, 6, 8, one is the human eye, another unlike any thing unless a rude imitation of a plough or shell, or door, perhaps the Phenician Œ, another like a bow and arrow . . . therefore all primitive and evidently akin to the oldest alphabets of the Mediterranean; but perhaps not so much with the Phenician and Demotic Egyptian, than with the oldest Pelagic, the Etruscan or Tyrrhenian, and the oldest alphabets of Spain, the Eskuara or Cantabrian, Betican &c—but above all I deem it has

greater analogies still with the Lybian alphabets (the real Atlantes) of which we know so little, except by inscriptions at Cyrene, and in Barbary; connected partly with those of Mokata near Mt. Sinai, of Hauran, Idumea, Arabia, Bactria and Western India (see Tod travels) all deemed so ancient as to be illegible! although *I think otherwise*, and could decypher them if it was worth while to take so much pains without thanks nor reward. Cruttenden found in 1836 the Hamyaric inscriptions of South Arabia, to be nearly similar in a square form.

Meantime my opinion on this valuable inscription and monument (perhaps one of the oldest in existence) is that it may be written in the letters and language of the LYBIAN ATLANTES, under the dynasty of Atlas . . . who were connected with the primitive Atlantes from Turan and Hind to Marocco and Spain; and it probably relates to one of the nautical expeditions of some Atlas their king, rather than the Atlantic submersion: if it could be proved to apply to the discovery of America or Great Atlantis by a Neptunian or Lybian Atlas . . . it would be still more valuable; but if it alludes to Malta alone. it is of less importance.

I wish I could have copied the whole; but have only transcribed the following figures out of it.

Figure 62, shape of the Atlantic Anchors.

63, the curious weapons out of the Eyes.

64, the monstrous Goat-Seal, or Siren-Goat, with 2 legs and half Goat in front. This probably was the national emblem of the *Pelagic-atlantic* tribes, as the Goat was of the *Arcadian-Pelagians*, the Seal or Phoca of Neptunian

Tribes—the other emblem of the Crab is akin to the Lobster or *Ligusta* of Italy emblem of the Ligurians or Western Illyrians, spread on the shores from Liguria to Catalonia in Spain.

65, The Constellation of 7 Stars including the Polar with their numbers.

66, The Tablet of ATLAS or ADLAZ.

67, Letters of the Alphabet akin to the Phœnician or Greek and Pelagian.

68, Letters that cannot be properly ascertained as yet, but could by the study of the cognate Signs in other Alphabets.

18. THE GRAPHIC SYSTEMS of the Ancient American and Chinese Nations.

In my letters to Champolion (1832) in my Atlantic Journal, I proved that the TULAS or Atlantes of Central America, had a peculiar alphabetical system, and wrote words by combining the characters as in our Anagrams: and in the tabular figures I compared them with the 2 Lybian Alphabets already ascertained.

This subject has since been pursued and enlarged in my Mpt. Work on the Ancient Graphic Systems, with great many figures of comparative signs and alphabets. The discoveries lately made or surmised on American Antiquities are wonderful, and we must not despair to trace at last the Ancient History of both Americas by Monuments, Languages and other means.

One of these means is found in the similarity of *Graphic Systems*, or mode of communicating and preserving ideas; which in America was seldom done by Alphabetical Writing; but chiefly by Symbolic Signs or Characters, having usually a physical form or else a colateral appli-

cation, pretty much as in the oldest Chinese characters called KU-UEN, of which 147 are given in the plates 3 to 8 of *Memoirs on the Chinese* Vol. I, being often abridged delineations of objects.

This appears to have been the oldest primitive mode of conveying ideas before the invention of Alphabets, and has been used by many nations of Yore from China to the Atlas, and is said to be still in use in Eastern Siberia by several nations (so says Humboldt but he gave not the figures of these Signs;) while in America it has been and is yet in use from Alaska to Canada, Florida and Mexico, being most improved in the Mexican Regions, where they assumed the shape of abridged paintings. It was also scattered in many parts of South America, although but faintly recorded. But the Muycas, Panos and Incas had something similar; and even the most rude tribes have always had some means to trace faint delineations of objects to serve in conveying their ideas. Whence the singular painted inscriptions found all over South America.

I do not mean to enter here upon the Mexican Signs, which are very numerous and often unlike others; but I mean to notice chiefly those of North America, used by the nations deemed *Savages* (although they were half civilized Hunters at their discovery) as I have collected a great variety of them, evidently akin to the Asiatic cognate Signs.

Of these I have now 60 used by the Southern or Floridian tribes of Louisiana to Florida, based upon their language of Signs—40 used by the Ozages and Arkanzas, based on the same—74 used by the Linapian (Delaware and akin)

tribes in their WALLAMOLUM or Records—besides 30 simple Signs that can be traced out of the NEOBAGUN or Delineation of the Chipwas or Ninniwas a branch of the last. Therefore over 200 simple signs (some as synonymous) each applying to one or several words, as in the KU-UN of China, and the Egyptian Symbols.

