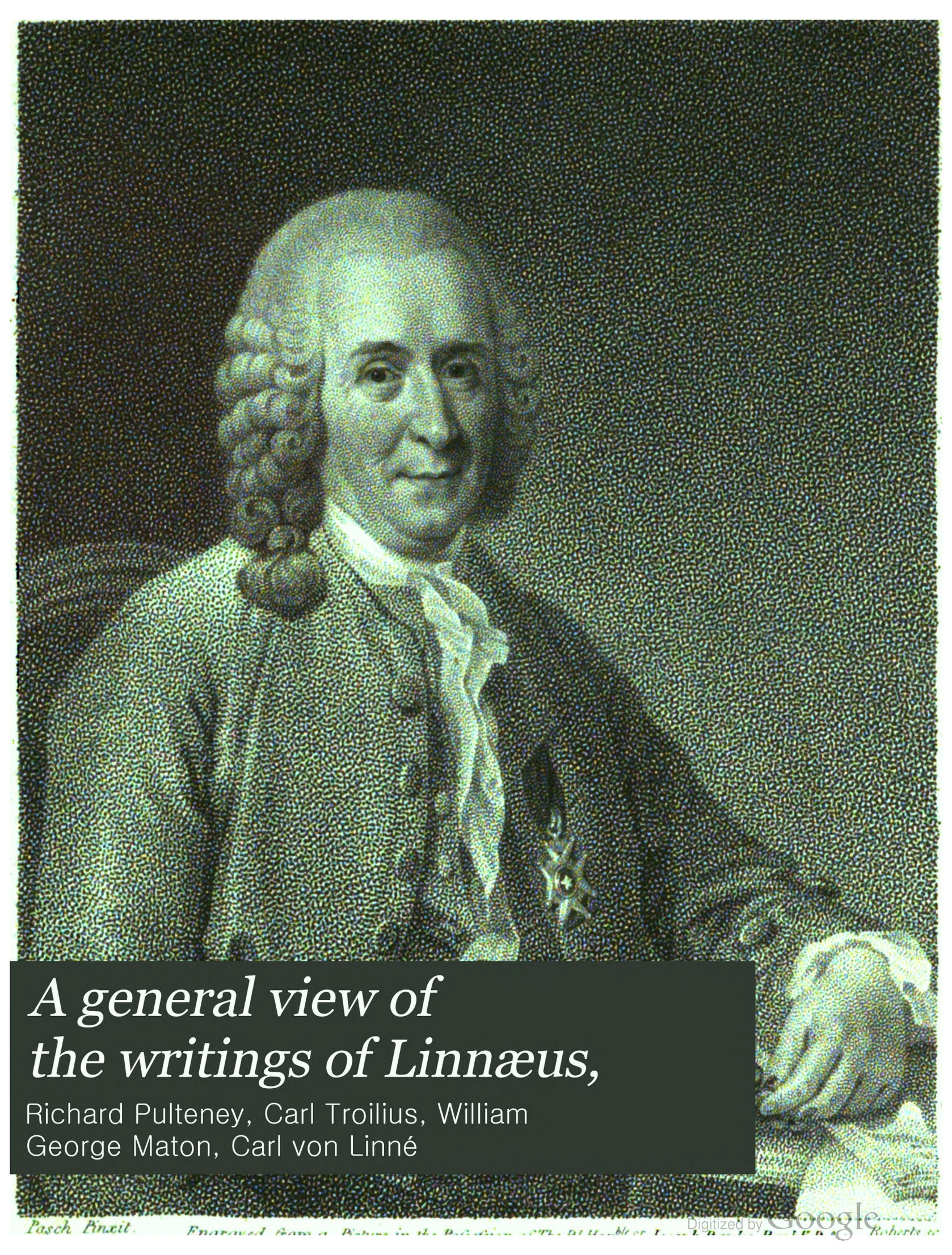
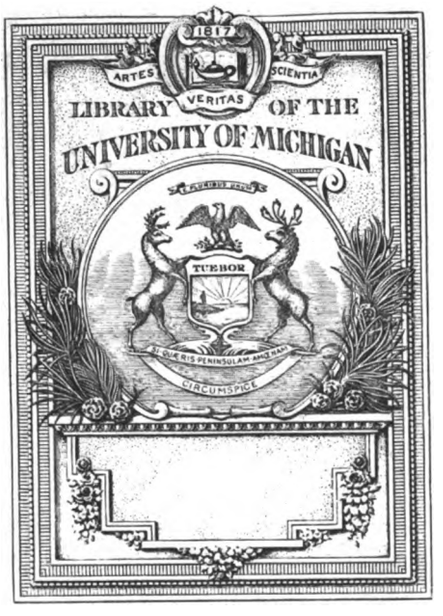


A general view of the writings of Linnæus,

Richard Pulteney, Carl Troilius, William George Maton, Carl von Linné



A

GENERAL VIEW

OF THE

WRITINGS OF LINNÆUS.

Pasch. Pinxit. *Engraved from a Picture in the Poſſeſſion of The Rt. Hon.ble Sr. Joseph Banks Bart. K.B. &c.* *Roberts sc.*

Carl von Linné

Born May. 24.th 1707. Died Jan.y 10.th 1778.

Published as the Act directs by Jos.h Mawman, March 16.th 1805.

A

GENERAL VIEW

OF THE

WRITINGS OF LINNÆUS,

BY

RICHARD PULTENEY, M.D. F.R.S.

THE SECOND EDITION;

WITH CORRECTIONS, CONSIDERABLE ADDITIONS,

AND

MEMOIRS OF THE AUTHOR,

BY

WILLIAM GEORGE MATON, M.D. F.R.S. F.S.A.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS,

AND A VICE-PRESIDENT OF THE LINNEAN SOCIETY OF LONDON.

TO WHICH IS ANNEXED

THE DIARY OF LINNÆUS,

WRITTEN BY HIMSELF,

AND NOW TRANSLATED INTO ENGLISH,

FROM THE SWEDISH MANUSCRIPT IN THE POSSESSION OF THE EDITOR.

LONDON:

PRINTED FOR J. MAWMAN, IN THE POULTRY,

BY R. TAYLOR AND CO. 38, SHOE-LANE.

1805.

THE

EDITOR'S PREFACE.

AS it may not be necessary to apologize for re-introducing to the notice of the public, a work which has been found so useful to the scientific student, as the late Dr. Pulteney's *General View of the Writings of Linnæus*, the editor's only intention, in this preface, is to explain by what plan he has been guided, in the compilation of the present volume.

The author not having undertaken the province of a *biographer*, it would have been improper (though no other objections had existed) to incorporate with his performance any additional particulars relative to Linnæus's private life, except such as seemed "to connect in a better manner the series and occasion of his publications; to relieve the tediousness of a bare account of books;" or to show more exactly the progress of his reputation and influence in the republic of science. Circumstances unconnected with these objects, therefore, have not been introduced into the "*General View;*" but the editor has not hesitated to intersperse others, in which he would most

a probably

probably have been anticipated by Dr. Pulteney himself, had the latter possessed such an authentic source of information as Linnæus's own Diary. It was originally the editor's intention, to subjoin all the new matter in the form of notes; but finding, as he proceeded, that many corrections, and alterations of arrangement in the text, became necessary, he at length resolved to re-model some part of the substance of the work, in preference to perplexing the reader with a multitude of annotations. As to differences of a *verbal* nature between this edition and the first, they extend no further than it was conceived the author himself would have carried them, had he prepared the work for the public at the present period. The arrangement has been rendered strictly chronological,—an order from which the author may be seen to have deviated, in two or three instances, without apparent reason. Abstracts from the *Systema Naturæ* were given *partially* before; but, as all the grand divisions of that incomparable performance manifest alike the talents of Linnæus, the editor has ventured to present the same kind of *conspectus* of each. For the same reason, the classification of the *Materia Medica* is now exhibited, conformably with the plan before adopted in respect to the *Genera Morborum*, an epitome of which occupied

occupied a conspicuous portion of Dr. Pulteney's own volume. Of the *Amœnitates Academicæ*, only seven volumes had been published, when this "*General View*" was first committed to the press; the analysis of the dissertations bearing that title, therefore, is here considerably extended. Besides these more obvious additions, notices and observations are interspersed in various parts of the work, tending either to supply what the editor deemed improper to be omitted, or to perfect more nearly the author's original plan. Since Dr. Pulteney wrote, there have been new editions of several of the works which he mentions; and improvements in various parts of them have been so generally adopted by the Linnean school, as to require being distinctly noticed in a performance like the present. Hence, in *this* respect also, much additional matter has been introduced, serving to render the volume as complete a view of the existing state of Linnean literature, as the editor's opportunities of information would permit. These opportunities have been greater, perhaps, than could be enjoyed elsewhere in the world; and if (as will too probably be the case) he should not be found to have employed them in a manner adequate to the expectations of the public, his claims to indulgence can be grounded only

only on the various avocations and duties necessarily attendant on an active profession. Sir Joseph Banks's kind permission to make use of his invaluable library; the accurate information and friendly assistance of Mr. Dryander,---one of the few surviving pupils of Linnæus; the communications with which he has been favoured by Dr. James Edward Smith,---possessor of the Linnean MSS., library, and museum; and various other advantages, the editor cannot acknowledge without peculiar satisfaction and thankfulness. He has not had recourse to publications on the subject of Linnæus, without great circumspection, being unwilling to admit any intelligence that was at all of a dubious nature, and conceiving that the reader would prefer being imperfectly informed to being absolutely misled. The "*Life of Linnæus*" published by Dr. Stoever, of Altona, which has been translated from the original German into our own language*, contains many interesting particulars; but it is not without a considerable number of errors, and is therefore very sparingly quoted. In fact, *private* memoirs form the principal part of that compilation, and the substance of the *literary* notices had appeared before in this *General View*.

* By Joseph Trapp, M.A. (London 1794. 4to.)

To the first edition was subjoined a translation of Linnæus's *Pan Suecus*, with additional observations, and some improvements in the general order of the tables. The substance of those observations is given also in the present volume, under the proper head; but the tables, and notes annexed to them, are omitted, as they would have required more numerous additions and corrections, to render them suited to the existing state of agriculture and rural œconomy, than the editor's knowledge of those branches qualified him to undertake.

In conformity to the plan of the author, criticisms on the Linnean system are given very sparingly. "No system yet invented" (as is judiciously remarked in the author's original advertisement) "can "stand a rigorous examination through all its parts, "and Linnæus was, perhaps, better acquainted than "any other man with the defects of his own." The method of that illustrious naturalist still retains the advantage of a general superiority over every other; and it is therefore a more agreeable employment to endeavour to strengthen its basis, supply its deficiencies, and candidly correct its errors, than to object to those anomalies and imperfections, which will most probably ever be insepa-

rable from *artificial* arrangements, and indeed from every other human performance.

Having said thus much relative to this new edition of the *General View of the Writings of Linnæus*, the editor will naturally be expected to give some account of the very interesting and curious document subjoined to it, namely Linnæus's *Diary*.

At the latter end of the year of 1799, M. Fredenheim, son of Dr. Mennander, Archbishop of Upsala, conveyed (on certain conditions) to Robert Gordon, Esq. merchant at Cadiz, a variety of manuscripts to be printed in England. In consequence of the death of Mr. Gordon, however, the publication did not take place in the manner intended; and the manuscripts, devolving to that gentleman's executors, were disposed of by them to the publisher of this volume, but not without the heirs of M. Fredenheim having been duly acquainted with all the circumstances of the transaction. Besides a considerable number of letters, written with Linnæus's own hand, to Dr. Mennander, and some other papers, there is a folio manuscript book, containing about 80 pages, in the Swedish language, and entitled "*Vita Caroli Linnæi*," &c. M. Fredenheim's coat of arms is affixed to the inside of the cover; and on the page opposite to the first

first part of the Diary is a note, of which the following is a translation, *viz.*

"Right Reverend Bishop,
"The messenger will not wait until I have time to write. Be so good as to erase, alter, and add, *pro tua sapientia.*"

This note is explained by the following memorandum, found among the papers just alluded to:

"On the 22nd of January, 1770, the Archiater von Linné sent from Upsala his *Curriculum Vitæ* (in a very circumstantial form, and continued by him up to that time) to Bishop Mennander, who was then at the Diet, at Stockholm; with the following short *vehiculum*, written on the very document [*see above*]. This Life, which is further mentioned in the letters of the 29th of January, 1762, 30th of October, and 19th of November, 1769, and 24th of January, 1770, therein copied, and also separately preserved, together with a Latin translation (not completed) by my late father, and the genealogy of the family of Linné, made by the Governor of the Province, Baron Tilas, was dictated with all the ingenuous simplicity of Linné, and in some places interlined and corrected by himself. It is certainly the only Life of him wholly composed by himself, and of course the most interesting and worthy to be published of all the other papers, among which are 55 letters to his most intimate friend from youth, who was fortunate enough to have chiefly contributed, if not towards rewarding this great man, at least towards encouraging him."

The

The passages in the letters, referred to in this memorandum, are copied in the same hand-writing (*viz.* that of M. Fredenheim) at the head of the Diary, and are to the following purport:

"I have here drawn up my own panegyric, and found that *propria laus sordet.* I should never have shown it to any body in the world, if not to the only one of all my friends, who has been unalterably such, from times when I was in less advantageous circumstances. If you should be pleased to extract any thing from it, my dear friend, it would attract notice, when coming from such a pen as yours. I am quite ashamed to lay it before you, and should never have done so, had I not been convinced of your friendship and uniform sincerity.

Upsala,
Jan. 29, 1762."

(It would appear from this extract, that Linnæus had sent his memoirs to the Archbishop in the year 1762; but, if we may judge from a passage in another letter, quoted below, the Archbishop did not actually receive them until the 22nd of January, 1770.)

"My principal object, in wishing to see you at Stockholm, my dear friend, was to beg of you, who have shown the most sincere and constant friendship for me, to take the trouble (when you are at leisure) of writing, in Latin, my insignificant memoirs which ought to be delivered to the French

 Academy,

Academy, as I am *Ordinarius Extraneus Professor*; and, since age and attendant circumstances admonish me *colligere sarcinas*, the sooner this is done the better.

Upsala,
Oct. 30, 1769."

"I cannot mention my personal merits without some preface; for *propria laus sordet*, and self-love will here and there show itself.

Upsala,
Nov. 19, 1769."

"The day before yesterday I sent, by a peasant, my *Curriculum Vitæ*, under cover to Archiater Bäck. If he should not have already transmitted it to you, you will recollect that Archiater Bäck lives opposite the cannon-foundery yard, or the gate of it.

"If, when you return home, you should have time, be so good as to think of me. It was written at various intervals, and of course with various degrees of attention. Pray alter the shape of it in any way you please, as it is intended only to state facts. This will be the last service that can be rendered to me, who now see people of my time of life dropping on all sides. *Ego infelix socius resto.*

Jan. 24, 1770."

These passages explain all the circumstances connected with Linnæus's Diary, and cannot require any comment.

The Archbishop's Latin translation extends no fur-

ther than the year 1730, a period having been put to his undertaking by death. The English translation published at the end of this volume was made by Mr. Troilius, a Swedish gentleman (now residing in London) of the same family with the late Archbishop von Troil, the well-known author of the *Letters on Iceland*. Both the style and the arrangement of the original are adhered to as closely as possible, and the Latin passages are given *verbatim*, in order that there might be no further deviation from Linnæus's own expressions than was absolutely requisite.

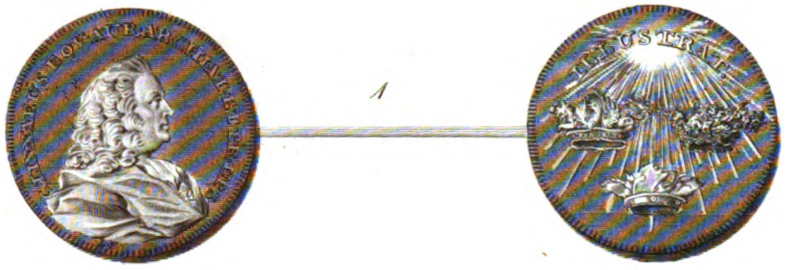
Through the greater part of the Swedish MS. the hand-writing is Dr. Lindwall's, who was a pupil of Linnæus; but different hands are discoverable, and the materials appear to have been put together with very different degrees of attention. The writing is in some places difficult to be decyphered; in others the sense is obscure; and there is often (as the reader will observe) an abrupt transition, in the construction, from the third person to the first.

The earliest letter in the collection is dated "*Upsala*, 1734," and bears the following superscription, *viz. A Monsieur M. Charles Friedric Menander, Etudiant en Philosophie et Histoire Naturelle a Stockholm.*"

The

The last letter is dated "*Upsala, Nov.* 8, 1775." In this interval, Linnæus's correspondent became Professor of Philosophy at Åbo, afterwards Bishop of that city, and lastly Archbishop, and Pro-Chancellor of the University, of Upsala. He appears to have been a very warm and affectionate friend, and to have assisted Linnæus on various occasions essentially affecting his interests. As the letters almost wholly relate to private occurrences, it was not thought necessary to publish them entire; but the few passages which either elucidate Linnæus's literary history, or involve matters of importance not mentioned in the Diary, are made use of in the body of this work.

To the *General View of the Writings of Linnæus* are prefixed some memoirs of Dr. Pulteney himself, whose well merited eminence, both as an author and as a physician, seemed likely to render them not unacceptable to the public. The editor felt an additional motive to pay this tribute to his memory, in the grateful remembrance of a friendship, which influenced his pursuits at a very youthful period, and to which he owes many of the most instructive and agreeable hours of his life.



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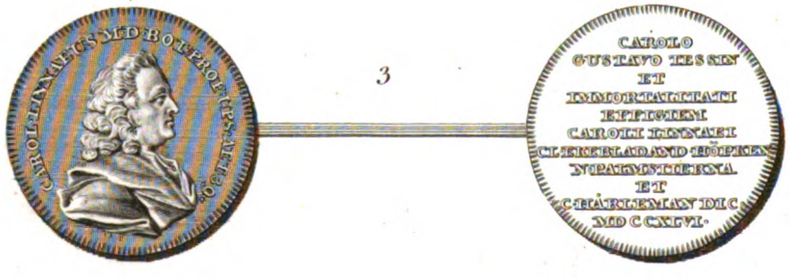

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J.ª Basire del. et Sc.

Published as the Act directs May 1st 1805, by J. Marman, Poultry.

(The Superscription)

Biskopen och Procancellaire
Högwördige Herren
Hr. Doctor Menander

Stockholm

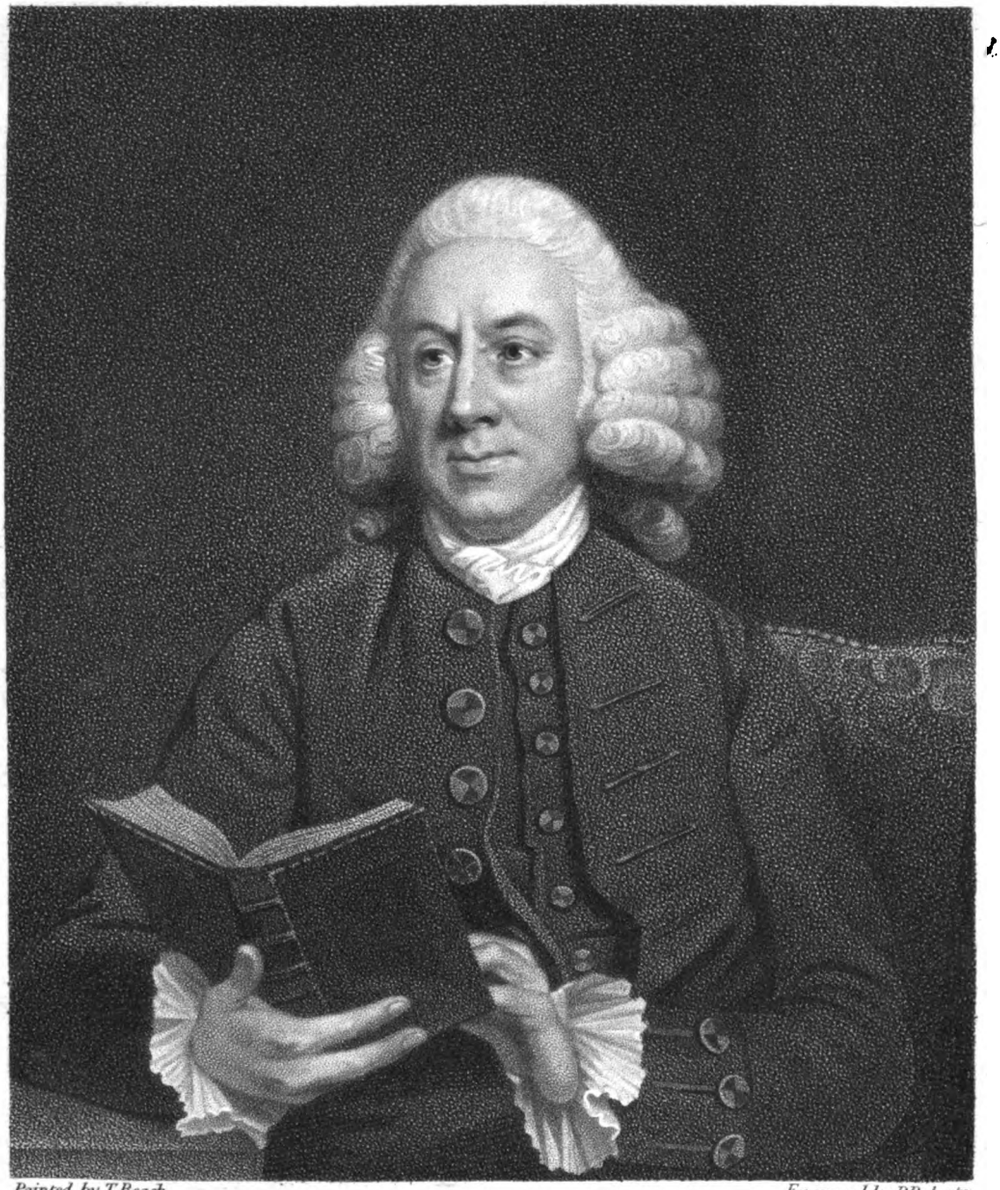
Högwördige Hr. Doctor och Biskop
Min hederlige Hr. Broder.

wår himmelswärre lefnad någon tid har
förhindrat mig upwacta M. Hr. Broder.
jag gaf min son in commissis at öfwer-
sända frön; om de såre ej upkommit
för Hr. Professor Kalm, så är det hans
och ej min skuld, ty hwart frö har
warit samblat i denna trägård åhret
för ut, sådane som wij sielfwe sådt
och aldrig slagit felt.
Ingen ting kunne wara mig kiärare
än att få se Min Hr. Broder några
dagar på min lilla Landgård, 3 quart
från upsala, och språkas än en gång
för än wij valediciera. hall ord om det
är mögelig! jag förblifwer
Min Hr. Broders
ödmiuke tienare
Carl v. Linné

upsala d. 8 Maji
1766.

Published as the Act directs May 1st 1805 by J. Mawman Poultry.

J. Basire Sc.



Painted by T. Beach. Engraved by P. Roberts.

Richard Pulteney.

M.D. F.R.S. Lond.& Edinb.: & F.L.S.

Published as the Act directs by Josh Mawman, March 30th 1805.

MEMOIRS

OF

DOCTOR PULTENEY.

DR. RICHARD PULTENEY was born at Loughborough, in the county of Leicester, February 17th, 1730. His parents had thirteen children, of whom Richard alone arrived at the age of maturity; and he himself was affected, at an early period of life, with a pulmonary complaint which indicated considerable delicacy of constitution. Though the circumstances of the family were easy, yet they did not admit of an expensive education, or of a superior branch of profession being bestowed on the subject of these memoirs, whose only advantages of instruction were those of an ordinary elementary school, and of subsequent apprenticeship to an apothecary. The formation of that taste for natural history by which he became so much distinguished, seems to have taken place in very early youth. Instead of engaging in the boisterous and useless sports of his schoolfellows, in the hours of relaxation from learning, he used to wander in the fields, with no companion but his herbal, examining the plants that grew in his path with the most lively

curiosity. The circumstances to which the acquisition of this taste, so singular in a boy, is principally to be ascribed, were his frequent opportunities of observing the pursuits of his uncle, Mr. George Tomlinson, of Hathern, who (we are informed by Dr. Pulteney himself, in a very feeling tribute of affection and gratitude to this gentleman's memory*) devoted much of his time to the study of natural history, and to whose example he was, no doubt, taught to look up with that respect which it merited.

Whether the destination of Dr. Pulteney to the medical profession was owing to his parents, or whether it was occasioned by a decided choice of his own, that profession was certainly the one which his bent of mind and disposition rendered the most proper for him of all others; and it is most probable that a predilection for it grew out of his fondness for sciences so intimately connected with that of medicine. At the termination of his apprenticeship, he was induced to commence practice at Leicester; where, however, partly from the circumstances of the situation, and partly from the effect of religious animosities, he laboured some time under many discouragements. The system of religion in which our author had been educated was Calvinism; many of his townsmen, therefore, who were of a different persuasion made it a matter of conscience to show indifference alike to his abilities and to his worth. He was obliged to adopt strict œconomy, as one of the means of maintaining a struggle with the unpropitious-

* See Nichols's *History of Leicestershire*, vol. 2. p. 846.

ness

ness of his situation: but this was not difficult to a young man whose habits, from his infancy, were those of the greatest temperance and frugality; the only mortification it produced was the being prevented from purchasing several books essential to the prosecution of his favourite studies. Books formed the great delight of his life, and the only solace under professional mortifications. Those which he had most pleasure in perusing had botany for their subject; and he was at length prompted by his partiality to that charming science to take up the pen himself, with a view to render it a matter of more general curiosity to his countrymen.

Dr. Pulteney chose for the vehicle of his first literary performances, the *Gentleman's Magazine*, a work at that period in high repute, and a medium of communication among men of the first literary distinction. His modesty, however, withheld him from putting his name to his papers, which, though the initials R. P. sometimes occurred, were often sent without any signature at all. Our author first became a contributor to this miscellany in the year 1750, at which period the pursuit of natural history was, in England, confined to very few persons, and a knowledge of the principles of the Linnean system, to still fewer. The following communications, therefore, could not fail to exhibit the importance of both one and the other in an interesting point of view; and many of them may be consulted, with satisfaction, even by a scientific naturalist of the present day.

"*On the seeds of* Fungi, *with some botanical queries.*" (Vol. 20. p. 68.)

"*A description of the* Agaricus pedis equini facie, *or the styptic agaric*" (Boletus igniarius), *with remarks on Mr. Hall's letter in the foregoing magazine.* (Vol. 21. p. 455—456.)

"*An account of poisonous English plants.*" (Vol. 25. p. 29—30. 69. 114. 159—160. 210—211. 270—272. 308—310. 348. 393—394. 450—451. 491—492.)

"*A brief dissertation on* Fungi *in general, and concerning the poisonous faculty of some species in particular, being a supplement to the papers on poisonous plants.*" (Ibid. p. 542—545. 585.)

"*A brief account of the most material writings of Professor Linnæus.*" (Vol. 26. p. 415—417. 463—465.)

"*An abstract of a Latin* thesis *published in the third volume of the* Amœnitates Academicæ, *entitled* Noctiluca marina." (Vol. 27. p. 208.)

"*An abstract of a Latin treatise published by Linnæus, and entitled* Somnus Plantarum." (Ibid. p. 315—320.)

Explanation of the above subject. (Vol. 28. p. 313—315.)

"*A series of experiments and observations to show the utility of botanical knowledge in relation to agriculture and the feeding of cattle.*" (Ibid. p. 360—364. 407—409. 463—465. 515—517. 567—568.)

"*On the* Acacia." (Vol. 29. p. 262.)

"*An account of the first volume of a new and enlarged edition of Professor Linnæus's* Systema Naturæ." (Ibid. p. 454—455. 509—511. 564—566.)

An

An account of the second volume. (Vol. 35. p. 57—61.)

Concerning the Elæagnus. (Vol. 42. p. 12.)

"*A* Fungus [Lycoperdon stellatum] *ascertained.*" (Ibid. p. 227.)

"*On* Tremella Nostoc." (Vol. 46. p. 123.)

"*On the Orcheston Grass.*" (Vol. 52. p. 113.)

"*An account of the* Flora Rossica." (Vol. 55. p. 613—617.)

"*On* Myrica Gale." (Vol. 56. p. 639—642.)

The Anastatica *described.* (Vol. 61. p. 202—204.)

"*On* Trochitæ." (Vol. 62. p. 233—234.)*

The *Sleep of Plants*, mentioned as the subject of papers in the 27th and 28th volumes, was afterwards treated by the author in a more scientific and complete manner in the 50th volume (part 2. p. 506—517) of the *Philosophical Transactions*, under the title of "*Some observations upon the sleep of plants; and an account of that faculty which Linnæus calls* Vigiliæ Florum, *with an enumeration of several plants which are subject to that law.*" Dr. Pulteney had before made himself known to the Royal Society by "*An account of the more rare English plants observed in Leicestershire*†," in which he describes their medicinal and œconomical uses, and quotes the synonyms of all the authors to whom he had the

* These are not all the papers of which Dr. Pulteney was author in the publication above mentioned, though they are all that relate to natural history. In the 43d volume is "*A description of a Roman camp at Ratby, in Leicestershire,*" (p. 76); and in the 47th are "*Memoirs relative to Dr. Threlkeld,*" (p. 63.)

† See *Phil. Trans.* vol. 49. part 2. p. 803. 866.

 means

means of referring. This paper, the materials for which must have been collected before he was twenty-six years of age, formed a very promising specimen of its author's skill in botany, to which, indeed, handsome testimony was borne by Sir William (then Doctor) Watson, through whose hands the communication was transmitted. In the same volume with the *Observations on the sleep of plants*, he also gave "*A brief botanical and medical history of the* Solanum lethale, Belladonna, *or deadly night-shade*" (Atropa Belladonna *of Linnæus**); and "*An historical memoir concerning a genus of plants called* Lichen *by Micheli, Haller, and Linnæus, and comprehended by Dillenius under the terms* Usnea, Coralloides, *and* Lichenoides; *tending principally to illustrate their several uses*†."

But it was not merely on subjects of natural history that Dr. Pulteney employed his pen, even in the earlier part of his life. In the 52d volume‡ of the *Philosophical Transactions*, we find "*The case of a man whose heart was found enlarged to a very uncommon size*," which was also communicated by Sir William Watson, and which contains some useful remarks and reflections that entitle the paper to a higher estimation than that of a mere medical record.

The acquaintance and correspondence which our author had the good fortune to establish with a man so distinguished in the philosophical world as Sir William Watson, proved sources of the highest gratification to the former, and, as they were com-

* Vol. 50. part 1. p. 62—88. † Ibid. part 2. p. 652—688. ‡ Page 344.

 menced

menced and continued solely from a mutual love of science, did no small honour to both. By this respectable friend, Dr. Pulteney was introduced to the Earl of Macclesfield (at that time President of the Royal Society), Mr. Hudson (author of the *Flora Anglica*), and other persons, an intercourse with whom increased his passion for scientific pursuits, and stimulated him to those exertions which laid the foundation for lasting fame of his own. But his situation and sphere of life appeared to all who could best appreciate his character far too humble and obscure; his cast of mind and acquirements seemed to qualify him for attaining the highest honours of his profession, which, however, a native modesty and humility prevented him from coveting. It was recommended to him to apply for the doctorate, and, after having acquired this promotion, to remove to the metropolis, where the patronage of the Earl of Bath*, to whom he was related, might be productive of the most beneficial consequences to his interests. Yet, judicious as was this advice, it is probable that Dr. Pulteney would never have acted upon it had not an intimate friend† formed a similar design, and, being about to graduate himself, prevailed on the former to accompany him to Edinburgh.

In this university there were some circumstances which rendered the attainment of the doctor's degree, without having kept a regular academical residence, a matter of much greater difficulty and favour than it would have been at former periods, and

* The celebrated Mr. Pulteney. † Doctor (at that time Mr.) Garthshore.

which

which would have been sufficient to discourage a person of greater enterprise than our author from making application for it, unsupported by the customary claims. Many of the senior students had entered into a common resolution to oppose, to the utmost of their power, the practice of conferring degrees on applicants who had not resided, and attended the lectures, the statutable period, conceiving that practice to be no less an injustice to themselves, than as having a tendency to bring the place of their education into discredit. Fortunately, the present candidate's merits were not unknown among the professors even before he was admitted to the usual examinations, which he also actually passed with so much ability, and so warmly did his friends interest themselves in his behalf, that opposition (though it had amounted almost to open rebellion) was overcome; and the outcry ultimately changed into general acquiescence in an indulgence which, on this occasion, was seen to be amply deserved. Dr. Pulteney obtained his diploma in May, 1764.

The subject of our author's inaugural dissertation was *Cinchona officinalis*—a subject which enabled him to display very fully not only his medical but also his botanical knowledge, and which was treated of with so much ability that it must have insured him high reputation, even if he had never been known as the author of other productions. This academical exercise was intended to have been inscribed to the Earl of Macclesfield, who had declared his willingness to accept the compliment; but, that nobleman dying just as the author was about to pay it, the name

name of Lord Willoughby, of Parham, who had also shown marks of attention and kindness to Dr. Pulteney, was substituted for the former. That the performance was deemed honourable to the university itself, is sufficiently proved by its having obtained insertion in the *Thesaurus medicus**.

Having accomplished thus much of the plan recommended to him by his friends, Dr. Pulteney now thought of settling in London. He was introduced to the Earl of Bath by the celebrated Mrs. Montagu. On inspection of the family pedigree, his lordship acknowledged the Doctor for his kinsman, and, having also formed a very favourable idea of his professional merits, offered him the situation of physician to his person, with a handsome salary. Dr. Pulteney accepted the appointment, but had the misfortune to lose his patron (with whom he was just about to travel to the continent) by death, within a year afterwards.

Not long after this event, a medical vacancy occurred at Blandford, in Dorsetshire, in consequence of the departure of Dr. England to Bristol. There was no physician then resident nearer to Blandford than Dorchester, and Dr. Cuming himself was so far advanced in years, that there was a prospect of a still wider field of practice being soon opened. Under these promising circumstances, prudence dictated to Dr. Pulteney the propriety of relinquishing the metropolis, especially as the limited state of his paternal income was unpropitious to a long and patient struggle with the chance and fashion of that place; a

* Tom. 3. p. 10. (1785).

struggle, for which a sort of constitutional timidity and apprehensiveness likewise rendered him peculiarly unfit. Being presented with letters of the strongest recommendation to several families in the county by Sir George Baker and Sir William Watson, who warmly interested themselves in his success, our author accordingly took up his abode at Blandford; and the same good sense which led him to that determination continued to influence and govern him throughout his professional career. He studiously kept himself aloof from the petty dissensions and cabals which so frequently subsist in a country town; and being fully aware that too great a familiarity of intercourse with the general mass of people is destructive of that respect which it ought to be the first object of a physician to secure, he preferred remaining at his post, in converse with his books, to partaking in the common convivialities and gossipings of the place. He was no less anxious to preserve independence and dignity of character among his medical brethren, neither entering into any of those humiliating leagues, nor courting any of those interested intimacies, which are so frequent between different orders of practitioners. In the discharge of his more immediate professional duties, he showed such scrupulous punctuality, such unremitting attention, added to so much firmness, decisiveness and caution in his practice, that he invariably obtained the entire confidence of his patient. By this correct and conscientious conduct, Dr. Pulteney was not long in establishing that degree of reputation which necessarily brings with it pecuniary affluence.

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In the year 1779, the Doctor married Miss Elizabeth Galton, of Blandford, a lady whose disposition and attainments comprehended every requisite to give durability of happiness to his domestic life; and though this union never placed Dr. Pulteney in the situation of a parent, he experienced in an amiable young relation of Mrs. Pulteney (during the latter part of his life) the affectionate attentions of a daughter.

We must now resume the more immediate purpose of these pages, and follow our author in his literary undertakings. Hitherto he had given to the public only detached papers and occasional essays, which we have already noticed as being communicated to the Royal Society, and to one of the most respectable periodical works of that period, the *Gentleman's Magazine*. Several of *these* show how fully he had made himself acquainted with the writings of Linnæus, which, in fact, he continued to study with enthusiastic diligence; and, as he had followed them through all the emendations and improvements of their author, no person could be better qualified either to describe the subjects or to point out the merits of them. He conceived that, by exhibiting a regular and complete analysis of the various labours of that great reformer of natural history, their utility would not only be more effectually made known to his countrymen than it had hitherto been, but the science itself, through that medium, assume new dignity and acquire a higher estimation. The few individuals to whom the cultivation of natural knowledge continued to be confined in England, being classed by the bulk of

people along with the mere collectors of curiosities, and superficial triflers of the day, were looked upon as objects of ridicule rather than of respect, and there was wanting some judicious effort to raise them to a level with the votaries of other branches of philosophical pursuit. The reception and effect of the "*General view of the writings of Linnæus*" were fully equal to the wishes of our author. Sanctioned by the commendations of all who were already conversant with its subjects, the work soon attracted general curiosity; the labours of Linnæus and the sciences to which they related became much more correctly understood; and Dr. Pulteney found himself placed among the first, both of the Linnean scholars and of the philosophical naturalists of his country. The sale was so extensive that the publisher had not a copy in his hands after the year 1785, which was only four years after the book was printed. Nor was its reputation confined to our own island. In a few years it found its way into the French language*, and the most respectful mention was made of it in all the periodical publications of the continent.

The Royal Academy of Sciences of Stockholm manifested their approbation of it, and their regard for its author, by pre-

* "*Revue générale des écrits de Linné, ouvrage dans lequel on trouve les anecdotes les plus intéressantes de sa vie privée, un abrégé de ses systemes et de ses ouvrages, un extrait de ses amènités academiques, &c. &c. &c., par* RICHARD PULTENEY; *traduit de l'Anglois, par* L. A. MILLIN DE GRANDMAISON, *avec des notes et des additions du traducteur,*" 2 tomes. 8vo. Londres et Paris, 1789.

senting to him the two medals struck in honour of Linnæus, one by command of the King of Sweden, and the other at the expense of Count Tessin.

The Doctor undertook, afterwards, a more original, and an infinitely more laborious work, to which he gave the title of "*Historical and biographical sketches of the progress of botany in England, from its origin to the introduction of the Linnæan system,*" and which was published (in two volumes octavo) in the year 1790. To the naturalist of learning and curiosity, this work was calculated to afford much interesting information; and, had its author been so situated as to have had the means of applying personally to all the various sources of intelligence which the kingdom (and, particularly, the metropolis) possessed, it would have been one of the most elegant and complete specimens of historical biography extant in our language. His distant friends freely furnished him with communications and assistance, but the materials were chiefly derived from authorities which he had been long collecting under his own roof. He dedicated his first volume to Sir Joseph Banks, and the second to Sir George Baker and Dr. Garthshore jointly, in testimony of the friendship with which these distinguished men had so long honoured him.

The "*Biographical sketches*" were originally intended to have been prefatory merely to a descriptive catalogue of the English plants (or rather to an *abbreviated Flora*, as the original manuscript is entitled), the plan of which included not only a concise description of every genus and species indigenous in our island, with

with the place of growth, time of flowering, &c., but also an enumeration of all the English authors by whom each had been mentioned, and references to figures. The Doctor had more particularly in view the recording of the first discoverer of every plant, and the rank of every describer with respect to originality *.

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* Being possessed of the original MSS. from which the *Flora* was intended to have been printed, I am induced to subjoin a specimen of its nature and arrangement.

TRIANDRIA.

MONOGYNIA.

A. Flores superi.

48. VALERIANA. *Cor.* 5-fida, basi gibba. *Sem.* unum. *Lin.* 44. *Reich.* 84. *Huds.* 12.

V. *rubra*, floribus monandris caudatis.

RED VALERIAN. *Hist. Ox.* § 7. 14. 15. *J. B. Hist.* iii. 211. 111. FLOR. ANG. 2. 12. *Ger. em.* 678. 1. *Park.* 122. 11. On old walls in the west of England. P. 3—8.

V. *dioica*, floribus dioicis foliis pinnatis integerrimis.

MARSH VALERIAN. *Fl. Lond.* 4. 3. *Hist. Ox.* § 7. 14. 5. *Matth. comp.* 18. b. fœmina. *Fl. Dan.* 687. 2. a. mas. *Fl. Dan.* 687. 1. LOB. *Adv.* 319. *Lyte*, 339. 3. *Ger. em.* 1075. *Park.* 122. RAII *Ang.* 310. 4. In moist and boggy meadows, common. P. 6.

V. *officinalis*, floribus triandris, foliis omnibus pinnatis.

GREAT VALERIAN. *Fl. Dan.* 570. *Hist. Ox.* § 7. 14. 2. *Matth. comp.* 16. *J. B. Hist.* 111. 211. aquatica. b. angustifolia. *J. B. Hist.* 111. 210. TURNER. 2. 86. and 3. 76. *Lyte*, 339. 2. *Ger. em.* 1075. 2. *Park.* 122. 13. Moist hedges and woods, common. P. 6. 7. RICHARDSON. *Ray Syn.* 3. 200. 2.

V. *Locusta*, floribus triandris, caule dichotomo, foliis linearibus.

CORN VALERIAN. *Fl. Dan.* 738. Corn Sallad. *Fl. Lond.* 8. 4. *Hist. Ox.* § 7. 16. 36. 37. LOBEL. *Adv.* 319. *Ger.* 242. *em.* 310. Among corn and on corn-grounds, common. A. 4. 8.

Interesting as would have been a *Flora* compiled in conformity with this design to the curious botanist, and much as it would have added to the utility of the general work, Dr. Pulteney was persuaded, by those who understood book-*making* better than himself, to limit his publication to the *Sketches*,—a performance with which he was never, himself, well satisfied. "I have no expectation," he said in a letter to a friend "that a book of this nature will come to a second edition in my life-time; after I am gone somebody will take it up and make a good work of it, now I have led the way." That this observation has not yet proved to be prophetic, is most probably owing to the original edition not being hitherto wholly disposed of.

Besides those literary labours in which his own reputation was more immediately involved, Dr. Pulteney, in his zeal for the extension of science, furnished very copious communications on subjects of natural history to various contemporary authors. Among other publications of repute, Dr. Aikin's *England delineated*, Mr. Nichols's *History of Leicestershire*, and Mr. Gough's edition of Hutchins's *Dorsetshire*, acquired from his pen very ample and valuable materials. The contributions towards the natural history of his native county had, of course, been prepared in the early part of his life, and had already (as we have before remarked) been partially given to the public; but they were now digested conformably to the latest improvements of method, and they evinced, still more strongly than before, the extent

extent to which he had practically prosecuted the science of botany. His "*Catalogue of some of the more rare plants found in the neighbourhood of Leicester and Loughborough, and in Charley Forest,*" contains nearly 600 species, which are arranged agreeably to the alterations of the Linnean system, introduced by Thunberg and Hedwig. The classification adopted by the present Swedish professor, who has been followed in it also by our countryman Dr. Withering (in his "*Botanical arrangement of British plants*"), had the approbation of our author, from his conceiving it to conduce in a striking degree towards facilitating the investigation of plants, and, though not generally followed by botanical writers of the present period, as likely hereafter to be received into universal use. Whether he were correct in this idea or not, his willingness to embrace the proposed alteration at least shows that he was a disciple upon principle, and that his admiration of Linnæus had no foundation in habit or bigotry. In the account of the *Dorsetshire plants*, he adhered to the same plan of arrangement: and he was not content with giving the botanical history of that county, but rendered the performance partly a *Fauna* also; for it contains an enumeration of all the birds and *testacea* which had been observed within the same limits: it is, besides, illustrated by so many notices and remarks of an explanatory and critical nature, that we may pronounce it one of the most valuable provincial catalogues, connected with natural history, that has hitherto been published in England. Such compilations are a sufficient

sufficient proof that even a physician's opportunities and sphere of observation, circumscribed as they are, may be rendered serviceable to science, especially in a country situation. But, few persons could be so unremittingly active as Dr. Pulteney. Every visit that he made to a distant patient; every walk that he took in the vicinity of his own residence, furnished him with some new fact, or with some addition to his museum. He was in the habit of recording every plant he saw either wild in the hedge-rows, or adorning the green-houses of his friends; and the principal contents of every cabinet he inspected were always noted down*. In short, our indefatigable naturalist seems to have taken for his motto the maxim of his great master, Linnæus—"*Nulla dies sine linea.*"

Among his scientific correspondents were many of the most eminent botanists in Europe; and there were none of any repute in his own country who did not consult him on the subjects of their labours. With Mr. Hudson, Professor Martyn, Dr. Withering, Dr. Smith, and Mr. Relhan, his epistolary intercourse was con-

* There are a multitude of little catalogues of this kind among the MSS. which Dr. Pulteney bequeathed to the author of these memoirs. They relate chiefly to collections and gardens in his neighbourhood, from which specimens were regularly presented to him, in return for the information which he was singularly capable, and always happy, to communicate. The conservatories of the late Henry Portman, Esq. of Bryanstone, and the nursery-gardens of the late Mr. Kingston, of Blandford (at that time very rich in exotics), were a never-failing source of amusement to him; as were also the cabinets of natural curiosities formed by the late Henry Seymer, Esq. of Hanford; Mr. Knight, of Anderston; and the Reverend Thomas Rackett, of Spetisbury.

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stant; and its value is fully evinced by the frequent mention of his name, and quotation of his authority, in the works respectively published by those well-known writers. In the "*Botany of New Holland*," Dr. Smith paid him the compliment of naming a genus of plants PULTENÆA*, conceiving, in common with every contemporary botanist, that this was a distinction justly due to one whose writings (to use the words of Professor Martyn in treating of this genus) "so essentially contributed to the introduction and establishment of Linnean botany in this country."

But, it was not for his knowledge of plants alone that Dr. Pulteney's acquaintance and correspondence were courted. The votaries of other branches of science coveted opportunities of communicating with him, and did not fail to benefit by his learning and judgment. Among other authors of that period, Mr. Da Costa obtained his assistance in the compilation of the *British Conchology*. It is only to be lamented that this gentleman was not so far governed by the opinion and example of his Linnean correspondent, as to have adopted the system of which the latter was such an able and zealous supporter. To the *Testacea*, Dr. Pulteney had devoted more attention than most other English naturalists of his time, as appears, in a striking manner,

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* *Pultenæa stipularis* (the only species then known) is figured in the 12th plate of the above-mentioned work, and also in Curtis's *Magazine*, 475. It first flowered in England, in April, 1794. Five additional species, all natives of the same country (New Holland), have since been discovered, and were first described by Willdenow, in his *Species Plantarum*, under the names of *Pultenæa paleacea*, *linophylla*, *juncea*, *villosa*, and *daphnoides*.

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from the accuracy and copiousness of the conchological part of the Dorsetshire catalogue; and some of the most distinguished collectors of shells, particularly the Duchess Dowager of Portland, and Mr. Seymer, had constant recourse to him for determining species, presenting him, in return, with duplicates from their rich and extensive museums.—The Rev. William Coxe partook largely of our author's liberality of information, especially with respect to the literary history of naturalists celebrated in the countries which that instructive traveller has described.

In the midst of those occupations which we have particularized, and which may be considered as only remotely connected with his profession, Dr. Pulteney did not fail to distinguish himself by productions purely of a medical nature; and these, though scattered among the transactions of various learned bodies, it would be wrong to neglect specifying, since they show that his sagacity of observation, and industry of research, extended to every subject of natural science with equal promptitude. We have before adverted to one communication of a medical kind which he transmitted to the Royal Society: namely, "*The case of a man, whose heart was found enlarged to a very uncommon size,*" which was read to that body, and printed in the 52d volume of the *Philosophical Transactions.* His friend Dr. Watson, in 1772, presented a letter which he had received from him "*Concerning the medical effects of a poisonous plant* exhibited instead of the water parsnep;*" (see

* *Œnanthe crocata.* This subject was treated of also in the *London Medical Journal.* (Vol. 5. p. 192—199.)

Phil. Trans. vol. 62. p. 469—475); and in 1779, "*An account of baptisms, marriages, and burials during* 40 *years in the parish of Blandford Forum.*" (See vol. 68. p. 615—621.) From the paper last mentioned, it appeared that 1 person only in 39 died annually in the place where the Doctor resided, whereas in the metropolis the proportion, at that period, varied from 1 in 20 to 1 in 28. Whilst we are on this subject, it may not be useless to take some notice of a curious fact relative to the treatment of the small-pox, which was described by our author in a letter to Sir George Baker*, and which forms a strong argument in favour of the cool regimen, a point of practice at that time difficult to be established. The fact alluded to is the following: In consequence of a great fire that happened at Blandford in the year 1731, upwards of 150 persons ill with the natural small-pox were suddenly hurried into the open fields, where many of them remained several days and nights; yet only one person died, *viz.* a young woman, who was almost expiring at the time when she was removed.—In the 3d volume of the *Medical Transactions* is "*An account of an extraordinary conformation of the heart,*" from the pen of Dr. Pulteney, and transmitted to the College of Physicians by the learned baronet whose name has just been mentioned. A case equally remarkable was described by him in the *Memoirs of the Medical Society of London*, (vol. 2. art. 26.) This was "*An extraordinary enlargement of the abdomen*

* This letter was published by Sir George in his "*Inquiry into the merits of a method of inoculating the small-pox, which is now practised in several counties of England.*" (8vo. 1766.)

owing

owing to a fleshy encysted tumour." The 6th volume* of the *Medical Observations and Inquiries* contains his account of the influenza as it appeared at Blandford, which, coming from the pen of so accurate an observer, was particularly interesting to practitioners at that period.

On the subject of the cow-pox, which began to engage, in a signal manner, the attention of the whole medical world some time before the Doctor's death, he was, like many of the most distinguished among his brethren, at first somewhat sceptical; but, from the result of diligent inquiry and observation, he was at length induced to range himself among the *believers*. The most important of the facts ascertained in the course of this inquiry he communicated to Dr. Pearson, who was collecting materials for a work on the subject, and who has since published them†. To the advocates for this important practice, intelligence that came from a quarter so cautious and so respectable could not fail to be doubly acceptable.

The several scientific bodies which we have had occasion to mention were no less ready to receive our author into their number than he was qualified to be admitted to those honours. Of the Royal Society he was elected a Fellow as early as 1762, which was two years before he received his diploma as Doctor in physic, and three prior to his passing the necessary examinations, and being admitted a Licentiate of the College of Physicians in

* Page 402.

† See *Inquiry concerning the history of the cow-pox*, London, 1798, 8vo.

London. In 1784 he was chosen an honorary member of the Royal Medical Society of Edinburgh; in 1787, of the Chirurgical and Obstetrical Society of that city, and also of the Medical Society of London; and in 1793 he became a Fellow of the Royal Society of Edinburgh. One learned corporation to which the Doctor belonged, and which received from him frequent communications, has not hitherto been mentioned; I allude to the Linnean Society of London. Of this he was elected a Fellow very shortly after its first institution, and at his death became a distinguished benefactor. In the 2nd volume of its Transactions he described an epiphyllous *Lycoperdon* discovered on the leaves of *Anemone nemorosa;* in the 5th appeared some "*Observations on the œconomical use of* Ranunculus aquatilis, *with introductory remarks on the acrimonious and poisonous quality of some of the English species of that genus;*" and also, "*On* Ascarides *discovered in the intestines of* Pelecanus Carbo *and* cristatus."

This perpetual labour of intellect, added to the fatigues of his profession, would have been sufficient to impair Dr. Pulteney's constitution even if it had been much stronger; and it is therefore not to be wondered at, that he had (especially in the later years of his life) frequent attacks of indisposition, which, of course, prevented him from devoting to science even those short intervals that occurred in his medical avocations. His circuit comprehended not only the whole of his own county, but also the contiguous parts of Wiltshire, Hampshire, and Somersetshire; and he was sent for occasionally as far as Bath. His ex-

tensive experience and profound skill naturally called forth no less confidence from his patients, than deference from his professional brethren; and both parties overlooked distance, in their anxiety to obtain his opinion. Under the exhaustion occasioned by long journeys and sleepless nights, his greatest comfort was the quiet converse of men whose minds were congenial with his own. This, however, was an intellectual luxury not often to be obtained in a situation like his, remote from the metropolis, and during the winter deserted even by those few whose society possessed the recommendations which he sought. Such a privation, the regrets of which they alone can understand who actually experience it, made him not unfrequently indulge again the wish to settle in London*; and he once authorized his intimate friend Dr. Garthshore to procure a house for him. His natural timidity and prudence, however, prevented him from adhering to this intention, and he limited himself to the temporary residence there (short as it was) which he was now and then enabled to enjoy. He found some compensation too for his distance from the great *focus* of information, in the epistolary communications of those who were more fortunately situated. The quarters

* "I do not wonder," says he, in a letter to a friend, "that you love London. I have always thought it the only place in the world for an Englishman attached to letters to live in. Linnæus might well call it *punctum saliens in vitello orbis*. I confess there was a time when the deepest regret I felt arose from the reflection that it was not in my power to partake of its enjoyments by a constant residence in that centre of science."

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from which he was gratified in this way were generally numerous; but there was one gentleman (well known in the botanical world*) whose zeal and enthusiasm for science, and whose readiness to make known to him every new occurrence connected with their common pursuits, rendered his correspondence a source of peculiar enjoyment, which our author used to acknowledge very emphatically by calling his letters *the angels of pleasure.*

It has been already mentioned that Dr. Pulteney suffered from a pulmonary complaint at an early period of his life. A return of this was what he always prognosticated would be fatal to him. On the 7th of October, 1801, he was attacked with symptoms of inflammation in the lungs, and there was reason to suppose that his liver also was similarly affected. He judged very accurately of the nature of his disorder himself, and, finding that the ordinary remedies (which were promptly and vigorously applied under his own direction) did not produce any favourable change within the usual time, was the first to announce to those about him the approach of dissolution. It was not without urgent solicitation that he consented to further medical aid being resorted to, observing "that it could not be of any use, and that he must

* Those who have witnessed the warm interest which Dr. Pulteney felt in the literary labours of his friends cannot but lament that he did not live to see this favourite correspondent's "*Description of the genus Pinus,*" one of the most superb offerings at the altar of Flora ever made by a private individual.

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die." On the 11th he agreed to Dr. Garthshore's being sent for from London; and two days afterwards he was visited by Dr. Fowler from Salisbury. The former of these gentlemen being too much occupied to be able to comply with the request, sent Dr. Reid, the son of a very old and much respected friend of Dr. Pulteney, in his stead. Medicine, however, proved to be of no avail; and the venerable patient, whose agonies had progressively increased, expired in the evening of Tuesday, October 13th. But, in the midst of these agonies, and to the very last, his mental faculties maintained their wonted activity and soundness. His will had been prepared with his own hand a few months before; yet there were several directions which he thought proper to add, to testify his esteem for various friends, and to dispose of his collections and papers. The bulk of his affluent fortune was bequeathed to Mrs. Pulteney; but he left many handsome legacies, and manifested his regard for some of the associates of his younger days in so affectionate a manner that even their representatives were to inherit its tokens. Most of the learned bodies of which he was a member also received testimonies of his remembrance, and he made liberal benefactions to several charitable institutions, and to the poor of Blandford. He bequeathed his valuable museum to the Linnean Society, upon condition, however, that it should either be kept separate from other collections in the possession of that corporation, or that it should be sold, and the interest of the sum produced by it expended in the purchase of a medal, to be presented annually to the author of the

best botanical paper read to the Society in the course of the year*. His library was directed to be sold†, but not until such reservations had been made as Mrs. Pulteney might choose for her own use; and with the exception of the botanical manuscripts, which were bequeathed to the author of these memoirs.

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* The Society preferred keeping the museum, which is rich chiefly in dried specimens of British plants, and in shells (subjects to which the Doctor had always paid most attention, and was most partial); but it contains also a considerable collection of foreign plants and a good number of minerals. The latter are arranged agreeably to the system of Wallerius, the earliest systematic writer on this science he had read. The plants and shells, however, all have the Linnean names, besides several synonyms, and are particularly worthy of being consulted, on account of the very scrupulous accuracy with which they had been examined, and the uncommon pains which had been taken to preserve them in a neat, commodious, and regular arrangement. Upon the whole, the shells may be considered as the most valuable branch of the collection, not only on account of their number, but from the circumstance of the British part of them forming an authentic exemplification of the species described in the *Dorsetshire Catalogue*.

† The sale took place at Messrs. Leigh's and Sotheby's (booksellers, in York street, Covent Garden) in the spring of the year following. Those works which related to natural history were particularly coveted, on account not only of the *original* value of many of them, but also of the very useful references and additions inserted in them by Dr. Pulteney's own hand. He had been in the habit of annexing the Linnean names to the descriptions given by authors who were unacquainted with that system, and he had taken the pains of making *indices* himself to many voluminous works (as the *Hortus Malabaricus*, &c.), the utility of which works, in the present improved state of science, is very imperfect without them. But the collection was far from being limited to natural history; it contained almost every medical author of any repute, besides a great number of voyages and travels, books of general literature, &c.

Dr.

Dr. Pulteney's remains were interred at the village of Langton, about a mile from Blandford. They were attended to the grave by Dr. Reid (one of his executors), and by the Rev. Thomas Rackett, for whom Dr. Pulteney had always shown a particular regard, and than whom few persons more justly estimated the worth, or more sincerely lamented the loss, of his deceased friend. Mrs. Pulteney has placed an elegant tablet, to the memory of her husband, in the church of Blandford. He had expressly forbidden any eulogy to be inscribed on his monument, which, therefore, only records, in unlaboured language, his widow's affection, and by the simple, but very appropriate, ornament of a *Pultenæa*, delicately indicates the pursuits by which he was distinguished.

During the forty years of that assiduous, skilful, and conscientious exercise of the healing art, for which the character of Dr. Pulteney most deservedly stood so high, the circle in which the continuance of his life was a circumstance of the deepest interest must necessarily have been extensive. Frequent as are those melancholy examples of intellectual vicissitude which exhibit something like reverting childhood, and a resolution of the noblest attainments into mere elements and wrecks, the powers of *his* mind, incessantly as they had been exerted, showed no signs of approaching imbecillity; neither had that torpor crept upon his feelings which is so apt, in advanced life, to diminish the activity of benevolence, and to make the greatest professional experience survive its own utility. It may therefore easily be

conceived that regret was universal and sincere, when such a resource under the calamities of disease was no more.

But those who were so fortunate as to enjoy the friendship of Dr. Pulteney, and who had opportunities of contemplating his character in the departments of private life, had motives to revere him, independently of his professional and philosophical qualifications, genuine and estimable as they were. His whole conduct was guided by the strictest integrity and the most scrupulous sense of honour. No man ever maintained more uniformly a spirit of independence, the respectable rank which he held in society being the well earned reward of his own labours and perseverance. The pursuits in which he delighted, indeed, were little calculated to interest the great, and they created that conscious dignity of mind which never suffered him to descend to the meanness or hypocrisy of a courtier. The same self-respect withheld him from deviating into the smallest species of intemperance; so exemplarily pure were his habits, that no expression ever fell from his lips that indicated the slightest indelicacy of thought, or the faintest tincture of profaneness. His manners were remarkable for their simplicity, and, among those whom he loved, exhibited all the amiable playfulness and unreservedness of unsophisticated youth. Nothing could be more engaging than the readiness with which he would join in the little hilarities and amusements of his domestic circle, divesting himself of gravity without ever appearing frivolous or puerile.

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In his general intercourse with the world, Dr. Pulteney was generally somewhat reserved, yet to the young and inquisitive he was remarkably communicative; and his own ardour for science, which remained unextinguished to the last, seemed to augment itself, whilst it fostered that of others.

Having a mind candid, liberal, and enlightened, he abhorred every species of conceit and dogmatism, and if he ever departed from his usual mildness of temper, it was to censure bigotry and intolerance. With an uniform, unequivocal respect for religion, he united none of the prejudices of the sectary, neither on the other hand, did his notions of it ever appear to clash with the speculations of rational philosophy.

With regard to person, he was of rather less than the ordinary stature, and slender; but his frame was well adapted to that habitual activity for which he was remarkable to a very late period of his life. His countenance, especially when his attention was awakened, or when he was conversing on a subject that interested him, had a sort of classical, and a peculiarly pleasing, cast; there was something in it that excited involuntary deference and respect, and no one could help remarking an expression indicative of extraordinary intelligence and superiority of mind. His features were regular, and retained even in advanced age an uncommon agreeableness. In his dress there was some singularity, for he never relinquished the professional *costume* that was general when he was a young man; yet this was not from any sort of affectation, nor from any absurd attachment to antiquated

tiquated formality, but partly from the effect of habit, and partly, perhaps, from conceiving that exterior appearance ought to correspond with seriousness and importance of character.

The portrait prefixed to these memoirs is accurately engraved from an original painting (in the possession of Mrs. Pulteney) which has been universally considered a striking likeness.

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A

GENERAL VIEW

OF THE

WRITINGS OF LINNÆUS.

CARL LINNÆUS* was born, May 24th, 1707, at Råshult, in the province of Småland, in Sweden, where his father at that time resided as *Comminister*† (but he was afterwards *Pastor*, or rector) of the parish of Stenbrohult. His ancestors took their surnames of *Lindelius*, *Tiliander*, and *Linnæus*, from a large *linden*, or lime-tree standing on the farm where he was born. This origin of surnames, taken from natural objects, is not very uncommon in Sweden.

It seems probable that Linnæus derived his taste for the study of nature from his father's example, who (as he has himself informed us) cultivated, as his chief amusement, a

* This was the name of our author before he was ennobled; and we have used it throughout this work, not only because he is better known by it (especially in England) than by that of von LINNE, but also from his having used it himself throughout his *diary*.

† *Comminister*, on the Swedish church establishment, is a clergyman somewhat similarly circumstanced to one who, in England, serves a *chapel of ease*.

garden plentifully stored with plants. Young Linnæus soon became acquainted with these, as well as with the indigenous species in his neighbourhood.

In 1717 he was sent to school at Wexiö, where, as his opportunities were enlarged, his progress in all his favourite pursuits was proportionately extended.

According to the Swedish system of education, Linnæus passed from the school to the *gymnasium*. But, instead of pursuing those studies which, as being preparatory to the clerical line, were the more immediate and general business of the place, such as metaphysics, moral philosophy, rhetoric, and the Greek and Hebrew languages, he gave himself up to the physical sciences (particularly botany), and surpassed his contemporaries in knowledge of the latter, as much as they surpassed him in that of the former. Yet, from the straitness of his father's income, and from his preceptors having reported him to be unfit for the church, the young naturalist was on the point of being destined to a mechanical employment. Fortunately, however, this design was overruled.

The first part of his university education he received at Lund, in the province of Skåne, where his inclination to the study of natural history was favoured by Professor Stobæus.

After a residence of about a year, he removed in 1728 to Upsala, where he prosecuted the study of natural history with unremitting assiduity and ardour, and where he composed a little catalogue of his botanical observations under the title of SPOLIA BOTANICA, *sive Plantæ rariores per Smolandiam, Scaniam, et Roslagiam observatæ et enumeratæ à Carolo Linnæo, Smoland. Med. Bot. et Zool. cult. Stipend. reg.* (Upsal. 1729. pp. 30.) This work, however, does not appear to have ever been published. The original manuscript, which is in the possession of Dr. James

Edward Smith, is in the Swedish language, and dedicated to Professor Roberg. There are sketches of a few of the plants, and a rude map illustrative of the situations. As the plants are all arranged after the system of Tournefort, the author would appear to have not as yet espoused the idea of a sexual difference in the vegetable kingdom, though within three years afterwards it was sufficiently matured in his mind for the arrangement of the Lapland plants in that method*.

Soon after his arrival at Upsala, Linnæus contracted a close friendship with Artedi, a native of the province of Angermanland, who had already been four years a student in the university, and, like himself, had a strong bent to the study of natural history in general, but particularly to ichthyology. He was moreover well skilled in chemistry, and not unacquainted with botany, having been the inventor of that distinction in *umbelliferous* plants which arises from the differences of the *involucrum*. Emulation is the soul of improvement; and, heightened as it was in this instance by friendship, proved a most powerful incentive. These young men prosecuted their studies together with uncommon vigour, mutually communicating their observations, and laying their plans so as to assist each other in every branch of natural history and medicine.

Our author was also happy enough to obtain the favour of several men of established philosophical character. He was in a particular manner encouraged in the pursuit of his studies by

* Stoever mentions a work of Linnæus entitled HORTUS UPLANDICUS, which is supposed by that biographer to be the first, in order of time, of all his productions; but, as the date of it is 1730, it could not have been earlier than the work mentioned above; besides, the arrangement is stated to be founded on the doctrine of a sexual difference. I do not find any mention of the *Hortus Uplandicus* in the catalogue of Linnæus's works given in his own Diary. (*Editor.*)

the patronage of Dr. Olof Celsius, at that time Professor of Divinity, and the restorer of natural history in Sweden, afterwards distinguished for oriental learning, and more particularly for his *Hierobotanicon*, or critical dissertations on the plants mentioned in Scripture. Linnæus had the good fortune to obtain this celebrated Professor's esteem very soon after his removal to Upsala. Celsius was at that time meditating his *Hierobotanicon*, and, being struck with the diligence of Linnæus in studying the plants of the Upsala garden, and with his extensive knowledge of their names, fortunately for him (then involved in difficulties from the narrow circumstances of his parents) not only patronised him in a general way, but admitted him to his house, his table, and his library.—It was in a manner equally meritorious that he acquired the friendship of Dr. Olof Rudbeck, Professor of Botany.

Linnæus had read in the Leipsic Commentaries a review of Vaillant's *Discours sur la structure des fleurs*, by which he was induced to examine very closely the *stamina* and *pistilla*. These appendages he discovered to be essential to the vegetable, and to assume as much variety as the petals; and hence he conceived that they might be made the foundation of a new system, the first sketch of which he drew up in opposition to an academical dissertation, intitled Γαμος φυτων, *sive Nuptiæ arborum**. He presented this little manuscript tract to Celsius, who showed it to Rudbeck; and the latter was so highly pleased with its novelty and ingenuity that he immediately expressed a desire to be made acquainted with the author, and shortly afterwards appointed him tutor to his children.

Hitherto the abilities of Linnæus were known only to a few individuals; but the time at length arrived when, by being pro-

* *Præside* Georgio Wahlin, *Acad. Bibliothecario. Resp.* Petro Ugla. (Upsal. 1729, 4to. cum figg.)

moted

moted to a public post in the university, he had an opportunity of acquiring general reputation. In 1730, Professor Rudbeck, who was far advanced in years, obtained permission to execute his duties by deputy. A person of the name of Preutz was first nominated to read the lectures, but, being found incompetent, he was obliged to give way to Linnæus, who thus, after a little more than two years' residence at Upsala, was judged qualified to teach the science of botany. He commenced his lectures without delay, instituted regular botanical excursions with his pupils (who soon became numerous), and made considerable alterations and improvements in the botanic garden. He also devoted as much attention as his situation would admit of to the perfecting of the new system which he had conceived.

In the year 1731, the royal academy of sciences at Upsala, having for some time meditated the design of improving the natural history of Sweden, at the instance particularly of Professors Celsius and Rudbeck, deputed Linnæus to make the tour of Lapland, with the sole view of examining the natural productions of that arctic region; to which undertaking his reputation (already considerable as a naturalist), and the strength of his constitution equally recommended him. This tour had been made with the same view, in 1695, by Rudbeck himself, at the command of Charles XI; but, unfortunately, the whole fruit of that expedition perished in the dreadful fire at Upsala in 1702.

As this expedition could not take place until the succeeding summer, Linnæus passed part of the winter with his friends and relations in the south. In January 1732, he paid a visit to his former preceptor, Stobæus, at Lund, for the purpose of studying his collection of fossils, this being the only branch of natural history with which our young traveller was not well acquainted. Stobæus's cabinet, however, did not altogether satisfy him. He

then proceeded to his native province of Småland, where after spending some weeks, he returned to Upsala to prepare for his journey.

On the 13th of May, 1732, Linnæus set out for Lapland, mounted on horseback, and carrying all the articles he wanted about him. His first point was Gefle, the principal town of Gästrikland, whence he passed through Helsingland, Medelpad, and Ångermanland to Umeå, in West Bothnia, ascending mount Norbyknylen, and visiting a remarkable cavern on the summit of mount Skula in his way. At Umeå, Linnæus left the public road, and took his course through the woods westward. Being now come to the country that was more particularly the object of his inquiries, equally a stranger to the language and to the manners of the people, and without any associate, he committed himself to the hospitality of the inhabitants, and never failed to experience it fully. He speaks, in several places, with peculiar satisfaction, of the innocence and simplicity of their lives, and their freedom from diseases*.

In proceeding from Lycksele towards the mountainous country bordering on Norway, he experienced great inconvenience from the floods, which were very violent at that season of the year; and

* The reader cannot fail to be pleased with the following animated passage, which occurs in the description of *Betula nana* (*Flora Lapponica*, Smith's edit. p. 277) "*O felix Lappo! qui in ultimo angulo mundi sic bene lates contentus et innocens. Tu nec times annonæ caritatem, nec Martis prælia, quæ ad tuas oras pervenire nequeunt, sed florentissimas Europæ provincias et urbes, unico momento, sæpe dejiciunt, delent! Tu dormis hic sub tua pelle ab omnibus curis, contentionibus, rixis liber, ignorans quid sit invidia! Tu nulla nosti nisi tonantis Jovis fulmina. Tu ducis innocentissimos tuos annos ultra centenarium numerum cum facili senectute et summa sanitate. Te latent myriades morborum nobis Europæis communes. Tu vivis in sylvis, avis instar, nec sementem facis nec metis, tamen alit te Deus optimus optime. Tua ornamenta sunt tremula arborum folia*

and he found it impossible to ascend the river Juktan; so that, after having wandered over trackless marshes and lakes of ice for some time, without success, he was obliged to return into West Bothnia, quite exhausted with fatigue. He next visited Pitheå, and Luleå, upon the gulph of Bothnia; and from Luleå he took a north-western route, by proceeding up the river of that name, and visited Jockmock, whence he traversed deserts inhabited only by a few straggling people, originally descended from the Finlanders, and who settled in this country in remote ages, being an entirely distinct nation from the Laplanders. Arriving at Quickjock, he provided himself with an interpreter, and ascended a noted mountain called Wallevari, in speaking of which he has given us a pleasing relation of his finding a singular and beautiful new plant (*Andromeda tetragona*) when travelling within the arctic circle, with the sun in his view at midnight, in search of a Lapland hut*. Hence he crossed the Lapland alps into Norway, and went by sea from near Torfjorden, along the shores of the North Sea, as far as Rörstad. These journeys from Luleå and Pitheå, on the Bothnian gulph, to the Norwegian coast, were made on foot, and our traveller was attended by two Laplanders, one his interpreter, and the other his guide. He tells us that the vigour and strength of these two men, both old, and sufficiently

folia graminosique lucí. Tuus potus aqua crystallinæ pelluciditatis, quæ nec cerebrum insania adficit, nec strumas in Alpibus tuis producit. Cibus tuus est vel verno tempore piscis recens, vel æstivo serum lactis, vel autumnali tetrao, vel hyemali caro recens rangiferina absque sale et pane, singula vice unico constans ferculo, edis dum securus e lecto surgis, dumque eum petis, nec nosti venena nostra quæ latent sub dulci melle. Te non obruit scorbutus, nec febris intermittens, nec obesitas, nec podagra, fibroso gaudes corpore et alacri, animoque libero. O sancta innocentia, estne hic tuus thronus inter Faunos in summo septentrione, inque vilissima habita terra? numne sic præfers stragula hæc betulina mollibus serico tectis plumis? Sic etiam credidere veteres, nec male."

* See *Flora Lapponica* (Smith's edit.) p. 135.

ficiently loaded with his baggage, excited his admiration, since they appeared quite unhurt by their labour, whilst he himself, though young and robust, was frequently quite exhausted. On this journey he slept generally under the boat in which they crossed the rivers, as a defence against rain and the musquetoes, which insects, in the Lapland summer, are not less teazing than in the torrid zone! In descending one of these rivers, he narrowly escaped perishing, by the oversetting of the boat, and lost many of the natural productions which he had collected. Linnæus thus spent the greater part of the summer in examining the productions of Lapland, and of those mountains on which, four years afterwards, the French philosophers secured immortal honour to Sir Isaac Newton. At length, after having suffered incredible fatigues and hardships, in climbing precipices, passing rivers in miserable boats, suffering repeated vicissitudes of heat and cold, and not unfrequently extreme hunger and thirst, he returned to Torneå in September. He did not take the same route from Torneå as when he entered Lapland, having determined to visit and examine the country on the eastern side of the Bothnian gulph: his first stage, therefore, was to Uleå, in East Bothnia, whence he proceeded to old and new Carleby. He continued his route through Wasa, Christinestad, and Björneborg to Åbo, a small university in Finland. Winter was now setting in apace; he therefore crossed the gulph by the isle of Åland, and arrived at Upsala in November, after having performed a journey (and that mostly on foot) of 10 degrees of latitude in extent, exclusive of those deviations which such a design rendered necessary.

The result of Linnæus's botanical observations on this journey was not published until several years afterwards, during his residence in Holland. For the present, he gave in to the academy a sketch

a sketch of them, which was published in the *Acta literaria et scientiarum Sueciæ* (1732. p. 46—58. 1735. p. 12—23.) under the title of *Caroli Linnæi* FLORULA LAPPONICA, *quæ continet brevem catalogum plantarum quas per provincias Lapponicas, Westrobotnienses, Umensem puta, Pithöensem, Lulensem, et Tornensem observavit in itinere Lapponico, quod societatis regiæ Literarum et Scientiarum stipendio munitus peregit*, 1732. In this catalogue the plants are disposed according to the system which was afterwards called the *sexual*, and which we should not have mentioned here, but to prove how early Linnæus had laid the foundation of that method which he afterwards wrought up to such perfection.

Dr. Smith has in his possession Linnæus's *general* account of this expedition, entitled LACHESIS LAPPONICA, which is at present only in manuscript, our author never having committed any part of it to the press, except a sketch prefixed to the *Flora Lapponica*. This curious manuscript is in the Swedish language, but it is the intention of Dr. Smith to present it to the public very shortly, in English; and there can be no doubt that it will prove extremely interesting.

The straitened state of his income induced Linnæus to try what emolument he could derive from giving lectures on mineralogy: but he had no sooner succeeded in gaining a good number of pupils, than he had to encounter the jealousy of some of the established lecturers, who contrived to prevent his progress.

At the end of the year 1733, he set out for the great mine-district of Sweden, with a view to improve himself still further in the science of mineralogy, of which he had now conceived a system of his own. Whilst at Fahlun, he became known to Baron

Baron Reuterholm, Governor of Dalarne, by whom he was sent on an expedition, with seven other young naturalists, for the purpose of investigating the natural productions of that province. To each of the party a distinct department was assigned, Linnæus having the superintendence and direction of all the others, who made their report to him at the end of each day's journey. In this manner, they not only travelled over the mountains of Dalarne twice, but also a part of Norway, and returned to Fahlun. The expenses of this expedition were defrayed by the Baron, to whom Linnæus, on his return, delivered a journal of the observations. Dr. Smith possesses a folio MS. closely written (in the Swedish language), which appears to be a copy of this journal, and which is entitled ITER DALECARLICUM. From an account given in the *Hamburgische berichte* for 1735, and extracted by Stoever*, it would appear that the result of the expedition was printed; but it could not have been in Linnæus's name, for he makes no mention of such a work in any part of his Diary.

After the completion of this journey we find that Linnæus resided for a time at Fahlun, where he contracted a close friendship with Dr. Browallius, at that time chaplain to Baron Reuterholm, and afterwards Professor, and Bishop of Abo. This gentleman was much attached to the study of natural history, particularly botany, but, being imperfectly acquainted with mineralogy, and thinking that the subject would be generally interesting to the inhabitants of a mining district such as Dalarne, he persuaded Linnæus to deliver a course of lectures

* See Trapp's Translation of his *Life of Linnæus* p. 395.

upon that science. The project was productive of considerable emolument to Linnæus, to whom the miners all resorted, not only to witness his experiments in assaying, but to learn (what was quite new to them) the clear and satisfactory system which he taught. Through his interest with the governor of the province, he obtained leave to give his instructions in the public laboratory.

At Fahlun, Linnæus embarked also in the practice of physic, in which, however, he failed to attain the success he merited,—a circumstance the more distressing to him, as it operated (for the present at least) as an impediment to a matrimonial union with the eldest daughter of Dr. Moræus, to whom he here became passionately attached*. By the advice of his friend Browallius, he resolved to try the effect of procuring the doctorate, and, with this view, which accorded also with his strong desire to travel, he planned a journey into Holland, where, in fact, it was at that time the custom among such of his countrymen as studied medicine, to seek their academical honours.

At the beginning of the year 1735, Linnæus commenced his journey, in company with Dr. Sohlberg, a fellow student; but, before he left Sweden, he paid a visit to the place of his nativity, where, however, his mother had died the preceding summer, in the 45th year of her age. From Råshult, he proceeded to Helsinborg, and, crossing thence to Elsineur, passed through part of the kingdom of Denmark. The nearest port of Germany to

* On this subject Linnæus expresses himself in a manner which shows very strikingly the sensibility and delicacy of his mind, in a letter to Haller. "*Vidi, obstupui, præcordia intima sensi attonitus novis intumuisse curis. Amavi. Illa tandem victa blanditiis, votis, &c. et me amavit; promisit; dixit fiat! Patrem adloqui erubescebam pauperrimus; dixi tamen. Voluit, et noluit. Me amabat pater, non mea fata. Dixit, intacta permanebit per tres annos; dicam tum demum.*" This letter (which may be found in the collection published by Stoever) is dated Stockholm, September 12, 1739.

 which

which the packet sailed being Lübec, he went from that place to Hamburg. Here Linnæus was highly gratified by the opportunity of viewing several interesting collections, and by the civilities which he received from Professor Kohl, Dr. Jænisch, and M. von Sprekelsen. But his sagacity in examining the various natural curiosities that were contained in the principal museums of this place proved a cause of his incurring considerable odium among the Hamburgers, for he pronounced one of the greatest wonders of which they had to boast a palpable deception; this was the famous serpent with seven heads*, as it was called, which heads, upon close inspection, our young naturalist discovered to be factitious, and to be merely the jaw bones of weasels artfully covered with serpent's skin. So unpopular was Linnæus rendered by this circumstance, and into such unpleasant embarrassments did it throw him, that he was advised by Dr. Jænisch to leave the town. He therefore lost no time in proceeding from Hamburg to Amsterdam, where he was induced by various attractions to stay eight days. He then set out for his more immediate place of destination, Harderwick, the university where he intended to graduate.

Having passed his examinations, Linnæus defended a *thesis*, entitled *Hypothesis nova de febrium intermittentium causa* (1735. 4to. pp. 24.)†. It is an inquiry into the causes of the frequency of intermittents in Sweden (particularly in Upland and the south-east parts of the kingdom) which, after the most minute

* There is a figure of this monster in Seba's *Thesaurus, Tom.* 1. *tab. cii. f.* 1.

† This dissertation was reprinted at Stockholm, in an octavo form, in the year 1739, as we are informed by Linnæus, in the account of the editions of his works given in his Diary. It was published also at the head of the first volume of the *Amœnitates Academicæ*, printed at Leyden, in 1749, by Dr. Peter Camper; and in the 10th volume of the edition of that collection by Schreber.

scrutiny

scrutiny into the soil and situation of the places where those complaints were so remarkably prevalent and obstinate, he was inclined to attribute to *local* circumstances; and he finally proposes, Whether the cause might not be the strong impregnation of the water with *argillaceous* particles? Linnæus met with a very strong opponent of this position in his countryman Wallerius, by whom he was severely attacked in some medical disputations*, which aimed at overturning many of the principles of the *Systema Naturæ*, as well as of the inaugural *thesis*. But how insufficient soever the Linnæan *hypothesis* may be to solve the difficulties which have attended the search into the remote causes of intermittents, the facts he adduced in support of that *hypothesis* certainly come in aid of the modern opinion, which imputes this class of diseases to *miasmata* arising from moist and marshy ground.

The degree of Doctor in Medicine having been conferred on him the 24th of June†, Linnæus soon afterwards set out again for Amsterdam, where he immediately waited on Dr. Burmann, who was Professor of Botany, but from whom we do not find that he received any particular civilities until a subsequent visit, which he made

* "*Decades binæ Thesium medicarum,*" *Moderatore Joh. Gottl. Wallerio, et Respondente Johanne a Darelio.* Upsal. 4to. 1741. pp. 38. The original *Theses* are extremely scarce, a circumstance owing to Linnæus's scholars having torn most of them in pieces (through partiality to their master) at the time of their being defended; but they have been republished by Stoever, subjoined to his *Collectio Epistolarum C. v. Linné.*

† Linnæus's diploma contained the following honourable testimony to his merit by the medical Professor at Harderwick, De Gorter, *viz.*

"*Ut omnibus constaret me in viro docto, et nunc Medicinæ Doctore Carolo Linnæo, Sueco, singularem non solum in omnibus medicinæ partibus, verum etiam botanica invenisse peritiam et doctrinam, adeo ut inter præcipuos medicinæ doctores sit habendus, meum nomen cum felicitatis precatione in curandis ægris, apponere non dubitavi.*"

as bearer of the compliments of the celebrated Boerhaave. He then went to Haarlem and Leyden. At the latter place he visited Professor van Royen, who showed him the botanic garden. But from no person did he, as yet, receive so much attention as from Dr. John Frederic Gronovius, who requested his permission to print the SYSTEMA NATURÆ at his own expense. This work was accordingly committed to the press the same year, but in a very compendious way, being in the form of tables only, in twelve pages (folio). Hence it appears that he had at a very early period of his life (certainly before he was twenty-four years old) laid the basis of that great structure which he afterwards completed, not only to the increase of his own fame, but to the advantage of natural science in general.—At the desire of Gronovius, Linnæus also waited on Boerhaave*, who showed him his garden (situated at a little distance from Leyden), which was stocked with all the trees the climate would bear, and afforded very great entertainment to our Swedish traveller. In the conversation that passed on this occasion, Boerhaave could not help discovering that his visitor was possessed of an extraordinary degree of knowledge, particularly in botany; and, becoming interested in his welfare, advised Linnæus not to leave Holland, but to take up his abode in that country. The latter, however, was not prompted to adopt this advice. He was desirous of recommending himself to Dr. Moræus by settling as a practising physician in Sweden; yet he resolved, before he returned thither, to lose none of the means of improving himself that lay within his reach.

* Linnæus mentions in his Diary that he could not obtain access to this great man for eight days after his application, owing to the multiplicity of Boerhaave's occupations. So much, we are told, was this great oracle of medicine in request that his antichamber was always as much crowded as that of a minister of state, and even an Emperor (Peter the Great) could not obtain immediate admission to him.

Intending

Intending at this time to return homewards through Amsterdam, he was permitted to make use of Boerhaave's name as a more regular introduction to Dr. Burmann's acquaintance than he had before been enabled to avail himself of. That distinguished botanist was occupied in completing his *Thesaurus Zeylanicus;* and, perceiving Linnæus's competency to give him essential assistance in this undertaking, offered him an apartment, with proper attendance, and board, in his own house,—an advantage which Linnæus valued too highly to forego, but which he enjoyed only a few months before a still more flattering and agreeable situation presented itself. Through the recommendation of Boerhaave, our author became acquainted with Mr. Clifford, a rich burgomaster, who paid him a visit at Burmann's house, invited him to see his magnificent garden*, and lastly, prevailed on his kind patron to part with him.

With Mr. Clifford, Linnæus enjoyed pleasures and privileges scarcely, at that time, to be met with elsewhere in the world, namely, access to a garden excellently stored with the finest exotics, and to a library furnished with almost every botanic author of note; permission to purchase whatever plants and books he thought worthy of being added to the collection; and leisure to prepare works of his own for the press. How happy he found himself in this situation, those only who have felt the same kind of ardour can conceive.

So little did Mr. Clifford spare expense in his favourite pursuit, and in his patronage of Linnæus, that, in the year 1736, he sent the latter into England, for the purpose of communicating with the most eminent botanists, and viewing the most remarkable

* The country-seat and garden of Mr. Clifford were at Hartecamp, about three miles from Haarlem.

gardens

gardens in that country. There was no person whom Linnæus had a greater desire to visit than Dr. Dillenius, the (then) Professor of Botany at Oxford, who was justly considered as one of the first botanists of his time, and, by his situation in the university, was enabled to gratify Linnæus with the inspection of the garden, *herbarium*, and library, founded by the celebrated Sherard*. Dillenius, however, did not at first receive Linnæus with much kindness, for he had been led to form rather an unfavourable idea of him from the perusal of a part of his *Genera Plantarum* which Gronovius had sent over from Holland before the work was half out of the press, and which naturally appeared, to one accustomed for many years to a system of his own, to be a very inconvenient innovation. But the conversation of the young Swede soon gave him a more favourable idea of his talents, and the venerable Professor at length became so partial to Linnæus that he would not leave him for an hour, and even strongly urged him to take up a permanent abode at Oxford, observing that the income of the professorship was sufficient for the maintenance of them both, and that such assistance as his, in the continuation of Sherard's *Pinax*†, would be invaluable.

* Linnæus makes the following honourable and merited mention of the founder of the Oxford garden in his dedication of the *Hortus Cliffortianus*. "*Consul* GULIELMUS SHERARDUS, *agnomine apud botanicos* MAGNUS, *dum suam vitam, se ipsum, et omnia sua rei herbariæ consecravit, immortalem apud botanicos obtinuit gloriam, quæ perennabit virens et florens dum vivent et florent plantæ, dato præsertim a J. J. Dillenio Phytopinace Sherardiano, uti quoque quondam Hortus Elthamensis Sherardi magni et Johannis fratrum, Dillenio authore, sine pari prodiit.*"

† The nature of this *Pinax* is perhaps too well known to require being explained. It was undertaken by Sherard as a continuation of Bauhin's *Pinax Theatri Botanici*, and afterwards devolved to Dillenius to be carried on in a similar manner. No part of it, however, ever came to the press; but the whole MS. is preserved in the botanical library at Oxford, and deserves to be considered as an interesting monument of the scientific industry and erudition of Sherard and his first Professor.

Linnæus

Linnæus visited Martyn, Rand, and Miller, and was in a more particular manner indebted to the friendship of Dr. Isaac Lawson, and Dr. Shaw the celebrated traveller. He also contracted an intimate friendship with Mr. Peter Collinson, which was reciprocally increased by a multitude of good offices, and continued to the last without any diminution. Boerhaave had furnished him with letters to our great naturalist Sir Hans Sloane; but it is with regret we must observe that they did not procure him the reception which the warmth of his recommendation seemed to claim. Boerhaave's letter to Sir Hans on this occasion (which is preserved in the British Museum) runs thus, "*Linnæus, qui has tibi dabit literas est unice dignus te videre, unice dignus a te videri; qui vos videbitis simul, videbit hominum par, cui simile vix dabit orbis.*" This encomium, however quaintly expressed, was in some measure prophetic of Linnæus's future fame and greatness, and proves how intimately Boerhaave had penetrated into his genius and abilities. One cause of the baronet's coolness may have been similar to that of Dillenius's, for Sir Hans had known plants by no other system but Ray's; and the alterations which Linnæus had made in so many of the generic names were as likely to have given the same offence to him as they had to some other contemporary botanists, notwithstanding those alterations were the necessary result of the rules so ably established in his *Fundamenta Botanica*. Probably we have reason to regret this circumstance, as Linnæus might otherwise have obtained an establishment in England, which, it has been thought, was his wish; and certainly his opportunities in this kingdom would have been much more favourable to his designs than in those arctic regions where he spent the remainder of his days. We may justly infer what an exalted idea Linnæus had of England, as a country eminently favour-

able to the improvement of science, from the compliment which he paid to London, in a letter to a friend; speaking of that city, he called it "*Punctum saliens in vitello orbis.*"

On his return to Holland, Linnæus enriched Mr. Clifford's garden and *herbarium* with a great number of valuable additions, which he had carried with him from Oxford and Chelsea. But towards the close of the year 1737, having completed the arrangement of that splendid botanical repository, and published an elaborate description of the plants that were cultivated in it, he formed the resolution of relinquishing his residence with Mr. Clifford, and of returning in the course of the following year to his native country. Linnæus himself mentions that nothing could exceed the comfort, liberality, and hospitality of treatment which he received from his princely patron; he had the constant command of a superb equipage and a regular attendance of servants, and moreover had Mr. Clifford's permission to attend Boerhaave's lectures at Leyden whenever he chose; but, notwithstanding all these advantages, whether he perceived an approaching embarrassment in that gentleman's circumstances, or whether (as is most probable) his thoughts turned with anxiety to being settled in Sweden, our author could not be prevailed on by any persuasions or promises to stay longer at Amsterdam. He went to Leyden, where other inducements to remain in Holland were held out to him by Professor Van Royen, who was very desirous of having the assistance of Linnæus in arranging anew the botanic garden, and in becoming sufficiently grounded in the principles of the new system to teach them publicly in that university. Linnæus so far acceded to the Professor's entreaties as to promise to remain a few months with him. In the mean time, the two botanists laboured hard in naming the plants and preparing a description of the garden, which had been arranged

agreeably to the plan of Boerhaave, but van Royen resolved to exchange it for that of Linnæus. The latter, however, from motives of laudable delicacy towards his kind friend, declined being instrumental in this undertaking, but consented to assist van Royen in forming a plan different from either. Linnæus passed much of his time with Gronovius, whom he also assisted in the publication of the *Flora Virginica**, which made its appearance nearly at the same time as van Royen's *Hortus Leydensis*, both these authors adopting the principles and the names proposed by our great reformer. The printing of the *Classes Plantarum*, Artedi's Ichthyology, the *Corollarium Generum*, and *Methodus Sexualis* likewise occupied his attention.

During Linnæus's stay at Leyden, he was a very active member of a philosophical club, which met in that city, and which consisted of many of the most eminent men of their time. Among them was Gronovius; van Swieten; Doctor Lawson, a learned Scotchman (who has been mentioned as a particular friend of Linnæus before)†; Lieberkühn, of Berlin, famous for his skill in microscopical instruments and experiments; Kramer, since well known by an excellent treatise on the docimastic art; and Bartsch, a young German physician, whom we shall have occasion to mention again hereafter. The members regularly assembled at their respective houses in rotation, and the one at whose house they met was always expected to demonstrate something in his own line of pursuit, as Gronovius in botany, van

* Gronovius very handsomely acknowledges Linnæus's assistance, in his preface to this work. "*Nullus igitur dubitavi* (says he) *specimina plantarum cum perspicacissimo Linnæo examinare; utinam reliqua etiam cum doctissimo viro ad examen revocare mihi licuisset.*" (P. 3.)

† Lawson was one of the physicians of the British army, and died much regretted, at Oosterhoot, in the year 1747.

Swieten in medicine, Linnæus in natural history generally, Lawson in history and antiquities, Lieberkühn in miscroscopics, Kramer in chemistry, and Bartsch in physics. On this occasion, it is not foreign to our plan to remark, that Linnæus, being present at a meeting when one of the company was exhibiting the *animalcula in semine masculino*, openly declared his opinion that these *moleculæ* were not true animalcules; and he appears ever afterwards to have retained the same opinion. We may add the names of Albinus, Gaubius, and others, were it requisite, to show that our author's talents had very early rendered him conspicuous, and gained him the regard of all who cultivated and patronised any branch of medical science; to this, no doubt, the singular notice with which Boerhaave honoured him did not a little contribute.

In the year 1738, Linnæus was recommended by Boerhaave to fill the situation (then vacant) of physician to the Dutch settlement at Surinam; but this offer, as also another made to him a short time before with respect to a similar situation at the Cape of Good Hope, he declined. Being permitted to nominate any physician whom he thought proper for that department, he recommended Dr. Bartsch, of Konigsberg, who accepted the appointment, but had the misfortune to fall a sacrifice, partly to the climate, and partly to ill usage from the governor, in half a year after his arrival, a circumstance which Linnæus has very pathetically lamented in the *Flora Suecica*, when treating of a plant to which he had given his unfortunate friend's name*.

Boerhaave's

* "*Bartsiam dixi a* JOHANNE BARTSCHIO, *Regiomontano, Medicinæ Doctore, juvene pulcherrimo, candidissimo, et certe doctissimo ac nationis suæ ornamento. Contracta cum viro intima amicitia in Belgio, eum inextinguibili plantarum insectorumque ardore infeci, adeo ut in rimandis minutissimis plantarum partibus iisdemque acutissime describendis paucos*

Boerhaave's regard for our author seems to have remained undiminished even to his dying moments; the following is the account given by Linnæus himself of the last interview with his illustrious and affectionate instructor. Linnæus was one of the few persons who were permitted to have access to that great man when he was labouring under the disease that proved fatal to him; and having bid him a sorrowful adieu, at the same time kissing his hand, in token of respect, Boerhaave put Linnæus's hand to *his* lips in return, and addressed him in these impressive words: "*I have lived my time out* (said he) *and my days are at an end. I have done every thing that was in my power. May God protect thee, with whom this duty remains. What the world required of me, it has got, but from thee it expects much more. Farewell, my dear Linnæus!*" No sooner was Linnæus returned to his lodgings than he received from the venerable invalid, as a last and parting present, an elegant copy of his Chemistry.

Just as our author was preparing to leave Leyden, he was seized with a very severe ague, from which he was scarcely recovered, before a dangerous attack of *cholera* supervened. He was attended by Baron van Swieten, to whom Linnæus attributes his having been saved from death. As soon as the disease appeared to be entirely removed, his kind friend Mr.

paucos superiores habuerit. Vacuo munere medici ordinarii Societatis Belgiæ Indiæ orientalis, Surinamæ me elegit Divus Boerhaavius; cum autem recusarem torridas inhabitare zonas, sub arctoo ipse natus et educatus, mihi concessit beatus vir ad hoc munus vocare quemcunque vellem; arrisit hoc integerrimo amico Bartschio, plantarum sola causa, commendatur apud Boerhaavium, recipitur, et Surinamas petit; ubi nescio quo gubernatoris Surinamæ odio et malitia, nunquam ipsi læta concessa hora, hinc tædio, invidia, pauperie, æstu, post dimidium annum obiit, meliori fato si quis alius dignissimus vir. Qualis fuit hic vir docet Dissertatio de calore, docebunt literæ ad me Surinama missæ, plenæ plantarum observationibus curiosissimis." (8vo. 1745. p. 186.)

Clifford, (though not altogether pleased with Linnæus for having preferred Leyden to Hartecamp,) persuaded him to pass a few weeks at his house once more, for the benefit of a change of air, and the enjoyment of exercise in his carriage. Linnæus, however, with all these comforts and advantages, continued in a very debilitated state until he had proceeded some way on his journey to Paris,—a city which he could not resist the inclination to visit before he returned to Sweden, notwithstanding the circumstances which now rendered that return necessary. When he reached Brabant, he says, his whole frame seemed to be renovated, and his spirits were relieved from an oppression that had almost overcome him.

Linnæus's route lay through Antwerp, Brussels, Mons, Valenciennes, and Cambray, but he did not make any stay at these places, being impatient to reach the metropolis of France, and to present his letters of introduction to Professor Antoine de Jussieu. This eminent botanist was then too much occupied by his medical avocations to pay that attention to Linnæus which he wished; and he therefore consigned him to the care of his brother, Bernhard de Jussieu, who was demonstrator of botany in the royal garden. The latter, not only procured him a sight of the garden, of the *herbaria* of Tournefort, Surian, Vaillant, &c., and of the fine botanical library belonging to D'Isnard, but also took him to Fontainbleau, and other places, for the sake of showing him all the remarkable plants that were to be found in the vicinity of Paris. In short, nothing could exceed the kindness and attention of the Jussieus, who were so liberal as to save him from all expense, and introduced him to all their friends. Our author felt particular pleasure in being made known to the celebrated Reaumur, Obriet (the draughtsman and companion of Tournefort on his travels in the East) La

Serre, the widow Vaillant, and Mad. Basseport, botanic painttress to the king. The Royal Academy of Sciences paid him a very high compliment. Having received permission to attend one of its sittings as a visitor, he was desired to wait a little while in the antiroom; and it was at length announced, that the Academy had elected him a Corresponding Member. M. du Fay proposed to Linnæus to remain in France, upon condition of being made an ordinary member and receiving a salary; but this he declined, assigning as a reason his fixed resolution to settle in Sweden.

It may appear somewhat singular, that Linnæus should not have acquired the French language whilst he was in that country. In fact, though he was so long a time in Holland, he did not become acquainted even with the Dutch; nor was the German or English tongue at all familiar to him. Yet he made his way without any difficulty, and the Latin being at that time the general medium of communication among men of science, he did not regret having grounded himself in one language only besides his own. He saved himself the time usually devoted by travellers to the acquisition of languages, from principle, conceiving that, as his stay abroad was limited, he should fall short of the *end*, if he gave too much study to the *means*; and that there were persons enough making interpretation their profession to render his undertaking it himself unnecessary, especially as real knowledge, rather than the graces of literature, constituted the object of his pursuit.

The number and importance of Linnæus's publications, during only three years' absence from his native country, sufficiently demonstrate how constantly his mind must have been occupied, and how little reason he could have had to accuse himself of the neglect of any attainments within the compass of his time and talents.

talents. There cannot be a more proper place to give some account of these publications, individually; for we are on the point of accompanying our author back into Sweden, whither he returned, ultimately to receive the reward of his merit.

The first of these was the SYSTEMA NATURÆ, *sive regna tria naturæ systematice proposita, per classes, ordines, genera, et species.* (Lugd. Bat. 1735. fol. pp. 14.) with the Swedish names annexed. This work, as we have mentioned before, was published at the expense of Dr. John Frederic Gronovius; as it contains little more than the outlines of his method, we shall reserve a fuller account of it until we come to the enlarged editions, in which that method was exemplified in detail.

FUNDAMENTA BOTANICA, *quæ majorum operum prodromi instar, theoriam scientiæ Botanices per breves aphorismos tradunt.* (Amst. 1736. 8vo. pp. 35.) The science of botany is in this work reduced to 365 aphorisms, or canons; and what Sethus Calvisius has said of Ptolemy's canon, may truly be said, *mutatis mutandis*, of Linnæus's *Fundamenta Botanica.* "*Omni auro pretiosior est; si dudum innotuisset, nec adeo in diversas sectas* BOTANICI *abiissent, sed* RES BOTANICÆ *multo melius se haberent.*" It passed through several editions*, and was published, with a comment upon each aphorism, in 1751, under the title of PHILOSOPHIA BOTANICA, hereafter to be noticed.

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* Ed. 2. Aboæ 1740. 4to. pp. 32.
3. Holm. 1740. 8vo. pp. 23. *Auctoris.*
4. Amstelod. 1741. 8vo. pp. 51.
5. Paris 1744. 8vo. pp. 26.
6. Halæ 1747. 8vo. pp. 31.

This work is contained also in Alston's *Tirocinium Botanicum* (Edinb. 1753. 8vo. p. 83—109.) and *Gilibert's Fund. Bot.* (Tom. 1. p. 1—48.) There is a Madrid edition, in which it is translated into Spanish. (1788. 8vo.)

BIBLIOTHECA BOTANICA, *recensens libros plus mille de plantis hucusque editos, secundum systema auctorum naturale in classes, ordines, genera et species dispositos, additis editionis loco, tempore, forma, lingua, &c.* (Amst. 1736. 8vo. pp. 153.) Botanic writers are distributed into 16 classes, in this work, which is by no means so unentertaining as might be expected from the general idea of a catalogue merely; for the author has frequently subjoined short characters of the books, and taken occasion, at the beginning of each class, as also in the orders or subdivisions, to explain several of the terms used in his subsequent writings. The preface contains a short history of the rise and progress of botany, and an acknowledgement of the aid which the author received in the compilation of this work, from his free access to the libraries of M. von Sprekelsen, at Hamburg, of Dr. Gronovius at Leyden, and particularly of his patron Mr. Clifford, and Dr. Burmann, Professor of Botany, at Amsterdam. The following is his classification of authors, *viz.*

1. *Patres.*
2. *Commentatores.*
3. *Ichniographi.*
4. *Descriptores.*
5. *Monographi.*
6. *Curiosi.*
7. *Adonistæ.*
8. *Floristæ.*
9. *Peregrinatores.*
10. *Philosophi.*
11. *Systematici.*
12. *Nomenclatores.*
13. *Anatomici.*
14. *Hortulani.*
15. *Medici.*
16. *Anomali.*

During his stay at Paris, Linnæus had opportunites of adding very considerably to the original materials, and we find him announcing to Haller, in a letter dated from that city*, his being even then enabled to publish a second edition. So rich in botanical

* Stoever's *Collectio Epist.* (p. 37.)

tanical works were the public and private libraries to which he obtained access by means of the Jussieus, that he soon found his catalogue doubled. His design, however, was not executed until the year 1747, when the *Bibliotheca Botanica* came forth, much augmented, at Halle. Subjoined to a third edition, published at Amsterdam in 1751, is a biographical table exhibiting, in chronological order, the names of 139 botanic authors, from the time of Avicenna in 981, to Catesby in 1749, and specifying, wherever it was possible, the year of their birth and death. In the first edition, this table was brought down no further than to our countryman Houston, who died in 1733; it was afterwards continued to the year 1759, in an academical dissertation, which will be noticed hereafter. The whole has been copied by Gilibert into the first volume of his *Fundamenta Botanica.*

Linnæus has been followed in this useful undertaking by Seguier*, L. T. Gronovius†, and others, but the literary world are most indebted to the illustrious and indefatigable Haller, whose work‡, as it is no less a critical than a typographical history, is inestimable in its way. The catalogue published by Dr. G. R. Boehmer§ is a valuable performance, but differs from Haller's in its arrangement, which is purely systematic, whereas the other's is chronological; that of Seguier and Gronovius is in an alphabetical order. We have to boast of an admirable specimen of biblical arrangement, published within a very late period, in our own country,

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* *Bibliotheca Botanica,* Hagæ, 1740. 4to.

† *Auctarium in Bibl. Bot. Seguieri.* Leyden. 1760. 4to.

‡ *Bibl. Bot. qua scripta ad rem herbariam facientia a rerum initiis recensentur.* 2 Tom. Tigur. 1771. 1772. 4to.

§ *Bibl. Scriptorum Hist. Nat. &c. realis systematica.* Lipsiæ, 1785—1789. 8vo. 3 Vol.

and

and which (so far as the collection admits of it) possesses the advantages of the chronological and systematical methods united*. Hence the *Bibliotheca Botanica* of Linnæus may be considered as now superseded; yet, as a specimen of its author's uncommon industry, and as being the earliest *scientific* production in this branch of knowledge, it will always be held in estimation by botanists of learning and curiosity.

The flowering of the Plantain-tree† in the garden of our author's patron, Mr. Clifford, produced a complete history of that plant from Linnæus's pen, under the title of MUSA CLIFFORTIANA *florens Hartecampi*, 1736, *prope Harlemum* (Lugd. Bat. 1736. 4to, pp. 46.), which is drawn up with the utmost precision, according to our author's own *methodus demonstrandi*, printed at the end of the *Systema*, and is a model for this kind of *monographiæ*. It is embellished with two plates, one representing the plant at large, the other the parts of fructification separately.

GENERA PLANTARUM *eorumque characteres naturales secundum numerum, figuram, situm, et proportionem, omnium fructificationis partium.* (Lugd. Bat. 1737. 8vo, pp. 384.) This is to be considered as one of the most important and valuable of all Linnæus's works‡. Of the system here first fully developed we

* *Catalogus bibliothecæ historiæ naturalis Josephi Banks, &c. auctore J. Dryander, M. M.* Tom. 4. London 1798. 8vo.

† *Musa paradisaica* (Linn. Spec. 1477.) This tree flowers in the Royal Gardens, at Kew, from October to December.

‡ It may not be uninteresting to the reader to be presented with the following extract from a letter addressed to Linnæus, on the publication of this extraordinary performance, by the celebrated Boerhaave. "*Liber ipse* (says he) *inspectus stupenti ostendit infinitæ diligentiæ, constantiæ singularis, et scientiæ incomparabilis opus; neque utilitatem pulcherrimi instituti satis ipse depredicare possum. Secula laudabunt, boni imitabuntur, omnibus proderit. Tu huic totus dum ades scribis quæ ætatem et Aristarchum ferant.*" (Jan. 13. 1737.)

shall treat at large in another place, and shall therefore content ourselves with remarking, on the present occasion, that the characters of plants given in this work are applicable to any classical method founded on the parts of fructification alone; in which respect they have the advantage over those of all foregoing writers, and will probably stand firm, even though the more general divisions of the Linnean system should be set aside. Our author found it necessary either to change or abolish more than half the number of the generic names which had been established by preceding authors, and the prodigious quantity of non-descript plants which had fallen into his hands, obliged him to frame *new* genera to the amount of more than double the number of those that were left as he found them. He tells us that he had examined the characters of 8000 flowers before the publication of the first edition. Those alone who have been accustomed to examine plants with a scientific view can judge how arduous this undertaking must have been, and how great the application which he must necessarily have devoted to it, at a very early period of life. No other persons can sufficiently admire the accuracy with which so great a number of flowers have been examined and compared, or see the aptitude of that assemblage of terms which were invented by Linnæus, to express the different *figure*, *situation*, and *proportion* that exist in such a variety of subjects. If this were a proper place to expatiate on the performance, and to consider all that Linnæus has done with respect to other distinctions in plants, his merit would become still more conspicuous, and be acknowledged to surpass all praise.

At the latter end of the work was given the general plan of a system, invented by Linnæus, and founded upon the different *kinds* and *arrangements* of the *calyx*, or cup of the flower in plants

(but this was omitted in the later editions); also a fragment of that "*primum et ultimum*" in botany—the *natural* method.

The first edition of this book contained 935 *genera*; the last extended the number to 1239*; and the *Mantissæ* since to 1336.

There have been two editions of the *Genera Plantarum* since the time of Linnæus, the one by JOHN JAMES REICHARD (Frankfort 1778, 8vo, pp. 571.) and the other by JOHN CHRISTIAN DANIEL à SCHREBER. (Frankfort 8vo, vol. 1. 1789. pp. 379. vol. 2. 1791. p. 381—872.) The last mentioned edition contains no fewer than 1767 *genera*, of which 75 were constituted by the editor himself. In 1787, the work was translated into our own language by a botanical society of Litchfield, who included, with Linnæus's last edition and the *Mantissæ*, the *Supplementum Plantarum* of the younger Linnæus and all the new *genera* of Thunberg and L'Heritier (Vol. 1. pp. 386. Vol. 2. p. 387—840. 8vo.)

Before the conclusion of the year 1737, our author published the COROLLARIUM GENERUM PLANTARUM, *exhibens genera plantarum* 60 *addenda prioribus characteribus* (pp. 25.), *cui accedit*

* The following is a list of the several editions of the *Genera Plantarum* during Linnæus's lifetime, *viz.*

Ed. 2. pp. 527. Lugd. Bat. 1742. 8vo, corrected; with the French names.

3. pp. 413, tabb. æn. 2. Paris. 1743. 8vo.

4. Halæ 1747. 8vo.

5. GENERA PLANTARUM, *quæ novis 70 auctoris generibus sparsim editis locupletata recudenda curavit* Ch. Car. Strumpff, pp. 441. tab. æn. 1. Halæ 1752. 8vo.

6. enlarged by the author, pp. 500. Holm. 1754. 8vo.

7. perfected by the author, pp. 580. ibid. 1764. 8vo.

I have never seen the edition marked as the 4th, nor can I find any account of it except that which is given in Linnæus's own list, and which is extracted above. Dr. Pulteney mentions a Vienna edition of 1767; this also is unknown to me. It was most probably a piracy.

METHODUS SEXUALIS, *sistens genera plantarum secundum mares et feminas in classes et ordines redactas* (pp. 23.) at Leyden, in octavo. These sixty new *genera* were all taken into the next edition of the foregoing book. The *Methodus Sexualis* exhibits a brief view of the sexual system, so far as respects the *classes* and *orders*, the foundation of which will be explained when we come to analyze the *Systema Naturæ*.

It has been thought by some that the first idea of the sexual method was received from the writings of Jungius, first, professor at Helmstadt, and afterwards rector of the *gymnasium* at Hamburg, where he died in 1657. These writings* contain an uncommon display of original observations on the subject of plants, and prove Jungius to have been a most accurate observer of nature. He has not only discriminated, with peculiar nicety, the structure and several parts of plants, but has also, with equal judgment, shown the impropriety of many of the old generical and specifical distinctions, and given rules for forming them anew which have been of the greatest service to his successors in the science. But Jungius did not exhibit any plan, by which it appears that he laid the basis either of the sexual or any other system; nor had Linnæus borrowed any ideas whatever from that author, for it appears that he had not an opportunity of perusing his works until many years afterwards†. With

* They were compiled by Dr. Albrecht, of Cobourg, under the title of "JOACHIMI JUNGII *Lubecensis, &c. opuscula botanico-physica, ex recensione et distinctione Martini Fagelii M. D. &c. et Joh. Vagetii, cum eorundem annotationibus, &c.* (Coburgi 1747. 4to, pp. 178.) The volume contains—1. *Isagoge Phytoscopica.* 2. *De plantis Doxoscopiæ physicæ minores.*

† This is proved by the following passage in a letter of Linnæus to Dr. Giseke, of Hamburg, dated Dec. 20, 1774. *viz.* "*Triduum est quo accepi a te missum rarissimum donum, Doxoscopiam Jungii, quam antea nunquam obtinui, pro quo libro grutès quas unquam potero reddo maximas. Auctor, ut video, fuit vir suo tempore et laboriosissimus et acutissimus.*" (See Stoever's Collection of Letters, p. 112.)

more

more justice, perhaps, has Linnæus been supposed to have been anticipated in some of the principles of his system by John Henry Burckhard, whose letter to Leibnitz was republished by Heister*, of Helmstadt, in 1750, solely with a view to dispute Linnæus's claims to originality; but the attempt cannot be considered as successful, by those who examine Burckhard's observations attentively; and even if the first *idea* of a system founded uniformly on the sexes of plants could be fairly ascribed to that writer, the first *execution* of it must universally be allowed to belong to our illustrious Swede.

In the same year with the *Corollarium Generum*, Linnæus published a small piece entitled VIRIDARIUM CLIFFORTIANUM, *in quo exhibentur plantæ omnes quas vivas aluit Hortus Hartecampensis annis* 1735, 1736, 1737, *indicatæ nominibus ex Horto Cliffortiano depromtis* (Amst. 1737. 8vo, pp. 104.) This little work is now become extremely scarce.

In the same year appeared the result of the Lapland expedition, as far at least as relates to the *plants* of that country. This volume includes the vegetable productions of a tract of country not less than 100 Swedish (equal to more than 600 English) miles in length, and 50 in breadth, under the title of FLORA LAPPONICA, *exhibens plantas per Lapponiam crescentes,*

* Heister (who was a sort of *Rayist*) took every opportunity of starting objections to the system of Linnæus, and the academical dissertations of his pupils were made vehicles of them. The book alluded to in the text is entitled, "*Epistola ad illustrem et excellentissimum virum D. Godofredum Guilielmum Leibnitzium, polyhistorem consummatissimum, qua characterem plantarum naturalem nec a radicibus nec ab aliis plantarum partibus minus essentialibus pluribus discriminandi capitibus constitutis peti posse ostendit, simulque in comparationem plantarum quam partes earum genitales suppeditant paucis inquirit* Jo. HENR. BURCKHARD, M. D. *Cum Laur. Heisteri præfatione.* (Helmstadt 1750. 4to.) The original letter is of the date of 1702.

secundum

secundum systema sexuale, collectas in itinere impensis Societatis regiæ litterariæ et scientiarum Sueciæ, an. 1732, *instituto, additis synonymis et locis natalibus omnium, descriptionibus et figuris rariorum, viribus medicatis et œconomicis plurimarum.*" (Amst. 1737. 8vo. pp. 372. tabb. 12.) This work is much more than a bare enumeration of synonyms, and the great object of it (as we are informed in the Diary) was to show what vegetables endure the hardest climate in the world. The preface contains an account of the author's journey, and his acknowledgments to the members of a literary society*, by whose munificence this work was adorned with plates, on which are engraved 58 of the more rare (chiefly alpine) plants. Among other *Prolegomena*, a geographical and natural description of the country is given, and the difference between the *Alps* and the *Desert* distinctly marked, concluding with some observations on alpine plants in general. The work is interspersed with many very curious remarks relating to the inhabitants, their simplicity of life and manners, their diseases, the animals of the country, the medical and œconomical uses of many of the plants, descriptions at large of such as were not well described before, and critical observations, in a botanical way, upon others. To instance briefly a few only of our author's observations,—

No. 16. The dropsy very frequent in East Bothnia, owing to the intemperate use of spirits.

No. 22. The down of the Cotton-grass (*Eriophorum polystachion*) used for bedding among the poor, instead of feathers.

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* This society (of which Burmann was a member) met at Amsterdam, and took a particular interest in the publications of Linnæus, who had frequently been a visitor in it.

No. 62. Astonishing growth of the Great Plantain (*Plantago major*). The spikes 4 or 5 feet high. In other situations, the whole plant not 1 inch.

No. 80. The wretched inhabitants sometimes obliged to make bread of the roots of the Marsh Trefoil (*Menyanthes trifoliata.*) The scurvy unknown in Lapland, although vegetable productions have scarcely any share in the diet of its inhabitants, which is almost wholly the recent flesh of the rein-deer: a fact which Sir John Pringle, among others, has made good use of in his discourse "On the means of preserving the health of mariners."

No. 101. Symptoms of a most excruciating species of colic, common among the natives of the Lapland woods, who employ for the cure of it the root of *Angelica.* This disease is called in Lapland *Ullem* or *Hotme*, and approaches very nearly to the *Colica spasmodica* of Scheuchzer*.

No. 103. The deleterious effects of the Water Hemlock (*Cicuta virosa*) largely discussed.

No. 136. The pernicious effects of the Lancashire Asphodel (*Anthericum ossifragum*) on sheep.

No. 143, 144, 145. Various uses of the black and red Whortleberries, and Cranberries†.

No. 160. Various œconomical uses of the Marsh Cistus (*Andromeda polyfolia.*)

No. 200. Observations on the gout—whether owing to the use

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* It is the *Colica Lapponica*, of Sauvages. (*Nosol.* 2. p. 103.)

† The fruit of the different species of *Vaccinium* are said to be very generally eaten in Lapland, both raw and mixed with various kinds of food. Those writers who impute the origin of scurvy to a deficiency of acescent diet would perhaps thus account for the exemption of the Laplanders from this disease.

of

of spirituous and fermented liquors. Reflections on the health and vigour of the Laplanders*.

No. 311. The Yarrow (*Achillea Millefolium*) used sometimes in Dalarne instead of hops, and said to render the drink very intoxicating.

No. 328. Singular œconomical uses of the Sedges, or *Carices* amongst the Laplanders.

No. 341, 342. Uses of the Birch-tree (*Betula alba*), and *dwarf* Birch (*B. nana*) beyond almost all others. *Moxa* of the Laplanders prepared from a part of this tree; their universal remedy in painful diseases.

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* These observations and reflections are too interesting and important not to deserve being extracted entire, even if they were not expressed in a manner so lively and pleasing.

" *Solent opulenti plurimi, cum baccæ hujus arboris* (Sorbus aucuparia) *rubescere incipiunt, threnos canere, futura fata et adpropinquantes podagræ paroxysmos prævidentes. Lappo autem talem morbum in mundo nostro existere ne per somnium audivit, sed agilis et levis omni anni tempore vivit. An podagra a solo vini potu? sic suadent nationes podagricæ quæ pro potu quotidiano utuntur vino. Sic rustici nostri podagra haud infestantur, qui nunquam vinum, sed cerevisiam suam hauriunt; sic Lappones; sic divites nostri podagrici, qui potu vini utuntur. Ex usu spiritus frumenti et similium nunquam oriri podagram docent et Lappones et rustici nonnulli septentrionales, qui sæpius nimiam ejus copiam ingerunt, inscii dolorum podagricorum. Nullam vidimus gentem facilius incedentem ipsa Lapponica, incedunt enim Lappones sine calcaneis artificialibus, utentes tantum soleis tenuissimis simplicibus, e pellibus confectis, nec constringunt ullibi artus corrigiis fibulis, cingulisve, accedit quod nunquam salsa vel vegetabilia edant, et pedibus incedant conniventibus, ductu naturæ, qui mos in Lapponia obtinet. Non sine admiratione consideravi Lappones duos comites meos in itinere ad Finmarkiam, quorum alter viæ dux, alter interpres meus erat. Hi enim superatis Alpibus, dum ego juvenis fere viribus exhaustus, exanimis instar lassus in extremis jacui populisque locisque, illi senes ambo tanquam pueri ludentes currentesque de viæ incommodis nihil sentiebant, licet uterque meo supellectile satis onustus esset. Vidi ipse senes plus quam septuagenarios talum collo suo, puerorum instar, imposuisse, et quidem sine ulla molestia.* O SANCTA SIMPLICITAS DIÆTÆ OMNES SUPERANS LAUDES!"

No. 345.

No. 345. The leaves of Bur-reed (*Sparganium natans*) preferred by horned cattle and horses to other plants of that kind. Observations on the immense number of water-fowl, and waders, in Lapland, and on their migration.

No. 325. Uses of the Golden Maiden-hair (*Polytrichum commune*) and

(No. 415) of the Bog-moss (*Sphagnum palustre*) among the Lapland women; to which are annexed some curious observations relating to the menstrual evacuations of the sex in those northern regions.

No. 437. Observations on the rein-deer, and their food, *Lichen rangiferinus.*

No. 445. On the *Lichen islandicus.*

No. 517. A very interesting account of the mischief occasioned to cattle in Lapland by different flies, a subject to which the author was led by having occasion to remark on the nourishment afforded to those insects by some of the *Agarici.* He dwells particularly on the habits of *Oestrus Tarandi,* and the torment it occasions to the rein-deer; but he has treated of this subject also in other parts of his writings, as will be noticed in the proper places.

In this work, our author has first exemplified (what he ever afterwards laboured to bring to the greatest perfection) the specific characters of plants, not taken, as had been customary with former authors, from the colour of the flower, relative size of the plant, smell, taste, place of growth, time of flowering, name of the discoverer, virtues, uses, or duration (none of which are sufficiently permanent), but from those invariable and essential parts, which fully and clearly mark every *species* under the same *genus,* and in the compass of a very few words convey such an idea of the plant intended, as will more effectually distinguish

it than all the verbose descriptions of foregoing authors. Linnæus has taken incredible pains with this part of his system, which is certainly as difficult as any that leads to the perfection of the science, since it depends upon a nice inspection of every species belonging to each genus, and of every actual variety belonging to each species.

The number of species described in this work is 537, inclusive of *Lithophyta;* but in a second edition (published by Dr. James Edward Smith*) they have been increased to 592. Upwards of 100 discovered by Linnæus on this journey, were not known to be natives of the Swedish dominions before, and some of these were nondescripts.

As Linnæus entertained a high opinion of our English professor, Dillenius, having said of him, "*Nullus est in Anglia qui genera curat vel intelligit præterquam Dillenius*"†, he therefore dedicated to him his next publication, the "CRITICA BOTANICA, *in qua nomina plantarum generica, specifica, et variantia examini subjiciuntur, selectiora confirmantur, indigna rejiciuntur, simulque doctrina circa denominationem plantarum traditur.*" (Lugd. Bat. 1737. 8vo, pp. 270‡.) His motives to pen this work are explained in a letter to Haller§, in which he says "*Videntur mihi*

* London 1792. 8vo, pp. 390. tabb. 12. The original plates had been purchased by Messrs White, booksellers, in Fleet-street; and Dr. Smith, being in possession of Linnæus's library and manuscripts, was enabled to insert many notes which he had found in the author's own hand-writing. The specific names from the *Species Plantarum*, and many new synonyms are also added. It is somewhat remarkable that the meaning of the asterisks, annexed to some of the specific characters in the original edition, has not yet been ascertained.

† See Stoever's *Collectio Epist.* p. 9. (ad Hallerum.)

‡ This work is edited in Gilibert's *Fund. Bot.* (*Tom.* 3.)

§ See the collection quoted above, p. 14.

botanici

botanici ne tetigisse doctrinam nominum, adeoque adhuc non incepisse tractare istam botanices partem. Si colligas omnia nomina generica a Tournefortiano tempore in hunc diem mutata, mille plura erunt, licet insensibile introducta : quæ causa innovationis nominum? Certe nullam aliam concipio quam quod leges, secundum quas confici debeant et defendi, datæ non sint. Omnia nomina specifica falsa esse, certo certius est ; alia certe videbit serior ætas. Si specifica mutari debent, cur non et hoc tempore simul generica falsa? Authoritatibus ab antiquis receptis nunquam subscribent futuri in libera republica botanici, cum retineamus nomina sesquipedalia Monolasiocallenomonophyllorum, Hypophyllocarpodendorùm, *et cur barbara, cur caudata, cur hybrida?"* He comments upon the 7th, 8th, 9th, and 10th parts of the *Fundamenta* from Aphorism 210 to 335, and amply explains all his reasons for the alterations of names which he had made. There were many botanists, at that time, who saw the justness of his remarks*, but there were others who could never reconcile themselves to the changes, and in this number was even the celebrated Haller†. The latter, however (there can be no doubt), was not a little biassed in his judgment

* Ludwig says, when speaking of this work, " *rigorosus quidem sed sæpissime felix botanicorum censor est.*"

† " *Nova nomina, imprimis generum, mihi non placent,*" says the Baron, in giving his opinion of Linnæus, in a letter to Dillenius.—There are other parts of this letter, too interesting not to deserve insertion here : *viz.*

" *De Linnæo, Dilleni optime, judicium tuum periti viri est. Facile adgnosco specierum notitia destitui quæ sufficiat expungendis tot veris speciebus—adgnosco præcipiti sæpe uti judicio—characteres tædiosas, repetitiones habere veras notas distinctionis plerumque non indicare, ut v. g. in Siliquosis nescias fere unde repetas discrimina. Nova nomina, imprimis generum, mihi non placent, cum nihil videtur mali accidere posse ab aliquo* öides, *idque magis etiam characteristicum esse quam eruditi viri nomen, sui satis sæpe obscurum.*"

judgment by a jealousy which is too frequently most alive in minds of the greatest attainments, and which in this instance seems to have been kindled by some strictures of Linnæus on a few of Haller's *genera**.

Linnæus printed at the end of the volume above mentioned "*Discursus de introducenda in scholas et gymnasia historiæ naturalis lectione*" (pp. 24.), written by Dr. Browallius, who afterwards defended very ably the system of Linnæus against Professor Siegesbeck of Petersburg.

In 1737 was likewise published the most splendid of all our author's writings, the HORTUS CLIFFORTIANUS, *plantas exhibens quas in hortis tam vivis quam siccis Hartecampi in Hollandia coluit Vir. Nob. et Gen. Georgius Clifford J. U. D. redactis varietatibus ad species, speciebus ad genera, generibus ad classes, adjectis locis*

On the other hand he observes,

"*Verum cur multa in ejus gratiam fecerim accipe æquus. Laboravit certe multum et acerbos tulit labores, meretur adeo elogium et veniam. Deinde omnes undique fere botanici leges ejus acceperunt,* Royenius, Gronovius, Gesnerus, Mochringius, ipsi pene Parisini: *ut barbarum et amarum hominem fere vocent qui recuset uti novo lumine.*" (Gottingæ, 7. Octob. 1744.)

This letter still exists among the *Dillenian reliquiæ* in the botanic library at Oxford. The editor was permitted to make use of it and other MSS. by the kindness of Dr. Williams, the present Professor of Botany in that university.

* The reader who is desirous of examining the precise grounds and merits of the misunderstanding that took place between the two greatest botanists of the age, may consult Stoever's collection of letters, which has been so often quoted in this work, and which is prefaced by many interesting remarks relative to Linnæus's literary adversaries. It is but justice to our author, however, to quote in this place a passage in one of his letters to Haller, which strongly shows how highly he thought of the latter, and how distant from his mind was the intention of offending him. "*Sanguinem meum movit tua epistola, in qua putas me ex studio inimica mente contra te scribere. Testor omnipotentem Deum me nullum botanicum majori in pretio honore et amore habere quam te. Sentias itaque non de me male.*" (Lugd. Bat. Jan. 3. 1738. p. 28.)

plantarum natalibus, differentiisque specierum." (Amst. 1737. folio, pp. 501.* tabb. 36.) As this book was printed at the expense of Mr. Clifford, it was ornamented with an elegant frontispiece, and with some of the finest engravings of plants that are extant, the drawings for which were made with all possible accuracy by Ehret. By the munificence of Mr. Clifford, many of the celebrated botanists were presented with a copy. The plants are arranged, as in all our author's succeeding works, in the sexual method; the varieties are reduced to their several species; the native places of the plants are particularly noticed; many new *genera*, and species under former *genera*, are introduced, with descriptions at large; curious observations are interspersed through the whole; and what must have been more especially acceptable to those who began to adopt our author's system, the *specific characters*, which the vast number of plants included in this work necessarily led to, were further exemplified. Add to this, that, from the copious number of synonyms, it is almost a *Pinax* of every plant therein mentioned; on which account, as well as others, the work will still retain its value, though superseded in a great degree by the *Species Plantarum*. To the curious and critical botanist it is no small satisfaction now, to see in this volume, compared with later works, the progress of Linnæus's own knowledge, manifested by the removes and alterations which better information had enabled him to make.—In the dedication, our author enumerates the most considerable botanic

* It ought to be remarked that the pages are not 501 in number, though the last page seems to indicate this; pages 231 and 301 immediately succeed each other, owing, probably, to the work having been printed by two different booksellers, for the sake of expedition, and their not having been able to calculate how many pages it would occupy. The form of this work *originally* intended, appears to have been the *quarto*, there being 2 sheets of it, of that size, among the papers possessed by Dr. Smith.

gardens

gardens that had hitherto been cultivated; he gives a list of the Cliffortian library; and annexes two tables, with explanations of all the varieties of leaves, according to his new method of defining them. This addition was very necessary, as the number of plants synonymed in the volume amounts to nearly 2,500; of these more than 1000 were contained in the *Hortus siccus**, and it should be noted also that the *genera* of *Isis*, *Spongia*, *Lithoxylum*, *Sertularia*, *Millepora*, *Madrepora*, *Tubipora*, *and Cellipora* (belonging to the LITHOPHYTA) are comprehended in the enumeration. We conclude with Gesner's opinion of this work, in a letter to Haller; "*Opus sane egregium et acerrimi judicii, nec minoris eruditionis, quo difficulter botanicus carebit. Mihi perplacet ab eo in nominibus specierum notas earum essentiales exhiberi, quod ante vix quisquam botanicus recte præstitit.*"

The last book, of his own, which Linnæus published, during his stay in Holland, was the CLASSES PLANTARUM, *seu Systemata plantarum omnia a fructificatione desumta, quorum* 16 *universalia, et* 13 *partialia, compendiose proposita secundum classes, ordines, et nomina*

* The Cliffortian *Hortus siccus* is now in the possession of Sir Joseph Banks.—Gaubius, of Leyden, having purchased it at the time of Mr. Clifford's bankruptcy, it came, after that professor's death, into the hands of his son-in-law, at the sale of whose effects it was bought by Sir Joseph for somewhat less than twenty-five pounds. It is in excellent preservation, and contains Linnæus's synonyms annexed to many of the specimens in his own hand-writing; the names of his *genera* also were written by himself on the backs of the *envelopes*, and through the greater part of the first three classes appear his numerals referring to the *Hortus Cliffortianus*. By some accident or other, most of the plants described in the Appendix were lost, or had fallen into other hands prior to the arrival of the herbarium in England; hence it is now very defective as an exemplification of that part of the work, but very few other specimens are wanting, and the original arrangement is retained. Several of those which had been presented to Mr. Clifford by our countryman Miller, are illustrated by descriptions which the latter wrote himself, and there are the synonyms also of other distinguished botanists who were in correspondence with that eminent patron.

genericа, cum clave cujusvis methodi et synonymis genericis. (Lugd. Bat. 1738. 8vo, pp. 656.) This work is a very large illustration of the second part of the *Fundamenta Botanica*, from aphorism 53 to 78, and contains a compendious and useful view of all the systems of botany, or methods of classing plants, both general and partial, from Cæsalpinus in 1583 (who is considered as the inventor) to Linnæus himself in 1735. To the generic name in every system he has added that by which it stands in his own; which is a great advantage in the use of this book. The general systems which are displayed in the work are those of

Cæsalpinus, Morison, Ray, Knaut, Herman, Boerhaave } founded on the fruit;

Rivinus, Ruppius, Ludwig, Knaut } on the number of petals in the flower;

Tournefort, Pontedera } on the figure of the same;

Magnol and Linnæus } on the cup of the flower.

After these follow Linnæus's sexual system and his fragments of the natural method. Lastly, we are presented with the *partial* systems (as they may be called) of

Seb. Vaillant, Pontedera } entitled *Methodus Compositorum;*

Artedi

Artedi, Morison } entitled *Methodus Umbellatarum;*

Ray, Scheuchzer, Micheli, Linnæus } —— *Methodus Graminum;*

Dillenius, Micheli } —— *Methodus Muscorum et Fungorum;*

and.

Linnæus —— *Methodus Filicum.*

A very large *index*, referring to every genus in each system, concludes the volume.

This work was republished at Halle, in 1747; and a new edition, exhibiting the systems of authors subsequent to Linnæus (as those of Adanson, Crantz, De Jussieu, and others), would be acceptable, even now, to the philosophical botanist. The only treatise that supplies in any degree the want of such a view, is one published in our own country by Milne*, who, however, wrote at a period too distant from the present to comprehend all the modern methods of classification, some of which, as they have attempted a *natural* arrangement with more success than those known to Linnæus, have high claims to attention. Linnæus's own endeavours to perfect a natural method were carried on for many years with great diligence and ardor, but he seems to have despaired of such a method being ever brought to perfection†. He went no

* *Institutes of Botany.* Part 2. (London 1772. 4to.)

† "*Diu et ego* (says he) *circa methodum naturalem inveniendam laboravi, bene multa quæ adderem obtinui, perficere non potui, continuaturus dum vixero; interim quæ novi proponam; qui paucas quæ restant bene absolvit plantas omnibus erit magnus Apollo.*" Class. Plant. p. 484.

further

further than to form 65 orders, together comprehending about 800 *genera*, which, with the *canones*, or institutes, occupy 30 pages of the work above particularized, and are called *Fragmenta methodi naturalis.* In his lectures, however, he continued to add very considerably to this part of his labours; and as much as could be collected from them was afterwards published by Dr. Giseke, of Hamburg, under the title of CAROLI LINNÆI, M. D. &c. *Prælectiones in ordines naturales plantarum è proprio et Ja. Chr. Fabricii, Prof. Kilon. MSto.* (Hamb. 1792. 8vo. pp. 662. cum tabb. æn. 8.) Here we find 58 orders, which are for the first time named, and illustrated by a curious *genealogico-geographical map* of vegetable affinities.

The key to a *complete* natural method (Linnæus observes in his Diary) it is not more easy to discover perhaps than the quadrature of the circle; yet very considerable advances towards it have certainly been made by later botanists.

Just before his illness, Linnæus edited the ichthyological works of his friend and fellow student Artedi, under the title of PETRI ARTEDI, *Sueci Medici*, ICHTHYOLOGIA; *sive Opera omnia de Piscibus, scilicet Bibliotheca ichthyologica; Philosophia ichthyologica; Genera piscium; Synonyma specierum; Descriptiones specierum. Omnia in hoc genere perfectiora quam antea ulla. Posthuma vindicavit, recognovit, cooptavit, et edidit* CAROLUS LINNÆUS. (Lugd. Bat. 1738. 8vo.) The circumstances that occasioned our author's undertaking this melancholy duty were the following: Artedi, on his return from England (whither he had taken a voyage in order to perfect his knowledge of fishes) having met Linnæus at Leyden, complained to him of the indigence to which he was reduced by the prosecution of his favourite studies, and requested the latter to put him in the way of obtaining a little money, towards paying his expenses and enabling him to return to Sweden. Linnæus readily

promised him every assistance, and shortly afterwards had an opportunity of recommending him to the patronage of Seba (an apothecary at Amsterdam), who was then preparing for the press the third volume of his *Thesaurus*. Seba had just before requested Linnæus to assist him in this undertaking: but the latter had declined it, in consequence of being engaged at Mr. Clifford's; and he was, besides, not very partial to the branch of natural history which was to form the main subject of the volume, *viz.* fishes; a subject, however, with which no one could be more delighted or more conversant than Artedi. The services of this young ichthyologist were therefore eagerly accepted by Seba, who treated him very handsomely; and the task was so near being completed that only 6 fishes remained to be described, when Artedi, leaving Seba's house very late at night, unfortunately fell into one of the canals of the city, and was drowned. Linnæus no sooner heard of this untimely loss, than he repaired to Amsterdam in order to secure his friend's manuscripts. Artedi's landlord, however, refused to part with them unless he was paid 200 guilders, the amount of his demands on the deceased. Seba was applied to, but would advance only 50 guilders, which were to defray the expense of Artedi's funeral. Linnæus then used his interest with Mr. Clifford, who paid the requisite sum, and the publication of the manuscripts was consigned to the hands to which they had been bequeathed by the writer.

In this work, Artedi has exhibited an instance of genius, method, and application, that cannot fail to excite the greatest regret at his early death. He gave to Ichthyology that degree of perfection, which his friend afterwards extended to the whole animal kingdom, and which must remain a lasting monument of his abilities. His descriptions of the indigenous fishes of Sweden, in particular, are more scientific than any that had hitherto been seen;

seen; and we cannot sufficiently admire the pains that must have been taken to extricate the synonyms from every author on the subject. With respect to the arrangement itself, we shall have occasion to notice it particularly in a subsequent part of these pages.

The intensity of Linnæus's application to his favourite pursuits, whilst he was in Holland, forms too striking a part of his literary history to be passed over without remark. In the short space of two years; amidst the occupations imposed by his engagement with Mr. Clifford (which engagement the *Hortus Cliffortianus* amply testifies to have been punctually fulfilled); and under the disadvantage of incessant interruptions from visitors, it is scarcely to be conceived how this great man found time to finish so many works, any *one* of which would have been sufficient for establishing his character as a botanist, and which, *collectively* taken, tended to give a new face to science in general. Some materials, indeed, had been prepared prior to the author's arrival in Holland; but the *Hortus Cliffortianus*, a work which required full as much industry and knowledge as any of the others, must have been composed wholly in that country; and this, with the *Critica Botanica*, and *Flora Lapponica*, was prepared for the press within the short space of only nine months*!

We must now accompany our author into Sweden, whither he returned rather precipitately, having been induced by various

* Of this fact we are informed by Linnæus himself, in the following passage of a letter addressed to Haller, which also contains an apology for the style and language employed in his publications. "*Tu cures modo contenta*, (says he, alluding to the performances specified above) *nec barbariem linguæ; conversatio enim cum Lapponibus, Finnis, Norvegis per aliquot annos me Michelio magis barbarum reddidit; debui dein Criticam furtim componere et omnia quam citissime, qui et hanc, et Floram Lapponicam et Hortum Cliffortianum per hos* tres anni quadrantes *omnia conscripsi.*" (Stoever—*Collectio Epist.* p. 16.)

circumstances connected with his scientific pursuits, to exceed the time he had at first allotted to himself for staying in France. It was originally his intention to have visited Haller, at Göttingen, for the purpose of viewing his herbarium, and to have also inspected some of the German mines, Frisch's collection of insects, and Hebenstreit's shells; but finding it necessary to return from France by sea, he of course could not accomplish this plan, which, however, he resolved to consider as postponed rather than as wholly relinquished*.

Linnæus embarked at Rouen, and arrived at Helsinborg in July, 1738. He no sooner landed at this last-mentioned place than he set out for Stenbrohult, in order to visit his aged father, with whom he passed a few days, and then proceeded to Fahlun. He was soon afterwards formally betrothed to the lady who had been the constant object of his affections, Sarah Elizabeth, daughter of Dr. Moræus.

In the month of September, in this year, Linnæus settled as a physician at Stockholm, where he seems to have met with considerable opposition, and to have laboured under great disadvantages. "*Irrisus ab omnibus ob meam Botanicen*, (says he) *quot insomnes noctes et laboriosas horas transegerim, nullus dixit; quam vero a Siegesbeckio† eram annihilatus, omnes uno ore acclamabant; non erat qui vel servum mihi curandum obtulit.*" At length, however, his merits triumphed over all difficulties, and he at-

* "*Quæ mihi diu promiserant fata in Belgio, abiturus non obtinui omnia; debui itaque privari ab exoptata diu vestra patria; debui per mare, viam brevissimam, redire in patriam meam; sed quamprimum ibi mihimet aliquot pecunias comparaverim, iterum abibo; flagro enim videre fodinas vestras, Frischii insecta, Hebenstreitii conchas, et te et tuas plantas.*" (Stoever—*Coll. Epist.* p. 38.)

† The nature of the attack made upon Linnæus by Siegesbeck will be explained hereafter.

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tained extensive practice, as appears from the following passage, in one of his letters to his friend Mennander, *viz.* " I am undeservedly (says he) got into so much practice, that from seven o'clock in the morning until eight in the evening, I have not even time to take a short dinner. This, it is true, brings me some money, but it also takes up so much of my time, that scarcely an hour remains either for myself or my most intimate friends."

Soon after his arrival at Stockholm, our author became acquainted with Captain Triewald, a gentleman well known at that period in Sweden, as a zealous promoter of experimental philosophy, and who was endeavouring to establish in the capital an Academy of Sciences. In this project Baron Höpken, a young man named Ahlström, and Linnæus, were chiefly consulted; and a body of regulations being at length formed, the constituent members drew lots for the offices; when that of President devolved to Linnæus. This was the origin of the present Academy of Stockholm, which rapidly increased in numbers and reputation, and received particular encouragement from the Marshal of the Diet, Count Carl Gustaf Tessin. By the interest of this nobleman, who became his great patron, and even caused medals to be struck in honour of him, Linnæus obtained the appointment of Physician to the Navy, and also a stipend to give public lectures on botany and mineralogy. Not satisfied with conferring these lucrative honours on his countryman, the Count condescended to offer him an apartment in his own house, and a constant seat at his table, where, during the assembly of the States, Linnæus frequently met some of the first men of the kingdom. His situation being now in all respects prosperous, Linnæus was enabled to marry the lady before spoken of (Sarah Elizabeth Moræa) on the 26th of June, 1739.

By

By the rules of the Stockholm Academy, the President held his place but three months, at the expiration of which period Linnæus made an ORATION *on the wonders of insects**, endeavouring to excite an attention to the knowledge of that order of animals, by displaying the many singular *phænomena* that occur in contemplating their nature, and by painting out their usefulness in a variety of instances, to mankind in particular, and to the œconomy of the world in general. This oration was published (by order of the Academy) in the Swedish language, but has since been translated into the Dutch, Latin†, and English‡.

Our illustrious naturalist, however, was not destined to advance in the career of reputation and prosperity without exciting envy, jealousy, and opposition in various quarters. The attacks of his adversaries did not fail to wound his ambition,—an ambition, which, useful as it was to mankind, and founded on the noblest of all pretensions, did not render him the more indifferent to the attempts that were made to injure his philosophical character. Yet, remembering the advice of his venerable friend Boerhaave§, and being of too high a cast of mind to entertain

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* "*Tal, om Märkwärdigheter uti insecterne, hållit för Wettenscaps Academien uti auditorio illustri då Första Præsidentskapet aflades. 1739. D. 3. October.*" Stockholm 1739. 8vo.

Ed. 2. Leyden 1741. 12mo. (in Dutch.)

3. Stockholm 1747. 8vo.

4. Stockholm 1752. 8vo. pp. 32.

† *Amœn. Acad.* Vol. 2. p. 388. This translation was made by Linnæus himself, whilst he was at Paris, at the request of Bernard de Jussieu. (*Grandmaison.*)

‡ Brand's *Select Dissertations of Linnæus*, p. 309—343.

§ "*Nostrum speculum* Boerhaavius (says he in a letter to Haller) *nunquam respondebat. Memor sum illius effati ad me; dixit ad me—Nunquam debes respondere ad apologias, et hoc mihi promittas; promisi, et inde maxime profeci.*" (Upsal. die 26. Sept. 1749.)

asperity,

asperity, or indulge in splenetic invectives, he wisely resolved to abstain from controversy. We have alluded in other places to the hostilities commenced against him by Siegesbeck and Wallerius: as these were carried on at a time peculiarly critical with respect to the interests of Linnæus, it was in some measure his duty to counteract their influence on the minds of his countrymen; he therefore published the various honourable testimonies given to his talents, and the exalted approbation expressed of his works by the most eminent men of science then living. This performance he entitled ORBIS ERUDITI JUDICIUM *de* CAROLI LINNÆI, M. D. *Scriptis*, which is given in distinct extracts from the respective authors, without comment, and without even glancing at his opponents. It is prefaced by some short *memoranda* of his life, and a list of his works. He must have recorded with peculiar pride the judgment of a BOERHAAVE, a SLOANE, a DILLENIUS, a SAUVAGES, a JUSSIEU, and a HALLER, each of whom had paid the most unqualified compliments to his merits.

This pamphlet (which is extremely scarce) forms only one sheet, in small *octavo*, without numerical figures or date; but its proper place in a chronological account of our author's works, is sufficiently pointed out by the list of them which it contains terminating with the year 1740. It has been copied by Stoever, at the end of the *Opuscula* accompanying his collection of letters, and an English translation of it is contained in the edition of that author's *Life of Linnæus*, published by Trapp.

During all this time, Linnæus appears to have had his eye upon the botanic chair at Upsala, then occupied by Rudbeck, who was far advanced in life. He was so intent on pursuing, and perfecting his great designs for the advancement of

natural history, that his practice as a physician became irksome, and he wished to dedicate himself exclusively to his favourite study. Accordingly, on the death of Rudbeck, which happened in the year 1740, he offered himself candidate for the professorship, but was not so fortunate as to obtain it, the preference being given to Rosen, who had certainly great claims from having resided much longer in the university. However, the year following, Linnæus attained the object of his wishes; for, being appointed to the medical chair (which had been vacated by the resignation of Roberg), he and Rosen agreed to divide the duties of the two professorships between them, and their arrangement received the approbation of His Majesty. Rosen took the superintendence of the hospital, anatomy, physiology, ætiology, therapeutics, and pharmacy; Linnæus the superintendence of the botanic garden, *materia medica*, semiology, diætetics, and natural history in general.

A short time before his removal from Stockholm to Upsala, Linnæus was deputed by the States of the kingdom to travel over Öland and Gothland, and also the provinces of West Gothland and Skåne (attended by six pupils), for the purpose of making such inquiries as might tend to improve agriculture and the arts in Sweden; to which objects the nation had for some time paid a particular attention, being awakened, as it were, by the effects of the desolating wars of Charles XIIth, to extend their commerce, and improve the general resources of the kingdom. The result of this journey was very successful, and proved quite satisfactory to the States; and it was afterwards communicated to the public.

On his return from the Baltic, in the autumn of 1741, he entered upon the duties of his professorship, and pronounced

before the University a Latin ORATION *on the necessity of travelling in one's own country*. In this oration, which was afterwards printed *, he forcibly inculcated the usefulness of such excursions, by pointing out to the students that vast field of objects which was held out to their cultivation, whether in geography, physics, or œconomics, and by showing the benefits that must accrue to themselves and their country as rewards of their diligence. The animation which runs through the whole of this composition, renders it one of the most pleasing and instructive of all our author's productions. That intimate knowledge which he had himself acquired of his own country, by his repeated travels, (possessed as he was too of every requisite for making useful observations,) enabled him to point out with the utmost precision the most proper objects of investigation, in every part of nature. His love for his country inspired him with a zeal, which showed him on this occasion to great advantage, and which acquired probably additional ardour from his success, in having gained, by his late appointment, the summit of his wishes.

In 1743, at the time of a degree being conferred on Dr. J. Westman, Linnæus delivered his third ORATION, *de telluris habita-*

* "*Oratio qua peregrinationum intra patriam asseritur necessitas, habita Upsaliæ, in auditorio Carolino majori, 1741 Octobr. 17, quum Medicinæ Professionem regiam et ordinariam susciperet C. L.*" (Upsal. 1742. 4to. pp. 18.)

This oration was published also at Leyden, together with Browallius's *Examen epicriseos Siegesbeckianæ*, and Gesner's *Dissert. de partium vegetationis et fructificationis structura, &c.* (1743. 8vo, pp. 28.)

It is annexed to the second volume of the *Amœnitates Academicæ*, and contained among the *Selectæ ex Amœnitatibus Academicis dissertationes* (p. 233—259.) and the *Fundamenta Botanica* edited by Gilibert. (Tom. 2. p. 713—732.)

An English translation appears among Stillingfleet's *Miscellaneous tracts*. (1st edit. p. 1—30.—2nd edit. p. 1—35.)

*bilis incremento**; an elaborate and ingenious defence of that hypothesis, which Sir Isaac Newton and several other philosophers have espoused, *viz.* that the proportion of water on the globe is constantly decreasing. The visible recession of the sea in many parts of the earth seems to have led to this opinion, which, whether we consider it as justly deducible, or not, was very likely to be maintained in a country where the changes of level between the land and sea had been incontestably ascertained. The level of the Baltic has been represented as lowering at so great a rate as 40 inches in a century. Celsius observed that several rocks which are now above water, were not long ago covered by it, occasioning no small danger to navigators; he particularly took notice of one, which in the year 1680 appeared above the surface of the water, and in 1731 was 20¼ Swedish inches below it. From an inscription near Aspo, in the lake Mälaren, (which communicates with the Baltic,) engraved, as is supposed, about five centuries ago, the level of the sea is stated by Frisi to have sunk in that time no less than 13 Swedish feet. From these considerations the Professor was led to discuss the 132d section of his *Philosophia*. "*Initio rerum ex omni specie viventium unicum sexus par creatum fuisse*," which position he thought was naturally to be inferred from the hypothesis before mentioned, and necessarily so from the Mosaic history. In solving the difficulties attendant on the latter part of the hypothesis, he was led to enter largely into a part of the œconomy of nature that renders his discourse highly interesting, independently of all conjectures relative to the main argument.

* This was printed at Leyden the year following (8vo. pp. 84.) It is also subjoined to the second volume of the *Amæn. Acad.* and included in the *Fundamenta Botanica*, edited by Gilibert (Tom. 2. p. 671—711.) It has been translated into English by Brand. (See *Select Dissertations*, p. 71—127.)

ment. The various modes by which vegetables are disseminated, and by which the seeds find their way to every part of the globe, are very satisfactorily explained, the structure of those seeds being illustrated by tables of *genera* constructed for the purpose*. In the introduction to this oration, our author turns the attention of his readers to some of the more remarkable discoveries that had lately been made in natural history and physics: such were those relating to the Polype, Rattlesnake, and Senega; and he mentions a curious fact (communicated to him by Sauvages of Montpellier) respecting the Myrtle-leaved Sumach†, the berries of which plant had been found to occasion instant epilepsy.

Linnæus published his *Tour in Öland and Gothland*‡, at Stockholm, in 1745. His instructions had been to endeavour to find some kind of earth proper for making ware in imitation of the porcelain of China; he was to notice every production of nature that might supersede the necessity of the importation of any article used either in medicine or manufactures; and in short, he was to have a regard to every part of natural history. In the execution of his plan, however, he went much further than his commission extended, having interspersed a number of observations relating to

* An entire system of botany, founded on the structure of the seeds, was afterwards proposed by Dr. Joseph Gærtner (whose son is now preparing to complete what that indefatigable author began), in two volumes, (4to. 1788 and 1791) "*De fructibus et seminibus plantarum.*"

† *Coriaria myrtifolia.* Spec. Plant. 1467.

‡ ÖLÄNDSKA OCH GOTHLÄNDSKA RESA, *förrättad ahr* 1741. (8vo. pp. 344. One plate, besides maps.) A German translation of this work was published by Schreber, under the title of *Reisen durch Oeland und Gothland*, (Halle 1764. 8vo. pp. 364. Three plates, besides maps); but it has not appeared in any other language, the Swedish original excepted.

the antiquities of those islands, the mechanic arts, the manners of the people, their fishery, and various other circumstances. He was (as might be expected) unsuccessful in the first part of his commission, since the two islands are almost entirely composed of limestone, or coral rocks, which abound, in a remarkable degree, in the Baltic.

As a proof of the little attention that had been paid to natural history in Sweden, we may observe that our author in this journey discovered above a hundred plants, which were not before known to be indigenous, and many of which were used in medicine and in dying. He pointed out to the natives several plants of great use in rustic œconomy, and showed them the advantages of planting the Sea reed-grass *(Arundo arenaria)* to arrest the sand, and form soil on the shores, to which it is extremely well adapted by the length of its roots. In the Öland tour, there occurs a curious remark on vegetation, proving the annual increase of the wood in an oak-tree, in which were perfectly distinguished the hard winters of 1578, 1687, and 1709, by the narrowness of the circles in those years. He describes the process for making tar, as practised by the islanders, and intersperses many observations relating to mineralogy, especially to iron, with which Sweden abounds. The iron-mountain Taberg*, the alum-mines of Mockleby, &c. are particularly described. An account of the plants had before been published in the Transactions of the Academy of Stockholm (vol. 2. p. 179—210.) under the title of *Samling af* 100 *wäxter upfunde på Gothland, Öland, och Småland.*

In 1745, our author published his FLORA SUECICA, *exhibens*

* An account of this remarkable mountain may be found in the *Philosophical Transactions* (vol. 49. p. 30—34), where it appears as a letter from Dr. Ascanius to Peter Collinson, translated by Da Costa, and illustrated by a plate.

plantas

plantas per regnum Succiæ crescentes, systematice cum differentiis specierum, synonymis autorum, nominibus incolarum, solo locorum, usu pharmacopœorum, (Holm. 8vo. pp. 392), and again, with many additions, in 1755 (pp. 464. tab. 1.). The first edition contains 1140 plants. In the second, they are increased by his own and the discoveries of his pupils to 1296. No generical characters are introduced, but references are made to them as they stand in the *Genera Plantarum* before spoken of. A number of select synonyms are added to his own specific name (under each plant), and not only the Swedish names in general, but the provincial ones also,—points highly worthy of imitation in works of this kind, and quite necessary in so extensive a kingdom. Many of the rare plants are described at large, and to others botanical criticisms are subjoined. In the last edition, the author has interspersed a great number of curious observations relating to the œconomical and medicinal uses of the plants, and particularly noted those that are capable of being applied to the purposes of dying. He never fails to mention *euporistic* medicines, which he seems to think, perhaps very justly, have not been attended to by physicians as they deserve. The plan of this work has been a pattern for all succeeding writers of local catalogues, more especially of such as have followed the Linnean system, and it has been excelled by none. It includes the plants of Lapland; and the preface, besides an account of Swedish botanical authors, contains a division of the several provinces of the kingdom, in respect to their different soils and situation, as adapted to particular plants, specifying under each province the more remarkable plants growing in it. There is a plate with a figure of the *Linnæa* subjoined to the last page.

In

In 1746 appeared the FAUNA SUECICA, *sistens animalia Sueciæ regni : mammalia, aves, amphibia, pisces, insecta, vermes; distributa per classes, ordines, genera et species, &c.* (Holmiæ, 8vo. pp. 411.) and again in 1761, greatly augmented (pp. 579.) The world had never seen so compendious, and at the same time so complete a local zoology before. An outline of this undertaking had been given by our author, ten years before, in the *Acta literaria et scientiarum Sueciæ*, (1736, p. 97—138.) under the title of *Animalia per Sueciam observata**. At that period, however, the catalogue was comparatively scanty, but it was now increased to 1357 subjects; the edition of 1761, indeed, comprehends (exclusive of an *appendix*) 2266.

Following the method of the *Flora*, Linnæus did not give any classical, ordinal, or generical characters at large, but only the specific character, which was new, and expressive, as far as possible, of the essential character. Synonyms of almost every author are either inserted, or referred to, and almost every species is concisely described in his own terms. Insects make a very considerable part of the catalogue, nearly 1700 species being enumerated, distinguished, and methodized in a manner entirely new, and which has been adopted by most other writers on the subject since. Whilst he was a student at Upsala, entomology constituted one of his favourite branches of pursuit, and he devoted to it (as he informs us in his preface to the paper above referred to) almost the whole of his leisure time. His classification will be fully explained in the abstract intended to be given of the *Systema Naturæ*. The number of animals under each class, in his last edition of the *Fauna*, stands thus, viz.

* This paper is printed also with his *Oratio de peregrinationum intra patriam necessitate.* (Holmiæ 1746. 8vo.)

Mammalia	53	*Pisces*	77
Aves	221	*Insecta*	1691
Amphibia	26	*Vermes*	198

There are 62 additional species, which our author did not include in the body of the work, in consequence of not having sufficiently examined them. He also subjoins what are called *Floræ Suecicæ Novitiæ*, being 31 species of plants recently discovered by some of his pupils.

Two plates exhibiting figures, chiefly of rarer birds, accompany the volume, and explain the technical terms used in ornithology.

A republication of the *Fauna Suecica*, with considerable additions and corrections, has lately been commenced by Professor Retzius, of Lund, who, however, has not yet proceeded beyond the four first classes; these are comprehended in an octavo volume, entitled *Faunæ Suecicæ a* CAROLO *a* LINNE, *Equ. inchoatæ Pars* 1*ma*. (Lips. 1800, pp. 362.) with a plate exhibiting figures of *Fringilla flavirostris* and *Lulensis*.

A compendious manual of *English* zoology, executed after a method of this sort, is a work much wanted: but it would be too great an undertaking for an individual, and the different branches should be taken up by as many different persons.

In the summer of the year 1746, Linnæus undertook his journey to West Gothland, and visited Mariestad, Lidköping, Skara, Sköfde, Falköping, Borås, Alingsås, Gotheborg, Bohus, Marstrand, Uddewalla, Wenersborg, and Åmål. He returned to Upsala in the autumn. The result of this journey was published the year following, under the title of WÄSTGÖTA RESA, (Stockholm 1747. 8vo. pp. 284.) which has since been translated into German by Schreber (Halle 1765. 8vo.)

An

An accident having thrown into our author's hands an herbarium, consisting of five large volumes, he discovered that it was the collection of the famous Dr. Paul Hermann, which had been made in the island of Ceylon by that botanist, at the expense of the Dutch East India company. This herbarium had been lost upwards of half a century, until chance threw it into the hands of M. Gunther (apothecary to the King of Denmark), who sent it to Linnæus, requesting him to examine it, and affix the names to the plants throughout the collection. Its great value, from the collector having been so eminent a man, induced our author to examine the whole with much attention, and he was thereby enabled to form many new *genera**, and settle many doubtful species. He published the result of his labour under the title of FLORA ZEYLANICA, *sistens plantas Indicas Zeylonæ insulæ, quæ olim* 1670—1677 *lectæ fuere a Paulo Hermanno, Professore Botanico Leydensi; demum post* 70 *annos ab A. Gunthero, Pharmacopœo Hafniensi, orbi redditæ.* (Holm. 1747, 8vo. pp. 254. tab. 4.) In an appendix, the new *genera* are concisely given by themselves, copied from an academical dissertation published under Linnæus's presidency, by C. M. Dassow, and which will be more particularly noticed hereafter. This appendix occupies 14 pages out of the 254, and there are *indices* to the whole of the botanical, Malabar, Cingalese, and officinal names. This work is yet of use as a *pinax* of these plants, and as a Linnean catalogue of Burmann's *Thesaurus Zeylanicus*, published in 1737, and illustrated with the figures of upwards of 200 species. The herbarium consisted of about 660 plants, of which the true places in the system are assigned to more than

* Two of these (*Ceanothus* and *Cynometra*) are included among the ten new *genera*, which Linnæus described in the *Act. Societ. Ups.* for 1741 (p. 77.)

400;

400; the remainder were too imperfect to admit of being sufficiently determined. This volume is rendered valuable by a concise view of the progress of botany from the restoration of learning in the 16th century; a natural history of Ceylon, and its general produce; the life of Dr. Hermann; a short account of Hartog, who was sent by Dr. Sherard to make collections in that island; and a sketch of Burmann's *Thesaurus Zeylanicus*. Linnæus authenticates the herbarium by showing that the numbers and the plants answer to Hermann's *Museum Zeylanicum*, originally published in 1717*.

On the death of Count Molcke, who became the possessor of this herbarium after Gunther, it was purchased by Sir Joseph Banks†, and still forms a part of his immense collection. The specimens are miserably damaged and mutilated; but many of them retain the Cingalese names annexed in Hermann's handwriting, and also generic names and synonyms in Linnæus's. They occupy four large bound volumes, three of which contain only Ceylon plants, and the fourth African and Indian plants together: in all of them the specimens are placed without regard to method, and apparently just in the order in which they were collected. There is a fifth volume, containing only drawings, which are not ill executed (for that period), and which amount to about 400 in number; but the same figure is, in several instances, given more than once.

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* There was a second edition in 1726. The descriptions in this catalogue are more full than those in manuscript attached to the specimens in the herbarium; and they include many species collected at the Cape of Good Hope, which Linnæus also has described in his *Flora Zeylanica*, without seeming to be aware that they were not natives of that island.

† For seventy-five guineas.

We now see Linnæus fixed in the situation which was so well adapted to his character, taste, and abilities, and which seems to have been the great object of his ambition, and the centre of his hopes. He had no sooner attained the professorship, than he laboured to get the academical garden put on a better footing; which he soon effected, obtaining the consent of the university that the whole should be laid out anew, conformably to a plan presented by Baron Carl Hårleman; that proper stoves, greenhouses, &c. should be erected; and that the professor's house should be rebuilt. The garden was founded in 1657 by Olaus Rudbeck the elder, but had been in ruins ever since the fire in 1702, and at the time of Linnæus's appointment to the professorship it did not contain above 50 plants that were exotic. His correspondence with the first botanists in Europe soon supplied him with great variety. He received Indian plants from Jussieu of Paris, and from van Royen of Leyden; European plants from Haller and Ludwig; American plants from Collinson, Catesby, and others; and a considerable number of annuals from Dillenius: in short, how much the garden owed to his diligence and care, in a few years, may be seen by the catalogue* published under the title of HORTUS UPSALIENSIS *exhibens plantas exoticas Horto Upsaliensis Academiæ â sese* (Linnæo) *illatas ab anno* 1742 *in annum* 1748, *additis differentiis, synonymis, habi-*

* The catalogues of plants of the Upsala garden that preceded this were the following, *viz.*

1. *Catalogus Plantarum tam exoticarum quam indigenarum, quibus Hortum Academicum Upsaliensem primum instruxit an.* 1657 OLAUS RUDBECK (Upsal. 1658. 12mo. pp. 43.) 2. *Hortus Upsaliensis Academiæ ex auctoritate S. R. Mtis primum instructus anno* 1657 *ab* OLAO RUDBECK. *Accedit ejusdem auctarium novissimum* (Upsal. 1666. 12mo. pp. 22.) 3. *Hortus Botanicus variis exoticis indigenisque plantis instructus, curante* OLAO RUDBECKIO. (Upsal. 1685. 8vo. pp. 120.) Latino-Suecice.

This last enumerates 1870 plants, of which about 630 are exotics.

tationibus, hospitiis, rariorumque descriptionibus, in gratiam studiosæ juventutis. (Holm. 1748. 8vo. pp. 306. tabb. 3.)

By this catalogue it appears that Linnæus had introduced 1100 species, exclusive of all the Swedish plants, and of varieties, which latter, in ordinary gardens, amount not unfrequently to one third of the whole number. Hence, the Upsala garden must have been the chief place of the kind in Europe, at the time of the publication of this volume. Most of the Siberian plants (and indeed others, from *hot* climates) which are now so common, appear to have been first raised by Linnæus, whose principal gardener, Derrich Neitzel, was much experienced in the nursing of exotics, having been employed for that purpose by Mr. Clifford, at Hartecamp; Neitzel had also arranged all the principal gardens in Lower Saxony. Of the delight which Linnæus derived from his situation as professor, in the botanic garden of Upsala, the reader may form some idea from the following animated passage, in a *Programma* relative to the celebration of the King's birth-day, *viz.* " *Deo optimo gratiam habeo, qui sic fata mea dispensavit, ut hoc tempore vivam, idque ita, ut rege Persarum beatior vivam. Verum narro, dum me beatum censeo. Nostis, patres civesque, quod in Horto Academico totus sim; quod hic mea Rhodus sit, aut potius hic meum Elysium. Teneo hic quæ volo spolia Orientis Occidentisque, et, nisi me fallo, id quod Babyloniorum vestibus Sinensiumque vasis longe est speciosius. Hic disco et doceo. Hic summi opificis sapientiam ipse aliis aliisque dōcumentis se prodentem admiror, aliisque monstro.*" The preface of this work contains some curious observations on the climate of Upsala, and the progress of the seasons through the whole year. From these observations, we learn that the greatest degree of heat at that city, in the summer of 1747, was on the 2nd of

July, at ¼ past 3 in the afternoon, when Celsius's thermometer* stood at 30° above 0; that the greatest degree of cold, in the night of the 25th of January 1740, was 28 degrees below 0.—From seven years' observations on the leafing of the oak, it was found never to appear before the 6th of May, or to be retarded beyond the 22nd.—The work is accompanied by several *indices*: 1st, of all the botanical names; 2nd, of the Swedish names; 3d, of the pharmaceutical names; 4th, of the indigenous plants; and 5th, of those which are used in Sweden as articles of food, and comprehended under the appellation of *Macellum Suecicum*. It concludes with a table entitled *Horticultura Topographica* (in which are pointed out the parts of the garden adapted to the plants of the different countries), and an *index* of the plants classed according to the climates in which they grow spontaneously.

It was about this period that Linnæus made a remarkable discovery relating to the formation of pearls in the River Pearl Muscle (*Mya margaritifera*), which must not be confounded with what is called the *Mother of Pearl Shell*, as the latter belongs to a different *genus*, is a *sea*-shell, and an inhabitant of the warmer countries only. The former is found in *rivers*, in all the northern parts of the world; as in Norway and Sweden; in the rivers of the county of Tyrone, and in those of Donegall, in Ireland; in Scotland, where the Don is said to abound with it; and it is not unfrequent in the rivers of England. This fish will bear removal remarkably well; and it is said that in some places they form reservoirs for the purpose of keeping it, and of taking out the pearls, which, in a certain period of time, will be renewed. From observations on the growth of the shell,

* In this thermometer, the freezing point is 0, and boiling water 100.

and

and the number of its annular *laminæ*, or scales, it is supposed that the animal will attain a great age; 50 or 60 years are imagined to be a moderate computation. Linnæus discovered a method of putting these muscles into a state of producing pearls at his pleasure, though the final effect did not take place for several years. He says that in 5 or 6 years the pearl would have acquired the size of a *vetch*. We are unacquainted with the means by which he accomplished this extraordinary operation, but may observe that it is probable, from a paper published many years afterwards by Chemnitz (in the *Beschäft. der Berlin. Ges. Naturf.* Fr. 1. Band. p. 344—358) under the title of "*Versuch einer neuen theorie vomursprunge der perlen*," that the method consisted in injuring the shell externally, perhaps by a perforation; for it has been observed that these concretions in shells are found in the inside, exactly opposite to perforations and injuries made by *serpulæ*, and other animals, from without. Linnæus's original MS. *de Perlarum ortu* is not to be found among the papers that came into the possession of Dr. Smith*; but we may judge of the important light in which the communication was viewed by the States of Sweden, from our author's being rewarded with a *premium* of 1800 dollars† (about 450l.), which in that country must have been a very considerable sum. A memorial was laid before the States by the then Bishop of Åbo (afterwards Archbishop of Upsala) for the purpose of enforcing Linnæus's claims on this occasion; and we are enabled to present the reader with a translation of what appears to have been the original sketch of it‡, which is ex-

* The Doctor assures me that he has not been able to find such a paper; yet Stoever and Grandmaison choose to assert the contrary. (*Editor.*)

† This sum is mentioned on the authority of the Diary.

‡ See the *Appendix*.

tremely

tremely interesting on account of the representation it includes of our author's general merits.

From the time that Linnæus and Rosen were appointed Professors at Upsala, it should seem that the credit of that place, as a *medical* as well as a botanical school, had been rapidly increasing; and indeed it is certain that numbers of students resorted thither from Germany and many other parts of Europe, attracted solely by the character of these two able teachers. In Sweden itself, many young men were invited to the study of medicine by the excellent manner in which it was taught, who would otherwise have engaged in different pursuits. We must not deviate into the line of Rosen's department; suffice it to say, that the two professors, by their united zeal and abilities, failed not to exalt, together with their own fame, that of the university. Linnæus, in teaching the *diagnosis morborum*, had adopted (with some alterations) the plan of Sauvages's nosology, of which we shall be led to give some account hereafter. In the year 1749, he published, for the use of the students, his MATERIA MEDICA. *Liber* 1. *de Plantis digestus secundum genera, loca, nomina, qualitates, vires, differentias, durationes, simplicia, modos, usus, synonyma, culturas, præparata, potentias, composita.* (Holm. 8vo. pp. 252.) The compendious manner in which this work is executed, and the several useful preliminary papers annexed, rendered it a very instructive manual to students in medicine. A *materia medica* of the vegetable kingdom, with every simple ascertained by so able a botanist as Linnæus, was a very considerable acquisition to science; it is only to be lamented that he did not republish it, with all the improvements which many subsequent years of observation enabled him to make, and which are actually shown to have been numerous and important by the many notes inserted with his own hand in the printed

printed copy that belonged to his own library. In this volume are arranged 535 subjects, several of which are for the first time reduced to their proper *genera* and *species*. The method pursued in it is as follows, *viz.*

1. His own *specific character* of the plant.

2. C. Bauhin's synonym; or, if the plant was unknown to that author, the synonym of the first discoverer.

3. The country where the plant is produced. In the same line is expressed, by a single epithet, whether it be a *herb*, *shrub*, or *tree*: whether it be *annual*, *biennial*, or *perennial*: also, whether it be *indigenous*; or, if not, whether it thrive well by common cultivation in gardens, or require defence from the cold of the winter in Sweden; or whether it will not endure that climate.

4. The Swedish *officinal* name: what part is in use, or what preparation of it, if any: and the *doses* of each.

5. The *sensible* quality of the plant, whether *bitter*, *aromatic*, *acid*, *astringent*, &c.: whether *fragrant*, *fœtid*, or *inodorous*: whether *gummy*, *resinous*, or *milky*. Its *reputed* quality, whether *uncertain*, *well known*, and *approved*; or whether to be cautiously used. Whether chiefly used in medicine, or for *culinary* purposes.

6. Its reputed effects on the human body, whether *cathartic*, *emetic*, *diuretic*, &c.

7. The diseases for which it is most frequently prescribed.

8. The *compound* medicines into which it enters in the Swedish pharmacopœia.

The work is prefaced by a *conspectus* of the method observed in it; by a list of the principal and most approved writers on the *materia medica* anterior to our author; by a collection of *canons* relative to medicines and the management of them, some framed by himself, and others derived from the authority of Celsus, Hoffman,

Hoffman, &c.; by an explanation of terms, abbreviations, and marks used in pharmacy; by a nosological table; instructions respecting the proper time and mode of collecting simples; the nature of the several pharmaceutical processes; the appellations of the various compounds employed in pharmacy, with the Swedish vulgar names of them annexed; and, lastly, by a classification of medicines, founded on their reputed effects. Of this classification the following is a sketch, which will also serve to give the reader some idea of Linnæus's *pathological* principles; these, as might naturally be expected, corresponded with the *humoral* doctrines of the day, but not without some modifications and exceptions of his own.

His *classes* are six in number, namely,

1. *Evacuatoria.*
2. *Alterantia.*
3. *Nervina.*
4. *Muscularia.*
5. *Visceralia.*
6. *Topica.*

Class 1. EVACUATORIA. Evacuants.

Order 1. PURGANTIA. Purgatives.

Genus 1. Emetica. *Emetics.*
2. Drastica. *Violent purgatives.*
3. Cathartica. *Gentle purgatives.*
4. Eccoprotica. *Laxatives.*

2. BORBORYGMICA. Evacuants of wind.
5. Flatulentia. *By the* Rectum.
6. Ructatoria. *By the* Oesophagus.
7. Carminativa. *Carminatives.*

3. PELLENTIA. Secernents, from the trunk.
8. Diaphoretica. *Perspiratives.*
9. Sudorifica. *Sudorifics.*
10. Diuretica.

10. Diuretica. *Diuretics.*
11. Emmenagoga. *Emmenagogues.*
12. Abortiva. *Medicines occasioning expulsion of the fœtus.*

4. PITUITOSA. Secernents from the head.
13. Errhina. *From the nostrils.*
14. Sialagoga. *From the salivary glands.*
15. Expectorantia. *From the* bronchiæ.

Class 2. ALTERANTIA. Alteratives, or medicines supposed to purify the mass of blood.

Order 1. DISCRASIACA. Alteratives of the fluids as to their acescency or alkalescency.
16. Antiphlogistica. *Correctors of putrescency by dilution.*
17. Refrigerantia. *By acidity.*
18. Balsamica. *By introduction of the bitter principle.*
19. Antacida. *Correctors of acescency by the bitter principle.*
20. Absorbentia. *By neutralization.*

2. DIATHETICA. Alteratives of the fluids as to their consistency and crasis.
21. Resolventia. *Resolvents.*
22. Incidentia. *Attenuants.*
23. Mundificantia. *Purifiers.*
24. Edulcorantia. *Correctors of acrimony.*
25. Demulcentia. *Demulcents.*
26. Obtundentia. *Obtundents.*
27. Lubricantia. *Lubricating (mucilaginous) medicines.*
28. Inspissantia. *Inspissants.*

Class 3. NERVINA. Medicines which act on the nervous system.

Order 1. ORGASTICA. Excitants of the *vital* functions.

29. Alexiteria. *Giving a fragrancy to the breath.*
30. Stimulantia. *Excitants of the secretions.*
31. Calefacientia. *Calefacients.*
32. Nutrientia. *Restoratives.*
33. Analeptica. *Invigorants.*

2. CONVULSIVA. Medicines occasioning convulsive affections.

34. Tussiculosa. *Of the lungs.*
35. Singultuosa. *Of the cardia.*
36. Sternutatoria. *Of the diaphragm.*

3. EXCITANTIA. Medicines producing an influence on the mind.

37. Exhilarantia. *Exhilarants.*
38. Inebriantia. *Intoxicating medicines.*

4. STUPEFACIENTIA. Stupefacients.

39. Paregorica. *Diminishing irritability.*
40. Anodyna. *Mitigating pain.*
41. Narcotica. *Oppressing the mental faculties.*
42. Hypnotica. *Soporifics.*

Class 4. MUSCULARIA. Medicines which act on the muscular fibres.

Order 1. RELAXANTIA. Relaxants.

43. Humectantia. *By a watery quality.*
44. Emollientia. *By an oily quality.*
45. Impinguantia. *By producing fat.*

2. CORROBORANTIA. Corroborants.

46. Exsiccantia. *By a drying quality.*
47. Tonica.

47. Tonica. *By a bitter quality.*
48. Adstringentia. *By a styptic quality.*
49. Sophisticantia. *Local tonics.*

3. CORRODENTIA. Corrodents.
50. Abstergentia. *Of the animal gluten.*
51. Cosmetica. *Of the skin.*
52. Septica. *Caustics.*
53. Vesicatoria. *Exulcerants. Vesicatories.*

Class 5. VISCERALIA. Medicines acting upon particular *viscera.*

Order 1. SPIRITUOSA. Excitants of the nervous energy.
54. Cephalica. *Cephalics.*
55. Cardiaca. *Cordials.*

2. BILIOSA. Augment the quantity of bile.
56. Hepatica. *By acting upon the liver.*
57. Splenica. *By acting upon the spleen?*
58. Stomachica. *Provoking appetite.*

3. MUCAGINA. Medicines which strengthen and lubricate the lungs.
59. Becchica.

4. VENEREA. Medicines favouring procreation.
60. Aphrodisiaca. *Provocatives to venery.*
61. Uterina. *Uterines.*
62. Lactifera. *Increasing the flow of milk.*

Class 6. TOPICA. Local applications.

Order 1. CONSOLIDANTIA. Repairing solution of continuity.
63. Vulneraria. *Vulneraries.*
64. Glutinantia. *Promoting adhesive inflammation.*

 65. Maturantia.

65. Maturantia. *Promoting the formation of pus.*
66. Digerentia. *Digestives.*
67. Sarcotica. *Promoting the formation of flesh (by removing extraneous matter?)*
68. Cathæretica. *Reducing proud flesh.*
69. Cicatrisantia. *Drying up consolidated ulcers.*
70. Sistentia. *Restraining the flow of blood.*

2. Discutientia. Discutients.
71. Repellentia. *Repellents.*
72. Lactifuga. *Diminishing the secretion of milk.*
73. Sterilitantia. *Preventing impregnation.*

3. Arcentia. Medicines noxious to animalcules.
74. Anthelmintica. *To worms.*
75. Exanthematica. *To* acari *and pustular animalcules.*
76. Phthiriaca. *To lice.*

At the end of the volume is an *index morborum*, with the simples appropriated to each; and an *index virium*, adapted to the above classification. There are also *indices* of the *officinal* and of the *botanical* names, which, with the assistances already mentioned, render this work extremely useful for reference.

Linnæus did not carry on this plan to the animal and mineral kingdoms (at least, not in his own name), but it was pursued in two academical dissertations, which will be noticed in the proper places, and which were embodied with the above into one work by Tessari, of Venice, in 1762. There are two editions* of this,

* *C. Linnæi Materia Medica, per tria regna naturæ, curante J. C. D. Schrebera. Editio altera auctior.* Vindobonæ 1773. 8vo. tab. 1. p. 131—236 regnum vegetabile. *Editio quarta auctior.* Lipsiæ et Erlangæ 1782. 8vo.

besides

besides a *mantissa**, by Schreber, who has increased the number of vegetable articles to about 600. The *Materia Medica* of Bergius† may also be considered as a republication of Linnæus's treatise, since it is executed on the same plan, and the materials were obtained chiefly from the lectures of the latter, of whom this author was a pupil.

In the month of April of this year (1749), Linnæus set out on the third of those journeys which he had been required to take by an order of the States; this was to the province of Skåne, situated at the southern extremity of the kingdom, opposite Zealand. He was absent therefore from Upsala until the autumn, in which interval he visited Christianstad, Cimbrishamn, Ystad, Skanër, Malmö, Lund, Landscrona, Helsingborg, and Engelholm. He took this opportunity also to visit once more the place of his nativity; his father died the year before, but he had the satisfaction to find his only brother, Samuel Linnæus, successor to the former in the living of Stenbrohult. The result of this journey was not printed until two years afterwards, and it first made its appearance in the Swedish language (like the fellow-publications, which we have already mentioned) bearing the title of SKÅNSKA RESA, *förrättad år* 1749 (Stockholm 1751. 8vo. pp. 434. 6 plates.) It was afterwards translated into German by C. Ernest Klein, who omitted, however, such parts as were not connected with natural history, rural œconomy, and medicine, (Stockholm and Leipsic 1756. 8vo. 3 plates.) On the subject of agriculture our author treats pretty largely, mak-

* *Mantissa editioni 4tæ.* Erlangæ 1782. 8vo.

† *Materia Medica de regno vegetabili, sistens simplicia officinalia pariter atque culinaria, secundum systema sexuale. Ex autopsia et experientia fideliter digessit* PETRUS JONAS BERGIUS, M. D. &c. 2 Tom. Holm. 1778. 8vo.

ing remarks on the culture of marshy grounds, and on various useful and noxious herbs: particularly the *Stakar* (supposed to be the *Phellandrium aquaticum*, or *Water-hemlock*, which, it is believed, renders horses that eat it paralytic), the *Gramen mannæ*, or *Festuca fluitans* (the seeds of which are so particularly useful for fattening geese), the *Agaricus muscarius*, &c.

In 1749 was published the first volume of a collection of dissertations in *octavo*, under the title of AMŒNITATES ACADEMICÆ, *seu Dissertationes variæ physicæ, medicæ, et botanicæ.* Linnæus and Camper both published it in the same year, the former at Stockholm and the latter at Leyden*; but Linnæus alone continued the work afterwards, though the volumes were all constantly reprinted, as soon as published, both in Germany and Holland. As these academical *theses* were sustained under Linnæus in his professorial capacity, and selected chiefly by himself, they have been regarded as of equal authority nearly with his own writings, various parts of which they extend and exemplify, in a particular manner. We shall therefore, in a more convenient part of this book, give a brief account of the several volumes, in their order, specifying the purport of each dissertation, with the name of the student by whom it was written and defended.

Whilst Linnæus was meditating one of his capital performances, which had long been expected, and greatly wished for, by his pupils, he was interrupted by a long and painful fit of the gout. He informs us, in his Diary, that he owed his recovery from this complaint to wood strawberries, of which he

* In the Leyden edition, the *Hypothesis nova de febrium intermittentium causa* is inserted, and the *order* of the dissertations is different; it is dedicated to our countryman Peter Collinson.

had

had accidentally eaten some quantities, and to which he afterwards had recourse annually, finding them a very successful preventive, as well as remedy. The present attack, however, left him in a very weak and dispirited state; and according to the intelligence which his friends gave of him, nothing was thought to have contributed more to the restoration of his spirits than the seasonable return of his pupil Kalm, with a large collection of rare and undescribed plants, from America.

Upon the recovery of his health, he published the PHILOSOPHIA BOTANICA, *in qua explicantur fundamenta botanica, cum definitionibus partium, exemplis terminorum, observationibus rariorum, adjectis figuris æneis.* (Holmiæ et Amstelodami 1751. 8vo. pp. 362. tabb. 11.) This must be considered as the institutions of the Linnean system of botany, and is a work which none, who wish to be acquainted with that system, can be without, as it is the author's own comment on his *Fundamenta* (first published in 1736), which are comprised in 365 aphorisms, divided into 12 chapters. The author's original intention was to have explained all these aphorisms at large, in the manner that had been adopted in the *Bibliotheca Botanica, Classes Plantarum, Critica Botanica*, &c.; but, he says, his numerous avocations did not allow him the requisite time. Neither did he afterwards add to, or alter the work, the present being the only edition that came from his own hands*.

Ch. 1. Exhibits a systematical distribution of the principal botanical writers, and is that part which is treated of at large in the *Bibliotheca*.

2. *Systemata.* A view of all the botanical systems, being a

* It was republished, however, at Vienna, in the years 1755 and 1770, and also in the *Fundamenta Botanica*, of Gilibert (Tom. 3. p. 1—362.)

compend of the *Classes Plantarum*, but here brought down somewhat later, so as to comprehend a general view of van Royen's, Haller's, and Wachendorf's systems.

3. *Plantæ.* Explanations of the terms used in describing the different kinds of *roots*, *stalks*, and *leaves* of plants.

4. *Fructificatio.* Descriptions of the parts of fructification, and definitions of all the terms used respecting their *number*, *figure*, *proportion*, *situation*, and *uses*.

5. Relates to the sexes of plants: a subject which is more copiously treated in a paper called *Sponsalia Plantarum*, printed in the first volume of the *Amœnitates Academicæ*.

6. *Characteres.* Rules and definitions for establishing the characters of *classes*, *orders*, and *genera*.

7. *Nomina.* Rules for rightly forming *generic* names, and those of *orders* and *classes*.

8. *Differentiæ.* Rules for establishing the *specific* characters of plants.

9. *Varietates.* Rules for distinguishing varieties among plants.

10. *Synonyma.* Rules relating to the right disposition of synonyms in botanical writings.

The four chapters last mentioned make the subjects of the *Critica Botanica*, in which every aphorism is much more largely explained than in the present work.

11. *Adumbrationes.* Rules for properly describing and naming the *species*, and for giving their complete history in a scientific manner.

12. *Vires.* This chapter relates to the virtues of plants, as deducible from the agreement either in their generical characters, or with respect to the natural order or class. The subject is treated in a more comprehensive manner in the *Vires Plantarum*, printed in the first volume of the *Amœnitates Academicæ*. To

give

give a few instances, however, as illustrations:—The Scammony, Mechoacan, Turbith, and Sea-bindweed are all species of the genus *Convolvulus*, and all agree in possessing a purgative quality. The Mallow, Marsh-mallow, and Cotton-bush are so many distinct *genera*, under a natural order, called *Columniferæ*, and agree in being all mucilaginous. Of the *Umbelliferæ*, such as grow in *dry* places are aromatic, and considered as sudorifics and carminatives; those growing in *watery* places, on the contrary, are mostly of a quality to be justly suspected, and not a few of them decidedly noxious. Plants of the *Papilionaceous* class are all excellent food for cattle. The *Syngenesiæ* are commonly bitters. The natural order of *Coniferæ*, all evergreens and resinous, are considered as diuretics.

Ten explanatory plates are subjoined, on which are exhibited the different leaves, their situation on the stalk, difference, stalks, roots, flowers, &c. The first part of these plates, relating to the leaves, had been given as introductory to the *Hortus Cliffortianus*.—Some new terms in botany, which have been invented since the publication of the *Philosophia*, may be found in a paper, under the title of *Termini Botanici*, contained in the 6th volume of the *Amœnitates*.

In this work of Linnæus, it is difficult to determine, whether we ought to admire the genius of its author most in his inventive power, or in that exquisite scientific arrangement which he has given to the whole: the two circumstances together, certainly render it a most extraordinary and pre-eminent performance.

At the end of the volume, we meet with several curious fragments: such are,

1. Directions to botanic pupils.
2. Method of forming an *herbarium*.
3. ——— of conducting botanical excursions.

4. Method of laying out a botanic garden.

5. Plan for naturalists in travelling, and in keeping a journal; with an enumeration of all those subjects that demand their attention.

6. Idea of a complete botanist. Some of the principal botanists are here mentioned.

7. A compend of the philosophy of vegetation.

Though this work never underwent any alteration, or was at all augmented, by Linnæus himself, yet it has, since his time, been improved by different editors, particularly in 1780, by John Gottlieb Gleditsch, of Berlin, whose edition having had a rapid sale, it was renewed by Dr. Willdenow*; and Spain has also produced an editor of this valuable work in Dr. Ortega†. The last-mentioned botanist has made but few deviations from the original text (compared with his predecessors in that undertaking); indeed he professes rather to explain than alter, and does not aim at the abbreviation which was a principal object of the former. There is one very material improvement, made by Dr. Ortega, namely in the index, the generic and specific names in which are not those of the original work, but of the *Species Plantarum*, as they were therein altered by Linnæus himself. Dr. Willdenow has adopted, with respect to the parts of fructification in plants, the terms constructed by Gærtner, and, with respect to mosses, those employed by the ingenious Hedwig‡,

* *Philosophia Botanica in qua explicantur Fundamenta Botanica, adjectis figuris æneis. Editio tertia, aucta et emendata cura* CAROLI LUDOVICI WILLDENOW, M.D. &c. (Berol. 1790. 8vo. pp. 364. tabb. æn. 11.)

† CAR. LINNÆI, *Botanicorum principis, Philosophia Botanica, annotationibus, explanationibus, supplementis aucta, cura et opera* CASIMIRI GOMEZ ORTEGA, M.D. &c. *Accedunt J. Andr. Murray nomina trivialia.* (Matriti 1792. 4to. pp. 426. tabb. æn. 10.)

‡ One of Willdenow's plates contains figures illustrative of the fructification of mosses, as originally given by Hedwig himself.

which

which may fairly be considered as more accurate and of more extensive use than Linnæus's, whose attention not having been so exclusively and professedly devoted to those particular branches of vegetable physiology, his descriptions in such points were, as might naturally be expected, less correct and comprehensive. But on this subject we shall speak more fully hereafter. The *Introduction to Botany** of our countryman James Lee may be looked upon as a sort of epitome of the Linnean *Philosophia Botanica;* as such indeed it is placed by our author himself in the *Editiones Operum* registered in his Diary. In our own language there is also a pretty close *translation* of the work by Hugh Rose, and, in the French, another by Fr. A. Quesne†.

In 1753 appeared (what Haller emphatically terms) Linnæus's "*maximum opus et æternum:*" the SPECIES PLANTARUM *exhibentes Plantas rite cognitas ad genera relatas, cum differentiis specificis, nominibus trivialibus, synonymis selectis, locis natalibus, secundum systema sexuale digestas.* (Holm. 8vo. Tom. 1. pp. 560; Tom. 2. p. 561—1200.) To give this work its utmost perfection had been the author's object for many years, and to this all his other botanical productions were in some measure only preparatory, (especially the local catalogues,) as the rightly ascertaining of species is the great end of all method. Linnæus included every plant that had come sufficiently under his own inspection, seldom admitting any on the authority of others; and, wherever

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* 1st edition. London 1760. 8vo. } pp. 320.
2nd ——————— 1776. — } 12 plates.
3d ——————— pp. 432, and the same number of plates.

† *Philosophie Botanique.* (Paris et Rouen 1788. 8vo. pp. 456. planches 9.)

he has done so, the plant is distinguished by a proper mark. The plan of this work is, in general, agreeable to that of his other catalogues, no other part of the system being exemplified except the *species*; and, as it is entirely botanical, none of the uses of the plants are here introduced. Every plant has its specific name, constructed according to the rules of the 8th part of the *Philosophia Botanica*, with a reference to such of his own works in which it has been mentioned before; the synonym being given, wherever the author saw occasion for altering his original description. Then follow the synonyms of the best authors, and if the plant be at all rare, or newly discovered, references to the best figures. The country in which the plant grows is next mentioned; and frequently a symbol, expressive of its duration, whether annual, biennial, or perennial.

It is in this work that Linnæus first employs *trivial* names; which are, single epithets, expressive, as far as possible, of the *essential specific differences* among the species of the genus, or, in default of these, of some striking and obvious character; and not seldom they are local terms, or the names of the first discoverers. The last-mentioned method, could it have been universal, would have had the advantage of conveying somewhat like a chronological history of each plant, and, at the same time, of perpetuating to the discoverer due credit. Before trivial names came into use, botanists were obliged to quote an entire description of a plant, to point out the species they chanced to allude to, thus burthening the memory, and creating a jargon which rather obstructed than facilitated the purposes of science. The first hint of this important improvement in botany was probably borrowed from Rivini; but Linnæus is indisputably the first author who actually put it into practice; and, by printing these names in

the margins of his works, he has given them the advantage of catching the eye instantly*.

In his preface, the author gives an ample account of the assistance he received, and of the pains he had taken to bring this work to its present state. To this end, he specifies the countries over which he had travelled; the many botanic gardens he had visited; the various excellent *herbaria* he had examined in Sweden, Holland, England, and France; the names of the pupils educated under him, and their various peregrinations; and, finally, the many liberal communications of seeds and specimens sent to him from all parts of the world by the first botanists of the time. After this preface, he gives a list of the botanists quoted in his work, whom he divides in his first edition into REFORMATORES and USITATIORES; but in the second into, 1. REFORMATORES, 2. RESTAURATORES, and 3. FUNDATORES. The volume is terminated by an appendix, and *indices* of the *genera*, synonyms, and trivial names separately.

As the *Species Plantarum* include all the plants of the known world which had come to Linnæus's knowledge†, the professed botanist has only to regret that this work could not have been extended by the author himself to a complete *pinax* and *history* of every plant it describes. He published an enlarged edition of it in 1762 and 1763, (Holm. 8vo. Tom. 1. pp. 784; Tom. 2. p. 785—1684.) which the German booksellers pirated the year after at Vienna; their edition differs in nothing but the title-

* The various advantages derived to botanical science from the introduction of trivial names are excellently explained by Dr. Murray, in two *Programmata*, entitled "*Vindiciæ nominum trivialium stirpibus a Linnæo Equ. impertitorum*," (Götting. 1782. 4to.) and which may be found in Gilibert's *Fundamenta Botanica* (Tom. 1. p. xlvii—lxxv.)

† The number amounts, in this first edition, to about 7,300 species.

page

page from the second. There is a very augmented edition, however, commenced since Linnæus's time, by Dr. Willdenow, of Berlin, who, when he has completed it, will have rendered a signal service to the science of botany*. This gentleman has added all the *vernacular* names of the plants. The species first described by Linnæus are distinguished by an asterisk prefixed.

In this year was published MUSEUM TESSINIANUM, *opera Ill. Comitis C. G. Tessin, Regis Regnique Senatoris, &c. &c. collectum,* (Holm. 1753. fol. pp. 90. tabb. 12.) which is Linnæus's description of the cabinet of his great patron and friend Count Tessin, (preceptor to Gustavus III. when Prince Royal of Sweden,) who had spared no expense in forming a rich museum, consisting principally of subjects of mineralogy, and abounding in fossils of the figured or extraneous kind. The work is in Swedish and Latin, and dedicated to our author. The plates represent several very scarce and valuable fossils not to be seen elsewhere.

The figured fossils, or petrifactions, are here arranged in four orders, founded on the different modes of their formation.

1. FOSSILIA. Shells, corals, animal remains unchanged, except by being deprived more or less of the connecting gelatine.

2. REDINTEGRATA. Earthy, stony, or crystalline fossils, formed within any crustaceous or testaceous body as in a mould; thus retaining the cast, without the external coat.

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* *Species Plantarum. Editio 4ta, post Reichardianam 5ta, curante Car. Lud. Willdenow.* Berol. 1797. 8vo. Three tomes are already published. Reichard's work is entitled *Systema Plantarum,* and was made chiefly from the *Syst. Vegetabilium, Species Plantarum,* and *Mantissæ.* (Francof. ad Mœn. 1779. 8vo. Partes 4. pp. 662.)

3. Impressa. Impressions only; as of fishes, capillary plants, ferns, &c.

4. Transubstantiata. Perfect petrifactions; in which the original organic parts are entirely filled up with stony particles, but retain the exact structure, externally and internally, of the original body.

The fame which Linnæus had now begun to acquire, and the extent of his scientific connections and correspondence, occasioned an influx, as it were, of every thing rare and valuable from all parts of the globe, into Sweden; and a passion for collecting natural curiosities became very prevalent in that country. The collections belonging to the Royal Academy of Upsala, to Count Gyllenborg, and to M. Grill, will be spoken of particularly in another place; we have here to mention a museum formed by the King of Sweden himself, who, with his Queen*, began to take an interest in pursuits of this sort, and to feel, in common with their subjects, a desire of testifying respect for the merits of Linnæus. Our author was honoured with His Majesty's commands to describe this museum, which he executed in a work entitled Museum *Sacræ Regiæ Majestatis* Adolphi Friderici *Regis, &c. in quo animalia rariora, imprimis et exotica quadrupedia, aves, amphibia, pisces, insecta, vermes, describuntur et determinantur, Latine et Suecice.* (Holm. 1754. folio. pp. 96. tabb. 33.) This splendid volume is frequently referred to by Linnæus, in his *Syste-*

* The Queen, Ludovica Ulrica, (who was the sister of Frederic the Great,) seems to have honoured Linnæus with her particular favour and friendship. We are informed in the Diary, that Her Majesty was disposed also to patronize his son, who, she promised our author, should be sent on his travels through Europe (as soon as he arrived at a proper age) at her own expense,—a testimony of royal regard which was peculiarly gratifying to Linnæus, because it was the very advantage which he most wished his son to enjoy.

ma Naturæ, on account of the figures of so many of the rarer serpents and fishes being engraved in it. Of the former there are 48 species, and of the latter 32, specimens of which are all preserved in spirits in the royal museum at Ulricsdahl. It is one of the most superb and expensive of Linnæus's works; yet it is but little known in this country. The preface, which has been translated by Dr. Smith, under the title of *Reflections on the study of nature*, (London 1785. 8vo. pp. 40.) is one of the best general views of the œconomy of the creation, as well as the most candid and rational recommendation of the study of natural history, that is any where to be found.

The reputation of our author in the republic of science had by this time procured him honours from the most distinguished societies in Europe. Into the* Imperial Academy he had been very early received, and distinguished, according to the custom of that institution, with a classic name, having been most aptly called DIOSCORIDES SECUNDUS. In 1738, he was chosen a member of the Royal Academy of Sciences at Upsala, to which body he afterwards became Secretary, in the room of Dr. A. Celsius, who died in the year 1744. In 1743, the Academy of Sciences of Montpellier received him into their number; in 1747, the Royal Academy of Berlin; and in 1753, the Royal Society of London. His own countrymen were not less zealous in conferring on him marks of their estimation; some of the nobility†

* Oct. 3, 1736.

† The noblemen were Count Ekeblad, Baron Höpken, Baron Palmstierna, and Baron Hårleman. On one side of their medal is the portrait of Linnæus, with these words: CAROL. LINNÆUS, M. D. BOT. PROF. UPS. ÆT. 39; and on the other the following inscription, *viz.* CAROLO GUSTAVO TESSIN ET IMMORTALITATI EFFIGIEM CAROLI LINNÆI, CL. EKEBLAD, AND. HÖPKEN, N. PALMSTIERNA, ET C. HÅRLEMAN DIC. 1746.

united

united in causing a medal to be struck in honour of him; Count Tessin paid him a compliment of this sort, singly*; and in 1753, his sovereign bestowed on him a most flattering mark of his distinction and regard, by creating him a Knight of the Polar Star. Linnæus was the only literary character on whom this order of knighthood had hitherto been conferred; nor had any person below the rank of a nobleman before been honoured with it. The Swedish monarch had, eleven years before, raised him to a high *professional* rank, unsolicited, having appointed him *Archiater*, or Physician to His Majesty.

It was now no longer *Laudatur et alget*†. His emoluments kept pace with his fame and honours; and we find him soon afterwards possessed of a country-house and gardens at Hammarby‡, about five miles from Upsala.

In the year 1755, the Royal Academy of Sciences of Stockholm honoured Linnæus with one of the first premiums (which were two gold medals, of 10 ducats' value each) decreed by the will of Count Sparre, to be given by the Academy to the authors of such papers in the preceding year's Stockholm Transactions, as should be adjudged most useful in promoting any branch of rural œconomy, particularly agriculture. This medal bore,

* The obverse of the medal struck at the expense of Count Tessin is the same as the other; but on the reverse are three crowns, one adorned with the heads of different animals, another with flowers, and the third with crystals and other mineral substances (to represent the three kingdoms of nature), over which is a radiant light, with the single word ILLUSTRAT. See No. 1. of the plate fronting the preceding page.

† This is what Linnæus used to say of himself before he had acquired the affluence above alluded to. On being presented with the Polar Star, he took for his regular motto *Famam extendere factis*.

‡ He gave for this estate, and a neighbouring one called Söfja, 80,000 dollars (or about 2350l. sterling.) *Diary*.

on one side, the arms of the Count, and on the other this motto—SUPERSTES IN SCIENTIIS AMOR FREDERICI SPARRE. Linnæus obtained it in consequence of having written on the œconomical uses of various alpine plants, which he considered as adapted to culture in Lapland*.

It does not seem to be generally known that Linnæus obtained another prize from this academy, for his answer to a question it proposed—" How to diminish the damage done to fruit-trees by the *larvæ* of insects." His dissertation was subscribed *C. N. Nelin*†. The word *Nelin* contains the letters of his name (*Linne*) transposed; but he never owned the composition, feeling some mortification perhaps at the gold medal being adjudged to a pupil‡, when his own was only the silver one.

Linnæus also obtained the *præmium centum aureorum* proposed by the Imperial Academy of Sciences at Petersburg, for the best paper to establish or disprove by new arguments the doctrine of the sexes of plants. On this occasion he wrote his *Disquisitio de quæstione ab Acad. Imp. Scient. Petrop. in annum* 1759 *pro præmio proposita*: SEXUM PLANTARUM *argumentis et experimentis novis, præter adhuc jam cognita, vel corroborare vel impugnare, præmissa expositione historica et physica omnium plantæ partium quæ aliquid ad fœcundationem et perfectionem seminis et fructus conferre creduntur; ab eadem academia die* 6 *Sept.* 1760, *in conventu pub-*

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* " *Herr Carl Linnæi Tankar om nyttiga växters planterande på de Lappska Fjällen.*" Suensk Vetensk. Acad. Handling. för År. 1754. Vol. 15. p. 182—189.

† See *Svar på K. Vetensk. Acad. fråga huru kunna maskar, som göra skada på frukträd, bäst förekommas och fördrifras.* (Stock. 1763. 8vo, p. 53—61.)

‡ The celebrated Torbern Olof Bergman, afterwards Professor of Chemistry at Upsala, and Knight of the order of Vasa.

lico præmio ornata. (Petrop. 1760. 4to. pp. 30)*. Apart from all foregoing arguments and experiments, brought in support of this question, Linnæus has in this little tract sufficiently proved by a series of *new* facts, that the *pollen*, or dust of the *antheræ*, (analogically called the male parts,) is absolutely necessary to be shed on the *stigma*, or female part, in order to render the seed fertile. His theory of vegetation, prefixed to the tract, is explained more at large in a paper entitled *Prolepsis Plantarum*, and printed in the 6th volume of the *Amœnitates Academicæ.*

It was, if possible, an additional glory to Linnæus to have merited the premium from the *Petersburg* Academy; in as much as a professor of that city (Dr. John George Siegesbeck), a few years before, had with more than common zeal, although with a futility like that of the other antagonists of our author, endeavoured to overturn the whole Linnean system of botany, by attempting to show that the doctrine of the sexes of plants had no foundation in nature, and was unsupported by facts and experiments. The work in which Linnæus was thus attacked bears the title of *Botanisophiæ verioris sciographia ; cui accedit ob argumenti analogiam epicrisis in Linnæi Systema Plantarum, &c.* (Petrop. 1737. 4to.) It has been mentioned before that our author wisely declined answering any of its invectives; this task, however, was soon afterwards undertaken by his friend Professor Browallius†,

* This disquisition was republished by Schreber in the 10th volume of his edition of the *Amœnitates*, and by Gilibert in the first volume of his *Fund. Bot.* It has been translated into English by Dr. Smith under the title of a *Dissertation on the sexes of plants* (London 1786. 8vo. pp. 62), including some facts discovered since the time of Linnæus. M. Broussonet has translated it into French (in the *Journal de Physique*) with notes from Dr. Smith's *Dissertation.*

† In a work entitled *Examen epicriseos in systema plantarum sexuale cl. Linnæi, auctore Siegesbeckio.* (Aboæ 1739. 4to.)

of Åbo, and also by Professor Gleditsch*, of Berlin, both of whom were as successful in pointing out the malevolence of Siegesbeck, as in controverting his arguments and positions.

In the autumn term of the year 1759, their Swedish Majesties, with the Prince Royal, being pleased to honour the university of Upsala with a visit, Linnæus, as Rector, pronounced before them an ORATION†, which was printed, and afterwards republished in the Latin language by Schreber‡. It is very concise, and relates chiefly to the importance of the sciences in general.

In the year 1761, Linnæus obtained a greater accession to his well-merited honours than ever, being presented by his Sovereign with letters of nobility, which were antedated the 11th of April, 1757. On thus becoming a nobleman, he (agreeably to the custom on those occasions in Sweden) changed his name to VON LINNE, and assumed arms correspondent to his new rank§.

He received additional distinctions also from foreign academies, being presented in 1755 with a diploma from that of Petersburg; and in 1762 from the Royal Academy of Sciences at Paris, among whose members a vacancy had occurred in consequence of the death of the celebrated astronomer, Bradley. As the

* Gleditsch's work bears the title of *Consideratio Epicriseos Siegesbeckianæ*. (Berol. 1740. 8vo.)

† *Tal, vid deras Kongl. Majesteters Höga Närvaro hållit uti Upsala på stora Carolinska Lärosalen den 25 Septemb.* 1759. (Upsal. 1759. fol. 4 pp.)

‡ *Oratio coram Rege et Regina Sueciæ*, in Amœn. Acad. *edit. a Schrebero.* Vol. 10. p. 53—65.

§ His arms were very appropriate and significative, the shield being divided (by a sort of pale, shaped like the letter Y, which is common in Swedish heraldry) into three fields: gules, vert, and sable, with a crown in each, to denote the three kingdoms of nature; and in the middle, an egg (on a hurt) in allusion to his fundamental position—"*omne vivum ex ovo.*" The crest was the *Linnæa borealis*, between two aloe leaves, which are also frequent in armorial bearings of the Swedes; the motto *Famam extendere factis.*

statutes

statutes of the last-mentioned institution admitted of only eight persons being placed on the foreign list, and as no Swede had received that compliment before, Linnæus justly considered it the highest literary honour that had hitherto been conferred on him.—There was scarcely a learned body in Europe that did not now manifest an anxiety to have the name of our illustrious philosopher on its list*.

Many of the most exalted individuals also, of different countries, testified their admiration of his extraordinary talents in the most marked manner. Sovereign princes not only paid him the highest compliments, through the medium of their ambassadors, but even transmitted to him presents†; and some of them expressly invited him to their courts‡. The most flattering testimony he received of the extent and magnitude of his fame was from the King of Spain, who invited him to settle at Madrid, with the offer of an annual pension for life of 2000

* Besides the societies already particularized above, those of Thoulouse, Florence, Drontheim, Celle, Rotterdam, Sienna, and Bern, the Medical Society of Paris, the Philosophical Society of Philadelphia, and the Royal Patriotic Society of Sweden successively received Linnæus into the number of their members.

† Linnæus had the honour of being presented with a collection of seeds from the garden at Trianon, by the King of France, Lewis XVth, who, when the Swedish monarch visited Paris, particularly complimented him on his country being possessed of such a distinguished philosopher. His Danish Majesty sent him two of the finest works on subjects of natural history that had been published in Denmark, the *Flora Danica* and Regenfus's *Choix de Coquillages*.

‡ Among other illustrious personages, Caroline Princess of Hesse-Darmstadt (who was become very partial to the study of botany, and who had projected the publication of some botanical drawings) expressed a strong desire to have Linnæus resident near her. His own sovereigns (especially the Queen) were so charmed with the extent of his knowledge, and the agreeableness of his conversation, that they frequently received him at their palaces of Drotningholm and Ulricsdahl in the most familiar manner; and Gustavus even honoured him with visits at Hammarby.

pistoles,

pistoles, letters of nobility, and the free exercise of his own religion—an offer not paralleled in the history of modern times, and more honourable perhaps, the state of the nation in which it originated, with all its circumstances, duly considered*, than was ever before made to any literary character.

What Ferney and Geneva were on account of Voltaire and Rousseau, the remote city of Upsala became on account of Linnæus. No strangers of any philosophic curiosity visited the north of Europe without endeavouring to see this illustrious naturalist†. Some of them prolonged their stay in the Swedish metropolis solely with a view to gain that knowledge of the various branches of natural history to which he, of all men who had ever lived, imparted the most powerful charms; and, they thought no recompense too liberal for the advantages derived from his conversation and instruction‡.

The great character of Linnæus, and that of his colleagues, particularly of Rosen, in the medical departments, and their united endeavours, had (as we have before observed) very considerably raised the reputation of Upsala, as an university. The number of students was double what it is said to have been

* It is almost superfluous to state that Linnæus did not accept it; he returned for answer (acknowledging in the fullest manner the singular honour conferred upon him) that "if he had any merits, they were due to his own country."