As early as 1800 Dunbar noticed at Natchez the singular manual language of Signs of the Indians of Louisiana, and in 1804 he published an account of it in the 6th vol. of the American Philos. transactions of Philadelphia: wherein he stated how nations and tribes speaking different languages could converse by signs made with the hands, as do the Chinese yet partly by tracing figures in the air when equivocal words occur. But Dunbar did not give the *Graphic Signs* corresponding to these *Manual Signs*: these I have partly procured, and found them quite accordant, nay often identical with the Chinese, known to be 5000 years old in China!

For an account of the WALLAM-OLUW, I refer to the first volume of my American Nations, & the translation of Historical Records—for the NEOBAGUN, I refer to Tanner and James, also Schoolcraft confirming them, and who has lately published the Legends of the Ninniwas, proving that there are Oral Traditions and Tales quite current among these Tribes.

Dunbar stated that almost all the nations dwelling between the Mississippi and Pacific Ocean, understood and used this *Manual Language of Signs*, although their respective *oral tongues* were frequently unknown to each other. Just like the neighbors of the Chinese understand the 300 original characters and roots of

language of the Chinese, as stated by Sir Geo. Staunton. And by the combination or abbreviation of 2 Signs, compound ideas are expressed. Thus *Heart* is a Genus of ideas and Graphic Signs, and peculiar added marks express all the passions, affections and sentiments of the Heart. While in America *Water* is a genus, to which is referred *Rain, Snow, Ice, Hail, Dew &c*, that are species with a more or less complex Sign, retaining the sign of the Genus, as the radical sign.

Thus both the Manual sign and the Graphic Sign of *Rain*, are formed by those of Water & Dripping—of *Hail* by those of Ice and Egg, &c the manual Signs are described by Dunbar, here I mean to notice and figure the *Graphic Signs* chiefly, which must be done in plates and figures as follows—

Figures 69 to 128, the 60 characters or Graphic Signs of the Western Indians of Louisiana &c, corresponding to their Manual Signs—69 Sun, 70 Moon—71 Earth, 72 Air, 73 Water, 74 Fire—75 Heat, 76 cold—77 Stone, 78 Hard Stone or Metal, 79 Egg, 80 Cloud, 81 Snow, 82 Rain, 83 Ice, 84 Hail, 85 Frost—Animals, 86 Bird, 87 Fowl, 88 Turkey, 89 Duck, 90 Fish, 91 Deer, 92 Horse—93 Male, 94 Female, 95 Man, 96 Woman, 97 Child, Boy and Girl, 98 Son,—99 I, 100 Mine. 101 Thee, you, 102 He, She, Another, 103 many, much—Verbs, 104 Give, Giving, 105 Go, 106 Come, 107 Swim, 108 Know, 109 March, Travel—110 Fear, 111 Hurricane, 112 Night, Sleep, 113 Smoke, 114 Clear, 115 Thunder, 116 Lightning, 117 Bow, 118 Cattle, 119 Now, 120 Yes, 121 No, None, 122 House, 123 Hair, 124 End, Done, 125 Spring, 126 White, 127 Black, 128 Big, Large.

Figures 129 to 168, the 40 Manual and Graphic Signs of the Ozages and Arkanzas, some of which are similar to the last, but most are additional: on these I propose to write a peculiar essay, and I shall merely give now their figures and import—Arrow, Gun, *Son*, *Yes or true*, *Foe*, Pipe, Wind, God, Council, Fire, Life, Death, Motion, *Travel*, Hand or Take, Grass and Plain, Mountain, Valley, Tree, Bush, Heart, Head, Leg, Eye, Mouth, Nose, Hair, Boat, Chief, *Fire*, *Male*, *Female*, Bad, Strife, Peace, *Water*, Stream, Bad Man, Good Man, Warrior.

Figures 169 till 242, the 74 simple Signs of the Linapi WALLAM-OLUM, requiring long explanations and also another Essay.—They are *Land*, *Water*, *Air*, God, *Sun*, *Moon*, *Star*, There, Beings, Spirits, Soul, *Bird*, Beasts, *Fish*, Turtle, Bad Spirit or Evil, Flies, Gnats, Black Snake, Monster, Jins or first Men, *Male*, *Female*, food or fruits, all, Snake or foe, *Death*, *Man*, Fight, Turtle Land, Nanabush, Boat, Praying, House, *Snow*, *Rain*, *Ice*, Lake, Good, Town, Writing, Corn, Mountains, Painted, Stone, *Eye*, Mouth, Sad or Bad, River and road, *Chief*, *Warrior*, Talegas or Eastmen, Sharp, Hurons or Iroquois, Castle, North men, Long, Cornfield, Canoe, Esquimaux, Nentegos, Shawanis, Mohigans, Peace, Shore, Ship, White men, Otalis or Cherokis, Cowetas, Horn, Illinois, Sea, High.