† Among other distinguished persons, the Earl Macartney, when he was English minister at Petersburg, went from that city to Upsala on purpose to visit Linnæus. The celebrated Duc de Rochefoucault also, who was much attached to the pursuit of botany, devoted a considerable time to interviews with him both in the university and at Hammarby, with the treasures of which place (Linnæus informs us in his Diary) the Duc was highly delighted.

‡ The Demidoffs, who belonged to a family of considerable consequence in Russia, gave him 3500 dollars (about 100l. sterling), and our countryman Lord Baltimore a service of silver plate, besides other costly presents. His regular fee for private lectures, which he read during the summer at Hammarby, was a ducat (about 9s. 6d. of our money) a lecture, but he never would receive more than four pupils for the course.

thirty

thirty or forty years before*. The emulation excited among his pupils amply rewarded Linnæus, by the vast harvest of useful information that flowed in from them after they were dispersed over the world. Some of these young men, settling in distant universities, were afterwards promoted to professorships, and did lasting honour to the memory of their master by promulgating his system, and illustrating its various branches by their writings; such were GEORGE TYCHO HOLM, who had been sent to hear Linnæus by the King of Denmark, and was afterwards appointed Professor at Copenhagen,—NICOLAS LAWRENCE BURMANN, made, on his return to Amsterdam, Professor of Botany and Physic in that university,—JOHN CHRISTIAN DANIEL SCHREBER, whom we have mentioned already as editor of the Linnean *Genera Plantarum*, and who has been promoted to the Professorship of Natural History at Erlangen, to the dignity of an Aulic Counsellor, and to the Presidency of the Imperial Academy *Naturæ Curiosorum*,—ADAM KUHN, who came from America solely for the purpose of attending Linnæus's lectures, and, on his return, became the first Professor of Botany at Philadelphia,—JOHN CHRISTIAN FABRICIUS, the celebrated entomologist, and Professor at Copenhagen,—JOHN JAMES FERBER, whose mineralogical travels are well known, and who became Professor at Mitau and Counsellor of the Mines to the King of Prussia,—JOHN ANDREW MURRAY, late Aulic Counsellor, and Professor of Botany at Göttingen,—PAUL DIETERIC GISEKE, Professor of Physics at Hamburg, and a favourite pupil of Linnæus,—MARTIN VAHL, the present Danish Professor, who has distinguished himself by his *Symbolæ Botanicæ*, *Eclogæ Americanæ*, *&c.* and has just commenced an *Enumeratio Plantarum* (after the method of his great master's *Species*) which

* In 1759, the number amounted to 1,500. (*Stoever.*)

will

will probably take place of all other performances of a similar kind yet published.

Others, as soon as they were properly grounded in natural history and medicine, had, with an ardour which nothing but the strongest love of science could inspire, voluntarily undertaken the most tedious and perilous voyages, supported by the munificence of particular patrons or societies, to investigate the productions of distant countries. Some of them, however, perished from change of climate or other causes, and much of the fruit of their labour was lost with them. It may not be amiss to particularize the most remarkable of these expeditions, as they have a very intimate connection with the more immediate subjects of our pages; they furnished materials for the great oracle of science, and proved essentially serviceable towards enlarging and improving the later editions of the *Systema Naturæ*, a work which we shall see him hereafter exhibiting in a much more perfect and detailed manner than it had as yet appeared.

We think it proper first to remark, that the Swedish East India Company were particularly forward in promoting the cultivation of natural history, of which *their* director, Magnus Lagerström, was a distinguished lover; but the Company were principally influenced by the exertions of Count Tessin, who, when their charter was renewed, stipulated that a young man should be sent out to the eastern parts of the world, every year, in the East India fleet, free of expense, and that the Company's officers should assist the latter in his pursuits to the utmost of their power. The first person that embarked on this laudable mission was C. TERNSTRÖM, who had distinguished himself by a dissertation on the isle of Åland*, in which he had accurately described various natural productions of that spot in the Linnean method. Ternström sailed from Gothenburg for China,

* *Dissertatio de Alandia, maris Baltici insula.* Upsalæ 1739. 4to. Partes 2. pp. 67.

but fell a victim to the climate at Pulocondor, in 1745. This expedition therefore was wholly unproductive, and it became necessary to select some other young man, who was willing to encounter the same dangers.

In the mean time, a plan was formed for exploring the northern parts of America, with a view to ascertain whether many plants of that continent, which promised to be very useful in œconomy and medicine, might not, from similarity of soil and climate, be cultivated with success in Sweden. Linnæus had expressed himself very confidently on this subject; but he was more particularly anxious that an attempt should be made to introduce a mulberry tree*, which was known to him to be indigenous in Canada, and which, by feeding the silk-worm, might give origin to a domestic manufacture of that important article. The importation of raw silk into Sweden (a branch of trade to which the attention of the country had been recently turned by some interesting observations addressed to the Royal Academy of Sciences by Captain Triewald†) drew an immense sum annually out of that kingdom, the resources of which were so far from being abundant as to render such a project for their improvement highly deserving of attention. Accordingly, many public bodies came forward with pecuniary contributions, and, on the recommendation of Linnæus, his pupil PETER KALM was engaged for the journey. This young man had already distinguished himself as a traveller, by the publication of a tour in some of the Swedish

* *Morus rubra*, which was afterwards very minutely described in the *Vetensk. Acad. Handling.* (for 1776. p. 143—173.) by the traveller to whose expedition it gave rise.

† See "*Försök angående möjeligheter at Suea Rike kunde äga egit radt silke.*" Vetensk. Acad. Handling. 1745. p. 22. 29; p. 136—147; p. 189—206; and p. 253—266. 1746. p. 83—93; p. 257—273.

provinces*, and his acquirements in natural science were highly respectable. He set sail for America, or rather for England, (where he passed six months,) December the 11th, 1747, and arrived at Philadelphia September the 26th, 1748, accompanied by Lars Yungström, whom he had taken into his service both as a gardener and draughtsman. Making Philadelphia chiefly his winter quarters whilst he remained on the American continent, his excursions were annually commenced from that city. In 1749, he went through New Jersey and New York along the river Hudson to Albany, and thence, after having crossed the lakes St. George and Champlain, to Montreal and Quebec. The following year, he visited the western parts of Pennsylvania and the coast of New Jersey. Yungström staid in the former province all the summer, to collect seeds, &c. whilst Kalm passed the blue mountains, and went from Albany, along the river Mohawk, to the Iroquois nations; he navigated the great lake Ontario, and saw the celebrated fall at Niagara. On his return to Philadelphia for the last time, he crossed the blue mountains in a different part, and made a great number of very interesting observations. Large cargoes of seeds, plants, and curiosities having been shipped off, at different times, for Sweden, the two travellers followed them in February 1751, but did not arrive at Stockholm until the month of June following. Their success was, in every respect, as great as could have been reasonably expected, and in the year 1753 Kalm commenced the publication of his account of it, which, however, was not completed until 1761†, owing to the difficulties and discouragements

* *Wästgötha och Bahuslandska Resa, förrättad ar* 1742. Stockholm 1746. 8vo.

† *Resa til Norra America, förrättad af* PETER KALM. Åbo. 8vo. Tom. 1. 1753.—T. 2. 1756.—T. 3. 1761.

at

at that time attendant on printing in Sweden. These travels, notwithstanding the many since published by other authors, may still be considered as highly worthy of being consulted, and are particularly interesting to naturalists, on account of their accuracy and minuteness of description. They were immediately translated into German by the Murrays, and through this medium they at length assumed an English dress from the well known J. R. Forster, who illustrated the work by a map and original figures of birds, &c. which do not accompany either the Swedish or the German publication*. By Linnæus's means, Kalm was established in the Professorship of Natural History at Åbo, where he cultivated (in his own garden) a great number of American plants, and distinguished himself by writing many curious dissertations on various branches of science.

Linnæus had dwelt a good deal, in his lectures, on the vast field for discovery that was then open in the East, particularly in Palestine, the natural history of which region, much as it was connected with the interpretation of various passages in sacred writ, and with antient literature in general, had scarcely even been touched upon by any scientific traveller. He was at length very agreeably surprised to find that his observations on this subject were likely to be productive of the fullest effect in one of his own pupils, whose imagination had been so fired with a love of knowledge and an enthusiasm for enterprise, that he suddenly declared to Linnæus a determination to investigate the natural productions of that interesting part of Asia himself. This pupil was FREDERIC HASSELQUIST, a native of East Gothland. The

* *Travels into North America; containing its natural history, and a circumstantial account of its plantations and agriculture in general. By* PETER KALM. (8vo. Vol. 1. Warrington 1770.—Vol. 2 and 3. London 1771.)

expense alone, necessarily attendant on such an expedition, might have deterred a young man of much greater affluence than our young student, who, however, was not to be stopped by obstacles of this sort, nor even by any fears for his health, though he had been subject to alarming complaints in his lungs. He collected what money he could among his relations and friends, with which and a stipend given him by some of the faculties at Upsala, he set sail from Stockholm, August 7th, 1749. The Levant Company conveyed him free of expense to Smyrna, where he arrived on the 26th of November, and where he passed the winter months, diligently making himself acquainted with the language and manners of the Asiatics. In the spring of the following year, he went to Magnesia, in Natolia, and, after having visited Mount Sipylus, returned to Smyrna, whence he sailed in May for Alexandria. From Alexandria, he proceeded to Cairo. By this time, however, his pecuniary resources began to fall so short of his wants, that the further prosecution of the journey would most probably have been impracticable, had not Linnæus, as soon as he was informed of the circumstance by letters from Hasselquist, exerted himself most actively to procure an increase of contributions; he supplied a handsome sum from his own pocket, and was so successful in his applications to the various scientific corporations of Stockholm and Upsala, that at length about 330l. were collected. In the mean time, Hasselquist visited the pyramids and catacombs of Egypt, made observations on the rise and fall of the Nile, and transmitted to his friends in Sweden various interesting communications on these and other subjects, which were, most of them, published in the literary journals of Stockholm, and some among the memoirs of the Swedish Academies. With a seasonable supply of money, he had the honour of receiving also a diploma from

from Upsala constituting him Doctor in Physic, many of the necessary forms for attaining which degree the university had in this case, out of compliment, dispensed with. Our persevering traveller now proceeded to the Holy Land, visiting Damietta and Jaffa in his way. He went to Jerusalem with the pilgrims, and thence to Jericho, Bethlehem, Acre, Nazareth, Tiberias, Cana, Galilee, Tyre, and Sidon. After having satisfied his curiosity, and made many important observations and discoverics in those countries, he embarked for Cyprus, viewed part of that island, and then visited those of Rhodes and Chio. He returned to Smyrna about the close of the year 1751, fondly hoping to be the bearer of the fruits of his laborious expedition to his native country; but a return of hæmorrhage from his lungs detained him at this port, where he died consumptive, February 9th, 1752, in the 30th year of his age. The news of the untimely death of this truly meritorious traveller gave Linnæus heart-felt concern, which was in no small degree aggravated by the intelligence that the immense collection of subjects of natural history, &c. brought by Hasselquist as far as Smyrna, were sequestered there for a debt of 350l. Neither the Swedish Consul in the Levant, nor the persons who had patronised the unfortunate naturalist, had the means of redeeming this treasure. At length, however, the Queen of Sweden (who had been informed of the circumstance by Linnæus's particular friend, Dean Bäck) was pleased to pay the sum required, and the collection was forwarded to Sweden. After the journal and triplicates of all the dried plants* had been put, by Her Majesty's command, into the hands of Linnæus, the remainder of the cargo, consisting

* A description of these was afterwards given in an academical dissertation, entitled *Flora Palæstina*, of which we shall have occasion to speak more fully hereafter.

sisting of a prodigious number of preserved animals, shells, plants, minerals, gems, coins, Arabic MSS. &c., was distributed in the royal museums of Drotningholm and Ulricsdahl.

We yet deplore the more recent fate of PETER FORSKÅHL (another of Linnæus's pupils) and his unfortunate associates, in Arabia; and the more so, as his posthumous descriptions*, published at Copenhagen in 1775, are sufficient to convince us, that the fruit of his expedition would have been rich and large, had it not been so unhappily blasted. It was undertaken by order of Frederic Vth, King of Denmark, in whose history this second plan for exploring the East ought always to be recorded, as a striking proof of that monarch's zeal for the promotion of science.

In 1757, Linnæus committed to the press Hasselquist's papers. under the title of *Fredric Hasselquist, M. D. &c.* ITER PALÆSTINUM, *eller Resa til Heliga Landet förrättad ifrån år* 1749 *til* 1752. (Stockh. 8vo. pp. 619.) In this volume, the substance of which is in the Swedish language, the animals, plants, *materia medica*, &c. are systematically described apart, in Latin. The importance of the contents caused it soon to find its way into other languages, and first into the German, from which it was translated into French†. There is also an English translation‡, now become scarce: a circumstance sufficiently indicative of the

* *Descriptiones Animalium, &c. quæ in itinere orientali observavit Petrus Forskåhl, Professor Havniensis, edidit Karsten Niebuhr.* 4to.—*Flora Ægyptiaco-Arabica,* 4to.

This editor was the only survivor of the five gentlemen who were selected for the expedition, and whose names were Counsellor Niebuhr, Professor Forskåhl, Professor von Haven, Professor Cramer, and Baurnfiend, the painter.

† *Voyages dans le Levant, dans les années* 1749,-50,-51, *et* -52. (Paris. Part 1. pp. 260.—Part 2. pp. 201. 8vo. 1769.)

‡ *Voyages and Travels in the Levant, &c.* London 1766. 8vo. with a map.

intrinsic value of the work, which for its originality, as well as accuracy and variety of information, must always rank high among books of travels.

Notwithstanding the melancholy fate of Ternström, it was not long before another young man was found, desirous of accomplishing the object of that voyage. A clergyman, of the name of Osbeck, engaged himself for this purpose, as chaplain to a Swedish East Indiaman, which sailed from Gothenburg November 18th, 1750. He was absent almost two years, during which time he visited various parts of the East Indies and China, and the islands of Java, Ascension, &c. Nothing seems to have escaped his attention, at whatever place he touched. His observations on the Chinese were made with particular study, and they confirmed in a great degree the judgment of Lord Anson respecting that extraordinary people. He kept a regular journal of all his remarks and discoveries, which, on his return, Linnæus and other persons pressed him to publish entire. Linnæus had received from him above 600 specimens of Chinese plants, and many descriptions, both zoological and botanical, wholly new; the public curiosity therefore was naturally directed by these, (of which our great author had already availed himself in some of his works,) to the remaining fruits of the expedition. Neither was this curiosity left ungratified. Osbeck published his voyage in 1757*, and proved by the performance that his time and trouble had been employed most advantageously to the interests of science. His ardor for discovery prompted him to propose going out to China a second time, but this design was on some account or other abandoned.

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* "*Dagbok öfer en Ostindisk resa åren* 1750, 1751, 1752. Stockh. 8vo. pp. 312.

In

In the same volume with Osbeck's voyage was published that of TOREN*, another scientific adventurer, who visited Surat, as chaplain to a Swedish merchantman called the *Gothic Lion*. This last-mentioned voyage is illustrated by 12 plates, all (excepting the last) containing figures of new plants. It consists of letters addressed to Linnæus, from Nov. 20, 1752, to May 3, 1753. Both these voyages have been translated into German†, and English‡; into the former of those languages by Georgi, (who was superintended in the work by Schreber,) and into the latter by Forster, who was enabled to avail himself of a revision of the German translation, and also of additions, made by Osbeck himself. Annexed to both is Osbeck's speech on being chosen a member of the Stockholm Academy, showing what should be chiefly attended to on a voyage to China; there is also an account of the Chinese husbandry, by Captain C. G. Eckeberg.

About the time that Osbeck was preparing to embark for the East Indies, Linnæus was applied to by the Spanish Ambassador, in the name of the King of Spain, to recommend a proper person to explore the natural productions of that kingdom, and to settle as a botanist at Madrid. Our professor chose for these purposes PETER LÖFLING, one of his favourite pupils, and one of the most diligent students in the university. Löfling set out in the spring of 1751, and landed in Portugal, in the course of his travels through which kingdom and Spain, he sent to Linnæus

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* "*En Ostindisk resa til Suratte, China, &c. från 1750 Apr. 1. til 1752 Jun. 26. förrättad af Olof Toren, uti bref öfversänd til Archiater Linnæus.*" p. 313—376.

† "*Reise nach Ostindien und China, übersezt von J. G. Georgi.*" Rostock 1765. 8vo. pp. 410. tabb. 13.

‡ *A Voyage to China and the East Indies, by Peter Osbeck, rector of Hasloef and Woxtorp, &c.* together with *A Voyage to Suratte, by Olof Toren, &c.* London 1771. 8vo. 2 Vols. A *Faunula* and *Flora Sinensis* are added.

above 600 specimens of plants. He gave so much satisfaction to his royal patron by the manner in which he acquitted himself of his engagements, that he was afterwards selected for an undertaking of still higher importance to the Spanish government; this was a journey through its different provinces and settlements in South America. Among other instructions, Löfling was directed to collect plants for the King of Spain, the King of France, the Queen of Sweden, the Spanish minister, and LINNÆUS. The mention of the names of her Swedish Majesty and the illustrious Professor at Upsala, was no less a compliment to the young traveller than to those two personages, for his services must have been commensurate with the obligation which it evinced; and we cannot doubt that he would have done additional honour both to his friends and to himself, had not unkind fate arrested him in the full career of his usefulness. He had been in America scarcely twelve months before he was seized with so obstinate a tertian ague, that the disease undermined his constitution, brought on dropsy, and at length cut him off, in the flower of youth*, on the 11th of February, 1756. Linnæus, who had formed great expectations with regard to the result of his pupil's expedition, and who had felt great admiration for the ardour of this young man in the cause of science, was of course deeply affected at his death†. Having been in constant correspondence with him from the time of his

* He was only 27 years of age.

† "*Nullus facile erat* (says the writer of the paper entitled *Reformatio Botanices*, in the *Amœnitates Academicæ*) *huic anteferendus, vel amore plantarum, vel solida eruditione botanica, ut taceam quod nulli similis occasio concessa fuit; quare obitum ejus magnopere nos dolere oportet.*" (Vol. 6. p. 317.)

leaving Sweden, and as the letters which he had received contained a variety of valuable information, our author judged that, by committing them to the press, he should perform an acceptable service to the public: accordingly in the year 1758, he honoured the lamented Löfling's memory by a volume entitled *Petri Löfling, &c.* ITER HISPANICUM, *eller Resa til Spanska Länderna uti Europa och America, förrättad ifrån år* 1751 *til år* 1756, *med beskrifningar och ron öfver de markvardigaste vaxter utgifven efter dess frånfälle af Carl Linnæus.* (Stockholm 8vo. pp. 316. tabb. 2.) This volume has been translated into the German language, by A. B. Kölpin, (Berlin and Stralsund 1766. 8vo. pp. 406.) and also into the Spanish, by Ignacio de Asso, (in the *Anales de Ciencias Naturales*, Tom. 3. p. 278—315. Tom. 4. p. 155—191. Tom. 5. p. 82—104.) Some of the most interesting parts are printed with the Travels of Bossu, as translated by Forster. The descriptions of the plants are given in the Linnean manner, separately from the letters, so as to be useful to readers wholly unacquainted with the Swedish language. Löfling had sent specimens of most of these plants to Linnæus, whilst he was on his travels.

Much as Linnæus was disappointed in the hopes he had formed from the mission of Löfling to America, he was still more so, with respect to a plan he had meditated for the exploring of the Cape of Good Hope. This was a part of the world from which he knew that a vast addition to natural history was to be derived; and he had actually obtained a travelling exhibition, through his interest with the Queen of Sweden, to enable one of his pupils to search that distant and fruitful region. The young man he had pitched upon as most proper for the enterprise was Dr. M. KÄHLER, who, however (notwithstanding an application

plication had been made in his favour, through the Swedish ambassador at the Hague), was not permitted by the Dutch government to execute the plan, though its exclusive object was the increase of science* !

Linnæus expresses his surprise at this illiberality, in terms as forcible as they are applicable, in his Diary. But he did not relinquish the design of turning Kähler's enthusiasm to the advantage of that pursuit with which it was connected. He advised him to visit Italy, and Kähler returned from that country (for which he set out in the year 1752) laden with plants, many of which were quite new to his master, and proved a great acquisition to European botany.

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* Linnæus's important project, however, in regard to exploring the Cape, was ultimately carried into execution by a pupil in every respect qualified for the enterprise; we allude to Dr. ANDERS SPARRMAN, who has added 2000 to the number of natural productions known prior to the publication of his Voyage. The permission for this eminent zoologist to travel over the southernmost part of Africa was obtained by Captain Ekeberg, who had in so many respects served the cause of natural history before, and who, from having had Sparrman as his companion on a voyage to China, had ascertained his various merits. Linnæus petitioned the Directors of the Swedish East India Company to convey Sparrman to his place of destination in the same advantageous manner as had been granted to others of his travelling pupils; and the petition being successful, Sparrman sailed for the Cape in one of the Company's ships, in the year 1772. Whilst in that part of the world, the Doctor was so fortunate as to have an opportunity offered him of going round the world with Messrs Forster, in the *Resolution*; but the result of his numerous discoveries, in this circumnavigation, has not hitherto been presented to the public, except in various detached papers contained in the Swedish Transactions. The *first* volume of his Voyage made its appearance at Stockholm in 1783, under the title of *Resa till Goda Hopps-udden, södra pol-kretsen och omkring jordklotet, samt till Hottentott och Caffer-landen, åren* 1772—1776 (8vo, with 10 plates); and it has been translated into English (London 1785. 2 vols. 4to.) as well as other languages.

The disciple whom we have next to mention, but who does not appear either to have given satisfaction, or to have manifested any attachment to Linnæus, is ROLANDER. This young man was private tutor to our author's son, and had devoted much attention to the study of entomology. A military officer, of the name of Dahlberg, being about to sail for Surinam in 1755, Linnæus prevailed on that gentleman to take Rolander with him, in order that he might have opportunities of making observations on the insects of the country, more particularly on the *Cochineal*, which Linnæus wished to be imported, if possible, alive, into Sweden. Rolander succeeded so far as to send home several insects of that species living, with the *Cactus;* but the jar which contained them having first fallen into the hands of Linnæus's gardener, and the man conceiving the plant to be encumbered with extraneous matter which required being removed, the cochineals were all destroyed and lost before his master had even the satisfaction of seeing them. Linnæus was so much disturbed by this provoking frustration of his endeavours to stock the orangery with an useful insect, that he was attacked in a most severe manner with *hemicrania*, which he imputed (as appears by his Diary) entirely to a mental cause acting upon his nervous system. Rolander brought home a considerable collection of subjects of natural history, but was ungrateful enough not to present his kind patron with any of them. He visited the island of St. Eustatius, as well as Surinam.

Of the result of ALSTRÖMER'S journey to the southern parts of Europe we have no particular account; but from Linnæus's naming this pupil in the list of those by whose expeditions he had profited, it may reasonably be inferred that he brought home information highly acceptable.

Linnæus

Linnæus had a very useful and indefatigable disciple in A. R. MARTIN*, who, in 1758, visited several parts of Norway, and made many interesting discoveries in natural history: his attention seems to have been more particularly directed to the class *Vermes*, of which he made known to Linnæus many new species; and he was the first person who sent to the latter, specimens of *Anomia Caput Serpentis* with the animals alive, which was a most gratifying present to Linnæus, for this species had never been seen before in any other than a fossil state. This young traveller also collected much valuable information of a medical and statistical kind, especially at Bergen, from which place he conveyed frequent intelligence and specimens to Hammarby. From observing very closely the nature of the leprous diseases which prevail on the coasts of the Baltic, Martin was led to attribute them to a species of *Gordius* infesting the skin.

The attention of Linnæus, however, was not turned exclusively to remote regions. He encouraged his disciples to pay particular regard to the productions of their own country; and in order to examine these, Doctors MONTIN, BERGIUS, TIDSTRÖM, SOLANDER, and FALK undertook to travel each to a separate district. The first of these made many curious observations in Luleå Lapmark, of which we shall have occasion to take some notice hereafter. There is a manuscript sketch of his journey, in the Banksian library, under the title of *Beskrifning öfver en resa år* 1749 *om sommaren, förrättad til Lapska fjällarne åfvan Luleå stad* (4to. pp. 532.)—BERGIUS explored the isle of Gothland and TIDS-

* Linnæus speaks in the handsomest terms of this young man in more than one of his letters to Archbishop Mennander, with whom he successfully made interest to procure him an exhibition from the university of Åbo.

TRÖM part of Westrogothia, in 1752, at the expense of Count Tessin,—SOLANDER, (so well known in our own country) Pitheå Lapmark and Luleå Lapmark, in 1753; and FALK some parts of Gothland, in 1760. The last-mentioned traveller afterwards went to Copenhagen with the hope of being appointed to accompany Forskåhl into Arabia, but he was disappointed. Through the recommendation of Linnæus, however, he was called to Petersburg, where, in 1765, he was made Professor in the medical college, and Inspector of the botanic garden. He visited several parts of the Russian empire, and published a narrative of his travels from 1768 to 1773. The termination of this active naturalist's career was of a very melancholy nature, for he put an end to his own life at Casan, in Tartary, in the year 1774.

But it was not from his *travelling* pupils alone that Linnæus obtained information, and was presented with specimens of plants. Those who were *settled* in various parts of the world; likewise voyagers, professors, and other distinguished scientific men, who were acquainted with him merely by name and reputation, constantly transmitted to him collections from every quarter of the globe, so that his herbarium became stupendous, and his country-house at Hammarby* was filled with rarities belonging to

* Linnæus built a museum here in 1768, (separate from the house, for its greater security against fire,) and arranged in it his large cabinets of insects, plants, shells, and minerals. The collection of insects comprehended all the Swedish, and most of the other species described by our author, and many quite new; which was the case also with the shells. The non-descript species of the latter, however, were more numerous than of any other part of the system. As to the minerals, they pretty nearly corresponded with the number described in the *Systema*; but the specimens were in general far from being good: a circumstance which may be accounted for from his having presented all his best duplicates to Archbishop Mennander, who was particularl

to all the kingdoms of nature. The following were the sources, (he informs us in his Diary) from which, in addition to those already mentioned, his botanical treasures were chiefly derived.

MAGNOL's herbarium having fallen into the hands of Sauvages (of Montpellier), the latter presented the whole of it to Linnæus, besides a great number of plants collected in Languedoc by himself.

GMELIN, the well known traveller in Siberia, sent him duplicates of all the species he had brought home from that country.

STELLER's (the *adjunctus* of Gmelin) collection also came into the hands of Linnæus. On the death of this traveller at Kiumeni, when he was returning from Kamtschatka, Leubel, who then became possessed of this collection, sold it to Demidoff. This gentleman (mentioned before as having been a pupil of Linnæus) wishing to have all the plants accurately named,

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ticularly pleased with fossils. The *Hortus siccus* contained almost all the plants noticed in the *Species Plantarum* (with the exception of the *Fungi* and *Palmæ*), and some hundreds that had never been named. They were disposed in the exact order of his system, so as to admit of every specimen being readily referred to. His garden was contracted, yet he cultivated in it many rare plants, especially of Siberian growth. Mr. Dryander informed the editor of these pages that he remembers to have seen *Fumaria nobilis* flourishing in it,—a plant which (it is remarkable enough) has never been raised in England. The habitable apartments at Hammarby were fitted up in a manner no less interesting than characteristic of the pursuits of the owner. His parlour was ornamented with coloured plates and drawings (many of the latter made by the celebrated Ehret) of East Indian plants, pasted together so as to form paper-hangings. His bed-room was ornamented in a similar manner with insects. His hall contained portraits of celebrated naturalists, and plans of different botanic gardens. Other parts of the villa were adorned with stuffed birds from the South-seas, and various dresses and weapons, of savage nations. Linnæus had also a collection of dried fish (most of which had been sent to him by Garden, from Carolina), and nearly 200 vegetable productions from Surinam preserved in spirits of wine; the latter were a present from his sovereign, and we shall have occasion to speak more particularly of them hereafter.

sent them to Upsala, desiring our author to reserve the duplicates for himself.

Brown, the historian of Jamaica, sold his fine and rare specimens to Linnæus.

Dr. Baster, of Zealand, sent him upwards of 300 plants collected in the island of Java. To this number a large trunk, full of the productions of the same spot, was added by Kleinhof, who had formed a large botanic garden there, and brought home with him to Holland a great many East Indian species which he had cultivated himself.

König, on his return from Iceland, sent to Linnæus many specimens from that country, especially of *Fuci* and other marine plants, which were incomparably fine. Not content with giving this testimony of his respect and remembrance, he afterwards forwarded to the Professor many hundred specimens from Madeira, the Cape of Good Hope, and Tranquebar; and among these were several species entirely new.

Burmann likewise made him a present of Cape plants; but no one obliged him more than Governor Tulbagh, who not only sent above 200 specimens of the rarest vegetable productions of that part of Africa, but also caused to be packed up with great care a multitude of bulbous roots, which were conveyed to Linnæus alive, for the purpose of being cultivated in his hot-houses. Linnæus considered his collection of Cape plants as one of the finest that had hitherto been made.

Though Rolander had presented most of the West Indian plants which he had brought home with him to De Geer, the latter generously gave up to Linnæus the whole number.

In short, botanists seem to have contended with each other in sending rare and remarkable plants to our great naturalist, some anxious to receive his opinion, and all seeking to afford him

him gratification, of which no man who had ever lived, perhaps, was in this way more susceptible.

Besides the numerous correspondents whom we have already mentioned in the preceding pages, were Professor John Amman, M. Demidoff, Krascheninnikow (the describer of Kamtschatka), Laxmann, Mounsey, and Gerhard Müller, in *Russia;* Brünnich, Professor de Buckwald, Bishop Gunner, Horrebow, Otto Fried. Müller, Niebuhr, and Zoega, in *Denmark* and *Norway;* the Margravine Carolina Louisa, of Baden, John Philip Breynius, Francis Ernest Bruckmann, Burchard, Professor Brückner, Erhrart, John Albert Gesner, Professor Gleditsch, Professor John Ernest Hebenstreit, Hermann, Professor von Jacquin, Jænisch, Professor John Lange, Professor Leske, Lesser, Lehmann, Ludolff, J. C. Meyer, Mylius, Professor Scopoli, Spengler, Wagner, Professor Weissmann, and Xavier von Wulfen, in *Germany;* Professor Gesner, and Scheuchzer, in *Switzerland;* Donati, Brunelli, Seguier, and Vandelli, in *Italy;* Professor Barrere, de Bomare, Carrere, Cusson, Gouan, Guettard, Professors Antoine and Bernhard de Jussieu, le Monnier, Professor and Abbé Sauvages, and du Vernoy, in *France;* Bernades, Professor de Ortega, Professor Quer y Martinez, in *Spain;* Lord Baltimore, John Ellis, Dr. Fothergill, Ehret, Forster, Dr. Hope, Hudson, Lee, Professor Martyn, Mitchel, Pennant, Professor Sibthorp and Walker, in *England;* Allamand, Professor de Gorter, Professor Gronovius, Moehringius, Roellius, Baron van Swieten, and Professor van Wachendorff, in *Holland;* Bartram, Clayton, Colden, Garden, and Mutis, in *America;* Radermacher, in *Batavia*, &c. &c., all of whom were in the constant habit of communicating to him their discoveries in every branch of natural history and medicine.

The Upsala garden having been rendered, by means of this extraordinary extent of correspondence, and by his own unremitting

mitting attention, the richest perhaps at that time in the world, Linnæus naturally became anxious respecting its fate after his decease*; and having educated his only son to the pursuit of that science, which was the chief source both of his own greatness, and of his enjoyments through life, he wished to see the professorship secured to him in preference to other less perfectly qualified applicants. This young man had already distinguished himself in the botanical world, and had been thought worthy to give the demonstrations in the garden. His claims therefore to the object of his father's wishes could not be better grounded; and the latter accordingly succeeded in getting the young Linnæus nominated joint-professor with himself (though he was only 22 years of age) March 19, 1763.

It has been observed that one of Linnæus's departments, as a professor, was that of teaching the *Diagnosis Morborum*. To this end, he drew up a system, in which, as in natural history, all diseases were disposed into *classes*, *orders*, and *genera*, founded on distinctions taken from the *symptoms* alone, no regard being had to *causes*, either remote or proximate. Before we

* He writes on this subject as follows, in a letter to Archbishop Mennander, Oct. 23d, 1761. "Should any one get the management of it but a person who from his youth has been bred up to it, then this garden, at present undeniably the richest in the world, in respect to plants, would within a few years be in as bad a state as the Oxford Garden is now, which, when Dillenius was alive, was the first, but during the two first years that S****** had the management of it was almost ruined."

Again he says, (in a letter dated the 17th of November,) "Should it fall, when I am dead, into the hands of one who is not bred up for the purpose, it will, certainly, within a few years be reduced to its former insignificance, because it requires a great deal of skill and experience to maintain the garden in the state in which it now is. If I live three years longer, I am confident that nobody will be able to take better care of it than my son, and therefore he is the proper person to be employed when I am gone, should the public wish to keep it up."

proceed

proceed to a particular view of Linnæus's method of thus arranging diseases, it will be proper to premise, that a nosology on this plan, the great object of which is to fix *pathognomonics* to every disease, had long been wished for by some of the first writers in the profession: such were Baglivi, Boerhaave, Gorter, Gaubius, and Sydenham, the last of whom has thus expressed himself on this subject, in the preface to his works, *viz.* "*Expedit ut morbi omnes ad definitas ac certas species revocentur, eadem prorsus diligentia ac ακριβεια, qua id factum videmus a botanicis scriptoribus in suis phytologiis.*" Yet, from that almost infinite variety and complication of appearances which are seen in diseases, the difficulty of obtaining sufficient distinctions, by which the *genus* and *species* may be accurately discriminated, must be allowed to be very great; and it is in many instances insurmountable. Hence, some of the most eminent physicians have been led to reject all such arrangements as futile and impracticable. This, however, has not deterred others from paying attention to the subject, more especially some of those, who, from their province as professors, are led to teach the rudiments of the art, and to whom method, *in some form*, is absolutely necessary. Systematic writers had used various methods. Some had chosen the *alphabetic* (if that deserve the name of a system); others, after the example of Aretæus and Cœlius Aurelianus, had divided diseases, according to their duration, into *acute* and *chronic*. Others again, had preferred the *anatomical* order, which, as it presupposes a knowledge of the seat of the disease, must not unfrequently prove fallacious; Sennertus's is an instance of this kind. However, the *aitiological* arrangement has been most followed by the best writers among the moderns (as Hoffman and Boerhaave), though it is not less fallacious perhaps than the anatomical, since it is in many instances founded on an

hypothesis of the writer. Felix Platerus, in his *Praxis Medica*, published in 1602, had given an imperfect sketch of a nosology on the *symptomatic* plan, yet no writer ventured to pursue his idea for more than a century, from the difficulty, probably, of the attempt. At length, Professor Sauvages, of Montpellier, after having communicated his scheme to Boerhaave, published the outlines of such a work, under the title of *Nouvelles Classes de Maladies*, (1731. 12mo.) in which he professes to define diseases from their constant and evident symptoms *only*. In the year 1763, the author augmented his work, by the addition of the *species* under each *genus*, to five volumes in octavo. Sauvages may be considered as having devoted his life to giving this design a certain degree of perfection, for he enlarged it to two quarto volumes, in which form it was published after his death, in 1768.

It will easily be imagined that an arrangement of this kind was too congenial with Linnæus's peculiar talents to be neglected by him. In fact, it appears that he very early corresponded* with Sauvages on the subject, and that he soon adopted his principles of nosology, framing a set of institutes, as the basis of his lectures in this department, under the title of GENERA MORBORUM *in auditorum usum*. (Upsal. 1763. 8vo. 16 pp.) The scheme was first published in an academical dissertation, by one of his pupils, in 1759; but Linnæus had taught it in his class for ten years preceding that time. His own edition differs from the respondent's, only in exhibiting the Swedish in addition to

* The correspondence (we are informed in the Diary) continued for thirty years, in the course of which time Linnæus received from Sauvages above 100 letters. These letters are in the possession of Dr. Smith, and contain a store of information, which, if published, would be highly interesting to the medical world.

the Latin names of the *genera*, and in having an index, with the terms accentuated. It ought to be remarked, however, that the accent is in many instances very inaccurate.

The *symptomatic* plan of arranging diseases has since been followed by some other professors of medicine; as Vogel*, of Göttingen; Cullen†, of Edinburgh; and Sagar‡, of Igław, in Moravia. The system of the last of these authors, allowing for some alterations and additions, may be considered as an useful abridgement of Sauvages's; he has subjoined the *species* under every genus, and also the method of cure. Cullen, by omitting many *genera*, and reducing others to the rank of *species* only, has so considerably abridged the whole, as not to have retained more than half the number of *genera* which the other writers enumerate; and in this form he has published the *Synopsis* annexed to the works of the latter, by which display of each, their respective merits may be compared, and a judgment formed of the practicability and use of the scheme in general;—a scheme that affords (it must be confessed) a very ample field for cultivation; yet, from that reform which was made by our countryman in various parts, it is not perhaps too much to hope, that symptomatology is capable of receiving a still higher degree of improvement, in the hands of those whose genius and industry may prompt them to extend the design of the above-mentioned writers.

Of Linnæus's system we are led by our plan to exhibit a general view; to which end, although our prescribed brevity will not

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* *Definitiones Generum Morborum.* Götting. 1764. 8vo.

† *Synopsis Nosologiæ Methodicæ.* Edinb. 1769. 8vo.—Ed. 2ndà, 1772.—3tia, 1780, 2 Tom. 4to. 1785. The two last editions comprehend the systems of the other nosologists mentioned above.

‡ *Systema Morborum Systematicum.* Viennæ 1771 et 1776. 8vo.

admit

admit of giving his definitions at length, yet it will be necessary to enumerate the *names* of all his *genera*, since nothing short of a view of the whole collectively can enable the reader to form a just idea of the author's scheme. Under each class, we shall observe wherein Linnæus differs materially from Sauvages, and note the alterations which Cullen has made in the disposition of the same *genera*.

In the classes, Linnæus has altered most of Sauvages's terms, and constituted an additional class, with which he begins his method, *viz.* the EXANTHEMATICI, or *Eruptive Fevers*, which, in the systems of Sauvages and Cullen, form only an order, or subdivision of a class. He has also changed the succession of some of the classes, and referred the VITIA, or *Local external disorders*, (which are principally the subjects of surgery) to the end of his system. In this he has been followed by Vogel and Cullen. The classical distribution, however, is confessedly not the *primary* consideration, that of fixing the generic character, and of determining what shall constitute the pecific, being the first object of every system. To this end a still further reduction of the number of *genera* and *species* will probably not a little contribute.

The classes are 11 in number:

1. *Exanthematici.*
2. *Critici.*
3. *Phlogistici.*
4. *Dolores.*
5. *Mentales.*
6. *Quietales.*
7. *Motorii.*
8. *Suppressorii.*
9. *Evacuatorii.*
10. *Deformes.*
11. *Vitia.*

Class 1.

Class 1. EXANTHEMATICI. Fevers attended with eruptions on the skin.

Order 1. CONTAGIOSI. Of a contagious nature.

Genus 1. Morta. *Vesiculary Fever.*
2. Pestis. *Plague.*
3. Variola. *Small-pox.*
4. Rubeola. *Measles.*
5. Petechia. *Spotted Fever.*
6. Siphylis. *Venereal Disease.*

2. SPORADICI. Sporadic (not contagious).

7. Miliaria. *Miliary Fever.*
8. Uredo. *Nettle Fever.*
9. Aphtha. *Aphthous Fever.*

3. SOLITARII. Affecting a part of the body only.

10. Erysipelas. *St. Anthony's Fire.*

In this class, as the disease is complicated of fever and eruption, the genus is defined from the nature of each. For instance, the *Variola* (or Small pox) is defined "*a disease attended with pustules of an erysipelatous, suppurating, escharotic kind; at length falling off and leaving a cicatrix. The fever of the ardent and malignant kind, with head-ache and pain of the loins.*" The term *Pustulæ*, and the others in this class expressive of the different kinds of eruption, have their definition in another part of the system. Such as appear in the *Morta* are called *Phlyctænæ*; in the *Pestis*, *Anthraces* or Carbuncles; in the *Rubeola*, *Papulæ*; in the *Petechia*, *Sudamina*.

This class constitutes the first order of Sauvages's PHLEGMASIÆ; and the third of Cullen's PYREXIÆ class. In both, the *genera* are nearly the same, except that the *Morta* of Linnæus is the *Pemphigus* of those authors, and the *Petechia* is con-

sidered by Cullen as only a *symptom*. Our author stands alone in bringing the *Siphylis* into the exanthematic class; and he considered himself justified by its being attended, in the advanced state at least, by fever and eruptions.

Class 2. CRITICI. Critical Fevers.
Order 1. CONTINENTES. Of the continued kind.
Genus 11. Diaria. *Ephemeral fever.*
12. Synocha. *Ardent fever.*
13. Synochus. *Malignant fever.*
14. Lenta. *Slow fever.*
2. INTERMITTENTES. Agues.
15. Quotidiana. *Quotidian.*
16. Tertiana. *Tertian.*
17. Quartana. *Quartan.*
18. Duplicana. *Double Tertian.*
19. Errana. *Erratic fever.*
3. EXACERBANTES. Remitting Fevers.
20. Amphemerina. *Continued fever, with a quotidian exacerbation.*
21. Tritæa. *Continued fever, with a tertian exacerbation.*
22. Tetartophya. *Continued fever, with a quartan exacerbation.*
23. Hemitritæa. Tritæa *complicated, or compounded, with the* Amphemerina.
24. Hectica. *Hectic fever.*

Our author allows the *Tertian* to be the root of all the *Febres Criticæ*, though he has, in the foregoing division, kept pretty close to Sauvages's method by retaining the distinctions. In this they

they are not followed by Cullen, who denies the existence of *continued* fever, and has greatly simplified the arrangement by reducing all the critical fevers to 6 *genera*, *viz.*

1. Tertiana.
2. Quartana.
3. Quotidiana.
4. Synocha.
5. Typhus.
6. Synochus.

and he allowed the *Hectica* to be *symptomatic* only.

Class 3. PHLOGISTICI. Inflammations.

Order 1. MEMBRANACEI. Of Membranes.

Genus 25. Phrenitis. *Of the* Meninges *of the Brain.*
26. Paraphrenitis. *Of the Diaphragm.*
27. Pleuritis. *Of the* Pleura.
28. Gastritis. *Of the Stomach.*
29. Enteritis. *Of the Bowels.*
30. Proctitis. *Of the* Anus.
31. Cystitis. *Of the Bladder.*

2. PARENCHYMATICI. Visceral Inflammations.

32. Sphacelismus. *Inflammation of the Brain.*
33. Cynanche. *Of the Throat.*
34. Peripneumonia. *Of the Lungs.*
35. Hepatitis. *Of the Liver.*
36. Splenitis. *Of the Spleen.*
37. Nephritis. *Of the Kidneys.*
38. Hysteritis. *Of the Womb.*

3. MUSCULOSI. Muscular Inflammation.

39. Phlegmone. *Inflammation of an external part.*

In this class Linnæus has followed Sauvages, dividing the diseases into MEMBRANACEI and PARENCHYMATICI, a division

disapproved

disapproved of by Cullen, on account of the difficulty of determining positively the precise seat of the inflammation. The PHLEGMONE, being external, is ranked by Sauvages among his VITIA. On the other hand, Cullen gives it the first place in his order of PHLEGMASIÆ, considering it, in common with our author and others, as the *prototype* of the inflammations in general. But he has reduced 13 of Linnæus's *genera* and 12 of Sauvages's to the rank of *species*, under the genus *Phlogosis*. Further, he accounts *Abscess*, *Gangrene*, and *Sphacelus* as effects only of *Phlogosis*, and therefore not entitled to the characters of separate *genera*. Numerous instances of this kind afford a striking proof of the difficulties attending these arrangements, in determining what distinctions shall take place between *genus* and *species*.

The generic character, in the *Phlogistic* class of our author, does not depend wholly on the part affected being supposed to be the seat of the disease, but on the genus of the attending fever also. Thus he defines the *Hepatitis* to be the "Amphemerina, *attended with dry cough, difficult respiration, hiccough, and a sense of heat and tension in the right* hypochondrium." The *Nephritis* is a "Synochus *of an irregular kind, attended with nausea, hiccough, eructation, variety in the urine, costiveness, burning heat in the loins, and numbness of the thigh.*"

Class 4. DOLORES. Painful diseases (most of them unattended with inflammation).

Order 1. INTRINSECI. Of internal parts.

Genus 40. Cephalalgia. *Head-ache.*

41. Hemicrania. *Meagrim*, or pain of one side of the head only.

42. Gravedo. *Dull pain of the forehead.*

43. Ophthalmia. *Pain of the eye.*

44. Otalgia.

44. Otalgia. *Ear-ache.*
45. Odontalgia. *Tooth-ache.*
46. Angina. *Pain in the throat, with a sense of suffocation.*
47. Soda. *Heart-burn.*
48. Cardialgia. *Pain at the* scrobiculus cordis, *with tendency to faint.*
49. Gastrica. *Pain of the stomach.*
50. Colica. *Pain of the bowels, near the navel.*
51. Hepatica. *Pain of the right* hypochondrium.
52. Splenica ——— *left* ———
53. Pleuritica. *Stitch, or pain of the side.*
54. Pneumonica. *Pain and oppression on the lungs.*
55. Hysteralgia. *Pain of the womb.*
56. Nephritica. *Pain of the kidneys.*
57. Dysuria. *Pain of the bladder.*
58. Pudendagra. *Pain* of *the* pudenda.
59. Proctica. *Pain of the* anus.

2. EXTRINSECI. Of external parts.

60. Arthritis. *Periodic pain of the joints.*
61. Ostocopus. *Fixed pain of the joints.*
62. Rheumatismus. *Pain of the muscles when moved.*
63. Volatica. *Flying pains of the vessels.*
64. Pruritus. *Excessive itching of the skin, without eruption of any kind.*

Sauvages has a class of 5 orders under the term DOLORES, disposed in the anatomical method; under which most of the foregoing *genera* are comprehended. Cullen, having no such class, is necessarily led to arrange these *genera* in different parts

of his system; but, with him, the greater number are either *species* only, or *symptoms*, he having admitted 3 only to the character of *genera* (which are included in the PHLEGMASIÆ), namely *Ophthalmia*, *Arthritis*, and *Rheumatismus*.

Class 5. MENTALES. Disturbance in the mental functions.

Order 1. IDEALES. Of the judgment principally.

Genus 65. Delirium. *Symptomatic or febrile insanity.*
66. Paraphrosyne. *Without fever.*
67. Amentia. *Idiotic insanity.*
68. Mania. *Madness.*
69. Dæmonia. *Idea of being possessed by dæmons.*
70. Vesania. *Tranquil, partial insanity.*
71. Melancholia. *Sorrowful, partial insanity.*

2. IMAGINARII. Of the imagination chiefly.

72. Syrigmos. *Imaginary sound.*
73. Phantasma. *Ocular* spectra.
74. Vertigo. *Giddiness.*
75. Panophobia. *Fear of being alone.*
76. Hypochondriasis. *Apprehension of dying, without adequate causes.*
77. Somnambulismus. *Sleep-walking.*

3. PATHETICI. Irregular desires.

78. Citta. *Longing for things not esculent.*
79. Bulimia. *Voracious appetite.*
80. Polydipsia. *Unquenchable thirst.*
81. Satyriasis. *Uncontroulable lust.*
82. Erotomania. *Sentimental love.*
83. Nostalgia. *Swiss malady.*
84. Tarantismus.

84. Tarantismus. *Madness occasioned by the bite of an insect.*
85. Rabies. *Canine madness.*
86. Hydrophobia. *Horror of drinking.*
87. Cacositia. *Aversion from food.*
88. Antipathia. *Unconquerable aversion from particular objects.*
89. Anxietas. *Wearisomeness of life.*

In this class, which answers to the VESANIÆ of Sauvages, the *genera* stand nearly the same as in that author's arrangement. They constitute, after great reduction, the 4th *order* (VESANIÆ) of Cullen's class NEUROSES, comprehending 4 *genera*, *viz. Amentia*, *Melancholia*, *Mania*, and *Oneirodynia*; the *Delirium* and *Paraphrosyne* of Linnæus being considered by the Scotch professor as symptomatic. The *Dæmonia*, *Vesania*, and *Panophobia* rank with *Melancholia*, under which the last-mentioned writer has also brought the *Erotomania* and *Nostalgia*, from the PATHETICI. Of the remaining *genera*, only the *Hypochondriasis* and the *Hydrophobia* are admitted as such, the former in the ADYNAMIÆ, and the latter in the SPASMI. The *Syrigmos* and *Phantasma* are referred to the LOCALES class, and the *Somnambulismus* to the *Oneirodynia*, in the order VESANIÆ. The *Citta*, *Polydipsia*, *Satyriasis*, and *Bulimia* belong also to the LOCALES, in the order DYSOREXIÆ. It is justly doubted whether the *Tarantismus* exists; and the *Rabies* can scarcely be separated from the *Hydrophobia*.

Class 6. QUIETALES. Diminished power of motion and sensation.

Order 1. DEFECTIVI. Defects in the vital functions chiefly.

Genus 90. Lassitudo. *Fatigue.*

91. Languor.

91. Languor. *Chronic debility (not to be repaired by rest).*
92. Asthenia. *Extreme and universal debility.*
93. Lipothymia. *Sudden deprivation of the powers of motion and sensation, the pulse remaining unaltered.*
94. Syncope. *Fainting.*
95. Asphyxia. *Long failure of vital and animal power, as in drowning, &c.*

2. Soporosi. Soporose affections.
96. Somnolentia. *Somnolency.*
97. Typhomania. Coma, *of authors.*
98. Lethargus. *Febrile somnolency.*
99. Cataphora. *Constant sleep, which may be interrupted by speaking to the patient.*
100. Carus. *Sopor and insensibility, with quiet respiration.*
101. Apoplexia. *Sopor and insensibility, with stertorous breathing.*
102. Paraplegia. *Palsy of all the limbs.*
103. Hemiplegia. ——— *one side.*
104. Paralysis. ——— *a particular part.*
105. Stupor. *Transitory numbness.*

3. Privativi. Defects of sensation chiefly.
106. Morosis. *Defect of imagination.*
107. Oblivio. ——— *memory.*
108. Amblyopia. *Obscure vision, without apparent defect in the organ of sight.*
109. Cataracta. *Cataract.*
110. Amaurosis. Gutta serena, *of authors.*
111. Scotomia.

111. Scotomia. *Transitory blindness.*
112. Cophosis. *Deafness.*
113. Anosmia. *Defect of smelling.*
114. Ageustia. ——— *taste.*
115. Aphonia. ——— *voice.*
116. Anorexia. ——— *appetite.*
117. Adipsia. ——— *thirst.*
118. Anæsthesia. ——— *feeling.*
119. Atecnia. *Impotency.*
120. Atonia. *Defect of muscular power.*

The diseases of this class very nearly correspond with the DEBILITATES of Sauvages; and the two first orders, the DEFECTIVI and SOPOROSI, with the COMATA and ADYNAMIÆ of the class NEUROSES, in the Cullenian arrangement. The three first *genera* of the DEFECTIVI Cullen takes no notice of; the three last he includes under his *Syncope*, as different degrees of the same diminished power of life. As to the SOPOROSI of our author, Cullen ranks the *Carus* and *Cataphora* under the *Apoplexia*, and also considers the *Typhomania* and *Lethargus* as symptomatic of the same. For the like reasons he accounts the *Paraplegia* and *Hemiplegia* as different degrees of the same disease, including them both under *Paralysis*, which he employs in a more general sense than it is used by Linnæus. The PRIVATIVI rank under the two first orders of Cullen's LOCALES, so far as he allows them to hold the character of *genera*. The *Morosis* and *Oblivio* he refers to his *Amentia*. The *Scotomania* he does not notice. The *Cophosis* he calls *Disæcia*. The *Anorexia* stands under his genus of *Dyspepsia*, among the ADYNAMIÆ; the *Atonia* as a species of *Paralysis;* the *Amblyopia* under *Amaurosis; Cataracta* under his *Caligo;* the *Anosmia, Ageustia, Anorexia,*

rexia, *Adipsia*, and *Anæsthesia* under their respective names separately; and the *Atecnia* under that of *Anaphrodisia*.

Class 7. MOTORII. Diseases attended with involuntary motion.

Order 1. SPASTICI. *Spasmodic.*

Genus 121. Spasmus. *Cramp.*
122. Priapismus. *Priapism.*
123. Borborygmi. *Rumbling of the bowels.*
124. Trismos. *Locked jaw.*
125. Sardiasis. *Involuntary laughter.*
126. Hysteria. *Hysteric affections.*
127. Tetanos. *Rigidity of the body, with sensibility.*
128. Catochus. *Rigidity of the body, with insensibility.*
129. Catalepsis. *Catalepsy.*
130. Agrypnia. *Sleeplessness.*

2. AGITATORII. Convulsive.

131. Tremor. *Trembling, (without the sensation of cold.)*
132. Palpitatio. *Palpitation of the heart.*
133. Orgasmus. *Twitching of the arteries.*
134. Subsultus. *Twitching of the tendons.*
135. Carpologia. *Tremulous involuntary contractions of the fingers.*
136. Stridor. *Grating of the teeth.*
137. Hippos. *Morbid nictitation.*
138. Psellismus. *Stammering.*
139. Chorea. *St. Vitus's dance.*
140. Beriberi.

140. Beriberi. *Tremor of the limbs, contraction of the knees, stupor, and hoarseness.*
141. Rigor. *Tremor, or shaking, with sense of cold.*
142. Convulsio. *Violent periodic agitation of the limbs, with sensibility.*
143. Epilepsia. *Periodic, chronic agitation of the body, with insensibility.*
144. Hieranosos. *Continued agitation of the body in a convulsive manner, with sensibility.*
145. Raphania. *Spastic contraction of the joints, with convulsions, and very violent periodic pain.*

Most of the diseases in this class stand in the corresponding one of Sauvages called SPASMI, except the *Borborygmus* and the *Agrypnia*, the latter of which is referred to the anomalous VESANIÆ. He also considers the *Sardiasis* and *Stridor* of Linnæus, as *species* only of the *Trismos;* and the *Subsultus* he calls *Carpologia*.

In Cullen's system, the MOTORII of Linnæus make the third order of his NEUROSES, called SPASMI. Of the SPASTICI, he has the *Trismos*, *Hysteria*, and *Tetanos* only as distinct *genera*, under their respective terms. The *Catochus* he refers to the *Tetanos*, and the *Catalepsis* is his *Apoplexia Cataleptica*. The others are not noticed in the Cullenian arrangement.—Of the AGITATORII, the *Tremor* Cullen accounts rather as a symptom of various disorders. The *Beriberi*, which he once ranked with the *Paralysis*, is omitted in the last edition of the *Synopsis*. The *Chorea* is admitted as a genus, and the *Hieranosos* stands under the idiopathic *Convulsio*. The *Psellismus* is removed to the class LOCALES; and of the remainder, the *Palpitatio*, *Epilepsia*,

and *Raphania* only, retain their places in his system under the same names.

Class 8. SUPPRESSORII. Diseases arising from, or attended with, oppression of the organs, or impeded secretions.

Order 1. SUFFOCATORII. With a sense of suffocation.

Genus 146. Raucedo. *Hoarseness.*
147. Vociferatio. *Screaming.*
148. Risus. *Laughter.*
149. Fletus. *Weeping.*
150. Suspirium. *Sighing.*
151. Oscitatio. *Yawning.*
152. Pandiculatio. *Stretching.*
153. Singultus. *Hiccough.*
154. Sternutatio. *Sneezing.*
155. Tussis. *Coughing.*
156. Stertor. *Snoring.*
157. Anhelatio. *Panting.*
158. Suffocatio. *Difficult respiration from narrowness of the* fauces.
159. Empyema. *Difficult respiration from an abscess in the* thorax.
160. Dyspnœa. *Difficult respiration not arising from narrowness of the* fauces.
161. Asthma. *Difficult respiration, of a chronic nature.*
162. Orthopnœa. *Acute and sudden difficulty of respiration.*
163. Ephialtes. *Night-mare.*

2. CONSTRICTORII.

2. CONSTRICTORII. With constriction.
   164. Aglutitio. *Impeded deglutition.*
   165. Flatulentia. *Flatulence.*
   166. Obstipatio. *Costiveness.*
   167. Ischuria. *Impeded micturition.*
   168. Dysmenorrhœa. *Difficult menstruation.*
   169. Dyslochia. *Suppression of the* lochia.
   170. Aglactatio. *Deficiency of milk.*
   171. Sterilitas. *Barrenness.*

Under the *genera* of the SUFFOCATORII, our author has departed from his usual rule, having subjoined to each a note expressive of the intention of nature in exciting these affections. Thus, after defining *Suspirium* to be "*a deep, agitating, slow inspiration,*" he adds that the effect is "*that of expelling the blood from the lungs.*" Most of the SUFFOCATORII have a place in Sauvages's system among the ANHELATIONES, but the CONSTRICTORII are scattered in various parts of it. Cullen has not introduced at all the lighter affections, among the SUFFOCATORII, which seem to have been defined and explained by Linnæus principally to use them as auxiliaries in other parts of the work. In the Cullenian arrangement, the *Raucedo* has a place, as symptomatic only, under the *Catarrhus*, and again, in another part, as a species of *Paraphonia*. The *Tussis* also is received under the *Catarrhus*, and the *Empyema* considered as a consequence of pneumonic inflammation.

The *Orthopnœa*, as a genus, is not noticed by Cullen. The *Dyspnœa* is admitted in the last edition, and, except the *Asthma*, is the only genus he receives from this order, as he has made the *Ephialtes* a species of his *Oneirodynia*, under the VESANIÆ, in the class NEUROSES. In the CONSTRICTORII order, the *Flatulentia* of Linnæus comes under the *Dyspepsia* of Cullen, and

the *Obstipatio*, *Ischuria*, and *Dysmenorrhea* enter into the fourth order of the LOCALES called EPISCHESES, the last under the term *Amenorrhea*.

Class 9. EVACUATORII. Diseases attended with increased excretions and discharges.

Order 1. CAPITIS. From the head.

Genus 172. Otorrhea. *Purulent discharge from the ear.*
173. Epiphora. *Continued discharge from the eye.*
174. Hæmorrhagia. *Discharge of blood from the nose.*
175. Coryza. *Mucous discharge from the nose.*
176. Stomacace. *Bleeding of the gums.*
177. Ptyalismus. *Salivation.*

2. THORACIS. From the breast.

178. Screatus. *Discharge of mucus from the* trachea.
79. Expectoratio. ——— *from the lungs.*
180. Hæmoptysis. *Hæmorrhage from the lungs.*
181. Vomica. *Sudden purulent discharge from the lungs.*

3. ABDOMINIS. From the belly.

182. Ructus. *Eructation.*
183. Nausea.
184. Vomitus. *Vomiting.*
185. Hæmatemesis. *Vomiting of blood.*
186. Iliaca. *Iliac passion.*
187. Cholera. *Vomiting, with purging and colic.*
188. Diarrhea. *Dejection of liquid* fæces.
189. Lienteria. ——— *of undigested aliment.*
190. Cœliaca. ——— *of chyle.*
191. Cholerica.

191. Cholerica. *Reddish flux, without colic.*
192. Dysenteria. *Bloody flux, with colic and* tenesmus.
193. Hæmorrhois. *Bleeding piles.*
194. Tenesmus. *Frequent and needed dejection of* mucus.
195. Crepitus. *Dejection of* flatus.

4. GENITALIUM. From the *pudenda.*
196. Enuresis. *Involuntary micturition.*
197. Stranguria. *Strangury.*
198. Diabetes. *Undue discharge of urine.*
199. Hæmaturia. *Bloody urine.*
200. Glus. *Mucous urine.*
201. Gonorrhea. *Mucous flux from the* urethra.
202. Leucorrhea. *Whites.*
203. Menorrhagia. *Inordinate flow of the* catamenia.
204. Parturitio. *Laborious parturition.*
205. Abortus. *Abortion.*
206. Mola. *False conception.*

5. CORPORIS EXTERNI. From external parts.
207. Galactitia. *Overflowing of milk.*
208. Sudor. *Profuse sweating.*

This class stands nearly the same as our author found it in Sauvages's arrangement, under the term FLUXUS, except that Linnæus has introduced three or four *genera* not in that writer; such are *Screatus*, *Vomica* (which is a species of Sauvages's *Anacarthasis*), *Ructus*, *Glus* (a species of his *Pyuria*), *Parturitio*, and *Mola*. He has also taken his *orders* from the anatomical division of the parts, whereas Sauvages divides them according to the nature of the discharge, whether bloody or serous, which must

be allowed to be equivocal in many instances. It has been objected that *Parturition* is not a disease. Linnæus, however, seems to consider it as such, only when it proves laborious, protracted, or unnatural. Cullen does not admit more than about a third part of the diseases of this class into his system. He has the *Epiphora*, *Ptyalismus*, *Enuresis*, and *Gonorrhea*, in an order called APOCENOSES, belonging to the class LOCALES. *Hæmorrhagia* is synonymous with his *Epistaxis*; *Coryza* with his *Catarrhus* (under which he considers *Expectoratio* as only symptomatic); and *Vomica* as the effect of Pleurisy, or Peripneumony. *Nausea* and *Vomitus* come under *Dyspepsia*; *Iliaca* under *Colica*; the *Cholerica*, *Cœliaca*, and *Lienteria* as different *species* of *Diarrhea*; *Leucorrhea* and *Abortus* under *Menorrhagia*; *Stomacace*, *Hæmatemesis*, and *Hæmaturia* are considered as symptomatic only; and *Hæmoptysis*, *Cholera*, and *Hæmorrhois* form distinct *genera* in both systems.

Class 10. DEFORMES. Deformities.

Order 1. EMACIANTES. Of the emaciating kind.

Genus 209. Phthisis. *Consumption* (*wasting with hectic fever, cough, dyspnœa and copious purulent expectoration*).

210. Tabes. *Wasting* (*with hectic fever, but without expectoration*).

211. Atrophia. *Atrophy* (*wasting with atony, but without hectic fever or expectoration*).

212. Marasmus. *Wasting* (*without atony, expectoration, or hectic fever*).

213. Rachitis. *Rickets.*

2. TUMIDOSI. Of the enlarging kind.

214. Polysarcia. *Corpulency.*

215. Leucophlegmatia.

215. Leucophlegmatia. *Emphysematous intumescence.*
216. Anasarca. *Watery intumescence.*
217. Hydrocephalus. *Watery enlargement of the head.*
218. Ascites. *Watery enlargement of the* abdomen.
219. Hyposarca. *Knotty tumor of the* abdomen.
220. Tympanites. *Flatulent enlargement of the* abdomen.
221. Graviditas. *Extraordinary distension of the* abdomen, *during pregnancy.*

3. DECOLORES. Discolorations of the skin.
222. Cachexia. *Œdematous paleness.*
223. Chlorosis. *Green sickness.*
224. Scorbutus. *Scurvy.*
225. Icterus. *Jaundice.*
226. Plethora. *Redness* (*from fullness of blood*) *with* dyspnœa.

The DEFORMES answer to the CACHEXIÆ of Sauvages and Cullen; and most of the *genera* are admitted into the system of the latter under three corresponding orders. The *Marasmus* is not distinguished by Cullen from the *Atrophia*. The *Phthisis* he notices before as the consequence of *Hæmoptysis*. The *Chlorosis* stands in the order ADYNAMIÆ, of the class NEUROSES. The *Graviditas*, *Cachexia*, and *Plethora* have no place in Cullen's system.

Class 11. VITIA. Cutaneous, external, or palpable diseases.

The class which corresponds with this in the Sauvagesian system stands as the first, under the same term, and is there professedly intended.

intended to contain such disorders as are more immediately the subjects of surgery. This character is not so strictly applicable to the Linnean class, or to Cullen's LOCALES, since both these contain *genera* which come under the province of the physician, independently of manual operation or assistance. In all the systems, it is the most comprehensive class. The congruity of the orders will be noted in our progress through it.

Order 1. HUMORALIA. Consisting in vitiation, or extravasation of the fluids.

Genus 227. Aridura. *Wasting or withering of a part.*
228. Digitium. *Dry whitlow.*
229. Emphysema. *Windy tumor.*
230. Œdema. *Watery tumor.*
231. Sugillatio. *Effusion of blood into the cellular membrane.*
232. Inflammatio. *Inflammation.*
233. Abscessus. *Abscess.*
234. Gangræna. *Gangrene.*
235. Sphacelus. *Mortification.*

In the *genera* of this order, the appearance of the external part and that of the contained fluid form the character conjointly.

In Sauvages, the *Aridura*, *Gangræna*, and *Sphacelus*, or *Necrosis*, belong to his class CACHEXIÆ. The *Digitium* is a species of his *Paronychia*, and stands with the remaining *genera* of this order among the VITIA. Cullen omits the *Aridura* and *Digitium*; the *Emphysema* is his *Pneumatosis*; the *Sugillatio* his *Ecchymosis*; and the four remaining *genera* of Linnæus come under his *Phlogosis*.

Order 2. DIALYTICA. Solutions of continuity.

Genus 236. Fractura. *Fracture.*
237. Luxatura. *Dislocation.*
238. Ruptura. *Rupture of a tendon.*
239. Contusura.

239. Contusura. *Contusion.*
240. Profusio. *Flux of blood, from solution of substance.*
241. Vulnus. *Wound.*
242. Amputatura. *Wound, from the entire separation of a part of the body.*
243. Laceratura. *Laceration.*
244. Punctura. *Puncture of a tendon.*
245. Morsura. *A venomous bite.*
246. Combustura. *A burn.*
247. Excoriatura. *Excoriation (of the skin).*
248. Intertrigo. *Erosion (of the cuticle).*
249. Rhagas. *Dry crack of the skin.*

This order nearly constitutes the 7th called PLAGÆ, in the class VITIA of Sauvages's system, and the 7th under the name of DIALYSES, in the class LOCALES of Cullen's. Under *Vulnus* are comprehended also the three succeeding *genera* of Linnæus. The *Fractura* constitutes a separate genus; the *Luxatura* belongs to the ECTOPIÆ of Cullen; the *Profusio* to the APOCENOSES; the *Intertrigo* and *Combustura* to the *Phlogosis* genus; the remaining *genera* are not noticed in the Cullenian system.

3. EXULCERATIONES. Purulent or ichorous solutions of continuity.
250. Ulcus. *A suppurating wound of a fleshy part.*
251. Cacoethés. *A superficial, spreading ulcer.*
252. Noma. *A deep, escharotic ulcer, leaving a* cicatrix.
253. Carcinoma. *Cancer.*
254. Ozena. *An ulcer of the* antrum Highmori.
255. Fistula. *A calloso-vaginating ulcer.*

256. Caries. *An ulcer of the* periosteum.
257. Anthrocace. *An ulcer of the cavity of a bone.*
258. Cocyta. *A poisonous animalcule lodged in a part.*
259. Paronychia. *Whitlow.*
260. Pernio. *Chilblain.*
261. Pressura. *Inflammation of the finger end from cold.*
262. Arctura. *Growing in of the nail.*

Most of these *genera* rank with Sauvages's PLAGÆ. The *Paronychia*, however, comes in among the PHYMATA; and the *Pressura* and *Arctura* of Linnæus are *species*, only, of that genus, as the *Pernio* is of the *Erythema* in the same system. The first six *genera* of this order are classed, in Cullen's system, under *Ulcera*; the *Caries* is a distinct genus; the *Anthrocace*, *Paronychia*, and *Pernio* rank under *Phlogosis*; and the others are omitted.

4. SCABIES. Cutaneous diseases.

263. Lepra. *Leprosy.*
264. Tinea. *Scald head.*
265. Achor. Crusta lactea, *of authors.*
266. Psora. *Itch.*
267. Lippitudo. *Blear-eyes.*
268. Serpigo. *Tetters; ring-worm.*
269. Herpes. *Shingles.*
270. Varus. *Pimples.*
271. Bacchea. *Ruby-face;* Gutta rosea, *of authors.*
272. Bubo. *Inflammation of a conglobate gland.*
273. Anthrax. *Carbuncle.*
274. Phlyctæna. *A watery vesicle.*
275. Pustula. *A purulent vesicle.*
276. Papula.

276. Papula. *A hard, inflamed tubercle.*
277. Hordeolum. *A stye.*
278. Verruca. *A wart.*
279. Clavus. *A corn.*
280. Myrmecium. *A moist, soft wart.*
281. Eschara. *An eschar, or scab.*

5. Tumores protuberantes. Tumours.
282. Aneurisma. *Dilatation of an artery.*
283. Varix. *Dilatation of a vein.*
284. Schirrus. *Induration of a gland.*
285. Struma. *Enlargement of a gland.*
286. Atheroma. *A wen.*
287. Anchylosis. *A stiff joint.*
288. Ganglion. *Tumour of a tendon.*
289. Natta. *Tumour of a muscle.*
290. Spinola. *Tumour on the lumbar* vertebræ.
291. Exostosis. *Bony tumour.*

The three first and the last of these *genera* stand in the corresponding class of the systems of Sauvages and Cullen, under the same names. Linnæus's *Struma* is their *Scrofula*, and his *Spinola* the *Hydrorachitis*. The *Atheroma* is the *Lupia* of Cullen. The Ganglion is a *Condyloma* of Sauvages, but stands in the Cullenian system under Linnæus's term. The *Natta* is neglected by Cullen, but belongs to the *Sarcoma* of the French nosologist.

6. Procidentiæ. Tumours arising from dislocation of fleshy or membranous parts.
292. Hernia. *Rupture.*
293. Prolapsus. *Hanging down of a part out of its natural place.*
294. Condyloma. *Relaxation of an internal membrane.*

295. Sarcoma. *Fungous flesh.*
296. Pterygium. *Web in the eye.*
297. Ectropium. *Reversion of the under eye-lid.*
298. Phymosis. *Inflamed intumescence of the prepuce.*
299. Clitorismus. *Intumescence of the* clitoris.

The *Hernia*, *Prolapsus*, and *Ectropium*, called *Blepharoptosis* by Sauvages, stand among the ECTOPIÆ of his system; the *Phymosis* with the PHYMATA; and the remaining *genera* among the EXCRESCENTIÆ. Cullen receives into his ECTOPIÆ only the *Hernia* and *Prolapsus*. The *Sarcoma* he refers to the TUMORES; the other *genera* are not admitted into his system as such.

7. DEFORMATIONES. Deformities.

300. Contractura. *Rigidity of a joint.*
301. Gibber. *Gibbosity of the chest.*
302. Lordosis. *Incurvation of the bones.*
303. Distortio. *Distortion of the bones.*
304. Tortura. *Wry-mouth.*
305. Strabismus. *Squinting.*
306. Lagophthalmia. *Retraction of the upper eye-lid.*
307. Nyctalopia. *Night-sightedness.*
308. Presbytia. *Long-sightedness.*
309. Myopia. *Near-sightedness.*
310. Labarium. *Looseness of the teeth.*
311. Lagostoma. *Hare-lip.*
312. Apella. *Abbreviation of the prepuce, without inflammation.*
313. Atreta. *Imperforation of a natural passage.*
314. Plica. *Indissoluble contortuplication of the hair.*
315. Hirsuties.

315. Hirsuties. *Unnatural hairiness.*
316. Alopecia. *Baldness.*
317. Trichiasis. *Distortion of the eye-lashes.*

These *genera* are placed by Sauvages in very different parts of his system: the *Contractura* (for instance) and the *Strabismus*, very improperly, as it should seem, among spasmodic diseases; the *Gibber*, or *Gibbositas*, and the *Lordosis* among the EXCRESCENTIÆ of the class VITIA; the *Nyctalopia*, and the two *genera* succeeding it, as *species* of *Amblyopia* in the class DEBILITATES, and also the *Lagostoma*, as a species of *Psellismus*; the *Plica*, under the name of *Trichoma*, with the CACHEXIÆ; and the *Trichiasis* as a species of *Ophthalmia*. Cullen receives only five of these *genera*; the *Contractura*, *Strabismus*, *Presbytia*, *Myopia* (the two last as *species* of his *Dysopia*, placed like the others) in the class LOCALES, and the *Plica* (which stands under his genus *Trichoma*) among the IMPETIGINES in the class CACHEXIÆ.

8. MACULÆ. Blemishes on the skin.
318. Cicatrix. *A scar.*
319. Nævus. *A mole or mark.*
320. Morphæa. *A broad, white, depressed spot.*
321. Vibex. *A wheal, or purple stripe under the cuticle.*
322. Sudamen. *Red spots, like flea-bites.*
323. Melasma. *Black blotches.*
324. Hepatizon. *Scurf.*
325. Lentigo. *Freckles.*
326. Ephelis. *Sun-burn.*

These lighter affections stand, in Sauvages's system, either among the MACULÆ or the EFFLORESCENTIÆ, but he does not allow all of them the rank of *genera*. The *Cicatrix* is a species of his *Leucoma*, as the *Morphæa* and *Melasma* are of his *Vitiligo*,

and the *Vibex* and *Sudamen* of the *Ecchymoma*. The *Nævus* stands under the same generic name in both systems; but the *Lentigo* of Linnæus is a species of Sauvages's *Ephelis*. Cullen has not given a place to these *genera*, in his system.

Our author has subjoined to this distribution of diseases a sketch of his *Theory of Physic*, written in that concise and methodic style so peculiar to himself; and to which, as it appears to have been intended entirely for the use of his pupils, nothing less than his own comment can do sufficient justice. We should not therefore have taken notice of it, in our plan, had it not been necessary in order to explain several papers in the *Amœnitates Academicæ* hereafter to be mentioned. Briefly therefore:—the Linnean principles of physic suppose the human body to consist of a cerebrose *medullary* part, of which the nerves are so many processes, (and which is commonly called the *nervous system*,) and a *cortical* part, including the *vascular system*: the former, being the animated part, or that in which the sentient, moving principle peculiarly resides, is considered as deriving its nourishment from the subtlest fluids of the vascular system, and its energy from an electrical principle inhaled by the lungs*. Further, this theory supposes the circulating fluids to be capable of being vitiated, by substances which the author chooses to consider either as *acescent*, or as *putrid* ferments; the former acting on the *serum*, and being the exciting cause of *critical* fevers, and the latter acting on the

* Absurd as this idea respecting the electrical principle may have been considered at the time when Linnæus wrote, and when the phænomena of Galvanism were wholly unknown, modern physiologists will not fail to admire its *ingenuity*, at least. Many current hypotheses of the present day are much less supported by facts; and, if it be said that Linnæus borrowed from Newton this notion of electricity, the merit of the former appears to me to be rather enhanced than diminished by the supposition. (*Editor.*)

crassamentum,

crassamentum, and exciting *phlogistic* diseases. The *exanthematic* class are supposed to be excited by some external causes, which we call *contagion*, and which (hypothetically) he pronounces to be *animalcula*. From the incessant attrition of the cortical or vascular system, it requires perpetual reparation; this is to be effected by an appropriate *diet*. From an *impropriate* diet or regimen, originate most of the diseases of this part of the system; and these are to be remedied by *sapid* medicines, as those of the medullary system are by *olids*. Hence arises the author's general division of all medicines, according as their sensible qualities are discoverable to the *taste* and *smell*. The *sapida*, according to this theory, act particularly on the cortical part, as the *olida* do on the medullary or nervous system.

He seems to have had some peculiar ideas with respect to number, both as to the divisions into which he supposed these two grand classes of medicines naturally to resolve themselves, and as to the diseases which they appeared to him calculated to cure. It was his opinion that nature acts "*numero quinario*" (as he informs us in his Diary); but he has no where sufficiently explained himself on this abstruse subject; and the hypothesis seems to be one of those eccentric exercises of imagination, in which ingenious minds are too apt to indulge, without the possibility of being followed. A table of the several qualities of medicines, according to the classification above mentioned, closes the *Genera Morborum*.

In the spring of 1764, Linnæus had a most violent attack of pleurisy, his recovery from which he attributed solely to the skill and attention of his colleague Professor Rosen, with whom he now lived on terms of intimate friendship. When the disease was subdued, he repaired to Hammarby, for the enjoyment of country air, and from this place he dates the preface of his

MUSEUM *Sacræ Regiæ Majestatis* LUDOVICÆ ULRICÆ *Reginæ*, &c. *in quo animalia rariora, exotica, imprimis insecta, et conchylia describuntur et determinantur, prodromi instar editum.* (Holm. 1764. 8vo. pp. 720.) This was drawn up and published, by order of the Queen of Sweden, who had formed at the palace of Drotningholm a rich and extensive cabinet of natural history, the subjects of which (as has already been observed) Linnæus had been appointed to arrange. Her Majesty's great expense, in procuring insects and shells particularly, had given this collection an advantage which proved very favourable to our author, by throwing in his way a multitude of fine and very costly objects, which otherwise, probably, he could have had no opportunity of describing; and these were, fortunately, all collected before the publication of the enlarged editions of the *Systema*. In the description of this museum, only the *exotic* insects and shells are introduced; of the former 436, and of the latter 434, with 25 of the *Mollusca*. The entomological part consists chiefly of the large and beautiful *Lepidoptera*. Among the shells are most of their elegant varieties, and they are described at large with all that precision, terseness, and accurate arrangement of the several parts, which are every where manifested so happily in our author's writings. Both in entomology and conchology a new language is introduced; and the descriptions may well stand as models for future works of this kind.

Annexed to the above is the second part (or rather only the *prodromus* of the second part) of the MUSEUM *Sacræ Regiæ Majestatis* ADOLPHI FRIDERICI *Regis*, &c. *in quo animalia rariora, imprimis et exotica, aves, amphibia, pisces describuntur.* (Holm. 1764. pp. 110.) In this publication are described at large 156 subjects of the animal kingdom, all belonging to the first four classes, and all acquired after the publication of the great volume in

1754.

1754. Throughout the *Systema Naturæ*, Linnæus has referred to these books for full descriptions of all the exotics; and nothing would be more acceptable to the critical zoologist than to see the plan of them pursued through the whole history of animals.

In 1766, Linnæus published a small piece under the title of CLAVIS MEDICINÆ *duplex, exterior et interior.* (Holm. 8vo. pp. 29.) This may be considered as a syllabus of his medical lectures. It is an enlarged view of the theory lately mentioned, connecting it with general pathology and therapeutics. In the latter part, all simples are arranged in 30 orders, founded on their sensible qualities, agreeably to the theory, and explained more fully in two papers printed in the *Amœnitates Academicæ*, under the titles of *Sapores* and *Odores Medicamentorum*, to be reviewed hereafter.

It appears from several passages in the writings of Linnæus, that the *dietetic* part of medicine was a subject to which he had paid much attention; and, in one of his letters to Haller*, he suggested that it was his intention to publish what he had collected upon that topic; but his manuscripts were left unarranged, and pretty nearly in the state wherein they were first written, as mere notes for his lectures. It is much to be wished that they should, even now, be presented to the public, unmethodical and concise as they are; for, on a subject which Linnæus himself declares to have been peculiarly interesting to him, it is scarcely to be conceived that he did not make many original and impor-

* "*Quid in diæteticis colligo, tandem videbis; in his per decem annos laboravi.*" (See Stoever's *Collectio Epist. ad Hallerum*, p. 43.) In another letter he says, "*in his meæ deliciæ; in his plura collegi quam quod novi ullus alius.*" (p. 55.)

tant observations. Transcripts* of the lectures were made by some of his pupils; but none of these have hitherto been printed, nor (so far as we know) have they appeared in any other language except the Swedish. Many of the papers in the *Amœnitates Academicæ*, however, may be considered as records of Linnæus's doctrines, and probably the most *material* part of his collections has actually thus found its way to the press; yet it would have been highly satisfactory to be possessed of the whole scheme and matter in its original state.

We come now to the proper place for noticing the grandest and most important of Linnæus's works—the SYSTEMA NATURÆ. The plan of this, as far as respected the *vegetable* kingdom, had been separately and largely exhibited (as before mentioned) in the GENERA PLANTARUM, and the *species* given in the several *Floræ* of our author, and finally in his SPECIES PLANTARUM. As yet, however, though it had passed through several editions†, little more

* There is one of these in the Banksian Library, together with other volumes of notes taken from Linnæus's lectures on different branches of natural history; it was compiled by Dr. Lars Montin (who attended every course from the year 1742 to 1749), and it occupies 616 quarto pages very closely and fairly written.

† Ed. 1. Lugd. Bat. 1735. fol. pp. 12. (See p. 44.)

2. Holm. 1740. 8vo. pp. 80.
Revised and enlarged by the author, the generic names and characters being added to the *animal* kingdom.

3. Halæ. 1740. 4to. obl. pp. 70.
With the German names annexed. By *J. Joachim Lange.*

4. Paris. 1744. 8vo. pp. 108.
With the French names. By *B. de Jussieu.*

This edition was reprinted, with the *Fundamenta Botanica* and *Sponsalia Plantarum* prefixed, at Lucca, in 1758 (8vo).

5. Halæ. 1747. 8vo. pp. 88.
With the German names. By *M. G. Agnethler.*

Ed. 6.

more had appeared in the *animal* kingdom than the generic characters and specific names, the ninth edition (printed at Leyden in 1756) being contained in a small octavo of 226 pages. But this, it must be observed, was only a republication of the sixth edition in 1748. The scheme, therefore, cannot be considered as completed by the author, until the publication of the tenth edition in 1758*, the first part of which, relating to the animal kingdom, makes a volume of 821 pages; and the same part, in the 12th edition, is augmented by the addition of new subjects to 1327 pages. The three volumes published at Stockholm in 1766—1767—1768, are to be considered as having received the author's finishing hand; the title is SYSTEMA

Ed. 6. Holm. 1748. 8vo. pp. 232. tabb. 8. By *the Author.*
Augmented by the introduction of the essential generic characters of plants, and the *species* of the animal and mineral kingdoms.

7. Lips. 1748. 8vo. pp. 232. tabb. 8.
With the German names, and a portrait of the author.

8. Holm. 1753. 8vo. pp. 136. tabb. 3.
Only the *vegetable* kingdom; in Swedish. By *J. J. Haartman.*

This edition was reprinted at Westeras in 1777. In the list of editions of the *Syst. Nat.* prefixed to the 12th by Linnæus himself, is mentioned the *Regnum Lapideum*, by Möller, (Scaræ 8vo.) as forming a part of the 8th. Unless this be a single sheet, (which is in fact a mere copy of the 1st edition) under the title of *Observationes in Regnum Lapideum*, it is unknown to me. (*Editor.*)

9. Lugd. Bat. 1756. 8vo. pp. 226.
With a few additions to the animals. By *Gronovius.*

* Ed. 10. Holm. 8vo. Tom. 1. pp. 821.—Tom. 2. pp. 560.
Greatly enlarged, and all the specific names annexed. By *the Author.*

11. Halæ. 1760. 8vo. 2 Tom.
(Lips. 1762. 8vo. ——— Very faulty.)

12. Holm. 8vo. Tom. 1. 1766. Pars 1. pp. 532. Pars 2. pp. 795, *Animalia.*—Tom. 2. 1767. pp. 736, *Vegetabilia.*—Tom. 3. 1768. pp. 236. tabb. 3, *Mineralia.* By *the Author.*
(Vindob. 8vo. Tom. 1. 1767.—Tom. 2. 3. 1770. pp. et tabb. totidem.)

NATURÆ *per regna tria naturæ, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis.*

Having given his great work the very comprehensive denomination of SYSTEMA NATURÆ, Linnæus considered it incumbent on him to preface his description of the three kingdoms (as they cannot with propriety be said to include *all* the objects of nature) with a concise view of the rest of the universe. The grandeur of his ideas and the judicious manner in which he methodized them are as striking here as in the body of his work*.

The three kingdoms are distinguished in the following manner, *viz.*

1. *MINERALS.* Concrete bodies, not endued with life or sensation.

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* IMPERIUM NATURÆ.

DEUS *sempiternus, immensus, omniscius, omnipotens.*

Movens primus, Ens entium, Causa Causarum, Custos Rectorque universi, mundani hujus operis Dominus et Artifex.

MUNDUS complectitur omnia, quæ in notitiam nostram per sensus cadere possunt.

ASTRA sunt remotissima corpora lucida, quæ gyrantur motu perpetuo; sunt hæc aut

1. SIDERA—propriâ luce radiantia ut *Sol*, remotioresque *Stellæ fixæ*.

vel 2. PLANETÆ—à sideribus lucem mutuantes.

ELEMENTA, corpora simplicissima atmosphæram Planetarum constituentia.

TELLUS, globus planetarius, horis 24 rotatus, circum Solem quotannis in orbem actus, *Elementorum* atmosphærâ obvelatus, rerum *Naturalium* stupendo cortice tectus, cujus cognoscendæ superficiei studemus.

NATURA lex immutabilis Dei, qua res est id quod est, et agit quod agere jussa est. (*Helmont.*)

NATURALIA sunt corpora cuncta Tellurem constituentia, in REGNA NATURÆ tria divisa, quorum limites concurrunt in Zoophytis.

1. LAPIDES—corpora congesta, nec viva, nec sentientia.
2. VEGETABILIA—corpora organisata et viva, non sentientia.
3. ANIMALIA—corpora organisata, et viva, et sentientia.

2. *VEGE-*

2. *VEGETABLES.* Organized bodies, endued with life, but not with sensation.

3. *ANIMALS.* Organized bodies, endued with both life and sensation.

Then, beginning his system with a philosophical history of

The ANIMAL KINGDOM,

in general, he proceeds to the *natural* division of animals, arising from their different internal structure,—a division partly established by Aristotle, and of which our own great naturalist Ray has made considerable use, in the introductory part of his *Synopsis Animalium.* By this arrangement the whole animal kingdom naturally falls into 6 classes, as follows:

Heart furnished with	
Two ventricles and two auricles	Viviparous. MAMMALIA.
Blood warm and red	Oviparous. BIRDS.
One ventricle and one auricle	Respiration voluntary. AMPHIBIA.
Blood cold and red	Breathing by gills. FISHES.
One ventricle without an auricle	Antennated. INSECTS.
Sanies cold and colourless	Tentaculated. VERMES.

He afterwards gives the natural characters at large of each class, taking in, with the foregoing internal structure, all the differences arising from the *lungs*, or other organs of respiration, as *gills;* from the *maxillæ*, jaws, or mandibles; from the *organs of generation;* those of *sensation;* the *teguments;* and the *fulcra*, or legs, wings, &c.

At the head of each class is given a concise and most instructive description of the *classical* character, so methodically framed as to include at the same time an explanation of all the *terms* appertaining to that class, and concluding with a

general mention of the best writers thereon. After this, our author establishes the natural characters of each *order* of the class respectively. Lastly, he divides the several orders into *genera*, or families, with abbreviated *artificial* characters attached to each.

Class 1. MAMMALIA.

This class comprehends not only all the animals which we call *Quadrupeds* (the *Lizard* genus, or rather the *Reptilia pedata*, excepted), but also the *Cetaceous* order, consisting of whales, cachalots, and porpoises. This arrangement of whales with quadrupeds, which did not take place in the first editions of the work, has not been adopted by some very respectable zoologists; but our author thought himself fully justified by the agreement of these animals in the *structure of the heart;* in the respiration being performed by *lungs;* in their having moveable *eyelids;* in their having *ears;* in being *viviparous;* in being furnished with breasts; and by other particulars, in which they differ so materially from *fishes*, as to more than balance that single agreement, of living in the same *element*.

The MAMMALIA are divided by our author into 7 *orders*, the distinctions of which are, in this *artificial* arrangement, established principally on the difference in the number, situation, and form of the three kinds of teeth, namely, the *primores* or *incisores*, called fore-teeth, or cutting-teeth; the *laniarii*, or *canini*, called dog-teeth and canine, or lacerating teeth; and the *molares*, double-teeth, or grinders. But he does not entirely neglect the *feet*, as will appear from his description of the *natural* characters of the orders, as well as from the following *systematic* arrangement:

1 1. *Digitated.*

1. *Digitated.*

Fore-teeth none.	BRUTA.	2.
Fore-teeth 2. Canine none.	GLIRES.	4.
Fore-teeth 4. Canine single.	PRIMATES.	1.
Fore teeth 6—2—10, conical. Canine single.	FERÆ.	3.

2. *Hoofed.*

Fore-teeth above and below.	BELLUÆ.	6.
Fore-teeth none above.	PECORA.	5.

3. *Destitute of hoofs and claws.*

Teeth various in the different *genera*.	CETE.	7.

We shall give the characters as they stand at the head of each order, and then enumerate the *genera*, adding to the latter only the *abbreviated* characters.

Order 1. PRIMATES. Animals furnished with fore-teeth, or cutting teeth: 4 above, parallel. Two breasts on the chest.

2. BRUTA. No fore-teeth.

3. FERÆ. Fore-teeth in the upper jaw, 6 in number, sharpish. One canine tooth on each side.

4. GLIRES. Fore-teeth in each jaw 2, close together, but remote from the grinders. No canine teeth.

5. PECORA. No fore-teeth in the upper jaw; 6 or 8 in the lower jaw, very remote from the grinders. Feet hoofed. Breasts inguinal.

6. BELLUÆ. Fore-teeth obtusely truncated. Feet hoofed.

7. CETE. Breathing apertures on the head. Pectoral fins, and the caudal fin horizontal. No claws.

1. PRIMATES.

Howsoever the pride of man may be offended at the idea of being ranked with the beasts that perish, he nevertheless

less stands as an *animal*, in the system of nature, at the head of this order, and as such he is here described (with his several varieties observable in the different quarters of the globe) in a manner, and with an accuracy peculiar to our author, and which we may venture to say is no where else to be met with. But man is not left by Linnæus to contemplate himself *merely* as an animal; he is emphatically defined to be an *intelligent and moral being*, by the Grecian sage's dictate "KNOW THYSELF," which is used as the generic character, and the true application of which is pointed out and commented on at considerable length.

Abbreviated Generic Characters.

Genus 1. Homo. *Man.*

2 Species. One the *Troglodytes*, or *Orang-outang**.

2. Simia. *Ape.* Canine teeth distant from the grinders.

33 Species. a. Without tails. *True Apes.* 3.
b. With short tails. *Baboons.* 6.
c. With long tails. *Monkeys.* 24.

3. Lemur. *Macauco.* Fore-teeth below 6 in number.

5 Species. *Mongooz. Black Macauco. Ring-tail'd, &c. &c.*

4. Vespertilio. *Bat.* Fore-toes connected by membranes so as to perform the office of wings.

6 Species. *Vampyre, Common Bat, Long-ear'd Bat, &c.*

Order 2. BRUTA.

5. Elephas. *Elephant.* Tusks and grinders only. Long *proboscis*, or snout.

* Linnæus seems to have been misled by the accounts of credulous travellers, otherwise he would not have placed what is properly a *Simia* in the same genus with *Man*; but indeed he confesses, when describing the *Troglodytes*, that he was in doubt which of those *genera* it ought to be referred to. The writer of the 13th edition of the *Systema* (Professor Gmelin) and our countryman Dr. Shaw have both described this animal as a *Simia*; but the history of it and of the *Simia Satyrus* is not yet sufficiently elucidated for determining with *certainty* how the synonyms of authors ought to be applied, with respect to either of those species.

6. Trichechus.

6. Trichechus. *Walrus.* Canine teeth above only. Grinders formed of a rugged bony substance. Hind feet formed into fins.
   2 Species. *Morse,* and the *Manati.*
7. Bradypus. *Sloth.* Grinders only; first longer than the others. Body hairy.
   2 Species.
8. Myrmecophaga. *Ant-eater.* No teeth. Body hairy.
   4 Species.
9. Manis. No teeth. Body scaly.
   2 Species.
10. Dasypus. *Armadillo.* Grinders only. Body crustaceous.
    6 Species.

3. FERÆ.

11. Phoca. *Seal.* Upper fore-teeth 6, lower 4.
    3 Species.
12. Canis. *Dog.* Fore-teeth 6 and 6; upper middle ones lobated.
    9 Species. *Domesticated Dog,* with 11 varieties; *Wolf, Hyæna, Fox, Jackall,* &c.
13. Felis. *Cat.* Fore-teeth 6 and 6; lower ones equal. Tongue very rough.
    7 Species. *Lion, Tiger, Panther, Lynx,* &c.
14. Viverra. *Civet.* Fore-teeth 6 and 6; lower middle one shorter than the others.
    6 Species. *Ichneumon, Coati-mondi, Skunk,* &c.
15. Mustela. *Weasel.* Fore-teeth 6 and 6; lower ones close together; 2 placed alternately interior.
    11 Species. *Otter, Glutton, Martin, Pole-cat, Ferret, Ermine,* &c.
16. Ursus. *Bear.* Fore-teeth 6 and 6; upper ones hollowed.
    4 Species. *Bear, Badger, Raccoon, Quickhatch.*

17. Didelphis. *Opossum.* Fore-teeth 10 above, 8 below.
5 Species.

18. Talpa. *Mole.* Fore-teeth 6 above, 8 below.
2 Species.

19. Sorex. *Shrew.* Fore-teeth 2 above, 4 below.
5 Species.

20. Erinaceus. *Hedge-hog.* Fore-teeth 2 above, 2 below.
3 Species.

4. GLIRES.

21. Hystrix. *Porcupine.* Body covered with quills.
4 Species.

22. Lepus. *Hare.* Upper fore-teeth double.
4 Species.

23. Castor. *Beaver.* Upper fore-teeth truncated, hollowed.
3 Species.

24. Mus. *Rat.* Upper fore-teeth subulated, or awl-shaped.
21 Species. *Guinea-pig, Aguti, Marmot, Mouse, Dormouse, Jerboa,* &c.

25. Sciurus. *Squirrel.* Upper fore-teeth cuneated, lower compressed.
11 Species.

26. Noctilio. Lower fore-teeth bilobated; fore-toes connected by membranes, performing the office of wings.
1 Species.

5. PECORA.

27. Camelus. *Camel.* No horns. Several canine teeth on each side.
4 Species. *Dromedary,* &c.

28. Moschus. *Musk.* No horns. Canine teeth single on each side; upper ones standing out of the mouth.
3 Species.

92. Cervus.

29. Cervus. *Deer.* Horns solid, branched, deciduous. No canine teeth.
7 Species. *Camelopard, Elk, Rein-deer, Roe-buck,* &c.

30. Capra. *Goat.* Horns hollow, erect. No canine teeth.
12 Species. *Chamois, Antelope, Bezoar,* &c.

31. Ovis. *Sheep.* Horns hollow, bending backwards. No canine teeth.
3 Species.

32. Bos. *Ox.* Horns hollow, extending forwards.
6 Species. *Bull, Bison, Buffalo,* &c.

6. BELLUÆ.

33. Equus. *Horse.* Fore-teeth 6 above, and 6 below.
3 Species. *Horse, Ass, Zebra.*

34. Hippopotamus. *Sea-horse.* Fore-teeth 6 above, 4 below.
1 Species.

35. Sus. *Hog.* Fore-teeth 4 above, 6 below.
5 Species.

36. Rhinoceros. Fore-teeth 2 above, and 2 below.
1 Species.

7. CETE.

37. Monodon. *Narwhal.* Two long teeth in the upper jaw, stretched forwards.
1 Species.

38. Balæna. *Whale.* Teeth in the upper jaw, horny.
4 Species.

39. Physeter. *Cachalot.* Teeth in the lower jaw only.
4 Species.

40. Delphinus. *Dolphin.* Teeth in both jaws.
3 Species. *Porpoise, Dolphin, Grampus.*

The *specific* distinctions, in this class, are drawn chiefly from the *tail* of the animal, but in few instances exclusively so, as

the *feet*, *ears*, *breasts*, &c. also enter into the descriptions. Among the *Pecora*, however, the diversity of shape of the *horns*, which form very remarkable and characteristic appendages in this order, serves almost throughout to constitute discriminations; and among the *Cete*, the *nostrils* and *jaws* are chosen as marks of distinction, these parts, in their variations, altering very materially the character of the head. The nasal canal, or *fistula*, of the Cetaceous tribe is differently situated, being not always in the snout or *rostrum*, but sometimes in the forehead, and sometimes in the neck; and whilst some species have a *simple*, others are provided with a *double* orifice. *Colour* is but little regarded by our author, except in the genus *Simia*, and in some *genera* of the *Feræ*, as *Viverra*, *Mustela*, &c. in which, being both permanent and striking, it has been judiciously included in the specific differences.

This part of the system, including a few species described in the appendix to the third volume and in the *Mantissa* (of which we shall speak hereafter), contains about 230 species. It will naturally be concluded that, since Linnæus's time, from our having been made more extensively acquainted with the various countries of the globe, the number has been greatly increased; not only have all the parts of the known world been much more fully explored, but a new continent and numerous islands have been discovered, the productions of which form a vast accession of subjects to the whole three kingdoms of nature. By the more general diffusion of science and the multiplication of observations, erroneous reports have been rectified and the imperfect descriptions of travellers supplied; and the introduction of the Linnean principles of arrangement has of itself more and more contributed to augment our acquaintance with the creation, because it has

furnished the most happy clues to correct discrimination. The writers who have followed Linnæus with most success, in methodical descriptions of the *Mammalia*, are Pennant*, Schreber†, Erxleben‡, and Shaw§, by whose united labours the number of *species* is now increased to nearly 600, which are upwards of 150 more than are contained in the improved *Systema Naturæ* (or 13th edition) by Professor Gmelin‖. In this edition, 8 new *genera* are constructed, which, however, affect only 3 of the orders, those of *Primates*, *Bruta*, *Feræ*, and *Cete* retaining their primitive distribution, except in regard to some of the *species*.

(Order 4. GLIRES).

Cavia. *Cavy*. Fore-teeth cuneated; grinders 4 on each side. No clavicles.

6 Species (4 of them described by Linnæus, as *Mures*.)

The Linnean genus *Mus* being very numerous, it was judged proper to sever from it some *species* very dissimilar to the

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* *Synopsis of Quadrupeds*. Chester 1771. 8vo. afterwards published in 4to. The last edition of this work bears the title of *History of Quadrupeds*. London 1793. 2 Vols. 4to.

† *Die Säugthiere in abbildungen nach der natur, mit beschreibungen*. 4 Theil. Erlangen 1775—1792. 4to.

‡ *Systema Regni Animalis*. *Classis* 1. *Mammalia*. Lips. 1777. 8vo.

§ *Speculum Linnæanum*. *Primates*. Lat. et Angl. London. 1790. 4to.

General Zoology. London. 1800. 8vo. Vol. 1. Part 1. 2.

‖ Tom. 1. Partes 7. Lips. 1788. 8vo. pp. 4120. ANIMALIA.
2. — 2 — 1791. pp. 1661. VEGETABILIA.
3. — — 1793. pp. 476. MINERALIA.

This edition has been translated into English by William Turton, M.D. Part 1. ANIMALS. 4 Vols. Part 2. VEGETABLES; of which only one volume has as yet appeared.

others

others in habit, though the teeth are nearly the same in all; it may be questioned whether Gmelin was equally justifiable in introducing the three first of the following.

Arctomys. *Marmot.* Fore-teeth cuneated. Grinders in the upper jaw 5, in the lower 4, on each side. Clavicles perfect.

7 Species (4 of them described by Linnæus as *Mures.*)

Myoxus. *Dormouse.* *Vibrissæ* long. Tail round, thicker towards the *apex.*

4 Species (3 of them described by Linnæus, one as a *Sciurus* and the other two as *Mures*).

Dipus. *Jerboa.* Fore-legs very short; hind-legs very long.

5 Species (2 of them only described by Linnæus).

Hyrax. Fore-teeth in the upper jaw broad. No tail.

2 Species, nearly allied to the *Cavies.*

(Order 5. PECORA).

Camelopardalis. *Camelopard.* Horns very short. Fore-legs much longer than the hind-legs.

1 Species; the *Giraffa* (described by Linnæus as a *Cervus*).

Antilope. *Antelope.* Horns solid, simple, permanent. No canine teeth.

22 Species, (7 of which are contained in Linnæus's 12th edition as *Capræ*).

Pennant and succeeding systematical writers have considered the Antelopes as exhibiting characters sufficiently peculiar to authorise their being formed into a distinct genus, the place of which in Gmelin's edition of the *Systema Naturæ* is between *Camelopardalis* and *Capra.* It appears doubtful whether many of this tribe described as distinct species be not merely varieties.

(Order 6. BELLUÆ).

Tapir. Front teeth in each jaw 10.

1 Species; called by Linnæus *Hippopotamus terrestris,*—an animal imperfectly known

known until the description of M. Bajon appeared, in the *Mem. de l'Acad. des Sc.* for 1774.

Class 2. AVES.

Belon and Gesner may be considered as the earliest authors, since the restoration of letters, who treated largely on *ornithology*. Nothing like method, however, was introduced into histories of birds until the time of our countrymen Willughby* and Ray†. The latter laid a ground-work, on which the system of Linnæus is in a great measure built; and the precision of his terms almost equals that of our author's. The *Fauna Suecica*, of 1746, and the 10th edition of the *Systema* reduced the birds into a stable arrangement. Our author's improved edition of the last-mentioned work was preceded by the laborious performance of Brisson‡, who was enabled to make very considerable additions to what was before known of this class, from the communications and museum of the celebrated Reaumur. We shall now take a view of the state of the science left by Linnæus's volume of 1767.

Birds are here divided into 6 orders, the distinctions of which are taken chiefly from the *beak*, but in some *genera* our author found it necessary to call in the *tongue*, *nostrils*, and, in some instances, the feet and other parts.