Figures 243 till 270, the 27 simple Signs of the Graphic NEOBAGUN of the Ninniwas and Ottawas—*Fire*, *Water*, Dead, Dance, Speech, Mouth, *Spirit*, Hammer, Evil, Sit, Temple, *Heart*, Lodge, Kettle, Ground, Snake, Father, Paint, 4 Winds, Indian, *White Man*, Beaver, Tongue, *Moon*, *Sun*, Rising, Night.

Figures 271 till 300—such KU-UEN or Chinese Signs (30) as correspond with these American Signs in form or import so as to compare them—Arrow, Water, Rain, Hail, Hill, Sea, Bow, Bird, House, Mountain, Sun, Moon, Star, Sit, Eye, Mouth, Man, Turtle, Tree, Grass, Writing, Chief, Ice, Repose, There, End, Field, Head, Dwelling—these have been collected out of 100 Signs, most of which cannot be compared, applying to different objects.—Out of all these and adding the numerous Mexican Symbols, we shall obtain a very ample Series of Signs, Characters and Graphic Symbols, to be compared with the Egyptian and Oriental Glyphic Symbols, and probably found to be all derived from a primitive Graphic System anterior to the oldest Alphabets applying to analytical literal Sounds, and therefore of very remote origin.

For instance, the old Egyptian Symbol of Water is almost the same as that of the Americans, see fig. 73.

19. *Agronomy*—OILS OF INDIA.

As exertions are soon to be made to introduce and cultivate useful tropical Plants in Florida, Alabama and the Southern States, I mean to indicate gradually several valuable productions deserving to be introduced, and I begin with the oily Plants of the East Indies that are very numerous. It is only lately that the Oil of Cotton Seed and Castor Plant have begun to be extracted, those of *Sunflower* and *Sesamum*, not yet although equally valuable; but others deserve attention besides.

Sesamum orientale, called *Til* in India, our Binny, it has white seeds. the *Sesamum Indi-*

cum has red seeds, both in India produce 7000 for one! the seeds give 33 per cent. of Oil fit for burning and cooking, the red is the best and sells for 6 cents the pound: even the cake is fit to eat after the oil is extracted.

Verbesina sativa, called *Kali-til* or black seed, also *Karleh*, fine edible oil used as butter, 25 per cent. is the produce, the oil sells for 1½ cent the pound, the cake half cent for feeding cows.

Carthamus persicus, called *Kusum*, produces 50 for one of seed, and gives 15 per cent of oil, fit for food and lamps, price 5 cents the pound.

Sinapis racemosa, called *Mohari*, the plant is eaten as greens, the seed used as mustard, and produces a fine edible and medical oil, price 2 cents the pound at Bombay.

Hibiscus cannabinus, the plant produces a kind of cordage and twine like hemp called *Waak*, the seeds sell for only half a dollar for 120 pounds, and produce an oil for burning.

Bassia latifolia, or *Mohha* a tree, the seeds afford a rich edible oil like butter, the bark dies brown, the flowers are dried and eaten tasting like raisins.

Many others might be added—the Cocos Nuts give an oil burning with agreeable odor in lamps, it only costs 2 Cts. per pound.

20. USEFUL TREES AND PLANTS OF EAST INDIES.

They are innumerable, Col. Sykes in his late Statistics of Dukkun or Western Mahrata country North of Bombay, has enumerated as many as 160, without the grasses and medical plants—there are 45 kinds of cultivated fruit trees, and 22 wild fruits—45 kinds of seeds and Grains including those for oil, sugar and Cordage—50 Garden Vegetables, whereof 8 edible roots, and 16 edible fruits, gourds &c.

The most remarkable of all grains is the *Paspalum frumentaceum* (*Kodro*) which produces 61,000 for one! the *Panicum spicatum* (*Sujgura*) producing 17,000 for one! comes next for fruitfulness.

Five trees are used for tanning—two wild plants for cordage, *Agave vivipara* or Gayal, and *Sida patens* or Garwuri.

I may enumerate hereafter these useful acquisitions for America; by attending to the local names, they may be imported from Bombay or Calcutta—the large Islands South of India from Madagascar and Ceylon, Sumatra &c to Gilolo and Luzon are also full of valuable trees and plants. Madagascar alone has 1000 such out of a rich botany of 7000 Species.

2 ADDITIONS.

1. *Add* to *Carexides* page 28—in an essay on 35 N. G. of Glumiferous and Culmiferous plants sent to Decandole in 1830, I had divided *Carex* into 4 subgenera already, which may be deemed subfamilies now, they were

Tristimex, 3 stigmas, fruit trigone.

Onatex, 3 Stigmas, fruit compressed commonly ovate.

Lentex, 2 stigmas, fruit lenticular.

Distimex, 2 stigmas, fruit trigone.

2. *Add* to the Atlantic Monument page 75—the letters of this inscription have also some analogies with the Irish and Scotch inscriptions deemed Phenician or Neptunian. The remarkable inscription of Newtown near Aberdeen particularly, which is like another at Fordun, also a 3d at Morbihan in Brittany, West France. Therefore these Atlantic or Pelagic rambles can be traced from Scotland to India, and probably also to South America, since the inscription of Cauca (see Humboldt) is also similar.

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