Order 1. ACCIPITRES. *Rapacious birds;* having the upper mandible of the beak furnished on each side with an angular process.

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* *Ornithologiæ libb.* 3 *recognovit, digessit, supplevit J. Raius.* London 1676. folio.

† *Synopsis Methodica Avium.* London 1713. 8vo. cum tabb. æn. 2.

‡ *Ornithologia.* Paris. 6 Vol. 1760—1763. 4to.

2. PICÆ. *Pies.* Birds having the beak somewhat compressed and convex.
3. ANSERES. *Web-footed birds;* having a somewhat obtuse beak, covered with a thin skin, or *epidermis*, gibbous at the base underneath, and wide at the end. The edges of the base, or *faux*, denticulated. The tongue fleshy. The feet webbed, or palmated, and formed for swimming.
4. GRALLÆ. *Waders.* Birds having a subcylindrical and rather obtuse beak. The tongue entire and fleshy. The thighs naked for some space above the knees.
5. GALLINÆ. *Poultry.* Birds having a convex beak; the upper mandible receiving the edges of the lower. Nostrils half covered with a cartilaginous, convex membrane. Tail-feathers (*Rectrices*) more than 12. Feet cloven, but the toes connected by a membrane as far as the inmost joint.
6. PASSERES. *Sparrow Tribe.* Birds having a conical, acuminated beak. The nostrils ovated, open, naked.

Abbreviated Generic Characters.

Order 1. ACCIPITRES.

Genus 41. Vultur. *Vulture.* Beak hooked. Head naked.
8 Species. *Condor, King of the Vultures,* &c.

42. Falco. *Falcon.* Beak hooked, covered with a *cera* at the base.
32 Species. *Eagles, Hawks, Buzzards, Kite,* &c.

43. Strix. *Owl.* Beak hooked. *Capistrum*, or feathers of the forehead, turned forwards.
12 Species.

44. Lanius. *Shrike.* Beak nearly strait, notched:
26 Species. *Butcher-birds,* &c.

2. PICÆ.

a. Feet formed for walking.

66. Trochilus. *Honey-sucker*. Beak incurvated, filiform, forming a tube at the extremity.
22 Species.

65. Certhia. *Creeper*. Beak incurvated, acuminated.
25 Species. 1 only *English*.

64. Upupa. *Hoopoe*. Beak incurvated, somewhat obtuse.
3 Species. 1 *English*.

48. Buphaga. *Beef-eater*. Beak straight, quadrangular.
1 Species.

60. Sitta. Beak straight, cuneated at the end.
3 Species. *Nut-hatch*, &c.

52. Oriolus. Beak straight, conical, very acute.
20 Species.

51. Coracias. Beak cultrated (sharp or cutting), incurved at the end.
6 Species. 1 *English*.

53. Gracula. Beak cultrated, equal, naked at the base.
8 Species. *Mino, Dialbird*, &c.

50. Corvus. *Crow*. Beak cultrated. *Capistrum* reversed.
19 Species. *Raven, Rook, Jackdaw, Jay, Magpye, Chough*, &c.

54. Paradisæa. *Bird of Paradise*. Beak somewhat cultrated. *Capistrum* of a downy nature.
3 Species.

b. Feet with 2 toes before, and 2 behind; formed for climbing.

46. Ramphastos. *Toucan*. Beak serrated; tongue fringed on the edges.
8 Species, all *American*.

55. Trogon. Beak serrated, hooked at the end.
3 Species, all *American*.

45. Psittacus. *Parrot.* Beak covered with the *cera*; tongue fleshy.

47 Species. *Maccaws, Parrots, Parroquets,* &c.

49. Crotophaga. *Tick-eater.* Beak rough; upper mandible angulated on each side.

2 Species.

59. Picus. *Woodpecker.* Beak angulated; tongue vermiform.

21 Species.

58. Yunx. *Wryneck.* Beak smooth; tongue vermiform.

1 Species; *English.*

57. Cuculus. *Cuckow.* Beak smooth; nostrils marginated.

22 Species, all exotic except one.

56. Bucco. Beak smooth, notched, and hooked at the end.

1 Species.

c. Feet with the middle and exterior toe joined together, nearly the whole length; formed for walking.

47. Buceros. *Horn-bill.* Beak serrated, furnished with a protuberance, or horn, at the base of the upper mandible.

4 Species. *Calao, Rhinoceros,* &c.

62. Alcedo. *King-fisher.* Beak triangular, straight.

15 Species, all exotic except one.

63. Merops. *Bee-eater.* Beak incurvated, somewhat compressed.

7 Species.

61. Todos. *Tody.* Beak linear, somewhat depressed, straight.

2 Species.

Order 3. ANSERES.

a. Beak denticulated.

67. Anas. *Duck.* Beak furnished with membranaceous denticles, and unguiculated.

45 Species. *Swan, Goose, Bernacle, Shoveller, Gadwell, Wigeon, Teal,* &c. &c.

68. Mergus. *Smew.* Beak furnished with subulated denticles and unguiculated.

6 Species. *Goosander, Lesser Dundiver,* &c.

74. Phaeton. Beak cultrated.

2 Species. *Tropic bird,* and *Penguin,* of Edwards.

73. Plotus. *Darter.* Beak subulated.

1 Species.

b. Beak edentulous.

78. Rhyncops. *Skimmer.* Upper mandible shorter than the lower.

2 Species.

71. Diomedea. *Albatross.* Lower mandible truncated.

2 Species.

69. Alca. *Auk.* Beak wrinkled transversely.

5 Species. *Auks, Puffin,* &c.

70. Procellaria. *Petrel.* Nostrils superincumbent and subcylindrical.

6 Species. *Storm-finch, Shearwater,* &c.

72. Pelicanus. *Pelican.* Face entirely naked round the base of the beak.

8 Species. *Corvorant, Shag, Gannet, Booby,* &c.

76. Larus. *Gull.* Beak gibbous under the *apex.*

11 Species.

77. Sterna. *Tern.* Beak subulated, compressed at the *apex.*

7 Species.

75. Colymbus. *Diver*. Beak subulated, somewhat compressed at the sides.
11 Species. *Guillemots, Divers, Grebes, &c.*

4. GRALLÆ.

a. Four-toed.

79. Phœnicopterus. *Fleming*. Beak incurvated as if broken, denticulated. Feet webbed.
1 Species.

80. Platalea. *Spoonbill*. Beak flattened, and wide at the end.
3 Species.

81. Palamedea. *Screamer*. Beak acutely hooked at the end.
2 Species.

82. Mycteria. *Jabiru*. Lower mandible thick and turned upwards.
1 Species.

83. Tantalus. Beak arcuated. Throat pouched.
7 Species.

84. Ardea. *Heron*. Beak straight, sharp-pointed.
26 Species. *Crane, Stork, Herons, Egret, Bittern, &c.*

89. Recurvirostra. *Avoset*. Beak subulated, thin, depressed, and recurved.
1 Species.

86. Scolopax. Beak straight, round, rather obtuse at the end.
18 Species. *Whimbrel, Woodcock, Curlew, Snipe, Jack-snipe, Greenshank, Redshank, Godwits, &c.*

87. Tringa. *Sandpiper*. Beak roundish, obtuse. Hinder toe very short, and placed high.
23 Species. *Ruff, Lapwing, Turr, Grey-plover, &c.*

91. Fulica. *Coot*. Forehead bald from the base of the beak.

7 Species. *Water-hen, Coots*, &c.

92. Parra. Beak and forehead furnished with moveable caruncles.

5 Species.

93. Rallus. *Rail*. Beak somewhat carinated. Body rather compressed.

10 Species.

94. Psophia. *Trumpeter*. Beak somewhat arched, or convex; nostrils ovated.

1 Species.

83. Cancroma. *Boat-bill*. Upper mandible very gibbous.

2 Species.

b. Three-toed; formed for running.

90. Hematopus. *Oyster-catcher*. Beak somewhat compressed, ending in a wedge.

1 Species.

88. Charadrius. *Plover*. Beak roundish, obtuse.

12 Species. *Sea Lark, Dottrel, 2 Plovers, 1 Sanderling*, &c.

95. Otis. *Bustard*. Upper mandible somewhat convex or arched; tongue notched.

4 Species.

96. Struthio. *Ostrich*. Beak conical. Wings unfit for flying.

3 Species. *Ostrich, Cassowary, and Rhea*.

5. GALLINÆ.

97. Didus. *Dodo*. Beak contracted in the middle, rugose; face naked.

1 Species.

98. Pavo. *Peacock*. Head crested with reflex plumage. Beak naked.

3 Species.

99. Meleagris.

99. Meleagris. *Turkey.* Head covered with caruncles.
3 Species.

100. Crax. *Curasso.* *Cera* investing the whole base of the beak.
5 Species.

101. Phasianus. *Pheasant.* Legs and knees naked, smooth.
6 Species.

103. Tetrao. *Grouse.* Naked papillose membrane above the eyes.
20 Species. *Cock of the Wood, Blackcock, Ptarmigan, Partridge, Quail,* &c.

102. Numida, *Guinea-fowl.* Carunculated wattles at the base of the mandibles.
1 Species.

6. PASSERES.

a. With thick beaks. *Crassirostres.*

109. Loxia. Beak conical and ovated.
48 Species. *Cross-bill, Gross-beak, Bullfinch, Greenfinch,* &c.

112. Fringilla. *Chaffinch.* Beak conical and acute.
39 Species. *Brambling, Goldfinch, Canary-bird, Redpoll, Linnet, Sparrow,* &c.

110. Emberiza. *Bunting.* Beak subconical; lower mandible the broader, a little narrowed in, or contracted on the sides.
24 Species. *Snow-bird, Yellow-hammer, Reed-sparrow,* &c.

b. With the upper mandible incurved at the end. *Curvirostres.*

118. Caprimulgus. *Goatsucker.* Beak incurved, depressed, ciliated about the base; nostrils tubular.
2 Species.

117. Hirundo. *Swallow.* Beak incurved, depressed.
12 Species. *Martin, Swift,* &c.

115. Pipra. *Manakin.* Beak incurved, subulated.
13 Species, chiefly *S. American;* a beautiful genus of birds!

c. With

c. With the upper mandible notched near the *apex*. *Emarginatirostres*.

107. Turdus. *Thrush*. Beak notched, subulated, compressed at the base.

28 Species. *Missel-bird, Field-fare, Redwing, Throstle, Ousels, Black-bird*, &c.

108. Ampelis. *Chatterer*. Beak notched, subulated, depressed at the base.

7 Species.

111. Tanagra. *Tanager*. Beak notched, subulated, conic at the base.

24 Species.

113. Muscicapa. *Fly-catcher*. Beak notched, subulated; base ciliated, or bristled.

21 Species.

d. With a straight, slender beak. *Simplicirostres*.

116. Parus. *Titmouse*. Beak subulated. Tongue truncated. *Capistrum* reversed.

14 Species.

114. Motacilla. Beak subulated. Tongue jagged. Claw of the hind toe moderately long.

49 Species. *Nightingale, Hedge-sparrow, Petty-chap, White-throat, Wagtails, Wheat-ear, Whinchat, Stone-chatterer, Black-cap, Red-start, Red-breast, Wrens*, &c.

105. Alauda. *Lark*. Beak subulated. Tongue bifid. Claw of the hind toe elongated.

11 Species.

106. Sturnus. *Starling*. Beak subulated; *apex* depressed. marginated.

6 Species.

104. Columba. *Pigeon*. Beak somewhat arched, or convex. Nostrils gibbous, almost obliterated by a membrane.

40 Species. *Pigeons, Doves*, &c.

The *specific* characters in the class of birds are deduced from a great

a great variety of particulars. In several (as in the *Falcon* genus) the colour of the *cera*, or naked tunic that surrounds the basis of the beak, and the colour of the legs assist in distinguishing the species. The *colour* of the bird is subject to great variation in different countries, as well as in the same country at different seasons of the year, which is more particularly seen in the arctic regions; not to mention that of the sexes in almost all kinds. Our author therefore does not trust to this, wherever a more permanent character can be found. It must, however, be confessed that, in too many instances, it is necessary to trust entirely to this distinction, unstable as it is. The form of the *tail*, as it happens to be *even*, *cuneated*, or *forked*, is an excellent and firm character. In the *Parrot* genus, its *length*, as less or greater than that of the body, is of much service. In others, the colour of the *beak*, a naked or crested *head*, contributes to form the note of distinction. Finally, nature has stamped upon others some peculiarity, which points them out immediately; as the receptacle of the lower mandible in the *Pelican;* two long tail-feathers in the *Tropic-bird;* the direction of the mandibles in the *Cross-beak*, &c. &c. Among the common marks, none more frequently occur than the differences of colour in the *quill-feathers*, and those of the *tail.*

This class comprehends upwards of 930 subjects. It has, since our author's time, acquired large accessions, with some improvements in point of arrangement, from the descriptions of Pennant* and others, but more particularly from Dr. Latham†,

* *Genera of Birds.* Edinb. 1773. 8vo. Lond. 1781. (with 16 plates) 4to.

† *A General Synopsis of Birds.* London 1781—1802. 4to. 3 Vols. in 6 Parts, besides two supplementary volumes; with plates.

Index Ornithologicus. Lond. 1790. 4to. 2 Vol. præter Supplementum.

whose

whose works may be considered as the most scientific of any, in this branch, that have appeared subsequently to the 12th edition of the SYSTEMA NATURÆ. Of these Professor Gmelin has availed himself, so as to increase the number of *species* in this class to nearly 2600, and he has formed 9 new *genera*, which we shall here notice.

(Order 2. PICÆ.)

Glaucopis. Beak incurved, arched. *Tongue* serrated, ciliated.
1 Species (*the cinereous Wattle-bird*, of Latham).

This comes under Linnæus's *first* division of the order.

(Order 3. ANSERES.)

Aptenodyta. Beak straight, narrow, sulcated on the sides.
11 Species, most of them *Penguins*, originally described by Cook, Forster, and Sonnerat, and allied to the Linnean genus of *Diomedea*.

(Order 4. GRALLÆ.)

In the four-footed division.

Corrira. Beak straight, narrow.
1 Species only, native of Italy.

Vaginalis. *Sheath-bill.* Beak thick, somewhat convex: the *apex* of the upper mandible covered by a horny sheath.
1 Species, discovered in New Zealand.

Scopus. Beak thick, compressed. Nostrils linear, oblique.
1 Species, the Senegal *Ombrette*, of Buffon.

Glareola. Beak short, straight, uncinated at the *apex*. Nostrils linear, oblique.
3 Species, called by Latham *Pratincoles*, the first being the *Hirundo Pratincola*, of Linnæus.

(Order 5. GALLINÆ.)

Penelope. Head pennated; beak naked.
6 Species. *Horned Turkey, Guan, Yacou, Marail*, &c.

This genus is formed out of the *Meleagris* of Linnæus.

(Order 6. PASSERES).

Colius. *Coly*. Beak thick, convex on the upper part, narrowed underneath.

5 Species, one of them described by Linnæus under the name of *Loxia Colius*.

Phytotoma. Beak conical, straight, serrated.

1 Species, very scarce, and described only by Molina. An inhabitant of Chili.

The above two *genera* belong to the Linnean division of *Crassirostres*.

Dr. Latham has ventured so far to alter the Linnean arrangement of birds as to constitute 4 new orders, of which perhaps it may be thought by most modern ornithologists very fairly to admit. He has separated the COLUMBÆ from the order of PASSERES, raising them from a genus into an order of their own. The Linnean *genera* of *Didus* and *Struthio*, with two species of the latter, *viz. Casuarius* and *Rhea*, form 4 *genera* of his 6th order, which he has denominated STRUTHIONES. The 8th order, called PINNATIPEDES, comprehends the 3 *genera* of *Phalaropus*, *Fulica*, and *Podiceps*, before included among the GRALLÆ. The 9th, or PALMIPEDES, has 2 subdivisions, formed on the *longer* or *shorter* structure of the feet; in the first of these stand the *Recurvirostra*, *Corrira*, and *Phœnicopterus*, separated from the GRALLÆ; and in the second, all the *genera* of the Linnean order of ANSERES, besides a new one called *Uria*, to which are allotted 4 species of *Guillemot*. This ornithologist, profiting by the valuable descriptions of Shaw*, Vaillant†, and Daudin‡, has increased the number of

* *Naturalist's Miscellany*, and other works.

† *Traité elementaire et complet d'Ornithologie*. Paris 1800. 4to. avec planches.

‡ *Histoire Naturelle des Oiseaux d'Afrique*. Paris 1799. 4to.

species

species to considerably more than 2500, of which indeed 500 at least were first described by himself.

Class 3. AMPHIBIA.

This class is so called by Linnæus, not because all the subjects of it are (strictly speaking) capable of living either in air or water, but principally from their power of suspending or performing the function of respiration, in a more arbitrary manner than other animals.

In reducing these creatures into a regular arrangement, our author had to strike out a plan entirely his own, for, except in a few of the *genera*, no systematic writer had preceded him. Seba's work afforded him a considerable number of figures, to which, as well as to Catesby's, he has made copious references, especially for the elucidation of the serpent tribe, but the descriptions given by these authors were of very limited use to him.—He has divided this class into 4 orders:

1. Reptiles. *Reptiles.* Furnished with feet, and breathing through the mouth.
2. Serpentes. *Serpents.* Destitute of feet; breathing through the mouth.
3. Meantes. *Gliders.* Breathing by means of gills and lungs together. Feet brachiated and furnished with claws*.
4. Nantes. *Swimming Amphibia.* Furnished with fins; breathing by means of lateral gills.

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* The only genus under this order is the *Siren*, (*Mud-Inguana*, of Carolina, described in the *Philosophical Transactions*, Vol. 56. p. 189.) It is first mentioned by Linnæus among the *Addenda* to his 1st volume of the *Systema*. More will be said of this singular animal in a subsequent page.

Abbreviated Generic Characters.

Order 1. REPTILES.

119. Testudo. *Tortoise.* Body protected by a shell.

15 Species. *Tortoises and Turtles.*

121. Draco. *Dragon.* Body winged.

2 Species.

122. Lacerta. *Lizard.* Body naked, furnished with a tail.

a. With a compressed tail. *Crocodile,* &c.

b. With a verticillated tail. *Common Lizards,* &c.

c. With a round imbricated tail, shorter than the body. *Chamæleon, Gecko, Skink,* &c.

d. With a round imbricated tail, longer than the body. *Basilisk, Inguana,* &c.

e. With four toes on the fore feet; body smooth and naked *Water-Eft* or *Newt, Salamander,* &c.

48 Species.

120. Rana. *Frog.* Body naked, without a tail.

17 Species. *Frogs and Toads.*

2. SERPENTES.

123. Crotalus. *Rattle-snake.* Body and tail covered underneath with small shields; tail terminating in a horny rattle.

5 Species, all *American* and venomous.

124. Boa. *Serpent.* Body and tail covered underneath with small shields; no rattle.

10 Species, not furnished with venomous fangs.

125. Coluber. *Viper.* Body covered underneath with small shields; tail with scales.

97 Species, of which 18 are known to have venomous fangs.

126. Anguis. *Snake.* Body and tail covered underneath with scales.

16 Species. *Snakes, Slow-worm,* &c.

127. Amphisbæna. *Annulated Snake.* Body and tail composed of annulated segments.

2 Species.

128. Cecilia. *Tentaculated Snake.* Body and tail wrinkled on the sides.
2 Species.

3. MEANTES*.

4. NANTES.

a. Several spiracles on each side.

129. Petromyzon. *Lamprey.* Spiracles 7, lateral.
3 Species.

130. Raia. *Ray.* Spiracles 5, underneath.
9 Species. *Torpedo, Skaite, Rays,* &c.

131. Squalus. *Shark,* Spiracles 5, lateral.
16 Species.

132. Chimæra. Spiracle 1, dividing into 4 within.
2 Species.

b. Spiracle solitary on each side.

133. Lophius. *Toad-fish.* Ventral fins 2. Mouth furnished with teeth.
3 Species.

134. Acipenser. *Sturgeon.* Ventral fins 2. Mouth without teeth.
3 Species.

139. Cyclopterus. *Lump-fish.* Ventral fins 2, uniting nearly into one orbicular fin.
3 Species.

135. Balistes. *Old-wife fish.* Ventral fin 1, placed like a keel.
8 Species.

136. Ostracion. *Bonyskin-fish.* Ventral fins none. Body covered with a bony coat.
7 Species.

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* See note in p. 195.

137. Tetrodon.

137. Tetrodon. *Sun-fish.* Ventral fins none. Belly rough, or muricated.
7 Species.

138. Diodon. *Porcupine-fish.* Ventral fins none. Body set with acute moveable spines.
2 Species.

140. Centriscus. *Trumpet-fish.* Ventral fins 10. A long moveable spine near the tail.
2 Species.

141. Syngnathus. *Pipe-fish.* Ventral fins none. Body articulated.
7 Species. *Needle-fish, Sea-horse,* &c.

142. Pegasus. *Dragon-fish.* Ventral fins 2. Beak ciliated or denticulated.
3 Species.

In the order of REPTILES, the specific characters of the *Testudo* genus are deduced principally from the difference in the *shells* and the *feet*, (which latter are, in the Turtles*, pinniform, and in the *Tortoises*, digitated); in the *Lacerta* genus, from the *head, tail, toes*, and various other parts; and in the *Rana*, from the diversity in the *make of the body* and number of the *claws* on the fore or hind feet. With respect to the SERPENTES, the specific distinctions have ever been matter of great difficulty to naturalists, as they were commonly taken from the *colour*, which is subject to an almost

* Later observation, however, has proved the apparent number of claws, or projecting extremities of the feet of *Turtles* to be no *certain* criterion of the species, but, on the contrary, to vary in such a manner as to contradict the Linnean characters. The reader may consult Schoepff's *Historia Testudinum*, (Erlang. 1792. 4to.) The *Tortoises* also are subject to the same variation. Dr. Shaw considers the shape, pattern, and colours of the shell, the form of the head, &c., as the best grounds of distinction. (See *General Zoology*, Vol. 3. Part 1.)

infinite

infinite variation. Hence it has happened that Seba, depending on the colours alone, has, in the opinion of our author, figured *Boa Constrictor* (the Gigantic Serpent) ten times, as so many distinct species; and *Coluber Naja* (the Hooded Viper) fourteen. Linnæus discovered what he considered a much more certain and permanent note upon which to found his specific characters, and which was first exemplified in the description of the *Amphibia Gyllenborgiana**; he retained it in all his works, sensible, however, that it is liable to failure. This note is the number of the small *shields*, and *scales*, or the *rings* and *rugæ* of the belly and tail, and the proportion these bear to each other in the different species; for example, in our *common Viper* the *shields* of the *belly* are usually about 146, and the *scales* of the *tail* (that is, all below the *anus*) about 40; the *shields* in our *common Snake* about 170, and the *scales* about 60. Experience has shown that, though often highly useful in the investigation of such animals, even this character is too uncertain to be permitted to stand as an established specific test. The *pattern*, or general distribution of markings in each species, is on the whole more constant, and has accordingly been much more dwelt upon in modern descriptions. The relative size of the head also, the length of the body and tail, the size and nature of the scales, and the shape of the scales in different parts of the animal, are often found to be pretty certain marks.

The order of MEANTES, which, as has been before remarked, was made solely for the genus *Siren*, has, together with that of NANTES, been thrown out of the class AMPHIBIA by most systematical writers subsequent to Linnæus. Though

* See *Amœn. Acad.* Vol. 1.

possessed

possessed of lungs, however, it is far from being yet determined whether this singular genus be the *larva* of a *Lacerta*, or a perfect animal. Dr. Shaw places it as a sort of anomaly, not referring it positively to any class. But, as the object of a general system is to include every known creature in the place which the existing state of science seems on the whole to render most eligible for it, and as we are unacquainted with any species of *fish** to which the genus bears the smallest resemblance, it may fairly be asked why the Linnean order of MEANTES should not still be retained.

The NANTES have, with propriety, been transferred to another class, in which they were originally included by Artedi, and the character of which depends on the respiration being carried on by gills. The specific characters are very short, but very various in the different *genera*, as to the parts of the animal from which they are deduced; in the *Petromyzon* and *Raia*, from the *mouth*, *fins*, *teeth*, &c. (in the *Raia* very much from the body itself); in the *Squalus*, from a variety of particulars; in the *Acipenser*, from the *cirrhi*, or beard, and the dorsal *shields*; in the *Balistes*, from the *fins* and *tail*; in the *Ostracion*, from the differently *angulated form* of the *body*; in the *Tetrodon*, from differences in the body chiefly; and in the remaining *genera*, from the form of the body, and the differences in the fins.

Linnæus has described upwards of 290 subjects in this part of the system, which, however, may now be considered as contain-

* In the Gmelinian edition of Linnæus, the *Siren* described by that author is placed (among the PISCES) in the genus *Muræna!* Gmelin seems to have been misled by an opinion of Camper, that the creature had no lungs,—an opinion proved since to be perfectly erroneous.

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ing above 50 more, exclusively of the orders of MEANTES and NANTES.

Dr. Shaw enumerates still more than Gmelin, the species contained in the *General Zoology* amounting to very nearly 400.

Among the modern writers who have elucidated with success this class of animals, we ought to mention Schoepff*, Schneider†, and Russell‡, to whom, almost exclusively, we are to ascribe the reformation of description now introduced.

Class 4. PISCES.

In the earlier editions of the *Systema Naturæ*, our author, in the distribution of fishes, had followed the method of his friend and fellow-collegian Artedi, whose *Ichthyology* § he had published during his residence in Holland, in 1738. This method, which included the Cetaceous order (now among the MAMMALIA) and the NANTES (now referred to the AMPHIBIA), was established on the structure, or rather *situation*, of the *tail* in the *Cete*, and in other orders, on the difference of the *gills*, and of the rays of the *fins*, whether cartilaginous or bony. In the two last editions, however, Linnæus adopted a disposition of his own. After having dismissed the Cetaceous order to his 1st class, and the CHONDROPTERYGII (or cartilaginous fishes) and the BRANCHIOSTEGI to the 2nd, he formed 4 orders of the *bony* fishes (respiring by means of gills) from the *situation* of the *ventral* fins, which he analogically considers as the *feet* of the

* See note in p. 198.

† *Allegemeine naturgeschichte der Schildkröten.* Leipzig 1783. 8vo.
Historia Amphibiorum. Jena. 2 Fasc. 1799—1801. 8vo.

‡ *Account of Indian Serpents.* Lond. 1796. Large folio, with plates.

§ See p. 73.

animal, according as they are placed either *before*, *under*, or *behind* the *pectoral* or gill fins, or (as in one order) wanting the *ventral* fins.

1. APODES. Destitute of ventral fins.
2. JUGULARES. Ventral fins placed before the pectoral fins.
3. THORACICI. Ventral fins placed underneath the pectoral fins.
4. ABDOMINALES. Ventral fins placed behind the pectoral fins.

Abbreviated Generic Characters.

Order 1. APODES.

143. Muræna. *Eel.* Apertures of the gills on the sides of the chest.
7 Species.

144. Gymnotus. Back destitute of any fin.
5 Species. *Torpedo*, &c.

145. Trichiurus. *Needle-tail.* Tail without any fin.
1 Species.

146. Anarhichas. *Wolf-fish.* Teeth rounded.
1 Species.

147. Ammodytes. *Sand-eel.* Head more slender than the body.
1 Species.

148. Ophidium. *Snake-fish.* Body ensiform.
2 Species.

149. Stromateus. *Pampus.* Body ovated.
2 Species.

150. Xiphias. *Sword-fish.* Upper mandible terminating in an ensiform beak.
1 Species.

2. JUGULARES.

151. Callionymus. *Dragonet.* Spiracles on the back of the neck.
3 Species.

152. Uranoscopus. *Star-gazer.* Mouth flat, opening upwards.
1 Species.

153. Trachinus. *Weever.* *Anus* near the breast.
1 Species.

154. Gadus. *Cod.* Pectoral fins slender, and ending in a point.
a. With 3 dorsal fins, and the jaw bearded. *Haddock, Torsk, Bib, Whiting,* &c.
b. With 3 dorsal fins; jaw not bearded. *Cole-fish, Whiting-pollack,* &c.
c. With 2 dorsal fins only. *Hake, Ling, Burbot.*
d. With 1 dorsal fin. *Mediterranean.*
Total 17 Species.

155. Blennius. *Blenny.* Ventral fins of 2 rays, not prickly.
13 Species.

3. THORACICI.

156. Cepola. Mouth opening upwards. Body ensiform.
2 Species.

157. Echeneis. *Sucking-fish.* Top of the head flat, transversely sulcated.
2 Species.

158. Coryphæna. Anterior part of the head very obtuse or truncated.
12 Species. *River-dolphin, Parrot-fish,* &c.

159. Gobius. *Goby.* Ventral fins united into one ovated fin.
8 Species.

160. Cottus. *Bull-head.* Head broader than the body.
6 Species. *Pogge, Feather-lasher, Miller's-thumb,* &c.

161. Scorpæna. Head set with prickles or beards.
3 Species.

162. Zeus. *Doree.* Upper lip arched by means of a transverse membrane.
4 Species.

163. Pleuronectes. *Plaise.* Both eyes on one side of the head.
a. On the right side. *Holibut, Plaise, Flounder, Dab, Sole.*
b. On the left side. *Pearl-fish, Turbot,* &c.
Total 17 Species.

164 Chætodon. Teeth like bristles, very numerous and flexile.
23 Species. *Pilot-fish,* &c.

165. Sparus. Teeth strong; fore-teeth very sharp, and the grinders very obtuse.
26 Species. *Gilt-head, Sea-bream,* &c.

166. Labrus. *Wrasse.* Connecting membrane of the dorsal fin extending beyond the extremity of each ray, in the form of filaments.
41 Species.

167. Sciæna. A groove in the back to receive the dorsal fin.
5 Species.

168. Perca. *Perch.* The gill-covers jagged, or serrated.
36 Species.

169. Gasterosteus. *Stickle-back.* Tail carinated on each side. Spines on the back distinct.
11 Species.

170. Scomber. *Mackarel.* Tail carinated on each side; spurious fins, in most species, near the tail.
10 Species.

171. Mullus.

171. Mullus. *Surmullet*. Scales of the body and head deciduous.

3 Species.

172. Trigla. *Gurnard*. Distinct appendages resembling fingers near the pectoral fins.

9 Species.

4. ABDOMINALES.

173. Cobitis. *Loche*. Body nearly of an equal width with the tail.

5 Species.

174. Amia. *Mud-fish*. Head naked, bony, and rough.

1 Species.

175. Silurus. *Skeat*. First ray of the dorsal fin and of the pectoral fins dentated.

21 Species.

176. Teuthis. *Liver-fish*. Head anteriorly truncated.

2 Species.

177. Loricaria. *Helmet-fish*. Body invested with a shelly crust, set with points.

2 Species.

178. Salmo. *Salmon*. Posterior dorsal fin adipose.

a. *Trouts*; with a variegated body. *Salmon, Salmon-trout, Char*, &c.

b. *Smelts*; with a dorsal and anal fin opposite.

c. With teeth scarcely to be seen. *Gwiniard, Umber, Grayling*, &c.

d. With 4 branchiostegous rays only.

Total 29 Species.

179. Fistularia. *Pipe-fish*. Very long cylindrical beak, with the mouth at the end.

2 Species.

180. Esox. *Pike*. Lower jaw the longer, punctated.

9 Species.

181. Elops.

181. Elops. *Scar-fish.* Branchiostegous membrane double; the exterior one the smaller.
1 Species.

182. Argentina. *Argentine.* Vent very near the tail.
2 Species.

183. Atherina. *Atherine.* Lateral band or line silvery.
2 Species.

184. Mugil. *Mullet.* Lower jaw carinated inwards.
2 Species.

185. Mormyrus. Branchial aperture linear, without covers.
2 Species.

186. Exocoetus. *Flying-fish.* Pectoral fins nearly the length of the body.
2 Species.

187. Polynemus. *Finger-fish.* Distinct appendages, like fingers, near the pectoral fins.
3 Species.

188. Clupea. Belly carinated, and serrated.
11 Species. *Herring, Pilchard, Sprat, Shad, Anchovy,* &c.

189. Cyprinus. *Carp.* Branchiostegous membrane with 3 rays.
a. Bearded (or with a cirrhose jaw). *Barbel, Carp, Gudgeon, Tench.*
b. Tail-fin entire. *Carasse, Chub.*
c. Tail-fin trifid. *Gold-fish.*
d. Tail-fin bifid. *Minnow, Dace, Roach, Rud, Bleak, Bream.*
Total 31 Species.

Hence the number of fishes described in Linnæus's 12th edition of the *Systema* is about 400. But very great additions have been made to this class by later discoveries, so that in the 13th it amounts to nearly 750; in which number, however, it must be remembered that the order of NANTES, formerly contained among the AMPHIBIA, is included.

Besides

Besides having removed Linnæus's order of NANTES from the AMPHIBIA into this class, Professor Gmelin has in some other respects added to its divisions. To the APODES are added two new *genera*, and the same number to the THORACICI. Among the JUGULARES, too, we find a genus called *Kurtus* introduced. These new *genera* are thus characterized, *viz.*

(Order 1. APODES.)

Sternoptyx. Body ovated, naked, with a plicated breast.

1 Species.

Leptocephalus. No pectoral fins.

1 Species, first discovered near Holyhead.

(Order 2. JUGULARES.)

Kurtus. Back elevated.

1 Species, originally described by Bloch.

(Order 3. THORACICI.)

Scarus. No teeth. Jaw denticulated on the edge.

7 Species, 6 of them discovered by Forskåhl, by whose travels in Arabia great additions were made to this class.

Centrogaster. Tail carinated at the sides. Ventral fins connected by a membrane; the 4 first rays spinose, the other 6 without spines.

4 Species.

Dr. Shaw's *General Zoology* contains a very remarkable new genus, which was originally described in the Linnean Transactions, and which he has thus defined, *viz.*

(Order 1.)

Stylephorus. Eyes pedunculated, standing on a short thick cylinder. Snout lengthened, directed upwards, retractile towards the head by means of a membrane. *Branchiæ* 3 pair

pair beneath the throat. Pectoral fins small: dorsal the length of the back; caudal short, with spiny rays. Body very long, compressed.

Of this extraordinary animal only one species is at present known; it is a native of the West-Indian seas.

There are many other new *genera* introduced in the above-mentioned work, on the authority of the laborious Bloch*, who, both as a describer and as an ichniographist, is certainly entitled to very high estimation, and who has given additional stability to the Linnean principles of arrangement, by making the situation of the fins the foundation of his orders.

We have mentioned before, that Artedi's distinctions of BRANCHIOSTEGI and CHONDROPTERYGII, which two orders Linnæus had himself adopted in all the editions of the *Systema* anterior to the 10th, are again received into this class, on the authority of anatomical proofs that the species included under those denominations do not breathe by lungs.

Great pains were taken by Artedi, and afterwards by Gronovius and our author, to distinguish the *species* of fishes by the *number* of the *rays* in the fins. Though, from repeated observations, the number is found to agree, in many, very remarkably, yet, in others, it varies so much as not to form a firm character. In the last edition of the *Systema*, the specific characters are taken from a great variety of particulars, among which, however, the number of the pinnal rays is frequently the most distinctive; and, whether so or not, it is subjoined to most species, and usually as they have been observed by different authors. The

* See his "*Systema Ichthyologiæ iconibus* 110 *illustratum* (*post obitum auctoris opus absoluit correxit, interpolavit* Jo. GOTTLIEB SCHNEIDER)" Berol. 1801. 8vo.

form of the *tail*, the *cirrhi*, or beard, the *length* of the *jaw*, the *spots* and *lines* on the body, &c. all conspire in their turn to the same end.

Class 5. INSECTA.

This branch of natural history, before the time of Linnæus, was nearly without method; for though the œconomy, structure, and *metamorphoses* of insects had been elucidated by various authors, and numberless species had been accurately figured and described, yet no one had constituted a general arrangement that enabled the student to investigate them with facility.

The class INSECTA comprehends 7 orders, founded mostly on the differences observable in the number and texture of the wings.

Order 1. COLEOPTERA. Wings 4; the upper 2 crustaceous, divided by a straight suture.

2. HEMIPTERA. Wings 4; the upper 2 semicrustaceous, incumbent on each other at the inner edges.

3. LEPIDOPTERA. Wings 4; all of them having imbricated scales.

4. NEUROPTERA.	Wings 4; all of them membranaceous.	Tail without a sting.
5. HYMENOPTERA.		Tail with a sting.

6. DIPTERA. Wings 2; each having a balance or club behind.

7. APTERA. No wings.

In forming the *genera* under each of these orders, the *antennæ* hold a principal rank, especially in the COLEOPTERA, but the author does not trust to them alone. The *elytra*, or crustaceous cases, the head, the *rostrum*, or beak, the *thorax*, and tail are,

in almost every genus of this order, altogether or partially called in to assist in forming the character. In the HEMIPTERA, the *rostrum* is of primary use, but here also the *antennæ*, wings, and feet, are introduced. The *antennæ* and wings form the characters of the LEPIDOPTERA, as do the mouth, wings, and tail of the NEUROPTERA. In the HYMENOPTERA, Linnæus was directed by the sting, as well as the mouth and wings; but in the DIPTERA, exclusively by the mouth or *proboscis*. In the last order, or APTERA, various parts of the insect are made subservient to generic distinction—the eyes, tail, number of feet, &c. &c.

Abbreviated Generic Characters.

Order 1. COLEOPTERA.

a. *Antennæ* club-shaped, the thick part outwards.

189. Scarabæus. *Chafer.* *Antennæ* with a fissile club. Fore legs dentated.
87 Species.

190. Lucanus. *Stag-beetle.* *Antennæ* with a flattened club: the broader side fissile.
7 Species.

191. Dermestes. *Leather-eater.* *Antennæ* with a perfoliated club. Head bent under the *thorax*.
30 Species.

193. Hister. *Antennæ* with a solid club. Head retractile within the *thorax*.
6 Species.

195. Byrrhus. *Antennæ* with a solid, ovated club.
5 Species.

194. Gyrinus. *Antennæ* somewhat rigid. Four eyes.
2 Species.

203. Attelabus. Hind part of the head attenuated.
13 Species.

202. Curculio.

202. Curculio. *Antennæ* insident. Snout horny.
95 Species.

196. Silpha. *Thorax* and upper wings or *elytra* marginated.
35 Species.

198. Coccinella. *Antennæ* with an obtuse club. *Palpi*, or feelers, with a truncated club.
49 Species. *Lady-Cow*, &c.

b. *Antennæ* filiform.

201. Bruchus. *Antennæ* filiform, thicker outwards.
7 Species.

197. Cassida. Body ovated. *Elytra* marginated. Head covered with a corselet.
31 Species.

192. Ptinus. *Thorax* receiving the head. Last joints of the *antennæ* the longest.
6 Species.

199. Chrysomela. Body ovated, and not marginated.
122 Species.

200. Hispa. *Antennæ* stretched forwards, approximated, spindle-shaped.
4 Species.

215. Meloe. *Thorax* roundish. Head gibbous, bent inwards.
Blistering-fly, &c. 16 Species.

214. Tenebrio. *Thorax* marginated. Head protruded. Body oblong.
33 Species.

207. Lampyris. *Glow-worm*. *Elytra* flexible. Corselet sheltering and receiving the head.
18 Species.

216. Mordella. *Laminæ* at the base of the *abdomen*. Head bent inwards.
6 Species.

217. Staphylinus. *Rove-beetle. Elytra* curtailed, covering the wings. Tail with two vesicles.
26 Species.

c. *Antennæ* setaceous.

204. Cerambyx. *Thorax* with tubercles on the sides.
83 Species.

205. Leptura. *Elytra* attenuated at the *apex*. *Thorax* roundish.
Great Wasp-beetle, &c. 25 Species.

208. Cantharis. *Elytra* flexible. Sides of the abdomen papillous and folded.
27 Species.

210. Elater. Under part of the *thorax* terminating in a point lodged in a pore, or cavity, of the *abdomen*.
38 Species.

210. Cicindela. *Sparkler*. Jaws prominent, dentated. Eyes prominent.
13 Species.

211. Buprestis. Head half concealed within the *thorax*.
Cow-burner, &c. 29 Species.

212. Dytiscus. *Boat-beetle*. Hind feet fringed, formed for swimming.
23 Species.

213. Carabus. *Thorax* somewhat heart-shaped, truncated posteriorly.
43 Species.

206. Necydalis. *Elytra* curtailed. Wings naked.
11 Species.

218. Forficula. *Ear-wig*. *Elytra* curtailed. Wings covered. Tail forcipated.
2 Species.

2. HEMIPTERA.

219. Blatta. Mouth with jaws. Wings coriaceous, flat. Feet formed for running.

10 Species.

220. Mantis. Mouth with jaws. Fore feet serrated; with a single claw.

14 Species.

221. Gryllus. *Cricket*. Mouth with jaws. Hind feet formed for leaping.

* ACRIDA. Head longer than the *thorax*. *Antennæ* ensiform.

** BULLA. *Thorax* carinated. *Antennæ* shorter than the *thorax*, filiform.

*** ACHETA. Tail with two bristles.

Mole Cricket, Common Cricket, Field Cricket, &c.

**** TETTIGONIA. Tail of the female ensiferous. *Antennæ* bristly.

Grasshopper, &c.

***** LOCUSTA. Tail simple. *Antennæ* filiform. *Locust-tribe.*

In the whole 61 Species.

222. Fulgora. *Lantern-carrier*. Beak bent inwards. Forehead lengthened out, empty. *Antennæ* capitated.

9 Species.

223. Cicada. Beak bent inwards. Hind feet made for leaping.

* FOLIACEÆ. With a compressed, membranaceous *thorax*, larger than the body.

** CRUCIATÆ. With the *thorax* horned on each side.

*** MANNIFERÆ, not leaping.

**** RANATRÆ, leaping.

***** DEFLEXÆ. With the wings deflexed over the sides.

51 Species.

224. Notonecta. Beak bent inwards. Hind feet formed for swimming (fringed).

3 Species.

225. Nepa.

225. Nepa. *Water-Scorpion.* Beak turned inwards. Fore feet clawed.

7 Species.

226. Cimex. *Bug.* Beak bent inwards. Feet formed for running.

* a * APTEROUS. *Common bug.*
* b * SCUTELLATED. *Scutellum* the length of the *abdomen.*
* c * COLEOPTRATED. *Elytra* almost wholly coriaceous.
* d * MEMBRANACEOUS and much depressed, like a leaf.
* e * THORNY. *Thorax* armed with a thorn on each side.
* f * ROUNDED, or ovated; *thorax* without thorns.
* g * BRISTLE-HORNED. *Antennæ* bristly at the *apex.*
* h * OBLONG.
* i * *Antennæ* bristly, the length of the body.
* k * THORN-FOOTED. *Tibiæ* marked with thorns.
* l * LINEAR. Body narrow.

Total 121 Species.

227 Aphis. *Blighter.* Beak bent inwards. *Abdomen* with two horns.

33 Species.

228. Chermes. Beak on the breast. Hind feet formed for leaping.

17 Species.

229. Coccus. Beak on the breast. *Abdomen* of the males bristly on the hinder part.

222 Species.

230. Thrips. Beak obsolete. Wings lying on the reflexile *abdomen.*

5 Species.

3. LEPIDOPTERA.

231. Papilio. *Butterfly. Antennæ* thicker towards the ends. Wings erect.

This genus being extremely numerous, Linnæus divided it into 6 *Phalanges* (as he calls them) under the names of

a. EQUITES, or *Knights* (which have the anterior wings longer from the posterior angle to the tip than to the base; and the *antennæ* of this tribe are generally filiform).
Trojan (with blood-coloured spots on the breast, and generally black).
Grecian (with blood-coloured breasts, and ocellated at the angle of the *anus*.
wings without bands.
wings with bands.
b. HELICONII (with wings narrow and very entire, often denudated; the anterior oblong, the posterior very short).
c. DANAI (with wings very entire).
White (with white wings).
Festive (with variegated wings).
d. NYMPHALES (with denticulated wings).
Gemmated (with ocellated wings).
all the wings ocellated).
the anterior only).
the posterior only).
Phalerated (wings not ocellated).
e. PLEBEII (the *larva* often contracted).
Rural (wings with dull spots).
Urban (wings frequently having pellucid spots on them).
Total 273 Species.

232. Sphinx. *Hawk-moth.* *Antennæ* thicker in the middle.
47 Species.

233. Phalæna. *Moth.* *Antennæ* thicker towards the base.

This genus also, which is almost twice as numerous as the *Papilio*, has been divided, for the sake of more commodious investigation, as follows, *viz.*

1. ATTACI. Wings patulous and inclined.
Pectinicornes. Without tongues.
Spiral-tongued.
Seticornes. Spiral-tongued.
2. BOMBYCES. Wings incumbent; *antennæ* pectinated.
Elingues. Tongue not obviously spiral.
Wings reversed.
deflexed.
Spirilingues. Tongue spiral.
smooth.
cristated on the back.

3. NOCTUÆ.

3. NOCTUÆ. Wings incumbent; *antennæ* bristly, not pectinated.
Elingues.
Spirilingues.
4. GEOMETRÆ. Wings expanded, horizontal, quiescent.
Pectinicornes.
Seticornes.
With rounded wings.
5. TORTRICES. Wings very obtuse, and with the outer edge curved.
6. PYRALIDES. Wings connivent, so as to form a deltoid appearance.
7. TINEÆ. Wings convoluted almost into a cylindrical shape. Forehead prominent.
8. ALUCITÆ. Wings digitated, or cut, almost to the very base.
In all 460 Species.

4. NEUROPTERA.

234. Libellula. *Dragon-fly.* Tail forcipated. Mouth with several jaws. Wings extended.
21 Species.

235. Ephemera. *May-fly.* Tail with 2 or 3 bristles. Mouth without teeth. Wings erect.
11 Species.

238. Myrmeleon. Tail forcipated. Mouth with 2 teeth. Wings deflexed.
5 Species.

236. Phryganea. Tail simple. Mouth without teeth. Wings deflexed.
24 Species. *Spring-fly*, &c.

237. Hemerobius. Tail simple. Mouth with 2 teeth. Wings deflexed.
15 Species.

239. Panorpa. Tail clawed. Mouth beaked. Wings incumbent.
4 Species.

240. Raphidia. Tail with a long flexible bristle. Mouth with 2 teeth. Wings deflexed.
3 Species.

5. HYMENOPTERA.

5. HYMENOPTERA.

241. Cynips. Sting spiral.
19 Species.

242. Tenthredo. *Saw-fly.* Sting serrated, with 2 valves.
55 Species.

243. Sirex. Sting serrated, under the terminal spine of the *abdomen*.
7 Species.

244. Ichneumon. Sting projecting, three-forked.
77 Species.

245. Sphex. Sting pointed. Wings flat. Mouth without a tongue.
38 Species. *Ichneumon-Wasp*, &c.

246. Chrysis. *Gold-fly.* Sting pointed. *Abdomen* arched underneath.
7 Species.

247. Vespa. *Wasp.* Sting pointed. Upper wings folded.
28 Species.

248. Apis. *Bee.* Sting pointed. Tongue inflexed.
55 Species.

249. Formica. *Ant.* Sting obsolete. Neuters without wings.
18 Species.

250. Mutilla. Sting pointed. Neuters without wings.
10 Species.

6. DIPTERA.

251. Œstrus. *Bott.* Mouth shut, or wanting.
5 Species.

252. Tipula. Mouth with lateral lips. *Palpi* 4.
58 Species. *Long-legs*, &c.

253. Musca. *Fly.* Mouth with a *proboscis*, but no teeth.
129 Species. *Chamæmeleon-fly*, *Flesh-fly*, &c.

254. Tabanus. Mouth with a *proboscis*, and connivent teeth.
19 Species. *Stinging-fly*, &c.

255. Culex. *Gnat.* Mouth with a siphon-like nutant beak, or snout. No *Stemmata.*
7 Species.

256. Empis. Mouth with an inflexed beak.
5 Species.

257. Conops. Mouth with a lengthened, geniculated beak.
13 Species.

258. Asilus. Mouth with a lengthened, awl-shaped beak.
17 Species.

259. Bombylius. Mouth with a lengthened, bristly beak.
5 Species.

260. Hippobosca. *Horse-fly.* Mouth with a nutant, very short beak. No *Stemmata.*
4 Species.

7. APTERA.

a. Feet 6. Head separate from the *thorax.*

261. Lepisma. Tail with projecting bristles.
3 Species.

262. Podura. Tail forked, inflexed, leaping.
14 Species.

263. Termes. *Death-watch.* Mouth with 2 jaws.
3 Species.

264. Pediculus. *Louse.* Mouth containing a sting.
40 Species.

265. Pulex. *Flea.* Mouth having an inflexed beak, with a sting. Feet formed for leaping.
2 Species.

b. Feet from 8 to 14. Head and *thorax* united.

266. Acarus. *Tick.* Eyes 2. Feet 4. *Palpi.*
35 Species.

267. Phalangium. Eyes 4. Feet 8. *Palpi* with claws.
9 Species.

268. Aranea. *Spider.* Eyes 8. Feet 8. *Palpi* with clubs.
47 Species. *Tarantula,* &c.

269. Scorpio.

269. Scorpio. *Scorpion.* Eyes 8. Feet 8. *Palpi* with claws.
6 Species.

270. Cancer. *Crab.* Eyes 2. Feet 10;—the foremost with claws.
87 Species. *Lobster, Shrimp, Prawn, Crawfish, Common Crab,* &c.

271. Monoculus. Eyes 2. Feet 12;—10 of these with claws.
9 Species.

272. Oniscus. Eyes. 2. Feet 14.
15 Species. *Wood-louse,* &c.

c. Several feet. Head separate from the *thorax.*

273. Scolopendra. Body linear.
11 Species.

274. Julus. Body somewhat cylindrical.
8 Species.

Linnæus has been succeeded, in the arrangement of insects, by an author whose generic distinctions are considered by many naturalists as preferable; we allude to Fabricius*, who has chosen the *instrumenta cibaria*, or different parts and appendages of the mouth, as the chief basis of entomological discrimination. Whatever may be the merits of the Fabrician classification (which, after all, are ascribable to the labours of our own author as their source), the Linnean still retains its original estimation with some of the first writers on the subject, and ought not, in our opinion, to be deviated from essentially, unless another method were known possessing much fewer defects. Villers†

* *Systema Entomologiæ.* Flensb. et Lips. 1775. 8vo.
Species Insectorum. Hamb. et Kilon. Tom. 2. 1781. 8vo.
Mantissa. Tom. 2. Hafn. 1787. 8vo.
Entomologia systematica emendata. Hafn. Tom. 4. cum Suppl. 1792—1798. 8vo.

† Caroli Linnæi, *Entomologia, Faunæ Suecicæ descriptionibus aucta; D. D. Scopoli, Geoffroy, De Geer, Fabricii, Schrank, &c. speciebus vel in systemate non enumeratis, vel nuperrime detectis, vel speciebus Galliæ australis locupletata, generum specierumque rariorum iconibus ornata, curante et augente Carolo de Villers.* Lugd. Tom. 4. 1789. 8vo.

has rendered great service to entomology, and to Linnean scholars in particular, by reducing the species of Fabricius to a conformity with the *Systema Naturæ*, and thus no small part of the confusion which would otherwise again have taken place in this branch of natural history, has been prevented.

The following are the new *genera* adopted in the 13th edition of the *Systema* by Professor Gmelin, *viz.*

(Order 1. COLEOPTERA.)

b. *Antennæ* with perfoliated clubs.

Melyris. Lip clubbed, notched.
2 Species.

Tritoma. Anterior *Palpi* hatchet-shaped.
7 Species.

Hydrophilus. Jaw bifid.
20 Species.

c. With a solid club.

Pausus. *Antennæ* with two joints. Club uncinated.
1 Species only.

Bostrichus. Head bent under the *thorax*, which is scarcely marginated.
22 Species; 6 of them described in former editions under the genus *Dermestes*.

Anthrenus. Jaw bifid.
7 Species; 3 of them described by Linnæus as *Byrrhi*.

Nitidula. *Thorax* and *elytra* marginated.
30 Species; 5 of them formerly *Silphæ*.

** *Antennæ* necklace-shaped.

Brentus. Beak elongated, horny, straight.
11 Species; 2 of them placed by Linnæus under the genus *Curculio*.

Erodius. Lip horny, notched.
4 Species.

Scaurus. Lip truncated, entire.

Zygia.

Zygia. Lip elongated, membranaceous.

1 Species only.

Opatrum. *Thorax* and *Elytra* marginated.

22 Species; 1 of them described by Linnæus as a *Silpha*.

Horia. *Palpi* unequal. Jaw bifid. Lip rounded.

2 Species; 1 of them described by Linnæus as a *Cantharis*.

*** *Antennæ* filiform.

Apalus. *Thorax* roundish. Head gibbous, inflexed.

1 Species. (*Meloe bimaculata* of Linnæus).

Manticora. Jaws protruded, dentated. Eyes prominent.

1 Species, found at the Cape of Good Hope, by Thunberg.

Pimelia. *Thorax* marginated. Head protruded. Body oblong.

85 Species; 20 of them placed by Linnæus under the genus *Tenebrio*.

Cucujus. Lip short, bifid; *laciniæ* distant.

11 Species; one of them, only, known to Linnæus, (*Cantharis sanguinolenta*.)

Cryptocephalus. Body ovated, not marginated.

268 Species; 42 of these described by Linnæus under the genus *Chrysomela*, 1 under *Dermestes*, and 2 under the genus *Meloe*.

Notoxus. Lip bifid; *laciniæ* connivent, and obtuse.

4 Species; 2 of these described by Linnæus, one as an *Attelabus*, and the other as a *Meloe*.

Calopus. *Thorax* with callous knobs on the sides.

3 Species, all described by Linnæus under the genus *Cerambyx*.

Alurnus. Jaw fornicated or arched.

3 Species.

Lytta. *Thorax* roundish. Head gibbous, inflexed.

32 Species, including 3 of the Linnean genus *Meloe*.

*** *Antennæ* bristly.

Serropalpus. Anterior *Palpi* deeply serrated.

2 Species; one the *Elater buprestoides* of Linnæus.

Rhinomacer. *Antennæ* placed on the beak.

3 Species.

Zonitis. Lip notched.

2 Species, both natives of the East.

(Order 2. HEMIPTERA.)

Pneumora. Mouth furnished with jaws. Wings membranaceous, turned downwards. Feet formed for running. Body hollow, inflated, and diaphanous.

4 Species; 1 of them the *Gryllus variolosus* of Linnæus.

Macrocephalus. Beak inflexed. *Antennæ* very short.

1 Species only, first described by Sweder in the *Stockholm Transactions*. 1787.

(Order 5. HYMENOPTERA.)

Scolia. Tongue inflexed, trifid. Lip membranaceous at the *apex*.

27 Species.

Thynnus. Tongue very short, involuted. Lip trifid.

3 Species, natives of New Holland.

Leucopsis. Lip longer than the jaw, and notched. *Antennæ* clubbed.

3 Species.

Tiphia. Lip short, horny, and tridentated.

17 Species.

Chalcis. *Antennæ* short, cylindrical, and spindle-shaped.

7 Species; one of them described by Linnæus as a *Sphex*, and 1 as a *Vespa*.

(Order 6. DIPTERA.)

* With a *proboscis* and *haustellum*.

Diopsis. Head with 2 horns. Eyes terminal.

1 Species only, found in South America.

* With a *haustellum*, but no *proboscis*.

Stomoxys. *Haustellum* with a convoluted univalvular sheath, geniculated at the root.

9 Species; of which 3 are described by Linnæus under the genus *Conops*.

(Order 7.

(Order 7. APTERA.)

** Having from 8 to 14 feet; head and *thorax* united.

Hydrachna. Eyes 2—8. Feet 8, on the fore part of the body.

49 Species, all described first by Muller.

It will readily be imagined that in the prodigious number of creatures contained in this class, the specific characters must be drawn from a correspondent variety of circumstances, which it would be too great a task to detail. The species described by Gmelin amount to nearly 11000, of which almost 900 (a number sufficient to form a *Class*) belong to the genus *Papilio* alone!

Class 6. VERMES.

The sixth and last class of the animal kingdom contains the VERMES, which are divided by our author into 5 orders. He very early adopted the system of Peysonell, Jussieu, and others, in introducing the *Corals* and *Corallines* among animals, under the names of LITHOPHYTA and ZOOPHYTA. Great light was thrown on this system by Trembley*, and also by our countryman Ellis†. In the distribution of TESTACEA, Linnæus adopted a method entirely his own; and, though he was preceded by a great number of systematical writers on this branch of natural history‡, his originality and happy mode of classification are no where more conspicuous. With respect to the other two orders, INTESTINA and MOLLUSCA, it was not possible to borrow much assistance, for very few authors had even attempted any regular history

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* *Memoires pour servir à l'histoire d'un genre de Polypes.* Leide 1744. 4to. &c. &c.

† *Essay towards a Natural History of Corallines.* London 1755. 4to.
Natural History of many curious Zoophytes. Lond. 1786. 4to. and in *Phil. Transactions.*

‡ See *Linnean Transactions.* Vol. 7. p. 119—275.

of them; indeed, excepting Bohadsch *, there was scarcely one worthy of being consulted. The characters of all these orders are necessarily very various.

1. INTESTINA. Animals simple, destitute of limbs, naked.
2. MOLLUSCA. Animals simple, naked (not included in a shell), furnished with limbs.
3. TESTACEA. Animals, mostly of the foregoing order, simple, commonly included in a calcareous habitation of their own.
4. LITHOPHYTA. Animals, of the molluscous kind, fabricating, and affixed to, a calcareous base called *Coral*.
5. ZOOPHYTA. Composite animals, resembling a flower, and springing from a vegetating stem.

The *generical* distinctions among the INTESTINA arise from the diversity of the body of the animal, almost solely; among the MOLLUSCA, from the body and feelers, or *tentacula*, and from other parts; among the TESTACEA, from the included animal, the general differences between the shells themselves, but, principally, from the *cardo*, or hinge in the bivalves, and the mouth, or aperture in the univalves; among the LITHOPHYTA, from the inhabiting animal and the form of the coral itself; and among the ZOOPHYTA, from the animal, and the very different forms of the fabrications.

Abbreviated Generic Characters.

Order 1. INTESTINA.

a. Having a lateral perforation, or pore.

277. Lumbricus. *Round worm.* Body round, with a fleshy ring.

2 Species.

* *De quibusdam Animalibus marinis.* Dresdæ 1761. 4to.

279. Sipunculus. *Tube-worm.* Body round, with a contracted, cylindrical beak.
2 Species.

278. Fasciola. *Fluke.* Body flattened, with a ventral pore.
2 Species.

b. Destitute of a lateral pore.

275. Gordius. *Guinea-worm.* Body filiform the whole length.
5 Species.

276. Ascaris. *Thread-worm.* Body round, subulated at each end.
2 Species.

277. Hirudo. *Leech.* Body roundish, truncated at each end.
9 Species.

281. Myxine. *Hag.* Body carinated, with cirrhated jaws.
1 Species.

2. MOLLUSCA.

a. Mouth on the upper part of the animal, which attaches itself to some other substance.

288. Actinia. *Sea-Anemone.* Aperture single, common, and dilatable.
5 Species.

287. Ascidia. Two apertures; one lower than the other.
6 Species.

b. Mouth anterior. Body with a lateral pore.

282. Limax. *Slug. Tentacula* 4. Vent common with the lateral pore.
8 Species.

283. Laplysia. *Sea-Hare. Tent.* 4. Vent above, posterior.
1 Species.

284. Doris. *Tentacula* 2. Vent above, posterior.
4 Species.

289. Tethys. Two *foramina*, or pores, on the left side.
2 Species.

c. Mouth anterior. Body surrounded anteriorly with *cirrhi*.

290. Holothuria. *Tentacula* fleshy.
9 Species.

291. Terebella. *Tentacula* capillary.
1 Species.

d. Mouth anterior. Body with arm-like processes.

292. Triton. Arms bipartite; some of them with claws.
1 Species.

296. Sepia. *Cuttle-fish*. Arms 8 or 10, having small concave discs on the inside.
5 Species.

295. Clio. Arms 2, dilated.
3 Species.

293. Lernæa. Arms 2 or 3, round.
4 Species.

294. Scyllæa. Arms 6, remote, of equal lengths.
1 Species.

d. Mouth anterior. Body pedated.

285. Aphrodita. Mouth unarmed. Body oval.
4 Species.

286. Nereis. Mouth unguiculated. Body elongated.
11 Species.

f. Mouth in the centre of the under part.

297. Medusa. *Sea-Jelly*, or *Blubber-fish*. Body gelatinous, smooth.
12 Species.

298. Asterias. *Star-fish*. Body with a coriaceous covering, muricated.
16 Species.

299. Echinus.

299. Echinus. *Sea Hedge-hog.* Body with a crustaceous covering; (often) furnished with (moveable) spines.
17 Species.

3. TESTACEA.

a. Multivalves.

300. Chiton. *Sea-Louse.* Shell with several valves connected lengthways, on the back of the animal.
9 Species.

301. Lepas. *Barnacle.* Shell with several unequal valves; attached to some extraneous body.
10 Species.

302. Pholas. *Piddock.* Two large valves, with a set of smaller ones attached to the hinge posteriorly.
6 Species.

b. Bivalves. *Conchæ.*

303. Mya. *Gaper.* Hinge of the shell furnished, generally, with a solid tooth not inserted into any groove of the opposite valve.
Pearl-Oyster, &c. 7 Species.

304. Solen. *Spout.* Lateral teeth of the hinge remote.
Razor-shell, Sword-shell, &c. 11 Species.

305. Tellina. *Tellen.* Lateral teeth of one valve not inserted into opposite grooves.
29 Species.

306. Cardium. *Cockle.* Lateral teeth remote, inserted into grooves of the opposite valve.
Venus's heart, Strawberry-shell, &c. 21 Species.

307. Mactra. Middle tooth of the hinge complicated with an adjacent cavity.
8 Species.

308. Donax. *Wedge-shell.* A single lateral tooth, remote, not inserted into the opposite valve.
10 Species.

309. Venus. *Venus's shell.* Teeth of the hinge approximated; the lateral divergent from the *apex.*
Dione, North American Clam, Hens, &c. 39 Species.

310. Spondylus. *Spondyle.* Two teeth in the hinge, with an intermediate cavity, or groove.
Electric Oyster, of Rumphius, &c. 3 Species.

311. Chama. *Chame.* Hinge with two oblique obtuse teeth.
Bull's heart, Giant-Chame, &c. 14 Species.

312. Arca. *Ark-shell.* Hinge with numerous interlocking teeth.
Noah's Ark, Bearded Ark, Velvet Ark, &c. 17 Species.

313. Ostrea. *Oyster.* Hinge without teeth, and having only an oval cavity.
Escallop, File-Oyster, Ducal Mantle, Hammer Oyster, Common Oyster, &c. 31 Species.

314. Anomia. Hinge without teeth. A linear cavity in the margin of the plain valve.
27 Species (many of them found only in a fossil state).

315. Mytilus. *Muscle.* Hinge without teeth, and having a subulated distinct cavity.
Cock's comb Muscle, Stone-eater, Pond-Muscle, Sea-Muscle, Mother-of-pearl shell, &c. 20 Species.

316. Pinna. *Nacre-shell.* Hinge without teeth. Valves coalescing on one side.
8 Species.

e. Univalves, with a regular spire. *Cochleæ.*

317. Argonauta. *Argonaut.* Shell consisting of one cell. The *Animal* a Cuttle-fish.
Paper-Nautilus, &c. 2 Species.

318. Nautilus.

318. Nautilus. *Sailor-shell.* Shell consisting of several cells, which communicate with each other by a *foramen.*
17 Species.

319. Conus. *Cone.* Aperture of the shell dilating, linear, without teeth.
Admiral shells, Cloth of gold shell, Butter-churn, Orange Admiral, &c. 35 Species.

320. Cypræa. *Cowry.* Aperture dilating, linear, dentated on each side.
Map-Cowry, Argus, Mouse-Cowry, Bull's mouth, Tiger-shell, Negro-money, Louse-Cowry, &c. 44 Species.

321. Bulla. *Dipper.* Aperture of the shell somewhat contracted, and running obliquely.
Poached-egg, Spindle, Fig, &c. 23 Species.

322. Voluta. *Volute.* Aperture dilating; the *columella* plicated.
Judas's Ear, Olive, Mitre, Music-shell, Melon, &c.
46 Species.

323. Buccinum. *Trumpet-shell.* Aperture terminating in a spout to the right.
Helmet, Ox-lip, Harp, Whelk, &c. 51 Species.

324. Strombus. *Wing-shell.* Aperture terminating in a spout to the left.
Distaff, Pelican's foot, Spider, Millepede, Crab, &c.
29 Species.

325. Murex. *Rock-shell.* Aperture terminating in a straight spout.
Thorny Woodcock, Scorpion, Tower of Babel, Triton's trumpet, &c.
61 Species.

326. Trochus. *Top-shell.* Aperture somewhat contracted towards the belly of the shell, and usually of a sort of tetragonal form.
Pharoah's-button, Telescope, &c. 26 Species.

327. Turbo.

327. Turbo. *Whirl.* Aperture differing from that of the former principally in its approach to an orbicular outline.

Periwinkle, Silver-mouth, Gold-mouth, Pagoda-shell, Magpie, Wentle-trap, &c. 50 Species.

328. Helix. *Snail.* Aperture approaching to a lunated (or *crescent*) shape.

Goat's eye, Ram's horn, Common Snails, &c. 60 Species.

329. Nerita. *Nerite.* Aperture semiorbicular.

White of egg, Nipple, Green Nerite, Bloody-tooth, Chamæleon, &c. 25 Species.

330. Haliotis. *Sea-ear.* Aperture much dilated, with a row of perforations on one side.

Midas's Ear, &c. 7 Species.

d. Univalves destitute of a regular spire.

331. Patella. *Limpet.* Shell conical, open, quiescent.

Fools-cap, &c. 36 Species.

332. Dentalium. *Tooth-shell.* Shell at liberty, subulated, open at each end.

Elephant's tooth, &c. 8 Species.

333. Serpula. *Worm-shell.* Shell adhering to some extraneous body, tubular.

Watering-pot, &c. 16 Species.

334. Teredo. *Ship-worm.* Shell inserted into timber.

1 Species.

335. Sabella. *Sand-shell.* Shell composed of arenaceous granules.

7 Species.

4. LITHOPHYTA.

336. Tubipora. *Tubular Coral.*

4 Species.

337. Madrepora. *Madrepore.* Coral with concave *stellæ.*

Sea-Mushroom, &c. 33 Species.

338. Millepora. *Millepore.* Coral with subulate pores.
14 Species.

339. Cellepora. *Cellular Coral.*
6 Species.

5. ZOOPHYTA.

a. Fixed.

340. Isis. Stem stony.
Red Coral, Encrinus, &c. 6 Species.

341. Gorgonia. Stem somewhat horny.
Sea Fan, &c. 16 Species.

342. Alcyonium. Stem of a corky texture.
Sea-Hand, Sea-Purse, &c. 12 Species.

343. Spongia. *Sponge.* Stem of a texture resembling tow.
16 Species.

344. Flustra. Stem very porous.
6 Species.

345. Tubularia. Stem fistular.
8 Species.

346. Corallina. *Coralline.* Stem with filiform, calcareous articulations.
8 Species.

347. Sertularia. Stem with filiform, fibrous articulations.
Sea-Moss, &c. 42 Species.

348. Vorticella. Stem with fibrous, gelatinous articulations.
Animal-plant, &c. 14 Species.

b. Locomotive.

349. Hydra. Mouth terminal, surrounded with *tentacula.*
Polype, Hydatid, &c. 7 Species.

350. Pennatula. *Sea-Pen.* Stem pinnated, with a soboliferous margin.
7 Species.

351. Tænia.

351 Tænia. *Tape-worm.* Body with a multitude of joints, resembling a necklace.

Common Tape-worm, Broad-worm, &c. 4 Species.

352. Volvox. Body roundish; the offspring nidulating in the pores.

Globe-animal, &c. 4 Species.

353. Furia. *Fury.* Body linear, with reflex *aculei*, or prickles.

1 Species.

354. Chaos. Body renewable, destitute of external limbs and senses.

Smut-Animalcules of various kinds. 5 Species.

The number of *species* described by Linnæus, in this class, amounts to about 1150. Professor Gmelin, however, collecting the descriptions of Muller*, Goeze†, and various other indefatigable helminthologists later than the times of our author, has increased the number of the INTESTINA and MOLLUSCA alone to upwards of 800. In the order of TESTACEA, the labours of Martini‡, Chemnitz§, Schroeter‖, &c. have augmented our knowledge of those infinitely varied and beautiful creatures to an amazing extent; and the discoveries of Muller have not only multiplied the *species* of Animalcules, but rendered it

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* *Vermium terrestrium et fluviatilium, seu Animalium Infusoriorum, Helminthicorum, et Testaceorum non marinorum succincta historia.* Havn. 2 Vol. 1773—1774. 4to.

† *Entomologische beyträge zu des Ritter Linné zu ölften ausgabe des Natursystems.* Leipzig. 3 Theil. 1777—1783. 8vo.

‡ *Neues Systematische Conchylien-Cabinet.* Nurnberg. 3 Band. 1769—1777. 4to.

§ ——————————————— Band. 4—9. 1780—1788.

‖ *Einleiking in die Conchylienkenntniss nach Linné.* (Halle 3 Band. 1783—1786. 8vo.) &c.

necessary to constitute a new order for them, to which has been given the term of INFUSORIA, and which, in the 13th edition of the *Systema*, stands as follows: *viz.*

Order 5.

INFUSORIA. Animals very minute, and of a simpler structure.

a. Furnished with external organs.

Brachionus. Body covered with a shell, ciliated at the aper.

11 Species.

Trichoda. Body hairy in one part.

47 Species.

Cercaria. Body rounded, with a tail.

9 Species.

Leucopera. Body ciliated all round.

5 Species.

b. With no external organs.

* *flattened.*

Gonium. Body angular.

5 Species.

Colpoda. Body sinuated.

6 Species.

Paramecium. Body oblong.

5 Species.

Cyclidium. Body orbicular, or oval.

7 Species.

** *rounded.*

Bursaria. Body hollow.

2 Species.

Vibrio. Body elongated.

18 Species.

Enchelis. Body cylindrical.

11 Species.

Bacillaria. Body composed of *trabeculæ* accommodated to various forms.

1 Species.

Monas. Body like a point.

3 Species.

To this order are now referred the Linnean *genera* of *Vorticella* and *Volvox*. It ought to be remarked also, that those of *Tænia* and *Furia* have been removed to the order of INTESTINA, to which they much more properly belong.

To the INTESTINA 12 new *genera* have been added, *viz.*

Trichocephalus. Body round, with a long, filiform head.

6 Species.

Uncinaria. Body filiform, elastic. Head labiated; lips membranaceous, angular. Tail (*of the female*) needle-shaped, (*of the male*) armed with 2 hooks inclosed in a pellucid vesicle.

2 Species.

Filaria. Body wholly filiform.

18 Species.

Scolex. Body minute, gelatinous, opaque, with a retractile head, and 4 pellucid auricles.

2 Species.

Ligula. Body linear, equal, elongated.

2 Species.

Linguatula. Body depressed, oblong; the anterior orifice surrounded by 4 *ostia*.

1 Species.

Strongylus. Body rounded, elongated, anteriorly globose and truncated. Aperture with a circular, ciliated margin; posteriorly (*in the female*) acuminated, (*in the male*) hooded.

2 Species.

Echinorhynchus. Body round, with a cylindrical, retractile *proboscis*, crowned with hooked *aculei*.

48 Species.

Hæruca. Body round. Head crowned with *aculei*.

1 Species.

Cucullanus.

Cucullanus. Body posteriorly acuminated, anteriorly obtuse. Mouth round.
8 Species.

Caryophyllæus. Body round, smooth, with a wide mouth.
1 Species.

Planaria. Body depressed, with a ventral pore.
48 Species.

All these new *genera*, except *Planaria*, are comprehended, with the Linnean *genera* of *Ascaris*, *Fasciola*, *Tænia*, *Furia*, and *Myxine*, in a division entitled *Inhabitants of the inside of other animals*; and the other *genera* in another, as *Inhabiting the outside of other animals*.

To the order of MOLLUSCA are added 13 new *genera*, the 5 first of which belong to the first of the Linnean divisions; the *Pterotrachea* is distinguished from all of them as having a moveable fin on the *abdomen*, or tail; the 2 next come under the *brachiated* division; the *Amphitrite*, *Spio*, and *Nais* under the *pedated*; and the 2 last under the last of the Linnean divisions:

Clava. One common aperture, dilatable, vertical, surrounded by club-shaped *tentacula*.
1 Species.

Mammaria. One aperture, with no *cirrhi*, smooth.
3 Species.

Pedicellaria. Body pedunculated, fixed; the peduncle rigid.
3 Species.

Salpa. Two apertures, each terminal.
11 Species.

Dagysa. Two apertures. Body angular.
1 Species.

Pterotrachea. Body pervious, gelatinous, tracheated.
4 Species.

Lobaria. Body convex on the upper part, flat and lobed on the under.

1 Species.

Glaucus? Arms 4, ramose.

Species ?

Amphitrite. Mouth unarmed. Body roundish. Eyes none.

7 Species.

Spio. Body extended in a tube, articulated with filiform processes on the back.

2 Species.

Nais. Mouth unarmed. Body elongated. *Tentacula* none.

10 Species.

Physsophora? Body gelatinous, suspended to a vesicle of air.

3 Species.

Lucernaria. Body gelatinous, rugose, brachiated.

3 Species.

Among the ZOOPHYTA, the only new genus is *Antipathes*, characterized by its horny stem being beset with small spines, and having a gelatinous covering. But in this order the LITHOPHYTA (Linnæus's 4th) are now included, being considered as differing from the former only in the calcareous nature of the stem, which, in the latter, is of a softer texture; and hence two divisions are formed, which supersede the Linnean distinctions of *Fixed* and *Locomotive*.

The number of VERMES described in the 13th edition of the *Systema* is considerably more than 6000.

After having thus exhibited a view of the grand systematical divisions of the Animal Kingdom, it remains for us to give some account of the method pursued in treating of the *species*. To this end, it must be observed that, throughout the system, the *classical*, *ordinal*, and *generical* characters always make, or are

understood to make, a part in the description of each species. After these, our author begins with his own specific name for the animal, established upon the most essential difference observable between that and every other species of the genus; and here it must be allowed that he has, in general, happily succeeded, by giving, in the space of two or three lines, a distinction which more immediately points out the animal sought for, than all the long and laboured descriptions of foregoing authors. If the specific name be the same that is adopted in any of his former writings, he refers to it. He has, however, in many parts of this enlarged edition of the *Systema*, formed new names to animals noticed in the preceding edition and in the *Fauna Suecica*. Indeed, where the essential or specific distinction is the point in view, this must frequently be the case, so long as new species continue to come in; for, as the essential character of each species results from the most careful comparison of the whole genus, the introduction of a new one must, in many instances, clash with the old, and require perhaps a total alteration of all the others.

After his own specific name, he gives the *synonyms* of the most reputed and authentic writers, with references to the pages of their works, and to the best figures of his subject; then the *locus natalis*; and, in many instances (more especially among the MAMMALIA and AVES) a short but comprehensive history of the nature, œconomy, and uses of the animal. To every species the author has affixed his *trivial* name, expressive, most commonly, of the place where the animal is found, of its colour, form, or other quality; or, in a great variety of cases wherein the subject has been well known by an arbitrary term, he retains *that* as his trivial

vial name: for instance, the *Partridge* and *Quail* (which both belong to his genus *Tetrao*) are called, the former *Tetrao Perdix*, and the latter *Tetrao Coturnix*.

It has been objected to Linnæus's classification, that by keeping too closely to one kind of character, he has thrown together, in various parts of his system, subjects too different in their general appearance and œconomy;—as, for example, in the MAMMALIA, by confining himself to the teeth. To this it may be answered, that, perhaps the very observance of such a rule gives Linnæus's system the greatest advantage over all others. Not quadrupeds only, but the whole creation, being under his eye, and the subjects therefore almost infinite, it was absolutely necessary to construct every great division, as far as possible, on one simple foundation. Nature does not seem to have observed *any* system, and an artificial one will ever be attended with anomalies. Whatever method therefore most readily leads to the subject under investigation, is certainly the best, and in this case, it is of small importance where that subject is placed, or how far removed from others to which it seems to bear a *general* resemblance.

The VEGETABLE KINGDOM.

The second part of the *Systema Naturæ*, or the Vegetable Kingdom, in all the editions prior to the 10th was very compendiously exhibited; the author having, after his *Clavis Classium*, only given the names of the *genera*, with their essential, or abbreviated characters, without touching at all on specific distinctions, which were reserved for the present enlarged edition, and for the *Species Plantarum*, a work before spoken of.

Before

Before we proceed to a particular account of this part of the system, it may not be improper to premise some observations on methods of botany in general, before our author wrote. It is needless to urge the necessity of method in the study of nature, as it is the very soul of science; and, amidst such a multitude of objects as the vegetable kingdom affords, all attempts towards the acquisition of knowledge, without it, must end in uncertainty and confusion. We have sufficient proofs of this in the writers upon plants, before the invention of systems, to the want of which must be attributed the loss of many valuable articles, not only of the *Materia Medica*, but of the *Materia Pictoria* and *Tinctoria* of the antients. Articles, the virtues and properties of which appear to have been well ascertained, are now lost to us, for want of a more scientific arrangement of the subjects, and of more accuracy in the description of them.

Botanical writers have chosen very different methods of arranging plants, not only before, but since, the invention of the sexual system. The *alphabetic* has been much followed, especially in local catalogues. Some have disposed plants according to the *time of flowering*, as Pauli in his *Quadripartitum Botanicum*, published in 1639; Besler in the *Hortus Eystettensis*, 1640; and Dillenius in the *Catalogus Gissensis*, 1719. Others have arranged them according to the different *places of growth*, as the authors of the *Historia Lugdunensis*, in 1587; and some according to their *virtues in medicine*. Others again, observing that numbers of vegetables agreed with each other in their general habit and appearance, or had a certain harmony and proportion in the form and disposition of their roots, leaves, flowers, or fruit, or in their particular mode of growing, flowering, or foliation, have planned a reduction of them into classes agreeable to such

distinctions: hence their division of trees into *pomiferæ, pruniferæ, bacciferæ, nuciferæ, glandiferæ, &c.*; of herbs into *bulbosæ, siliquosæ, umbelliferæ, verticillatæ, papilionaceæ, &c.* These are so many classes, or orders, which nature has characterized in such a manner, that they could not escape notice, and, if all the subjects of the vegetable kingdom could be properly reduced under such combinations, and the whole chain properly connected, we should then see what is meant by the NATURAL METHOD, that *ultimum et desideratum* of botany, of which however our author says, "*nec sperare fas est, quod nostra ætas systema quoddam naturale videre queat, et vix seri nepotes.*" Nevertheless the best writers of the last century (such were John and Caspar Bauhin) endeavoured to preserve the above-mentioned arrangement, although it was in a rude manner. In this they were followed by our own countrymen Gerard and Parkinson; but as they established no precise definitions of their classes, so in their subdivisions, or chapters, they paid little or no regard to the minuter parts of distinction taken from the fructification. Hence nothing like *generic* notes can be discovered in their methods; and the only resource, in seeking many of their *species*, was to read over their long and tedious descriptions, which, after all, were frequently insufficient to distinguish the plant sought for.

That great naturalist Conrad Gesner (who died in 1565, in his 50th year) appears to have been the first who thought, with any precision, of a method of classing plants from the *flower* or *fruit*; but he only slightly touched on it, in his epistles, and never brought any thing of the kind to perfection. It was reserved for Cæsalpinus (physician to Pope Clement VIII.) to be the first author who arranged plants in a truly systematic manner. In his *Libri de plantis*, published in 1583, he establishes the

the characters principally on the *fruit*. It is wonderful that, though so many eminent botanists afterwards flourished, (among whom were the two Bauhins) no one ever thought of pursuing the plan he had laid down, until Morison and Ray; who both published, nearly together, their separate systems, which were also founded on distinctions drawn principally from the fruit. Since their time, others have laboured to bring those systems to perfection, as Knaut, in Germany; Paul Hermann and Boerhaave, in Holland; and Dillenius, Professor of Botany, at Oxford, who still further perfected the method of Ray, as is evident from the arrangement he has given to the British plants, in the third edition of that author's *Synopsis*.

Several ingenious systems have been formed from the *flower* also, as the basis of the *classical* character; in considering which, both the *regularity* and *irregularity*, as well as the *number* of the *petals*, have been made the principal distinctions. Rivini (at Leipsic, in 1690) was the first who took the flower as the foundation of a method, in which he was followed by Ruppius, in 1718. But no one carried this method to such perfection as Tournefort, (in 1694), who formed his *classical* character from the *figure* of the flower, and his *orders*, or subdivisions, on the different *situation* of the *fruit*, whether above or below the *empalement*, or *receptacle*. Besides these methods, in which the authors have considered one part only, either *flower* or *fruit*, as the basis of their systems, several others have been constructed, in which vegetables have been arranged, as far as possible, according to what have been called the *natural classes*, taking in a numerous set of characters, which arise from a combination and agreement in the *habit* of the plants, as well as in the essential *parts of their fructification*. Among

 these,

these, the system of Van Royen (Professor at Leyden) is one of the most elegant attempts towards this important object; it is exhibited in the *Prodromus Floræ Leydensis.* He was followed by Gmelin, in the *Flora Sibirica*, &c. These authors, as also L. Gerard, in his *Flora Gallo-Provincialis* (Paris 1761), have preserved the natural generic characters of Linnæus almost entire throughout their systems; and the latter writer has, with some variations, taken the *orders* of a natural method constructed by Bernard de Jussieu, for his *classes.* Haller also planned and brought to great perfection a method of this kind, which is exhibited in his *Enumeratio Stirpium Helvetiæ* (1742), and in the *Hortus Gottingensis* (1753); and which he afterwards still more elaborated in a work of infinite industry and merit, the *Historia Stirpium Helvetiæ* (3 Tom. folio, 1768). Linnæus himself very early attempted a *natural* method; but it is evident that he thought too many links wanting in the chain to render it the readiest guide to botanical science.

Methods have been formed also from the different kinds and arrangement of the *calyx*, or cup, of the flower, in plants. Professor Magnol, of Montpellier, published on this plan in 1720; and Linnæus himself in 1737, but he did not pursue it.

Linnæus was the first who constituted the *stamina* and *pistilla* the bases of an *artificial* method of arranging plants; and he tells us, in his CLASSES PLANTARUM, that he was led to it by considering the great importance of these parts in vegetation. They alone are essentially necessary to fructification, all other parts, except the *antheræ* and *stigmata*, being wanting in some flowers; and the present philosophy of botany regards the former as the *male*, and the latter as the *female* organs of generation. As such indeed they must be considered, *analogically*; yet perhaps

haps the Linnean system, admirable as it is, would not have been less acceptable, had the classical terms been expressive only of *number* and *situation*, without regard to the offices of the parts, in framing the terms. Ludwig, of Leipsic, who has endeavoured to combine the systems of Rivinus and Linnæus, by taking his *classes* from the method of the former, and his *orders* from that of the latter, has avoided this mode of expression, by substituting the terms *monantheræ*, *monostylæ*, &c.

Our author begins the new and enlarged edition of the *Systema Vegetabilium*, of 1767, by premising a compendious view of the philosophy of vegetation, and then proceeds to what he calls *Delineatio Plantæ*, something analogous to what he had entitled, in the editions prior to the 10th, *Methodus demonstrandi Vegetabilia*, and which was published separately also, for the use of his pupils*. Here he introduces all the terms he makes use of in describing plants; and, by a methodical and apt disposition of them, explains them at the same time. After this, he gives the *Clavis et Characteres Classium*, and then comes to the system itself.

The prerogative of an artificial system in botany is supposed to consist in its keeping together the *genera*, as much as possible, in what are called the *natural* classes or orders, and thus approaching to the system of nature. All artificial systems, being founded on some, or other, or all the parts of fructification, without regard to *habit*, will be found in many instances to break the natural orders, and disjoin *genera* which nature seems to have classed. The more simple and uniform the classical characters of any system may be, the more they are likely to interfere in

* "*C. Linnæi Delineatio Plantæ, in usum Auditorum.*" Upsal. 1758. 8vo. pp. 8.

this respect: nevertheless, it is pleasing to observe how well many of the natural classes are kept together in the Linnean system, the characters of which enjoy the advantage of being very simple and easy to retain in the memory, and of being founded on parts of plants as little subject to variation as any whatever; yet, like all other methods, it has its defects, of which no one was more sensible than the author himself. There are many instances of particular species that break through the classical and generical characters of the system itself; but for these defects there is no other remedy, at present, than that which Linnæus has applied, in the volume under consideration, and which ought ever, in arrangements of this kind, to be rigidly observed. Wherever such anomalies take place, they are mentioned among the *fictitious* characters, under the class and order in which the number of *stamina* or pistils entitles them to a place.

The *SEXUAL SYSTEM* is briefly as follows.—All known plants are divided into 24 CLASSES, the characters of which are established upon the *number*, or *difference of situation*, or *arrangement* of the *stamina*, or male organs; and the ORDERS, or subdivisions of these classes, as far as possible, on a similar number, situation, or arrangement of the *pistilla*, or female organs.

The first 20 classes contain what the author calls *hermaphrodite* flowers, or such as have the *stamina* and *pistilla*, both, within the same *cup* or *petals*, or, where those are wanting, standing on the same *receptacle*. Of these twenty, the first ten classes proceed in an uninterrupted series from

MONANDRIA to DECANDRIA; the plants of each having as many *stamina* as the title expresses.

The

The 11th class is DODECANDRIA, as there are no plants yet discovered which have only 11 *stamina*.

The 12th, ICOSANDRIA, contains such plants as have about 20 *stamina*, but always arising from the *calyx* or *corolla*, and not from the *receptacle*.

The 13th, POLYANDRIA, such as have from 20 to even 1000 *stamina*, but always arising from the *receptacle*.

The 14th, DIDYNAMIA, such as have 4 *stamina*, two long and two short. The essential character of this class does not consist in the *number* of *stamina*, (otherwise the plants might be referred to the class TETRANDRIA), but in having two of the *stamina* shorter than the others, one pistil only, and an irregularly-shaped corolla.

The 15th, TETRADYNAMIA, plants with 6 *stamina*, four long and two short.

The 16th, MONADELPHIA, such as have the *stamina* not distinct at the base, but united.

The 17th, DIADELPHIA, such as have the *stamina* united, at the base, into two sets.

The 18th, POLYADELPHIA, such as have the *stamina* united, at the base, into several sets.

The 19th, SYNGENESIA, such as have the anthers, but not the filaments, coalescing, so as to form a tube or cylinder, through which the pistil is commonly transmitted.

The 20th, GYNANDRIA, such as have the *stamina* springing from the pistil itself.

The 21st, MONŒCIA, such as have the *stamina* and pistils in separate flowers, on the same plant.

The 22d, DIŒCIA, such as have the *stamina* and pistils on separate plants.

The 23d, POLYGAMIA, such as have constantly, besides hermaphrodite flowers, others, either male or female, on the same plant.

The 24th, CRYPTOGAMIA, containing those plants, the mode and organs of whose fructification are not yet sufficiently ascertained: heretofore called *imperfect plants*.

The secondary part of the system, *viz.* the ORDERS, or subdivisions of the classes, are established chiefly on the *number* of the *pistils* or female parts; but there are some deviations, which we shall notice as we proceed. The arrangement from number is pursued no further than through the first 13 classes:—for, so long as the *classical* character, uninterruptedly, depends on the number of *stamina*, so long the *orders* likewise depend on the number of *pistils*; but when difference of *situation*, or arrangement becomes the ground of distinction of the *classes*, the *orders* are most commonly founded on other circumstances, which we shall briefly specify.

The 14th class, or DIDYNAMIA, is divided into GYMNOSPERMIA, and ANGIOSPERMIA; the former having four naked seeds, and the latter having the seeds inclosed in a seed-vessel.

The 15th, TETRADYNAMIA, has two orders, founded on the size and shape of the pod, *viz.* SILICULOSA (short) and SILIQUOSA (long).

The orders in the three next classes, MONADELPHIA, DIADELPHIA, and POLYADELPHIA, are formed from the *number* of the *stamina*.

Those of the class SYNGENESIA are 6, in 5 of which the plants are POLYGAMIÆ, and in the remaining one MONOGAMIÆ. The differences in the former of these orders arise from the difference of *structure* or *sex* of the *floscules* constituting the whole flower. Thus in

POLYGAMIA

POLYGAMIA EQUALIS, the florets are all hermaphrodite;

POLYGAMIA SUPERFLUA, the florets of the disk hermaphrodite, and of the circumference female;

POLYGAMIA FRUSTRANEA, the florets of the disk hermaphrodite, and of the circumference neutral;

POLYGAMIA NECESSARIA, the florets of the disk male, and of the circumference female; and in

POLYGAMIA SEGREGATA, the florets are in separate cups, within a common *calyx*, or empalement.

In the 20th class, GYNANDRIA, the arrangement of the orders arises from the *number* of the *stamina* (as in the 16th, 17th, and 18th classes), and they therefore assume the same names as the first ten classes and the thirteenth.

In the 21st and 22d classes, viz. MONŒCIA and DIŒCIA, the classical characters of the foregoing parts of the system are adopted as characters of the orders, as far down as to the MONŒCIA class itself. Thus the first order of those classes contains MONANDROUS plants, and the last GYNANDROUS.

The 23d class, POLYGAMIA, is divided into three orders, as the plants are MONŒCIOUS, DIŒCIOUS, or TRIŒCIOUS.

The 24th, and last class, CRYPTOGAMIA, is divided into four orders, *viz.* FILICES, MUSCI, ALGÆ, and FUNGI.

The *genera* of the vegetable kingdom are far too numerous to admit of our giving definitions of them similarly to the plan which we have followed in the animal kingdom. Their names therefore will alone be inserted, with occasional mention of the more remarkable *species*, and notices of the number belonging to each genus.

Class 1. MONANDRIA.

Order 1. MONOGYNIA.

Genus 1. Canna.
3 Species.

2. Amomum.
Ginger, Cardamom, &c.
4 Species.

3. Costus.
1 Species.

4. Alpinia.
1 Species.

5. Maranta.
2 Species.

6. Curcuma.
2 Species.

7. Kæmpferia.
2 Species.

8. Thalia.
1 Species.

9. Boerhaavia.
6 Species.

10. Salicornia.
5 Species.

11. Hippuris. *Mare's tail.*
1 Species.

Order 2. DIGYNIA.

12. Corispermum.
2 Species.

13. Callitriche.
2 Species.

14. Blitum.
2 Species.

15. Cinna.
1 Species.

Class 2. DIANDRIA.

Order 1. MONOGYNIA.

16. Nyctanthes.
Lilac, &c. 5 Species.

17. Jasminum. *Jasmine.*
6 Species.

18. Ligustrum. *Privet.*

19. Phillyrea.
3 Species.

20. Olea. *Olive.*
3 Species.

21. Chionanthus.
2 Species.

22. Syringa.
2 Species.

1240. Dialium.
1 Species.

Genus 23.

Gen. 23. Eranthemum.
1 Species.
24. Circæa. *Enchanter's Night-shade.*
2 Species.
25. Veronica. *Speedwell.*
34 Species.
26. Pæderota.
2 Species.
27. Justicia.
20 Species.
28. Dianthera.
2 Species.
29. Gratiola.
4 Species.
1233. Schwenkia.
1 Species.
30. Pinguicula. *Butterwort.*
4 Species.
31. Utricularia.
8 Species.
Gen. 32. Verbena. *Vervain.*
16 Species.
33. Lycopus.
2 Species.
34. Amethystea.
1 Species.
35. Cunila.
3 Species.
36. Ziziphora.
4 Species.
37. Monarda.
5 Species.
38. Rosmarinus. *Rosemary.*
1 Species.
39. Salvia. *Sage.*
38 Species.
40. Collinsonia.
1 Species.
41. Morina.
1 Species.

Order 2. DIGYNIA.

42. Anthoxanthum.
3 Species.

Order 3. TRIGYNIA.

43. Piper. *Pepper.*
20 Species.

Class 3. TRIANDRIA.

Order 1. MONOGYNIA.

44. Valeriana. *Valerian.*
20 Species.
45. Olax.
1 Species.

Gen. 46. Tamarindus. *Tamarind.*
1 Species.

47. Rumphia.
1 Species.

48. Cneorum.
1 Species.

49. Camocladia.
2 Species.

50. Melothria.
1 Species.

51. Ortegia.
1 Species.

52. Loeflingia.
1 Species.

53. Polycnemum.
1 Species.

54. Hippocratea.
1 Species.

55. Crocus. (*Saffron.*)
1 Species.

56. Ixia.
13 Species.

57. Gladiolus.
12 Species.

58. Antholyza.
4 Species.

Gen. 59. Iris.
22 Species.

60. Moræa.
3 Species.

61. Wachendorfia.
2 Species.

62. Commelina.
9 Species.

63. Callisia.
1 Species.

64. Xyris.
1 Species.

65. Schœnus.
11 Species.

66. Cyperus.
Papyrus, &c. 21 Species.

67. Scirpus.
28 Species.

68. Eriophorum. *Cotton-grass.*
5 Species.

69. Nardus.
4 Species.

70. Lygeum.
1 Species.

Order 2. DIGYNIA.

N. B. These are almost all *Grasses.*

71. Bobartia.
1 Species.

72. Cornucopia.
2 Species.

73 Saccharum. *Sugar-Cane.*
2 Species.

74. Phalaris.
9 Species.

Gen. 75.

Gen. 75. Paspalum.
4 Species.
76. Panicum.
30 Species.
77. Phleum.
5 Species.
78. Alopecurus. *Fox-tail Grass.*
7 Species.
79. Milium. *Millet.*
5 Species.
80. Agrostis.
21 Species.
81. Aira.
14 Species.
82. Melica.
5 Species.
83. Poa.
25 Species.
84. Briza.
5 Species.
85. Uniola.
4 Species.
86. Dactylis.
3 Species.
87. Cynosurus. *Dog's-tail Grass.*
10 Species.
Gen. 88. Festuca. *Fescue.*
16 Species.
89. Bromus.
20 Species.
90. Stipa.
8 Species.
91. Avena. *Oat-grass.*
16 Species.
92. Lagurus.
2 Species.
93. Arundo. *Reed.*
6 Species.
94. Aristida.
3 Species.
95. Lolium. *Darnel.*
3 Species.
96. Elymus.
9 Species.
97. Secale. *Rye.*
4 Species.
98. Hordeum. *Barley.*
8 Species.
99. Triticum. *Wheat.*
11 Species.

Order 3. TRIGYNIA.

100. Eriocaulon.
5 Species.
101. Montia.
1 Species.

Gen. 102. Proserpinaca.
1 Species.
103. Triplaris.
1 Species.
104. Holosteum.
4 Species.
1241. Kœnigia.
1 Species.
105. Polycarpon.
1 Species.
Gen. 106. Mollugo.
5 Species.
107. Minuartia.
3 Species.
108. Queria.
2 Species.
109. Lechea.
2 Species.

Class 4. TETRANDRIA.

Order 1. MONOGYNIA.

110. Leucadendron.
16 Species.
111. Protea.
3 Species.
112. Globularia.
7 Species.
113. Cephalanthus.
1 Species.
114. Dipsacus. *Teasel.*
3 Species.
115. Scabiosa.
26 Species.
116. Knautia.
2 Species.
117. Allionia.
1 Species.
118. Hedyotis.
3 Species.
1242. Scabrita.
1 Species.
119. Spermacoce.
6 Species.
120. Sherardia.
3 Species.
121. Asperula.
8 Species.
122. Diodia.
1 Species.
123. Knoxia.
1 Species.
124. Houstonia.
2 Species.
125. Galium.
25 Species.
126. Crucianella.
3 Species.

Gen. 127.

Gen. 127. Rubia. *Madder.*
3 Species.
128. Fuchsia.
1 Species.
129. Siphonanthus.
1 Species.
130. Catesbæa.
1 Species.
131. Ixora.
2 Species.
132. Pavetta.
1 Species.
133. Petesia.
1 Species.
134. Mitchella.
1 Species.
135. Callicarpa.
2 Species.
136. Aquartia.
1 Species.
137. Polypremum.
1 Species.
138. Penæa.
3 Species.
139. Blæria.
2 Species.
140. Buddleia.
2 Species.
141. Exacum.
2 Species.
142. Plantago. *Plantain.*
20 Species.

Gen. 143. Scoparia.
2 Species.
144. Rhacoma.
1 Species.
145. Centunculus.
1 Species.
146. Sanguisorba.
3 Species.
147. Cissus.
6 Species.
148. Epimedium.
1 Species.
149. Cornus.
6 Species.
150. Fagara.
4 Species.
151. Tomex.
1 Species.
152. Ptelea.
2 Species.
153. Ludvigia.
3 Species.
154. Oldenlangia.
7 Species.
155. Ammannia.
3 Species.
156. Isnardia.
1 Species.
157. Trapa.
1 Species.
158. Dorstenia.
4 Species.

Gen. 1243. Cometes.
1 Species.

159. Elæagnus.
4 Species.

1244. Struthiola.
2 Species.

160. Brabejum.
1 Species.

161. Krameria.
1 Species.

Gen. 162. Rivina.
4 Species.

163. Salvadora.
1 Species.

164. Camphorosma.
4 Species.

165. Alchemilla.
3 Species.

Order 2. DIGYNIA.

166. Aphanes.
1 Species.

167. Crurita.
1 Species.

168. Bufonia.
1 Species.

169. Hamamelis.
1 Species.

170. Cuscuta. *Dodder.*
2 Species.

171. Hypecoum.
3 Species.

Order 3. TETRAGYNIA.

172. Ilex. *Holly.*
5 Species.

173. Coldenia.
1 Species.

174. Potamogeton.
12 Species.

175. Ruppia.
1 Species.

176. Sagina.
3 Species.

177. Tillæa.
2 Species.

178. Myginda.
1 Species.

Class 5. PENTANDRIA.

Order 1. MONOGYNIA.

179. Heliotropium.
8 Species.

180. Myosotis. *Mouse-ear.*
4 Species.

Gen. 181.

Gen. 181. Lithospermum.
6 Species.
182. Anchusa.
8 Species.
183. Cynoglossum. *Hound's tongue.*
8 Species.
184. Pulmonaria. *Lungwort.*
5 Species.
185. Symphytum.
Comfrey, &c. 3 Species.
186. Cerinthe.
2 Species.
187. Onosma.
3 Species.
188. Borago. *Borage.*
4 Species.
189. Asperugo.
2 Species.
190. Lycopsis.
6 Species.
191. Echium. *Viper-grass.*
9 Species.
1245. Messersmidia.
1 Species.
192. Tournefortia.
8 Species.
193. Nolana.
1 Species.
194. Diapensia.
2 Species.

Gen. 195. Aretia.
1 Species.
196. Androsace.
5 Species.
197. Primula.
Primrose, Cowslip, Oxlip, &c. 6 Species.
198. Cortusa.
2 Species.
199. Soldanella.
1 Species.
200. Dodecatheon.
1 Species.
201. Cyclamen.
2 Species.
202. Menyanthes. *Buckbean.*
3 Species.
203. Hottonia.
1 Species.
204. Hydrophyllum.
2 Species.
205. Lysimachia. *Loosestrife.*
11 Species.
206. Anagallis.
Pimpernel, &c. 4 Species.
207. Theophrasta.
1 Species.
208. Spigelia.
1 Species.

Gen. 209. Ophiorrhiza.
2 Species.

1248. Lisianthus.
2 Species.

210. Randia.
2 Species.

211. Azalea.
6 Species.

212. Plumbago.
4 Species.

1246. Nigrina.
1 Species.

213. Phlox.
10 Species.

214. Convolvulus.
Bindweed, Scammony, &c.
47 Species.

215. Ipomæa.
19 Species.

216. Polemonium.
4 Species.

217. Campanula. *Bell-flower.*
42 Species.

218. Roella.
2 Species.

219. Phyteuma.
6 Species.

220. Trachelium.
1 Species.

221. Samolus.
1 Species.

222. Nauclea.
1 Species.

223. Rondeletia.
4 Species.

224. Macrocnemum.
1 Species.

225. Bellonia.
1 Species.

226. Portlandia.
2 Species.

227. Cinchona.
Peruvian Bark, &c.
1 Species.

228. Psychotria.
2 Species.

229. Coffea. *Coffee-tree.*
2 Species.

230. Chiococca.
1 Species.

231. Hamelia.
1 Species.

232. Lonicera *Honey-suckle.*
14 Species.

233. Triosteum.
2 Species.

234. Morinda.
3 Species.

235. Conocarpus.
3 Species.

236. Kuhnia.
1 Species

Gen. 237. Erithalis.
1 Species.

238. Menais.
1 Species.

239. Mussænda.
3 Species.

240. Genipa.
1 Species.

1231. Matthiola.
1 Species.

241. Mirabilis.
Jalap, &c. 3 Species.

242. Coris.
1 Species.

1229. Brossæa.
1 Species.

243. Ellisia.
1 Species.

244. Verbascum. *Mullein.*
13 Species.

245. Datura.
Thorn-apple, &c.
6 Species.

246. Hyosciamus. *Henbane.*
7 Species.

247. Nicotiana.
Tobacco-plant, &c.
6 Species.

248. Atropa.
Mandrake, Deadly-nightshade, &c. 5 Species.

Gen. 249. Physalis.
Winter-Cherry, &c.
12 Species.

250. Solanum.
Bitter-sweet, Potatoe, &c.
33 Species.

251. Capsicum.
4 Species.

252. Strychnos. *Nux Vomica.*
2 Species.

253. Jacquinia.
3 Species.

254. Chironia.
8 Species.

255. Cordia.
6 Species.

208. Patagonula.
1 Species.

256. Ehretia.
4 Species.

257. Varronia.
6 Species.

258. Langeria.
1 Species.

259. Brunsfelsia.
1 Species.

260. Cestrum.
2 Species.

261. Lycium.
3 Species.

262. Chrysophyllum.
2 Species.

Gen. 263. Sideroxylon.
8 Species.

264. Rhamnus.
Buckthorn, Jujub, &c.
23 Species.

265. Phylica.
3 Species.

266. Ceanothus.
3 Species.

1250. Arduina.
1 Species.

267. Buttneria.
1 Species

268. Myrsine.
1 Species.

269. Celastrus.
6 Species.

270. Evonymus.
2 Species.

271. Diosma.
7 Species.

272. Brunia.
5 Species.

1247. Cyrilla.
1 Species.

273. Itea.
1 Species.

274. Galax.
1 Species.

275. Cedrela.
1 Species.

Gen. 276. Mangifera. *Mango-tree.*
1 Species.

277. Hirtella.
1 Species.

1249. Plectronia.
1 Species.

278. Ribes.
Currant, Gooseberry, &c.
8 Species.

279. Gronovia.
1 Species.

280. Hedera. *Ivy.*
2 Species.

281. Vitis. *Vine.*
7 Species.

282. Lagoecia.
1 Species.

1234. Roridula.
1 Species.

283. Sauvagesia.
1 Species.

284. Claytonia.
2 Species.

285. Achyranthes.
10 Species.

286. Celosia.
7 Species.

287. Illecebrum.
12 Species.

288. Glaux.
1 Species.

Gen. 289. Thesium.
6 Species.
290. Rauvolfia.
3 Species.
1252. Pæderia.
1 Species.
1251. Carissa.
1 Species.
291. Cerbera.
3 Species.
292. Gardenia.
1 Species.
293. Vinca. *Periwinkle.*
4 Species.
Gen. 294. Nerium.
4 Species.
295. Echites.
11 Species.
296. Plumeria.
3 Species.
297. Cameraria.
2 Species.
298. Tabernæmontana.
6 Species.
299. Ceropegia.
2 Species.

Order 2. DIGYNIA.

1253. Pergularia.
2 Species.
300. Periploca.
4 Species.
301. Cynanchum.
9 Species.
302. Apocynum.
5 Species.
303. Asclepias.
19 Species.
304. Stapelia.
2 Species.
305. Herniaria. *Rupture-wort.*
4 Species.
306. Chenopodium.
18 Species.
307. Beta. *Beet.*
3 Species.
308. Salsola.
13 Species.
309. Anabasis.
3 Species.
310. Cressa.
1 Species.
1254. Steris.
1 Species.
311. Gomphrena.
7 Species.
312. Bosea.
1 Species.
313. Ulmus. *Elm.*
3 Species.

Gen. 314. Nama.
2 Species.
315. Hydrolea.
1 Species.
316. Schrebera.
1 Species.
317. Heuchera.
1 Species.
447. Velezia.
1 Species.
318. Swertia.
5 Species.
319. Gentiana. *Gentian.*
30 Species.
320. Phyllis.
1 Species.

* Umbellatæ.

321. Eryngium. *Eryngo.*
9 Species.
322. Hydrocotyle.
5 Species.
323. Sanicula. *Sanicle.*
3 Species.
324. Astrantia.
2 Species.
325. Bupleurum.
15 Species.
326. Echinophora.
2 Species.
327. Tordylium.
8 Species.
328. Caucalis.
7 Species.

Gen. 329. Artedia.
1 Species.
330. Daucus. *Carrot.*
5 Species.
331. Ammi.
3 Species.
332. Bunium. *Pig-nut.*
1 Species.
333. Conium.
Hemlock, &c. 4 Species.
334. Selinum.
4 Species.
335. Athamanta.
9 Species.
336. Peucedanum.
5 Species.
337. Crithmum. *Samphire.*
2 Species.
338. Cachrys.
2 Species.
339. Hasselquistia.
1 Species.
340. Ferula.
Assafœtida, &c.
9 Species.
341. Laserpitium.
10 Species.
342. Heracleum.
6 Species.
343. Ligusticum. *Lovage.*
6 Species.
344. Angelica.
4 Species.

Gen. 345. Sium.
9 Species.
346. Sison.
6 Species.
347. Bubon.
4 Species.
348 Cuminum.
1 Species.
349. Œnanthe. *Dropwort.*
5 Species.
350. Phellandrium.
2 Species.
351. Cicuta.
3 Species.
352. Aethusa.
1 Species.
353. Coriandrum.
3 Species.
354. Scandix.
9 Species.
355. Chærophyllum. *Chervil.*
8 Species.
356. Imperatoria.
1 Species.
357. Seseli.
12 Species.
358. Thapsia.
5 Species.
359. Pastinaca.
3 Species.
360. Smyrnium.
5 Species.
361. Anethum. *Dill.*
2 Species.
362. Carum. *Carraway.*
1 Species.
363. Pimpinella.
5 Species.
364. Apium. *Parsley.*
2 Species.
365. Ægopodium. *Goutwort.*
1 Species.

Order 3. TRIGYNIA.

366. Rhus.
15 Species.
367. Viburnum. *Guelder-rose,* &c.
9 Species.
368. Cassine.
2 Species.
369. Sambucus. *Elder.*
4 Species.
370. Spathelia.
1 Species.
371. Staphylea.
2 Species.
372. Tamarix. *Tamarisk.*
2 Species.
373. Turnera.
4 Species.

Gen. 374.

Gen. 374. Telephium.
2 Species.
375. Corrigiola.
1 Species.
376. Pharnaceum.
4 Species.
377. Alsine.
3 Species.
Gen. 378. Drypis.
1 Species.
379. Basella.
3 Species.
380. Sarothra.
1 Species.

Order 4. TETRAGYNIA.

381. Parnassia.
1 Species.
382. Evolvulus.
5 Species.

Order 5. PENTAGYNIA.

383. Aralia.
5 Species.
384. Statice.
17 Species.
385. Linum. *Flax.*
22 Species.
386. Aldrovanda.
1 Species.
387. Drosera.
6 Species.
388. Crassula.
22 Species.
1255. Mahernia.
2 Species.
389. Sibbaldia.
2 Species.

Order 6. POLYGYNIA.

390. Myosurus. *Mouse-tail.*
1 Species.

Class 6. HEXANDRIA.

Order 1. MONOGYNIA.

391. Bromelia.
7 Species.
392. Tillandsia.
9 Species.
393. Burmannia.
2 Species.
394, Tradescantia.
5 Species.

Gen. 395.

Gen. 395. Pontederia.
3 Species.
396. Hæmanthus.
4 Species.
397. Galanthus. *Snow-drop.*
1 Species.
398. Leucojum.
2 Species.
399. Narcissus.
13 Species.
400. Pancratium.
7 Species.
401. Crinium.
5 Species.
402. Amaryllis.
11 Species.
403. Bulbocodium.
1 Species.
404. Aphyllanthes.
1 Species.
405. Allium.
Onion, Garlic, &c.
38 Species.
406. Lilium. *Lily.*
9 Species.
407. Fritillaria.
Crown Imperial, &c.
5 Species.
408. Uvularia.
3 Species.
409. Gloriosa.
2 Species.
410. Erythronium.
1 Species.

Gen. 411. Tulipa. *Tulip.*
3 Species.
412. Albuca.
2 Species.
413. Hypoxis.
4 Species.
414 Ornithogalum.
Star of Bethlehem, &c.
11 Species.
415. Scilla. *Squill.*
10 Species.
416. Cyanella.
1 Species.
417. Asphodelus. *Asphodel.*
3 Species.
418. Anthericum.
11 Species.
419. Leontice.
4 Species.
420. Asparagus.
12 Species.
1256. Dracæna.
5 Species.
421. Convallaria.
Lily of the Valley, Solomon's Seal, &c.
8 Species.
422. Polyanthes.
1 Species.
423. Hyacinthus. *Hyacinth.*
13 Species.
424. Aletris.
3 Species.

Gen. 425.

Gen. 425. Yucca.
4 Species.

426. Aloe.
9 Species.

427. Agave.
4 Species.

428. Alstroemeria.
3 Species.

429. Hemerocalis.
2 Species.

430. Acorus.
1 Species.

431. Orontium.
1 Species.

432. Calamus. *Bamboo.*
1 Species.

433. Juncus. *Rush.*
19 Species.

Gen. 434. Richardia.
1 Species.

435. Achras.
3 Species.

436. Prinos.
2 Species.

437. Bursera.
1 Species.

438. Berberis. *Barberry.*
2 Species.

439. Loranthus.
9 Species.

440. Hillia.
1 Species.

441. Frankenia.
3 Species.

442. Peplis.
2 Species.

Order 2. DIGYNIA.

443. Oryza. *Rice.*
1 Species.

444. Atraphaxis.
2 Species.

Order 3. TRIGYNIA.

445. Flagellaria.
1 Species.

446. Rumex.
Dock, &c. 28 Species.

447. Scheuchzeria.
1 Species.

448. Triglochin.
2 Species.

449. Melanthium.
3 Species.

450. Medeola.
2 Species.

451. Trillium.
3 Species.

452. Colchium.
Meadow Saffron, &c.
3 Species.

453. Helonias.
2 Species.

Order 4.

Order 4. TETRAGYNIA.

454. Petiveria.
2 Species.

Order 5. POLYGYNIA.

455. Alisma.
7 Species.

Class 7. HEPTANDRIA.

Order 1. MONOGYNIA.

456. Trientalis.
1 Species.

457. Æsculus. *Horse-Chesnut.*
2 Species.

Order 2. DIGYNIA.

458. Limeum.
1 Species.

Order 3. TETRAGYNIA.

459. Saururus.
1 Species.

Order 4. HEPTAGYNIA.

460. Septas.
1 Species.

Class 8. OCTANDRIA.

Order 1. MONOGYNIA.

461. Tropæolum.
4 Species.

462. Osbeckia.
1 Species.

463. Rhexia.
2 Species.

464. Œnothera.
7 Species.

465. Gaura.
1 Species.

466. Epilobium.
7 Species.

Gen. 1257. Antichorus.
1 Species.

467. Combretum.
2 Species.

468. Grislea.
1 Species.

469. Allophyllus.
1 Species.

470. Ximenia.
2 Species.

471. Mimusops.
2 Species.

472. Jambolifera.
1 Species.

473. Melicocca.
1 Species.

474. Amyris.
Balm of Gilead tree, &c.
8 Species.

475. Santalum.
1 Species.

476. Memecylon.
1 Species.

Gen. 1258. Chlora.
3 Species.

477. Lawsonia.
2 Species.

478. Vaccinium.
Bilberry, Cranberry, &c.
12 Species.

479. Erica. *Heath.*
44 Species.

480. Daphne.
Mezereon, Spurge Laurel, &c. 13 Species.

481. Dirca.
1 Species.

482. Gnidia.
6 Species.

483. Stellera.
2 Species.

484. Passerina.
5 Species.

485. Lachnæa.
2 Species.

486. Bæckea.
1 Species.

Order 2. DIGYNIA.

1259. Schmidelia.
1 Species.

487. Galenia.
1 Species.

488. Weinmannia.
1 Species.

489. Mœhringia.
1 Species.

Order 3. TRIGYNIA.

490. Polygonum.
Bistort, &c. 27 Species.

491. Coccoloba.
6 Species.

Gen. 492. Paullinia.
7 Species.

493. Cardiospermum.
2 Species.

Gen. 494. Sapindus.
3 Species.

Order 4. TETRAGYNIA.

495. Paris.
1 Species.

496. Adoxa.
1 Species.

497. Elatine.
2 Species.

Class 9. ENNEANDRIA.

Order 1. MONOGYNIA.

498. Laurus.
Cinnamon, Cassia, Camphor, and *Sassafras*-trees, *Laurel,* &c.
11 Species.

499. Tinus.
1 Species.

500. Cassyta.
1 Species.

Order 2. TRIGYNIA.

501. Rheum. *Rhubarb.*
5 Species.

Order 3. HEXAGYNIA.

502. Butomus.
1 Species.

Class 10. DECANDRIA.

Order 1. MONOGYNIA.

503. Sophora.
12 Species.

504. Anagyris.
1 Species.

505. Cercis.
2 Species.

506. Bauhinia.
8 Species.

507. Hymenæa.
1 Species.

508. Parkinsonia.
1 Species.

Gen. 509. Cassia.
Senna, &c. 30 Species.
510. Poinciana.
2 Species.
511. Cæsalpinia.
3 Species.
512. Guilandina.
5 Species.
513. Guaiacum.
3 Species.
514. Cynometra.
2 Species.
515. Anacardium.
1 Species.
516. Dictamnus. *Dittany.*
1 Species.
517. Ruta. *Rue.*
4 Species.
518. Toluifera. *Tolu-tree.*
1 Species.
519. Hæmatoxylum.
1 Species.
1260. Prosopis.
1 Species.
1261. Chalcas.
1 Species.
520. Adenanthera.
1 Species.
521. Trichilia.
4 Species.
522. Swietenia.
1 Species.
523. Melia.
2 Species.

Gen. 524. Zygophyllum.
9 Species.
525. Quassia.
1 Species.
526. Fagonia.
3 Species.
527. Tribulus.
4 Species.
528. Thryallis.
1 Species.
529. Limonia. *Lime.*
1 Species.
530. Monotropa.
2 Species.
531. Trianthema.
3 Species.
532. Jussiæa.
4 Species.
533. Heisteria.
1 Species.
534. Quisqualis.
1 Species.
535. Dais.
2 Species.
536. Melastoma.
11 Species.
537. Kalmia.
2 Species.
538. Ledum.
1 Species.
539. Rhododendron.
6 Species.
540. Andromeda.
10 Species.

Gen. 541. Epigæa.
1 Species.

542. Gaultheria.
1 Species.

543. Arbutus.
4 Species.

544. Clethra.
1 Species.

545. Pyrola.
6 Species.

Gen. 546. Styrax. *Storax.*
1 Species.

547. Samyda.
5 Species.

548. Copaifera. *Copaiba.*
1 Species.

549. Bucida.
1 Species.

Order 2. DIGYNIA.

550. Royena.
4 Species.

551. Hydrangea.
1 Species.

552. Cunonia.
1 Species.

553. Chrysosplenium.
2 Species.

554. Saxifraga. *Saxifrage.*
39 Species.

555. Tiarella.
2 Species.

556. Mitella.
2 Species.

557. Scleranthus.
2 Species.

558. Gypsophila.
11 Species.

559. Saponaria. *Soapwort.*
7 Species.

560. Dianthus.
Pink, Carnation, Sweet-William, &c. 18 Species.

Order 3. TRIGYNIA.

561. Cucubalus.
15 Species.

562. Silene. *Catch-fly.*
34 Species.

563. Stellaria. *Starwort.*
8 Species.

564. Arenaria. *Sandwort.*
20 Species.

565. Cherleria.
1 Species.

566. Garidella.
1 Species.

567. Malphigia.
9 Species.

568. Banisteria.
7 Species.

Gen. 569.

Gen. 569. Hiræa.
1 Species.

570. Triopteris.
1 Species.

Gen. 571. Erythroxylon.
2 Species.

Order 4. PENTAGYNIA.

572. Averrhoa.
3 Species.

573. Spondias.
2 Species.

574. Cotyledon.
7 Species.

575. Sedum. *Stone-crop.*
19 Species.

576. Penthorum.
1 Species.

577. Suriana.
1 Species.

1235. Grielum.
1 Species.

578. Oxalis.
Sorrel, &c. 14 Species.

579. Agrostemma.
4 Species.

580. Lychnis.
7 Species.

581. Cerastium.
16 Species.

586. Spergula. *Spurry.*
5 Species.

1262. Forskohlea.
1 Species.

Order 5. DECAGYNIA.

587. Neurada.
1 Species.

588. Phytolacca.
4 Species.

Class 11. DODECANDRIA.

Order 1. MONOGYNIA.

589. Asarum.
3 Species.

590. Bocconia.
1 Species.

591. Gethyllis.
1 Species.

592. Rhizophora.
7 Species.

593. Blakea.
1 Species.

594. Garcinia.
1 Species.

Gen. 596.

Gen. 596. Halesia.
2 Species.

597. Decumaria.
1 Species.

598. Winterania.
1 Species.

599. Cratæva.
3 Species.

600. Triumfetta.
3 Species.

601. Peganum.
2 Species.

Gen. 1263. Hudsonia.
1 Species.

602. Nitraria.
1 Species.

603. Portulaca.
7 Species.

604. Lythrum.
10 Species.

605. Ginora.
1 Species.

Order 2. DIGYNIA.

606. Heliocarpus.
1 Species.

607. Agrimonia.
3 Species.

Order 3. TRIGYNIA.

608. Reseda.
Woad, &c. 11 Species.

609. Euphorbia. *Spurge.*
63 Species.

Order 4. PENTAGYNIA.

610. Glinus.
1 Species.

Order 5. OCTAGYNIA.

611. Illicium.
1 Species.

Order 6. DODECAGYNIA.

612. Sempervivum.
House-leek, &c. 7 Species.

Class 12. ICOSANDRIA.

Order 1. MONOGYNIA.

Gen. 613. Cactus.
24 Species.

614. Philadelphus.
2 Species.

615. Psidium.
2 Species.

616. Eugenia.
6 Species.

617. Myrtus.
Myrtles, Pimento, &c.
12 Species.

Gen. 618. Punica. *Pomegranate.*
2 Species.

619. Amygdalus.
Peach, Nectarine, Almonds. 4 Species.

620. Prunus.
Sloe, Cherry, &c.
13 Species.

621. Chrysobalanus.
1 Species.

Order 2. DIGYNIA.

622. Cratægus.
Hornbeam, Hawthorn, &c. 9 Species.

Order 3. TRIGYNIA.

623. Sorbus.
Mountain-Ash, &c.
3 Species.

624. Sesuvium.
1 Species.

Order 4. PENTAGYNIA.

625. Mespilus.
Medlar, &c. 7 Species.

626. Pyrus.
Apple, Pear, &c.
5 Species.

627. Tetragonia.
2 Species.

628. Mesembryanthemum.
45 Species.

629. Aizoon.
3 Species.

630. Spiræa.
Dropwort, Meadow-sweet, &c. 11 Species.

Order 5.

Order 5. POLYGYNIA.

Gen. 631. Rosa. *Rose.*
14 Species.

632. Rubus. *Raspberry.*
13 Species.

633. Fragaria. *Strawberry.*
4 Species.

634. Potentilla.
28 Species.

635. Tormentilla.
2 Species.

Gen. 636. Geum.
5 Species.

637. Dryas.
2 Species.

638. Comarum. *Marsh-locks.*
1 Species.

639. Calycanthus.
2 Species.

Class 13. POLYANDRIA.

Order 1. MONOGYNIA.

640. Marcgravia.
1 Species.

641. Rheedia.
1 Species.

643. Capparis.
13 Species.

644. Actæa.
2 Species.

645. Sanguinaria.
1 Species.

646. Podophyllum.
2 Species.

647. Chelidonium. *Celandine.*
4 Species.

648. Papaver. *Poppy.*
9 Species.

649. Argemone.
3 Species.

650. Cambogia.
1 Species.

651. Muntingia.
1 Species.

652. Sarracenia.
2 Species.

653. Nymphæa.
Water-Lily, Egyptian Lotus, &c. 4 Species.

654. Bixa.
1 Species.

655. Sloanea.
2 Species.

1239. Trewia.
1 Species.

656. Mammea.
2 Species.

657. Ochna.
2 Species.

Gen. 659. Grias.
1 Species.

658. Calophyllum.
2 Species.

660. Tilia. *Lime-tree.*
2 Species.

661. Lætia.
2 Species.

663. Elæocarpus.
1 Species.

664. Lecythis.
2 Species.

672. Delima.
1 Species.

666. Vateria.
1 Species.

670. Mentzelia.
1 Species.

1286. Loosa (of Jacquin).
1 Species.

Gen. 667. Lagerstroemia.
1 Species.

668. Thea.
Bohea and Green Tea.
2 Species.

669. Caryophyllus. *Clove.*
1 Species.

671. Plinia.
1 Species.

673. Cistus.
37 Species.

674. Prockia.
1 Species.

675. Corchorus.
7 Species.

676. Seguieria.
1 Species.

677. Symplocos.
1 Species.

Order 2. DIGYNIA.

678. Pæonia. *Pæony.*
2 Species.

679. Curatella.
1 Species.

680. Calligonum.
1 Species.

Order 3. TRIGYNIA.

681. Delphinium.
Larkspur, &c. 7 Species.

682. Aconitum.
Monk's-hood, &c. 6 Species.

Order 4. TETRAGYNIA.

683. Tetracera.
1 Species.

Order 5.

Order 5. PENTAGYNIA.

Gen. 684. Aquilegia.
Columbine, &c. 4 Species.

685. Nigella.
7 Species.

Gen. 686. Reaumuria.
1 Species.

Order 6. HEXAGYNIA.

687. Stratiotes.
2 Species.

Order 7. POLYGYNIA.

688. Dillenia.
1 Species.

689. Liriodendron.
Tulip-tree and Lily-tree.
2 Species.

690. Magnolia.
4 Species.

691. Michelia.
2 Species.

692. Uvaria.
2 Species.

693. Annona.
8 Species.

694. Anemone.
24 Species.

695. Atragene.
3 Species.

696. Clematis.
Traveller's Joy, &c.
11 Species.

697. Thalictrum.
14 Species.

698. Adonis.
Pheasant's Eye, &c.
5 Species.

699. Ranunculus.
39 Species.

700. Trollius. *Globe-flower.*
2 Species.

701. Isopyrum.
3 Species.

702. Helleborus. *Hellebore.*
5 Species.

703. Caltha. *Marsh Marigold.*
1 Species.

704. Hydrastis.
1 Species.

Class 14. DIDYNAMIA.

Order 1. GYMNOSPERMIA.

705. Ajuga. *Bugle.*
5 Species.

706. Teucrium.
Wood-Sage, Ground-Pine, &c. 35 Species.

Gen. 707. Satureja.
9 Species.
708. Thymbra.
2 Species.
709. Hyssopus. *Hyssop.*
3 Species.
710. Nepeta.
Cat-mint, &c. 14 Species.
711. Lavandula. *Lavender.*
4 Species.
712. Sideritis.
11 Species.
713. Mentha. *Mint.*
16 Species.
1236. Perilla.
1 Species.
714. Glecoma. *Ground Ivy.*
1 Species.
716. Lamium.
Dead-Nettle, &c.
8 Species.
717. Galeopsis.
3 Species.
718. Betonica. *Betony.*
4 Species.
719. Stachys.
All-heal, &c. 15 Species.
720. Ballota.
5 Species.
721. Marrubium.
Horehound, &c.
10 Species.
722. Leonurus.
Mother-wort, &c.
4 Species.

Gen. 723. Phlomis.
13 Species.
724. Moluccella.
3 Species.
725. Clinopodium.
3 Species.
726. Origanum.
Marjoram, &c. 11 Species.
727. Thymus. *Thyme.*
9 Species.
728. Melissa.
6 Species.
729. Dracocephalum.
11 Species.
730. Horminum.
2 Species.
731. Melittis.
1 Species.
732. Ocymum.
11 Species.
733. Trichostema.
2 Species.
734. Scutellaria. *Scull-cap.*
14 Species.
735. Prunella.
3 Species.
736. Cleonia.
1 Species.
737. Prasium.
2 Species.
738. Phryma.
1 Species.

Order 2.

Order 2. ANGIOSPERMIA.

Gen. 739. Bartsia.
4 Species.

740. Rhinanthus.
7 Species.

741. Euphrasia. *Eye-bright.*
7 Species.

742. Melampyrum.
5 Species.

743. Lathræa.
4 Species.

744. Schwalbea.
1 Species.

745. Tozzia.
1 Species.

746. Pedicularis. *Louse-wort.*
16 Species.

747. Gerardia.
6 Species.

748. Chelone.
4 Species.

749. Gesneria.
3 Species.

750. Antirrhinum. *Snap-dragon.*
40 Species.

751. Cymbaria.
1 Species.

752. Craniolaria.
2 Species.

753. Martynia.
3 Species.

Gen. 754. Torenia.
1 Species.

755. Besleria.
3 Species.

756. Scrophularia.
15 Species.

757. Celsia.
1 Species.

758. Digitalis. *Fox-glove.*
6 Species.

759. Bignonia.
17 Species.

760. Citharexylum.
2 Species.

761. Halleria.
1 Species.

762. Crescentia.
1 Species.

763. Gmelina.
1 Species.

764. Petrea.
1 Species.

765. Lantana.
9 Species.

766. Cornutia.
1 Species.

767. Loeselia.
1 Species.

768. Capraria.
3 Species.

769. Selago.
10 Species.

Gen. 1264. Manulea.
1 Species.
770. Hebenstretia.
3 Species.
771. Erinus.
4 Species.
772. Buchnera.
4 Species.
773. Browallia.
3 Species.
774. Linnæa.
1 Species.
775. Sibthorpia.
3 Species.
776. Limosella. *Mud-weed.*
1 Species.
1265. Vandellia.
1 Species.
777. Stemodia.
1 Species.
778. Obolaria.
1 Species.
779. Orobanche.
7 Species.
780. Dodartia.
2 Species.
781. Lippia.
3 Species.
782. Sesamum.
2 Species.

Gen. 783. Mimulus.
2 Species.
784. Ruellia.
13 Species.
785. Barleria.
7 Species.
786. Duranta.
2 Species.
787. Ovieda.
2 Species.
788. Volkameria.
3 Species.
789. Clerodendrum.
4 Species.
790. Vitex.
4 Species.
791. Bontia.
1 Species.
1237. Avicennia.
2 Species.
792. Columnea.
2 Species.
793. Acanthus.
5 Species.
794. Pedalium.
1 Species.
795. Melianthus.
2 Species.

Class 15. TETRADYNAMIA.

Order 1. SILICULOSÆ.

796. Myagrum.
9 Species.
797. Vella.
2 Species.

Gen. 798. Anastatica.
2 Species.

799. Subularia.
1 Species.

800. Draba.
8 Species.

801. Lepidium.
Wall-pepper, &c.
19 Species.

802. Thlaspi.
Shepherd's-purse, &c.
10 Species.

803. Cochlearia.
Horse-radish, &c.
8 Species.

Gen. 804. Iberis.
Candy-tuft, &c.
12 Species.

805. Alyssum.
17 Species.

807. Clypeola.
3 Species.

806. Peltaria.
1 Species.

808. Biscutella.
2 Species.

809. Lunaria. *Moonwort.*
2 Species.

Order 2. SILIQUOSA.

810. Ricotia.
1 Species.

811. Dentaria.
3 Species.

812. Cardamine.
15 Species.

813. Sisymbrium.
Water-Cress, &c.
26 Species.

814. Erysimum.
6 Species.

815. Cheiranthus. *Wall-flower.*
17 Species.

816. Heliophila.
2 Species.

817. Hesperis.
7 Species.

818. Arabis.
9 Species.

819. Turritis.
3 Species.

820. Brassica.
Rape, Turnip, &c.
13 Species.

821. Sinapis. *Mustard*
12 Species.

822. Raphanus. *Radish.*
3 Species.

823. Bunias.
6 Species.

Gen. 824. Isatis.
4 Species.

825. Crambe.
Sea-Cabbage, &c.
3 Species.

Gen. 826. Cleome.
16 Species.

Class 16. MONADELPHIA.

Order 1. PENTANDRIA.

827. Waltheria.
2 Species.

828. Hermannia.
8 Species.

829. Melochia.
6 Species.

Order 2. ENNEANDRIA.

833. Brownæa.
1 Species.

Order 3. DECANDRIA.

830. Connarus.
1 Species.

831. Hugonia.
1 Species.

832. Geranium.
60 Species.

Order 4. DODECANDRIA.

834. Pentapetes.
3 Species.

Order 5. POLYANDRIA.

836. Adansonia.
1 Species.

835. Bombax.
4 Species.

837. Cida.
21 Species.

1266. Malachra.
2 Species.

838. Napæa.
2 Species.

839. Althæa.
Marsh-Mallow, &c.
4 Species.

Gen. 840. Alcea.
2 Species.

841. Malva. *Mallow.*
23 Species.

842. Lavatera.
Tree-Mallow, &c.
9 Species.

843. Malope.
1 Species.

844. Urena.
3 Species.

845. Gossypium. *Cotton-tree.*
5 Species.

Gen. 846. Hibiscus.
25 Species.

847. Stewartia.
1 Species.

848. Camellia.
1 Species.

665. Mesua.
1 Species.

642. Morisonia.
1 Species.

Class 17. DIADELPHIA.

Order 1. PENTANDRIA.

850. Monnieria.
1 Species.

Order 2. HEXANDRIA.

1267. Saraca.
1 Species.

849. Fumaria. *Fumitory.*
12 Species.

Order 3. OCTANDRIA.

851. Polygala.
Milk-wort, &c.
25 Species.

852. Securidaca.
2 Species.

Order 4. DECANDRIA.

853. Nissolia.
2 Species.

1286. Abrus.
1 Species.

854. Pterocarpus.
1 Species.

855. Erythrina.
4 Species.

Gen. 856. Piscidia.
2 Species.

857. Borbonia.
7 Species.

858. Spartium. *Broom.*
11 Species.

859. Genista.
13 Species.

860. Aspalathus.
19 Species.

881. Ulex. *Furze.*
2 Species.

861. Amorpha.
1 Species.

862. Crotalaria.
17 Species.

863. Ononis.
Rest-harrow, &c.
20 Species.

864. Anthyllis.
10 Species.

876. Arachis.
1 Species.

895. Ebenus.
1 Species.

865. Lupinus. *Lupin.*
6 Species.

866. Phaseolus. *Bean.*
15 Species.

867. Dolichos.
Cowhage, &c. 27 Species.

868. Glycine.
10 Species.

Gen. 869. Clitoria.
5 Species.

870. Pisum. *Pea.*
4 Species.

871. Orobus.
9 Species.

872. Lathyrus.
21 Species.

873. Vicia. *Vetch.*
18 Species.

874. Ervum.
6 Species.

875. Cicer.
1 Species.

876. Cytiscus.
11 Species.

878. Geoffrœa.
1 Species.

879. Robinia.
7 Species.

880. Colutea.
3 Species.

882. Glycyrrhiza. *Liquorice.*
3 Species.

883. Coronilla.
11 Species.

884. Ornithopus. *Bird's-foot.*
4 Species.

885. Hippocrepis. *Horseshoe Vetch.*
3 Species.

Gen. 886. Scorpiurus.
4 Species.
888. Aeschynomene.
7 Species.
887. Hedysarum.
49 Species.
889. Indigofera. *Indigo-plant.*
5 Species.
890. Galega.
10 Species.
891. Phaca.
5 Species.
892. Astragalus.
40 Species.
Gen. 893. Bisserula.
1 Species.
894. Psoralea.
15 Species.
896. Trifolium. *Trefoil.*
40 Species.
879. Lotus.
18 Species.
898. Trigonella.
10 Species.
899. Medicago.
9 Species.

Class 18. POLYADELPHIA.

Order 1. PENTANDRIA.

900. Theobroma. *Cacao.*
2 Species.

Order 2. DODECANDRIA.

1268. Monsonia.
1 Species.

Order 3. ICOSANDRIA.

901. Citrus. *Citron.*
3 Species.

Order 4. POLYANDRIA.

1269. Melaleuca.
1 Species.
1270. Hopea.
1 Species.
902. Hypericum. *Tutsan.*
33 Species.
903. Ascyrum.
3 Species.

Class 19. SYNGENESIA.

Order 1. POLYGAMIA ÆQUALIS.

Gen. 904. Geropogon. *Old Man's Beard.*
2 Species.

905. Tragopogon. *Goat's Beard.*
11 Species.

906. Scorzonera.
10 Species.

907. Picris.
3 Species.

908. Sonchus.
Sow-thistle, &c.
10 Species.

909. Lactuca. *Lettuce.*
7 Species.

910. Chondrilla.
1 Species.

911. Prenanthes.
9 Species.

912. Leontodon. *Dandelion.*
7 Species.

913. Hieracium. *Hawkweed.*
29 Species.

914. Crepis.
16 Species.

915. Andryala.
3 Species.

916. Hyoseris.
9 Species.

Gen. 917. Seriola.
4 Species.

918. Hypochæris.
4 Species.

919. Lapsana.
4 Species.

920. Catananche.
3 Species.

921. Cichorium. *Endive.*
3 Species.

922. Scolymus.
2 Species.

923. Arctium.
Bur-weed, &c. 3 Species.

924. Serratula. *Saw-wort.*
16 Species.

925. Carduus. *Thistle.*
26 Species.

926. Cnicus.
8 Species.

927. Onopordum.
4 Species.

928. Cynara.
Artichoke, &c. 4 Species.

929. Carlina.
7 Species.

930. Atractylis.
3 Species.

931. Carthamus.
9 Species.

Gen. 1287. Spilanthus of Jacquin.
3 Species.

932. Bidens.
13 Species.

933. Cacalia.
14 Species.

934. Ethulia.
5 Species.

935. Eupatorium.
22 Species.

936. Ageratum.
3 Species.

937. Pteronia.
2 Species.

Gen. 938. Stæhelina.
5 Species.

939. Chrysocoma. *Golden-Hair.*
9 Species.

940. Tarchonanthus.
1 Species.

941. Calea.
3 Species.

942. Santolina.
4 Species.

943. Athanasia.
11 Species.

Order 2. POLYGAMIA SUPERFLUA.

944. Tanacetum. *Tansy.*
8 Species.

945. Artemisia. *Wormwood.*
24 Species.

946. Gnaphalium. *Cud-weed.*
41 Species.

947. Xeranthemum.
11 Species.

948. Carpesium.
2 Species.

949. Baccharis.
7 Species.

950. Conyza.
22 Species.

951. Erigeron.
18 Species.

952. Tussilago. *Colt's-foot.*
10 Species.

953. Senecio.
Ragwort, Groundsel, &c.
41 Species.

954. Aster. *Star-wort.*
37 Species.

955. Solidago.
Golden-rod, &c.
14 Species.

957. Cineraria.
13 Species.

956. Inula.
24 Species.

958. Arnica.
Wolf's-bane, &c.
7 Species.

Gen. 959.

Gen. 959. Doronicum.
3 Species.
960. Perdicium.
3 Species.
961. Helenium.
1 Species.
962. Bellis. *Daisy.*
2 Species.
964. Tagetes.
African Marigold, &c.
3 Species.
963. Leysera.
2 Species.
974. Zinnia.
2 Species.
965. Pectis.
3 Species.
966. Chrysanthemum.
Marigold.
22 Species.
967. Matricaria.
7 Species.

Gen. 968. Cotula.
10 Species.
969. Anacyclus.
3 Species.
970. Anthemis.
Chamomile, &c.
17 Species.
971. Achillea.
Yarrow, &c. 21 Species.
972. Tridax.
1 Species.
978. Amellus.
1 Species.
973. Siegesbeckia.
2 Species.
975. Verbesina.
12 Species.
977. Buphthalmum.
11 Species.

Order 3. POLYGAMIA FRUSTRANEA.

979. Helianthus. *Sun-flower.*
12 Species.
980. Rudbeckia.
6 Species.
981. Coreopsis.
11 Species.
983. Osmites.
3 Species.

981. Gorteria.
5 Species.
1271. Zoegea.
1 Species.
984. Centaurea.
Centaury, Blue-bottle, &c.
65 Species.

Order 4.

Order 4. POLYGAMIA NECESSARIA.

Gen. 985. Milleria.
2 Species.

986. Silphium.
5 Species.

987. Polymnia.
4 Species.

988. Chrysogonum.
1 Species.

989. Melampodium.
2 Species.

990. Calendula.
8 Species.

Gen. 991. Arctotis.
11 Species.

992. Osteospermum.
5 Species.

993. Othonna.
9 Species.

994. Eriocephalus.
3 Species.

995. Filago.
7 Species.

996. Micropus.
2 Species.

Order 5. POLYGAMIA SEGREGATA.

997. Elephantopus.
2 Species.

998. Sphæranthus.
3 Species.

999. Echinops.
4 Species.

1000. Gundelia.
1 Species.

1001. Stoebe.
1 Species.

Order 6. MONOGAMIA.

1003. Seriphium.
4 Species.

1002. Strumpfia.
1 Species.

1004. Corymbium.
2 Species.

1005. Jasione.
1 Species.

1006. Lobelia.
28 Species.

1007. Viola. *Violet.*
24 Species.

1008. Impatiens. *Touch-me-not.*
7 Species.

Class 20. GYNANDRIA.

Order 1. DIANDRIA.

Gen. 1009. Orchis.
32 Species.

1010. Satyrium.
8 Species.

1011. Ophrys.
18 Species.

1012. Serapias. *Helleborine.*
6 Species.

1013. Limodorum.
2 Species.

Gen. 1014. Arethusa.
3 Species.

1015. Cypripedium. *Ladies' Slipper.*
2 Species.

1016. Epidendrum.
30 Species.

1272. Gunnera.
1 Species.

Order 2. TRIANDRIA.

1017. Sisyrinchium.
2 Species.

1018. Ferraria.
1 Species.

1273. Stilago.
1 Species.

Order 3. TETRANDRIA.

1019. Nepenthes.
1 Species.

Order 4. PENTANDRIA.

1020. Ayenia.
3 Species.

1021. Passiflora. *Passion-flower.*
26 Species.

Order 5. HEXANDRIA.

1022. Aristolochia. *Birth-wort.*
20 Species.

1023. Pistia.
1 Species.

Order 6.

Order 6. DECANDRIA.

Gen. 1024. Kleinhovia.
1 Species.

Gen. 1025. Helicteres.
5 Species.

Order 7. DODECANDRIA.

1232. Cytinus.
1 Species.

Order 8. POLYANDRIA.

1027. Xylopia.
2 Species.

1026. Grewia.
4 Species.

1238. Ambrosinia.
1 Species.

1028. Arum.
22 Species.

1029. Dracontium.
5 Species.

1030. Calla.
2 Species.

1031. Pothos.
7 Species.

1032. Zostera.
2 Species.

Class 21. MONŒCIA.

Order 1. MONANDRIA.

1034. Zannichellia.
1 Species.

1035. Ceratocarpus.
1 Species.

1033. Cynomorium.
1 Species.

1203. Chara.
4 Species.

1036. Elaterium.
2 Species.

Order 2. DIANDRIA.

1037. Anguria.
3 Species.

1038. Lemna. *Duckweed.*
4 Species.

Order 3. TRIANDRIA.

1040. Typha. *Cat's Tail.*
2 Species.

1041. Sparganium.
2 Species.

Gen. 1042. Zea. *Indian Corn.*
1 Species.

1044. Tripsacum.
1 Species.

1043. Coix.
1 Species.

1045. Olyra.
1 Species.

1046. Carex. *Sedge.*
39 Species.

Gen. 1047. Axyris.
4 Species.

1039. Omphalea.
1 Species.

1048. Tragia.
5 Species.

1049. Hernandia.
1 Species.

1050. Phyllanthus.
6 Species.

Order 4. TETRANDRIA.

1051. Centella.
2 Species.

1274. Serpicula.
1 Species.

1275. Cicca.
1 Species.

1052. Betula. *Birch.*
6 Species.

1053. Buxus. *Box.*
1 Species.

1054. Urtica. *Nettle.*
19 Species.

1055. Morus. *Mulberry.*
7 Species.

Order 5. PENTANDRIA.

1277. Nephelium.
1 Species.

1056. Xanthium.
3 Species.

1057. Ambrosia.
4 Species.

1058. Parthenium.
2 Species.

1059. Iva.
2 Species.

273. Hartogia.
5 Species.

1060. Amaranthus.
22 Species.

1061. Solandra.
Species.

1276. Leea.
2 Species.

Order 6. HEXANDRIA.

1062. Zizania.
2 Species.

1063. Pharus.
1 Species.

Order 7.

Order 7. HEPTANDRIA.

Gen. 1064. Guettarda.

1 Species.

Order 8. POLYANDRIA.

1065. Ceratophyllum.
2 Species.

1066. Myriophyllum.
2 Species.

1067. Sagittaria. *Arrow-leaf.*
4 Species.

1068. Theligonum.
1 Species.

1069. Poterium.
3 Species.

1070. Quercus. *Oak.*
14 Species.

1071. Juglans. *Filbert.*
4 Species.

1072. Fagus. *Beech.*
3 Species, inclusive of the *Horse-Chesnut.*

1073. Carpinus.
2 Species.

1074. Corylus. *Hazel.*
2 Species.

1075. Platanus. *Plane.*
2 Species.

1076. Liquidambar. *Storax-tree.*
2 Species.

Order 9. DIADELPHIA.

1077. Pinus. *Pine-tree.*
12 Species, inclusive of the *Cedar, Larch, Firs,* &c.

1078. Thuja.
4 Species.

1079. Cupressus. *Cypress.*
4 Species.

1080. Plukenetia.
1 Species.

1081. Dalechampia.
1 Species.

1082. Acalypha.
4 Species.

1083. Croton.
21 Species.

279. Cupania.
1 Species.

1084. Jatropha.
8 Species.

1085. Ricinus.
2 Species.

1086. Sterculia.
2 Species.

1088. Hippomane.
3 Species.

1279. Stillingia.
1 Species.

Gen. 1278. Gnetum.
1 Species.

Gen. 1087. Hura.
1 Species.

Order 10. SYNGENESIA.

1089. Trichosanthes.
4 Species.

1090. Momordica.
Spirting Cucumber, &c.
8 Species.

1091. Cucurbita. *Gourd.*
6 Species.

1092. Cucumis. *Cucumber.*
11 Species, inclusive of the *Bitter Apple, Melon*, &c.

1093. Bryonia. *Bryony.*
7 Species.

1094. Sicyos.
2 Species.

Order 11. GYNANDRIA.

1095. Andrachne.
1 Species.

Class 22. DIŒCIA.

Order 1. MONANDRIA.

1096. Naias.
1 Species.

Order 2. DIANDRIA.

1097. Vallisneria.
1 Species.

1098. Salix. *Willow.*
31 Species.

1099. Cecropia.
1 Species.

Order 3. TRIANDRIA.

1100. Empetrum.
2 Species.

1101. Osyris.
1 Species.

1102. Excœcaria.
1 Species.

1280. Caturus.
2 Species.

Order 4.

Order 4. TETRANDRIA.

Gen. 1103. Trophis.
1 Species.

1104. Batis.
1 Species.

1105. Viscum. *Misletoc.*
6 Species.

Gen. 1106. Hippophaë.
2 Species.

1107. Myrica. *Myrtle.*
5 Species.

Order 5. PENTANDRIA.

1108. Pistacia.
Turpentine-tree, &c.
5 Species.

1109. Zanthoxylum.
2 Species.

1111. Astronium.
1 Species.

1281. Canarium.
1 Species.

1118. Antidesma.
1 Species.

1113. Iresine.
1 Species.

1112. Spinacia. *Spinach.*
2 Species.

1114. Acnida.
1 Species.

1115. Cannabis. *Hemp.*
1 Species.

1116. Humulus. *Hop.*
1 Species.

1117. Zanonia.
1 Species.

1118. Fevillea.
2 Species.

Order 6. HEXANDRIA.

1119. Tamus.
2 Species.

1120. Smilax.
Sarsaparilla, China, &c. 13 Species.

1121. Raiania.
3 Species.

1122. Dioscorea.
8 Species.

Order 7. OCTANDRIA.

1123. Populus. *Poplar.*
5 Species.

1124. Rhodiola.
1 Species.

Order 8.

Order 8. ENNEANDRIA.

Gen. 1125. Mercurialis. *Mercury.*
4 Species.

Gen. 1126. Hydrocharis. *Frog's-bit.*
1 Species.

Order 9. DECANDRIA.

1127. Carica.
2 Species.

1128. Kiggelaria.
1 Species.

1130. Schinus.
2 Species.

1129. Coriaria.
2 Species.

Order 10. DODECANDRIA.

1132. Datisca.
2 Species.

1131. Menispermum.
8 Species.

Order 11. POLYANDRIA.

1282. Cimicifuga.
1 Species.

1133. Cliffortia.
4 Species.

Order 12. MONADELPHIA.

1134. Juniperus. *Juniper.*
10 Species, inclusive of *Bermuda Cedar, Frankincense-tree, Savin,* &c.

1135. Taxus. *Yew.*
2 Species.

1136. Ephedra.
2 Species.

1138. Cissampelos.
3 Species.

1137. Adelia.
3 Species.

Order 13. SYNGENESIA.

1139. Ruscus.
5 Species.

Order 14. GYNANDRIA.

1140. Clutia.
7 Species.

Class 23. POLYGAMIA.

Order 1. MONŒCIA.

Gen. 1141. Musa.
4 Species.

1142. Ophioxylon.
1 Species.

1143. Celtis.
3 Species.

1144. Veratrum.
3 Species.

1145. Andropogon.
18 Species.

1146. Holcus.
10 Species.

1147. Apluda.
2 Species.

1148. Ischæmum.
2 Species.

1149. Cenchrus.
6 Species.

1150. Aegilops.
5 Species.

Gen. 1151. Valantia.
8 Species.

1152. Parietaria. *Pellitory.*
6 Species.

1153. Atriplex.
10 Species.

1283. Terminalia.
1 Species.

1154. Clusia.
4 Species.

1155. Acer. *Maple.*
10 Species.

1157. Gouania.
1 Species.

1156. Begonia.
1 Species.

1158. Mimosa.
Sensitive Plant, &c.
44 Species.

Order 2. DIŒCIA.

1159. Gleditsia.
1 Species.

1160. Fraxinus. *Ash.*
3 Species.

1161. Diospyros.
2 Species.

1163. Nyssa.
1 Species.

1164. Anthospermum.
2 Species.

1165. Arctopus.
1 Species.

1162. Pisonia.
2 Species.

1166. Panax.
3 Species.

Order 3.

Order 3. TRIŒCIA.

Gen. 1167. Ceratonia.
1 Species.

Gen. 1168. Ficus. *Fig.*
8 Species.

Class 24. CRYPTOGAMIA.

Order 1. FILICES.

1169. Equisetum. *Marc's-tail.*
7 Species.

1170. Onoclea.
7 Species.

1172. Osmunda.
17 Species.

1173. Acrostichum.
30 Species.

1174. Pteris.
Brakes, &c. 20 Species.

1175. Blechnum.
3 Species.

1176. Hemionitis.
3 Species.

1177. Lonchitis.
4 Species.

1178. Asplenium.
24 Species.

1179. Polypodium. *Polypody.*
64 Species.

1180. Adiantum.
20 Species.

1181. Trichomanes.
11 Species.

1182. Marsilea.
2 Species.

1183. Pilularia.
1 Species.

1184. Isoetes.
1 Species.

Order 2. MUSCI.

1185. Lycopodium.
Club-moss, &c.
24 Species.

1186. Porella.
1 Species.

1187. Sphagnum.
Bog-moss, &c.
3 Species.

1189. Phascum.
4 Species.

1190. Fontinalis.
4 Species.

1188. Buxbaumia.
1 Species.

1191. Splachnum.
4 Species.

Gen. 1192.

Gen. 1192. Polytrichum.
3 Species.
1593. Mnium.
18 Species.
Gen. 1594. Bryum.
32 Species.
1595. Hypnum.
43 Species.

Order 3. ALGÆ.

1196. Jungermannia.
28 Species.
1197. Targionia.
1 Species.
1198. Marchantia.
7 Species.
1199. Blasia.
1 Species.
1200. Riccia.
5 Species.
1201. Anthoceros.
3 Species.
1202. Lichen.
Liverwort, Lungwort, Cupmoss, &c.
91 Species.
1204. Tremella.
9 Species.
1205. Fucus.
54 Species.
1206. Ulva.
Laver, Sea Lettuce, &c. 10 Species.
1207. Conferva.
21 Species.
1208. Byssus.
12 Species.

Order 4. FUNGI.

1209. Agaricus.
Common Mushroom, &c. 14 Species.
1210. Boletus.
14 Species.
1211. Hydnum.
5 Species.
1212. Phallus.
2 Species.
1213. Clathrus.
4 Species.
1214. Helvella.
2 Species.
1215. Peziza.
9 Species.
1216. Clavaria.
8 Species.
1217. Lycoperdon.
Trufle, Puff-ball, &c.
11 Species.
1218. Mucor. *Mould.*
12 Species.

APPENDIX.

PALMÆ. *Palms.* Spathaceous, and consisting of three petals.

Gen. 1219. Chamærops.
1 Species.

1220. Borassus. *Fan-palm.*
1 Species.

1221. Corypha.
1 Species.

1222. Cycas. *Sago.*
1 Species.

1223. Cocos. *Cocoa.*
2 Species.

1224. Phœnix.
1 Species.

Gen. 1284. Elais.
1 Species.

1225. Areca.
2 Species.

1226. Elate.
1 Species.

1227. Zamia.
1 Species.

1228. Caryota.
1 Species.

ADDENDA.

Panicum curvatum.
Festuca spadicea.
Rubia lucida.
Scandix infesta.
Carum Bunias.
Passerina ericoides.
Arenaria fasciculata.
Astragalus Stella.
Cotula stricta.

The *Genera* are established upon the assemblage of all the parts of fructification compared together, according to their *number*, *figure*, *proportion*, and *situation*, as we have mentioned before, (see p. 57.) Besides the *Natural Characters* of these *genera*, our author invented, for brevity's sake, two other kinds of characters, which he calls *Factitious* and *Essential*. The *Factitious* serve to distinguish each genus from other *genera* of the same *artificial* order, and greatly facilitate the labour of the young botanist. The *Essential* characters, could they be rendered perfect, are designed to distinguish the *genera* from each other in their *natural* orders; but they are not as yet complete,

except in a few instances, and possibly they exist but in a small number; nevertheless they are attempted throughout the system, to save the trouble of turning over the natural characters at large, which in this volume were not thought necessary to be introduced*, the author having already given them in his last edition of the GENERA PLANTARUM (1764), and the number prefixed to each genus refers to them as they stand in that work. The factitious characters are placed at the head of each class, and the essential at the head of each genus. With regard to the *species*, as they had been described in detail in his SPECIES PLANTARUM, of 1762, the *characteristic differences* only are inserted in the SYSTEMA, but the reader is referred to the page of the other work for the description at large.

In forming the specific characters, Linnæus has done more than all the writers who preceded him, having taken the utmost pains to fix them upon distinctions as permanent and invariable as possible. This indeed is the ultimate object of all method. He gave new definitions to all the plants that came to his knowledge,—definitions not taken (as had been customary before) from the name of the discoverer, the likeness of the plant to other species, place of growth, time of flowering, the size, the colour of the flower or of the plant, the smell, taste, virtues in medicine, or any such vague, indefinite, or mutable circumstance; but from some remarkable difference in the root, trunk, stalk, leaf, or other obvious part.

In all his works, after the first edition of the SPECIES PLANTARUM, Linnæus has applied what he calls a *Trivial*

* They may be found, however, in a volume published at Edinburgh, under the title of *Genera Plantarum ex editione 12ma Systematis Naturæ Illustrissimi Caroli à Linné.* (8vo. pp. 88.)

Name to each plant, consisting of a single adjunct to the generic name, expressive, if possible, of some essential distinction of the species, as for instance, *integrifolia*, *laciniata*, *erecta*, *repens*, *aquatica*, *montana*, &c.; sometimes of the name of the person by whom the plant was discovered, as (*Salvia*) *Forskåhlei*, (*Hieracium*) *Kalmii*, &c.; sometimes of the country to which it appears to be peculiar; and where, from the laws of his *Fundamenta Botanica*, he was obliged to change the generic name of a plant well known before, and especially if it was an *officinal* one, he frequently retains the *old generic* name as the *trivial* epithet: thus, as the Penny-royal, or *Pulegium*, really belongs to the *Mentha* genus (according to *his* characters), he calls it *Mentha Pulegium:* the Horse-radish, known by the old name of *Armoracia*, from its agreeing with the *Cochlearia* genus, he calls *Cochlearia Armoracia*.

The *Varieties* (which, for want of true specific characters, had increased the number of plants to almost double what Linnæus thought it really to be) are excluded from this work, as well as from the SPECIES PLANTARUM. In the opinion of several contemporary botanists, Linnæus carried this matter too far, disallowing the name of *species* to many plants which were supposed to have sufficient permanent distinctions.

The time that had elapsed after the publication of the GENERA and SPECIES PLANTARUM, together with the vast quantity of new materials acquired from all parts of the world, enabled our author to enlarge this last edition of the *Systema;* to amend very many generic and specific characters; and to make many removes tending considerably to the advancement and perfection of his work. It is proper to remark that the appearance of the *Vegetable* part of the *Systema* was immediately preceded by MANTISSA PLANTARUM *Generum, editionis 6tæ et Specierum*

Specierum editionis 2ndæ, (Holm. 1767. 8vo. pp. 142) in which are described, as in the GENERA PLANTARUM, the natural characters at large of 44 *genera*, newly constructed. These are followed by upwards of 430 new *species*, with their synonyms, &c., as in his SPECIES PLANTARUM. The last-mentioned work (as we have before noted) contains nearly 7300 plants. In the 12th edition of the *Systema*, which includes all that had been described by Linnæus in his various works before, the number is augmented to above 7800.

Linnæus made still further additions to the vegetable kingdom in his MANTISSA ALTERA, (a work of which we shall take more particular notice in the proper place,) and he continued to collect materials for a supplement to the *Systema*, until within a very short time before his death. These materials, however, were not published by himself. He committed them to the hands of Professor MURRAY, of Göttingen, who had been a favourite pupil, and who undertook to be his editor*. The manuscript additions communicated on this occasion by our author, together with those compiled from the several *addenda* and from the *Mantissæ*, enabled Professor Murray to extend the SYSTEMA VEGETABILIUM to above 100 pages more than are included in Linnæus's own volume of the year 1767.

To this edition of the vegetable part of the system published by Murray in 1774, considerable additions were made by Linnæus the son, under the title of SUPPLEMENTUM PLANTARUM *Systematis Vegetabilium editionis* 13 *et Specierum Plantarum editionis*

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* CAROLI A LINNÉ, &c. *Systema Vegetabilium, à Jo. Andr. Murray, M. D. &c* Gottingæ et Gothæ 1774. 8vo. pp. 844.

2ndæ

2ndæ editum à Carolo à Linné filio. (Brunsvigæ 1781. 8vo. pp. 467*.) The volume of which we are speaking contains a great number of Surinam plants, descriptions of which had been prepared by Linnæus the father; but there are, besides these, some new species, discovered by the editor himself, in the course of his travels through different parts of Europe.

Other botanical travellers, indeed, had now augmented the number of species to an amazing extent. Such was the ardor with which the science began to be pursued, that distinguished men, of various countries, undertook to explore the most savage and inhospitable, and even unknown, parts of the globe, in quest of their vegetable productions. There cannot be a more striking instance, perhaps, of exalted enthusiasm in the pursuit of this branch of science, than that exhibited by a countryman of our own, who did not hesitate to relinquish all the pleasures of polished life, and all the enjoyments which a most ample fortune held out to him at home, for the sake of investigating nature in the remotest parts of the earth. To the rich harvests collected on this perilous circumnavigation, we may add the discoveries of Aublet in Guiana and the Isle of France; of Sonnerat in New Guinea and the East Indies; of Sparrman in Africa; of Thunberg in Ceylon, Java, and Japan; and of Pallas and others in the remote parts of the Russian empire: so that, within ten years after the publication of the *Systema Vegetabilium* of 1774, the number of known plants was increased to full 10,000. With these materials Reichard formed his *Systema Plantarum*, in

* The 13th edition of the *Systema Vegetabilium*, having the above work incorporated with it, has been translated into English by a botanical society at Litchfield. (Litchfield 1783. 2 Vols 8vo. pp. 425. with 11 plates.)

1779,

1779, and Murray his *fourteenth* edition, (containing 143 pages more than the thirteenth) in 1784*.

Gmelin's edition of the *Systema Naturæ* comprehends nearly 2100 *genera* (upwards of 800 more than are contained in the 12th edition, and about 330 more than are enumerated by Schreber†), and at least 17000 *species*. These editors have, of course, availed themselves, throughout their works, of the various discoveries and improvements which the progress of botanical knowledge and of physiological research has daily made known, more especially in the class CRYPTOGAMIA, in which however the fructification of some tribes of plants is still very far from being sufficiently elucidated, and the definitions cannot be considered as finally fixed. But since the times of Micheli and Dillenius, on whose authority chiefly Linnæus relied in his description of the MUSCI and ALGÆ, the distribution of those orders has undergone considerable alteration, in consequence of the important labours and investigations of Hedwig, to whose curious and interesting works we have alluded before‡, and whose arrangement is more or less

* There is a more recent edition of the *Systema Vegetabilium*, by Dr. Persoon. (Götting. 1797. 8vo. pp. 1026.)

† See p. 59. GENERA PLANTARUM.

‡ P. 107.

The principal works of this eminent physiologist are:

1. *Fundamentum Historiæ Naturalis Muscorum Frondosorum.* Lips. 1782. 4to. cum tabb. æn. 20.

2. *Theoria Generationis et Fructificationis Plantarum Cryptogamicarum Linnæi.* Petrop. 1784. 4to. cum tabb. æn. 37.

Retractata et aucta. Lips. 1798. 4to. cum tabb. æn. 42. col.

3. *Microskopisch-Analytische Beschreibungen und Abbildungen neuer und Zweifelhafter Laub-Moose.* Leipz. 1797. fol. taff. 40.

4. *Species Muscorum Frondosorum, Opus Posthumum, editum à Schwægrichen.* Lips. 1801. 4to. cum tabb. æn. 77. col.

closely

closely followed by most botanical writers of the present period. This author defines the MUSCI, as *Vegetables in which the female parts of fructification are furnished with a veil-like petal* (Calyptra) *bearing a shaft*; and he divides them into 2 orders: *viz.*

1. *Frondosi.* Capsule (in very few entire) opening transversely.
2. *Hepatici.* Capsule with 4 valves opening lengthways.

These definitions exclude the *genera* of *Lycopodium* and *Porella*, which are now contained, with those of *Equisetum*, *Salvinia*, *Marsilea*, *Pilularia*, and *Isoetes* (from the FILICES) in a new order, called MISCELLANEÆ; which order is intended to comprehend such plants of this class as belong to anomalous *genera*, and differ, in their mode of fructification, from those of the other orders. The following is the arrangement adopted in the GENERA PLANTARUM of Schreber. With respect to the editor of the SYSTEMA NATURÆ, he has preferred retaining the original Linnean distribution, endeavouring to reconcile it with the principles of Hedwig's system, by altering the definitions only, and reducing the new *genera* into mere subdivisions of the old.

Order 1. MISCELLANEÆ.

2. FILICES.

3. MUSCI.

Genus 1. Phascum.
2. Sphagnum.
3. Gymnostomum.
4. Tetraphis.
5. Octoblepharis.
6. Splachnum.
7. Grimmia.
8. Encalypta.
9. Dicranum.
10. Trichostomum.
11. Didymodon.
12. Tortula.
13. Weissia.
14. Pohlia.
15. Funaria.
16. Bryum.
17. Timmia.
18. Meesia.

Genus 19.

Genus 19. Barthramia.
20. Fontinalis.
21. Hypnum.
22. Leskia.
23. Neckera.
24. Buxbaumia.
25. Polytrichum.

Order 4. HEPATICÆ.

1. Marchantia.
2. Jungermannia.
3. Targionia.
4. Anthoceros.
5. Blasia.
6. Riccia.
7. Sphærocarpus.

By the above arrangement, it will be seen that half the original *genera* of the ALGÆ are now removed into the new order of HEPATICÆ, their fructification being found to exhibit a different character from that of the *Lichen*, *Tremella*, *Ulva*, *Fucus*, *Conferva*, and *Byssus*. The physiology of these last-mentioned *genera*, notwithstanding the researches of various able botanists, is still involved in great obscurity. Much as the genus *Fucus* has been augmented since the time of Gmelin, the foundation laid by that author in his *Historia Fucorum*, and which was for the most part adopted by Linnæus, has not been materially improved upon, nor are we yet fully acquainted with the organization and œconomy of that numerous and intricate tribe. More success, however, has attended the investigation of the FUNGI. Assisted by the valuable works of Schäffer, Bolton, Tode, Bulliard, and others, the later editors of Linnæus have been enabled to improve the distribution of that order very considerably; in the 13th edition of the *Systema* no fewer than 35 *genera* are added to the original 11 of our author. An entirely new arrangement has recently been attempted, by Dr. Persoon*.

* *Tentamen dispositionis methodicæ Fungorum.* Lips. 1797. 8vo.

Thus far the alterations introduced in the *Systema Vegetabilium* ought to be considered perhaps as legitimate and necessary reformations, because they are founded on physiological investigation and progressive discovery; and for that system to be susceptible of such reformations, without undergoing any diminution of simplicity, or losing any of the original characters, in its grand and fundamental outlines, is one of the most unequivocal proofs of the firm and philosophical principles on which it rests. But whether other alterations lately proposed, which affect Linnæus's general *classification* of plants, be equally justifiable, we shall not presume to determine: it is certain, however, that the alterations alluded to, though supported by the authority of a successor in the botanic chair of Upsala*, and of a professed editor of the *Systema*†, are far from being generally followed. The reduction of the number of classes was begun (but carried no further than to the exclusion of POLYGAMIA) by Linnæus the son, and soon afterwards two more of them (MONŒCIA and DIŒCIA) were done away by Dr. Casimir Medicus‡, under the persuasion that the contained species admitted of being distributed among the remaining twenty-one classes, not only without inconvenience, but so as to bring back to their natural families many plants which the rules of the original classification had transferred to distant parts of the system. Professor Thunberg has proscribed the class GYNANDRIA also; and he endeavours to justify the alterations, by remarking that the position of the *stamina* in the last of these classes,

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* See Thunberg's *Flora Japonica.*

† See CAROLI A LINNÉ *Systema Naturæ, à Joh. Frid. Gmelin, M.D. &c.* Tom. 2.

‡ See *Beitrage zur schönen Gartenkunst;* and *Botanische Beobachtungen der Jahres,* 1782. p. 82.

and

and the sexes in the other three first mentioned, are so extremely variable as to be unfit notes of distinction, except in the *minor* divisions of a botanical arrangement. Withering, (in the 3d edition of his *British Plants*), Sibthorp, (in his *Flora Oxoniensis*), and other distinguished botanists of our own country, professing to render investigation more easy, and to reconcile, as far as possible, the laws of a *natural* with those of an *artificial* method, have, in like manner, reduced the number of the Linnean classes of plants to twenty, and thus abolished the four immediately preceding the CRYPTOGAMIA. How far Dr. Willdenow, in his edition of the *Species Plantarum*, intends to adhere to the original system does not yet appear, his work not being, at this time, advanced beyond the class SYNGENESIA; but from that class he excludes the order of MONOGAMIA, the *genera* of which are (as in the Gmelinian edition of the *Systema*) now distributed in the MONOGYNOUS order of PENTANDRIA.

We refer such of our readers as are disposed to enter fully into an investigation of the merits of these innovations, to a dissertation published in Uster's *Annalen der Botanick**, by Dr. Stephen John van Geuns.

The MINERAL KINGDOM.

We are now to accompany our author into the Mineral Kingdom, which, though he very early gave a specimen of his method of classing, he did not fully exemplify, as in vegetables, until the year 1768, when he published the 3d tome of his 12th edition of

* "*Immutationum quas recentiores Botanici in Systema Linnæanum tentaverunt modesta dijudicatio.*" (Drittes Stück. 1792. p. 20.)

the *Systema*. This volume makes 222 pages, exclusively of a short appendix of some unnoticed, or not well described, animals and vegetables. It contains also, besides *indices* connected only with its immediate subjects, an *universal* index of the Linnean generic names (amounting to 1820 in number), in which those appertaining to the animal kingdom are distinguished from the others by a difference of type.

In arranging minerals, various methods have been pursued, all of which have had, for different purposes, their respective advantages. Some authors have founded their system on the *figure*, *colour*, *structure*, and other external and visible characters; yet, scarcely ever trusting solely to these, they have called in the aid of chemistry, so far at least as the mineral acids could assist them. Others (as the professed chemists and metallurgists) have established their arrangement chiefly on *chemical principles*, which, it must be acknowledged, would be the best basis for a system, were we happy enough to have sufficient light for the purpose, and were the operations of chemistry sufficiently simple and expeditious, in most cases, to admit of that ready investigation of substances which is the object of all kinds of classification. It is not perhaps an inaccurate analogy to consider chemistry as being, with respect to mineralogy, what anatomy is to zoology. Every person conversant with natural history will contend for the last-mentioned science, or the arrangement of animals, being founded on obvious external characters, and certainly the same arguments may be urged in favour of mineralogy resting on similar principles: yet these principles cannot be pursued safely without limitation; for the correspondence, in external and mechanical characters, of substances which are essentially different in their intimate and real composition, is in

many instances so close, that it is absolutely necessary to call in the assistance of analysis, otherwise nature and science would be strangely at variance with each other. Linnæus professes to take a middle way between the mere chemists and those who would characterize minerals from external appearance only.

He begins the volume with his own theory of the origin of mineral bodies in general, and of their several combinations into those forms in which we meet with them in the body of the earth. The methodical and abbreviated manner in which our author gives his philosophy of minerals renders it incapable of an abstract. He then proceeds to give a *synopsis*, or classical view of the several systems of arranging those bodies, as they stand exhibited in the best authors that preceded him, beginning with Bromelius, who published in 1730 (*Bergarter*, Holm. 8vo.) and proceeding to his own system of 1736—1748, Wallerius's (*Mineralogia*, Stockh. 1747. 8vo.), Woltersdorf's (*Systema Mineralium*, Berol. 1748. 4to.), Cartheuser's (*Mineralogia*, Francf. 1755. 8vo.), Justi's (*Mineralreich*, Goetting. 1757. 8vo.), Anonymous (Cronstedt's *Mineralogie*, Stockh. 1758. 8vo.) and Vogel's (*Mineral System*, Lips. 1762. 8vo.) To each of these he subjoins short remarks relating to their methods and theories of minerals, and concludes this introductory part with an explanation of the epithets used in his own work. Our author, with his usual precision, has defined a set of *termini artis* equally new and curious, which are principally adapted to, and used in, the ultimate and most difficult part of the system—the specific characters. They are happily framed to express all differences in the *figures* of minerals; in their *crust*; their *surface*; their *component particles*; their *texture*, *hardness*, and *colour*; and the alterations they undergo by *solution*, whether by acids, or by fire.

It

It has been doubted by some of the most respectable mineralogists, whether we ought to descend below what are called *generic* distinctions in the mineral kingdom, so infinitely do the subjects vary, and so imperceptible, commonly, is that gradation by which they run into each other, in the various compound forms wherein they are found. Linnæus and Wallerius were among the first who attempted the arduous task of fixing the *specific* characters.

The *Regnum Lapideum* is divided by our author into 3 classes, under the names of PETRÆ, MINERÆ, and FOSSILIA, each being subdivided into several orders, the whole comprehending 54 *genera*. We shall give a view of these in the same manner as was adopted before, when we were treating of the animal kingdom.

Class 1. PETRÆ.

Unproductive stones, originating from an earthy substance by cohesion:

Simple, as being destitute of saline, inflammable, or metallic impregnation:

Fixed, as not being entirely soluble in any *menstruum*:

Similar, the component parts being homogeneous.

Order 1. HUMOSÆ. Formed from vegetable earth.

Combustible, burning to ashes.

Giving a branny kind of powder, the latter being gross and light.

Order 2. CALCAREÆ. Formed from animal earth.

Penetrable by fire, and rendered more porous.

Giving á farinaceous powder, when burnt falling into impalpable particles.

Order 3.

Order 3. ARGILLACEÆ. Formed from a viscid sediment of the sea.

Hardening in the fire.

Giving an unctuous powder, before combustion.

Order 4. ARENATÆ. Formed by precipitation from rain water.

Giving sparks when struck with steel; very hard.

Giving a rough powder, angulated like particles of glass.

Order 5. AGGREGATÆ. Originating from a mixture of the foregoing.

Participating therefore of the constituent particles of the other earths.

Giving different kinds of powder, according to the nature of the constituents.

Generic Characters.

Order 1. HUMOSÆ.

Genus 1. Schistus. *Slate*. Base vegetable mould. Fragments fissile, horizontal, plane, opake, yielding to the knife, and combustible.

Whet-stone, Touch-stone, and different kinds of *Shale*. 13 Species.

Order 2. CALCAREÆ.

2. Marmor. *Marble*. Base animal earth. Fragments indeterminate, amorphous, yielding in some degree to the knife.

15 Species.

3. Gypsum. Calcareous earth, saturated with acid. Fragments indeterminate, amorphous, yielding in some degree to the knife; component particles impalpable. Fixed; neither effervescing with, nor soluble in, acids.

Alabaster, &c. 3 Species.

Genus 4.

Genus 4. Stirium. A gypseous stone. Fragments consisting of parallel threads, approximated, and yielding to the knife.

4 Species.

5. Spatum. *Spar.* A calcareous stone that has been in a fluid state. Fragments rhombic, plane, shining.

19 Species.

Order 3. ARGILLACEÆ.

6. Talcum. *Talc.* Stone formed from indurated clay. Particles impalpable, yielding to the knife, and smooth, or unctuous to the touch.

Lithomarga, Ruddle, Soap-stone, Pot-stone, Serpentine, Jade, Horn-stone, &c. 12 Species.

7. Amianthus. An argillaceous stone. Fragments filiform.

Asbestos, Mountain-cork, Mountain-leather, &c. 10 Species.

8. Mica. *Glimmer.* Formed from clay in a state of solution.

10 Species.

Order 4. ARENATÆ.

9. Cos. Conglutinated sand. Fragments amorphous, subopake, striking fire with steel. Particles granular, separable by contusion.

Common Sand-stone, Whet-stone, Filtering-stone, Grinding-stone, &c. 16 Species.

10. Quartzum. *Quartz.* Stone formed from water. Fragments of an indeterminately angular form, sharp. Particles compact, pellucid.

8 Species.

11. Silex. *Flint.* Calcareous earth conglutinated into an uniform substance. Fragments indeterminate:

nate: convex on one side, concave on the other. Particles coalescent.

Ægyptian Pebble, Opal, Onyx, Chalcedony, Carnelian, Agate, Jasper, &c. 16 Species*.

Order 5. AGGREGATÆ.

Genus 12. Saxum. *Rock.* Heterogeneous stone, consisting of various kinds of earth, either mixed together, or intimately compounded.

Porphyry, Trap, Granites of various kinds, *Pudding-stone*, &c. 39 Species.

Class 2. MINERÆ.

Productive stones, originating from a saline principle, by crystallization.

Compound, as consisting of saline, inflammable, or metallic particles.

Soluble completely in their appropriate *menstrua.*

Order 1. SALIA. *Salts.* Distinguishable by their effects on the organ of taste.

Sapid and *soluble* in water.

Under this order are arranged, to the great offence of most mineralogists, all the *gems*, or precious stones, (notwithstanding their texture and insolubility,) as also many other lapidose crystallized bodies. To this, our author tells us, he was led, by considering that all regular polyedrous figures of bodies in the mineral kingdom are the result of crystallization, which can only take place under requisite and certain degrees of fluidity;

* In describing the *S. cretaceus*, or common Flint, our author mentions the following fact, which does not seem to have been noticed by any other mineralogist: "Vulgatissimus in cretaceis rimis, *in altioribus, a mari remotioribus minor rariorque.*" He considers this singular substance as being formed from chalk.

and therefore, whether they be saline or lapidose crystals, they must owe their figure to the same uniform principle operating on them, whilst they are in the fluid state. Hence, from the similarity of its figure with the crystals of nitre, *Mountain-crystal* has a place in the same genus; the *Topaz* with *Borax*; the *Diamond* and *Ruby* with *Alum*. His arguments are given at large in a paper (published in the first volume of the *Amœnitates Academicæ*, and which we shall remark upon in another place), "*de Crystallorum Generatione.*" At the opening of his system of minerals, however, he seems to admit that there may be an impropriety in such an arrangement, and proposes the substitution of the word CRYSTALLI for SALIA, if mineralogists should prefer the former*. Still this alteration does not obviate the total incongruity of the characters of the lapidose *species*, and indeed of most of the *genera*, with those of the order defined above, as the reader will remark presently. Had Linnæus confined himself to the *shape* of the crystal, and avoided all reference to *sapidity* and other qualities of *salts* strictly so called, except in his specific distinctions, we might have hailed him as the author of the first specimen of an arrangement which promises at the present day to supersede all others, and which the distinctive characters adopted in the Linnean order of SALIA may be fairly said to glance at†.

Order 2. SULPHURA. *Inflammables.* Distinguishable by their effects on the organ of smell.
Odorous, and flaming in the fire.
Soluble in oil.

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* CRYSTALLOS *quod subjecerim Salibus, ne quemque offendat, mutet vocem* SALIS *in Crystalli, si magis placeat; in verbis erimus faciles.*" p. 16.

† The arrangement alluded to is that of which *Crystallography* has been made the foundation, and which has lately been exemplified in a very ingenious manner by M. Haüy. (*Traité de Mineralogie*, 4 tomes. 1801. Paris.)

Order 3. METALLA. *Metals.* Distinguishable by their appearance.
Shining, fusible in the fire, and very heavy.
Soluble in appropriate acid *menstrua*.

Class 2. MINERÆ.

Order 1. SALIA.

Genus 13. Nitrum. Salt æthereal, pungent, a peculiar acid. Crystal a hexaëdral prism, with hexaëdral pyramids. Taste cold and pungent. In the fire fusible and detonating.

* Naked. *Salt-petre.*
** Quartzose. *Mountain-crystal, Fluor,* &c.
*** Calcareous. *Basaltes,* &c.
Total 9 Species.

14. Natrum. Salt calcareous, subalkaline. Crystal peculiar: a tetraëdral *prism* with pentagonal planes, 2 broad and 2 narrow, alternately vertical: pyramid at each extremity, consisting of 2 plain parallelograms.

* Naked. *Mineral Alkali, Soda,* or *Natron, Aphronitre,* and *Epsom Salt.*
** Lapidose. *Selenite,* &c.
Total 14 Species.

15. Borax. Salt alkaline, (*natural?*) Crystal prismatic, octaëdral; pyramid at each end truncated, (sometimes different). Taste mild. In the fire swelling, vitrescent.

* Naked. *Crude Borax.*
** Lapidose. *Topaz, Chrysolite, Beryl, Emerald,* (which are considered as *varieties* only of precious stone), *Schoerl, Tourmaline, Garnet,* and *Margodes,* or *oriental Garnet.*
Total 6 Species.

Genus 16. Muria. Salt marine, neutral. Crystal hexaëdral, or cubic. Taste pungent. In the fire crackling.

* Naked. *Sea-salt, Rock-salt,* &c.

** Lapidose. *Bononian Stone, Crystalline Fluor,* &c.

Total 9 Species.

17. Alumen. Salt earthy, acid, (without metal). Crystal octaëdral, consisting of trigonal planes. Taste austere. In the fire frothing.

* Naked. *Native Alum.*

** Soluble. *Aluminous Slate* and *Stone Alum.*

*** Lapidose. *False Emerald* and *Amethyst, Diamond,* and *Sapphire.*

Total 6 Species.

18. Vitriolum. *Vitriol.* Salt metallic, acid, earthy. Crystal a polyëdrous, rhombic *tessera;* subject to variation. Taste styptic. In the fire calcinable.

* Simple. *Green, blue,* and *white Vitriol.*

** Compound. *Vitriols of compound metals.*

*** Lapidose. *Tetraëdral Vitriol.*

Total 9 Species.

Order 2. SULPHURA

19. Ambra. *Ambergris.* Sulphur inert. Fumes of an ambrosial smell. Colour cinereous.

2 Species.

20. Succinum. *Amber.* Sulphur inert. Fumes of a sweet smell. Colour brown.

1 Species.

21. Bitumen. Sulphur inert. Fumes of an unpleasant smell. Colour black.

Naphtha, Petrol, Maltha, Mumia, Asphaltum, Peat, Stone-coal, Jet, Lapis Suillus, and *Hepatic Stone.* 10 Species.

Genus 22.

Genus 22. Pyrites. Sulphur charged with vitriol. Fumes of a pungent acid smell, and yellowish colour. In taste salt. Flame blue. Soluble in oil.

Orpiment, Native, and various other kinds of Pyrites. 7 Species.

23. Arsenicum. *Arsenic.* Sulphur metallic. Fumes of an alliaceous smell, and a white colour. Taste sweet. Soluble in warm water and other liquors.

8 Species.

Order 3. METALLA.

24. Hydrargyrum. *Quicksilver*, or *Mercury*. Metal fluid, dry, white. In the fire volatilizing before incandescence. Soluble in *aqua fortis*, whitish.

5 Species.

25. Molybdæna. Metal infusible? cinereous, colouring the fingers. In the fire not fusible. Glass of a somewhat ferruginous colour.

Plumbago, *Manganese*, and *Wolfram*.

26. Stibium. *Antimony*. Metal friable, white, fibrous. In the fire volatilizing before ignition. Solution, in *aqua fortis*, white. Glass yellowish red.

4 Species.

27. Zincum. *Zinc*. Metal somewhat malleable, but easily breaking, bluish white, giving a dull sound. In the fire before ignition melting, and burning with a yellowish green flame into a white light calx. Solution, in *aqua fortis*, white.

8 Species.

28. Vismutum. *Bismuth*. Metal somewhat malleable, but very fragile, laminose, of a yellowish white colour. In the fire fusible at the moment of ignition.

nition. Solution, in *aqua fortis*, water-coloured; in *aqua regia*, yellow. Glass tortoise-shell coloured.

4 Species.

Genus 29. Cobaltum. *Cobalt.* Metal brittle, of a light gray colour. Solution in *aqua fortis* and *aqua regia* red. Glass blue.

4 Species.

30. Stannum. *Tin.* Metal easily malleable, white, crackling on flexure, not sonorous. In the fire fusible before ignition. Solution in *aqua regia* yellow; in *aqua fortis* it is precipitated into a white powder. Glass opaline (but it scarcely admits of complete vitrification).

4 Species.

31. Plumbum. *Lead.* Metal easily malleable, bluish-white, not sonorous. In the fire fusible before ignition. Solution in *aqua fortis* opaline. Precipitate white. Glass yellow.

10 Species.

32. Ferrum. *Iron.* Metal very hard, and difficultly malleable, of a dull bluish-gray colour, sonorous. In the fire not fusible until after ignition; throwing off sparks in a stronger fire. Solution in *aqua fortis* brown. Glass brown, with a slight greenish tinge.

Smiris, Hæmatite, Loadstone, and 24 other Species.

33. Cuprum. *Copper.* Metal hard, malleable, red, sonorous. In the fire fusing after ignition with a green flame. Solution in *aqua fortis* blue; in *aqua regia,*

gia, or the vegetable acids, green. Glass, unmixed, of a ferruginous colour; otherwise of a bright blue.

Fahlerz, Lapis Lazuli, Lapis Armenus, Malachite, Nickel, and 11 other Species.

Genus 34. Argentum. *Silver.* Metal very malleable, bright white, sonorous, durable. In the fire fusing after ignition. Solution in *aqua fortis* white. Glass opaline.

9 Species.

35. Aurum. *Gold.* Metal very malleable, yellow, not sonorous, durable. In the fire fusing after ignition with a bluish hue. Solution in *aqua regia* yellow. Glass purple.

2 Species.

Class 3. FOSSILIA.

Ambiguous stones originating from different combinations of the subjects comprehended in the foregoing classes.

Order 1. PETRIFACTA. *Petrifactions.* Figured like some natural substance.

Order 2. CONCRETA. *Concretions.* Promiscuous *conglutinations* of different kinds of earths.

Order 3. TERRÆ. *Earths. Pulverulent* substances, not conglutinated.

Order 1. PETRIFACTA. *Petrifactions.*

36. Zoolithus. Petrified parts of *animals.*

Turquoise, &c. 4 Species.

37. Ornitholithus. Of *birds.*

3 Species.

Genus 38.

Genus 38. Amphibiolithus. Petrifactions of *amphibia.*
Glossopetræ, &c. 6 Species.

39. Ichthyolithus. Of *fishes.*
Bufonites, &c. 3 Species.

40. Entomolithus. Of *insects.*
3 Species.

41. Helmintholithus. Of *worms*, &c.
Ammonite, Lapis Judaicus, Echinite, Star-stone, Brain-stone, Entrochus, Encrinus, Belemnite, &c. 24 Species.

42. Phytolithus. Of *vegetables.*
7 Species.

43. Graptolithus. Petrifactions resembling *pictures.*
Florentine-marble, Dendrite, &c. 8 Species.

Order 2. CONCRETA. *Concretions.*

44. Calculus. Concrete *animal* juice.
Urinary, Salivary, and *Pulmonary Calculi, Bezoar, Hair-ball, Gall-stone, Pearl, Crab's-eyes.* 8 Species.

45. Tartarus. Concrete *vegetable* juice.
2 Species.

46. Aetites. Concretions within cavities of stones.
Geodes, Eagle-stones, &c. 5 Species.

47. Pumex. Concretions formed by the effects of fire.
Pumice, Iron-slag, Copper-slag, Soot, Volcanic ashes, Scoria, &c. 8 Species.

48. Stalactites. Concretions formed by the air.
Zeolite, and 11 other Species.

49. Tophus. Concretions in water.
Oolithus, Osteocolla, Bog iron-ore, &c. 22 Species.

Order 3. TERRÆ. *Earths.*

50. Ochra. *Ochre*, or metallic earth. Particles coloured, minute.
15 Species.

Genus 51.

Genus 51. Arena. *Sand.* Formed by means of water. Particles distinct, granular, dry, hard, rough; not penetrable, or capable of being conglutinated, by moisture, (*insoluble in acids*).

14 Species.

52. Argilla. *Clay.* Earth formed from viscid sediment of the sea. Particles amorphous, impalpable, soft, tenacious, smooth. Moisture softens and renders it unctuous and plastic. Fire hardens it.

Pipe-clay, Porcelain Earth, Lithomarga, Fuller's, Lemnian, and *Tripoli Earths, Bole, Marl, Umber,* &c. 21 Species.

53. Calx. *Lime.* Earth of animal extraction. Particles dry, farinaceous, friable, soiling the fingers; soluble (especially when burnt) and effervescing in acids; tinging water.

9 Species.

54. Humus. *Vegetable Mould.* Particles pulverulent, dissipable by heat. Swelling in water; burning into ashes in the fire.

Turf, Mud, &c. 14 Species.

Three very instructive tables are subjoined, exhibiting different views of the several saline and other crystallized bodies, and accompanied by copious and methodical descriptions of the figures, with references to them, as they occur in the work itself.

The mineralogical part of the *Systema* contains considerably more than 500 species; the particulars from which the characters are taken vary almost as much as the species themselves.

The Gmelinian edition has changed the whole face of this part of Linnæus's works, modifying and modernizing it so much that it ought now to be called the system of Werner rather than of

Linnæus. It is very probable that our author might have adopted something like the Wernerian mode of arrangement, had he lived to witness the great changes and improvements effected in mineralogy by the aid of the sister science of chemistry,—a science which is every day rendering alterations necessary in the classification of unorganized bodies; yet it may be questioned whether Professor Gmelin has not, in this respect, deviated a little too far from the acknowledged privileges of an editor. We readily subscribe, however, to the superiority of the last edition of the *Systema Naturæ* (with regard to the *mineral* kingdom) above the 12th, the 3d tome of which, from the highly improved state of mineralogical knowledge at the present day, has ceased to be of any utility, except so far as it shows the use made by Linnæus of the materials to which he was limited, and as it illustrates the progress of system.

In the 13th edition of the *Systema Naturæ*, outlines of the classification adopted by Veltheim (*Grundriss einer Mineralogie*, Braunschw. 1781. fol.), Bergman (*Sciagraphia Regni Mineralis*, Lips. et Dresd. 1782. 8vo.), Kirwan (*Elements of Mineralogy*, Lond. 1784. 8vo.), and Werner (*Mineralsystem**), are added to those of preceding systems exhibited in the 12th, and the *Termini Artis* are no other than the Wernerian external characters. Minerals are here divided into the 4 obvious general divisions, or classes, of EARTHS, SALTS, INFLAMMABLES, and METALS. There is also a class called LARVATA, (placed rather as an appendix than as a part of the system,) which comprehends the old Linnean order of PETRIFACTA, belonging to the class FOSSILIA. The CONCRETA of the 12th edition are

* Copied from *Bergmaennisches Journal*. Freyberg 1789. 8vo. Ann. II. Vol. 1. p. 369.

not

not admitted in the 13th, except one or two *genera*, which, with those of the order TERRÆ, are dispersed in their appropriate places, in the Gmelinian *class* of that name.—The new arrangement is as follows: *viz.*

Class 1. TERRÆ.

Order 1. TALCOSÆ. *Magnesian Earths.* For the most part soft, and the softest contain chiefly white magnesia—never any vestiges of organized bodies; found in primary mountains, still more frequently in secondary; some of them constituting whole *strata* and the chief parts of mountains; others rather parasitical; not to be calcined in the fire, nor, except *Hornblende*, *Actinotus*, and ferriferous *Asbestus*, readily to be fused, but becoming indurated.

Order 2. PONDEROSÆ. *Ponderous Earths.* Possessed of greater specific gravity than the others; more readily fusible; never found otherwise than parasitical, nor containing any organic *exuviæ*; both the soft and hard kinds composed chiefly of their peculiar substance called *terra ponderosa*.

Order 3. CALCAREÆ. *Calcareous Earths.* Some formed from testaceous and coralline substances, others primitive; some forming entire rocks, others parasitical and not unfrequently replete with animal relics; most of them of a very soft texture; the soft and hardish rendered more porous by fire; all the purer kinds effervescing and almost wholly soluble in *aqua fortis*.

Order 4. ARGILLACEÆ. *Argillaceous Earths.* Some extremely soft, and ductile; adhering to the tongue; emitting a peculiar smell when moistened; hardening in the fire; some of the harder kinds, when cloven asunder, exhibiting impressions of animal

and vegetable bodies; others of a softer texture, fusible rather than susceptible of induration in the fire; some of the rocky and harder kinds, (though few,) also undergoing the same change.

Order 5. SILICEÆ. *Siliceous Earths.* The harder kinds resisting in part the action of all acids, except the fluoric; some constituting entire rocks, others parasitical; and not unfrequently exhibiting remains of organized bodies.

Order 6. ADAMANTINÆ. *Adamantine Earths.* Extremely hard, parasitical, and peculiar to the spar bearing this name, being found in no other mineral.

Order 7. AGGREGATÆ. *Aggregate Earths.* Composed of the five foregoing, and exhibiting the characters of the predominating ingredient.

Class 2. SALIA. *Salts.*

Distinguished by their sapidity, and solubility in water, from all other substances.

Class 3. PHLOGISTA. *Inflammables.*

Distinguished by their solubility in oil, and their flame or smoke, which is either agreeable or otherwise, harmless or deleterious, and variable as to colour and tincture.

Class 4. METALLA. *Metals.*

Distinguishable by their splendor, great weight, peculiar kind of fusibility in the fire, and solubility in acids.

Class 5. LARVATA. *Figured Fossils.*

Not consisting of any mineral substance different from what is comprehended in the foregoing classes, but exhibiting the *forms* of various *organized* bodies.

The

The following are the *genera* in the Gmelinian system, *viz.*

Class 1. TERRÆ.

Order 1. TALCOSÆ.

Genus 1. Talcum. *Talc.* Greasy to the touch.
11 Species, 4 of them described by Linnæus.

2. Serpentinus. *Serpentine.* Meagre, admitting of a polish, inconspicuous.
4 Species, 2 of them described by Linnæus.

3. Asbestus. *Asbestos.* Meagre, fibrous, inconspicuous.
10 Species, 8 described before.

4. Actinotus. Meagre, shining.
3 Species, 1 of them only described by Linnæus, viz. the *Common Schörl.*

5. Hornblenda. *Hornblende.* Meagre, lamellar, black.
3 Species, 1 described by Linnæus as a *Talcum.*

Order 2. PONDEROSÆ.

6. Barytes. Soluble in boiling sulphuric acid.
8 Species, 2 of them only described in the 12th edition, one as a *Muria*, and the other as a *Natrum.*

7. Crossopetra. *Cross Stone.* Not wholly soluble in sulphuric acid.
2 Species.

Order 3. CALCAREÆ.

8. Creta. *Chalk.* Colouring the fingers.
7 Species, 5 called by Linnæus *Calces.*

9. Tophus. *Tufa.* Porous, precipitated from water.
7 Species, 5 described by Linnæus (3 as *Stalactites*).

10. Spatum. *Spar.* Lamellar, breaking into rhombic fragments.
24 Species, 14 of them contained under various *genera* of the 12th edition.

Genus 11. Schistospatum. *Schiefer-spar.* Of an undulated slaty texture.

1 Species, described by Linnæus as a *Spatum.*

12. Inolithus. Fibrous, wholly soluble, with effervescence, in *aqua fortis.*

4 Species, 2 of them new.

13. Stalactites. *Stalactite.* Precipitated in the air from water.

4 Species, 2 of them described by Linnæus.

14. Pisolithus. *Pea-stone.* Consisting of *globuli.*

1 Species, an *Oolithus* of Linnæus.

15. Marmor. *Marble.* Compact or granulated.

12 Species, 9 of them described by Linnæus in his 12th edition.

16. Suillus. Stinking when rubbed.

4 Species, all described before, but under different *genera.*

17. Tremolites. *Tremolite.* Radiated, soluble (in part) in *aqua fortis.*

1 Species.

18. Stellaris. Stellated-fibrous, readily fusible in the fire.

1 Species.

19. Humus. *Mould.* Friable, becoming pale in drying.

10 Species, 7 of them described by Linnæus before under this genus, and 1 as an *Argilla.*

20 Marga. *Marl.* Becoming hard in the fire, vitrifying in a furnace.

7 Species, all, except 1, described under different *genera* of the 12th edition.

21. Magnesiata. Becoming black in the fire.

3 Species.

22. Gypsum. Hardening in the air, after being calcined and mixed with water.

18 Species, 11 of them new.

Genus 23.

Genus 23. Hepaticus. Emitting a sulphurous smell after being rubbed or ignited.

3 Species, 1 of them a *Bitumen* in the preceding edition.

24. Lazurus. Hardish, opake, and its blue colour not alterable by acids.

1 Species, the *Cuprum Lazuli* of the 12th edition.

25. Fluor. Emitting an acid gas, which corrodes glass, when immersed in hot sulphuric acid.

6 Species, 3 of them described by Linnæus.

26. Apatites. *Apatite*. When thrown on burning coals emitting a beautiful green light; not readily fusible in the fire.

6 Species, all new.

27. Boracites. *Boracite*. Cubic and hard.

1 Species.

Order 4. ARGILLACEÆ.

28. Aluminaris. *Native Aluminous Earth*. Meagre, almost wholly soluble in *aqua fortis*.

1 Species.

29. Argilla. *Clay*. Greasy to the touch, plastic, hardening in the fire.

29 Species, 18 of them described by Linnæus, but not all as *Argillæ*.

30. Puteolana. *Puzzolana*. Friable; mixed with water and clay hardens in the air.

4 Species, 1 of them the *Pumex cinerarius* of Linnæus.

31. Cæmentum. *Cement*. Solid, when pounded with water and clay hardening in the air.

3 Species.

32. Cariosus. *Rotten-stone*. Rough, falling into powder in water.

1 Species.

Genus 33. Ardesia. *Slate.* Fissile; when moistened emits an argillaceous smell.

11 Species, 8 described by Linnæus as *Schisti.*

34. Basaltes. Inconspicuous, opake, compact, of a dull colour, easily cracking, vitrifying in the fire into a black slag.

6 Species, 1 of them described by Linnæus as a *Saxum.*

35. Lava. Formed in volcanos.

6 Species, 2 of them *Pumices* of the 12th edition.

36. Mica. *Glimmer.* Squamose, or scaly.

8 Species, 6 described by Linnæus.

37. Opalus. *Opal.* Amorphous, compact, scarcely fusible in the fire.

7 Species, 4 of them new, *viz.* the *Pitch-stone, Holz Opal, Wax-stone,* and *Spotted Opal.*

38. Zeolithus. *Zeolite.* Liquefiable in the fire with ebullition, and giving out light as it passes into the fluid state.

20 Species, 1 only known to Linnæus, and that described as a *Stalactite.*

39. Scorlus. *Schörl.* Melting in the fire, but emitting no light.

5 Species, 2 described before as species of *Borax.*

Order 5. SILICEÆ.

40. Gemma. *Precious Stone.* Crystalline, extremely hard in general, shining in the dark.

15 Species, 8 of them described before.

41. Olivinus. *Olivine.* Readily cracks, fusible with difficulty in the fire.

4 Species.

42. Feldspatum. *Feldspar.* Lamellar, melting in the fire into a pellucid glass, readily cracking.

5 Species, 2 of them described by Linnæus.

Genus 43.

Genus 43. Pyromachus. *Flint.* Neither cracking, nor fusible in the fire; fragments convex.

5 Species, 3 of them contained in Linnæus's genus *Silex.*

44. Petrosilex. Fusible in the fire; breaking into indeterminate fragments.

3 Species, 1, only, unnoticed by Linnæus.

45. Jaspis. *Jasper.* Opake, changing its colour in the fire, but not fusible; fragments convex.

4 Species, 2 of them described in the Linnean genus *Silex.*

46. Smiris. *Emery.* Amorphous, readily fusible, very hard.

1 Species, described before as a *Ferrum.*

47. Circonius. *Jargon.* Ponderous, lamellar; *lamellæ* curved.

1 Species.

48. Amarus. Tenacious, green; fragments of an indeterminate shape.

1 Species.

49. Lydius. Fissile, opake, of a dull colour.

2 Species, 1 new.

50. Chlorogranatus. Green, crystalline, readily fusible in the fire.

2 Species.

51. Arena. *Sand.* Granules dry, hard, and rough.

8 Species, all described by Linnæus.

52. Quartzum. *Quartz.* Not fusible in the fire, resisting all acids except the fluoric; fragments angulated.

24 Species, 11 of them described in the 12th edition, but in different *genera.*

53. Chalcedonius. *Chalcedony.* Not fusible in the fire, resisting the action of acids; fragments more convex.

17 Species, 5 of them, only, noticed by Linnæus.

Genus 54. Adamas. *Diamond.* Very hard, volatilized by fire.
1 Species, described by Linnæus.

Order 6. ADAMANTINÆ.

55. Adamantinus. *Corundum.* Not fusible in the fire, fixed, hard, lamellar.
1 Species.

Order 7. AGGREGATÆ.

56. Granites. *Granite.* Continuous.
59 Species, 3 of which are described by Linnæus as *Saxa.*

57. Gneissum. *Gneiss.* Fissile.
31 Species, 4 of them comprehended by Linnæus under the genus *Saxum,* and 1 under *Talcum.*

58. Porphyrius. *Porphyry.* Crystalline particles imbedded in a stony paste.
66 Species.

59. Amygdalites. *Amygdalite.* Rounded, almond-like bodies imbedded in a stony paste.
55 Species.

60. Breccia. *Pudding-stone.* Fragments of stones cemented together either by a stony or metalline matter.
24 Species, 2 of them placed by Linnæus among the *Saxa.*

61. Arenarius. *Sand-stone.* Siliceous granules conglutinated by a stony or metalline cement.
35 Species, 21 of them distributed by Linnæus under his *genera* of *Cos* and *Saxum.*

Class 2. SALIA.

62. Natrum. *Natron.* Tasting like lye.
4 Species, 2 of them described in the old editions.

63. Borax. Frothing in the fire, which when increased in strength reduces it to a kind of slag.
2 Species, 1 of them new.

Genus 64.

Genus 64. Muria. Converting *aqua fortis* into *aqua regia.*

5 Species, 2 of them described in the old editions.

65. Nitrum. *Salt-petre.* Sending forth reddish fumes, when very strong vitriolic acid is poured upon it.

4 Species, 3 of them new.

66. Mirabile. Showing signs of sulphur when exposed to a strong heat with powdered charcoal; aqueous solution not affected by natron.

4 Species, 1 of them, only, described by Linnæus.

67. Amarum. Of a bitter taste; aqueous solution rendered turbid by natron.

6 Species, 1 of these, only, described by Linnæus.

68. Alumen. *Alum.* Of an austere taste; aqueous solution not affected by Prussian alkali.

10 Species, 3 described by Linnæus.

69. Vitriolum. *Vitriol.* Of an austere taste; solution rendered turbid by Prussian alkali.

9 Species, 4 of them contained in the former edition.

Class 3. PHLOGISTA.

70. Turfa. *Peat.* Composed of vegetable fibres impregnated with bitumen.

5 Species.

71. Bitumen. Emitting a strong smell when exposed to the fire.

10 Species, all, except 2, contained in the former editions.

72. Mellites. *Mellite.* Remarkable for the form of its crystal (*a double tetraëdral pyramid*).

1 Species.

73. Succinum. *Amber.* Emitting a pleasant smell when exposed to the fire; not very readily liquefiable.

1 Species.

Genus 74. Ambra. *Ambergris.* Emitting a pleasant smell when exposed to the fire; readily liquefiable.

1 Species.

75. Graphites. *Graphite.* Scarcely inflammable by itself.

3 Species, 1 the *Molybdænum Plumbago* of Linnæus.

76. Sulphur. *Brimstone.* Burning with a blue flame and an acid vapour.

6 Species, 4 of them contained in the genus *Pyrites* of Linnæus.

Class 4. METALLA.

77. Uranium. Calx yellow, convertible into a brown glass with borax, and into a green with phosphoric acid.

3 Species, first described by Klaproth, in the *Ann. de Chimie*, 1789.

78. Wolframum. *Wolfram.* Calx yellow, convertible by borax and phosphoric acid into a red glass.

2 Species, 1 of them the *Molybdænum Spuma Lupi* of Linnæus.

79. Magnesia. *Manganese.* Calx black, convertible with borax and phosphoric acid into a red glass.

9 Species, of which 2 are described by Linnæus, though under different *genera*.

80. Stibium. *Antimony.* Calx cinereous, convertible into a hyacinthine glass.

9 Species, 4 of them described by Linnæus, but not all under this genus.

81. Zincum. *Zinc.* Calx white, fusible with borax and phosphoric acid in the fire, but scarcely tinging them.

9 Species; 5 of them described by Linnæus, 1 of which, according to his system, is an *Ochra*.

82. Molybdæna. Calx white, convertible by borax into a violaceous, and by phosphoric acid into a green glass.

1 Species, *M. Plumbago.* γ. of Linnæus.

Genus 83. Stannum. *Tin.* Calx white, convertible by borax and phosphoric acid into a milk-white glass.

9 Species, 5 of them contained in the former edition.

84. Cobaltum. *Cobalt.* Calx black, changed by borax and phosphoric acid into a blue glass.

9 Species, 6 of them described before, but two of these as species of *Ochra.*

85. Ferrum. *Iron.* Calx red, convertible by borax into a greenish brown glass.

33 Species, 17 of them described by Linnæus, but under several different *genera.*

86. Arsenicum. *Arsenic.* Calx white, in the fire emitting a smell like that of garlic.

7 Species, none of them new.

87. Cuprum. Calx of a light red colour, convertible by borax into a green glass.

30 Species, 11 of them described by Linnæus, partly under the same genus, and partly under that of *Ochra.*

88. Niccolum. *Nickel.* Calx green, changeable with borax and phosphoric acid into a hyacinthine glass.

3 Species, 2 of them contained in the former edition, but not under the same genus.

89. Wismuthum. *Bismuth.* Calx becoming reddish; readily convertible by the fire alone into a yellowish brown glass.

4 Species, none of them new.

90. Argentum. *Silver.* Not convertible by the heat of the fire alone into calx; soluble in sulphur.

14 Species, 6 described before by Linnæus.

91. Plumbum. *Lead.* Calx becoming red, and convertible by the fire alone into a yellowish glass.

25 Species, 6 of which are described by Linnæus under the same genus, and 1 as an *Ochra.*

Genus 92.

Genus 92. Hydrargyrum. *Quicksilver*. Calx red and volatilizable.
11 Species, 4 of them noticed by Linnæus.

93. Aurum. *Gold*. Not convertible into calx by the fire alone, or soluble in sulphur, unless the latter be hepatized.
11 Species, 3 of them, only, described in the 12th edition.

94. Platina. Not convertible into calx by the fire alone, nor soluble in sulphur, whether pure or hepatized.
1 Species.

Class 5. LARVATA.

In this class no new *genera* are formed, but there are 48 *species* not enumerated in the 12th edition.

Among the *Addenda*, the editor has placed 9 new species of earths, so that the number of minerals described by him amounts to about 950, whereas Linnæus himself has not enumerated more than 530.

In 1771, Linnæus published a continuation of the *Mantissa*, carrying it on to 558 pages, under the title of MANTISSA PLANTARUM ALTERA *Generum editionis 6tæ. Specierum editionis 2ndæ.* (Holm. 8vo.) Nearly one half of this work comprehends additional new *genera* and *species*, (a large number of which had been communicated by Dr. Mutis from the continent of South America,)—and the remaining part a variety of emendations, with some considerable augmentation of the animal kingdom.

We have no volume published by Linnæus later than this *Mantissa altera*, which may be looked upon as his botanical testament; and, having now brought our view of his separate works, in chronological order, to a conclusion, we shall proceed to take some notice of his numerous papers, published in the transactions

transactions of various learned societies; and also of the dissertations contained in the *Amœnitates Academicæ*, the principal materials of which (as we have remarked before) were furnished by himself, notwithstanding they bear the names of the respondents.

ACTA LITERARIA ET SCIENTIARUM SUECIÆ.

The collection bearing this title was begun by Olaus Celsius, in 1720, and includes the *Florula Lapponica* and *Animalia per Sueciam observata*, which have been already adverted to, (the former in p. 39, and the latter in p. 86.) In the year 1740, a new series was begun; and the work, being now carried on more immediately by the Royal Society of Upsala, assumed the title of

ACTA SOCIETATIS REGIÆ SCIENTIARUM UPSALIENSIS.

Linnæus was chosen Secretary of this Society in 1744, in the room of Professor Andreas Celsius; but he resigned the office about sixteen years afterwards, feeling hurt (as he mentions in a letter to his friend Archbishop Mennander) at being forsaken at the labouring oar—no member coming forward at that time with any communications, but himself. In this work are published the following papers, *viz.*

C. L. Species Orchidum et affinium Plantarum. (1740. p. 1—37.)

This catalogue is accompanied by a copious collection of synonyms under each species.

Lobelia descripta. (1741. p. 23—26.)

A description of *Lobelia inflata*, accompanied by figures.

Decem Plantarum Genera. (Ibid. p. 76—84.)

Scientific descriptions of 10 new *genera* of plants.

Oestrus rangiferinus. (Ibid. p. 102—115.)

A remarkably interesting description of the fly that infests the rein-deer, and of which Linnæus had given some account in his *Flora Lapponica*.

Sida descripta. (1743. p. 137—140.) This

This is a description of *Malachra capitata*, a plant the *genus* of which our author felt some difficulty in determining.

Scabiosa descripta. (1744. p. 11—12.)

The species denominated *Tatarica*, seeds of which had been sent, along with others, from Siberia, and presented to Linnæus by M. Demidoff.

Penthorum descriptum. (Ibid. p. 12—14.)

This is *P. sedoides*, a plant which had been described only in Gronovius's *Flora Virginica*, and therein from a dried and imperfect specimen; but, Kalm having sent home seeds from America which were afterwards raised in the Upsala garden, our author had an opportunity of describing and figuring it satisfactorily from its living state.

Cyprinus pinnæ ani radiis xi. *pinnis albentibus*, Faun. Suec. 325, Stæm *Suecis, descriptus à C. L.* (Ibid. p. 35—36.)

The *C. Grislagine* of the *Syst. Nat.* (à Gm. p. 1425.) a specimen of which had been received from Finland by Secretary Wargentin. It is here figured.

The Transactions of the Upsala Society were discontinued several years, but revived in 1773, under the name of

Nova Acta Regiæ Societatis Scientiarum Upsaliensis.

In the first volume of this second series (p. 39—43), Linnæus described one of the *Testacea*, which until about this time he had never seen in a recent state, and in fact the animal of the genus was unknown to him; this was the

Anomia,

of which two species are here noticed and figured, viz. *Caput Serpentis* and *patellæformis*. Of the former, specimens, with the animal complete, had been sent to him (as we have before

before remarked) from Bergen, in Norway, by his pupil Martin.

Ellisia Nyctelea. (Ibid. p. 97).

Linnæus figured this plant from a drawing sent to the Academy from London, by the celebrated Ehret. It had not been accurately engraved before.

KONGL. SVENSKA VETENSKAPS ACADEMIENS HANDLINGAR.

The *Transactions of the Royal Academy of Sciences at Stockholm* have been continued, in an octavo form, from the establishment of that society in 1739. It is to be lamented that they are not written in the Latin language, as those of the Upsala Academy, the Swedish being so partially understood in the western parts of Europe. There is a work, however, which in a great measure remedies this inconvenience, *viz.* a Latin epitome of the more important papers, under the title of *Analecta Transalpina*, (Venet. 1762. 8vo. *cum tabb. æn.*) and several of them are copied from this Latin collection into Gilibert's *Fundamenta Botanica* (Tom. 2).

Linnæus's earliest paper in the *Kongl. Svensk. Vetensk. Handl.* is entitled:

Rön om växters plantering, grundat på naturen. (1739. p. 1—24. *Anal. Trans.* Tom. 1. p. 1—24.)

This is an attempt to reduce the art of gardening to scientific principles, to which the author was led, he says, by a conviction of the insufficiency of the works hitherto published to accomplish that desirable end. He takes some notice of the *Gardener's Dictionary* of our countryman Miller, which he had recently perused, and on which he bestows proper commendation, but accompanied by expressions of regret at that meritorious horticulturist not having been sufficiently full and scientific in

the instructions he had given. This subject was taken up again afterwards in the *Amœnitates Academicæ*, in two dissertations; one entitled *Horticultura Academica*, and the other *Hortus Culinaris*, each of which we shall notice in the proper places.

Om Renarnas Brömskulor i Lapland. (Ibid. p. 119—130).

Observations on the tumors caused in the skin of the Rein-deer by *Œstrus Tarandi*. This insect is one of the greatest scourges of the Laplanders (as is pointed out in a peculiarly interesting manner in the *Flora Lapponica*, n. 517), and by breeding on the backs of the fawns frequently occasions the death of a third part of them. Linnæus gives figures of the tumors, and of the mode in which the insects insert themselves.

Anmärkning öfver Lapska Limet. (Ibid. p. 213—214. *An. Tr.* Tom. 1. p. 34—35.)

Remarks on the glue used by the Laplanders in making their bows for hunting. The process of manufacturing it from the skin of the perch is here described.

Beskrifning på en ny Fogel Picus pedibus tridactylis. (1740. p. 214—216. *Anal. Trans.* Tom. 1. p. 35—36.)

Description of the three-toed Woodpecker, before that time unnoticed, since figured by Edwards (tab. 114), and named in the System *Picus tridactylus*. It is found in America, as well as in Europe. (See Phil. Trans. Vol 62. p. 388.)

Anmärkning öfver de djuren, som säigas komma neder utur skyarna i Norige. (1740. p. 320—325. *Anal. Transalp.* Tom. 1. p. 68—73.)

Remarks on animals reported in Norway to have fallen from the clouds,—with figures of *Mus Lemmus*, the well known pest of the north. The writer points out the origin of the vulgar opinion respecting the Norway rat, and gives an account of the descent of this animal from the mountains of Lapland. Högström wrote afterwards on the same subject in these Transactions, (1749.

(1749. p. 14—23.) making many additional and curious remarks on the migrations of those rats.

Beskrifning på Snö-Sparfven. (Ibid. p. 368—374. *An. Trans.* Tom. 1. p. 75—79.)

Description of the Snow-Bunting, or *Emberiza nivalis*, which is here figured for the first time; in fact, no writer had *described it* before. Linnæus received specimens of these birds from Lapland, and kept three of them alive in his own house for some time.

Beskrifning om Guld fisken och Silver fisken. (Ibid. p. 396—404. *Anal. Trans.* Tom. 1. p. 83—89.)

Description of the Gold and Silver fish (*Cyprinus auratus*, of the *Syst. Nat.*), with figures.—This species is here scientifically described for the first time, from specimens sent by Palmstierna, the Swedish Envoy, from Copenhagen.

Tankar om Grunden til Œconomie genom Naturkunnogheten och Physiquen. (Ibid. p. 405—423. *Anal. Tr.* Tom 1. p. 89—99.)

On laying the foundation of œconomics on natural history and physics.—This was always a favourite subject with our author, who has proved in various parts of his writings, and in a very striking manner, the close connection subsisting between the science of natural history and rural œconomy of every description.

Anmärkning over Wisen hos Myrorne. (1741. p. 36—48. *An. Tr.* Tom. 1. p. 110—118.)

Remarks on female ants.—This paper contains a history and description of 5 species of *Formica* found in Sweden, and throws much light on the œconomy of those insects.

Upsats på de medicinal växter, som i apothequen bevaras, och hos oss i fäderne-landet växa. (1741. p. 81—96. *An. Tr.* Tom. 1. p. 129—140.)

In this paper our author informs his countrymen of several articles of the *Materia Medica* indigenous in Sweden, and which they had unnecessarily imported. The catalogue was published by order of the Academy; and it is contained in Gilibert's edition of the *Fundamenta Botanica*. Tom. 2. p. 529—542.

Samling af 100 *wäxter upfundne på Gothland, Öland, och Småland.* (Ibid. p. 179—210. *An. Trans.* Tom. 1. p. 146—166.)

This is a catalogue of 100 plants first discovered to be natives of Sweden during our author's tour in Gothland, Öland, and Småland, in the summer of 1741. We have alluded to this catalogue before (see p. 84).

Förtekning af de färgegräs som brukas på Gothland och Öland. (1742. p. 20—28. *Anal. Transalp.* Tom. 1. p. 194—199.)

An account of plants used in dying, which was one of Linnæus's objects professedly when he visited the islands above mentioned. The subject was afterwards taken up more at large in a dissertation entitled *Plantæ Tinctoriæ.*

Anmärkningar öfver Amaryllis der sköna. (Ibid. p. 93—102. *An. Tr.* Tom. 1. p. 206—211.)

Remarks on *Amaryllis formosissima*, accompanied by a figure of that plant, which flowered for the first time in Sweden in April 1742. Linnæus gives a very pleasing history of this elegant species, noticing all the authors by whom it had been described, and the places where it had first been cultivated.

Beskrifning på Sältings-gräset. (Ibid. p. 146—151. *Anal. Trans.* Tom. 1. p. 211—214.)

Description of *Triglochin maritimum*, called in Öland *Sælting*, or salt-grass.—The writer recommends to farmers to cultivate this plant with attention, having remarked on his travels how much it was relished by cattle and horses, and how salutary and medicinal

medicinal it proved to those animals. He exhibits a figure of it and of *T. palustre*, considering the latter species also as worthy of cultivation.

Svenskt höfrö. (Ibid. p. 191—198. *Anal. Trans.* Tom. 1. p. 221—226.)

A recommendation of the culture of *Medicago falcata*, or Yellow Medic, as a substitute for Lucern, in Sweden. Besides a very full and popular description of this plant, Linnæus makes many useful observations on others of this kind, and on the practices of the peasantry, with respect to the feeding of cattle, in remote districts of the kingdom.

Beskrifning på et slag Ostindiska ärter. (Ibid. p. 202—206. *Anal. Trans.* Tom. 1. p. 226—229.)

Description of an East Indian bean, viz. *Phaseolus radiatus*, which had recently been raised in the Upsala garden from seeds brought to Linnæus by Admiral Ankarkrona, from China. This plant seems to require a high temperature to rear it; only one was brought to perfection out of many seeds sown by three or four different people. The people of Canton, we are informed, employ a decoction of these beans, with great success, in nephritic complaints, and especially for the expulsion of gravel. It is drunk *ad libitum*. This species of *Phaseolus* had been described and figured by Dillenius, in his *Hortus Elthamensis* (p. 213—235. fig. 304), but very unsatisfactorily. Linnæus gives a figure of his own, to accompany the new description.

Rön, om orsaken til Fallande goten i Skane ock Wernsharad. (Ibid. p. 279—284.)

Observations on the cause of the epilepsy prevailing at Wernsharad, in the province of Skåne. Our author conceived it to be owing to the custom, followed at that place, of washing the scald

scald heads of children with *cold* water, which, acting as a repellent, may be supposed to have occasioned congestion in the brain.

Anmärkning öfver Jackashapuck. (1743. p. 292—295. *Anal. Tr.* Tom. 1. p. 266—268.)

Remarks on Bear-berries, which having been recently introduced into England from America under the above name, and used by the common people mixed with tobacco, Linnæus applied to Mr. Peter Collinson for specimens, in order to ascertain the species of the plant. He had no sooner received them from his correspondent than he recognized the American *Jackashapuck* to be the *Uva Ursi*, which was very common in Sweden, and therefore not considered in that country as an article of luxury. Linnæus informs us that these berries had been strongly recommended to him by the physicians of Montpellier as a sort of lithonthriptic, and that the proper mode of using it is to take half a drachm of the powder in chicken broth, every morning, for ten or fourteen days. This remedy was afterwards noticed by Dr. Murray, of Göttingen (*Commentarium de Arbuto Uva Ursi.* Götting. 1765. 4to, pp. 65.), and highly commended by Dr. de Haen, of Vienna. Dr. Heberden mentions, in his *Commentaria*, that it imparted to the urine, in one instance which he witnessed, a green colour.

Siberiskt Bokhvete. (1744. p. 117—122. *Anal. Trans.* Tom. 1. p. 293—296.)

Siberian Buck-wheat, or *Polygonum Tataricum*, described and figured. The author gives an interesting account of the properties of this plant, which is cultivated, and supplies the want of other grain for bread, in several parts of Siberia and Tartary.

Petiveria,

Petiveria, *en Americansk växt.* (Ibid. p. 287—292. *Anal. Trans.* Tom. 1. p. 346—349.)

An American plant (*Petiveria alliacea*) described, and its parts of fructification accurately figured. In the *Hortus Cliffortianus* Linnæus had described it from a dried specimen only; but as it flowered this year in the hot-houses of the Upsala garden, he had an opportunity of giving a more accurate account and figure of it than had hitherto appeared. But, besides an elegant demonstration of *Petiveria alliacea*, this paper contains many curious remarks on the flavour, odour, and medicinal properties communicated to the flesh and fluids of animals by particular vegetable substances: as, for example, the intolerable taste communicated to hares that have eaten rape-seed; the wormwood flavour which the flesh of sheep acquires after that plant has been eaten by those animals; the cathartic properties imparted to thrushes after they have swallowed buckthorn, and to goats' milk after the latter have eaten scammony; the disposition to convulsions created by eating partridges that have fed on hellebore; and, lastly, the insufferable alliaceous taste and smell imparted to beef when the animal has chanced to eat the plant which forms the more immediate subject of this paper, and which has hence acquired the trivial name of *alliacea*. The Jamaica people employ the root for curing tooth-ach, putting it into the diseased cavity. It is a very acrid and even caustic plant. From the fondness which guinea-hens manifest for it, in the West Indies, it is vulgarly called *Guinea-hen weed.*

Storm-väders fogelen beskrifven. (1745. p. 93—96. *Anal. Trans.* Tom. 1. p. 376—378.)

The storm-finch (*Procellaria pelagica*) described and figured. This is the Petrell of Dampier's Voyage, a name which the bird

seems to have acquired from its appearing to walk on the sea like St. Peter. It is the Little Peterel, of Edwards, tab. 90.

Pomerantz med et inneslutit foster. (Ibid. p. 281—285. *An. Tr.* Tom. 1. p. 414—416.)

One orange growing within another, exhibited to the Academy by Count Tessin, and here figured. The account of this curious *lusus naturæ* is prefaced by an interesting little history of the cultivation of oranges, and of the works which treat on that subject.

Lyckte-matken från China. (1746. p. 60—66. *An. Tr.* Tom. 1. p. 475—479.)

A phosphorescent Grasshopper from China (*Fulgora Candelaria*) described, with a few remarks and figures, by De Geer. The description of this remarkable insect is preceded by observations on phosphorescent bodies in general, and by an enumeration of several species.

En sällsam Phryganea *beskrifven.* (1747. p. 176—178. *An. Tr.* Tom. 1. p. 483—484.)

Description and figure of *Panorpa Coa*, an insect of the Neuropterous class, usually found in the islands of the Archipelago, but in this instance discovered (by Carlson, a Swede,) in the Maldives, where it is extremely rare.

Beskrifning på ett Americanskt djur. (1747. p. 277—278. *Anal. Trans.* Tom. 2. p. 35—42.)

Description of an American quadruped, *viz. Ursus Lotor*, or the *Raccoon*, of Pennant. This description is very full, and accompanied by a plate.

Limnia *beskrifven.* (1746. p. 130—134. *An. Trans.* Tom. 1. p. 42—45.)

Claytonia Sibirica described and figured. This species was before

before unknown to botanists. It was discovered by Steller in the most eastern parts of Siberia, and in the islands which lie scattered between that part of Asia, and America. It flowered in the Upsala greenhouses, in May, 1746.

Asping beskrifven. (1749. p. 246—251. *Anal. Tr.* Tom. 2. p. 197—201.)

Coluber Chersea (called by the Smålanders *Asping*) described. This is a venomous small snake, found in osieries and other low situations; its bite is much dreaded and frequently fatal, particularly in Småland. It had never before been described. Linnæus received four specimens, from which he has given figures to accompany the paper.

Sommar-Guling. (1750. p. 127—132. *Anal. Trans.* Tom. 2. p. 277—280.)

A description of the Golden Thrush (*Oriolus Galbula*), singular in being a native both of northern Europe and of Bengal. The original name given to this species was *Ampelis flava.* It is here figured, with its nest, &c. and Sparrman afterwards wrote some remarks on it in the volume for 1786, p. 70—73.

Rön om Slö-korn. (Ibid. p. 179—185. *Anal. Trans.* Tom. 2. p. 294—297.)

An insect destructive to barley, and afterwards described in the *Systema* under the name of *Musca Frit.*—Our author thinks that every tenth grain of barley in Sweden is destroyed by this pernicious little creature, and that the damage it occasions cannot amount to less than 100,000 ducats annually.

En Indiansk sparf beskrifven. (Ibid. p. 278—280. *Anal. Trans.* Tom. 2. p. 311.)

A description and figure of *Emberiza Ciris*, which being introduced from America into Spain, found its way thence to Sweden.

Anmärkning om Ormarnas skiljemärken. (1752. p. 206—207. *Anal. Trans.* Tom. 2. p. 471.)

Remarks on the characters of Serpents.—It has been observed before, that Linnæus first attempted to fix these characters from the number of the *scuta* and *squamæ* of the abdomen and tail. He here remarks that this character is not sufficiently permanent, but that what is wanting to complete the number in one will usually be found in the other.

Två nya Species Tobak. (1753. p. 37—43.)

Two new species of Tobacco, viz. *Nicotiana paniculata*, and *N. glutinosa*, described and well figured.

Tankar om nyttiga växters planterande på de Lappska Fjallen. (1754. p. 182—189.)

This was the paper that obtained the premium left by the will of Count Sparre, as mentioned before (p. 113).

Markattan Diana, (Ibid. p. 210—217.)

Description and plate of *Simia Diana*.

Mirabilis longiflora *beskrifven.* (1755. p. 176—179.)

A Mexican plant now not uncommon in our English gardens, where it is known by the name of the Sweet-scented Marvel of Peru. This paper is accompanied by a figure.

Spansk krasse beskrifven. (Ibid. p. 273—275. *Anal. Tr.* Tom. 2. p. 460—461.)

A Spanish species of Dittander (*Lepidium Cardamines*), described and figured for the first time. Seeds of this plant had been sent to our author by Löfling.

Ayenia, *en sällsom blomma, beskrifven och ingrifven.* (1756. p. 23—26.)

Ayenia pusilla, an elegant plant, sent to our author by Miller, is here described and figured. Miller had received seeds from Dr. Monier, Intendant of the Duc de Noailles's fine garden at St. Germaine

Germaine en Laye, and raised them annually. It was in honour of that nobleman (whose family name was *D'Ayen*) that Linnæus named the plant *Ayenia*, of which there are now 4 species, all natives of South America.

Gaura en växt från Norra America beskrifven. (1756. p. 222—225. *Anal. Trans.* Tom. 2. p. 452—454.)

Gaura biennis, from North America, described. Seeds of this plant had been received from Collinson; and Linnæus here gives the first figure of it.

Tvänne örter Loeflingia *och* Minuartia *af C. L.* (1758. p. 15—18.)

In this paper *Loeflingia Hispanica* and 3 species of *Minuartia* are described. These plants had been sent from Spain by Löfling, of whose travels and discoveries some notice is here taken.

Petrificatet Entomolithus paradoxus. (1759. p. 19—24.)

Description of a curious fossil (from Count Tessin's Museum), which Linnæus supposes in his *Systema* to have been a species of *Monoculus*, but which his editor, Professor Gmelin, pronounces to be the type of an *Oniscus*. The description is illustrated by figures.

Anmärkningar om den så kallade Påfogelstenen. (Ibid. p. 24—26.)

Remarks on the Peacock-stone, or *Penna Pavonis* (of the *Museum Tessinianum*), which our author thinks is formed from the hinge of the Pearl-muscle (*Mytilus margaritiferus*), and which he has called in the System *Helmintholithus Androdamas.*

Svensk Coccionell. (1759. p. 26—30.)

Account of the Swedish Cochineal-insect, or *Coccus Uvæ Ursi.* This species is very like the Polish kind, found at the roots of the Knawel, but is double the size, and yields a very fine red colour.

Åkerbärs plantering. (1762. p. 192—197.)

Rubus Arcticus, much valued for the sake of the berries, is cultivated in the southern parts of Sweden with difficulty. This paper contains the result of some trials made to inure it to a

climate warmer than is natural to it; they are too operose, however, to prove of general use.

Anmärkningar om Öl. (1763. p. 52—59.)

Remarks on Beer. This paper is copied into the *Berlin. Sammlung* (6 *Band.* 177—178.), under the title of *Anmerkungen über das Bier.*

Aguti *beskrifven.* (1768. p. 26—30.)

Description of the Aguti, or long-nosed Cavy of Pennant, from one which had been sent to Upsala from the Swedish Consul at Lisbon, and which had been brought to the latter city from the Brazils. This animal is a *Mus* of the original *Systema*, but a *Cavia* (*Aguti*) of Gmelin's edition.

Djuret Narica *beskrifvit.* (1768. p. 140—145.)

Viverra Narica, the *Coati-brun* of Buffon, described and figured.

Tvänne anmärkningar i natural historien. (1768. p. 146—147.)

Remarks relative to the natural history of two animals: *viz. Simia Œdipus* (the red-tailed Ape of Pennant), and *Gordius Medinensis* (the Guinea-worm). A Guinea-worm, half an ell long, was discovered in a living state at Gottenburg, and communicated to our author by the King of Sweden.

Calceolaria pinnata *beskrifven.* (1770. p. 286—292.)

This description of *Calceolaria pinnata* is accompanied by a figure.

Swedish Almanacks.

Linnæus wrote in the Swedish almanacks observations, of a popular nature, on the following subjects, *viz.* (in *Hjorter's*)

For the year 1742. On domestic medicines for the Ague.

1743. 1744. On indigenous Plants.

1746. On Tea.

1747. On Coffee.

1748. On Brandy. (*In*

(*In Celsius's*)

1744. 1745. On the application of the sexes of plants, in agriculture and horticulture.

All these observations contain information highly useful and important, more especially to the less enlightened orders of the community. They were, most of them, afterwards put into a more diffuse and scientific form, serving for the substance of dissertations in the *Amœnitates Academicæ*.

NOVI COMMENTARII ACADEMIÆ SCIENTIARUM IMPERIALIS PETROPOLITANÆ.

The only paper of our author's contained in this collection appears in Vol. 7. (p. 315—320) for the years 1758—1759, and is entitled

Nitraria planta obscura explicata.

It is a description and history of *Nitraria Schoberi*, a native of Siberia, from which country specimens of it had been sent by Gmelin to Amman, who described it, but not the parts of fructification, in his *Stirpes rariores Ruthenici*. Linnæus could not fully describe it in his *Species Plantarum*, and was obliged to try a great variety of soil and temperature before he could even raise the plant: at length, however, being led by its habit to suspect, that a soil impregnated with sea-salt might agree with it, he succeeded in bringing it to perfection: hence he was enabled to figure it in this work entire, and to assign to it a proper place in his arrangement, viz. *Dodecandria Monogynia*. He named it *N. Schoberi*, from Schober, one of the travellers who accompanied Gmelin into Siberia.

INRIKES

INRIKES TIDNINGAR,
or *Home Gazette* of Sweden. 1766.

Linnæus drew up, for this publication, an account of *Insects destructive to books*, a German translation of which is given in the *Berlin. Mag.* (4 Band. p. 411—414.)

MEMOIRES DE L'ACADEMIE ROYALE DES SCIENCES DE PARIS. (1775. p. 515—519.)

In compliment to the French Academy, for the honour done him when he was placed on the list of Foreign Members, Linnæus laid before that body an interesting description of *Cycas circinalis*, the character of which had not been given before, as no opportunity had occurred to him until now of examining the inflorescence. The paper is prefaced by observations on his arrangement of *Palmæ*, and concluded with remarks on the *pollen* of the *Cycas* and other plants, especially *Filices*, or the Ferns, to which tribe, in fact, he removed the *Cycas*, considering it as having naked *pollen* without any *antheræ*. Jacquin has since declared it to be perfectly diœcious, and has figured the parts of fructification*, from which, after all (as Professor Martyn remarks in his edition of Miller's Dictionary), it appears to be a *Palm.* To this division it was brought back in Schreber's edition of the *Genera Plantarum.*

AMŒNITATES ACADEMICÆ, *seu Dissertationes variæ Physicæ, Medicæ, Botanicæ, antehac seorsim editæ, nunc collectæ et auctæ.*

The collection known under this title consists of 10 volumes in

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* See *Act. Helvet.* 8. p. 59. t. 2.

8vo,

8vo, of which, however, only 7 were published by Linnæus himself, the last 3 having been committed to the press, since his death, by Schreber, of Erlangen, who has included the dissertations sustained under the presidency of the younger Linnæus. Something has been said relating to this collection in a preceding part of our work (p. 102); to which we have only to add, that the following pages are to be regarded as little more than an enlarged table of contents; and that it is impossible, by means of any abridgment, to give an adequate idea of the merit of this miscellany, or of its utility as exhibiting dilated explanations of our author's philosophical and medical principles.

Most of these dissertations have been published, enlarged, and commented on, by various persons and in various languages. The principal selections are the following; *viz.*

Miscellaneous Tracts relating to Natural History, Husbandry, and Physic, translated from the Latin, with notes, by BENJAMIN STILLINGFLEET. (London 1759. 8vo. pp. 230. and again in 1762. pp. 391. pl. 11.)

Selectæ ex Amœnitatibus Academicis CAROLI LINNÆI *Dissertationes ad universam naturalem historiam pertinentes, quas edidit et additamentis auxit L. B. ē S. J.* (*Græcii* 4to. 1764. pp. 316. tabb. æn. 2. 1766. pp. 297. tab. 1. 1769. pp. 277. tabb. 4.)

Select Dissertations from the Amœnitates Academicæ, *a supplement to Mr. Stillingfleet's tracts, &c. translated by the Rev.* F. J. BRAND. (London 1781. 8vo. Vol. 1. pp. 480.)

CAROLI LINNÆI *Fundamentorum Botanicorum Pars* 1ma, *exhibens omnes Dissertationes Academicas quæ varios Aphorismos Philosophiæ Botanicæ illustrare possunt, edita à* GILIBERT. (*Col. Allobrog.* 1786. 8vo. Tom. 2.)

Vol. 1.

Holm. et Lips. 1749. 8vo. pp. 563. tabb. 17.

Lugd. Bat. (*Camper*) pp. 610. tabb. 15*.

Erlang. (*Schreber*) 1787. pp. 563. præter expl. tabb. 17.

1. *Betula Nana.* Resp. L. M. Klase. 1743.

In this dissertation is exhibited a complete history, accompanied by a figure, of *Betula nana*, or the Dwarf Birch, which clothes the Lapland Alps in great quantities, and is of signal use in the œconomy of the inhabitants of that arctic region. The branches furnish them with their chief fuel, and the seeds are the food of the Ptarmigan; or White Partridge (*Tetrao Lagopus*). These birds, being much esteemed, make a considerable part of the sustenance of the inhabitants; great quantities are caught in the winter season, and sent to different provinces. Before Linnæus made his Lapland expedition, this Birch had been considered as a *variety* only of the common tree of that name, but it now stands as a distinct *species*. Our own country yields it, but only in the more northern parts, as the Highlands of Scotland.

This dissertation, which may be considered as a perfect model for botanical *Monographiæ*, has been translated into the French language by M. de Grandmaison, in his *Revue Generale*, &c. Tom. 2. p. 299—326.

2. *Historia naturalis et medica Ficus.* Resp. C. Hegardt. 1744.

From the earliest times, the cultivation of the Fig-tree has been an important object in all the oriental countries. In this dissertation we are presented with a history of the *genus*, of which the writer has enumerated 22 *species*. Linnæus greatly reduced the number, in his *Species Plantarum*, conceiving many varieties to be effected by culture; but in a dissertation defended

* See an account of this edition in a preceding page (113).

under the presidency of the Chevalier Thunberg*, 27 species are enumerated, and later discoveries have made us acquainted with more than 50. That part of the history of the *Ficus*, which for many ages was so enigmatical, and which nothing but the doctrines of the Linnean school have completely cleared up, *viz.* the husbandry or *caprification* (as it is called), is more particularly worthy of attention, not only as a singular phænomenon in itself, but as it has furnished one of the most convincing proofs of the reality of the sexes of plants. Our limits will not allow us to detail this subject; but in brief it is as follows:—It is now known that the flowers of the fig-tree are situated within a pulpy receptacle, which we call the *fig*, or fruit of the tree; of these receptacles, in the wild fig-tree, some have male flowers only, and others have male and female, both distinct, though placed in the same receptacle. The garden or cultivated fig contains only female flowers, and these are fecundated by means of a kind of gnat (*Cynips Psenes*) bred in the fruit of the wild fig-tree, which pierces that of the cultivated, in order to deposit its eggs in the inside; at the same time diffusing within the receptacle the *farina* of the male flowers. Without this operation, the fruit may ripen, but no *effective* seeds are produced. Hence, in those countries where the wild fig is unknown, the garden fig can only be propagated by layers and cuttings. The process of ripening the fruit, in the oriental countries, is not left to nature, but is managed with great art, and different degrees of dexterity, so as to reward the skilful husbandman with a much larger increase of fruit than would otherwise be produced. A tree of the same size, which in Provence (where caprification is not practised) may produce about 25 pounds of

* See *Dissertationes Academicæ Upsaliæ habitæ.* (*Vol.* 1.) *Resp.* El. Gedner. 1786.

fruit, will by that art, in the Grecian islands, bring ten times the quantity.

3. *Dissertatio de Peloria.* Resp. D. Rudberg. 1744.

A description, with the figure, of a very extraordinary variety of the common yellow Toad-flax (*Antirrhinum Linaria*), which was found in several parts of Sweden, and engaged the attention of botanists very much at that time.—Indeed its variation is extremely singular. The flower, instead of the ringent, tetrandrous character of the *Linaria*, with a single, corniculated *nectarium*, exhibits a regular, monopetalous, pentandrous tube, from the base of which proceed five *nectaria*. Strange as this was, Linnæus discovered it to be no other than a monster,—a fact proved by its agreeing in habit and sensible qualities with the above-mentioned species; by its never producing seeds; and by flowers of both kinds having been found on the same plant. Some of its congeners have recently been observed to assume the same tendency, especially *A. Cymbalaria, Elatine,* and *spurium*. The monstrosity has been noticed in Germany, by Leers; in England, by Hudson; and in other countries, by various persons.

4. *Corallia Baltica.* Resp. H. Fougt. 1745.

In this dissertation the author, after having traced the history of corals from the remotest period of natural history, and considered the several theories that have at different times prevailed respecting the production of these bodies, acquiesces in the modern one, which ascribes their formation to *animalcula*, and which Ellis and several other writers have confirmed and illustrated. He then gives a copious description of 20 species, all generated in the Baltic, in some parts of which immense masses are found; on the coast of Gothland, *strata* of corals extend several miles. Excellent figures of the species described in this paper are subjoined.

5. *Amphibia Gyllenborgiana.* Resp. B. R. Hast. 1745.

A detailed description of 24 species of animals (all of the

class *Amphibia*), presented by Count Gyllenborg* to the University of Upsala, of which he was at that time Chancellor, and to which he had been a munificent patron, having interested himself in procuring to be built and furnished an astronomical observatory; in restoring to a state of usefulness the botanic garden, which had been in ruins for many years; in causing stoves and a house for the demonstrator to be there erected; and, lastly, in having presented to the university his own museum, formed at a great expense, and consisting of rare *Amphibia*, Insects, Corals, Minerals, and also many elegant works of art.

In this dissertation is exhibited the first specimen of Linnæus's method of zoological description at large, as also the first attempt to form the specific characters of *Serpentes* from the different number of the *scuta* and *squamæ* of the body and tail taken conjointly. Former authors, in distinguishing these animals, generally had recourse to colour alone, which was found, at length, to be too unstable; but it had given rise to a most enormous multiplication of the species. Linnæus's mode of distinction has been since adopted by others, and is retained, as we have before remarked, in the *Systema Naturæ*.

6. *Plantæ Martino Burserianæ*. Resp. R. MARTIN. 1745.

Joachim Burser, a most diligent disciple and friend of Caspar Bauhin, and afterwards Professor of Medicine at Sora, in the kingdom of Naples, had collected, on his travels over several parts of Europe, a *Hortus siccus*, contained in 25 volumes, which, after various fates, were given by M. Coijet to the University of Upsala. The object of this dissertation is to illustrate

* This nobleman was ambassador to the Court of St. James's, in the reign of George I. His residence here was attended with some remarkable circumstances, which are detailed by Stoever (see his *Life of Linnæus*, translated by Trapp, p. 161), as are also other particulars of his political life, and his offices in Sweden.

the most rare plants contained in the collection (particularly such as were obscurely known to the collector), and to add to these the specific names, according to the principles of the Linnean method. With this view, 240 species are enumerated.

7. *Hortus Upsaliensis.* Resp. S. NAUCLERC. 1745.

Botanic gardens began to be founded in Europe so early as the middle of the sixteenth century. The first was that of Padua, in 1540. That of Upsala was founded (as we have mentioned before) in 1657, by Charles Gustavus, under the direction of the elder Rudbeck. How much the latter owed to Linnæus has already been seen, in our account of the catalogue of its plants published by himself in 1748. Nauclerc's history of the antient and modern state of this garden contains a variety of curious matter on the subject, and is illustrated with a ground-plan and view of the spot; lists of the succulent plants and others; and (what is particularly acceptable) the lives of the Rudbecks, father and son, whose fame is founded not on botany alone, but on anatomy and the knowledge of antiquities.

Linnæus was the means of improving the establishment, subsequently to the date of this dissertation, having prevailed on the University to appoint additional gardeners, and to allow 100 cart-loads of fire-wood every year.

But soon after the Chevalier Thunberg succeeded to the professorship, the original spot was wholly relinquished, the King, Gustavus III., having been pleased to present to the University a more eligible piece of ground, (which was crown-land,) and to issue directions for building a new house for the Professor, as also hot-houses, a museum, &c. &c. In the year 1787, His Majesty went to the University, and laid the foundation-stone of the new edifices himself, depositing within it one of the medals which he had caused to be struck in honour of

of Linnæus, and a copper-plate on which was engraved the following inscription, *viz.*

GUSTAVUS III.

Ut bonis artibus et præsertim scientiæ in gentis laudem à CAROLO LINNÆO *ad fastigium evectæ simulque memoriæ consecraret auspicia quibus filius*

GUSTAVUS ADOLPHUS

Academiam Upsaliensem tuetur, has ædes extruere voluit, primis sua manu locatis fundamentis die XVII *Aug.* MDCCLXXXVII.

This monarch's high estimation of the merits of Linnæus was forcibly expressed also in his letter of donation to the University; and in giving orders for the erection of a museum of natural history and lecture-room adjoining*, he directed that a noble marble statue of Linnæus should be placed in the latter, as if to signify whose doctrines and principles were to be the guidance of future professors, and to testify the obligations of the science of botany to its immortal reformer.

8. *Passiflora.* Resp. J. G. HALLMAN. 1745.

A very methodical history of that beautiful and much admired genus of plants, which the Catholics, (who first saw it, in America,) from the fancied resemblance of the cross in the flower, called the *Passion-flower*, and which soon acquired a distinguished rank in the European gardens. M. Hallman, after a chronological list of the writers who have described the several species, from Peter Ciltza and Monardes down to Dillenius, enumerates 22 species, and gives their synonyms, adding afterwards a list of many which were dubious. He subjoins the uses which the natives make of these plants, principally borrowed from Piso. The whole is ornamented, and rendered much more useful, by a

* There is a description of these, illustrated by a plan and elevation, in the *Allgemeine Literatur-Zeitung*. Jan. Feb. Mär. 1805.

plate,

plate, on which are engraved different views of the flower, and a figure of the leaf of each species.

The *Passiflora* belongs to the *Gynandrous* plants with five *stamina*; and the number of species, as they stand in Reichard's edition of the *Systema Plantarum*, is augmented to 26. All of these are natives of the warmer parts of America only.

9. *Anandria*. Resp. E. Z. TURSEN. 1745.

This is a history of a singular Siberian plant, which, during the time of flowering, was found not to open the *calyx*, and which was called *Anandria* by Professor Siegesbeck, of Petersburg, who had *fancied* that it was destitute of *stamina*, and, having declared himself (as has been before observed) a strenuous opposer of the sexual system, thought, by the instance of this plant, he should overturn the whole doctrine of Linnæus. He had written a treatise, in which he asserted that the *stamina* did not constitute the *essential* parts of the plant, and that the seed would become fertile without the influence of the *pollen* of the *antheræ*. The *Anandria* is *Syngenesious*, and stands in the system under the name of *Tussilago Anandria*. Later observations have proved, that in a warmer situation than its native one, the *calyx* will open, and show a radiated flower.

10. *Acrostichum*. Resp. J. B. HEILIGTAG. 1745.

A botanical dissertation on a genus of plants belonging to an extensive *natural* order (placed in the class *Cryptogamia*), which we call *Ferns*, and which were known to former botanists by the name of *Epiphyllospermous* plants, on account of their producing the parts of fructification chiefly on the back of the leaf, or *frons*. After some general observations on the plants constituting this order, and showing the place they hold, and their characters, in the several systems of Ray, Morison, Tournefort, and Linnæus, the writer proceeds to an ample description of the *species* of

of *Acrostichum*, of which he enumerates 17, with their synonyms. This *genus* is distinguished by having the fructification spread all over the under surface of the leaf, and the number of species in the *Systema Plantarum* of Reichard amounts to 20. They are mostly of American produce, 6 only being European. A plate accompanies this dissertation, on which 5 of the uncommon species are delineated.

11. *Museum Adolpho-Fridericianum*. Resp. L. Balk. 1746.

The subject of this paper is strictly zoological. It contains a particular description of 65 of the rarer animals which were presented to the Museum of the University by King Adolphus, at that time Hereditary Prince. These descriptions being drawn up with sufficient accuracy, and regard to the rules of the Linnean system, and being referred to in the subsequent zoology of Linnæus, still retain their value. *Amphibia* and Fishes form the greater part of the collection; among the former ought to be noticed an excellent description of the Chameleon (*Lacerta Chameleon*,) of *Amphisbæna fuligiuosa*, and of the Rattle-Snake (*Crotalus horridus*); among the latter, of the *Torpedo*, which has so much excited the attention of electricians, and also of that remarkable fish called *Soldigo* by the Portuguese (*Silurus Callichthys*), which, Margrave and Piso say, will travel in dry seasons across the land from rivulet to rivulet in quest of water. Two copper-plates accompany this dissertation.

12. *Sponsalia Plantarum*. Resp. J. G. Wahlbom. 1746.

Those who would see all the arguments, and the result of the experiments, on which the doctrine of the sexes of plants is founded, are referred to this dissertation, as containing by far the most clear, comprehensive, and copious view of that subject. It is professedly a commentary on the 5th chapter of Linnæus's *Fundamenta*, or *Philosophia Botanica*, from section 132 to 150 inclusive, and contains 49 pages. It is out of our plan to detail

all

all the arguments; suffice it to say, that although, from the writings of Theophrastus and Pliny, we learn that the antients had some idea of an analogy, as to sex, between the animal and vegetable kingdoms (drawn principally, perhaps, from the artificial manner of fecundating the date-tree), yet, so crude and erroneous were their ideas, that in many instances those plants which they pronounced male or female, modern observations have taught us are exactly the reverse. Indeed it does not appear that any very precise ideas on this subject were established till late in the 17th century. Were it a matter of importance to determine to whom applause is due for the discovery, the English perhaps might with justice claim the honour, and bestow that applause on Sir Thomas Millington, Savilian Professor of Geometry in the University of Oxford, who appears to have been the first that gave the hint to Dr. Grew; since whose time the doctrine has received so much light, that, we presume, few persons can now doubt the following position, which briefly contains the whole of what is at present understood by this analogy: namely, "That the influence of the *farina* from the *antheræ* of flowers upon the *stigma* is essentially necessary to give fertility to the seed." If any of our readers wish to see what arguments may be adduced *against* this doctrine, they are referred to the *Anthologia* of Pontedera, and to Alston's *Dissertation on Botany*.

13. *Nova Plantarum Genera.* Resp. C. M. Dassow. 1747.

In this paper are described and established the natural characters of 43 new *genera*, all of which were afterwards taken into Linnæus's *Genera Plantarum* of 1754.

14. *Vires Plantarum.* Resp. F. Hasselquist. 1747.

Practical physicians have wished, and some have formed the idea that it is possible, to deduce the virtues of plants from their botanical affinities. Petiver was among the first who hazarded some reflections on this subject (see *Phil. Trans.* Vol. 21. p. 289—

p. 289—294); and Hoffman has a professed dissertation on it in the 5th volume of his works (p. 58). It was the object of the present paper, written by this ingenious but unfortunate disciple of Linnæus, to extend and illustrate the same idea, by a commentary on the 12th chapter of the *Philosophia Botanica*, which contains the general doctrine, and an enumeration of those *natural* or *artificial* orders in botany that are supposed to confirm the probability of attaining this desirable end. To mention a few instances of the agreement in character and qualities, alluded to: the Stellated class, of Ray's system, are mostly *diuretics;* the *Asperifoliæ* are chiefly demulcents; the *Umbelliferæ* that grow in dry places are *aromatics*, particularly the roots and seeds, but if growing in wet places usually partake more or less of a deleterious quality; the *Icosandrous* plants, of Linnæus, abound with pulpy and esculent fruits; the *Polyandrous* are, many of them, poisonous; the *Syngenesious*, in frequent instances, intense bitters; and so on. There are many persons, however, who consider both the *natural method* in botany, and the deduction of the virtues of plants from these congruities, as the *philosopher's stone* of the science. Notwithstanding this, there is no attempt towards improving botany, or applying it to the purposes of medicine, that ought more strenuously and unremittingly to be pursued, than that of bringing to all possible perfection the object of this dissertation.

15. *Crystallorum Generatio.* Resp. M. Kæhler. 1747.

In this paper is discussed at large the opinion, which Linnæus early imbibed, that the regular polyedrous figure of all those bodies called *crystals* is to be ascribed to the operation of one and the same cause acting upon them during their suspension in an aqueous *menstruum*, and that this is equally the case whether these bodies be what we usually call *saline*, or whether they be

lapidose, or, finally, whether they be such as are termed *metallic salts*. Hence arose his arrangement of figured *spars*, *quartz*, &c., together with all the *gems*, under that genus of salts to which their agreement in figure entitled them to a place.

This part of the Linnean method (as we have remarked before, when analyzing the third great division of the *Systema Naturæ*) has hitherto given great offence to most mineralogists; yet it is not improbable that, so far as its foundation rests on crystallography, it will stand the test of philosophical scrutiny when other modes of arrangement are forgotten. At all events, Linnæus must be considered as the earliest author who paid proper attention to that interesting branch of mineralogical science, and, in justice to him, we may quote the merited compliment bestowed upon him by the ingenious M. Haüy, who pronounces him "*le Fondateur de Crystallographie.*" The number of crystals described by our author amounts to about 40 (which are exhibited in the 3 plates annexed to the last volume of the *Systema*); but Romé de l'Isle, who took up the subject with great ardor, increased this number, in the first edition of his *Essai de Cristallographie* (Paris. 1772. 8vo.), to 110, and does equal justice to his great predecessor in this curious branch of research, with his countryman above mentioned. M. Haüy shows the number of crystalline figures assumed by minerals to be prodigious, at the same time endeavouring to prove how subservient they may be rendered, from their permanency and visible character, to mineralogical arrangement in general. (See *Traité de Mineralogie*. Paris, Tom. 4. 1801. quoted before in p. 314.) With respect to the *origin*, however, of the various forms of crystallization, it must be confessed that the greatest difficulties still attend its investigation, our knowledge of the elements of mineral bodies being as yet much too limited.

16. *Surinamensia Grilliana.* Resp. P. SUNDIUS. 1748.

A description, at large, of 25 subjects of the animal kingdom, chiefly *Serpentes*, collected at Surinam by M. Gerret, famous for being among the first who introduced, and successfully cultivated, coffee in America, and who sent these curiosities to M. Grill, an opulent citizen of Stockholm; by which means they came finally into the museum of Upsala. We here meet with an excellent account of the Rattle-snake; a description and figure of that gigantic serpent, *Boa Constrictor*, of which there are such copious and astonishing accounts in Adanson, Piso, Kæmpfer, and others; also of *Cæcilia tentaculata*, *Coluber Ammodytes*, and the Egyptian Locust (*Gryllus cristatus*), which are all figured in a plate annexed to this dissertation.

17. *Flora Œconomica.* Resp. E. ASPELIN. 1748.

There is scarcely any paper in the collection more worthy of notice, or that has a more useful tendency than this, which is intended to point out in a general manner, the uses of the indigenous plants of Sweden, in Agriculture, Rural Œconomy in general, the Arts, and Culinary concerns. It does not profess to deliver their medicinal qualities, that not being a part of the plan. The plants are enumerated in the order wherein they are found in the *Flora Suecica;* but no *botanical* distinctions or disquisitions are introduced.

The only performance of this kind as yet published in our own country is the *Flora Rustica**, of Professor Martyn, of which valuable work, however, the plan has not been completed; but it contains no fewer than 40 species of Grasses, and 14 of that useful genus the *Trifolium*. All of them are accurately figured, and in addition to the œconomical observations, the

* 4 Vols. 8vo. London 1792—1794.

Professor has given a very full botanical description, in English, of every plant.

It has been already remarked, that M. Aspelin's dissertation is confined to the native plants of Sweden, of which (as an instance of the variety of species that are here mentioned as objects of œconomy in various ways) there are not fewer than 300 in his catalogue.

18. *Curiositas Naturalis.* Resp. O. Sederberg. 1748.

This concluding paper of the first volume is intended as an incitement to the study of natural history, by a train of well-connected arguments and observations, drawn both from that admirable display of wisdom and goodness which is manifest throughout all nature, and from its dignity and importance, as being so immediately connected with utility to mankind; from all which considerations the writer thinks this science entitled to one of the most distinguished ranks among the subjects of human inquiry; and that, so far from its being a frivolous pursuit, it is in every view one of the worthiest employments of the human mind.

Vol. 2.

Holm. 1751. pp. 478, tabb. 4.
(Amst. 1752.)
Holm. 1762. pp. 444. tabb. 4. (*augmented.*)
Erlang. (*Schreber*) 1787. pp. 472. tabb. 4.

19. *Œconomia Naturæ.* Resp. J. J. Biberg. 1749.

It is impossible, in an abstract, to do justice to this excellent production, the design of which is entirely physico-theological, and consequently its scope various and extensive. The writer first considers the structure of the earth (in general), its seas, mountains, &c.; the effects of the change of seasons on all parts of its surface, and on the elements; and the disposition of the *MINERAL KINGDOM,*

KINGDOM, with the various origin of its several substances, their gradual transmutation, and decay. It is worthy of remark, however, that though we are here presented with some of Linnæus's general geological ideas, no speculation is indulged with respect to the *antiquity* of the globe, or to those vestiges of convulsion which present themselves on its surface; neither has he entered upon that subject in any other of his works. This circumstance is to be accounted for only by supposing him to have been apprehensive of incurring censure from the divines; for that he had employed his extraordinary powers of mind on this, as well as on every other subject of natural history, is evident from some curious remarks subjoined to his Diary, which we shall here transcribe. "*He would willingly have believed the earth to be older than what the Chinese assert, had the scriptures allowed him; he had never seen* rudera diluvii universalis, *but* successiva temporis; *he had never been able to get through* rudera ævi *to* terra primogenita."

In the *VEGETABLE KINGDOM*, the writer notices the various means by which the dissemination of seeds is effected; the wonderful contrivances in the general œconomy and structure of plants; the progress of vegetation in places originally destitute of verdure; and the mode of its gradual and stated decay.

In the *ANIMAL KINGDOM*, he remarks upon the extraordinary increase of some species and the paucity of others; their means of preservation; their hybernation, emigration, and associations; and their use, even in their destruction, to the general purposes of nature. All the positions are illustrated and confirmed by apt examples; and finally this conclusion is drawn,—that all nature is harmoniously arranged, and adapted to produce, upon the whole, reciprocal good. "This subject," says the writer, "which I have only touched upon, is of so much importance,

importance, and of such an extent, that if the ablest men were to attempt to treat it thoroughly, an age would pass away before they could reveal completely the admirable œconomy, habits, and structure even of the most imperceptible insect. There is not a single species whatever, that does not, of itself, deserve an historian."

This excellent paper is among those translated into English by Stillingfleet, and it has also been put into the French language, by M. Grandmaison, in the 2d volume of his edition of the present work (p. 217—297).

20. *De Tænia.* Resp. G. DUBOIS. 1748.

At the time when this treatise was written, the subject had more than usually engaged the attention of naturalists and physicians in Sweden, particularly of Linnæus, and of his colleague Professor Rosen, who has made many curious and valuable observations on the nature and treatment of worms in his work on the *Diseases of Children* (see the English translation by Sparrman, p. 225—268).

The writer of the present dissertation has here described and figured 4 species of *Tænia*, all of which are found in the intestines of animals, chiefly in those of carnivorous quadrupeds; and unhappily two of them (but more particularly *T. Solium*) too frequently infest the human body. The specific differences of the *Tæniæ* arise from the number and situation of the mouths, or suckers, in each link of these compound animals, the history of which has employed the pens of many ingenious men, and is, notwithstanding, still involved in great obscurity.

The species most commonly infesting the human body are those described in the *Systema Naturæ*, under the names of *T. Solium* and *T. vulgaris*, both of which are not unfrequently found extended from the *duodenum*, or upper part, almost through the

the whole course of the intestinal tube. There has been much controversy in determining whether these creatures have any part analogous to the brain, or head of other animals. Our author affirms the contrary, considering them as each consisting of a chain, as it were, every link of which is a perfect animal of its kind, furnished with a mouth and all its proper organs, and capable, when separated from its original *compages*, of propagating its species, as if by a vegetative power, and independent of any apparent *oviparous* or *viviparous* process. In this idea he is opposed by Tyson, who has figured what he considers as the *head* of *T. Solium*, in the *Philosophical Transactions* (Vol. 13. n. 146.); and by some other authors. The *Vermes cucurbitini*, or Gourd-worms of former writers, are now however allowed to be the descending, or posterior, links of *T. Solium*, and these (according to Linnæus) are again capable of extending themselves, and producing another chain. According to Pallas and others, the joints are pregnant with *ova*. In either case, the reason is at once seen why these noxious creatures are expelled from the human body with so much difficulty. But Linnæus does not deny that they are capable of propagating by *ova* too, and says that they are found, though much smaller, in muddy springs: which Pallas scarcely admits. Linnæus's opinion, however, is confirmed by subsequent observations; and indeed we cannot but observe that, without allowing worms to exist elsewhere than in the intestines of animals, it is exceedingly difficult to account for the *locality* of the disease which they generate.

We cannot, consistently with our plan, enlarge on this treatise. It must suffice therefore to remark, that the dissertation here noticed, besides being in itself highly satisfactory, may be considered

sidered as an *index* also to those writers who are most worthy of being consulted on the subject.

21. *Lignum Colubrinum.* Resp. J. A. DARELIUS. 1749.

This is a critical inquiry, to determine the species of that drug, which it is said that the Indian Weasel, Ichneumon, or Mungos (*Viverra Ichneumon*), first pointed out to those people. The Zeylanese use this wood as an antidote to the poison of the Hooded Serpent, or *Naia* (*Coluber Naia*), called also *Cobra di Capello*, of which Kæmpfer has given so extensive a history, as the most poisonous of all serpents. Darelius prefixes to his inquiry the history both of the Ichneumon and of the Serpent, of which too many marvellous things have been related. He then examines the pretensions of the substance which had usually been sold, in Europe, under the name of *Lignum Colubrinum*, and which is obtained from *Strychnos Colubrina;* but he rejects its claim, inclining at length to consider what is described by Kæmpfer under the name of *Radix Mungo* as the genuine drug, which belongs to the species called by Linnæus *Ophiorrhiza Mungos*, and is figured in his *Materia Medica*. This root is exhibited in India and Ceylon, not only as an antidote to the venom of the serpent, but also to the bite of a mad dog, and as a remedy in putrid fevers. Grimmius, who lived some time as a physician at Colombo, professes to have made great use of it. Our author subjoins several preparations of this medicine, and presents us (from Lochner) with the *formula* of the famous *Lapis de Goa*, in which the Mungos root stands as the first ingredient. He concludes with an inquiry into the effects of the spurious *Lignum Colubrinum*, the result of which sufficiently agrees with what is related of the *Nux Vomica*, belonging to the same *genus*.

22. *Radix Senega.* Resp. J. KIERNANDER. 1749.

As

As the terror of the *Naia* is dispelled in Asia by the *Ophiorrhiza*, so is that of the *Rattle-Snake*, in America, by the *Senega*. After premising the history of *Crotalus horridus*, borrowed chiefly from Catesby, the writer of this paper gives a full botanical and medical account of the famous plant, which for so long a time the Indians had concealed from the Europeans. He then enumerates ten different species, of which the Europeans, during their endeavours to come at the true *Rattle-snake root*, tried the effects against that subtle venom. Some of these plants are said to have been not quite unavailing; but at length the secret was discovered by Dr. Tennant, who found the plant in question to be a species of *Polygala*, or Milk-wort. The description of *Polygala Senega* is accompanied by a figure of it. The root, which is the only part used in medicine, gives an acrimonious sensation to the palate, unexampled perhaps in the whole *Materia Medica*. We have here its *analysis*; its effect as a *sialagogue*, *diuretic*, and *expectorant*; its various preparations; and their uses in dropsy, gout, rheumatism, and a disease which is mentioned as endemic in Virginia, under the name of *Marasmus Virginicus*; and finally it is dwelt upon as the great specific to the venom of the Rattle-snake, to which end the Indians instantly chew it, swallow the juice, and apply the masticated root to the puncture. The root of *Polygala vulgaris*, which grows so plentifully in England, appears from experiments to possess the qualities of the *Senega*, but in a far weaker degree.

23. *Genesis Calculi.* Resp. J. O. Hagström. 1749.

Before the writer comes to the immediate consideration of the origin of the urinary *calculus*, he premises some observations on calcareous substances in general, and enumerates the several kinds of concretions, and their situations, in the animal body: such are the *Calculus Salivæ*, *Pul-*

monum, Gastricus, Felleus, and *Podagræ.* He then considers the component parts of *Urine,* and the changes to which it is liable in smell, taste, and colour, from the difference of the *ingesta.* Under this article he mentions a singular fact of a gentleman, who, after having laboured under an inveterate acidity in the stomach, for which he had taken large quantities of chalk, found his urine altered so as to have entirely a milky appearance. In considering the immediate formation of *calculus,* he adopts the Boerhaavian theory, and ascribes it to crystallization. This leads him to consider all those circumstances which favour and accelerate such a mode of concretion, and to seek for somewhat analogous to it in the human body, as a predisposing cause of that malady; which he imagines may be found in *Atonia,* and the use of acid and fermented liquors. He concludes his theory with some curious and apt reflections on the connection between *calculus* and gout.

In the therapeutic part, notwithstanding all that had been written relative to the power of alkaline medicines, in promoting the decomposition of urinary *calculi,* the author of this dissertation does not allow them so much merit as has been attributed to them by other physicians. He is inclined to impute more efficacy to bitters, particularly as *prophylactics,* from the idea of their striking more immediately at the *atony;* and he adduces two cases (communicated to him by Linnæus) of the use of the essence of wormwood in this dreadful disease. The disquisition concludes with an observation on milk-diet in the stone and gout, the efficacy of which he confirms by two well adapted instances: these however, agreeably to foregoing remarks, prove the necessity of adhering to such a regimen throughout life. One of them affords a melancholy lesson of the danger of deserting it, in the case of a French general, who, after 20 years' freedom from

from the disease, at the age of 70, died in consequence of a fit brought on by *one* plentiful meal of animal food.

24. *Gemmæ Arborum.* Resp. P. Löfling. 1749.

This unfortunate young naturalist has here given us a curious and elaborate disquisition on the buds of trees, which, till this time, had been less attentively examined than most other parts of vegetables.

Gems, or buds, are small, rounded processes, made up of scales, differently arranged, situated commonly on the stems or branches, and containing the rudiments of either the future flower singly, or of both flower and leaves. Analogous to the flower, or leaf-bearing, gem (which latter is the most common), is a *bulb*, placed at the root of many plants; each of these contains an *embryo* plant, requiring only the genial effect of warmth for developement. Gems and bulbs are called by Linnæus *hybernacula* (as inclosing the *embryo* during the winter), and the former are almost confined to trees of the colder countries. After having treated of the subject in general, the writer exhibits a classification 108 of trees and shrubs, founded on the different structure and situation of the *hybernacula*. In consequence of this arrangement, the species of any of these trees and shrubs is supposed to be discoverable, in the winter season, and in the state of defoliation, by the buds alone.

25. *Pan Suecus.* Resp. N. L. Hesselgren. 1749.

The originality and excellent plan of this paper induced Dr. Pulteney, several years ago, to throw it into a form more immediately adapted to an English reader, by referring to English authors; and it was then laid before the public in the *Gentleman's Magazine* for 1758 (see p. 4.), accompanied by notes and general observations. It was annexed, in a still more enlarged form, to the original edition of this work.

There are here recorded more than two thousand experiments, to ascertain what plants are eaten, and what are rejected, by horned cattle, goats, sheep, horses, and hogs. Linnæus conceived the design of instituting these experiments, when he was on his journey in Dalarne, but it was not until several years afterwards that they were regularly prosecuted, and we may readily conceive that numberless difficulties must have attended the completion of the scheme. Care was taken, as far as circumstances would permit, that the plants should all be gathered fresh; not bruised in collecting; nor offered to the animals, when the latter were either almost famished, or glutted with variety; nor yet in the spring season, when many of them greedily devour almost any green vegetable they can get,—sometimes such as are fatal to them, and which at other times they will not touch. The plants were also, in many instances, offered to several individuals of the same species. These trials were made only with the indigenous plants of Sweden, at least three fourths of which are the same as ours in England. From the result, it appears that the *horned cattle* ate of the plants which were offered to them only 276 species, and that they rejected 218; the *goats*, of 449 kinds, refused 126; the *sheep*, of 387, refused 141; the *horses*, of 262, refused 212; and of those which were offered to *swine*, 72 were eaten, and 171 rejected.

Amidst that almost infinite variety of vegetables, with which the beneficent hand of nature has replenished the earth, those which bear the general name of *Grasses* form the *principal* food of cattle. Next to these, among the *natural* classes of plants, none are more acceptable than the Diadelphous, or *Leguminous* herbs; of this class is the *Clover*, so much cultivated in England, the *Saintfoin*, and the *Lucern*, or Medic-fodder, so generally grown in France. But horses, horned cattle, &c. will, in their turn,

turn, eat with equal pleasure, and some with more avidity, a great variety of other vegetables. Numerous instances occur of one species of animals feeding greedily upon what another will refuse and almost famish rather than touch. Some plants are highly noxious, and even poisonous, to certain animals, whilst they are eaten by others without the least subsequent ill effect: for instance, the long-leaved Water Hemlock (*Cicuta virosa*), the most virulent plant that grows spontaneously in England, though fortunately not common, is fatal to cows, when, through scarcity of food, they are obliged to eat it; yet sheep and horses feed on it with impunity, and goats even greedily devour it.

" ——— *Videre licet pinguescere sæpe* Cicuta
" *Barbigeras pecudes, homini quæ est acre venenum.*"

LUCRETIUS.

Facts of this kind must, in some measure, have been obvious to the most incurious of mankind, even in the earliest ages. The first race of shepherds had daily instances, among their flocks, of the selection and refusal of particular herbs, and subsequent observations must have multiplied and confirmed them. It is well known that *Flag-flowers*, *Hound's-tongue*, *Henbane*, *Mullein*, *Night-shade*, *Hemlock*, several *Docks*, *Agrimony*, *Celandine*, several *Crowfoots*, *Marsh-marigold*, *Horehound*, *Figwort*, many *Thistles*, *Fern*, and other plants, are commonly neglected by our horses, and horned cattle, and stand untouched, even in pastures where it might be expected that necessity would constrain those animals to eat any thing. These are but few out of many instances; there are more than we commonly imagine; and it was desirable, in consequence of these observations, that a course of experiments should be instituted, to elucidate this instinct, especially in that part of the brute creation which is so immediately subservient to mankind. The utility of such experiments

periments must be evident, as they necessarily lay the foundation of further improvements in the œconomy of cattle. The intelligent husbandman would, by such means, have it in his power to rid his pastures of noxious and useless plants, and give room for the salubrious ones.

From these remarks, it will be seen that physicians are not the only persons who may study botany to advantage. The farmer and the grazier, by becoming well versed in the knowledge of indigenous plants, would be enabled to confer incalculable benefit on their respective branches of pursuit, and on œconomics in general. To eradicate from pastures poisonous and useless weeds would be but one (although indeed no mean one) among many other advantages. The husbandman would be more competent to suit his several sorts of cattle to the different pastures in his possession; the advantage accruing to the animals must ultimately turn to his own. Even in marshy grounds, where it is a difficult undertaking to mend the soil, the growth of many plants might be encouraged, and the seeds of others sown, which are highly acceptable to different kinds of cattle. By degrees too we should undoubtedly be led to the cultivation of other vegetables besides *clover*, as fodder; and the foregoing observations imply, that this might be done in soils and situations where clover would not thrive. Our hay would in consequence be much improved; for, although cattle will eat among hay those herbs which they reject while green and growing*, yet it does not follow that all are in their dried state equally nutritive and wholesome. In short, the benefits which would arise from a diligent attention to the study of plants are no less various

* A remarkable instance of this is recorded by Dr. Pulteney, in the 5th volume of the *Transactions of the Linnean Society*.

than

than extensive, and would be many more, in all probability, within a course of years, than can at present be thought of.

26. *Splachnum.* Resp. L. MONTIN. 1750.

Dr. Montin having, at the instance of Linnæus, made an expedition into Lapland (of which notice was taken in page 133), brought back, among other natural productions, a curious and uncommon moss; and in the present paper he gives a botanical history of its genus, called *Splachnum*. The first species, *S. lubrum*, singular from the elegant form of its fructification, was discovered in Norway by an Englishman, and communicated to Petiver. The second (here described) bears the trivial name of *luteum;* and our author notices a third, called *ampullaceum.* Since his time, the genus has been augmented by additional discoveries.

On this journey, Dr. Montin had an opportunity of confirming Linnæus's opinion, relative to the cause of a most excruciating colic to which the Laplanders are subject, and which is described very particularly in the *Flora Lapponica*, under the head of *Angelica*, a plant used, among other articles, as a remedy. The Doctor thought it clear that this disease arises from swallowing in their waters the worm called by Linnæus *Gordius aquaticus*, and well known to Gesner and the older naturalists by the name of *Vitulus aquaticus*, and *Seta aquatica*, as being no bigger than a horse-hair.

27. *Semina Muscorum.* Resp. P. J. BERGIUS. 1750.

Dr. Bergius (afterwards Professor of Natural History and Pharmacy at Stockholm) has, in this dissertation, thrown considerable light on the fructification of the second order of plants in the class *Cryptogamia*. Much more, however, has been done since the time at which he wrote, especially by Hedwig: see *Fundamentum Historiæ Naturalis Muscorum frondosorum*. It is now

now believed that the tribe of Mosses have, with very few exceptions, separate male and female flowers, either ŏn the same or on distinct plants,and that what Linnæus called *antheræ* are really *seed-vessels;* in fact, Withering informs us (*Bot. Arr. of British Plants*, 1792. Vol. 3. p. 21.) that by sowing the particles which these appendages contain, he repeatedly procured a crop of young mosses in all respects similar to their parents.

28. *Materia Medica ē Regno Animali.* Resp. J. SIDREN. 1750.

This enumeration contains 67 subjects, and is executed exactly on the plan of Linnæus's *Materia Medica ē Plantis*, of which we have before spoken: see page 94.

29. *Plantæ Camschatcenses Rariores.* Resp. J. P. HALENIUS. 1750.

A description at large of 26 new Siberian plants, sent to Linnæus by Gmelin, who had passed almost 10 years, by the command and at the expense of the Empress of Russia, in investigating the natural history of that country. Among these plants is noticed *Cimicifuga fœtida*, so offensive and poisonous to the insect from which it takes its name. A decoction of this drastic herb is used in Siberia (as Gmelin informs us in his *Flora Sib.* iv. p. 183.) with great success, in dropsies.

It is a curious remark made by our author, that if journeying eastward in Kamtschatka, the botanist sees his nearer approach to North America, by the *habit* of many of the plants; and hence arose a presumptive proof of the vicinity of the two continents, before real discoveries had confirmed the truth of it. The author has given a list of several plants, which are actually of the same *species* as are found in North America.

30. *Sapor Medicamentorum.* Resp. J. RUDBERG. 1751.

After having premised some general observations on all the ancient sects of physicians; felicitated the present age on the rejection

rejection of all *hypotheses* and opinions not supported by experiments; and considered the general physiology of the human body, Dr. Rudberg proceeds to his subject, which may be regarded as a very instructive comment on the 363d Aphorism of the *Philosophia Botanica*, "*Sapida in fluida et solida agunt.*" Under this head, all vegetable simples are arranged in 11 classes, founded on distinctions arising from their sensible qualities, principally as they affect the taste; as follows, *viz.*

1. *Sicca.*
2. *Aquosa.*
3. *Viscosa.*
4. *Salsa.*
5. *Acida.*
6. *Styptica.*
7. *Dulcia.*
8. *Pinguia.*
9. *Amara.*
10. *Acria.*
11. *Nauseosa.*

To these the comment is subjoined, explaining the mode of their action and effects both on the solids and fluids, and frequently specifying the particular diseases in which they are respectively employed. A set of apt corollaries are added. Upon the whole, this little tract is by no means unworthy of the attention of medical students, especially of those who wish to comprehend the *Linnean* theory of medicine.

To this volume of the *Amœnitates* are subjoined the three orations of Linnæus, which, as they make part of his own proper works, have been spoken of in foregoing pages of our volume.

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Holm. ..... 1756. pp. 464. tabb. 4.
(Amst.) ..... 1756. ———
Erlang. (*Schreber*) 1787. ———

31. *Nova Plantarum Genera.* Resp. L. J. CHENON. 1751.

A description, chiefly, of new *genera* and *species* of plants, brought from North America by Kalm. By way of preface, we have a brief account of authors who had treated of the plants of North America prior to that traveller: as Cornutus in 1625; Banister (in Ray's *History*), in 1680; Plukenet, in 1691; Bobart, in 1699; Ray (in his *Supplement*), in 1704; Catesby, in 1731; Gronovius, or rather Clayton, in 1739; Mitchell, in 1748; Governor Colden, in 1743. By the industry of these writers, botany had been augmented with 77 new *genera*, to which Kalm added 8. As Kalm's plants have been long received into the *Species Plantarum*, any further account of this paper would be superfluous.—A plate is added, on which are engraved 7 of the rarer species.

32. *Plantæ Hybridæ.* Resp. J. HAARTMAN. 1751.

The subject of this paper is very interesting to botanic science, and, being somewhat problematical, has exercised the pens of several ingenious men, but none perhaps more successfully than that of Gmelin, in his *Sermo Academicus de novorum vegetabilium ortu.* (Tubing. 1749.) The present writer acknowledges the possibility of this origin, or new creation of vegetables, derived from the influence of the *farina* of one species upon the pistil of another, either of the same or of a different genus; whence a *hybrid* plant is produced. Instances of this admixture, and production of monsters, in the vegetable kingdom, have been frequent; but (as in the animal kingdom) they have not usually been found to perpetuate themselves by producing fertile seed. The general effect of culture, and the immense number of

of species, with which the African *genera* in particular, such as *Geranium*, *Erica*, *Mesembryanthemum*, &c. abound, very much favour this hypothesis. A catalogue is given of 34 species of well known plants, supposed to have thus originated; noting also those from which they are suspected to have sprung; and to show the probability of such an origin, a comparison is made between the several parts and the habit of the supposed parents with those of the corresponding hybrid offspring. Another list of many other plants follows, in which the traces are not so strongly marked. Among the English plants thought to be of hybrid extraction, we mention *Veronica hybrida*, which is believed to have arisen from *V. officinalis* and *V. spicata;* and *Sibthorpia Europæa*, from *Chrysosplenium alternifolium* and *Hydrocotyle vulgaris*.

33. *Obstacula Medicinæ.* Resp. J. G. Beyersten. 1752.

An inquiry into, and concise discussion of, the causes that have hitherto impeded the progress of medical science. Among other obstacles, the writer mentions the force of custom in directing prescriptions; theories founded on assumptions; neglect of nosology; too little attention to reputed poisons; timid prescribing; too small doses; ignorance of apothecaries in botany and *materia medica;* use of compound medicines; ignorance of the natural classes of plants; &c.—all which positions are confirmed by suitable examples and reflections. The laudable, ingenious, and well conducted plan which this paper exhibits, every friend to the science would desire to see still further illustrated by some author able to command attention, and to give the subject that importance which it deserves.

34. *Plantæ Esculentæ Patriæ.* Resp. J. Hiorth. 1752.

A list of such native plants of Sweden as have been, or in some way or other may be, made subjects of culinary use, principally as aliments; to these are added *condiments*, and *succedanea* to

several of those articles of exotic luxury, which the opulent nations of Europe import from distant parts of the world. It is happily not an object of importance, much less of necessity, to consult such a catalogue in *this* country; but it would be a matter of surprise and pleasure to many, to see the great number of vegetables, which, in a country from its situation by no means fertile, may supply the want of bread. The subjects of this dissertation amount to 127, many of which would demand a place in an œconomical herbal adapted to a much milder climate.

35. *Euphorbia.* Resp. J. WIMAN. 1752.

A complete botanical history of one of the most extensive *genera* of plants; several of which have a place in the *Materia Medica.* This genus stands in the Linnean class *Dodecandria*, and furnishes greater instances of anomalies in the habits of the species than are elsewhere, perhaps, to be met with; as it contains not only the *Euphorbium*, *Esula*, and *Cataputia* of the shops, but also all the *Tithymali*, or Spurges, of authors. Fifty-three species are described, and their synonyms given, in this dissertation, together with a general account of their uses in medicine. In the *Systema Plantarum* of Reichard, the number of *Euphorbiæ* is augmented to 64. At the present day, they are but little used, their extreme acrimony and drastic powers being too unmanageable.

36. *Materia Medica ē Regno Lapideo.* Resp. J. LINDHULT. 1752.

Under 72 heads are here comprised all the articles of the *Materia Medica* from the mineral kingdom, digested exactly in the method which Linnæus has observed in his separate publication of the *Materia Medica ē Regno Vegetabili.*

37. *Morbi ex Hyeme.* Resp. S. BRODD. 1752.

Preceding the history of the diseases that arise from winter in Sweden, a general account is given of the effects of intense

tense cold on the animals of that country, in changing their colour, and diminishing the size of the breed in various species; in Lapland, the writer thinks they are instanced in the human race itself. We are presented also with remarks on the state of the atmosphere; on the production of meteors; differences observable in the particles of the snow; effects of various and additional degrees of cold on the ice of lakes, &c.; extraordinary appearances of the *aurora borealis;* prognostics of severe winters; signs of the approaching remissions of cold; and other curious particulars.

The diseases of the winter season in Sweden are more particularly such as follow. *Perniones*, or chilblains, unusually painful and untractable. For the cure, among other applications mentioned, is the diluted muriatic acid, recommended by Linnæus himself, who had found it useful among the sailors when he was physician to the navy; but it cannot be employed when the complaint is advanced to its ulcerated state.—*Paronychia*, or whitlow, of various kinds, not seldom attended with dangerous consequences.—*Congestio hyemalis*, a species of catarrh extremely common, and the source of worse diseases; usually caused by sudden transitions from heat to cold, and incautious exposure to the latter. Observations on this disorder are extracted from Linnæus's *Wästgöta Resa*.—*Coughs*, universal; sometimes to the disturbance of all public assemblies.—*Pleurisies*, especially among those country people who indulge themselves in drinking strong liquors.—*Peripneumonies*, considered as particularly endemic among inhabitants of the vicinity of copper-mines.

The dissertation concludes with a compendious view of the effects of cold, and the *phænomena* of winter; mention being also

also made of the hard winters in Europe, in 1586, 1665, 1684, 1709, 1740, and 1752. In the last of these years, the lowest point of Celsius's thermometer, at Upsala, was 31° (about 24° below 0 of Fahrenheit's).

38. *Odores Medicamentorum.* Resp. A. Wåhlin. 1752.

An ingenious illustration of the doctrine, that those different sensations excited in the organs of smell by different odours will lead to an explanation of the qualities inherent in the bodies from which such odours proceed; their general effects on the human frame being also deducible. After a train of general explanatory and physiological observations, the author introduces Bacon's contrast between youth and old age, in order more clearly to illustrate (which he does in a familiar but striking manner) the effects of wine and spirituous liquors, in their various and progressive operation, on the nervous system, from their first exhilarating effect when taken in a moderate quantity, to their intoxicating and fatal issue. This he makes, in some measure, the basis of his reasoning on the effect of other odorous substances, which he at length arranges in 7 classes: *viz.*

1. *Aromatici.* Cinnamon; Cardamoms; &c.
2. *Fragrantes.* Saffron; Jasmine flowers; &c.
3. *Ambrosiaci.* Musk; Musk *Geranium;* &c.
4. *Alliacei.* Garlic; Assafœtida; &c.
5. *Hircini.* Herb Robert; Stinking Orach; &c.
6. *Tetri.* Opium; Henbane; &c.
7. *Nauseosi.* White and black Hellebore; Tobacco; &c.

The specific effects of each of these classes are then concisely explained, and their reputed mode of operation. This paper may be considered as a comment on section 362 of the *Philosophia*, and properly accompanies the *Sapor Medicamentorum*, mentioned before.

39. *Noctiluca marina.* Resp. C. F. ADLER. 1752.

M. Adler (who went as surgeon in a Swedish East-India ship to China, in 1748) gives an account of those authors who have treated of the luminous appearance of the sea in storms, and in the current occasioned by the course of ships. He then proceeds to inform us, that it was not until the year 1749 that this phenomenon was certainly discovered to be owing (in many parts of the ocean at least) to an inconceivable number of minute insects. One of these insects is the more immediate subject of the paper, and is completely described, with a figure of it annexed, as augmented by the microscope. It is of the class *Vermes*, and of the order *Mollusca*, and stands in the *Systema* under the name of *Nereis noctiluca*, being the first of 11 species there described. Its real length does not exceed the sixth part of an inch.

40. *Rhabarbarum.* Resp. J. ZIERVOGEL. 1752.

A botanical and medical history of *Rheum undulatum*, described here under the idea of its being the true Rhubarb, having been sent from Russia as such by Professor Gerber to Sprekelsen, at Hamburgh, and by him introduced into many gardens. This history however must be transferred to *Rheum palmatum*, which is now generally believed to be the officinal sort, and of which a description and figure may be seen in the *Philosophical Transactions* (Vol. 55. p. 290.) communicated by Dr. Hope, Professor of Botany at Edinburgh, who raised it from seeds sent him from Russia by Dr. Mounsey, in 1763. About the same time Professor Martyn succeeded in raising this species in the botanic garden at Cambridge. It has of late been cultivated in many parts of Great Britain with so much success, that, if particular interests did not militate against it, the importation of this root might soon become unnecessary.—It is not wonderful that

that *Rheum undulatum* should have been taken for the true rhubarb, as both species grow in China, and near the famous wall.

41. *Cui Bono?* Resp. C. GEDNER. 1752.

To what purpose are all the researches of the naturalist? A question which can be dictated only by incuriosity or ignorance. We will not pay our readers so ill a compliment, as to suppose they need the conviction here referred to. Nevertheless, if any persons should wish to see what reasons may be alleged by the naturalist against those who object the frivolousness and inutility of his researches, they will most probably receive some satisfaction from an attentive consideration of this paper, which is incapable of abridgment, and may be properly read with the 18th (*Curiositas Naturalis*) and the 20th (*Œconomia Naturæ*). The writer has introduced a pleasant and instructive allegory, which Linnæus himself used on these occasions.

42. *Nutrix Noverca.* Resp. F. LINDBERG. 1752.

This dissertation is much to be recommended, as containing every material argument that has been urged to prove the propriety and advantage of mothers nursing their infants at their own breasts. Several observations on the diseases of children are interspersed, and some local observations, which however lose their force in this country.

As the subject has been so ably discussed by several masterly pens amongst us, we shall only observe respecting the present paper, that Dr. Lindberg allows more force than some of our own writers, to those arguments which maintain diseases and temperaments to be transmissible from nurses to their foster-children.

43. *Hospita Insectorum Flora.* Resp. J. G. FORSKÅHL. 1752.

The author of this paper begins by giving a general history of all the principal writers on insects, and the method in which they

have treated the subject, whether in relation to the *metamorphoses* and œconomy principally, in the manner of Swammerdam and others; or by giving also a detail of the *species* at large, as Ray, Reaumur, and De Geer. He then pays merited compliments to the Queen of Sweden, on account of the magnificent museum which Her Majesty had formed at the palace of Drotningholm, a museum very superb in insects, as well as shells, corals, &c. He next exhibits his plan: it consists in arranging such insects as are natives of Sweden, each under the name of the plant on which it is found, or on which it feeds, the references being made to Linnæus's *Fauna* and *Flora Suecica*. It would be highly gratifying to those who cultivate entomology, to see this arrangement augmented by the numerous discoveries that have been made since the time of Linnæus; it is a part of the history of insects meriting greater attention than has hitherto been paid to it; and nothing could lead more effectually to the means of destroying the noxious species.

There is a publication of a similar nature to this, in England, but it relates only to the three *genera* of *Papilio*, *Phalæna*, and *Sphinx;* we allude to Martin's *Aurelian's Vade Mecum* (Exeter 1785. 8vo.), which contains an English alphabetical, and a Linnean systematic, catalogue of the plants, with the names of the inhabiting insects mentioned under each, and also some miscellaneous additions relative to other substances.

44. *Miracula Insectorum.* Resp. G. E. Avelin. 1752.

This dissertation is intended to awaken curiosity, and excite attention to the study of insects, by pointing out the extraordinary instincts and properties with which particular kinds are endued, many of their operations being inexplicable, and frequently attributed to different causes.

Nothing exemplifies this truth more than the history of a

minute insect, or rather worm, of which we have, in this paper, the first proper intelligence; it is very curious and worthy of notice. In Finland, Bothnia, and the northern provinces of Sweden, people were not unfrequently seized with a pungent pain, confined to a point in the hand, or other exposed part of the body, which presently increased to a most excruciating degree, and was sometimes suddenly fatal. This disorder was more particularly observed in Finland, especially about marshy places, and always in autumn. At length it was discovered that this pain instantly succeeded somewhat that dropped out of the air, and in a moment penetrated, and buried itself in the flesh. The Finlanders had tried a variety of applications to no purpose, nntil at length a cataplasm of curds, or cheese, was found the most effectual for easing the pain: and the event proved, that the worm was allured by this application to leave the flesh; for, on its removal, this animalcule, no longer than one-sixth of an inch, was discovered in it, and the cause of the disease thereby ascertained. Linnæus himself once suffered from this animal, as he informs us in his Diary; but we owe the complete history of it to Dr. Solander, who described it in the *Nova Acta Upsaliensia*, Vol. 1. n. 6. It stands in the *Systema* under the name of *Furia infernalis*. By what means the creature is raised into the air is as yet unknown.

45. *Noxa Insectorum*. Resp. M. A. Bæckner. 1752.

A curious and useful paper, specifying all those insects that are more immediately hurtful to animals and vegetables. They are classed, in 11 divisions, according to the several subjects on which they prey, or to which they carry devastation.

1. Such as are particularly offensive to man. (Under this head, the author seems inclined to favour the opinion of St. André, and some other French physicians and philosophers, who

who ascribe to insects the cause of many cutaneous and contagious diseases.)

2. Such as are destructive within doors, to furniture, clothes, grain, &c. (Among these is particularly mentioned the Seed-Beetle, *Bruchus Pisi*, the cause of great destruction to peas in Pennsylvania, and which has found its way into southern Europe. See Kalm's Travels, English edition, Vol. 1. p. 176.)
3. Such as are destructive to fruit-bearing trees, and culinary herbs.
4. To trees, woods, stove and green-house plants, &c.
5. To corn-fields, pastures, &c.
6. To horses, horned cattle, and other animals.

The subjects of this paper and the two preceding, are of great importance in rural œconomy, and might be introduced with propriety into an *Œconomical Herbal*, that should specify, in treating of each plant, the species of insect inhabiting or feeding on it.

46. *Vernatio Arborum*. Resp. H. Barck. 1753.

A curious essay (perhaps the first on the subject) relative to the leafing of trees in Sweden, being the result of a variety of observations made, at the request of Linnæus himself, in almost all the provinces of that kingdom, and intended to lead, as if by the dictates of nature, to the true time of committing the grain to the earth. A table is exhibited, showing at one view the days on which 19 species of trees, all natives of Sweden, put forth their leaves in 3 successive years. The same table shows also the day on which barley was sown, and reaped, in all the same provinces. From another table it appears, that, at Pitheå, (which is situated in about 63° N. L.) on an average of 12 years, there intervene 85 days between the sowing of barley and its

harvest; and at Upsala (in 60°) the average of 6 years turned out to be 105 days. It is concluded, upon the whole, that in Upland, the leafing of the birch-tree should direct the time for sowing barley; but that different trees will best indicate the time in different places.—Another curious observation follows from this paper, *viz.* That, notwithstanding the difference in the number of days between the ripening of barley in Lapland and in Upland, the greater *length* of days in the former country gives a balance of sun equal to the greater *number* of days in the latter.

A series of observations, made with a view similar to the above, may be found in the *Philosophical Transactions*, for 1789. They relate to various indications of spring, registered at Stratton in Norfolk, from the year 1736 to 1788, and arranged in tables.

47. *Incrementa Botanices.* Resp. J. Biuur. 1753.

A concise history of the rise, fate, and progress of botanic science, from the first traces of it to the present time. It is divided into 4 periods, or epochs.

The *first* period includes only the ancients, by whom are understood Aristotle, Theophrastus, Dioscorides, and Pliny. These being chiefly compilers, did little more than to deliver the traditions of the times, and many of their plants, after the commentaries of more than a century, are not to be recognized by their descriptions to this day, so little had they extended their ideas to specific distinctions; yet we must venerate their writings, as the only remains of the science transmitted to our times.

The *second* period commences with the restoration of letters, after the taking of Constantinople by the Turks. It begins with Brunsfelsius, and ends with the Bauhins.

The *third*, which is called the period of the *Systematics*, is continued to the time of Linnæus, who effected that great

 reformation

reformation in the whole science, by which it is fixed as on a new basis.

The conclusion of the paper contains some information relating to the introduction of figures cut in wood for the old herbals; whence it appears, that Plantin, the famous printer at Antwerp, monopolized almost all the figures of this kind during his time, and became the principal printer for botanical books. By such means, Norton, the printer of Gerard's Herbal, procured from Frankfort all the figures we see in his book, which had before served for an edition of Tabernamontanus's Herbal in 1588.

48. *Demonstrationes Plantarum.* Resp. J. G. Höjer. 1753.

Intended chiefly for the use of those pupils who attended the botanical lectures in the Upsala garden. The paper contains a list of the exotics therein cultivated (as they stood in this year) amounting to nearly 1450 distinct species, which in 59°—51′ N. L. is no inconsiderable number; all double flowers and varieties being excluded. Since the invention of trivial names, this list is the first specimen of their use in forming compendious catalogues.—An observation occurs which may appear rather paradoxical to some readers: several of the plants that are natives of southern Europe produced seeds this year, without showing any *corolla.* It may seem strange too, that Lapland and Alpine plants should perish, though in the same situation, through cold; but it is true, and the fact is, that, in their *native* situations, they are, at the change of the season, instantly covered with snow, and thus defended from injury.

49. *Herbationes Upsalienses.* Resp. A. N. Fornander. 1753.

As the foregoing catalogue comprehends those of the garden, this exhibits the indigenous plants of the neighbourhood, of Upsala, found on the botanical surveys which the Professor made with the students, and which were usually about eight in number,

ber, every year. The writer notices the custom with other Professors, (as Bernhard de Jussieu at Paris, Haller at Göttingen, and Strumph at Halle,) to accompany their pupils on similar excursions; the utility of which is obvious, as they afford students opportunities of seeing plants in their native places of growth, and also of making additions to the indigenous species already ascertained.

This laudable custom was commenced, at an early period in our own country, by Johnson (the editor of Gerard's *Herbal*), who was accompanied by some of the London Society of Apothecaries on annual botanical excursions, in different counties, and whose *Iter in Agrum Cantianum* (1629), *Ericetum Hamstedianum* (1632), and *Mercurius Botanicus* (1634), were the records of his observations, and in fact, the earliest local catalogues published in England. After the endowment of the Chelsea Garden, the associations were put under regulations, and the periods of their *herborizations* fixed. Besides six circuits made by the demonstrator for the instruction of the young apprentices of the Society, once in every year there is a general herborization, when the Court of Assistants and other gentlemen attached to botanical pursuits accompany the students to a considerable distance from London, collect the scarce plants, and dine together in the country, the demonstrator, before their return, calling upon his pupils to report on the discoveries of the day.

The herborizations instituted by Linnæus at Upsala seem to have been conducted under circumstances peculiarly advantageous to those who attended him, and there was even a considerable degree of *éclat* attached to them. We are informed in his Diary, that the party used to collect both plants and insects, to shoot birds, &c. keeping minutes of their proceedings, and receiving instructions in all these branches

from the Professor, who was generally accompanied by 200 students, besides foreigners and persons of distinction attending from curiosity. The excursions commenced at 7 o'clock in the morning, and continued until 9 in the evening, when the party returned through the streets of Upsala in a kind of festive procession, with flowers in their hats, the music of drums and trumpets (which were used on their rambles for calling the students togther), and loads of natural productions collected on the day's excursion.

It is much to be wished that a recreation in all respects so rational were established in other similar places of education, as it would at least diminish the number of votaries to other amusements, which involve intemperance and prodigality.

50. *Instructio Musei Rerum Naturalium.* Resp. D. HULTMAN. 1753.

The method of forming a museum for the purposes of natural history in all its branches, with directions for collecting, preserving, and disposing the subjects.—We are presented also with an enumeration of the best repositories of this kind in Sweden: as the Queen's museum, rich in shells, insects, and corals; the King's, in *amphibia*, fishes, *vermes*, and the birds of Sweden; Count Tessin's, abounding in fossils, gems, shells, &c.; Chancellor Gyllenborg's; the museum belonging to the Royal Academy; Stobæus's at Lund; and Ziervogel's at Stockholm. The method of drying and preserving plants for a *Hortus siccus* is given, followed by an account of the more celebrated collections of this kind; also, the mode (perhaps more curious than useful) of casting an artificial plant, which consists in forming a mould with plaster over a real plant placed in a vessel, then burning the inclosed one to ashes (which are to be shaken out), and filling the cavity with melted silver.

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This little tract has been published in Holland, for the use of merchants dealing in subjects of natural history.

Vol. 4.

Holm. 1759. pp. 600. tabb. 4.
(Lugd. Bat. 1760.)
Erlang. (*Schreber*) 1788.

51. *Plantæ officinales.* Resp. N. GAHN. 1753.

The scope of this paper is entirely pharmaceutical, and, though it may be superseded now, it must have been very useful at the time of its publication, having been drawn up for the benefit of the apothecaries in Sweden, in consequence of some new regulations meditated by the College of Physicians under the presidency of Dr. Bäck; and it was highly acceptable also to others, as being probably the first list of the medicinal plants to which the Linnean synonyms had been accommodated. This paper contains,

1. A catalogue of the vegetables of the *Materia Medica* (nearly 580 in number), specifying the parts of each used in medicine, to which are opposed the Linnean generic and trivial names from the *Species Plantarum;* marking also, by a different character, all such as the author thought might be expunged. Then follow directions for gathering and preserving the several plants, or such parts of each as were in use.

2. A catalogue of such plants as grow spontaneously in Sweden; many of which had been needlessly imported.

3. Catalogues of such as might be advantageously cultivated for medicinal purposes; of such as are imported from distant quarters of the globe; &c.

52. Censura

52. *Censura Simplicium.* Resp. G. J. CARLBOHM. 1753.

A very instructive paper, consisting principally, after some pertinent observations, of two lists of plants:

1. Such as the writer thinks might be expunged from the *Materia Medica*, without inconvenience.

2. Such as might be advantageously received into that catalogue, their virtues having been sufficiently ascertained to justify such an introduction.—To this latter is subjoined, under every article, the quality of the plant, and also the writer's authority for allowing each its designed rank.

A paper of this tendency is well worthy of attention, since it is only by such inquiries that the *Materia Medica* can be enriched and improved.

53. *Canis familiaris.* Resp. E. M. LINDECRANTZ. 1753.

This natural history of the Dog was one of the earliest complete exemplifications of zoological description according to the principles of the Linnean school, as laid down in the *Methodus Demonstrandi.* The writer considers the whole canine race as reducible to one species, and distinguished from other congenerous animals, such as the wolf, hyæna, fox, &c., not only by the curvature of the tail, which is usually to the left, but by the disposition of the *suturæ velleris* (or ridges formed by the meeting of the several courses of hair on various parts of the body), and the number and situation of the *verrucæ*, or warty risings in the face. In these distinctions, heretofore unnoticed, all the varieties of the dog (of which 11 are specified) agree. The properties and uses, together with the diseases, of this animal are fully described. Our author tells us, that the natives of Lapland and Dalarne are in possession of some secret by which they instantly disarm the most furious dog, and oblige him to fly with all his

usual signs of fear, becoming silent at once, and dropping his tail. This art is said to be not unknown in England.

Mr. John Hunter was of opinion that the Wolf and the Jackal are varieties of the Dog. (See *Phil. Trans.* Vol. 77. p. 253—266. Vol. 79. p. 160—161.)

54. *Stationes Plantarum.* Resp. A. HEDENBERG. 1754.

The object of this paper is to prove, that the knowledge of the natural places of growth of plants is the true foundation on which the art of gardening successfully must be established. The author laments that botanists, and writers of *Floræ*, have been too remiss in their observations of this kind; whence numbers of exotic seeds and plants have failed to produce flowers, and to perpetuate themselves in gardens. He mentions a remarkable instance in the *Nitraria Schoberi*, which remained destitute of flowers, in the Swedish gardens, for 20 years; at length, as has already been remarked (see p. 349), Linnæus rendered it fertile by means of salt scattered about the roots. The knowledge of the *Stationes Plantarum* is equally useful also in assisting the researches of the practical botanist.

Every plant has its natural situation and soil, in which alone it will thrive, and out of which, in many instances, no care or culture will preserve it alive. The knowledge of this axiom (as far as respects indigenous plants) is applicable to purposes of agriculture; and with this view the author has given an arrangement of the Swedish plants, divided into 6 classes, according to their several places of growth, as follows;

1. Aquatic.
2. Alpine.
3. Sylvan.
4. Upland.
5. Mountainous.
6. Parasitic.

These again are subdivided; the aquatics into *marine*, *maritime*,

time, *marsh*, and *bog* plants; and so on. Afterwards follow definitions of the terms, explaining the nature of these different soils and situations.

55. *Flora Anglica.* Resp. J. O. Grufberg. 1754.

At the time of the publication of this paper, the Linnean system of botany had made but little progress in England; to such, however, as had adopted it, this must have been a very acceptable present, as being the first arrangement, in that method, hitherto given to the English plants; as also the first of those compendious *Floræ*, in which the newly-invented trivial names had been exemplified, and which are now, so much to the advantage of science, generally used.

The author first discusses the utility of such local catalogues, and of adhering to the trivial names. He then concisely describes the climate of England, and its different soils and elevations, as favouring the growth of particular plants. Some of the plants which are peculiar to England are mentioned, and also the points in which those of Sweden differ from ours. He says that Sweden abounds more in alpine, upland, and wood kinds than England, which latter country excels in marine plants and such as affect a chalky soil, whereas Sweden is almost destitute of chalk.

This *Flora* contains nearly 1000 plants, but the mosses and *fungi* are not introduced. Such as are not found in Sweden are distinguished by the Italic type, and of these there are nearly 300. A list is subjoined of upwards of 100, which the author could not fully investigate.

It may not be altogether superfluous to present the reader with a short account of the other writers (both antecedent and subsequent to the author of this paper), who have treated of the indigenous plants of England.

The first attempt to separate the native from the exotic botany of this island was made by Dr. William How, whose work is named *Phytologia Britannica, natales exhibens indigenarum Stirpium sponte emergentium.* (Lond. 1650. 12mo.) The plants are arranged in the alphabetical order, and are above 1200 in number; but it must be observed that many of them are mere varieties, and still more not actually natives. This *Phytologia* was followed, in 1667, by the *Pinax Rerum Naturalium Britannicarum*, of Dr. Merret, who professing to supply How's deficiencies, enumerated 200 additional plants; many of these, however, were as little entitled to places in a British *Flora* as others introduced by How. The accurate Ray, who published his *Catalogus Plantarum Angliæ* only 3 years afterwards, did not venture to register more than 1050; but to this number he afterwards added about 50, in the new edition of his catalogue printed in 1677, and at length in the 2d edition of his *Synopsis Methodica Stirpium Britannicarum* (1696. 8vo.)*, he augmented the list to full 1600 species, of which few have since been expunged, so cautious was this excellent botanist not to admit doubtful natives into his enumeration. In the year 1724, some time after the death of Ray, a third edition of his *Synopsis* was published (by Dillenius), containing 450 additional species, on the authority of various contemporary botanists, but more especially of the editor himself, and of Doctors Sherard and Richardson. From the pen of an obscure individual, named Wilson, the *Synopsis* assumed, in 1744, an English dress, and, by the addition of a botanical dictionary and several figures, became well calculated to render

* The first edition of this work, published in 1690, contains 250 more species than the *Catalogus*, some of which, wholly new, had been before enumerated in this author's *Fasciculus Stirpium Britannicarum.* (1688. 8vo.)

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the science more generally understood in the country: indeed this work is to be considered as the first methodical *Flora* of England published in the vernacular language. None of these writers, however, though scientific had been substituted for alphabetical arrangement from the time of Ray, had as yet attended sufficiently to genuine specific distinctions. Hence the 2200 plants contained in Dillenius's edition of the *Synopsis* did not stand the test of Linnean rules, which reduced the *Flora Anglica* very considerably; so that Hudson, in the first edition of his work bearing that title (1762. 8vo.), did not include in it more than 1566 species. The *Flora* of Hudson was the earliest performance (if we except the *Flora Britannica*, of Hill, which scarcely deserves mention here), that professed to describe in a complete manner, agreeably to the system of Linnæus, the native plants of these islands. To this work, which came to a new edition, and was much augmented, in 1778, succeeded the *Botanical Arrangement of British Plants*, by Dr. Withering, who, though not the first writer that published the British Linnean *Flora* in English*, has been excelled by none in his endeavours to render the study of indigenous botany easy and useful to his countrymen in general. The *Botanical Arrangement*, after having gone through three editions (the last of which was completed in 1796) increased the British catalogue to 2600 plants. In 1790, an elegant series of figures was commenced by Mr. Sowerby, which, with the descriptions by Dr. Smith accompanying them, renders English botany more susceptible of being easily studied than ever, and with the new *Flora Britannica*, of

* There is a "*Generic and Specific Description of British Plants, translated from the* Genera *and* Species Plantarum *of Linnæus*," by James Jenkinson. (Kendal 1775. 8vo. with plates.) Withering's work appeared the year after.

which.

which the scientific student is anxiously awaiting the completion, may be considered as establishing the phytology of our island on a basis of greater accuracy and authority than any other country in the world can hitherto boast of.

56. *Herbarium Amboinense.* Resp. O. STICKMAN. 1754.

The work entitled *Herbarium Amboinense* is one of the greatest and most magnificent botanic treasures ever published. We owe it to the singular zeal and industry of Rumphius, who lived upwards of 40 years in Amboyna, and was Consul there under the Dutch East India Company. He sweetened the leisure hours of his life by an uncommon and successful application to the study of natural history, which he pursued in all its branches, but particularly in botany. He had the misfortune to lose his family by the fatal earthquake of 1674; and some years afterwards, having collected materials for this work, and meditated returning to Europe, he suffered the loss of his sight from a cataract, in which state he lived 20 years, and died in 1706. The *Herbarium Amboinense* comprehends not only the plants of Amboyna, but also those of Malacca, Banda, and the neighbouring islands, and (allowing for the time when it was written) contains excellent descriptions of them, with a copious account of their uses. Though inferior to the *Hortus Malabaricus*, as to the engravings, it excels that work in the history of the subjects. There are nearly 1000 vegetables described in it, and of these a great number were entirely new to the European botanists; and more than 700 are engraved. The manuscript was 30 years in the possession of the Dutch East India Company, and was rescued from oblivion by the interest and extraordinary zeal of the editor, Professor Burmann, of Amsterdam, who also, with great skill and industry, extricated the synonyms as far as possible, and subjoined such as were appropriate to each description. He began

began this publication in 1741, and finished it in 1750 (in 7 volumes folio), except a small supplement, which was not published until 1757. In 1769, the editor rendered the work still more useful, by the publication of an alphabetical index with the Linnean synonyms, and a like one adapted to the *Hortus Malabaricus*.

The pupils of the Linnean school much regretted, that the *Herbarium Amboinense* had not been completed before the publication of Linnæus's *Species Plantarum*, that the synonyms might have been introduced into that work. To remedy the defect was the intention of Dr. Stickman's paper, in which the subjects are arranged in the order of the original work, with the Linnean name annexed to each; and afterwards, as many as could be extricated are formed into a *Flora*, according to the sexual system.

It is to our neighbours the Dutch, that botanists are obliged for two of the most valuable performances, in the history of foreign vegetables, that are yet extant, this of Rumphius, and the *Hortus Malabaricus* of Rheede.

57. *Cervus Tarandus.* Resp. C. F. Hoffberg. 1754.

In this dissertation we have a complete history of the Rein-deer, an animal which constitutes almost the sole riches, not only of the Laplander, but of the other arctic inhabitants of the globe. In Lapland more particularly, the whole *res pecuaria* respects this animal, which is more especially domesticated in that country. In summer, the Rein-deer feeds on various herbs, but rejects a considerable number that are eaten by others. Of the species thus refused, the reader is presented with a catalogue, from the experiments of a curious observer. In winter, they are sustained solely by the Rein-deer Liverwort (*Lichen rangiferinus*), with which the Alps of the north are covered. The Rein-deer

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are obnoxious to many diseases, which are all here distinctly described, and particularly those arising from the nidification of *Oestrus Tarandi*, which are adverted to in various parts of Linnæus's writings.

Since this respondent's time, various dissertations have been written on the animal here treated of, but most of the authors have borrowed largely from the present performance.

58. *Ovis.* Resp. J. PALMÆRUS. 1754.

The natural history of the Sheep is here given, on the same plan as that of the foregoing paper, and abounds with many interesting observations. The genus, species, and varieties are described; many physiological observations are interspersed; a list is given of those plants which the sheep does not eat, amounting (from the experiments of the *Pan Suecus*) to upwards of 140 species; some are pointed out that are particularly grateful, of which number are the Sheep's Fescue Grass (*Festuca ovina*), and the Shepherd's Purse, *Thlaspi Bursa Pastoris;* and there is also an enumeration of such as are highly noxious and poisonous to this animal,—as the Corn Horsetail (*Equisetum arvense*), Spearwort (*Ranunculus Flammula*), Lancashire Asphodel (*Anthericum ossifragum*)*, Mouse-ear Scorpion Grass (*Myosotis Scorpioides*), Wood Anemone (*Anemone nemorosa*), and Dog's Mercury (*Mercurialis perennis.*

In treating of the diseases of sheep, the author inquires particularly into the nature of the *rot*, or dropsy, occasioned by worms (*Fasciola hepatica*) in the liver, which, he thinks, are swallowed by the animal in marsh water; and he proposes salt as a preventive of their effects. Dr. Nicholls has described this disease in the *Philosophical Transactions* (Vol. 49. p. 247), and his

* *Narthecium ossifragum*, of Smith's *Flora Britannica.*

paper

paper cannot be less useful to naturalists, and lovers of rural œconomy in England, than the one now before us to an intelligent Laplander.

59. *Mus Porcellus.* Resp. J. J. NAUMAN. 1754.

A zoological tract relating to the animal with us usually called *Guinea Pig*, the *Indian Rabbit* of the old authors, and the *Cobaya* of the Brasilians. It was placed by Linnæus in the genus *Mus*, but, in the 13th edition of the *Systema Naturæ*, it bears the name of *Cavia Cobaya*.

The writer treats largely of the whole œconomy and manners of this restless little quadruped; his observations are evidently the result of long acquaintance and attention. He says that the flesh is delicate food.

60. *Horticultura Academica.* Resp. J. G. WOLLRATH. 1754.

This paper is intimately connected with No. 54, *Stationes Plantarum.* In the beginning it is laid down as an axiom, that horticulture depends on a perfect knowledge of the climate of each plant, and of the soil in which it flourishes in its native country. As a striking instance of the necessity of paying regard to proper soil, and to induce curious people who transmit seeds and plants to Europe to be more accurate in this particular, the writer mentions *Ricotia Ægyptiaca*, which no management could bring to flower and fruit, until Linnæus suggested mixing the mud of the Nile with the earth in the pot: this was no sooner done than it succeeded.

The Linnean terms applicable to the several kinds of gardens are here defined; the heat of the different climates is noted, according to the graduations of the thermometer of Celsius; and the various soils and situations suited to each are distinctly enumerated.

61. *Chinensia Lagerstromiana.* Resp. J. L. ODHELIUS. 1754.

The name of M. Lagerstrom has already been mentioned in

this work as a great friend to science, in his office of Director of the Swedish East India Company*. He was also a collector of natural curiosities himself, and very liberally presented to the University of Upsala a considerable number which he had received from China and the East Indies; among these were a collection of the medicinal plants employed by the Chinese apothecaries, and a Chinese herbal, in 36 volumes *octavo*, of which 2 consist entirely of figures.

The dissertation before us contains a scientific description of more than 50 subjects of natural history (chiefly birds and fishes), received from China by the above-mentioned gentleman. It is still of value, as being referred to in the *Systema* of our author. Fifteen figures are annexed.

62. *Centuria Plantarum.* Resp. A. D. Juslenius. 1755.

63. *Centuria 2 Plantarum.* Resp. E. Torner. 1756.

These papers contain descriptions of very rare, or heretofore undescribed, plants, sent to Linnæus from various parts of the world. Those in the 2nd *Centuria* were transmitted to him by Seguier, from Verona; by Sauvages, from Montpellier; by Dr. Burmann, who had received them from the Cape of Good Hope; and some by Miller, from Chelsea. The time elapsed since the publication of these dissertations has not rendered them useless; for they are closely connected with the *Species Plantarum*, are referred to in that work, and remain as so many illustrations of the system of Linnæus.

64. *Somnus Plantarum.* Resp. P. Bremer. 1755.

The subject of this paper, at the time of its publication, excited the attention of philosophers throughout Europe. That nocturnal change to which certain plants are liable, and which is here analogically called *sleep*, is more particularly manifested

* See p. 120.

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in such species as are furnished with pinnated leaves, and of those the class *Diadelphia* affords the greater number. The change consists in the different position which the *foliolcs*, or small leaves, assume in the night, from that which they exhibit in the day. Slight notices of the phenomenon are to be found in the antients; in this paper the observations are extended so far as to include upwards of 40 species, which are here enumerated, and divided into 10 classes, according to the differences observable in the position of the leaves, during this sleeping state. Sir John Hill, by a well instituted set of experiments, fully confirmed the idea that this change was owing to the absence of light. His experiments were made with the scarlet Indian Pea (*Abrus precatorius*), in which plant the appearance is very remarkable, and had been observed by Prosper Alpinus.

The substance of this paper (as has been mentioned already*) was given in English, in the *Gentleman's Magazine* for the year 1757, by the author of the present work.

65. *Fungus Melitensis.* Resp. J. Pfeiffer. 1755.

This plant, notwithstanding the name it bears, is very far removed from the tribe of *Fungi;* it produces perfectly distinct flowers, and belongs to the monandrous order of the class *Monœcia*, being called by Linnæus *Cynomorium coccineum.*

The *Maltese Fungus* is a parasitical plant, singular in its form, (which is little more than that of a simple stalk, about a finger's thickness, and 6 or 7 inches long,) and, in its state of fructification, the whole may be considered as an *amentum*, or catkin. It is found on the coast of Barbary, in Sicily, and, sparingly, in Malta; springing from the roots of trees and shrubs, like *Asarum Hypocistis*, with which it agrees also, in its

* Page 5. See also *Phil. Trans.* Vol. 50. p. 506—517.

sensible qualities and effects, and it is used in the countries just mentioned as an astringent medicine. The writer of the present paper gives us, from the *Acta Bononiensia*, a detail of experiments made with this and several other subjects of the same kind, to determine their comparative astringent and antiseptic powers on the human blood; from the result of which, he tells us that the author was led to consider this plant as one of the safest and most powerful of the class.

66. *Metamorphosis Plantarum.* Resp. N. E. DAHLBERG. 1755.

The subject of this paper scarcely admits of an abridgment, according to our contracted plan. In order the more clearly to explain what the author calls *Metamorphosis Plantarum*, he delivers, in a concise manner, the Linnean doctrine of the physiology of plants, which supposes that the flower is nothing more than an expansion, or evolution, of the trunk, or stem, in the following arrangement, namely: the *cortex*, or outer bark, is ultimately converted into the *perianthium*, or cup; the *liber*, or inner bark, into the *corolla*, or blossom; the *lignum*, or woody part, into the *stamina*, or chives; and the *medulla*, or pith, into the *pistillum*, or pointal. Hence, whatever causes can disturb the usual, natural, and regular expansion and evolution of these parts may be supposed to occasion great variety and changes in the appearance of plants; and that such effects are brought about by change of climate, difference of soil, situation, air, culture, and perhaps various other (yet unknown) circumstances, is certain. To these sources must be traced the varieties we observe in the leaves, flowers, and roots, whether permanent or not. The doctrine is here illustrated and confirmed by numerous examples; and the young and inexperienced botanist is guarded against the delusion frequently occasioned by the operation of these causes, which are very extensive in the vegetable kingdom.

67. *Calendarium*

67. *Calendarium Floræ.* Resp. A. M. Berger. 1756.

The *Calendar of Flora* is intended to exhibit the progress of the seasons, as they are manifested by the times of the flowering of different plants, which in every species appear to be determined by some fixed law of nature, and from an observance of which (after a sufficient course of experiments has been made) the author thinks that the sowing of grain, and many other branches of rural œconomy dependent on the seasons, might in every country be better regulated, than by the rules in common use. The tables in this paper were formed from observations made on the common plants of Sweden, in the garden at Upsala, in 1755. The subject is connected with the return and departure of migratory birds, and furnishes many curious and useful hints; but we do not enlarge upon it, as the dissertation was translated, and published with an *English* Calendar of Flora, by Stillingfleet, to which we refer our readers for more ample information. See also the *Vernatio Arborum* (No. 46 of this collection), a paper strictly connected with the *Calendar of Flora.*

Several naturalists have treated of this curious subject, in England, since Stillingfleet's time: as, Professor Martyn (in the *Transactions of the Linnean Society*, Vol. 4. p. 158—163.); White (in his *Naturalist's Calendar*, 1795.); Markwick (in White's works, Vol. 2. p. 121—156.); and Mr. Dawson Turner, whose observations relate more particularly to the flowering of marine plants, (in the *Linnean Transactions*, Vol. 5. p. 126—131).

68. *Flora Alpina.* Resp. N. N. Åmann. 1756.

The Alps of Europe produce a set of vegetables very different from, and incapable of culture in, the lower situations. Our correspondent, who was a native of one of the provinces bordering on the *Alps of Lapland*, with a laudable zeal for the improvement of his country, inquires what kinds of vegetables might

might be cultivated with the most advantage in those desert regions, where so few thrive; where shrubs scarcely ever attain even a moderate size; and where a tree will hardly grow erect. To this end, he enumerates all the alpine parts of Europe, and gives a list of 400 plants peculiar to those situations. He expresses a wish, that at the royal, or public, expense, a garden might be planted in the Lapland *Alps*, to determine with precision what exotic plants would bear introduction into that country; and concludes with pointing out some of the esculent and medicinal kinds, as also some that are applicable to dying and other arts, which he thinks might be cultivated there, to much advantage.

69. *Flora Palæstina.* Resp. B. J. STRAND. 1756.

Many commentators have employed themselves in determining the plants of the sacred writings, among whom none are thought to have been more successful than Professor Olof Celsius*, who was not only well qualified by his skill in the learned languages, especially the oriental, but was himself also an excellent botanist. He lamented that, by a singular fate, whilst the missionaries of the Romish church had, in various other parts of the world, been very instrumental in improving natural science, Palæstine had been entirely neglected; hence he was doubly solicitous to recover the collection of his countryman Hasselquist, and much rejoiced when it was redeemed, hoping that an inspection of the subjects would throw great light on his favourite pursuit of illustrating the phytology of the scriptures. Hasselquist had particular instructions to attend to this point; how well he acquitted himself of the task is proved by the present *Flora*, which is framed chiefly from his discoveries.

* The celebrated work of this author, entitled *Hierobotanicon*, has been alluded to in p. 34.

This

This catalogue is compiled in the same concise method as the other *Floræ* of these volumes, after the generic the trivial name only being cited. The author has also availed himself of helps from other travellers, whose skill in this department of knowledge was indisputable. Some plants he has introduced on the authority of Rauwolf, Prosper Alpinus, Shaw, Pocock, and Gronovius. The whole number amounts to 600 species. Wherever it was possible, Celsius's names are subjoined; but the curious will regret, that the learned author of the *Hierobotanicon* did not live to give the public another edition of his work, as it might have been much improved by the new materials which had come to his hands.

The botany of Palæstine has, since the time of Hasselquist, acquired great augmentation from the travels of Forskåhl (in his *Flora Ægyptiaco-Arabica*), La Billardiere (*Icones Plantarum Syriæ rariorum.* Paris. 1791. 4to.) and others.

70. *Flora Monspeliensis.* Resp. T. E. NATHHORST. 1756.

The happy climate and variety of soil of Montpellier render this *Flora* one of the largest of any. The vicinity of some considerable mountains and forests, and the maritime situation of the place, conspire to favour the growth of plants both of northern Europe and of northern Africa, many of which are common also to the East. This catalogue is compiled from the *Botanicum Monspeliense* of Magnol (1688), and the *Methodus Foliorum* of Sauvages (1751). The *Flora* of Montpellier has since been greatly enriched by M. Gouan (*Flora Monspeliaca.* 1765).

71. *Fundamenta Valetudinis.* Resp. P. ENGSTRÖM. 1756.

The author of this *thesis* ascribes the foundation of firm health, and vigour of constitution, to two sources: 1st, good *stamina* transmitted by parents; 2d, care taken in the education, from birth to the perfect state of adolescence. From the first, he

thinks that strength in the nervous system, and, from the second, that strength of the vascular system, must be derived. In considering his first position, he has, in a concise manner, thrown together a variety of arguments, which he endeavours to confirm by the most respectable authorities, to prove that various disorders are transmissible to the offspring; also, that (independently of the specific disorders thus transmitted by the parent) others arise in children from enervated and debauched progenitors. To the first class he refers mania, epilepsy, gout, stone, and some others; to the latter, particularly the rickets.—In considering his second position, he prescribes the appropriate regimen for the mother during pregnancy, and for the nurse, whom he would always suppose to be the mother. He concludes his remarks with some forcible arguments to young men, not to defeat these desirable ends, by a course of intemperance.

72. *Specifica Canadensium.* Resp. J. Von Coelln. 1756.

In the first chapter of this dissertation, the writer, after presenting us with a view of the progress of medical science through the several schools and sects of physicians, and after condemning that *farrago* of compound medicines with which practice has been so long burthened, considers the return to a more simple mode of prescribing as intimately connected with its improvement. This leads him to his subject, which is intended to exhibit and recommend to notice, a number of simples from the vegetable kingdom, used by the natives of North America in the cure of their diseases, and some of which may be worth the attention of European physicians. His catalogue is compiled chiefly from Bartram's appendix, Colden's papers in the *Acta Upsaliensia*, and from the communications of Kalm. Among the medicines mentioned by Bartram, we have the exact method of exhibiting *Lobelia syphilitica* (the Indian

specific for the venereal disease), as delivered to Sir William Johnson, who purchased it of the Indians at a great price; but it is much more largely treated of by Kalm. There is a pretty full inquiry into the virtues of *Spigelia Anthelmintica*, or Indian Pink; *Phytolacca Americana*, or Poke-weed; *Polygala Senega;* and *Geum rivale*, used with great confidence in North America as a substitute for Peruvian bark. The catalogue contains nearly 40 plants, and the author concludes with proposing some of them which appear most worthy of attention, to be cultivated for medicinal purposes in Europe: such are,

Aralia nudicaulis.
Collinsonia Canadensis.
Lobelia syphilitica.
Rumex Britannica.
Polygala Senega.
Actæa racemosa.
Phytolacca Americana.
Geum rivale.

73. *Acetaria.* Resp. H. VON DER BURG. 1756.

This writer, after having pointed out the advantages and disadvantages of eating crude vegetables, (showing to what constitutions such food is adapted), and having treated largely of the properties of oil and vinegar, describes the sensible qualities of the different vegetables eaten in various parts of Europe as sallads. Eighteen different sorts are enumerated, most of which are superseded amongst us, by lettuce, endive, cresses, and celery; the last our author thinks particularly hurtful to those who labour under nervous disorders.

Our countryman Evelyn wrote on the same subject as this respondent. See his "*Discourse of Sallets.*"

74. *Phalæna Bombyx.* Resp. J. Lyman. 1756.

The history of the Silk-worm, and its culture; with some account of the several *species* of mulberry on which it feeds. The *white* mulberry is the most acceptable to it; next the *red*; and then the *black*. This writer thinks it probable that silk was first wrought by the Chinese, from whom the art might have passed to the Persians. The Emperor Justinian attempted to introduce the insect into Italy; but it did not then succeed, neither was the proper culture of it brought to perfection until about the year 1130, when it was established in Sicily, from which island it spread into other parts of Europe.

The author mentions a species of *Phalæna* (*P. Atlas*,) the coccoons of which are much larger than those of the silk-worm, and the silk much stronger; but unfortunately they are difficult to wind, and are therefore commonly spun. He is too sanguine, perhaps, in supposing that the culture of the silk-worm may succeed in so northern a climate as Sweden.

75. *Migrationes Avium.* Resp. C. D. Ekmarck. 1757.

This paper is confessedly one of the most complete hitherto published on the curious subject of the migration of birds, which is still involved in considerable obscurity, the cause, with respect to several species, and the places of their resort being unknown. As to the greater number of birds, it cannot be doubted that the facility of finding their appropriate food in distant countries, in different seasons, and their security during incubation, have the principal share in this part of their œconomy.

The author observes that most migratory birds belong to the *flat-bill'd* order (*ANSERES*), and the *Waders* (*GRALLÆ*); the former breed chiefly in the extreme north, where, from the relation of Linnæus, their number almost darkens the air, and they are

driven southward by the freezing of the lakes and rivers. Many also of the *PASSERES*, especially of those with *slender bills*, are of the migrating class. The insectivorous retire southward when our winter advances, as others visit us, in that season, for the sake of the berries.

It is no small merit in this writer, that he brings together, in one view, more completely than any other, all the known *species* of migratory birds, whether exotic, or indigenous in Sweden. He gives a list of all such as are mentioned in the writings of Catesby, Klein, and Hasselquist; but the most considerable part of his dissertation is employed in a methodical enumeration of the native birds of Sweden, under each of which he mentions (as fully as was then possible) the particular times of their migrations; the places whither they resort; their food, &c.; and he intersperses many other remarks, equally curious and satisfactory to those who wish for information in this part of natural history.

Many interesting observations on migratory birds of the *British* isles may be found in Pennant's *British Zoology* (Ed. 1776. Vol. 2. p. 601—615.) and in the *Linnean Transactions* (Vol. 1 and 3).

Vol. 5.

Holm. 1760. pp. 483. tabb. 3.
(Lugd. Bat.)
Erlang. (*Schreber.*) 1788. cum pagg. et tabb. totidem.

76. *Morbi Expeditionis Classicæ.* 1756. Resp. J. Bierchen. 1757.

The author of this paper was physician to the fleet of observation, fitted out by the Swedes (at the beginning of a war between England and France) to act in conjunction with the Danes in the north sea. The Swedish squadron consisted of 8 ships of

the line, besides frigates. When Dr. Bierchen received his appointment (in August), he found not fewer than 1900 men on the sick list, the principal diseases being dysenteries, fevers, and the scurvy. The dysenteries were attended with fever, great pain in the bowels, and a very weak pulse. The fevers were of that kind which has been called the *Upsala fever*, from its having been remarkably epidemical in that city and neighbourhood. This disease was evidently of the typhoid tribe, and was much more acute in summer than in autumn. It was attended with frequent and obstinate hæmorrhagies from the nose, early in the disease; a quiet kind of delirium; trembling tongue; twitching tendons; deafness; *petechiæ*; and *vibices*. As the heat declined, hæmorrhagy did not so often occur. The attack of the disorder was marked by pain and lassitude of body; pain and *vertigo* in the head; cough; and oppression of the breast; and followed by *cardialgia*, nausea, vomiting, turbid (and sometimes, towards the decline, bloody) urine. The pulse, was weak, and many patients were seized, in the beginning, with violent fluxes.—The Scurvy seems to have been attended with the usual symptoms.

Our author appears to have been very sedulous in his endeavours to discover the causes of the great prevalence of this disease in the fleet. In the scurvy, besides the use of salted meats, he attributes much to the want of sufficient exercise on board the ships, and confirms the observations of some other writers, that the disease, independently of regimen and diet, decreased when the fleet was out at sea, and when the ships were, consequently, more agitated by wind and waves, and the men more employed; the contrary occurring when they were in a state of inaction in port. He condemns the use of fat and lard, as difficult of digestion, and favourable to the disease. In the cure he recommends

mends acids, and says that he used principally the sulphuric; but, above all, he commends sour-krout, in proof of the efficacy of which he also cites the authority and experience of Sir John Pringle.

He considers the fevers as arising from impeded perspiration, co-operating with the effects of cold, moist, and foul air; and, in *this expedition*, he thinks the insufficiency of proper clothing during the watches might not unfrequently have been a predisposing cause. He is of opinion that the disease was contagious. Many patients were cured by the early exhibition of emetics. In the *general* mode of cure, the practice laid down by our later writers in England was pursued with success.

The dysenteric disorders he ascribes particularly to the prevalence of saline and putrid acrimony in the food of seamen, aided by foul air and want of exercise, and propagated, at length, by contagion too.

Our author concludes with suggesting, that there are two causes, of a general and permanent nature, which predispose to these diseases, in all naval expeditions: *viz.* impure air, and a constant depression of spirits, hitherto not sufficiently attended to, and inducing a degree of real *nostalgia*. He seems to be sufficiently aware of the importance of correcting the first, and strongly recommends the use of ventilators; to the other it is not easy to apply a remedy. He informs us, that both the Swedes and the Swiss find the greatest relief (next to their return home), from strong exercise.

These subjects have been so well discussed by several later judicious writers, that the English physician cannot expect to meet with much new matter in this dissertation, which is notwithstanding worthy of the attention of all who wish to make themselves fully acquainted with the diseases of the navy.

77. *Febris*

77. *Febris Upsaliensis.* Resp. A. Boström. 1757.

The fever here described, which had been remarkably epidemical in various parts of Sweden, but particularly at Upsala, and which had been supposed by many to be a new distemper, is considered by this writer as of the remittent class, and common in all other parts of Europe. He determines its type to be that of the *Hemitritæa* of Linnæus, or the *Semitertian* of other authors. In some years indeed, he observes, it seemed to change its form, was attended with *petechiæ*, and became contagious; under which appearance it was named *Febris petechizans*, and, when attended with delirium and *subsultus tendinum*, *Febris nervosa*. In its milder state, especially in the spring, it assumed, either a regular quotidian, or a continued tertian type.

In investigating the causes of the frequency of this fever, especially at Upsala, our author accedes to the opinion that they are owing to moist and foul air, and he thinks that, from the situation of the city, the closeness of its streets, and particularly from the stagnating canals and waters, the prevalence of the disorder may fairly be referred to this circumstance. To confirm his opinion, he adduces two remarkable instances of cities rendered free from these fevers, by leading off and drying up stagnant and putrid waters.

In the *prognosis*, he says, a stiffness of the neck was not uncommon, and that it usually foreboded a long continuance of the disease; it frequently ended in convulsions, and other dangerous affections of the nervous system.

The cure of this fever was usually begun by giving gentle emetics, and repeating them for a few days occasionally; without which, it was observed that the bark and other remedies failed to produce their proper effect. Gentle paregorics and saline medicines

medicines were interposed, and as soon as a remission took place, a table-spoonful of the following preparation of bark was exhibited every two hours; *viz.* one ounce was infused for a few hours in five ounces of red wine; the residuum was boiled in a sufficient quantity of water to admit of eight ounces being strained off; and with this tincture and decoction three ounces of syrup of oranges were mixed. Blood-letting was commonly found to be very hurtful.

78. *Flora Danica.* Resp. G. T. Holm. 1757.

This Linnean catalogue of the plants of Denmark was formed principally from the *Viridarium Danicum* of P. Kylling, published in 1688, which comprehends 1100 *species*. A few are introduced into the present list from Burser's *Herbarium*, and some from the author's own observations.

Since the publication of this dissertation, the *Flora* of Denmark has been admirably illustrated, and received large accessions, from the well-known work successively conducted (under Royal patronage) by M. M. Oeder, Müller, and Vahl, and the plates in which now amount to 1140 in number. M. Rafn, also, has proceeded some way in a still more modern phytology of that country, entitled *Denmarks og Holsteens Flora.*

It is curious to remark how few of the species enumerated in Dr. Holm's catalogue are not also natives of Great Britain,—a circumstance rendering the collection of figures to which we have just alluded particularly useful to the British student.

79. *Panis Diæteticus.* Resp. J. Suensson. 1757.

This dissertation begins with an enumeration of the several sorts of grain used for bread, and a concise account of their general qualities, and of the estimation in which they were held by the antients. The various kinds of bread, whether leavened, unleavened, or fermented; their nature as articles of nutriment, and their different tendencies to acescency, are then specified.

The

The author condemns the too liberal use of it by the studious, persons of weak habits, and such as are troubled with flatulency. He descants upon every part of the process of making bread. He describes the different kinds of mill-stones, reprobating strongly those formed of sand-stone, and quoting instances of their pernicious effects (such as are of a talky texture are recommended); remarks are made on the effects of fermentation, kneading, the different degrees of baking bread, biscuit, cakes, &c., and also on the qualities of the unfermented kinds; the use of hot new bread is considered as extremely unwholesome. He concludes with reciting the general properties of bread prepared from rice, Turkey wheat, millet, and sago, and of the substitutes for bread used in different parts of the world: such are, the Cassava (root of *Jatropha Maniot*), Potatoes, Yams, root of the Sea-rush (*Scirpus maritimus*), roots of Drop-wort (*Spiræa Filipendula*), and of the Clown's All-heal (*Stachys palustris*) *Lichen Islandicus*, the bark of the wild Pine (*Pinus sylvestris*) still used in Dalarne, Chesnuts, the seeds of Spurrey (*Spergula arvensis*), and others, which are enumerated in No. 34 (*Plantæ Esculentæ*), and to which we may add the berries of *Rhamnus Lotus* (the *Lotus* of Pliny) used by some of the African tribes.

80. *Natura Pelagi.* Resp. J. H. Hagér. 1757.

A general view of the contents of that vast expanse, the Ocean; and a comparison between its inhabitants and those of the Earth.

In the *VEGETABLE* kingdom, the reader's attention is directed to the Sargazo (*Fucus natans*), which, swimming in a growing state, covers the deep in some places for hundreds of leagues.

Madrepores and *Millepores* incrust, as it were, the bottom of the sea, and form banks, which at length rise into islands. *Coral-lines*, *Sea-fans*, &c. are spread over them, as grass on the land.

But what words can express the myriads that belong to the class

class *VERMES!*—the *Nereides*, illuminating the deeps; the *Medusæ*, or Blubbers, food for whales; the *Asteriæ*, or Star-fish, *Scyllæa pelagica*, or Sea-Hare, the *Pennatulæ*, *Holothuria Physalis*, the *Sepiæ*, *Argonautæ*, &c.

It were endless to describe the *PISCES*. The various kinds of flying fishes: the Bonito, Albicore, Tunny, Pilot-fish (*Gasterosteus Ductor*), Sucking Fish (*Echeneis Remora*), the Splendid Dolphin, Spiny *Ostracion*, &c., are subjects both of wonder and instruction to the curious eye.

Among the *AMPHIBIA*, the whole Turtle genus, sleeping on the surface of the waves; the voracious Sharks, those tyrants of the ocean; the Toad-fish; the Fishing Frog, rioting in pastures of Sargazo, and feeding on *Scyllæa pelagica*;

Above, the *FEATHERED TRIBE:* the Tropic bird (*Phaeton æthereus*) soaring beyond the reach of the eye; the Albatross (*Diomedea exulans*); the Man of War Bird (*Pelecanus Aquilus*); the Shearwaters (*Procellariæ*), skimming the surface of the sea; lastly, the numerous *genera* of Divers:

Of the *MAMMALIA:* the enormous Whale, the voracious Grampus, the unwieldy Porpoise, the armed Morse, the basking Seal, &c.:—all these afford but a small sample of what the Ocean offers to the contemplation of the inquisitive and scientific observer.

81. *Buxbaumia*. Resp. A. R. Martin. 1757.

The history, accompanied by figures, of a small plant of the class *Cryptogamia* (*Buxbaumia aphylla*), singular in being destitute of leaves. It was first discovered near Astracan, by Buxbaum, Professor of Botany at Petersburg, since whose time it has been found in various other parts of Europe, and named after the discoverer, by Haller, in consideration of his having enriched

natural history with many new plants, on an expedition to the countries bordering on the Caspian Sea.

82. *Exanthemata viva.* Resp. J. C. NYANDER. 1757.

The origin of contagious diseases has exercised the pens of many ingenious physicians, and various theories have been invented, all of which are concisely noticed at the beginning of this dissertation; the author had been led by some singular circumstances to adopt that of Kircher, which ascribes those diseases to *animalcula*, and which has had many followers, especially in France. He proceeds to show the several analogies that subsist in the symptoms of contagious complaints; and, as *animalcula* have been demonstrated in the Itch, and likewise in the Dysentery, so, he tells us, have they also in the Measles, by Langius; in the Plague, by Kircher; in *Syphilis*, by Hauptman; in *Petechiæ*, by Sigler; in the Small Pox, by Lusitanus and Porcellus; and in the *Scrpigo*, and other cutaneous affections. He then adduces all that occurs in defence of this theory from the consideration of facts in the following diseases: *viz.* the Itch, Dysentery, Hooping Cough, Small Pox, Measles, Plague, and *Syphilis*.

In the Itch, the existence of *Acarus Siro* is acknowledged, and our author thinks it not less certain, that a species of this genus exists as a cause of Dysenteries; to this opinion he was led by a fact that occurred to Rolander, during his residence in Linnæus's house. Rolander had suffered from the dysentery for some time, and had been relieved twice by taking rhubarb; but the disease recurred, commonly at the end of about eight days. He was the only one in the house thus affected. By the advice of Linnæus, he examined his *egesta*, with a view to prove the truth of Bartholine's assertion, who relates that he had seen the alvine dejections

dejections in this disease full of the most minute insects. Rolander's observations on his own state confirmed the fact; and he afterwards discovered, that the *animalcula* were conveyed into his body in water received from a vessel made of juniper wood. This *Acarus* is described in the *Systema Naturæ*, under the name of *A. Dysenteriæ*. Our plan will not allow us to follow the author through the whole of his disquisition; it must therefore suffice to say, that it is ingenious, and worthy of the attention of those who wish to be acquainted with the doctrine which it favours.

83. *Transmutatio Frumentorum.* Resp. B. Hornborg. 1757.

The object of this dissertation is to combat a long established error, which prevailed among some men of considerable knowledge, until the time of Harvey, and even now subsists among the vulgar, in some parts of Europe: namely, that one kind of grain is convertible, by different soils, into an inferior, distinct, and less useful species; thus Wheat, in an impoverished soil, would change into Rye; the latter into Barley; Barley into Darnel; Darnel into Brome grass; Brome grass into Oats. Some of the antients carried their belief further, supposing that, in fertile lands, the reverse would take place. As these ideas were repugnant to truth, so were they, in many instances, unfriendly to improvement. This writer, after having observed, that among the Romans the *Res Rustica* was held in such high estimation as to induce even men of quality to cultivate lands, laments that, in modern times, it is too much neglected by the great. He therefore urges gentlemen to pursue the history and philosophy of vegetables, through its whole extent, as the foundation of practical improvements. With this view, he refers them to the many excellent papers on the subject contained in this collection. From the physiology of plants, the consideration

of their structure, and particularly of the parts of fructification, he shows the futility of the opinion which has so long subsisted, and particularly levels his arguments against that part of the error which has gained most belief, and remained longest in the minds of his countrymen,—that Oats are transmutable into Rye.

No notice is taken in this dissertation of the *Secale cornutum*, or Ergot, which, with other vitiated grain, has been supposed to occasion the *Necrosis ustilaginea* (of Sauvages's Nosology), and which is treated of in the *Philosophical Transactions*. (Vol. 52. p. 523—533. Vol. 55. p. 106—126.)

In the *Uitgezogte Verhandelingen* (4 Deel. p. 67—71.) is a letter, relative to the supposed transmutation of grain, addressed by Linnæus to M. Nozeman, who wrote on that subject in the same work.

84. *Culina mutata*. Resp. M. G. Österman. 1757.

In a former paper was exhibited a list of vegetables which are eaten in a *crude* state, as sallads. The present is intended to show the change that has taken place in the choice of vegetable aliments, since the time of the ancients, a number of more bland, agreeable, and nutritive plants being now substituted for those which were then in use.

In this review of the alteration which part of the culinary system has undergone, the writer gives, under each article, a comparative sketch of its qualities, and shows the superiority of the modern substitute. To mention some of the most material:

The Nuts and Acorns of the primitive days have given way to all the variety of sweeter farinaceous seeds and roots.

To the Malvaceous tribe of plants, so much used by the Greeks and Romans, has succeeded the more grateful Spinach; and to the Blite, the Garden Orach.

The rough Borage is supplanted by the acescent Sorrel; and

Asparagus has banished a number of roots, recorded by the Roman writers under the name of *Bulbs*, though at this day it is not easy to determine the several *species*.

Our author thinks that the Parsnip, however, has usurped the place of the Skirret undeservedly.

The Bean of the antients, improperly so called (being the root, as well as other parts, of the Indian Water Lily, *Nymphæa Nelumbo*), is superseded by the Kidney Bean.

The Garden Rocket (*Brassica Eruca*) eaten with, and an antidote against, the chilling Lettuce, is banished by the more agreeable Cresses and Tarragon; the *Apium* by the meliorated Celery; the Pompion, and others of the Cucurbitaceous tribe, by the Melon; and the berries of the Sumach by the fragrant Nutmeg.

The *Silphium*, or *Succus Cyrenaicus*, (which the Romans purchased from Persia and India, at a great price, and which is thought by some to be the *Asafœtida* of the present time) is no longer used in preference to the Alliaceous tribe.

To turn from the vegetable to some of the animal substitutes: we may mention the Carp among Fishes, as having excluded a great number held in high estimation in ancient Rome.

The change of Oil for Butter; of Honey for Sugar; of *Mulsa* (liquors made with wine, water, and honey) for the exquisite wines of modern times; and that of the ancient *Zythus* for the improved Malt Liquors of this day, are all recited. We may mention also the exchange of the *Calida* of the Roman for the bewitching Tea and Coffee of modern taverns.

85. *Spigelia Anthelmia*. Resp. J. G. COLLIANDER. 1758.

A botanical and medical history of the Indian Pink, which has been so highly celebrated, and so much used, for expelling worms from the human body.

Dr.

Dr. Colliander does not merely treat of the plant, for he enumerates also the several kinds of worms infesting the human species: *Ascaris vermicularis*, and *Lumbricoides*, *Lumbricus terrestris* (γ. of the *Syst. Nat.*) and the *Tæniæ*. He then gives a distinct account of the symptoms that indicate the presence of these creatures in the human body, and the diseases which they too frequently occasion. Afterwards, a catalogue is given of all the supposed anthelmintics, from the vegetable and mineral kingdoms; and, before he comes to the history of the plant in question, the several simples which have been considered as specifics are recited: among these, we may note particularly the Fern, mentioned by Dioscorides as an anthelmintic, and described in France as such, at the expense of the King.

The history of the *Spigelia* (with a figure annexed) is delivered at large, nearly as it stands in Browne's *History of Jamaica*, and in Garden's account, printed in the *Edinburgh Essays* (Vol. 3. p. 145—153.) The success of this remedy among the negroes introduced it into general practice. Browne administered it in decoction; the North American physicians give the powder of the root. Subsequent observations have proved, however, that the South American and the North American *Spigeliæ* are not of the same species; the former is figured in Browne, and the latter (*Spigelia Marilandica*) in the *Essays* above mentioned.

86. *Medicamenta Graveolentia*. Resp. J. T. Fagræus. 1758.

It is a *postulatum* in the philosophy of Linnæus, that "the qualities of medicines are, in a general way, to be determined by their effect on the organs of taste and smell." And further, that "the *Sapida*, or those which strike the taste more sensibly than the smell, operate principally on the vascular system," and that "the *Olida*, or those which more sensibly strike the organ of

of smell, operate on the medullary, or nervous system." The paper entitled *Sapor Medicamentorum* (No. 30) of this collection, may be considered as a comment on the first part of this general distribution of medicines, distinguished by the term *Sapida*; and the present *thesis* as an explanation of a large division of the *Olida*, here called *Graveolentia*, from their strong and ungrateful smell.

The combinations of *Sapids* and *Olids* are innumerable; but that medicines, strictly of the latter kind, do, in a sudden and extraordinary manner, exert their influence on the nerves, is certain. Our author contents himself with asserting the fact, without inquiring in what way the functions of the nerves are performed. From the *Graveolentia* (which are the subject of his paper), he justly observes, that we derive some of the most powerful medicines. Of these he gives a catalogue, dividing them into 3 classes: *viz.*

1. *Subinsipid.* 2. *Acrid.* 3. *Bitter.*

Each of these is divided into 2 orders, as the subjects differ in degrees of strength. The *Subinsipid* comprehend chiefly the narcotics; the *Acrid* several of the purging and fœtid roots, the fœtid gums, and carminative seeds; the *Bitter* others of the purging roots and leaves, and some of the bitter herbs. Under each, the author specifies concisely, in technical terms, the quality, and the diseases to which it has been appropriated. He then presents us with a very instructive theory of the operation of this division of *Olida*; leaving to the consideration of others the *Suaveolentia*. After which follows a general pathology of those diseases which are remedied by the *Graveolentia*.

87. *Arboretum Sueticum.* Resp. D. D. Pontin. 1759.

88. *Frutetum Suecicum.* Resp. D. M. Virgander. 1758.

The design of these papers nearly coincides with that of the

Flora

Flora Œconomica (No. 17.), having for its object the culture of the native trees and shrubs of Sweden, and some of exotic origin which time has naturalized, amounting together to 106 *species*. In these excellent papers, no botanical descriptions are given, the name only under which they stand in the Linnean system being introduced. The provinces in which these *species* are most plentifully found; the soil in which they best thrive; their times of leafing, flowering, and ripening their fruit; their duration; the best modes of sowing or propagating them; and their uses in the arts, but particularly in rural œconomy, are concisely and distinctly treated of.

At the end of the *Arboretum* are subjoined some *general* rules, to secure the propagation and growth of trees; and at the conclusion of the *Frutetum*, the author has pointed out the proper kinds of shrubs for all sorts of hedges, adapted to different soils and situations.

89. *Pandora Insectorum*. Resp. E. O. Rydbeck. 1758.

This writer pursues the plan of the *Hospita Insectorum* (No. 43), the completion of which cannot but be subservient to the arts of gardening and agriculture, and to the management of cattle, in a variety of instances; and it is likewise necessary to facilitate the inquiries of the entomologist.

In the preliminary sections, the reader is presented with a history of the metamorphosis of insects, from the worm, or maggot, through the state of *chrysalis*, to the period when the creature comes out in its full beauty and perfection, and performs all the functions of its being.

The catalogue (like that of the *Hospita*) exhibits a list of Swedish plants, arranged according to the sexual method; and under each is mentioned the insect which it nourishes. It has this advantage above the former dissertation, that the insects are

are better defined, by a more complete addition of the trivial names, taken from the enlarged edition of the *Systema Naturæ*, which had been published in the interval between these two papers. It is accompanied by a plate, containing nearly 50 of the more rare *species*, with references to the numbers in the 10th edition of the *Systema*.

90. *Senium Salomoneum.* Resp. J. PILGREN. 1759.

A comment on Solomon's description of old age, which has so frequently employed the pens both of medical and theological critics. The allusions of the Jewish writer, however, are probably too obscure, at this distance of time, to admit of uncontrovertible explanation.

91. *Auctores Botanici.* Resp. A. Loo. 1759.

We are here presented with an alphabetical catalogue of botanic writers, amounting to upwards of 350, on the following plan. After the name of the writer is given the time of his birth; his rank, or profession; the period in which he flourished (commonly taken from the date of his first publication, the title of which is concisely noticed); and, lastly, the year of his death. Such as have been eminently conspicuous for their merit are, in this list, distinguished by an asterisk affixed to the name. After the alphabetic catalogue, other arrangements of the same authors are exhibited; in one, they are placed according to the countries of which they were natives. The paper concludes with pointing out those writers whose works are indispensably necessary to such persons as would make any considerable progress in the history and knowledge of botany.

92. *Instructio Peregrinatoris.* Resp. E. A. NORDBLAD. 1759.

After some pertinent instructions to the young traveller, how to conduct himself in foreign countries, and useful hints relative to those requisite qualifications, in which, it is to be regretted,

too many who travel are deficient, the writer of this dissertation exhibits a complete method of keeping a journal, on the most extensive scale, pointing out whatever is worthy of observation. It is not easy to conceive a plan of instruction on this head more perfectly described. The traveller will not only find his memory much assisted by having proper objects of inquiry suggested to him, whether in nature or art, but also the method of arranging his remarks greatly facilitated. One part of the author's advice is of the utmost importance, for without the due and regular observance of it, nothing will be effectually accomplished: "*Nulla dies sine linea.*" If the traveller would be successful in his undertakings, he must make a point of entering and arranging the remarks of each day, before the next arrives.

93. *Plantæ Tinctoriæ.* Resp. E. JÖRLIN. 1759.

Intended to bring into one general view all the vegetable substances, whether indigenous or imported, which are used in the art of dying. The author determines the exact plant from which each article is produced, adding short observations on the colour it yields, and the methods of extracting it. In this *Materia Tinctoria* occur many of the indigenous plants of England, not commonly known to be possessed of any colouring quality; and though their use, at present, may be superseded by the facility of obtaining better from abroad, yet they nevertheless remain fit subjects of inquiry with the encouragers of arts. The catalogue consists of 100 articles, exclusive of a few from the animal kingdom.

94. *Animalia Composita.* Resp. A. BÄCK. 1759.

The *Compound Animals* are so called from being connected together by one common base, or support, either in the form of irregular or rudely-branched stony masses, of a calcareous nature, as the *Lithophyta*, or *Corals*; or as fixed to one common

stalk more or less branched, as the *Zoophyta*, or *Corallines*, and some others.

In order to give a more perfect idea of these animals, the writer of this dissertation displays the general analogy between animals and vegetables, principally to show that the former are not, like the latter, endowed with that multiplicative power of propagating themselves without the particular energy and exertion of the generative function; whereas the *Animalia Composita* seem to unite these powers, since they appear to propagate not only by eggs, or *viva soboles*, but also by progressive extension and ramification.

The animals of the *Lithophyta*, like the *Testacea*, fabricate their own base of calcareous matter, forming the whole mass into tubes, each ending on the surface in pores, or cells (according to their specific difference), where alone the animal seems to dwell, in the manner of vegetables, leaving the base at length to perish.

The animals of the *Zoophyta*, containing the Corallines, &c. particularly the *fixed*, approach much nearer to vegetables than the foregoing, both in their texture and form in general, arising as if from a root, and constituting a stem and branches, which are beset at the extremities and articulations with the animals, or *Polypes*, appearing by the help of glasses like so many flowers.

Since this dissertation was written, the subject has received much additional illustration from the discoveries of Ellis. See *Phil. Trans.* Vol. 57. p. 404—427.

95. *Flora Capensis.* Resp. C. H. WÄNNMAN. 1759.

In the time of the Romans it was a trite proverb, "*Semper aliquid novi ex Africa;*" which still remains true, as in these days it affords, both in the animal and vegetable kingdoms, some of the most stupendous and singular productions of nature. From

the first discovery of the Cape of Good Hope, whence Europe has chiefly been furnished with the plants of Africa, their uncommon aspect, so very different from those of Europe, has attracted the notice, not only of naturalists, but of all mankind; and as the mildness of that climate admitted of their cultivation here, they soon became favourites in the English gardens.

Some of the first Cape plants that were brought to Europe we owe to J. Heurnius, who sent them to his brother, a Professor at Leyden; and they are figured in Bodæus à Stapel's *Theophrastus*. Among these were *Canna Indica*, *Hæmanthus coccineus*, *Aletris Uvaria*, and a few others. But the first *botanist* who visited the Cape was Paul Hermann*; he collected 800 *species*, then unknown in Europe. After him H. B. Oldenland, a Dane, and J. Hartog, a Dutchman, made collections of African plants, which at length falling into the hands of John Burmann, of Amsterdam, that Professor published catalogues of them †, and also a collection of plates of the more rare species ‡. The principal part of the last catalogue, however, was taken from Kolbe's *Beschryving van de Kaap de goede Hoop*. (1 Deel. p. 285—304.) From these materials chiefly the present *Flora* is composed, which, according to the usual plan, contains the trivial names only.

Among the plants of the Cape here enumerated are 38 *genera* peculiar to that part of the world, several of which excel all others in the number of *species*, as well as in their uncommon and superb appearance. The vast number of *species* under the same genus, so frequently met with in that country, strongly favours the idea of the perpetual new origin of plants, and that

* The same who made the collection at Ceylon. See p. 88.

† *Catalogi duo Plantarum Africanarum*, &c. Amstel. 1737. 4to.

‡ *Rariorum Africanarum Plantarum Decades X.* Ibid. 1738-1739. 4to.

many

many, which elsewhere are only hybrid, there propagate and become permanent. But Caffraria, beyond all other countries, abounds with extensive *genera* of plants; the succulent kinds, particularly, cover the sandy soil, where nothing but the fact could convince us that vegetation would in any degree succeed. Such are the *Mesembryanthema*, Aloes, Purslanes, &c. Among the others, we are astonished by the number of *Ericæ*, *Gerania*, *Proteæ*, and *Gnaphalia*.

Since the publication of this dissertation, considerable additions have been made to the phytology of Southern Africa by the Chevalier Thunberg. See his *Prodromus Plantarum Capensium*. (Upsal. 1794, 1800. 8vo. cum tabb. æn.)

96. *Flora Jamaicensis*. Resp. C. G. SANDMARK. 1759.

The author begins his *Flora* with a general account of the geography of the island, and its produce, specifying some of the most useful articles thence exported: as *Guaiacum*, *Ebony*, *Logwood*, *Mahogany*, *Indigo*, *Sugar*, *Coffee*, *Cotton*, *Pimento*, and *Ginger*. He then subjoins an account of the two principal works, from which his catalogue is compiled; these are Sir Hans Sloane's *Catalogus Plantarum*, and Dr. Browne's *History of Jamaica*. The former writer appears to have been the first *naturalist* who visited Jamaica, and he brought back with him 800 *species* of plants. The latter is said to have made a collection amounting to 1200, which, after the publication of his *History*, came into the possession of Linnæus, as has already been mentioned*. As Browne followed the Linnean system, his work is referred to in this *Flora*.

97. *Pugillus Jamaicensium Plantarum*. Resp. G. ELMGREN. 1759.

A description of 130 *species* of the more rare among the fore-

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* See p. 136.

going

going plants, made from Browne's collection, when it came into the possession of Linnæus.

98. *Nomenclator Plantarum.* Resp. B. Berzelius. 1759.

This paper contains the vernacular names of *genera* of plants (particularly of European and garden kinds), in Italian, French, English, Dutch, and German, placed in columns opposite to the Latin name. It would have been an acquisition if the plan had been extended much further, so as to have included the name by which each *species* also is known in the several countries; a point too much neglected by almost all writers of local catalogues, though highly necessary to render them more extensively useful. Even the provincial names should likewise be collected, if possible, as they are frequently very different for the same plant. Linnæus is almost the first and only author who has taken due notice of, and supplied, this deficiency. (See *Flora Suecica.*) There is a work on the subject by Mentzelius, entitled *Index Plantarum Polyglottus* (1682); but it is very incomplete, and indeed cannot be rendered otherwise, except by the united endeavours of botanists throughout the world.

A *Nomenclator* of the plants of Denmark, in French, English, Dutch, Swedish, and Danish, was published soon after this dissertation, by Professor Oeder.—The *Lexicon Botanicum*, of Beckmann, is also an useful work to the botanical etymologist.

99. *Aer Habitabilis.* Resp. J. V. Siefvert. 1759.

The atmosphere is here considered in the various changes to which it is subject; the properties of its different states are discussed; its effects on the various parts of the globe; and its influence on the health and œconomy of life, and the manners of the inhabitants.

From the very imperfect state of chemical and meteorological knowledge at the period when this paper was written, it will not,

not, of course, be read with much interest at the present day; yet several curious facts are introduced in it, and many pertinent observations, especially of a medical nature.

100. *Sus Scrofa.* Resp. J. LINDH. 1759.

A natural history of the Hog, in which the whole œconomy of the animal and its uses to mankind are more completely treated of than in any other publication.

Vol. 6.

Holm. 1763. pp. 486. tabb. 5.
(Lugd. Bat. 1764.)
Erlang. (*Schreber*) 1789. pp. et tabb. totidem.

101. *Generatio Ambigena.* Resp. C. L. RAMSTRÖM. 1759.

The author begins with a concise explanation of the ancient and modern theories relative to this obscure subject. He observes that the doctrine of equivocal generation generally prevailed, until Harvey taught that every animal is produced *ex ovo;* and that his system may now be considered as including a double hypothesis: first, that adopted by himself, which supposes the entire rudiments of the future *fœtus* to be present in the *ovum*, and only waiting for animation from the vivifying principle, or *aura genitalis masculina;* the other, that of the seminal animalcule entering into the *ovum*, according to the doctrine founded on Leeuwenhoek's microscopical discoveries. We have before remarked, that Linnæus very early forsook Leeuwenhoek's theory, in consequence of attending the demonstrations of Lieberkuhn.

The argument of the present dissertation tends to show, that both sexes are equally efficient; yet it leans to the following opinion, *viz.* that the external form, as well as the specific

specific energy of the vital functions, is principally derived from the male parent. This is partly the opinion also of Haller (*Phys.* § 786.); and Darwin (*Zoonomia*, Sect. 39.). After having drawn a physiological analogy between vegetables and animals, our author asserts that the male is commonly most conspicuous in the external form, and this assertion he substantiates by several examples of hybrid *species* in both kingdoms.

102. *Politia Naturæ.* Resp. H. C. D. Wilcke. 1760.

This paper is intended to point out the perfect order and just subordination by which the several parts of nature are rendered subservient to the conservation of each other, and of the whole, and which, collectively considered, our author has not unaptly named the *Police of Nature.* His physico-theological design is executed on nearly the same plan as that of the *Œconomia Naturæ* (No. 19.), exhibiting,

1. A general view of the *Mineral Kingdom*, as constituting the surface of the globe, and as disposed into land and water, mountains, hills, valleys, &c.;

2. That innumerable variety of *Vegetables*, with which the surface of the earth is clothed and adorned, as adapted to the different soils, climates, and elevations, and as affording nutriment to various kinds of animals;

3. In the *Animal Kingdom*, a general view of their relations to each other, and the proportion they bear in the scale, through the several classes, from the lowest up to the highest and most perfect tribes; their specific uses also in the general œconomy are regularly considered.

Numerous examples are adduced from all parts of the animal and vegetable kingdoms, to show how admirably the grand scheme of nature and providence is ordained for the generation, nutrition, and due proportion of each.

103. *Theses*

103. *Theses Medicæ.* Resp. J. C. D. SCHREBER. 1760.

In this dissertation, the respondent delivers a short explanation of the Linnean doctrine relative to the anatomy and physiology of plants; and he endeavours to sustain the following *theses: viz.*

1. That all plants consist of a medullary and a cortical substance: by the former the life of the plant is perpetuated, through the medium of seeds and buds, which are considered as the ultimate distribution of the vegetable *medulla;* the latter, or cortical substance, is subservient to nutrition.

2. That, as in a certain assortment of *species*, which in artificial systems form a *genus*, we see a similar proportion and an agreement of the parts of fructification, however different the external form of the whole plant; and as we not unfrequently see hybrid plants produced, they may have all originated, in the same way, *viz.* by the various admixtures of the *farina.* From this power in the medullary part of perpetuating itself, and of modifying the whole internal structure, the author also deduces the similar qualities, which are commonly found in plants of the same genus, and manifested by the taste and smell.

104. *Flora Belgica.* Resp. C. F. ROSENTHAL. 1760.

A Linnean *Flora* of the indigenous plants of the United Provinces, compiled from the works of Commelin, (*Catalogus Plantarum indigenarum Hollandiæ*), and De Gorter, (*Flora Gelro-Zutphanica*), the one printed in 1709, 2nd edition, and the other in 1745. The author refers to the page in both these works, for each species. He premises a general account of the country, with respect to the climate, inhabitants, and commerce of the several provinces; enumerates the universities and gardens; and then gives concise lists of the plants found in particular situations: for instance, in the canals, dykes, woods, osieries, &c.

The plants of Holland (as far as soil and situation admit) are nearly those of England; but as the former country is destitute of mountains, rapid rivers, and chalky lands, a great variety are necessarily excluded.

In 1767, an enlarged edition of de Gorter's book was printed, under the title of *Flora Belgica*. This contains upwards of 1050 *species*; which number has been since considerably augmented, as may be seen in the edition published at Haarlem, in 1781.

105. *Anthropomorpha.* Resp. C. E. Hoppius. 1760.

After a general account of the manners of apes, the reader is here presented with a history of 4 remarkable *species* (as they were then considered), *viz.*

1. *Simia Pygmæus*, or the Wild Man of the woods, (*S. Satyrus*, of the *Syst. Nat.*) described and figured by Edwards, *tab.* 213.

2. *Satyrus Indicus*, of Tulpius (*Obs. Med.* lib. 3. c. 56.) which Linnæus considered as a variety, only, of the above species, but which is the *Simia Troglodytes*, of Gmelin.

3. A *Cercopithecus*, of Aldrovandus (*Digit.* p. 249), said to exist in Java and Nicobar, and of which travellers, considering it a *Homo caudatus*, have related strange stories. This animal is here described on the authority and testimony of Köping, a Swede, who asserted that he had seen both male and female; but it has been suspected (not without reason) that the account is either entirely fabulous, or a great exaggeration. The reader may see more relative to the animal and to Köping's account in a letter from Linnæus himself to the author of *The Origin and Progress of Language* (Vol. 1. Ed. 2nd. p. 260. note).

4. *Homo Nocturnus* of Bontius's *Java* (t. 84), which in the 12th edition of the *Systema* bears the name of *H. Troglodytes.*— Our author takes great pains to prove that this animal is really

a child

a child of darkness, and incapable, from the extreme dilatation of the pupil, of seeing in the day-time.—Gmelin, conceiving the description of this animal to be either founded in fiction, or to relate to some monstrous or morbid individual, or, at any rate, to belong with more propriety to a species of *Simia*, has not retained it in the genus *Homo*.

Accompanying the dissertation are figures of these several animals, copied from the respective authors who originally described them.—The Linnean orders of *Primates* and *Simiæ* have been recently elucidated by the labours of Camper*, Audebert†, and Cuvier‡; but the history of many species is still involved in much obscurity.

106. *Plantæ Africanæ rariores.* Resp. J. PRINTZ. 1760.

Of all the quarters of the globe, no one displays such luxury and variety in the production of plants as southern Africa. It is thence that the European gardens have derived their most superb and ornamental *species*. This catalogue contains descriptions of 100 of the most rare, some entirely new, and others imperfectly noticed before. It was drawn up from an inspection of the plants themselves, which had been sent from the Cape of Good Hope, and with a view of which Linnæus had been gratified by Dr. Laurence Burmann, when he paid our great naturalist a visit in the summer of the year 1760. Extremely as the Cape plants differ from those of Europe, many of the latter nevertheless

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* *Natuurkundige verhandeling over den Orang-outang en eenige andere Aapen.* Amst. 1782. 4to.

† *Histoire Naturelle des Singes et des Makis.* Paris. An. 8. Fol.

‡ See *Magasin Encyclopédique.* Tom. 3. p. 451—463.
Nouv. Journal de Physique. Tom. 3. p. 185—191.

 thrive

thrive well in that climate. The paper concludes with a list of African plants, as an appendix to the *Flora Capensis* (No. 95).

107. *Macellum Olitorium.* Resp. P. JERLIN. 1760.

Under this title our author includes the plants of the kitchen-garden; and we are here presented with a catalogue of 77 *species*, principally such as are either found growing spontaneously, or are easily cultivated. It is drawn up on the same plan as Linnæus's *Materia Medica*, specifying, in a concise manner, the duration of each plant, whether annual, biennial, or perennial; the part in use; the mode of preparing it; its taste, or other sensible qualities; and its reputed effects on the human body.

Culinary herbs are here divided into 3 classes.

1. *Roots:* and these into *fusiform* and *tuberous.*

2. *Stalks:* comprehending chiefly the young and blanched shoots, as *Asparagus*, and the disk of the flower, as the *Artichoke.*

3. *Leaves:* divided into *Olera*, or boiling herbs, *sprouts*, and *greens;* and *Acetaria*, or sallads, eaten crude.

Our author commends parsnips, in preference to turnips and carrots, as being less flatulent, and more nutritive. He condemns the use of mushrooms, and says that the disk and young stalks of the *Onopordum Acanthium* may be eaten, which resemble artichokes. It is here repeated that celery is prejudicial to people subject to nervous disorders.

108. *Meloe Vesicatorius.* Resp. C. A. LENÆUS. 1762.

A complete history of the Blistering Fly, an insect of the class *Coleoptera*, with filiform *antennæ*, and distinguished from the other *genera* by the rounded *thorax*, and gibbous, inflexed head. The species in common use is found all over Europe, more or less, on the privet, the ash, and the elder; but there are also three

three others endued with the same vesicating acrimony, two of which are European, and the other is frequent in the East, particularly in China, where it is used in the shops. Many reasons are mentioned to prove that this last (*Meloe Cichorii*) is the true *Cantharis* of Dioscorides.

After having given the natural history of the insect, at large, our author prescribes forms for several vesicating plasters, and also the places and mode of application. In his last chapter, which is professedly medical, he treats of the internal and external uses of *Cantharides*, considering chiefly, how far they are useful and safe as diuretics; and he introduces a case, which furnishes a caution against the use of them as aphrodisiacs. After having made some general observations on the action and use of blisters, he enumerates the diseases in which they are salutary, and also those in which they are contra-indicated.

109. *Diæta acidularis.* Resp. E. VIGELIUS. 1761.

It is not surprising, that, in a country abounding with iron, chalybeate waters should be frequent. In fact, these *acidulæ* are so in Sweden, and their efficacy has been known and extolled in that country, as our author observes, from the most ancient times. He thinks that the inhabitants of the more northern climes were led to the frequent use of these *acidulæ*, by long experience of their salubrity as diuretics and tonics, in remedying the inconveniences occasioned by a long winter's diet of salted meats, which dispose the constitution to scorbutic, cachectic, and dropsical disorders. The later physicians of Sweden have regulated the use, and confirmed the good effects of them; and in this dissertation Dr. Vigelius has, in a concise and perspicuous manner, prescribed the regimen adapted to such persons as enter upon a course of these waters, under the six well known heads of the *Non-naturals*.

110. *Potus*

110. *Potus Coffeæ.* Resp. H. Sparschuch. 1761.

A botanical and medical history, with a figure, of the Coffee-tree (*Coffea Arabica*), and its fruit. The writer is one of the last of 20 authors who had written professedly on this shrub, and who are here enumerated, with the date of their writings, from 1621 to Kalm's treatise in 1755.

Coffee, originally the produce of Arabia Felix (where the best *now* is most successfully cultivated), is called by the Egyptians *Bon*, and was first mentioned by the Arabians, about the year 900. Our author says that it was brought into Europe about the year 1645, and that the first coffee-house was set up at Marseilles in 1671. The shrub itself was introduced into the gardens of Europe about 1710, by means of seeds procured from Arabia, by Governor Van Hoorn, of Batavia, who also first cultivated it at Surinam.

We are next presented with the classic, generic, and specific character of this plant; to which succeeds a copious list of synonyms, and the description, at large, as it stands in the *Hortus Cliffortianus*. The culture of the shrub; the preparation of the berry; the different times and modes of drinking this liquor, as established by custom in the various nations; and the *succedanea* to the berries, are then discussed. Among the *succedanea* are mentioned peas, beans, beech-nuts, almonds, maize, wheat, and the seeds of the sun-flower (*Helianthus annuus*). Of these, the author prefers almonds, but he observes that they dispose to flatulency much more than coffee.

In speaking of the qualities and virtues of coffee, Dr. Sparschuch thinks that it should rather be classed with medicines, than considered as a nutritive article of diet. He appears to be no friend to its frequent and indiscriminate use, conceiving that it destroys rather than creates appetite; that it occasions watchfulness;

fulness; promotes flatulence and indigestion, instead of relieving either; and that it debilitates the nerves, and occasions tremblings. On this occasion, he thinks it worthy of inquiry, whether it may not contribute to those sudden deaths, which are frequent in Stockholm about the winter solstice, as they have been observed to happen to such as were inordinate drinkers of this liquor. That it is anti-aphrodisiac, he says, is generally allowed; and he illustrates and confirms this quality by a pleasant tale from Olearius's Travels. He describes it also as producing weakness of sight; as being noxious to melancholic, hypochondriacal, and hysterical people; as promoting hæmorrhages of all kinds; and, in short, as being generally unsafe when freely used, except to the corpulent. That head-aches are frequently relieved by coffee, is confirmed by daily experience; and our author relates that Linnæus found it singularly beneficial in taking off a *cardialgia*, with which he was himself affected, when he was physician to the fleet, in 1740, and which, as it constantly succeeded his morning visits to the sick, he attributed to the *effluvia* of the hospital.

Numerous treatises on the subject of Coffee have made their appearance, since the time of our author, but few of them afford any additional information of importance, except as to its chemical analysis. The English reader may consult Ellis's *Historical Account of Coffee* (1774. 4to.), and Mosely's *Observations*, (1785. 8vo.)

111. *Inebriantia.* Resp. O. R. Alander. 1762.

Inebriants are almost universally derived from vegetables. They are defined by our author to be such articles as affect the nerves in a particular and agreeable manner, and through them alter and disturb the functions of the mind. They are properly divided into *native* and *artificial;* the former in use

chiefly among the oriental nations, the latter chiefly among Europeans. Of *native inebriants* the following are enumerated, and the mode of administration and effects of them described.

1. *Opium*, in use all over the East, and of which the Turks, through custom, swallow as much as a drachm at a time.
2. *Peganum Harmala*, or Syrian Rue. The seeds are sold in Turkey for this purpose; and with these (as Bellonius asserts) the Ottoman Emperor Solyman kept himself intoxicated.
3. *Maslac*, of the Turks, or *Bangue*, of the Persians, prepared from the dust of the male flower of the Hemp, or from the leaves.
4. *Bangue*, of the Indians; from the leaves of *Hibiscus Sabdariffa*.
5. Seeds of various *species* of *Datura*, or Thorn-Apple. See Rumphius's *Herb. Amb.* 5. p. 243.
6. *Pinang*, or *Betle*, of the Indians.
7. Roots of Black Henbane (*Hyosciamus niger*).
8. *Hyosciamus Physaloides.*
9. Berries of the Deadly Night-shade (*Atropa Belladonna*).
10. Leaves of Millefoil (*Achillea Millefolium*); used by the inhabitants of the province of Dalarne, to render their beer intoxicating.
11. *Tobacco*, and several others less powerful, as Clary, Saffron, and Darnel.

Artificial Inebriants are fermented liquors from farinaceous seeds; wines and spirits, drawn by distillation. With these our author ranks the *Nectar* of the Gods, and the anodyne medicine of Homer, commonly called *Nepenthes;* also the spells by which Medea and Circe produced their enchantments.—A fable is introduced, in a most striking and lively manner, to illustrate the effects

effects of intoxicating liquors on the human frame and passions. After showing when they may be safely allowed, the author concludes with cautions and exhortations against the habitual use of them.

112. *Morsura Serpentum.* Resp. J. G. Acrell. 1762.

In this dissertation on the venomous bites of serpents, the author premises a general description of the structure of this order of *Amphibia*, and some observations relative to *Boa Constrictor* (the Gigantic Serpent of the East Indies), and its capacity of ingorging large animals.—He adverts also to the fascinating power of the Rattle-snake, with which, he says, *Coluber Berus* (the common Viper) is in some degree endued.—He describes the mechanism of the jaw, and the venomous apparatus in serpents. The description is illustrated by a figure; he then gives an abstract of Redi's experiments, and discusses the theory of the operation of the virus, in the explanation of which he inclines to the opinion of the *mechanical* theorists, attributing the effects rather to an almost instantaneous alteration induced in the fluids, than to its immediate action on the nervous system. The symptoms following the punctures of the various *species* are then described; those from the viper particularly, and of the asp, which kills by inducing sopor and lethargy. Three asps are mentioned by the ancients. That called *Ptyas* he supposes to be the *Coluber Ammodytes*, of the moderns, described and figured in the paper entitled *Surinamensia Grilliana* (No. 16 of this collection). Besides those of the Rattle-snake genus, there is a list of 8 of the Viper genus, furnished with venomous organs. Among these, none strike more suddenly fatal than *Coluber Naia*, or the *Cobra di Capello.*

This author next treats of the various remedies in use among

the ancients, and notes their general inefficacy. He then examines the three noted antidotes of Europe, Asia, and America, which are regarded as specifics against the venom of the most dangerous kinds, in the respective quarters of the globe: 1. *Oil of Olives*, against the Viper of Europe. 2. *Ophiorrhiza Mungos*, against the *Naia* of Asia (see No. 21 of this collection). 3. The *Senega*, against the Rattle-snake of America. There is nevertheless a small venomous viper (*Coluber Chersea*) in Sweden, against the bite of which the oil of olives failed to produce the usual good effects, and the patient died. The author mentions an instance of the successful administration of *Senega* in that country. He concludes with descanting on the *Psylli*, or Charmers of Serpents, in the East, and tells us that Professor Jacquin, of Vienna, purchased a secret of the same kind in the West Indies.

Since this dissertation was written, many ingenious writers have taken up the subject, but more particularly Fontana (*Ricerche fisiche sopra il veleno della Vipera*. Lucca. 1767. 8vo.); and the anatomy and physiology of serpents have been much illustrated, by Russell (*Account of Indian Serpents*, *Phil. Trans.* 1804. p. 70), Home, and others, in our own country, where it was first accurately investigated, by the celebrated Tyson (*Phil. Trans.* Vol. 13. p. 26).

113. *Termini Botanici*. Resp. J. Elmgren. 1762.

This paper does not admit of being abridged. It is a methodical arrangement, and complete explanation of all the terms (amounting to 673) used in describing plants, according to the Linnean method of botany. Somewhat of the same kind was begun in the *Hortus Cliffortianus*, and prefixed also to the enlarged editions of the *Systema*. These terms necessarily occur

occur too, and are explained, in the *Philosophia Botanica*.—In this paper they are amplified, improved, and methodized in so excellent a manner, that no one who wishes to gain precise ideas on the subject ought to be without it*.

114. *Planta Alströmeria*. Resp. J. P. Falck. 1762.

This plant is of American origin, and belongs to the *Hexandrous* class and *Monogynous* order of the system. Three *species* are here noticed, the two first of which were described and figured by Pere Feuillée (in Peru), who ranked them with the *Hemerocallis*, or Day Lily. Linnæus received the seeds of the last, which is a singular and beautiful plant, from Cadiz, by means of M. Alströmer, son of a gentleman of that name, who was Counsellor of the Swedish College of Commerce. Finding it to be a new genus, he gave it the name of *Alströmeria peregrina*; and it is here completely described and figured. Its virtues are not ascertained, but the sensible qualities of the root rank it with the *Sarsaparilla*. It appears, from Feuillée's account, that there is another species in Chili, which the natives use as a substitute for the above plant; and hence Linnæus gave to this the trivial name of *Salsilla*.

115. *Nectaria Florum*. Resp. B. M. Hall. 1762.

——"*Dulci distendunt nectare cellas.*"
Virg. Georg. 4. 164.

Hence Linnæus gave the term *nectarium* to a particular gland, or repository, which in most plants contains the honey. This part in flowers had been but little noticed before Linnæus raised

* Such of our readers as are not possessed of either of the above-mentioned works will find an useful substitute in Forster's *Enchiridion* (Halæ 1788. 8vo), and in Martyn's *Language of Botany* (London 1793. 8vo). There are numerous other publications on the subject, in various languages.

it to importance: in his system, it affords an excellent mark of distinction, in various *genera* and *species*.

Our author premises some short observations relative to the glands of plants, which are situated mostly on the leaves and petioles. He then proceeds to the direct design of the dissertation, which is to point out the several kinds of *nectaria* in flowers, and to specify their different situations in different classes, orders, and *genera*. It is therefore an instructive paper to those who would gain a more complete idea of this singular, and before neglected part, the use of which, however, is as yet imperfectly ascertained.

116. *Fundamentum Fructificationis.* Resp. J. M. GRÅBERG. 1762.

Having concisely stated the improvement of botany, and defined it as a science, the writer proceeds to explain the title of his dissertation. Under the word *Fructification*, he includes not merely the *Corolla*, *Pericarpium*, and *Semina*, simply considered, as Tournefort had done, but also the *Calyx*, *Nectarium*, *Stamina*, and *Pistilla*. All these parts therefore constitute the organs of fructification, and on them the foundation of all true system must be laid. He then sketches the rise and progress of botanical system, from Gesner, through the improvements of Cæsalpinus, Columna, Morison, and Tournefort, to Linnæus, who, by defining the parts of fructification as above, first laid the basis of accurate generic distinctions. The author afterwards enlarges on specific distinctions, and shows what constitutes *varieties* in plants. He proceeds to consider the generation of hybrid plants, concerning which he favours the opinion delivered in the dissertation entitled *Generatio Ambigena* (No. 101 of this collection), *viz.* That the internal structure, or parts of fructification in hybrid plants resemble the impregnated species, and the habit,

habit, or external parts, that which furnished the *farina fœcundans.*

On the whole, this paper abounds with curious matter for speculation, and is highly interesting to physiologists.

117. *Reformatio Botanices.* Resp. J. M. Reftelius. 1762.

We are here presented with a very entertaining history of the rise, progress, and present improved state of botany. This history is divided into 3 epochs:

1. Under the *Founders* of the science, after the restoration of letters.
2. Under the *Systematics.*
3. Under the auspices of the great Swedish botanist.

1. Among the restorers of botany, Brunsfelsius, Tragus, Gesner, Fuchsius, and Cordus stand foremost. They may be said to close with Caspar Bauhin, who, by his incomparable *Pinax* (in which he collected all their synonyms into one work), gave use to their writings, and improvement to the study, which otherwise it could not have acquired.

2. Bauhin having laid this foundation, the knowledge of plants made a rapid progress in the seventeenth century, and received vast additions from the discoveries of Cornutus, Marcgrave, and Piso, in America; from those of Hermann, Rheede, and Commeline, in Asia; from Sloane, Plukenet, Petiver, and Sherard; Tournefort and Plumier. During this period also, it was reduced to system, from the hints of Gesner, first by Cæsalpinus, and afterwards, more successfully, by Morison, Ray, and Tournefort.

3. Dr. Reftelius dates the commencement of reformation in botany from the first publication by Linnæus, in 1735: he then collects together in one view the improvement which the science

has received from the labours of that great man. He enumerates the several disciples of Linnæus who assisted their master by their travels; adds a list of those writers who have followed his method; and closes with a sketch of what is yet wanting to give perfection to botanical system.

118. *Prolepsis Plantarum.* Resp. H. ULLMARK. 1760.

The theory of vegetation founded by Malpighi and Grew on the anatomy of plants, and that of Hales and others drawn from what may be called their physiology, has not been followed in the Linnean school. Linnæus early conceived the idea of an analogy between plants and animals, and speaks of the former consisting of a medullary and a cortical substance like the latter. (See No. 103 of this collection.) This idea seems also to have led him to adopt the opinion of Cæsalpinus, relative to the evolution of those two parts in the order which is mentioned in the 66th dissertation.

To confirm and illustrate these opinions is the principal design of the present paper, which is in fact a comment on the 23d and 24th sections of the introduction to the 2nd tome of the *Systema Naturæ.* As illustrations cannot be so aptly drawn from annual and other plants, on account of their tender structure and quick growth, the author adduces his exemplifications from the bud-bearing trees; remarking, that the full evolution of the parts, from the origin of the bud to the expansion of the flower, as the final act of vegetation in each, is a progressive work, the accomplishment of which requires 5 or 6 years; and that it takes place in the following order. The *leaves* (which are unconnected with the medullary substance, and derive their origin from the cortical,) are the produce of the first year; in herbs and trees that are furnished with *bracteæ*, or floral leaves, these are the issue of

of the 2nd year; the *perianthium*, or cup of the flower, of the 3d; the *petals* of the 4th; the *stamina* of the 5th; and the *pistilla* of the 6th.

119. *Fructus Esculenti.* Resp. J. Salberg. 1763.

The design of the *Plantæ Esculentæ* (No. 34), *Acetaria* (No. 73), and the *Macellum Olitorium* (No. 107), is in this paper pursued, and extended to the esculent *fruits*, of which 133 are enumerated, and their nature and uses briefly pointed out; they are disposed in 6 classes:

1. Berries.
2. Plums.
3. Pomaceous fruits.
4. Podded fruits.
5. Grain.
6. Nuts.

120. *Prolepsis Plantarum.* Resp. J. J. Ferber. 1763.

The design of this dissertation is similar to that of the other bearing the same title (No. 118).

The author first treats of the food of plants, which, without entering into any subtle disquisitions relative to its elementary principles and composition, is defined to be the watery tincture of the soil, received by the roots, and transmitted to the medullary substance by the vascular part of the cortical. He establishes it as a fact, that too great an afflux of nutriment to the cortical part retards the fructification, by compressing the medullary. This is proved, he thinks, by the state of luxuriant plants in general, and by the effects of depriving them of the superfluity; on which head, he quotes the experiments of Fitzgerald, recorded in the *Philosophical Transactions*, Vol. 52. p. 71.

He next proceeds to show, that heat alone excites to action and vigour the life, or protrusive and expansive force of the medullary part, which is ever expended in propagating the plant, by forming buds, bulbs, or seeds, as its final and most perfect issue; and, that this intention of nature depends on the proportion

tion of nutriment afforded by the cortical to that of the heat administered to the medullary structure.

In the 2nd chapter, the evolution of buds is treated of; the writer acceding to the doctrine of their progressive perfectibility, mentioned in the dissertation which has just been reviewed.

The last chapter is appropriated to the involution of plants in the seed, and bulbs. It is asserted, that in the seeds of *Nymphæa Nelumbo*, the very leaves of the future plant are visible. In bulbs, the rudiment of the next year's plant is also conspicuous. In like manner, buds contain the perfect plant, though in these the evolution requires a longer process.

It may be observed, that a set of experiments made by M. Mustel, and printed in the *Philosophical Transactions*, Vol. 63. p. 126, seem to favour much the theory of vegetation here advanced. Too many difficulties, however, attend all the speculations hitherto advanced on this obscure subject.

121. *Centuria Insectorum.* Resp. J. Johansson. 1763.

Insects were scarcely noticed before the time of Conrad Gesner, whose comprehensive mind extended over the whole field of nature. He, together with Mouffet and Aldrovandus, may be said to have laid the foundations of entomological science. To these succeeded another set of writers, who were employed principally in investigating the œconomy and *metamorphoses* of insects: such were Gœdart, Lister, Swammerdam, and Reaumur; we may add also Madame Merian, who took a voyage to Surinam, with the sole view of gratifying a taste for this branch of natural history.

Nevertheless, after all the researches of these ingenious persons, and the labours of our eminent countryman Ray, a defect of system rendered this the most difficult to study of any branch of zoology; and it will readily be granted, that the true æra

æra of this science commenced with Linnæus, who very early turned his attention to it, and by whose method the history of these minuter animals has been wonderfully extended.

The present catalogue contains the description of 100 rare *species*, few of which had been described before; they were sent to Linnæus from Carolina, Pennsylvania, Surinam, and Java.

122. *Lignum Quassiæ.* Resp. C. M. Blom. 1763.

Quassia amara, or the Bitter Ash (as it is called in the West Indies), is a tree of the class *Decandria*. Its root was first brought into use at Surinam, by a negro called *Quassi*, who revealed its virtues. The medicine was known, but the species and its true history were undefined until at length a branch of the tree, with the flower and fruit, was sent to Linnæus from Surinam. The root appears to be the most pure and intense of all bitters. At Surinam it has a high character for curing intermitting, exacerbating, and malignant fevers, so endemial in that country; and even (as the author asserts) in cases wherein the Peruvian bark has failed. It may be given in any form; but the most frequent is that of an aqueous infusion, in the proportion of 1 drachm to 1 pint.

The history of this medicine is accompanied by figures of the leaf and parts of fructification. Three cases of its good effects (from trials made in Sweden) are inserted, and those are not confined to fevers only.

There is a confirmation of its virtues in febrile cases, given by Farley, of Antigua, in the *Philosophical Transactions*. Vol. 58. p. 81; it is said to have succeeded when the Peruvian bark would not remain in the stomach.

123. *Raphania.* Resp. G. Rothman. 1763.

The disease here described is defined, in the *Genera Morborum*,

to be " a spastic contraction of the limbs or joints, attended with convulsions and excruciating periodic pains." The author gives a full account of the *Raphania*, from the two principal Swedish writers on the subject. He had seen it himself; and observes, that it had frequently been epidemical in that country. Some physicians had thought it a new disease; he has traced it, however, in the writings of a numerous set of authors, from the year 1596 to 1727, whence it appears to have been common in other parts of Europe. This dreadful malady sometimes held the patient for three or four weeks; and those who perished generally sunk under either a diarrhœa or convulsions. Valerian, castor, camphor, and other antispasmodics of the like kind, appear to have been the most beneficial remedies.

The *hypotheses* of the various authors relative to the cause of *Raphania* are brought together in one view. Some of these suppose it to be owing to a certain constitution of the air; others to vitiated grain, darnel, or *Secale cornutum*; but all of them were rejected as unsatisfactory by Dr. E. Rosen, one of the last and most intelligent writers on the subject. Our author says, that in Sweden it always commences in the autumn; that it is frequent only among the lower orders of people, and consequent to eating bread made with new corn. Hence he sought for its origin in impure admixtures with the grain, and at length was led to attribute it to the seeds of *Raphanus Raphanistrum*; hence the name given to the disease. The dissertation closes with a figure and botanical description of the plant.

The hand of a master is no where more visible than in the scientific manner of drawing up the history of this disease; and it may be proposed as a model in its kind.

124. *Genera Morborum.* Resp. J. Schröder. 1759.

Of this arrangement of diseases, as it stands in Linnæus's own publication, a detailed account has been given before. (See p. 140.)

Vol. 7.

Holm. 1769. pp. 506. tabb. 7.
(Lugd. Bat.)
Erlang. (*Schreber*) 1789. pp. et tabb. totidem.

125. *Motus polychrestus.* Resp. C. Lado. 1763.

There are few who do not require rather to be reminded than convinced of the many benefits arising from proper exercise. Its signal uses, both as a preservative and a restorative of health, are in this dissertation concisely, but very strikingly, delineated.

After some general physiological observations on the effects of exercise, the writer describes its efficacy as a *preservative*; in strengthening the body; procuring the most genial warmth; helping digestion; increasing perspiration; promoting all the excretions in due time and proportion; procuring the most refreshing sleep; and, in valetudinarian habits particularly, subduing that fruitful source of disease, acidity in the first passages. He then enumerates those diseases in which exercise is to be considered in a medicinal view: as, *hypochondriasis*, habitual debility, languid appetite, obstructed *viscera*, consumptions, asthma, &c.

In speaking of the *hemicrania*, he remarks that Linnæus himself had been subject to violent paroxysms of that kind, which usually held him 24 hours, with intervals of rarely less than a week; and that these paroxysms were excited by very slight

causes, even such as the drinking of only a spoonful of wine. After having tried ineffectually various remedies, the Professor attributed the restoration of his health to the use of daily morning exercise, preceded by a large draught of cold water.

A case is also related of a person, who, from his infancy to his 24th year, had never been free from *ascarides*, but got entirely rid of them by taking a journey on horseback, as far as Torneå in Lapland.

126. *Hortus culinaris.* Resp. J. C. TENGBORG. 1764.

This dissertation exhibits an account of all those vegetables, which are, or as the author thinks might be, advantageously cultivated in the fields and gardens of Sweden; it describes also, in a succinct way, the manner of propagating the several kinds of grain, hops, tobacco, saffron, kitchen, or boiling herbs, sallads, fruit-trees, &c.; their proper soils, and methods of guarding them from the severity of the climate.

127. *Hirudo Medicinalis.* Resp. D. WESER. 1765.

There are 14 *species* of Leeches described in the last edition of the *Systema Naturæ.* That which is used for medicinal purposes is distinguished by the name of *Hirudo* (*medicinalis*) *depressa, nigricans, supra lineis flavis sex, intermediis nigro-arcuatis; subtus cinerea nigro-maculata.* The anatomical structure and natural history of this worm; the opinions of the ancients respecting it; the proper time of procuring it; the method of preserving and applying it—are all discussed. After this, the author points out the several diseases in which the mode of blood-letting by means of leeches has been preferred to others. He previously quotes, however, a case from Zacutus Lusitanus, in which the leech, during its application, made its way into the *rectum*; and takes occasion to recommend, in any similar occurrence, the immediate injection of salt water, which he thinks would

be equally efficacious in the stomach, if the animal should be swallowed, a circumstance that has sometimes been attended with fatal consequences.

128. *Opobalsamum declaratum.* Resp. W. LE MOINE. 1764.

Among several articles of the *Materia Medica*, of the production of which physicians had a very imperfect knowledge, none excited more curiosity than this drug, called also *Balm of Gilead*, and *Balsam of Mecca*, from the place of its growth: a drug, the virtues of which were highly extolled throughout the East, from the most ancient times. Nearly 20 authors are here mentioned, who have written professedly on this article; but few had seen the shrub that produced it. Prosper Alpinus says, he saw the plant growing in a cultivated state, in gardens, near Cairo. It is now doubtful, however, whether he saw the true species, though of the same genus. We owe the full discovery of the shrub to Forskåhl, who saw it growing plentifully in Arabia Felix, particularly about Medina, and transmitted a branch to Linnæus, in 1763. It is now known to be of the same genus with the plant which, in America, yields the Gum Elemi, belonging to the order *Monogynia* of the class *Octandria*. Its name is *Amyris Gileadensis*. A complete history of the shrub, and the virtues of the balsam are exhibited. Concerning the latter, we need only observe, that modern physicians have found substitutes in other natural balsams, and therefore do not entertain so high an opinion, as the ancients did, of the wonderful restorative powers of this medicine. The present age has made us acquainted with the plants that afford the Elemi, Animæ, and Copaiba; but we yet wait for the discovery of those which produce Ammoniacum, Caranna, Myrrh, Bdellium, and Sagapenum.

The dissertation is terminated by a description of the plant honoured by Linnæus with the name of *Forskåhlea*, of which genus

genus the 13th edition of the *Systema* contains two species, besides the one here alluded to, which is *F. tenacissima.*

129. *Diæta Ætatum.* Resp. D. J. Öhrquist. 1764.

A concise account of the changes which the human body passes through, in the several stages from birth to extreme old age, inculcating the necessity of observing all those rules respecting diet and regimen that are best adapted to give vigour to the constitution, and permanence of health during these vicissitudes. It points out also, under each period, the disorders incident thereto, and the most efficacious means to escape the influence of them.

130. *Morbi Artificum.* Resp. N. Skragge. 1764.

It is well known that artificers in various trades are almost necessarily subject to dangerous and sometimes lingering diseases, which frequently shorten the period of their lives. Miners, hewers of free-stone, workers of metals, painters, and various others are notorious instances of this truth. But, as our author observes, they are not the only sufferers in this way, inasmuch as too close an application to any business or profession will ever be attended with insalutary effects. In this general account of the diseases of tradesmen, the respondent professes to have made all possible use of Ramazzini's work on the subject; but he has extended that author's catalogue, and availed himself of subsequent observations from various writers, interspersing several remarks of his own.

131. *Lepra.* Resp. J. Uddman. 1763.

The disorder here described has long been endemial in Norway and several parts of Sweden, particularly on the eastern coast of the Gulph of Bothnia, and in Finland; also in the islands of Åland and Gothland. So long since as the year 1631, a pest-house was erected in the parish of Croneby, for the reception

ception of the sick of that neighbourhood. Our author defines the *Lepra*, from Linnæus's *Genera Morborum*, as "a disorder showing itself in pustules, throwing off dry scabs, or scurf; attended with moveable discoloured nodes in the flesh, and *rhagades* or dry fissures on the skin." Whether the disorder of which he undertakes to give the history be the same with the *Lepra Arabum*, or *Alexandrina*, the *Javanensis*, and the *Americana* (of all which he has given the characters), is not absolutely determined; he is inclined to think it various in its appearance. Being a native of Bothnia, he had frequent opportunities of observing it, and describes it as assuming the following appearances in that country.

It showed itself in tubercles, or nodes, in the fleshy parts; in the forehead, cheeks, arms, and thighs. These nodes were indolent, moveable with the finger, and of a livid hue. There were tubercles also in the mouth, *fauces*, and about the root of the tongue, of the same, or sometimes of a brownish yellow, cast; ulcers in the nostrils; tumours, or thickenings of the edges of the outer ears; thick lips; feet and hands enlarged and inflamed; in some, ulcers, or rather fissures, on the skin, creeping, broad, and deep, with callous edges, bleeding from slight pressure or handling, but destitute of pain, as were all the nodes and tubercles, so far as the author observed; yet, he says, they were inclined to itch round their bases.

We cannot follow our author through his inquiries into all the *hypotheses* relative to the cause of this disorder, ingenious as they are; it must suffice therefore to observe, that he favours the theory of *exanthematic animalcula*; and, from the frequency of this disorder on the sea-coast, where the inhabitants live much on fish, and particularly herrings, which abound with the Sea Hair-worm (*Gordius marinus*), he adduces a train of arguments

to

to show that it probably originates from these worms. We have mentioned before*, that a similar opinion was entertained by Martin (another of the Linnean pupils), who travelled in Norway.

In the cure, our author descants on the *viper-broth* of the ancients, and remarks, that the famed viper of the East is a different serpent from ours. He next treats of the inefficacy of mercurials as vermifuges, and quotes Scopoli as observing that no people are more troubled with worms than those who work in the quicksilver mines of Carinthia. At length, against this obstinate and formidable malady, Dr. Uddman informs us that Russell's method of cure, which consists in giving large quantities of sea-water, assisted by *enemata* of that fluid, to which were joined frictions with warm and acrid oils, had been attended with more success than any thing else.

132. *Fundamenta Ornithologica.* Resp. A. P. Bäckman. 1765.

To all lovers of Ornithology this must have been an acceptable morsel, as containing the rudiments of the science according to the Linnean method, and a full explanation of the terms therein employed. It is divided into 4 parts. In the first, the author gives a brief history of ornithologists, amongst whom he places Belon and Gesner, as the first writers worthy of attention, descending to Aldrovandus, Marcgrave, Willoughby, and Ray, before any thing like system was introduced. To these succeed Rudbeck, Albinus, Catesby, and Edwards, the last of whom, from his unwearied diligence, and the opportunities afforded by his situation, far excelled his predecessors. Brisson, Klein, Brünnich, and Barrere, are added. Later times have to boast of Latham, Shaw, Daudin, Schreber, &c.

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* See p. 103.

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In the 2nd part, the anatomical structure and external form of this order of animals are described: first, the form in general; then the particular parts. Under each, the terms used in describing them, as also in forming the generic and specific characters, are fully explained. This part is illustrated by a plate, which has been copied into several succeeding works on the subject.

The 3d treats of the history of birds; their habitations, migrations, incubation, and the whole of their natural œconomy; to which is subjoined the method of constructing scientific descriptions and generic characters.

The 4th exhibits a general view of the uses of birds in the police of nature; in diet; and to man. And here we cannot but note *Parra Chavaria* (the Faithful Jacana, of Latham), which is trained by the Indians, in the neighbourhood of Carthagena, to defend their flocks of poultry, that stray in the woods, against the numerous birds of prey, no one of which will dare to encounter this bird. It is never known to desert the flock, and returns in the evening to roost.—Our author touches on the prognostics of birds in presaging weather, so well understood by seamen;—and lastly, as beautiful and pleasurable objects to man.

The ornithological terms and descriptions, employed by the Linnean school, are now methodically explained in other places besides this academical dissertation. We refer the reader more particularly to Forster's *Enchiridion*, before noticed in our observations on the *Termini Botanici*.

133. *Fundamenta Entomologiæ*. Resp. A. J. Bladh. 1767.

The knowledge of Insects may be said to be the last branch of natural history that raised its head. Notwithstanding this, it has of late attained a high degree of perfection, which cannot but be attributed, in a great degree, to the excellent arrangement of

Linnæus, under whose auspices it has extended itself beyond all other parts of zoology.

The plan of this paper is exactly that of the foregoing, and will amply satisfy those who wish to enter on the study of insects. In his first chapter, the author gives a chronological list of 32 writers on the subject, beginning with Mouffet (who published in 1634), and ending with Schæffer, in 1767.

The substance of this dissertation is contained in the *Enchiridion* of Forster; and also in an English publication by Curtis, entitled *Instructions for collecting and preserving Insects* (London. 1771. 8vo.)

134. *Fundamenta Agrostographiæ.* Resp. H. Gahn. 1767.

Dr. Gahn professes to have undertaken this dissertation chiefly with a view to aid the good designs of those societies which, to the honour of their founders, have been established, in several parts of Europe for the advancement of agriculture,—a branch of rural œconomy with which the subject of the dissertation is intimately connected.

That large natural class of plants called *Grasses*, comprehend also the *Cerealia*, or Grain, and (including all that are hitherto known) do not amount to fewer than 850 species. Such a number of plants, so nearly alike in their habit as these, must require numerous subdivisions and nice distinctions, in order that the species may be discriminated. To effect this is the intention of the present dissertation; in which, after some curious preliminary observations relative to the stations and uses assigned by nature to particular kinds, and a list of all the common grasses (then known), classed acccording to their native situations, the author presents us with an historical account of the principal writers who have treated separately on this tribe, exhibiting

exhibiting under each a concise view of their respective systems of classification. These are C Bauhin, Rudbeck, Ray, and, above all, Scheuchzer, who described all the species at that time discovered, with incredible labour. Several other writers, who have illustrated this branch of botany, may be added, particularly Morison and Haller.

Then follows a description of the natural character and habit of a grass; intended to convey a full explanation of the terms, and referring to two explanatory plates, on which is engraved a flower of each genus.

Various have been the methods invented to class Grasses. Our author here gives them a new disposition, entirely independent of the sexual system, and established on the *figure* and *number* of the valves composing the glume, or *calyx*, and those of the flower, classed under two general heads, as they grow either in *spikes* or *panicles*.

In all *natural* classes, the distinctions depend on minute differences, which require very delicate discriminations. The author therefore proceeds to point out these, in several instances; he also adds the exceptions that arise under different *genera*, an imperfection attendant on all systems. He concludes with a full explanation of the plates, which are well adapted to convey to the student a true idea of this tribe. Schreber's tables are not adapted to common use in *England*, where, however, we have several works written professedly on the native grasses; as those of Stillingfleet (in his *Miscellaneous Tracts*), Curtis (*Practical Observations on British Grasses*), and others.

135. *Varietas Ciborum*. Resp. A. F. Wedenberg. 1767.

The immense variety of food, which custom, necessity, and luxury have introduced, is here displayed; the simplicity of some nations, whether arising from penury or from climate, and

the *Apician* luxury of others, together with the various effects of the culinary art, are also briefly pointed out; and then follows a division of aliments into classes, thus,

1. *Watery.*	6 *Bitter.*
2. *Dry.*	7. *Viscous.*
3. *Fat.*	8. *Salt.*
4. *Styptic.*	9. *Sweet.*
5. *Acid.*	10. *Acrid.*

Under each are subjoined summary observations, relating to the effects of a regimen in which any one of these classes forms a prevailing part, and to the diseases which it has a tendency to produce. The author then speaks of the great power of custom over the habit. He concludes with inculcating the *Ne quid nimis*, a maxim of much greater importance than any of those nice distinctions relative to the *wholesome* and *unwholesome*, which so often perplex the minds, and disturb the comforts, of many well meaning people.

136. *Fervidorum et Gelidorum Usus.* Resp. C. RIBE. 1765.

This writer fixes the heat of the human body between 35 and 37 of Celsius's thermometer, and pronounces all foods and drinks of the temperature of 40 to be hot. He considers the constant and daily use of hot aliments as an abuse that calls for the strictest animadversion, showing, by their effects on the solids of the human body, their tendency to produce a variety of chronic diseases, which he here specifies. Man is the only animal accustomed to hot foods, and is almost alone affected with carious teeth. Hence our author takes occasion to condemn, in a forcible manner, the custom of drinking hot tea, coffee, &c., and to dissuade his countrymen from the practice of eating bread, boiled rice, puddings, and other like foods in a hot state,—a practice, to which the Swedes (from the severity of the

the climate perhaps) are more addicted than many other nations. He does not conclude this part, however, without pointing out those cases in which tepid, and even fervid, liquors are both allowable and beneficial: such are some kinds of fever, several spasmodic diseases, and those resulting from rigidity of fibres.

In the second part, the author reprobates the use of *iced* creams, jellies, &c., but particularly of a sort of food, unknown amongst us, though frequent in Sweden, namely *congealed oysters*. The pernicious qualities of these he endeavours to prove by several cases. He is not less decisive in condemning a kind of iced malt liquor drunk in Sweden during the summer months. The dissertation concludes with a recital of the advantages of simply *cool* liquors.

137. *Potus Theæ.* Resp. B. C. TILLÆUS. 1765.

At the time of its publication, this dissertation had perhaps the merit of being the most complete history of the Tea shrub; owing to the lucky incident of its arriving safe in a vegetating state, in Sweden, through the skill and care of Captain Ekeberg, who is said to have been the first person that succeeded in the several attempts to introduce it into Europe. Linnæus had suggested the putting of the seeds into earth just as the ship left China; and the success confirmed the propriety of his method.

Tea is now known to be the leaves of a plant of the class *Polyandria*, and the flower of which is succeeded by a tricoccous capsule. This writer describes the shrub at large; includes all the synonyms; and mentions those authors who have given figures of it: among these, Kæmpfer's is considered by him as the only exact one. It was long believed that there was but one species of *Thea*; but the *Green Tea* is now said to be the produce of another, which differs from the *Bohea*, in having 9 petals in the flower, whereas the latter has only 6. It is not known to grow

spontaneously elsewhere than in China and Japan; in the former kingdom it is cultivated in all the provinces, from Canton to Pekin.

Our author mentions the mode of preparing the leaves, of which a diffuse and exact account is given by Kæmpfer, who, having resided two years in Japan, was enabled to obtain the most complete information. The origin of the use of Tea in those countries is too remote to be ascertained, and commerce has now extended it to almost every part of the civilized world. In no country has the demand for this article increased to a greater extent than in Great Britain. At the beginning of the last century, the annual public sales of tea by the East-India Company did not much exceed 50,000 pounds (weight), but now their annual sales amount to more than 20,000,000, answering to the rate of at least 1 pound *per annum* to every individual throughout the British dominions. The high price of tea, at its first introduction, induced many physicians to think of a substitute; and it is well known that Simon Pauli thought *Myrica Gale* to be the shrub itself. We are informed by Sir George Staunton, in his account of the British Embassy to China, that our common Sage (*Salvia officinalis*) was brought into use in that country by the Dutch, but the Chinese soon became tired of it. Several *succedanea* are mentioned by our author: such as the leaves of the Sloe Tree (*Prunus spinosa*), of the Wild Marjoram (*Origanum vulgare*), the Arctic Bramble (*Rubus Arcticus*), the Common Speedwell (*Veronica officinalis*), Wild Germander (*Veronica Chamædrys*), Mexican Sweet Blite (*Chenopodium Ambrosioides*), Sweet-weed, or Goat-weed (*Capraria biflora*), &c. . . . .

To this part of our author's dissertation may be added the well known sophistication of tea practised in some of the southern parts of England, by smugglers, who have reduced to a regular process

process the management of the leaves of the Ash and the Elder, in particular; these, when prepared, are called *Smouch*, and mixed (as it is said) in the proportion of one third with the ordinary teas. To what an extent the trade in this sophisticated tea was once carried, to the detriment of the trees, may be imagined, when the reader is informed that an Act of Parliament was found necessary, to prohibit it under very severe penalties. But to return to our author:

He next considers the sensible qualities of Tea; its fragrant odour, and styptic taste; and, from its place in the system, botanically considered, with respect to the *natural orders*, he thinks it highly probable, that what Kæmpfer relates of its narcotic quality, when green, is consonant to truth. From similar instances he proves that this quality may be easily thrown off, by that degree of heat which the sudden exsiccation of the leaves requires.

In discussing the virtues of Tea, he observes, that the Chinese recommend the exhibition of it in all lethargic diseases, but condemn it in ophthalmies, colics, and palsies. From Kalm he tells us, that the Indians of North America knew not the inconveniences of carious teeth, and debilitated stomachs, nor the women difficult labours until tea was introduced among them. The physicians of Hamburg, Amsterdam, &c. attribute the frequency of *leucorrhea* among the women of condition, to their indulgence in this liquor. Further, Boerhaave ascribed to the sipping of hot tea a scirrhosity of the glands of the *œsophagus*, which he had met with on dissection, and which he thought was a disease unknown to the ancients.

The author subjoins some observations on the important and extensive influence of Tea in a mercantile point of view, and as an article of luxury; also, the history of the introduction of the living

living plant into Europe, as above mentioned; and hints respecting the possibility of naturalizing it in other countries. A plate of the Bohea shrub is annexed.

138. *Potus Chocolàtæ.* Resp. A. HOFFMAN. 1765.

We are now come to the last, and what our author thinks the most salubrious, of the three elegant articles of luxury which the moderns have acquired by the discovery of the East and West Indies. Chocolate is the produce of an American intertropical tree, flowering twice in a year, and singular in producing its fruit from the body or trunk, and not from the branches. It belongs to the order *Pentandria* of the class *Polyadelphia*, and is distinguished by the name of *Theobroma Cacao*.

We are presented with three methods of preparing Chocolate, as practised by the Indians, Spaniards, and others. The Indians to one pound of the roasted nuts put half a pound of sugar dissolved in rose-water, and half a pound of flour of maize, or Indian corn. The Spaniards to six pounds of the nut add three and a half of sugar, seven pods of vanilla, one pound and a half of maize, half a pound of cinnamon, six cloves, one drachm of *capsicum*, and as much of the roucou-nut as is requisite to improve the colour, together with ambergris or musk, to impart an agreeable scent. In the other, and more common way, to seventeen pounds of nuts are added ten pounds of sugar, twenty-eight pods of vanilla, one drachm of ambergris, and six ounces of cinnamon.

The pods of vanilla are filled with minute seeds, from a parasitical climbing plant, described under the name of *Epidendrum Vanilla*, belonging to the class *Gynandria*, and, like the *Orchides*, reputed aphrodisiacal. The spices are added to give pungency, and mitigate the oleaginous quality of the nut.

Having detailed the history of the nut, the author proceeds to consider

consider it as an aliment, and in a medicinal view. He recommends it in diseases of emaciation, and in *hypochondriasis*, adducing in confirmation of his advice the case of Cardinal Richelieu, who, he says, was restored to health by living on chocolate. He is not less copious on its good effects in the treatment of hæmorrhoids, and relates a singular case communicated to him by Linnæus himself.

139. *Spiritus Frumenti.* Resp. P. Bergius. 1764.

The Arabians have the credit of inventing the alembic and the distillation of ardent spirits, which they are said to have used principally, if not entirely, as solvents only, to extract the virtues of simples, and exhibit them in the form of tinctures. Our author remarks, from Raymond Lilly, that spirits were unknown in Europe at the commencement of the 14th century; but the distillation of *spirit from fermented grain* is attributed to Arnold de Villa Nova, about the year 1315. Soon after this time, brandy was made in Sicily (first from spoiled grapes), and very early became an article of extensive commerce at Venice.

Having enumerated the properties of this inflammable fluid from Boerhaave's chemistry, and described a method of preparing the grain for distillation as practised in Sweden, (which is different from ours), the writer discusses the effects of spirits taken medicinally, as analeptic, diuretic, cordial, and stomachic; under all which heads he lays down apposite rules for their exhibition. He prefers them to wine, as preservatives against contagious dysenterics, and asserts, that this was clearly proved among the seamen of the Swedish fleet, in the expedition of 1742. Diluted with coffee, brandy is recommended as a diuretic, in calculous cases. The imprudent use of it is afterwards considered; and, from its power of coagulating the fluids and solids (as our

author supposes) are deduced its effects in producing inflammatory fevers, consumptions, dropsy, jaundice, hæmorrhoids, tremors, &c. The dissertation concludes with some well digested observations on the general abuse of fermented liquors, and their influence both in a moral and political view, on society at large.

140. *Menthæ Usus.* Resp. C. G. LAURIN. 1767.

Mint is one of the vegetables which have retained their character from the earliest ages, having been used by the Greeks and Romans. England, above all other countries, abounds with plants of this genus, of which there are not fewer than 12 species mentioned in the *Flora Britannica.*

The Swedish physicians at this time employed *M. sylvestris, Pulegium,* and *crispa*; but of these the London *Pharmacopœia* retains only one, *viz. Pulegium*, or Penny-royal, the other species which hold a place in it being *M. sativa*, and *Piperita.*

In the *natural orders* of botany, Mint is among the *Verticillatæ*, which are in general supposed to have resolvent and nervine qualities; and from these powers arise the good effects usually ascribed to this plant, in a variety of disorders specified in the present paper.

141. *Purgantia Indigena.* Resp. P. STRANDMAN. 1766.

After some preliminary observations relative to the opinions of the *Empiric* and *Dogmatic* Sects in medicine, as connected with his subject, and some encomiums on the institution of hospitals, as affording a field of observation and experiment to the physician, which private practice does not allow, the writer presents us with a catalogue of such vegetables as are endued with a purgative quality, confining his enumeration, however, to such as are either indigenous, or easily cultivated in the gardens of Sweden.

Sweden. Under each, he mentions the place of growth, the part used, its preparation, dose, effects, and the disorders in which it has principally been employed as a purgative.

142. *Siren Lacertina.* Resp. A. OSTERDAM. 1766.

A complete history, with a figure, of the Lizard Siren, or Mud-Inguana, of Carolina, a biped eel-shaped animal, having both gills and lungs, the former placed entirely on the outside of the body. It is sometimes seen 2 feet long, and sends forth a cry somewhat like that of the young of the duck kind, but more acute and clear.—We have made some observations on its place in the *Systema*, in former pages of this work (195—200). There is an excellent description of an animal very nearly allied to *Siren Lacertina*, in the *Philosophical Transactions*, for 1801, p. 241—264; but the real nature of neither of these species is as yet fully ascertained.

143. *Metamorphosis Humana.* Resp. J. A. WADSTRÖM. 1767.

An ingenious and elaborate dissertation on the changes which the human system undergoes, in the several stages of life, from birth to extreme old age, divided into 12 periods. Under each of these, Man is considered with respect to all those alterations which succeed each other in the structure and discharge of the several functions of the body, or, in other words, *anatomically* and *physiologically*; also, in regard to the diseases of each stage, or *pathologically*; and he is, throughout, contemplated in regard to the powers of the mind, the affections, and the passions.

This detail is succeeded by tables, in which, under the same periods, are given the different temperatures of the body; the different degrees of muscular strength; the appetites; affections; passions; the exercise of the mental faculties, and their aptitude to works

of genius, science, and judgment; the powers of speech and oratory; and, lastly, a *scala ætatum*, containing all the tables brought together, and scientifically opposed to each other. This paper is closely connected with, and properly accompanies, the *Semium Salomonium* (No. 90), and the *Diæta Ætatum* (No. 129).

144. *Cura Generalis.* Resp. J. G. BERGMAN. 1766.

In a foregoing part of these memoirs, a short account has been given of Linnæus's Theory of Medicine, or his *Clavis Medicinæ*, in which was observed the distinction he has made between the cortical and medullary, or, in other words, the vascular and nervous systems of the human body. The present dissertation is a comment on the first part of the *Clavis*, relating to the diseases of the vascular system. Our respondent traces the immediate effects, both on the solids and fluids, of any excess or defect in the air, nourishment, motion and rest, sleep and watchfulness, excretions and retentions. The passions, as being more immediately connected with the medullary, or nervous system, do not belong to this scheme. Having discussed the ill consequences of these errors to the constitution, and remarked on the diseases originating from them, he turns to the consideration of the old canon, "that diseases are cured by their contraries;" and, agreeably to the theory of his master, that such as spring from these errors are principally the objects of dietetic medicine, and to be cured by *Sapids*, he shows the power of the several classes of *Aquosa*, *Sicca*, &c. in preventing and curing diseases, concluding his dissertation with the distinction between the rational and the empirical physician.

In mentioning the scurvy, and the effects of salted meat, our author relates a memorable instance of an arthritic patient, who, after having taken, in one summer, 1800 boles of Mrs. Stephens's medicine,

medicine, became afflicted with the highest degree of genuine scurvy, which he thinks might fairly be attributed to the quantity of alkaline salt contained in that preparation.

145. *Usus Muscorum.* Resp. A. H. BERLIN. 1766.

The uses of this tribe of plants in well cultivated countries, and in benign climates, can be but little known; in the northern regions they are conspicuous. The writer, after having mentioned those botanists who have particularly attended to the *Musci*, and given due praise to the matchless work of Dillenius on the subject, describes their particular advantages in the general œconomy of nature: for instance, the terrestrial Liverworts (*Lichenes*) lay the first foundation of soil on barren rocks, as the *Sphagnum*, and many other bog mosses do in marshy places. In human œconomy, nothing is more remarkable than the utility of the Rein-deer Moss (*Lichen rangiferinus*) in the regions of the arctic pole. Many of the Liverworts are ingredients in dying; and several have their places in the *materia medica*, among which may be particularly mentioned the Iceland Liverwort (*Lichen Islandicus*), the virtues of which, in consumptive complaints, were first fully made known by Scopoli (in his *Annus 2ndus Historico-Nat.* p. 107—118), and have since been highly extolled by many other physicians both in Germany and England.

The reader will find a paper on the uses of *Lichenes*, written by the author of this volume, in the *Philosophical Transactions* for 1758. (Vol. 1. p. 652—688.)

146. *Mundus Invisibilis.* Resp. J. C. Roos. 1767.

The subjects of this *thesis*, which are extremely curious, have been much agitated by philosophers skilled in optics. It turns principally on the discoveries of Baron Munkhausen, relative to the *smut* of wheat and barley, and to the dust of *Agarici*, *Lycoperda*, and other plants of the order of *Fungi*; which substances he

he asserted to be no other than the *ova* of animalcules; whence doubts had arisen, whether *Fungi* should be ranked with animals or vegetables. Linnæus adopted, though with great hesitation, the Baron's opinion, as appears from p. 1326 of the *Systema Naturæ*; but his sentiments on this subject, after the experiments made by Ellis, (who instituted a course professedly to determine this point, at Linnæus's own request) do not appear. The result of Ellis's inquiry proved the negative, as may be seen by his papers, published in the *Philosophical Transactions* (Vol. 59. p. 138—152), and in the *Gentleman's Magazine* (for 1773, p. 316). Much curious matter occurs in the present dissertation. An important fact is related from the Baron's book, who recommends seed wheat to be washed in a lye made of lime and sea-salt, by which practice, for twenty years, he had secured his crop from smut, though his neighbours sometimes lost a third part of theirs.

In the latter part of this paper, the author descants on exanthematic animalcules, and appears to favour the *hypothesis* concerning them, candidly confessing however the difficulties that occur, and concluding with a string of doubts, proposed by way of queries, relative to this abstruse point.

147. *Usus Historiæ Naturalis.* Resp. M. Aphonin. 1766.

This ingenious dissertation, written by a young Russian nobleman, a student at Upsala, is one of the most entertaining and best digested on the subject, in this collection, and cannot fail to carry conviction with it. It is divided into two parts. In the first, he points out the necessity of a knowledge of Natural History in general, as opening the way to improvements in all branches of agriculture and gardening. To illustrate its utility in rural œconomy, he mentions a memorable fact (from Linnæus's Travels in Skåne) of a number of goats which were perishing

rishing in an island that abounded with the Reed Bent-grass (*Agrostis arundinacea*), a plant on which horses feed with avidity, and thrive extremely. Thus also, on the other hand, goats will riot and fatten on the *Meadow-Sweet* (*Spiræa Ulmaria*), whilst horses, and horned cattle, especially when they are young, will not touch it.—The second part abounds with curious observations concerning the œconomy of domesticated animals; in treating of which, the author points out both the most nutritive and the most noxious plants, descending afterwards to domestic fowls and inferior parts of the animal creation, which are more particularly the objects of husbandry. A plate is added, on which is engraved, together with a rare species of Henbane, *Actæa Cimicifuga*, famous in Russia and Tartary, for expelling bugs and some other noxious insects.

148. *Necessitas Historiæ Naturalis Rossiæ.* Resp. A. DE KARAMYSCHEW. 1766.

This paper also was written by a Russian nobleman, and is intended to excite his countrymen to a diligent cultivation of the study of natural history, as a science eminently beneficial to a rising people. He endeavours to raise their emulation, by showing the progress it has made, and the useful influence he has had, in the eastern nations of Europe; exhibiting also the vast field which the Empire of Russia affords for its cultivation. He then gives some biographical anecdotes of those who have improved the natural history of that country, under the patronage and command of its sovereigns, since the time of Peter I. Such are Messerchmidius, Buxbaum, Gmelin (who resided in Siberia from 1733 to 1743), Krascheninnikow, Martin, Stéller, Amman, and others. A list is given, from the *Museum Petropolitanum*, of zoological subjects requiring further investigation, and, though natives of Russia and Siberia, imperfectly known. He endea-

vours to persuade his countrymen to cultivate a number of useful vegetables, by presenting them with a long catalogue of exotics, which have been, in some sort, naturalized at Åbo, in Finland, under the care of Professor Kalm, the traveller. His dissertation concludes with a list of Siberian plants, extracted from the manuscripts of Heinzellmann, Gerber, Lerche, and Schober, all of which were in the hands of Linnæus. A figure of a specious Siberian plant accompanies this paper: it is *Fumaria spectabilis*, of the *Species Plantarum*.

Russia has now to boast of a *Flora* no less splendid than scientific, commenced in 1784 by Professor Pallas; and there can be no doubt that the prosecution of the work will continue to be encouraged by imperial patronage.

149. *Rariora Norwegiæ*. Resp. H. TONNING. 1768.

The pen of a learned, ingenious, and skilful naturalist is visible in this dissertation. The writer first traces the origin of natural history among the Danes, whose monarchs have lately been its celebrated patrons. Among the principal modern authors of that country stands Gunner, late Bishop of Drontheim, who, to the highest merit in his sacred profession, also added an exquisite taste for natural history, and a consummate knowledge of that science, as his writings fully testify*. Neither is Ström forgotten, who published, in 1762, a natural history of Söndmör, in the diocese of Bergen†.—After this literary introduction, the principal intention of the writer is to exhibit lists of the more rare subjects of nature, especially such as are not common in Sweden. Agreeably to this design, we have a catalogue of the

* See *Flora Norvegica* (*Pars prior, Nidrosiæ* 1766. *Pars post. Hafniæ* 1772. *Fol. cum tabb. æn.* 12) and other works.

† *Physisk og œconomisk Beskrivelse over Fogderict Söndmör*, &c. 1762. Vol. 2. 4to.

peculiar

peculiar plants of Norway,—the Alpine, some other rare species, and particularly of *Fuci*, with which the Norwegian coast abounds; also, Bishop Gunner's list (from the *Norske Vidensk. Selsk. Skrift.* 12 Deel. p. 314—316.) of all the American fruits which are thrown on that coast every year, and which have occasioned much speculation, to account for their transmission so particularly to that part of Europe. The author asks a solution of this difficulty from the learned; for they are sometimes found in no inconsiderable quantity, and so recent as to germinate, when properly secured from the effects of the climate. These fruits are usually those of *Cassia Fistula*, *Anacardium occidentale*, or Cashew Nuts, *Cucurbita Lagenaria*, or the Bottle-Gourd, *Mimosa scandens*, called in the West Indies *Coccoons*, *Piscidia Erythrina* (called by Sloane Dog-wood Tree), and Cocoa nuts.

The author next pursues his catalogue through all the classes of animals, using only the Linnean trivial names, and referring to the *Fauna Suecica*, to Gunner, and to Ström. The last-mentioned writer thinks, that what deceived the fishermen, and by their means Bishop Pontoppidan, under the appearance of a serpent of the extraordinary length described in the *History of Norway*, was no other than a string of sturgeons, which, at the stated time of the year, follow each other in a line, in immense numbers, with only their backs above water; which circumstance might suggest the idea of the waving motion of a serpent.

The remaining part of this dissertation chiefly respects medicinal plants, and the diseases of the country. We have an account of some vegetable productions which form an article of commerce, being exported in considerable quantities; among these are reckoned *Rubus Chamæmorus*, or the Cloud-berry, and *Lichen Islandicus*, mentioned in the account of No. 145, *Usus*

Muscorum. Then follows a list of medicines easily obtained, or such as are in use among the country people; among them, the good effects of *Linnæa borealis*, in rheumatic disorders, are well known, and much celebrated. He relates, on the authority of the President himself, that two men, who had been confined to their beds for several months by ischiatic pains, were cured in three days by a strong decoction of that plant. Its operation appears to have been of the sedative kind, as the patients were thrown into a sleep, which lasted 16 or 20 hours. He confirms the opinion of the *Lepra* arising from the Hair Worm (*Gordius aquaticus*), as mentioned in No. 131 of this collection; and he makes some observations relative to the *Colica Lapponum*, described in Montin's dissertation, No. 27. At the end is a description of an African plant, called by Linnæus *Gunnera*, in honour of the Bishop of Drontheim.

150. *Iter in Chinam.* Resp. A. SPARRMAN. 1768.

This epitome of Sparrman's voyage to China consists of little more than an enumeration of those subjects of natural history which occurred to the journalist, both on land and sea; for, as he makes use of the trivial names, all descriptions are superseded, except that some of those imperfectly known are more amply elucidated in the notes.

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Erlang. (*Schreber*) 1785. pp. 332. tabb. 8.

151. *Coloniæ Plantarum.* Resp. J. FLYGARE. 1768.

This dissertation treats of what may be called the *emigrations* and *colonizations* of plants,—a subject extremely interesting to the curious botanist, and not hitherto sufficiently studied by

writers of local *Floræ*. After having adverted to the various means, by which seeds may be accidentally conveyed from one region to another, the writer gives a list of plants which he conceives to have been *naturalized* in Sweden in this way, and points out the countries from which they are supposed to have been originally transported. But his observations are not confined to the *Flora* of *Sweden*; for he gives the history of several plants inhabiting other countries, in which they were not formerly to be found. The Swedish list is arranged according to the several provinces.

152. *Medicus Sui Ipsius.* Resp. J. Gryssélius. 1768.

Here our author's design is to point out by what means any person, who sets a value on his life, may preserve a sound, or repair a broken, constitution. He follows the order of the *non naturals*, noticing under each the abuses to which they are respectively liable, and the diseases likely to be generated in consequence. The substance of this dissertation is not very different from that of No. 144. *Cura generalis.*

153. *Morbi Nautarum Indiæ.* Resp. C. H. Wänman. 1768.

In this paper we are presented with 8 *theses*, relative to diseases which the writer had opportunities of observing, on a voyage to the East Indies.

154. *Flora Åkerövensis.* Resp. C. J. Luut. 1769.

A list of 478 *species* of plants found in the isle of Åkerö, situated in the lake Yngari, in the Swedish province of Sudermannia.

155. *Erica.* Resp. J. A. Dahlgren. 1770.

An elucidation of the genus *Erica*, with a plate, showing all the variations in its *calyx* and *corolla*. A list of the *species*, amounting to 58 in number, is subjoined, and also a particular description of the Common Heath (*Erica vulgaris*), which is as

abundant in Sweden as in England, growing in the most steril places, where *Pinus sylvestris* and *Lichen Islandicus* are alone to be found besides.

This beautiful genus of plants is now become one of the most numerous in the vegetable kingdom. Since Dr. Dahlgren's dissertation was published, several writers have taken up the same subject; and indeed no one of a similar nature requires more attention from critical botanists. The Chevalier Thunberg had opportunities of investigating a great number of the *Ericæ* in their native places of growth, and hence the dissertation published under his presidency at Upsala*, may be considered as one of the most correct and scientific descriptions of this tribe hitherto written. In our own country great pains have been taken to elucidate the several species, by Mr. Salisbury, who has enumerated in the *Linnean Transactions* (Vol. 6. p. 316—388), no fewer than 246, a number exceeding Thunberg's by 155. Mr. Salisbury's description includes a very useful *synopsis*, arranged according to the *affinities* of the species. *Engravings of Heaths*, very superbly executed (in folio), with botanical descriptions, in Latin and English, have lately been commenced by Mr. Andrews; and in Hanover, M. Wendland has carried on a similar publication, under the title of *Ericarum Icones et Descriptiones* (4to). These last-mentioned works, if completed, must ultimately remove most of the student's difficulties in investigating this numerous, but interesting, genus.

156. *Dulcamara.* Resp. G. HALLENBERG. 1771.

After some concise remarks on the imperfect state of physiology and pathology, and on the little attention that has been paid to botanical distinctions in the *Materia Medica*, this respon-

* *Resp.* J. B. Struve. *Dissert. Acad. Upsal. habitæ*, Vol. 2. p. 195—261.

dent

dent proceeds to recommend to the notice of physicians *Solanum Dulcamara*, a plant the medicinal properties of which were but little known, until it was employed by Linnæus in the naval hospital of Stockholm, in the year 1738. On this occasion, it was found very efficacious in the cure of scorbutic complaints; and our author recommends its exhibition also in rheumatic, and syphilitic pains, in the jaundice, uterine obstructions, and the itch. The mode in which this medicine is prepared among the Swedes, is to collect the stalks of the plant either at the beginning of spring, or towards the end of autumn, when being destitute of leaves, the woody part gives out most smell and taste. A handful (or from 2 to 4 drachms) of these stalks, dried and cut into small pieces, is infused in a pint of hot water for half an hour, and then slowly boiled about 8 minutes. Of this decoction, two tea-cups full are directed to be taken every morning and evening. It operates either as a sudorific, diuretic, or purgative, according to the circumstances of the patient, and is allowed to be taken in all those cases which are stated to be benefited by the use of sarsaparilla, sassafras, and other similar articles.

In England, the use of the *Dulcamara* seems now to be almost confined to cutaneous disorders; but it was very early brought into notice here, as having efficacy in other complaints. See Gataker's *Observations on the internal Use of the Solanum* (London 1757. 8vo). The editor of the present volume has employed it with most success in those affections of the skin which have a *leprous* character.

157. *Pandora et Flora Rybyensis.* Resp. D. H. Söderberg. 1771.

An enumeration of the insects and plants observed at Ryby (near

(near Stockholm), the residence of Archiater Bäck; with short observations on some of the more remarkable species.

158. *Fundamenta Testaceologiæ.* Resp. A. Murray. 1771.

This is a complete exposition of the Linnean principles of testaceological arrangement, accompanied by a very full explanation of terms, and two plates illustrative of all the different parts of shells to which they apply. The history of the science is concisely sketched, as a sort of preface to the dissertation; and due notice is taken of the general structure and physiology of testaceous animals. Upon the whole, this may be considered as one of the most useful of such papers in the *Amœnitates Academicæ* as relate to the elucidation of our author's general system.

The history of authors, in this branch, is given more at large in the *Transactions of the Linnean Society*, Vol. 7. p. 119—244.

159. *Respiratio Diætetica.* Resp. J. Ullholm. 1772.

We are here presented with some remarks on the different kinds of air that have been found by experience to be most salutary, or otherwise, to the human constitution. As far as the nature of the respiratory process, and of its effects on animals, was in Linnæus's time understood, it is here explained, together with the general anatomy of the lungs. Many curious observations occur on the change produced in the air that is inhaled, the writer maintaining that it parts with some principle, though what that principle is, he does not venture to explain.

There are many interesting facts relative to the different degrees of purity and salubrity of the atmosphere, in different parts of the globe.

160. *Fraga vesca.* Resp. S. A. Hedin. 1772.

Linnæus (as we have before remarked) derived great benefit, under

under the attacks of gout to which he was subject, from the use of strawberries*. The present paper states particularly, in addition to a botanical history of the genus *Fragaria*, the circumstances under which that fruit proved of such singular service to our author, and which induced him to recommend it to arthritic patients in general. It appears, that about the end of June, 1750, he experienced so violent an attack as to be unable to take either nourishment or repose for a fortnight; and he could not even keep his feet quiet two minutes at a time. The complaint passed from one foot to the other, into his hands, and also to other joints, affecting them with redness, swelling, and all the usual appearances. A plate of strawberries having been accidentally brought to him, whilst he was in this afflicted state, they proved to be the only article that was at all grateful to his palate, and after eating them he slept some hours, the only time during the whole fourteen days of his illness. When he awoke, he ate more strawberries; and having again good sleep from midnight until the next morning, he found himself well enough to leave his bed, and in fact experienced no pain whatever, though the disease had of course debilitated him extremely. The following year, the gout came on again, about the same period; and our invalid being then at Drottningholm, his pale sickly countenance struck the Queen, who very condescendingly inquired what he would take? Linnæus replied "*Strawberries*," which were not to be procured. Her Majesty, however, ordered a plate of this fruit to be brought; and having eaten that quantity, he found himself well enough the next morning to go to court. The gout returned the *third* year (but in a much slighter degree than before), and was again cured by strawberries; and

* See p. 102.

on

on its access the *fourth* and *fifth* times, at the same season in the succeeding years, the same occurrences took place, and they were remedied by the same means. The attacks gradually became less violent, and, by persevering in the use of this fruit every summer, they did not recur at all for nearly twenty years; indeed we do not find that Linnæus experienced a return of gout even *after* that interval.—It is no wonder therefore that the writer of this dissertation pronounces strawberries preferable to any medicine hitherto discovered, for the cure of arthritic disorders.

Two cases are mentioned, showing that, wholesome as strawberries are universally considered, they will notwithstanding act as a *poison* on some persons. They occasioned *syncope*, succeeded by a petechial efflorescence on the skin.

161. *Observationes in Materiam Medicam.* Resp. J. LINDWALL. 1771.

Here, as well as in a preceding dissertation (*Vires Plantarum*, No. 14), it is maintained that the medicinal qualities of plants are in many instances deducible from their botanical affinities. But the general mass of observations contained in this paper amount only to a sort of recapitulation of the uses of particular species, as originally given by Linnæus, with their appropriate generic and specific designations, and a catalogue of others whose names and virtues had not hitherto been fully ascertained.

162. *Planta Cimicifuga.* Resp. J. HORNBORG. 1774.

Some account of this plant had before been given, in the description of certain new species brought from Siberia by Gmelin (*Amœn. Acad.* Vol. 2. n. 29.); and it had been figured by Dr. Aphonin (Vol. 7. n. 147.) Here, however, its history is given more at large, with a more accurate engraving, and we find

find some remarks, worthy of attention, relative to its sensible qualities.

This plant, it appears, is universally rejected by horses, cows, sheep, goats, and hogs. Being of the natural order of *Multisiliquæ*, and nearly allied to the *genera* of *Aconitum*, *Delphinium*, *Actæa*, and others (possessing well known poisonous properties) in the Linnean class *Polyandria*, it is supposed to have very active virtues, which though not as yet ascertained, may prove of great importance in medicine. Our author recommends its being tried in cases of diseased glands, scrophula, and hæmorrhoids. The people of Siberia (as has been before observed) employ an infusion of this herb for the cure of dropsy, which it is said to remove by acting as an emetic and cathartic. Dr. Hornborg assures us of its power to produce vomiting, having made the experiment on himself. We do not find that its odour, notwithstanding the name of *Cimicifuga fœtida* implies a peculiar offensiveness to bugs, is more noxious to those insects than to others.

There is scarcely any genus that varies more than *Cimicifuga*, in the number both of its *stamina* and *pistilla*, and of the parts of the *calyx* and *corolla*. Linnæus originally considered it as an *Actæa*.

163. *Esca Avium domesticarum.* Resp. P. Holmberger. 1774.

This interesting paper is formed somewhat on the plan of that entitled *Pan Suecus**. It records a series of experiments on 89 species of *Insecta* and *Vermes*, and on the seeds of 111 different kinds of plants, to ascertain how many of them are devoured or rejected by our common poultry.—The general result of these experiments, which the writer informs us were (many of them)

* No. 25 of this collection (p. 371).

repeated at least twenty times, and under the fairest circumstances, is as follows: *viz.* *Geese* ate 63 species, and rejected 7; *Ducks*, out of 63, swallowed 54; *Common Fowls* 119 out of 145; and *Turkeys* 98 out of 115.

What an admirable provision is established, says our author, against that immense multiplication of insects and seeds which we daily witness! According to Reaumur, a single *Phalæna* may yearly produce 200,000 individuals. In the capsule of a Poppy, we may count 32,000 seeds, and in that of the Tobacco at least 40,320! If then there were no permanent means carried on by nature for checking so prodigious an increase, the life of man would be almost entirely employed in endeavouring to rid the world of its myriads of noxious creatures.

164. *Marum*. Resp. J. A. DAHLGREN. 1774.

A dissertation on the history, botanical characters, medicinal properties, preparations, &c. of *Teucrium Marum*, which the writer considers as a powerful *nervine*, and as deserving more attention than physicians have hitherto paid to it. In England this plant is but little used, except as a sternutatory; as such, it holds a place in the *Pulvis Asari compositus* of the London Pharmacopœia, for it yields a quick, pungent smell, which provokes sneezing. The form of exhibiting it recommended by our author, is that of powder, of which from half a drachm to a drachm may be given (in his opinion) with advantage, in most diseases of debility. Cases of palsy and asthma are subjoined, in which the use of this medicine seems to have been attended with beneficial effects. Linnæus himself speaks of it, in his *Clavis Medicinæ*, as being preferable to Thyme, Lavender, and most others of his *Spirantia*.

165. *Viola Ipecacuanha*. Resp. D. WICKMAN. 1774.

The well known root, called in the shops Ipecacuanha, has

been supposed by different authors to belong to very different *genera*. Ray judged it to be a species of *Paris*; Plukenet and Morison as belonging to the Honey-suckle tribe; Barrere (who is followed by the present writer) as a *Viola*; and Vandelli describes it under the name of *Pombalia Ipecacuanha*. Now, however, no doubt seems to be entertained respecting its real botanical characters, which have been very fully described, and elucidated by figures, in the *Transactions of the Linnean Society* (Vol. 6. p. 137). Professor Brotero, of Coimbra, the author of the description alluded to, denominates the plant *Callicocca Ipecacuanha*, and shows its proper place in the *Systema* to be in the order *Monogynia*, of the class *Pentandria*.

Dr. Wickman enumerates the medicinal propertics of Ipecacuanha, which are become too well known to need being remarked upon in this place.

166. *Plantæ Surinamenses*. Resp. J. Alm. 1775.

We have here concise notices of the collection of Surinam plants, presented to Linnæus by the King of Sweden. This collection was found to contain 13 new *genera*, and between 40 and 50 new *species*, most of which were afterwards fully described in the *Supplementum Plantarum*, of Linnæus, the son.

At the end of this dissertation are given the botanical characters and a figure of that fine species, named by our author *Gustavia Augusta*, in honour of his royal patron.

Some of the rarer plants of Surinam have been described and figured in an academical dissertation, published at Copenhagen, under the Presidency of Rottböll*. See *Actà Literaria Univ. Hafniensis*. 1778. p. 267—304.

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* *Descriptiones rariorum plantarum, necnon materiæ medicæ atque œconomicæ e terra Surinamensi.* (Havniæ. 1776. 4to. cum tabb. æn. 5).

167. *Ledum palustre.* Resp. J. P. Westring. 1775.

A botanical, œconomical, and medical history of a plant, very common in the moister woods of Sweden, and denominated by Linnæus *Ledum palustre.* That it possesses very active properties, the writer infers from its strong, subaromatic smell, which it has been known to retain, even when dried, during the lapse of 150 years. Its taste is bitter, and somewhat astringent, like turpentine. The Germans put it into their beer, for the sake of increasing the inebriating qualities of that liquor.

It is certain that this plant is peculiarly offensive to almost all the smaller insects, especially bugs, lice, &c., and no animal is known to feed on it, except the goat. Instances are here adduced of its good effects in some cutaneous diseases, and in hooping cough; but its use is more particularly recommended for the cure of *Lepra*, in which complaint recourse is had to the *Ledum* by the people of Kamtschatka (as it is said) with singular success. We have the authority of Dr. Odhelius (in the *Stockholm Transactions*, of the year 1774) for believing this medicine to excel most others, in the treatment of the disorder last mentioned; and, upon the supposition that *exanthemata* owe their origin to insects,—a supposition which our author evidently favours, physicians may do well to give the herb a more extensive trial. The form of exhibiting it recommended by Odhelius is to infuse 4 ounces of the *Ledum* in a quart of hot water, and to give to the patient from half a pint to a quart internally, in the course of the day.

168. *Opium.* Resp. G. E. Georgii. 1775.

A very full and excellent account of the various forms of opiates, with some concise remarks on the properties of opium in general, and on the comparative advantages of its several preparations. The writer declines entering minutely into all the

medicinal effects of opium, lest he should seem "*Iliada post Homerum scribere*," the work of Tralles (published in the year 1757) having anticipated, in his opinion, every thing that can be said on the subject. Since the time of Dr. Georgii's graduation, however, much important matter has been added to the history of this inestimable drug, by various medical and chemical writers; but it would be too tedious to enumerate them in this place.

169. *Bigæ Insectorum.* Resp. A. Dahl. 1775.

Thunberg, notwithstanding his skill in entomology, and his diligent search after insects, during the three years he travelled in the vicinity of the Cape, was unable to find scarcely a single new genus; and Forster, whose sphere of investigation was still larger, observed a few new *species* only, in the whole space he visited towards the antarctic pole. Hence the author of this dissertation considered himself peculiarly fortunate in having it in his power to add to zoology the two *genera* here described, viz. *Diopsis* and *Paussus*, individuals of both which are figured in a plate annexed to his paper. They were first noticed in the collection of our countryman Dr. Fothergill, who had received an immense number of insects from North America and Guinea, and sent many of these to Linnæus.

170. *Planta Aphyteia.* Resp. E. Acharius. 1776.

This singular plant, discovered by Thunberg, in Africa, was considered by that botanist as a *Fungus*, and described as such in the *Stockholm Transactions* of the year 1775, under the name of *Hydnora Africana.* The penetration of Linnæus, however, proved the discoverer's idea to be incorrect. It was found to belong to the class *Monadelphia*, and having 3 *stamina*, was placed in the order of *Triandria.*

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This plant is one of the most simple hitherto known. It is destitute of stalk, leaves, and root, and puts forth only a single flower, in which even petals are scarcely discoverable. In fact, no one would conceive it to be what is commonly called a *perfect* plant, without examining it in the closest manner; and, from being parasitical also (on the roots of *Euphorbiæ*), it would most probably be referred by most botanists to the order of *Fungi*. There are figures of it subjoined to the dissertation.

171. *Hypericum.* Resp. C. N. HELLENIUS. 1776.

A botanical history of the genus *Hypericum*, of which 35 species are described, and 3 of these, viz. *H. Guineense*, *Mexicanum*, and *Ægyptiacum*, figured.—More particular notice is taken of *H. perforatum*, a plant extremely common both in Sweden and England; and it is supposed by our author to possess active medicinal virtues, especially as an *antihectic*, for which purpose it was successfully employed by Linnæus himself, in a case here related. The professor's prescription was as follows, *viz.*

℞. Summit. Hyperici Mp. 1.
Coque in Vini Hispan. lb. iv. ad tertiæ partis reman. Cola.
D. s. Decoct. *Nwaraf ett halft quarter intages morgon och afton.*

The respondent discusses at some length its efficacy in other complaints, quoting several authors in support of his opinions, and interspersing remarks also on the uses of the plant in rural œconomy and in dying.

In Dr. Willdenow's edition of the *Species Plantarum*, the number of *Hyperica* are no fewer than 88.

Vol. 9.

Erlang. (*Schreber*) 1785. 8vo. pp. 331.

As Linnæus was not known to have communicated to the respective respondents any part of the dissertations contained in this volume, it scarcely comes within our province to notice them in the present work. As many of the subjects are interesting, however, it may be desirable to the reader, at least to be made acquainted with their titles, and the authors' names.

172. *Hæmorrhagiæ uteri sub statu graviditatis.* Resp. E. Elf. 1749.

173. *Methodus investigandi vires medicamentorum chemica.* Resp. L. Hiortzborg. 1754.

174. *Consectaria Electro-Medica.* Resp. P. Zetzell. 1754.

175. *Pulsus intermittens.* Resp. A. Wåhlin. 1756.

176. *Cortex Peruvianus.* Resp. J. C. P. Petersen. 1758.

177. *Ambrosiaca.* Resp. J. Hideen. 1759.

178. *Hæmoptysis.* Resp. J. M. Gråberg. 1767.

179. *Venæ Resorbentes.* Resp. C. P. Thunberg. 1767.

180. *Febrium Intermittentium curatio varia.* Resp. P. C. Tilläus. 1771.

181. *Hæmorrhagiæ ex Plethora.* Resp. J. M. ab Heidenstam. 1772.

182. *Suturæ Vulnerum.* Resp. C. E. Boecler. 1772.

183. *Medicamenta purgantia.* Resp. J. Rotheram. 1775.

184. *Perspiratio insensibilis.* Resp. N. Avellan. 1775.

185. *Canones Medici.* Resp. S. A. Hedin. 1775.

186. *Scorbutus.* Resp. E. D. Salomon. 1775.

Vol. 10.

Vol. 10.

Erlang. (*Schreber*) 1790. 8vo. pp. 131. tabb. æn. 6.

This volume contains

1. *Hypothesis nova de febrium intermittentium causa,*

Linnæus's own inaugural dissertation, of which we have already taken notice in p. 42.

2. *Programma quo memoriam anniversariam suscepti à S. R. Cels. Adolpho Friderico, Regn. Suec. t. t. Principe hæreditario electo,* &c. *Cancellariatus Academiæ Ups. pie recolendam indixit* CAROLUS LINNÆUS, *Acad. t. t. Rector.* 1750.

3. *Programma quo Diem Natalem S. R. C. Adolphi Friderici Regn. Suec. t. t. Princ. hær. el. &c. pie celebrandum indixit* C. L. &c. 1750.

4. *Programma quo ad solemnem inaugurationem medicam celebrandam invitavit constitutus Promotor,* C. L. 1758.

5. *Programma quo ad audiendam orationem aditialem M. Joannis Lastbohm, Œcon. priv. Prof. Regii et Borgstroemiani invitavit* C. L. &c. 1759.

6. *Programma quo Successorem suum in Rectoratu civibus indixit* C. L. &c. 1759.

These five *programmata*, published by Linnæus in his official capacity, as *Rector Magnificus* of the University, except the 2nd, 3d, and 5th, were originally written in Swedish, but are here given in Latin. Being of a complimentary nature, and relating to local and temporary circumstances, they scarcely either require or admit of analysis.

7. *Oratio coram Rege et Regina Suecia, cum Academiam Upsaliensem inviserunt.* 1759.

This oration is noticed in p. 117.

8. *Deliciæ Naturæ. Oratio recitata in Templo Cathedrali Upsaliensi*

liensi anno 1772 *d.* 14. *Decembris, quum Fasces Academicos deponeret, à C. v. L. &c.*

This was the last oration delivered by Linnæus, and it afforded his audience so much gratification, that, the morning after his resignation of the Rectorship, a deputation was sent to thank him in the name of the University, and to request that he would print it in the Swedish language. Linnæus acceded to this request, and the oration was printed at Stockholm in 1773, under the title of *Deliciæ Naturæ. Tal, hållit uti Upsala Dom-Kyra, År* 1772. *den* 14 *Decemb. vid Rectoratets nedläggande af Carl v. Linne,* &c. (pp. 32. 8vo.) The original (he informs us) was written but a few days before it was recited, and under the pressure of illness, as well as of haste. Hence, in the Swedish translation probably, the oration was not only corrected, but also amplified. The form in which it is given in the *Amœnitates Academicæ*, by Schreber, is not the *original* Latin, that editor not having been able to obtain a sight of it.

The title of this composition sufficiently points out the nature of the subject, which is treated in that methodical, yet interesting and energetic style, so peculiar to our author. He gives a figurative description of the three kingdoms of nature, with allusions to the various analogies that may be imagined to subsist between them, and notices of the more wonderful species and properties existing in each; and he concludes with some compliments to the students, on the marked propriety of their conduct in the University, during the whole time he exercised the Rectorship.

On the whole, this oration is admirably calculated both to instruct and fascinate the youthful mind, and to explain the peculiar delight attending the pursuit of natural history, a pursuit, which the instance of the venerable Linnæus himself, on this very oc-

casion, proved to be not like the ordinary and perishable enjoyments of life, but on the contrary, one of the richest and most permanent sources of pleasure which the kindness of Providence has opened to the human mind.

9. C. L. &c. *Disquisitio de Sexu Plantarum*, &c. &c. *cum Annotationibus D. Jacobi Eduardi Smith et P. M. Aug. Broussonet.*

We have already given some account of this performance. (p. 115.)

10. *Appendix.*

Pan Suecus emendatus et auctus, Auctore P. G. TENGMALM.

This paper was originally written in the Swedish language, and inserted in a periodical work, published by the Royal Patriotic Society of Sweden, under the title of *Hushällnings-Journal*. The title sufficiently implies what kind of matter it embraces, which is very interesting and useful, as being supplementary to the observations and experiments contained in No. 25 of this collection. In the original publication, its author includes the substance of No. 163, which, however, in the present work is omitted.

The remainder of this volume consists of the botanical dissertations published under the Presidency of Linnæus the son, the titles of which are as follow: *viz.*

1. *Nova Graminum Genera.* Resp. D. E. NÆZEN. 1779.
2. *Lavandula.* Resp. J. D. LUNDMARCK. 1780.
3. *Methodus Muscorum illustrata.* Resp. O. SWARTZ. 1781.

There is added a Description of *Erica Sparrmanni*, by Professor Linnæus (junior) himself. It was originally given in the *Stockholm Transactions*, Vol. 39.

IN

IN the month of May, 1774, whilst lecturing in the botanic garden, Linnæus suffered an attack of apoplexy, the debilitating effects of which obliged him to relinquish the more active part of his professorial duties, and to close his literary labours.

In 1776, a second apoplectic seizure supervening, rendered him paralytic on the right side, and impaired his mental powers so much, that he became a very distressing spectacle. But the more immediate cause of his dissolution was an ulceration of the urinary bladder*, under which he languished to the 10th of January, 1778, when he expired, in the 71st year of his age.

To the lovers of science, it will not appear strange, nor will it be unpleasant to hear, that uncommon respect was shown to the memory of this great man, by every description of his fellow citizens. We are told that, on his death, a general mourning took place at Upsala, and that his funeral procession was attended by the whole University, as well professors as students, the pall being supported by sixteen Doctors in Medicine, all of whom had been his pupils. A subscription was also commenced for erecting a monument† to him, in a small chapel, near his grave,

* It appears from a passage in the Diary, that the first time Linnæus experienced any symptoms indicating disease in the bladder (which disease he supposed to be *Calculus*), was in the autumn of 1753, just after he had completed the *Species Plantarum*. He attributed the complaint to his long sitting and application to that laborious work.

† This was not completed, however, until the year 1798. It is described as being executed with great simplicity and beauty, in the red porphyry of Elfsdahl. On the upper part is a bronze medallion of Linnæus, modelled by Setgell, with a wreath of laurel above; and below, the following inscription, in characters of gilt brass (of admirable elegance and workmanship) placed in high relief, on the polished surface of the porphyry, *viz.*

grave, in the cathedral church of Upsala.—His sovereign ordered a medal to be struck, of which one side exhibits Linnæus's bust (with the *Linnæa* in his bosom), and his name,

CAROLUS LINNÆUS, ARCH. REG. EQU. AURATUS;

and the other Cybele, in a dejected attitude, holding in her left hand a key, and surrounded with animals and growing plants; over these is the following legend,

DEAM LUCTUS ANGIT AMISSI;—

and underneath,

Post obitum Upsaliæ, die X *Jan.* MDCCLXXVIII. *Rege jubente**.

The same generous monarch not only honoured the Royal Academy of Sciences with his presence, when Linnæus's com-

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CAROLO A LINNÉ
Botanicorum
Principi.

Amici et Discipuli
1798.

The expense of this monument, plain and simple as it is, amounted to 2000 rix dollars (upwards of £460 sterling), of which sum 400 (£93) were expended upon the letters alone. It is rather to be lamented that the words *Botanicorum Principi* were inserted, as they are but a weak and superfluous allusion to the botanical talents of Linnæus, and seem to limit his superiority to *one* of the kingdoms of nature, though it was undeniably so conspicuous in all the three. In other respects, the style of the inscription strikingly corresponds with the simplicity and taste of the monument itself. —The reader will find an engraving of it, fronting the title-page of the *Allgemeine Literatur-Zeitung*. (Jan. Feb. Mär. 1805.)

* This medal was executed by Liungerrger, one of the first artists Sweden has produced. The workmanship is excellent, and the likeness said to be strikingly correct. See the plate fronting p. 112 of this volume (fig. 2).

memoration

memoration* was held at Stockholm, but, as a still higher tribute of respect, lamented the public loss, in his speech from the throne to the Assembly of the States. "The University of Upsala" (said his Majesty) "has also attracted my attention. Always shall I remember with pleasure that the Chancellorship of that University was intrusted to me before I ascended the throne. I have also instituted there a new professorship. *But I have lost, alas! a man whose fame was as great all over the world as the honour was bright which his country derived from him as a citizen. Long will Upsala remember the celebrity which it acquired by the name of* LINNÆUS†."

Nor has the memory of this illustrious naturalist been honoured only in his own country. Dr. Hope, Professor of Botany at Edinburgh (who died in 1786), not only pronounced an *eulogium* of Linnæus before his students, at the opening of his lectures in the spring of 1778, but also laid the foundation-stone of a monument, which consists of a vase supported on a pedestal, and bears the following inscription, *viz.*

LINNÆO POSUIT J. HOPE.

The Marechal Duc de Noailles also showed a similar mark of respect for Linnæus, by erecting in his noble garden at St. Germain en Laye, a cenotaph, supporting the bust of that great man, with the plants *Linnæa* and *Ayenia* springing up by its side.

Very shortly after Linnæus's death, his *Eloge* was read before the Royal Academy of Sciences at Paris, by the celebrated M. de Condorcet, and published in the *Memoires* of that body for the same year (1778. p. 66—84). It appears that our author,

* The speech was made by Linnæus's intimate friend Archiater Bäck, and published under the title of *Aminnelse-tal öfver Carl von Linné*, &c. (Stockholm 1779. 8vo. pp. 84.)

† See Stoever's Life of Linnæus, translated by Trapp, p. 246.

willing

willing to prevent inaccuracy even in the account of his own life, sent several particulars to the Academy himself, as soon as he perceived his dissolution to be approaching.—Another *Eloge* was delivered before the Royal Medical Society of Paris, by M. Vicq d'Azyr*; and also a third (in that kingdom) before the Royal Academy of Sciences at Montpellier, where this duty devolved to M. de Ratte†.—Neither did the Royal Society of Upsala omit paying to the memory of their departed member a similar compliment. A history of his life was printed among their Transactions‡.

The universal respect which still attaches to the memory of Linnæus, and the high reputation of his writings throughout the world, render any encomium in this work altogether unnecessary; with all lovers of natural science his *name* alone is eulogy, and will doubtless be very long inseparable from the idea of extraordinary merit. Yet we may be permitted, perhaps, to offer the following brief estimate of his talents, which, it is hoped, will be thought just, and naturally deducible from an impartial view of his writings.

Nature had been eminently liberal in the endowments of his mind. He was possessed of a lively imagination, corrected by a strong judgment, and guided by the laws of strict system; the most retentive memory; the most unremitting industry; and the greatest perseverance in all his pursuits, as is evident from that continued vigour with which he prosecuted his design (adopted so early in life) of totally reforming and arranging anew the history of all the productions of nature.

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* See *Hist. et Mem. de la Soc. Roy. de Med.* 1777—1778. p. 17—44.

† *Assemblée Publique de la Soc. Roy. des Sc. à Montpellier.* 1779. p. 100—116.

‡ *Nova Act. Soc. Sc. Upsal.* Vol. 5. p. 335—344.

To

To this science he gave a degree of perfection unknown before; and he had the uncommon felicity of living to see his own method, notwithstanding every discouragement its author at first laboured under, and the opposition it long met with, preferred to all others. Yet no writer more cautiously avoided that common error, of endeavouring to build his own fame on the ruin of another man's. He every where acknowledged the several merits of each author's system, and no one appears to have been more sensible of the partial defects of his own. Those anomalies which had principally been the subjects of criticism, he well knew every *artificial* arrangement must abound with; and, having laid it down as a firm maxim, that every system must finally rest on its intrinsic merit, he willingly committed *his* to the judgment of posterity. Perhaps there is no circumstance of Linnæus's life that shows him in a more dignified light, than his conduct towards his opponents. Disavowing controversy, and justly considering it an unimportant and fruitless sacrifice of time, he never replied to any cavils or invectives, numerous and malignant as they at one time were*.

Linnæus had a happy command of language, and no man ever applied it to his purposes more successfully, or gave it more precision and conciseness. It has been objected, as derogatory to his learning in no small degree, that he has introduced a number of terms not warranted by classical authority. But, granting this, it ought to be recollected that Linnæus, in the investigation of nature, discovered a multitude of relations entirely unknown to the ancients; if therefore the objection have any

* "*Acerrima convicia,*" (says he, in the preface to his *Species Plantarum*) "*insinuationes, cavillationes, buccinationes, præstantiorum longe virorum omni ævo laboris præmia tranquillo animo sustinui, nec ipsarum autoribus invideo si inde ipsis apud vulgus gloria major evadat.*"

force, let it be shown that the terms which he has introduced to express these relations are not fairly and analogically deduced from the Greek and Latin languages, and that they are not well adapted to that technical phraseology, which is so usefully substituted for the tedious circumlocutory descriptions of former writers*. If the same industry and genius, which were manifested by our author in his scientific pursuits, had been devoted to the acquisition of the learned languages, and the graces of composition, the most fastidious philologists would most probably have sought for grounds of censure in his works without success; but, on the other hand, it is not to be conceived that he could, in that case, have attained any considerable degree of the more exalted kind of fame, which now survives him in the annals of natural knowledge.

The ardor of Linnæus's attachment to the study of nature, from his earliest years, and his uncommon application to the philosophy of that pursuit, gave him a most comprehensive view both of its pleasures and of its usefulness, at the same time that it opened to him a wide field, before but little cultivated, especially in his own country. Hence he was early led to regret, that natural history had not, by public institution, been more cultivated in universities, in many of which logical disputations

* The following remarks made on this subject by Rousseau, in the introduction to his *Lettres Elementaires sur la Botanique*, may be appropriately introduced here in support of the above observations. "*On s'est plaint*" (says that ingenious and elegant writer) "*que les mots de cette langue n'étoient pas tous dans Ciceron; mais cette plaint auroit un sens raisonnable, si Ciceron eût fait un traité complet de Botanique. Ces mots cependant sont tous Grecs ou Latins, expressifs, courts, sonores, et forment même des constructions elegantes par leur extreme precision. C'est dans la pratique journaliere de l'art qu'on sent l'avantage de cette nouvelle langue, aussi commode et necessaire aux Botanistes qu'est celle de l'Algebre aux Geometres.*"

and

and metaphysical theorizing had too long prevailed, to the exclusion of more useful science. Availing himself therefore of the advantages which he derived from a large share of eloquence, and an animated style, he never failed to display in a fascinating and convincing manner the relation this study has to the public good; to incite the great to countenance and protect it; and to encourage and allure youth into its paths, by opening its various sources of entertainment to their view. His extensive knowledge of the science, as connected with almost all the œconomical arts, did not allow him to confine his arguments and incitements to those only who were designed for the practice of medicine. He laboured to inspire the great and opulent with a taste for it, and wished particularly that such persons as were devoted to an *ecclesiastical* life should acquire some portion of it, not only as the means of sweetening retirement and a rural situation (obliged as many are to reside constantly in the country), but as what would almost inevitably lead, in a variety of instances, to discoveries which such situations alone can give rise to, and which the learned in great cities can have no opportunities of making; not to add, that the mutual communication and enlargement of this kind of knowledge, among people of equal rank, must prove one of the strongest bonds of union and friendship, and contribute, in a much higher degree than the usual perishing amusements of the age, to the substantial pleasures and advantages of society.

The habit of scrutinizing and contemplating the wonderful energies and œconomy of nature had the effect of inspiring Linnæus with an unsophisticated sort of pious feeling, which breaks forth in various parts of his writings with peculiar and most engaging eloquence. Not one of his greater works either begins or ends without a passage from some sublime author, declaratory

of his adoration of the Supreme Being, and of his admiration of the stupendous and endlessly diversified contrivances in the creation. The warmth of his heart also produced, on various occasions, the most glowing expressions of gratitude to Providence, for the taste with which he had been gifted, and which had afforded him so much interest and delight in existence*.

Linnæus lived to enjoy the fruits of his labours in an uncommon degree. Under his culture, natural history raised itself, in Sweden, to a state of perfection unknown elsewhere, and it was thence disseminated throughout Europe. His pupils dispersed themselves over the globe, and with their master's doctrines and celebrity extended science and their own. In those very places where his writings had been treated with most contempt, and where his system had at first met with most disparagement, he had the satisfaction of obtaining the completest triumph†, and of perceiving even national partialities

* His Diary is interspersed with many passages from scripture, expressive of these feelings.—Over the door of the hall in which he gave his lectures were painted the words "*Innocue vivito; Numen adest!*"

† At Rome, measures were taken in the year 1758 for the absolute suppression of his writings, the pontifical officers inserting them in the list of forbidden books; but no sooner had the enlightened Ganganelli (Clement XIVth) ascended the papal throne, than he made all the retribution in his power for this absurd insult to the cause of science and to the reputation of the Swedish naturalist, by a proceeding thus adverted to in a letter from the latter to the Chevalier Thunberg, *viz.* "*Pafven, som för 15 ar sedan befalt, at, om mina böcker dit komma, skulle de brannas, har af satt Professor Botanices, som ei förstod min method, och tillsatt en annor, som skall läsa publice min method och theorie.*" (Stoever's *Collectio Epist. C. L.* p. 92.) "The Pope," (says he) "who 15 years ago ordered my books to be burnt as soon as they were found in his dominions, has now removed the Professor of Botany from his chair, because he was ignorant of my system, and has appointed another in his room, who will give public lectures according to my own method and theory."

give

give way to the influence of his individual genius and philosophical eminence*. He lived to see several sovereigns of Europe establish public institutions expressly for the cultivation of natural history,—institutions which have excited a general curiosity for the science, and a sense of its importance that cannot fail to further its progress, and raise it to that rank which it is entitled to hold among the pursuits of mankind†.

Those who feel a reverence for the memory and merits of Linnæus will naturally experience some gratification in forming an idea of his person, habits, and manners.—In stature he is described as having been rather short than tall, yet his limbs were muscular, and he was of moderate corpulency. His head was large, with a very strong gibbosity of the *occiput* or back part of it. His features were agreeable, and his countenance animated, the eyes, which were brown, being remarkably bright, ardent, and piercing; he speaks of having enjoyed excellent sight. His hair, in infancy, was as white as snow, but it became brown

* In France, the prejudices in favour of her own illustrious naturalists, Tournefort, the Jussieus, Buffon, &c. were of course extremely strong; yet the example of Gouan (both in his Icthyological and Botanical works), and of Gerard (in his *Flora Gallo-Provincialis*), paved the way for the introduction of the Linnean system in that country as early as the year 1762.—In Portugal a royal ordinance, issued in the year 1771 for the reform of the University of Coimbra, expressly required the Professor of Botany to adopt the principles of the Linnean school; which began to be generally adopted also in Spain about the same period.—The progress of the new system in the other principal countries of Europe may be collected from the remarks dispersed in the preceding pages.

† If the reader should be desirous of perusing a more detailed review of Linnæus's pre-eminent merits, and of the effects of his extraordinary labours, he might be gratified by consulting the several *Eloges* above referred to, also that of M. de. St. Amans (in Ns. 3, 4, 5, and 6, of the *Journal des Sciences utiles*), and a dissertation *de Vita et Meritis Linnæi*, in Gilibert's *Fund. Bot.* (Tom. 3. p. v—xxxii.)

when he grew up, and, in advanced age, hoary; at which last period many large wrinkles appeared on his forehead. His teeth were weak, and very early became carious, in consequence of an hereditary tooth-ache, to which he was subject in his youth.—In temper he was quick and irritable, yet easily appeased; he possessed a natural cheerfulness*, and even in old age exhibited nothing like torpor or inactivity. He did not appear to take much interest in the fine arts, nor was his ear sensible to music. Wholly devoid of pride, and valuing his honours and titles only as they marked his scientific greatness, he was always affable and courteous, and his style of living had nothing in it either of ostentation or luxury; on the contrary, his establishment was so moderate, that he sometimes incurred the imputation of avarice. From the extreme difficulties, of a pecuniary nature, which he experienced in the early part of life, it is not improbable that he acquired habits of very strict œconomy and frugality; but that the love of riches was not a passion with him, is proved by his acknowledged liberality respecting fees from his pupils, and by the scanty profits† with which he was content from his publications. Linnæus's *foible* (if it be necessary to record it) was his love of fame, which must be confessed to have been boundless, and it is no where more apparent than in the pages of his own diary. Yet who will charge this great man

* Mr. Dryander informs me, that Linnæus would often make up dances for his family and pupils, at Hammarby, where, with unaffected and amiable gaiety of mind, he used to look on, and even to derive amusement from these little domestic festivities. (*Editor.*)

† He is understood to have never received more than a ducat a sheet for any of his writings, which, from the time of his being settled in Sweden, were purchased by Laurence Salvius, of Stockholm, who for many years made large exportations of books to the Dutch fairs.

with

with having arrogated to himself merit that did not justly belong to him, or with having disputed the pretensions of others, because they interfered with his own?—He ever showed the most sacred regard for truth. All his actions and employments were regulated by the strictest order. He never deferred any thing; and whatever fact came to his knowledge he made a point of noting immediately, in its proper place, never trusting to his memory.

So exact was he in the distribution of his time, that he always proportioned the duration of his repose to the season of the year, sleeping in the winter from 9 in the evening to 6 in the morning, and in the summer only from 10 to 3; but he never extended his application of mind beyond the moment at which he felt fatigue, nor did he disdain social enjoyments when his faculties were unfitted for exertion. In fact, it was by such management alone, that he could have accomplished those extraordinary labours which it has been our business to record; and notwithstanding his regulated relaxation from intellectual exertion, so intensely had his memory been exercised, that its powers very obviously declined many years before his death, and had at last almost wholly deserted him.

The *hand-writing* of Linnæus indicated, in some degree, the neatness and method to which he habituated himself; though diminutive, it was remarkable for its legibility and elegance. A specimen of it, accurately engraved, from one of his letters to Archbishop Mennander, fronts the next page; and the following is a translation, *viz.*

(*Superscription*)

(*Superscription*)

"The Right Reverend Bishop and Pro-Chancellor,
Dr. Menander,
Stockholm.

Right Reverend Doctor and Bishop.

My dear Friend,

The busy life we have led for some time has prevented me from writing to you. I commissioned my son to send you the seeds; if those before sent for Professor Kalm did not come up, it is his fault and not mine, as every seed was collected in this garden the year before, and we sowed some of the same, not one of which has failed.

Nothing could give me greater pleasure than to see you, my dear friend, for a few days, at my little country seat, ¾ of a [*Swedish*] mile from Upsala, and to converse with you once more before we leave this world. Pray keep your word, and come if you can.

I remain,
My dear friend's most humble servant,
CARL v. LINNE'."

Upsala,
8th of May, 1766.

Those who would wish to form a more accurate idea of Linnæus's person than can be given by mere description, may be acquainted, that the plate fronting the title page of this volume is very accurately engraved from a portrait* (in the pos-

* This portrait was painted for Archbishop von Troil, by whom it was sent as a present to Sir Joseph Banks.

session of Sir Joseph Banks, K.B.), which was copied by Professor Pasch from a picture belonging to the Royal Academy of Sciences at Stockholm, and which is esteemed the most striking and characteristic likeness that has been executed. The original picture was painted by a famous Swedish artist named Roslin; and two engravings have been made from it in France, one by Clement Bervic, and the other (in colours) by Alix. There is an engraving also from Sir Joseph Banks's picture, by Messrs. Facius, who, however, cannot be said to have been very successful. The portrait in Miller's *Illustration of the Sexual System* was copied from an elegant medallion, done after the wax model for the bust on the royal medal (already described), by a Swede named Inlander, which medallion has been imitated also by Messrs. Wedgwood, in England. In the meeting-room of the Linnean Society of London is an excellent cast from a large *basso-relievo*, in white marble (executed by Archeveque), which now adorns the royal palace of Drotningholm; it was presented to the society by Sir Joseph Banks.—There is a picture of Linnæus (painted by an artist named Krafft) belonging to the College of Physicians at Stockholm, which has been engraved by Acrel.—A scholar of our author, named Hållman, painted some portraits of him; one of these is in the possession of Aylmer Bourke Lambert, Esq., V.P.L.S., and is esteemed a good likeness.—But, all the portraits we have hitherto mentioned represent our author as he appeared when far advanced in years. There is a picture (said to be now in the possession of Dr. Thornton) which was taken when he was a very young man, and which originally belonged to Mr. Clifford. This is a whole length, representing him in his Lapland dress; and it has been engraved in *mezzotinto* by an artist in London. The painter's name

name was Hoffman.—There are extant three half-length portraits of Linnæus in his own works. The first (prefixed to the Leipsic edition of the *Systema Naturæ*, printed in 1748) and the second (in the first edition of the *Philosophia Botanica*) represent our author, apparently, in about the fortieth year of his age; he is figured in an undress, resting upon a volume of the *Systema*, and holding in his hand a sprig of the *Linnæa**; in this manner also he is represented in a plate engraved by Tanfé, and published at Leyden. In the third plate (prefixed to the *Species Plantarum* of 1762)† he appears in a full dress, with the *insignia* of the Order of the Polar Star, and Aurivillius's inscription underneath:

" *Hic ille est cui regna volens natura reclusit,*
" *Quamque ulli dederat plura videnda dedit.*"

It has been observed before, that Linnæus married the daughter of Dr. Moræus (provincial physician of Dalarne), soon after he settled at Stockholm, in 1739. This lady is still living‡. He left a son§ and four daughters. The younger Linnæus (as has been already mentioned) became Demonstrator in the Upsala garden when he was only 18 years of age, and in 1763 was appointed joint Professor of Botany with his father, at whose death he was elected also to the chair of medicine.

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* This plate has been copied (but in a very inferior manner) in Willdenow's edition of the *Philosophia Botanica*, printed at Berlin in 1790.

† Many portraits of Linnæus, besides those above enumerated, are mentioned by different writers; but it was not intended to notice, in the present work, such as have not occurred to the editor's own inspection.

‡ At Hammarby, which, with Söfja, was bequeathed to her by Linnæus.

§ But this was not the only son whom Linnæus ever had. There was another, named John, who was born in 1754, but died an infant.

Besides

Besides the *Supplementum Plantarum* (noticed in p. 301.), he wrote a considerable botanical work, descriptive of rarer plants growing in the Upsala garden*, and he was author also of some dissertations, which we have noticed in p. 488. He died of an attack of apoplexy, at Upsala, Nov. 1, 1783, in the 42nd year of his age†, and his corpse was deposited in the cathedral church of that city, close to the remains of his father, immediately over which is a very plain entablature of stone, with the following inscription, *viz.*

OSSA
CAROLI · A · LINNNÆ'
EQV. AVR ·

Marito Optimo
Filio Unico
CAROLO · A · LINNÆ'
Patris Successori
ET
SIBI
SARA · ELISABETA · MORÆA ·

Elizabeth Christina, the eldest daughter of Linnæus, married Captain Carl Fred Bergencrantz, of the Swedish Upland Regi-

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* *Decas prima Plantarum rariorum Horti Upsaliensis, sistens descriptiones et figuras plantarum minus cognitarum.* Stockholm 1762. Fol. pp. 20. tabb. 10. *Decas secunda.* 1763. pp. 20. tabb. 10.

Plantarum rariorum Horti Upsaliensis Fasciculus 1mus. Lips. 1767. Fol. pp. 20. tabb. 10.

† An ample account of the younger Linnæus may be found in Von Schulzenheim's *Grifte-tal öfver Vällorne Herrn Herr* CARL VON LINNÉ, *M.D. &c.* (Upsal. 1784. 8vo.)—an oration read at the funeral, and pretty closely copied into Stoever's Life of the elder Linnæus (see the translation by Trapp, p. 289—307).

ment, but died before her brother. This lady obtained distinction in the scientific world, by a discovery which is described in the Transactions of the Stockholm Academy*.—The youngest daughter, Sophia†, is the wife of M. Dusc, Syndic (*Academiens Umbudsman*) of the University of Upsala, and, with her sisters Louisa and Sarah, is still living‡.

As the only surviving son of Linnæus died without issue, the male branch of the family is, of course, now extinct. But the *name* of this illustrious man can never die. It will be cherished in the memory of every lover of nature, and remain on the fair records of science, to the END OF TIME!

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* For the year 1762, p. 284—287, under the title of *Om Indianska Krassans blickande*, or *Remarks on a luminous appearance of the Indian Cresses*. This appearance, which had never been noticed before, is like the sparks that arise from a fulminating powder, and was first observed by this lady when she was walking in her father's garden at Hammarby. She mentions its being visible only in the dusk of evening, and ceasing when total darkness came on. Subjoined to her account are some observations by M. Wilckes, a celebrated electrician, who considered the phænomenon as being of an electrical nature.

† This daughter (Linnæus mentions in his Diary) was to all appearance dead when she was brought into the world, but her father revived her by expanding her lungs artificially.

‡ For these particulars respecting the surviving family of Linnæus, the editor is indebted to M. Casström, His Swedish Majesty's Secretary of Legation at the Court of Great Britain.

LIFE

LIFE

OF

CARL LINNÆUS,

PHYSICIAN TO THE KING,

PROFESSOR OF MEDICINE AND BOTANY AT UPSALA,

KNIGHT OF THE POLAR STAR.

"Quid properasse juvat; quid pauca dedisse quieti
"Tempora; quid nocti conseruisse diem,
"Si semel hic standum est?"

"Stat sua cuique dies; breve et irreparabile tempus
"Omnibus est vitæ; sed famam extendere factis,
"Hoc virtutis opus."

(*Virg. Æn.* x. 467—469.)

CARL LINNE.

(Potest è casa vir magnus exire.)

1707. MAY $\frac{13}{24}$—$\frac{14}{25}$, between 12 and 1 o'clock in the night, born at Råshult, in the parish of Stenbrohult, in Småland. His father was Nils Linnæus, at that time *Comminister*, but afterwards *Pastor* there; his mother, *primipara*, Christina Brodersonia.

1717. Sent to the *trivial school* at Wexiö.

1724. Entered the *gymnasium* at Wexiö.

1727. Became a student at the University of Lund.

1728. Became a student at the University of Upsala.

1730 and following year. Lectured publicly in the Upsala Garden as Rudbeck's *vicarius*.

1732. Travelled through Lapland at the expense of the Society of Upsala.

1733. Lectured privately on mineralogy (he was the first person who had done so) at Upsala.

1734. Travelled through Dalarne at the expense of Baron Reuterholm, Governor of that province.

1735. Commenced his travels in Denmark, Germany, and Holland. Took the degree of M.D. at Harderwik $\frac{23}{24}$ June.

1736. Botanist to Clifford. Visited England and returned to Clifford.

1737. Published many works whilst in Clifford's Museum.

1738. With Professor Van Royen at Leyden, where they arranged together the botanic garden. Returned from France to Sweden.

1739.

1739. Obtained a pension on condition of lecturing publicly on the cabinet belonging to the Royal College, May 14. Appointed Admiralty-Physician to the Stockholm Hospital, May 15. Became first president of the Academy of Stockholm, of which he was one of the 7 founders.

1741. Public Professor at Upsala, May 5. Travelled over the isles of Öland and Gothland, by order of the States.

1742. The Upsala garden, being in a ruinous state, was restored and improved by him.

1743. Museum of the University established by him.

1744. Secretary of the Society at Upsala.

1746. Travelled through West Gothland, by order of the States.

1747. Appointed *Archiater*, without having made application for that office, in January.

1749. Travelled through Skåne, by order of the States.

1751. Described the Queen's Museum at Drotningholm.

1753. Described the King's Museum at Ulricksdahl.

1758. Knight of the Polar Star,—the first *Literatus* who was advanced to that honour. Purchased Söfja and Hammarby * * *

1760. Obtained a prize from the Russian Academy—the first foreign member that was honoured with a prize from that body.

1761. Ennobled April 4th by the King's express nomination.

1762. Elected one of the 8 foreign ordinary members of the Royal Academy at Paris, one of the highest literary honours, and the first instance of its being conferred on a Swede.

1763. He was the first person who imported tea into Europe alive.

1768. His own Museum built, of stone, on an eminence at Hammarby.

STENBROHULT

Stenbrohult is a parish of *Småland*, in the government in *Cronoberg*, and in the hundred of *Albo*. It is situated on the confines of *Skåne*, in a very pleasant spot, adjoining to the great lake *Möklen*, which forms itself into a bay about a quarter of a [Swedish] mile long, and in the centre of this bay stands *Stenbrohult* church. It is surrounded on all sides, except to the west, where it fronts the lake, by well cultivated lands. At a little distance, to the south, the eye is relieved by a beech wood; to the north, the lofty mount *Taxås* rears its head, and *Möklen* lies on the oppposite bank of the lake. Moreover, to the east, the fields are encompassed with woods, which westward inclose broad meadows and large spreading trees. In short, Flora seems to have lavished all her beauties on the spot that was to give birth to our botanist.

Samuel Brodersonius was pastor of this parish about the beginning of the [18th] century; his father *Pehr Brodersonius*, and his maternal grandfather *Nils Torgen* had enjoyed the living before him, and he had for his successors his son-in-law and grandson. He married *Maria Skee* (daughter of *Jöran Skee*, pastor of *Wisseltoft*, in the province of *Skåne*), by whom he had four children *Christina*, *Pehr*, *Mary*, and *Jöran*.

Nils Linnæus, born in 1674, was the son of a peasant named *Ingemar Bengtsson*, who lived at *Stegeryd*, in the parish of *Wittaryd*, in *Småland*, and married *Ingrid Ingemarsdotter*, sister of *Sven Tiliander*, pastor of *Pietteryd*. The latter took *Nils Linnæus* into his house, and educated him along with his own children; having a very good garden, he gave him also a taste for horticulture. After having quitted school, he went to the university of *Lund*, where he had to contend with poverty for some years, and applied himself very diligently to his studies. Returning to his native place, he was admitted into holy orders by Bishop *Cavallius*, and first became curate, and afterwards (in 1706) *Comminister* of *Stenbrohult*. He soon after this married the pastor's eldest daughter *Christina Brodersonia*, a young lady possessing all the virtues of her sex, and an excellent œconomist. *Nils* passed all his leisure hours in cultivating his garden at *Råshult*, the residence of the *Comminister*. His first born was our Carl, besides whom he had (2) *Anna Maria*, married to *Gabriel Höh*,

pastor of *Wirelstad*, (3) *Sophia Juliana*, married to *Johan Collins*, pastor of *Rÿsbÿ*, (4) *Samuel*, who succeeded his father, and (5) *Emerentia*, wife of a Receiver-General, named *Branting*.

In 1708, *Nils Linnæus* was appointed by letters of King Charles, then in Poland, pastor of *Stenbrohult*, the duties of which situation he discharged with piety and moderation until his death in 1748.

CARL LINNÆUS was brought into the world between the hours of 12 and 1 in the night dividing the $\frac{1}{2}\frac{2}{8}$ and $\frac{1}{4}\frac{3}{5}$ of May, 1707,—a delightful season of the year, in the *Calendar of Flora*, being between the months of *frondescence* and *florescence*. His parents received their first born with joy, and devoted the greatest attention to impressing on his mind the love of virtue, both in precept and example. The same thing that is said of a poet, "*Nascitur non fit*," may be said without impropriety of our botanist. From the very time that he first left his cradle, he almost lived in his father's garden, which was planted with some of the rarer shrubs and flowers; and thus were kindled, before he was well out of his mother's arms, those sparks which shone so vividly all his lifetime, and latterly burst into such a flame. But his bent was first decidedly displayed on the following occasion. He was scarcely four years old, when he accompanied his father to a feast at *Möklen*, and in the evening, it being a very pleasant season of the year, the guests seated themselves on some flowery turf, listening to the pastor, who made various remarks on the names and properties of the plants, showing them the roots of the *Succisa*, *Tormentilla*, *Orchides*, &c. The child paid the most uninterrupted attention to all he saw and heard, and from that hour never ceased harassing his father with questions about the name, qualities, and nature of every plant he met with; indeed, he very often asked more than his father was able to answer, but, like other children, he used immediately to forget what he had learned, and especially the *names* of plants. Hence the father was sometimes put out of humour, and refused to answer him, unless he would promise to remember what was told him*. Nor had this harshness any

* Note by Archbishop Mennander:

"*Malebranchius usque ad annum* 21 *vix aliquos in studiis fecit profectus. Unus doctorum historiam ecclesiasticam eidem commendavit, alter linguam Hebræam et criticam, sed neutrius erat capax. Demum anno ætatis* 26, *in bibliopolio Cartesii Tractatus de Homine invenit. Hinc iis speculationibus se dedit quibus natus erat, quæque immo tale nomen eidem pepererunt.*

bad effect, for he afterwards retained with ease whatever he heard. All the child's powers, both of mind and body, conspired to make him an excellent natural historian;—besides his retentiveness of memory, he had an astonishing quickness of sight.

In the year 1714, he was put under the private tuition of *John Telander*, a morose and passionate man, who was better calculated for extinguishing a youth's talents, than for improving them.

1717. He entered the trivial school of *Wexiö*, where the masters, according to the custom of those times, pursued the same methods, preferring stripes and punishments to admonitions and encouragements.

1719. The young *Linnæus* was put under another private master, *Gabriel Hök*, who afterwards became a relation by marriage. This man possessed a milder disposition, and much better talents for teaching. But he could not overcome the distaste which the boy had contracted towards the ordinary studies of a school.

1722. He went up to a higher form in the school,—called the *circle*. He now had greater liberty allowed him both of shunning the usual exercises and of giving himself up to that science, to which his mind was principally turned,—namely, the knowledge of plants. He therefore often wandered about the outskirts of the town, and made himself accurately acquainted with all the plants he could find.

1724. He was removed from the school to the *gymnasium*, carrying with him the same dislike of those studies which were considered as preparatory to admission into holy orders, and the same predilection for others in which he had experienced so much pleasure. But his distaste was not equally great for all the sciences that were here studied; in rhetoric indeed, metaphysics, ethics, the Greek and Hebrew languages, and theology, his contemporaries left him far behind, but in the mathematics, and particularly physics, he was as much superior to *them*. Botany, however, a science at that period entirely neglected, was what almost entirely engrossed his attention. He formed a little library of books in this branch, among which were Manson's *Örta-bok*, or Herbal; Tillands's *Catalogus Plantarum prope Aboam*; Palmberg's *Serta Florea Suecana*; and also Bromelius's *Chloris Gothica*, and Rudbeck's *Hortus Upsaliensis*. Notwithstanding his inability to comprehend clearly, as yet, the two last of these

authors, he continued to read them day and night, and committed them to memory; hence, among both masters and scholars, he acquired the name of *the little botanist*.

1726. The father came to *Wexiö*, hoping to hear from the preceptors a very flattering account of his beloved son's progress in his studies and morals. But things happened quite otherwise; for, though every body was willing to allow how unexceptionable his moral conduct was, yet on the other hand, it was thought right to advise the father to put the youth an apprentice to some taylor or shoemaker, or some other manual employment, in preference to incurring any further expense towards giving him a learned education, for which he was evidently unfit. The old clergyman, grieved at having thus lost his labour, and at having supported his son at school for twelve years (his circumstances, too, very ill admitting of superfluous expenses) to no purpose, went to the provincial physician, who was also lecturer in physics, Dr. *Rothmann*, to consult him respecting a complaint under which he had suffered for some weeks. In the course of conversation, he likewise made known to the Doctor his sufferings of mind, on the score of his son's failure in his studies. *Rothmann* intimated that he found himself equal to the cure of *both* complaints, remarking that correct as might be the opinion of his colleagues with respect to the boy's inaptitude for those theological studies to which his father had destined him, so much stronger ground was there for hoping that he would distinguish himself in the profession of medicine, and for expecting him to accomplish great things in the pursuit of natural history. These remarks afforded so much the more comfort to the old clergyman, as they were advanced confidently and decidedly by *Rothmann*, who at the same time handsomely offered, in case the father's circumstances or inclination did not admit of his son being maintained in that course of studies, to take him into his own house, and to give him board and instruction during the year that it would be necessary for him to remain longer in the *gymnasium*. Shortly afterwards *Rothmann* gave *Linnæus* a course of private instructions in physiology, with so much success, that the latter, when examined, was able to report in the most accurate manner every thing he had learned. This worthy lecturer also put him into the right method of studying botany, by pointing out the inutility of what he had acquired in the common way, and the necessity of studying that science in the systematic manner of

Tournefort, which was founded on the differences of the flowers. *Linnæus* accordingly copied out the classes from Valentini's *Historia Plantarum*, and was never easy until he could refer every plant he collected to its proper place in *Tournefort*'s system; but there were many which had not at that time been examined with sufficient botanical accuracy, and which, not being reducible to the rules of that system, involved our young botanist in great perplexity; such were *Cornus herbacea*, *Lobelia Dortmanna*, *Elatine Hydropiper*, *Peplis Portula*, *Linum Radiola*, *Plantago Monanthos*, *Isoetes lacustris*, *Anthericum Ossifragum*, *Aphanes arvensis*, *Trientalis Europæa*, *Scheutzeria palustris*, *Andromeda polyfolia*, *Caltha palustris*, *Stratiotes Aloides*, and *Utricularia vulgaris*.

1727. He went to complete his education at the university. But the rector (that year) of the *gymnasium*, *Nils Krok*, worded his *testimonium* in this manner,—*viz.* Youth at school might be compared to shrubs in a garden, which will sometimes, though rarely, elude all the care of the gardener, but, if transplanted into a different soil, may become fruitful trees. With this view therefore, and no other, the bearer was sent to the university, where it was possible that he might meet with a climate propitious to his progress.

Provided with this, not very creditable, certificate, he set out for the university of *Lund*, where his old preceptor *Hök*, keeping it back, presented him to the rector and dean, as his private pupil, and procured his matriculation.

Linnæus lodged in the house of Dr. *Kilian Stobæus*, afterwards Professor of Medicine, and Physician to the King. There was nothing to recommend the young man to this very experienced physician, but his devoting himself to the study of medicine, and his possessing a little medical library. *Linnæus* enjoyed the advantages of his host's excellent museum of minerals, shells, birds, and dried plants. He was highly delighted with the mode of making a *hortus siccus*, and immediately began to collect all the plants that grew in the vicinity of *Lund*, and to glue them on paper. *Stobæus* had very bad health, labouring constantly under *hypochondriasis*, and pains of his head and back; he was, besides, one-eyed, and lame in one foot. But what nature had denied him in bodily advantages, was amply compensated for in the excellence of his disposition, and the superiority of his mental attainments. He was perpetually harassed with applications for professional advice from the nobility of *Skåne*.

Linnæus was sometimes called to write letters and give advice in the Doctor's stead, but when he wrote a bad hand, he was usually sent away again. He was allowed, however, to attend the demonstrations of shells, which were exhibited to *Matthias Benzelstierna* and *Retzius*.

There was a German student, by name *Koulas*, who lived with *Stobæus*, and to whom, among other indulgences, was shown that of having access to the Doctor's library. *Linnæus* formed a close friendship with this young man, and in return for teaching him the principles of physiology, which he had learned from Dr. *Rothmann*, he obtained books by *Koulas*'s means from *Stobæus*'s library. He passed whole nights in reading them. *Stobæus*'s mother, who was very old, and a bad sleeper, saw Linnæus's candle constantly burning, and, being afraid of fire, desired her son to chide the young Smålander for his carelessness. Two nights afterwards, at 11 o'clock, *Stobæus* went into *Linnæus*'s apartment, expecting to find him soundly asleep, but to his astonishment he was diligently poring over his books. Being asked, therefore, why he did not go to bed, and whence he had procured the books, *Linnæus* was forced to confess every thing. *Stobæus* ordered him to go to bed immediately, and, having called him the next morning, again inquired about the books, the consequence of which was that, from admiration of these strong evidences of thirst after knowledge, the Doctor gave him liberty to make what use he pleased of his whole collection. From that time he admitted *Linnæus* to perfect familiarity, asked his assistance in visiting patients, and received him at his table, giving him hopes, moreover, of becoming his heir, for he had no children.

In the spring of 1728, *Linnæus* went on a herborizing excursion with *Matthias Benzelstierna*, to a very pleasant spot at *Fågle-sång*, where, having taken off some of his clothes on account of the heat, he was bitten in the right arm by a worm, called *Furia infernalis*. The arm immediately became so violently swollen and inflamed that his life was endangered, especially as, *Stobæus* being about to set off for the mineral waters of *Helsinborg*, he was left to the care of * * *. *Snell*, however, having made an incision, the whole length of his arm, restored him to his former health. He passed, therefore, the summer vacation with his parents in *Småland*.

Here he met with Dr. *Rothmann*, who advised him to leave the university of *Lund*, and remove to *Upsala*, where the Doctor assured him he would meet with

greater advantages for the completion of his medical studies; the celebrated Professors *Rudbech* and *Roberg*; a very rich public library; a most extensive botanical garden to gratify his taste for botany; and many royal and other foundations, by obtaining some of which he might remedy the poverty of his circumstances. *Linnæus* eagerly adopted his kind patron's advice, and betook himself to *Upsala*. But his parents were so ill able to support the expenses of their son's education there, that they could scarcely afford to give him 200 silver dollars [*about £8 sterling*], which sum, they informed him, was all he was to expect. As *Petronius* says, poverty is the attendant of a good mind, and Linnæus was not without it in this university. In a short time, he found his pocket quite empty, no chance of obtaining private pupils (who, in fact, are seldom put under the care of medical students), nor any other means of obtaining a livelihood. He was obliged to trust to chance for a meal, and, in the article of dress, was driven to such shifts, that he was obliged, when his shoes required mending, to patch them with folded paper, instead of sending them to the cobler. He repented of his journey to *Upsala*, and of his departure from the roof of *Stobæus*. But to return to *Lund* was a tiresome and expensive undertaking. *Stobæus* too had taken it very ill, that a pupil whom he loved so sincerely had left that university without consulting him.

"——————— *Labor tamen omnia vincit*
"*Improbus, et duris urgens in rebus egestas.*"

VIRG.

It happened one day in the autumn of the year 1729, whilst *Linnæus* was very intently examining some plants in the academical garden, there entered a venerable old clergyman, who asked him what he was about; whether he was acquainted with plants; whether he understood botany; whence he came; and how long he had been prosecuting his studies. *Linnæus* answered all these questions, and, when he showed him various plants, mentioned their names, agreeably to the system of *Tournefort*. Being further asked, what number of specimens he possessed, he replied, that he had above 600 indigenous plants preserved in his cabinet. He was requested to accompany the gentleman who had thus interrogated him to his house, which proved to be that of Dr. *Olof Celsius*, and the interrogator was the Doctor himself; the latter was just returned from Stockholm, where he had been engaged as a member of the ecclesiastical

siastical commission, and he was at this time preparing his great and celebrated work on the plants mentioned in Scripture, to which end, he had applied very closely to the study of botany, and had collected many indigenous plants. As soon as he saw *Linnæus*'s herbarium, he had still further proofs of the latter being conversant with that pursuit, and observing also that his circumstances were necessitous, he offered him board and lodging in his own house. *Linnæus* collected for him the plants growing about *Upsala*, and had the full use of his library, which, even in botanical books, was extremely rich. He was admitted also to a most familiar footing with *Celsius*, which daily proved more and more advantageous to *Linnæus*'s interests.

A short time before *Linnæus*'s arrival, *Nils Rosen* had been appointed *Adjunctus* of the faculty of medicine at *Upsala*, and went abroad for the purpose of obtaining a doctor's degree, and improving himself in his profession. In the mean time, his place was supplied by one *Preutz*, for whose abilities the students entertained a most marked contempt; many of them, therefore, as *Letstrom*, *Solberg*, and Archiater *Rudbeck*'s son, *Johan Olof*, put themselves under the private instructions of *Linnæus*; the presents they made him enabled him to assume a more decent appearance in his dress.

Pehr Arctedius (who afterwards called himself *Artedi*) was the only medical student who at that time distinguished himself by his diligence and erudition. On this young man's return from *Angermanland*, where he had discharged the last duties to his father, he formed an intimate friendship with *Linnæus*; but there was a great difference in their persons and dispositions, the former being of a more tall and handsome figure, more serious, and of a deliberate judgment, whereas the latter was short in stature, yet stout, hasty, and of a sanguine temperament. *Artedi* pursued his favourite studies, chemistry and (especially) alchemy, with the same ardor as *Linnæus* devoted himself to botany. Neither of them however was altogether ignorant in the other's branch of pursuit, but, with a noble spirit of emulation, as soon as one found himself unequal to the progress of the other in one species of study, he dedicated himself to another. They therefore divided the kingdoms and provinces of nature between them. Indeed, they both began to study fishes and insects together, but in a short time *Linnæus* yielded the palm to *Artedi* in ichthyology, and the latter acknowledged *Linnæus* to be his superior in entomology; *Artedi* undertook to reduce

amphibia,

amphibia, and *Linnæus* birds, under a regular arrangement. Each kept his discoveries to himself, though for no length of time, since not a day passed without one surprising the other by narrating some new fact; so that emulation produced mutual industry of research, and stimulated each to new exertions. The following was the state of education at that period, in the university of *Upsala*. Professor *Rudbeck* exhibited to the students his beautiful coloured drawings of birds; Professor *Roberg* lectured upon the problems of *Aristotle*, according to the principles of *Des Cartes*; in anatomy and chemistry there was a profound silence; neither did our botanist ever hear a single lecture, public or private, on the study of plants.

Linnæus was sovereign in the botanical department, *Artedi* reserving to himself only the umbellate plants. The former had, about this time, read in the *Leipsic Commentaries*, a review of *Vaillant*'s treatise on the sexes of plants, by which his curiosity was excited to a close investigation of the *stamina* and *pistilla*; he observed that these parts of the plant were of essential importance, and that they varied as much as the petals. Hence he formed the design of constituting a new sexual method. There was just then published a philological dissertation *de Nuptiis Plantarum*, from the pen of *George Wallin*, librarian of the university; and as Linnæus had no opportunity of publicly opposing it, or of starting his doubts, he drew up in writing a little treatise on the sexes of plants, in conformity with genuine botanical principles, and showed it to Dr. *Celsius*, who put it into the hands of Dr. *Rudbeck*. The latter honoured it with the highest approbation, and expressed a wish to be better acquainted with the author of so masculine a composition.

1730. *Rudbeck* obtained leave, on account of his advanced age, to execute his office by deputy. Accordingly, *Preutz* was appointed, as an *adjunctus*, to read publicly in the academical garden, but was afterwards found to be incompetent. *Linnæus*, therefore, was brought forward, and, after having been examined by the faculty, was judged worthy of being placed in that situation, in *Preutz*'s stead.

[*Thus far the Diary was put into Latin by Archbishop Mennander.*]

——— Professor *Roberg*, however, thought it rather hazardous to make a teacher of a young man who had not yet been three years a student;—and still more

more so, to intrust him with the public lectures. But as there was no other person so proper, *Linnæus* was appointed to lecture in the garden. He therefore commenced his public lectures on botany in the spring of 1730, and had a great number of private pupils on his botanical excursions. *Rudbeck* also engaged him to live in his house as tutor to his sons by his last wife.—*Linnæus* caused the garden to be entirely altered, and planted with all the rarest species that he could procure, both indigenous and exotic, according to a method of his own. By the advice of Professor *Roberg*, he had made application for the place of gardener (which was vacant) the year before, but Professor *Rudbeck* refused it him, remarking at the same time that he thought him qualified for a far superior situation. He repined very much at this denial, until he became actually a teacher in the garden, when he acquired a right to direct the gardener in every thing; and he now carried on his botanical excursions with a considerable number of pupils, by which means he was enabled to assume more of the appearance of a gentleman in his dress. He could also now avail himself fully of Professor *Rudbeck*'s fine botanical library, and incomparable collection of drawings of Swedish birds. At this period his mornings were passed in giving instructions to the students, and his evenings in composing the new system, and meditating a general reformation of botanical science. He began his *Bibliotheca Botanica*, *Classes Plantarum*, *Critica Botanica*, and *Genera Plantarum*. Hence not a moment passed unoccupied during his residence at *Upsala*.

In the year 1731, the *Medicinæ Adjunctus*, Dr. *Rosen*, being returned from his travels abroad, and having perfected himself in anatomy and the practice of medicine, got into universal request, there being no other practitioner at *Upsala*. He likewise commenced a course of lectures on a branch connected with Professor *Rudbeck*'s office. As the latter was 70 years of age, there was a good prospect of his being chosen *Rudbeck*'s successor, and of his having no competitor unless *Linnæus* got forward. He also applied for permission to lecture publicly on botany, but *Rudbeck* was unwilling to trust this department to him, as he had never studied it. *Rosen* tried to persuade *Linnæus* to give up the lectures to him spontaneously, which *Linnæus* would have done, had *Rudbeck* consented to it. Thus *Linnæus* had scarcely surmounted poverty before he became an object of envy,—a passion that played him too many tricks, of no use to be mentioned here.—The faithless wife of the librarian, *Norrelius*, lived at

at this time in *Rudbeck*'s house, and by her *Linnæus* was made so odious to his patroness, that he could no longer stay there; and as *Rudbeck* had often related to him the curious facts he had noticed, and the plants he had discovered on his travels in *Lapland*, *Linnæus* conceived a great inclination to visit that country. The Secretary of the Academy of Sciences at *Upsala*, the Master of Arts *Andreas Celsius*, strongly urged *Linnæus* to proceed thither, especially as there was a royal order that somebody should be sent by the Academy through that part of the Swedish dominions. Hence the Academy came to a resolution that *Linnæus* should set out on this journey the year following. Wherefore *Linnæus* left *Rudbeck*'s house, and gave up the situation of tutor, towards the end of the year, at which time he went into his native province of *Småland*.

In 1732, *Linnæus* went to *Lund* for some days, in order to inspect *Stobæus*'s collection of minerals, the only branch of natural history with which he was unacquainted. This collection, however, consisting merely of petrifactions, did not satisfy *Linnæus*, who, after remaining a few days at *Lund*, on account of business he had there, returned to *Upsala*, from which place he set out for *Lapland* on horseback, May 13th, without incumbrances of any kind, and having all his baggage on his own back. When he came into *Angermannland*, he quitted the high road, and visited the lofty cavern on Mount *Skula*, accompanied by two peasants: and here he was within a hair's breadth of meeting with a dangerous accident; for one of the peasants in climbing up loosened a large stone, which rolled down just in the track *Linnæus* would have kept, had he not one instant before turned a little out of the way, following the other man. From *Umeå*, *Linnæus* went up the river towards *Lychsele*; but the floods beginning to be very violent, he was obliged to walk through forests and marshes, where the ice sunk under him, and he stopped at last near *Olychsmyran*. As it was impossible to travel through the country at this time of the year, *Linnæus* was obliged to return to *Umeå*, by the river of that name, whence he proceeded to *Pitheå* and *Luleå*. Here he met with a mine-master, named *Swanberg*, who was at that time intending to go to *Kiurivari*. They therefore sailed up the river *Luleå*, passing from *Haris* to *Jockmock*, and from *Jockmock* to *Quickjock*. During this voyage, *Swanberg*, who had taken great delight in *Linnæus*'s conversation, offered to instruct him in the art of assaying within a very short time, if he would agree to visit *Calix* in his way

homeward. At *Quickjock*, *Linnæus*, by means of the curate *Grot*'s wife, provided himself with an interpreter, with whom he ascended the chain of mountains at *Vallivari*: here he saw the sun at midnight*, and a new race of plants among the mountains; which, together with the œconomy and manners of the *Laplanders*, and other circumstances worthy of notice, he has described at length. He crossed over the *Lapland Alps* on foot, and arrived near *Torfjorden*, on the northern coast of *Finmark*, intending to go by sea to *Salleron*; but, owing to tempestuous weather, he could not proceed further than *Rörstad* church. On his return, as he was one day exploring the northern side of the mountains, in quest of plants and minerals, one of the *Finmarkers* inhabiting the coast shot at him, but missed his aim, and, *Linnæus* drawing his hanger, he ran away, and thus escaped. After having rested a few days, *Linnæus* again crossed the ridge, but keeping more to the north towards *Kaitomma*, and came down to the river *Luleå*, where, having constructed a raft in the middle of the night, to pass over to *Purkiaur*, his life was again exposed to great danger, as there was so great a mist that he could not see before him, and the wind and current drove the raft so much to one side, that it was with the most imminent risque he escaped the cataract. On his return through *Luleå*, he learned the art of assaying from the mine-master *Swanberg*, at *Calix*, in two days and a night; and, having suffered extreme fatigue, he reposed himself at the house of M. *Höyer*, the magistrate. His journey was continued thence through *Torneå*, and he intended to visit the mountains of *Torneå*; but before he could get thither, the winter set in, and he was obliged to return along the coast [*on the eastern side of the Bothnian Gulph*] by *Kiemi*, *Uleå*, *Carleby*, *Wasa*, and *Björneborg* to *Abo*, where he staid eight days, and then proceeded by sea to *Öland*, *Grisselham*, and *Upsala*; thus had he travelled 700 [*Swedish, or between* 4 *and* 5000 *English*] miles, this year.

On his arrival at home, he delivered to the Academy of Sciences an account of his expedition, which obtained their approbation, and they gave him 112 silver dollars [*not more than* £10 *sterling*], his travelling expenses.

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* "*Solus Hyperboreas glacies, Tanaimque nivalem*
"*Arvaque Rhipæis nunquam viduata pruinis*
"*Lustrabat.*" —— Virg. *Georg.* 4. 517.

Immediately.

Immediately afterwards, *Linnæus* made application for *Wrede*'s exhibition, called *Öfvershotts medlen*, which he obtained chiefly by the kind assistance of Professor *Valraves*. From this he enjoyed, the first year, 30 *plåtar* [*about £5 sterling*], but, after that, nothing; and, as soon as he went abroad, he lost this exhibition, through his enemies.

In the year 1733, *Linnæus* began a private course of lectures on the art of assaying, which had never been taught before in this university. He delivered them for 2 *plåtar* [*about* 7*s.*] each person, on which account he got a great number of pupils*. *Rosen*, observing that *Linnæus* came forward more and more, and fearing lest he should at last become a dangerous competitor, requested *Linnæus* to lend him his manuscript lectures on botany, which he had composed himself, and which he valued more than any thing that belonged to him; and when *Rosen* found he could not obtain them by fair means, he held out threats to *Linnæus*, who then gave up to him a part of them; but as soon as he was informed that *Rosen* copied the manuscript, no intimidation would induce him to deliver into *Rosen*'s hands the remainder. In the mean time, *Rosen* had taken by the hand a young Master of Arts, named *Gottskalk Wallerius*, who had studied medicine under him almost a year.—The office of *Adjunctus* in the medical faculty at *Lund* was now instituted, and *Linnæus* endeavoured to obtain it, at the urgent desire of Professor *Rudbeck*. *Rosen* was at this time practising at *Wiksberg*, where people went to drink the mineral waters; the Chancellor of the University, Count *Carl Gyllenborg*, was of the number, and consequently *Linnæus* stood no chance against *Wallerius*, who got the office of *Adjunctus*, though it was of less advantage to him than it would have been to *Linnæus*.

At the end of the year, *Linnæus* went to the mine district [called in Sweden *Bergslag*], where he visited *Norberg*, *Bitsberg*, *Afvestad*, *Garpenberg*, and the iron-founderies, mines, and town of *Fahlun*. During his stay at *Fahlun*, the Governor of the province, *Reuterholm*, requested *Linnæus* to undertake, at his (*Reuterholm*'s) expense, a journey all over *Dalarne*, in the same man-

* [*In the margin of this part of the Diary, is the following note, viz.*] Menander, Bishop of Åbo, was at that time a scholar, and assisted Linnæus considerably with money; the latter taught him natural history in return.

ner as he had travelled over *Lapland*. *Linnæus* consented, though with no idea of the plan being intended to be put into execution.

In 1734, when Dr. *Rosen* was married to the niece of the Archbishop, he procured an edict from the Chancellor *Cronhjelm*, that a medical teacher should never be received in the University of *Upsala*, to the prejudice of the *Adjunctus*. By this edict, *Linnæus* was deprived of his only means of subsistence, and *Rosen* made up his mind to believe that he had now totally ruined him; but, the following week, there came a letter from *Reuterholm*, the Governor of *Dalarne*, with a bill of exchange inclosed, and a request that he would set out on his travels in *Dalarne*. *Linnæus* accordingly got ready for this undertaking, and at *Fahlun* he engaged seven of his ablest pupils, *Nüsman*, *Clewberg*, *Fahlstedt*, *Ichberg*, *Emporelius*, *Hedenblad*, and *Sandel*, to accompany him. With this party he travelled over the eastern part, and the mountains of *Dalarne*, as far as as *Röråks* copper-mine, in *Norway*, and thence again over the mountains, through *West Dalarne* to *Fahlun*, where he put into the Governor's hands a journal which he had kept of all the observations made on the journey.

Johan Browallius, at that time Chaplain to the Governor, *Reuterholm*, and tutor to his children (afterwards Professor and Bishop at *Åbo*), conceived a particular regard for *Linnæus*, and wished to be taught by him the art of assaying, mineralogy, botany, &c. *Linnæus* therefore began a course of lectures on assaying, at *Fahlun*, and for this purpose obtained permission to make use of the laboratory belonging to the mine district. A considerable audience attended him. On his return from *Lapland*, *Linnæus* had paid particular attention to mineralogy, which was the principal reason of his visiting the district of mines,—a spot the most favourable of all others for acquiring that knowledge of minerals which could alone enable him to form a correct system. He had now completed the system, and read it, greatly to the satisfaction of the miners. *Linnæus* here, at *Fahlun*, found himself in quite a new world, where every body loved and assisted him, and he acquired considerable medical practice. But *Browallius* saw no means of his getting forward in the world, without going abroad, and taking a Doctor's degree, in which case he could, on his return, settle wherever he chose, with advantage; and as money was necessary for all this, there seemed to his friend to be no other alternative for *Linnæus*

but to pay his addresses to some young lady of fortune, whom he might render as happy as she might render *him*. *Linnæus* approved, theoretically, of this advice, but notwithstanding several plans were proposed, no one was just then adopted. Dr. *Johan Moræus*, physician of the town, who was looked upon as a man of considerable fortune (for his situation in life), and who saw the progress of *Linnæus* both with astonishment and jealousy, being tired of practice, had determined never to bring up any one of his children to the profession of medicine. *Linnæus*, however, in spite of all this, and though a mere student, after having spoken to the eldest daughter, presented himself to her father, and asked his consent to marry her, which *Moræus*, to the great surprise not only of *Linnæus* but of others, agreed to; however, he could not obtain the consent of her mother.

At the beginning of the year 1735, *Linnæus* commenced his travels abroad, in company with Dr. *Claes Sohlberg*, at that time a medical student. *Artedi*, *Linnæus*'s faithful fellow-collegian, had left *Upsala*, a short time before, to proceed to *England*. *Linnæus* visited his [own] birth-place, where his mother had died on the 6th of June the year before, in the 45th year of her age. He continued his journey through *Helsingborg* to *Elsineur*, from which place he went by sea to *Tremunde* and *Lubeck*, and thence to *Hamburg*, where the Licentiate in Law *Sprekelsen*, Professor *Kohl*, and Dr. *Jænitsch* showed him great civilities. Here he employed his whole time in viewing the fine gardens, and every thing else worthy of attention,—among other things the museum of the Burgomaster *Andersson*, and the *Hydra* with seven heads belonging to *Andersson*'s brother, and *Linnæus* was the first person who discovered that this wonder was not a work of nature, but of art: however, this was no sooner known than the enormous price fixed on the monster fell to nothing, and *Linnæus* was obliged to hasten his departure, from fear of the *Anderssons*. He went from *Altona* to *Amsterdam*, during which voyage he was exposed to great peril.

At *Amsterdam*, *Linnæus* staid eight days, and saw all the splendor and expense bestowed on that city. He then went by sea to *Harderwych*, where, after having undergone the requisite previous examinations, and defended his *Dissertatio* DE NOVA HYPOTHESI FEBRIUM INTERMITTENTIUM, he was admitted to the Doctor's degree on the $\frac{1}{14}$th of June. Now all the money *Linnæus* had carried with him from *Sweden*, being 600 copper dollars [*about £15 English*],

English], was expended, and, being unwilling to trouble his father-in-law (whose disposition he well knew) on this score, he accompanied *Claes Sohlberg* from *Hardervych* to *Amsterdam*, where *Linnæus* waited on the Professor of Botany, Dr. *Burmann*; he afterwards proceeded through *Haarlem* to *Leyden*, where he visited the botanical garden and Professor *van Royen*.

Of all the persons *Linnæus* met with in *Holland*, there was no one who paid him more attention that *Johan Fredric Gronovius*, Doctor in Medicine. *Linnæus* having paid him a visit, the latter returned it, and saw his *Systema Naturæ* in manuscript, which astonished him, and he requested *Linnæus*'s permission to get it printed at his own expense. The publication of that work was accordingly commenced. By the advice of *Gronovius*, *Linnæus* waited on the celebrated *Boerhaaven*, and, after eight days' application, was admitted, when *Boerhaaven* showed him his garden (not far from *Leyden*), stocked with all kinds of trees that would bear the climate; and *Linnæus* had then an opportunity of manifesting his skill in the science and history of botany. *Boerhaaven*, observing this, advised him not to leave *Holland* immediately, as he had intended, but, on the contrary, to take up his abode and remain there. *Linnæus*, however, could not be prevailed on, and as he purposed taking *Amsterdam* in his way homeward, *Boerhaaven* desired him to present his compliments to *Burmann*. The day following *Linnæus* went to see *Burmann*, who offered him a handsome apartment, attendance, and his table, of which advantages *Linnæus* availed himself till the year following. During this interval, *Linnæus* published his *Fundamenta Botanica*, and amused himself with looking over *Burmann*'s work on the plants of *Ceylon*, and frequently visiting the physic garden at *Amsterdam*.

Linnæus had been with *Burmann* but a few months, before the rich banker *Georg Clifford*, J. U. D. visited the former at *Burmann*'s, and invited him to go and see his magnificent garden at *Hartecamp*, persuading *Burmann* to let him have *Linnæus*, whom *Boerhaaven* had recommended to him, on account of his great knowledge of botany. Thus *Linnæus* removed to *Clifford*'s, where he lived like a prince; had one of the finest gardens in the world under his inspection; obtained permission to procure all the plants that were wanted in the garden, and such books as were not to be found in the library; and, of course, enjoyed all the advantages he could wish for in his

botanical labours, to which he devoted himself day and night. He first tried to get his *Flora Lapponica* printed, and succeeded by means of a society at *Amsterdam* (of which *Burmann* was a member, and which he had often visited) offering to advance the plates.

Meanwhile, *Artedi*, meeting with *Linnæus* one day, told him that he had spent all his money in *London*, and that he was in great want of more to purchase clothes and books, and also for the purpose of obtaining his degree, and returning home; he added, that he knew no means whatever of raising it. *Linnæus* comforted him with the assurance that, as he was not now under the confined circumstances and the persecution to which he was exposed at *Upsala*, he would take care that he should be assisted.—*Albertus Seba*, a German apothecary at *Amsterdam*, had, a short time before, requested *Linnæus* to assist him in completing the 3d volume of his *Thesaurus*, but, being then employed at *Clifford's*, *Linnæus* could not accept this offer; and besides, this third volume intended to be printed related to fishes, which *Linnæus* liked the least of all the branches of zoology. *Linnæus* went to *Seba* with *Artedi*, whom he recommended as the first man in ichthyology. The work was accordingly put into *Artedi's* hands, with the promise of a handsome recompense; and he lived comfortably at *Amsterdam*, where he, at length, so far completed the undertaking that only 6 fishes remained; but one evening, on leaving *Seba* to return to his own house, he fell into a canal, and was unfortunately drowned. As soon as *Linnæus* was informed of this, he went to *Amsterdam*, in order to save *Artedi's* ichthyological manuscripts; the landlord, however, having made out a bill to the amount of more than 200 guilders, *Linnæus* went to *Seba*, and tried to prevail on him to redeem the manuscripts, but the latter would give only 50 guilders towards the burial of *Artedi*. *Linnæus* then persuaded *Clifford* to advance the money, and he afterwards put the papers in order [for publication].

In 1736, *Linnæus* went over to *England*, at the expense of M. *Clifford*, and here he not only saw the gardens at *Chelsea* and *Oxford*, but also procured many of the rarest and non-descript plants sent thither. He likewise became acquainted with all the learned at that time in the kingdom. At *Oxford*, *Linnæus* was received in a friendly manner by Dr. *Shaw*, who had travelled in *Barbary*, and who declared himself a disciple of *Linnæus*, having read his System with great pleasure. The learned botanist *Dillenius* was at first haughty, conceiving

conceiving Linnæus's *Genera* (which he had got half printed from *Holland*) to be written against him; but he afterwards detained him a month, without leaving *Linnæus* an hour to himself the whole day long, and at last took leave of him with tears in his eyes, after having given him the choice of living with him till his death, as the salary of the Professorship was sufficient for them both, **** also the Sherardian *Pinax**—

Linnæus returned to *Holland*, where he enriched *Clifford*'s garden with many living plants, and his *herbarium* with many dried ones which he had procured in *England*. The printing of Linnæus's *Genera Plantarum* went on with all possible speed at *Leyden*. On the 3d of October, 1736, *Linnæus* was made a member of the Imperial Academy of Sciences, under the name of *Dioscorides 2ndus*.

Boerhaaven wished to persuade *Linnæus* to go to the Cape of *Good Hope*, and thence to the American colonies, at the public expense, in order to procure all kinds of curious and rare plants for the gardens in *Holland*, assuring him he would take care not only that his travelling expenses should be defrayed, but also that, on his return, a grant should be procured for appointing him acting professor. *Linnæus* refused this offer however, assigning as a reason, that he could not bear hot climates, having been born and educated in a cold one; though there were other reasons for his refusing it, as he was already engaged at home.

In 1737, *Linnæus* had completed the arrangement of *Clifford*'s large collection of plants, and had augmented and put in order those in the garden. As *Clifford* had not only given him a considerable sum of money annually, but also maintained and treated him as if he had been his own son, *Linnæus* undertook the extensive work of *Hortus Cliffortianus*, which he both arranged and wrote; and he also corrected the press, performing the whole within 9 months. Another person could not have completed such a task within several years; and in the intervals of this occupation with the *Hortus Cliffortianus*, *Linnæus*, whenever he was fatigued by it, used to amuse himself with the *Critica Botanica*,

* The MS. is not sufficiently legible in this place to admit of the whole sentence being given. In the margin near it are the following words, in Linnæus's own hand writing, viz. "*Miller gave him many rare plants from the garden at Chelsea.*" (EDITOR).

which

which he got printed at *Leyden*. In consequence of all this labour however, he became, towards the autumn of this year, so much enervated that he could no longer bear the air of *Holland*, although he lived in the best circumstances that any mortal could wish for, being able to go to *Leyden* whenever he chose, to hear *Boerhaaven*; having a coach and four at his service in the streets of *Amsterdam*, where he could stay as long as he chose; the liberty of remaining in the beautiful gardens at *Hartecamp* as long a time as he pleased; all possible attendance of servants; and he was always able to receive in form those who visited him. When *Clifford* found that *Linnæus* intended to leave him, he requested him to remain at *Leyden*, at his [*Clifford*'s] expense;—to attend *Boerhaaven* as long as he chose; and not to depart before the Professorship of Botany at *Utrecht* was vacated by the death of old *Serrurier*, as *Linnæus* might be quite sure of succeeding him. He also offered *Linnæus* a salary during this interval.—But notwithstanding all these offers, and the delight and reputation he enjoyed at a place where he was visited as an oracle by every botanist, he took leave of *Clifford*, for he thought he ought not to relinquish his views at a moment so favourable to him; besides which he longed to be at home, and the climate of *Holland* is not long healthy to a *Swede*.

Linnæus, on leaving *Clifford*, went through *Leyden* to *Paris*. At the former of these places he bid farewell to all friends and acquaintances. Professor *van Royen*, astonished at *Linnæus*'s resolution to leave the place entirely, offered him every kind of advantage if he would remain with him for only half a year, in order to assist him in arranging the university-garden, and to demonstrate to him his *Fundamenta Botanica*, by which means *Linnæus*'s principles would be publicly propagated at this illustrious university, and the names which he had used in the *Hortus Cliffortianus* and other works of his, would be adopted also in that renowned garden. *Linnæus* determined to remain; which grieved *Clifford* very much, especially as he had made him such advantageous proposals. He did all he could to excuse himself to *Clifford*, assuring him that there was no other reason for his remaining there, but that of doing honour to himself and to his worthy friend *M. Clifford*. The garden at *Leyden* was laid out agreeably to the method of *Boerhaaven*, which Professor *van Royen* had resolved to overthrow, and substitute *Linnæus*'s. *Linnæus*, however, being unwilling to give ground for offence to one who had been of so much service to him [*as*

Boerhaaven], and as *van Royen* would not on any account suffer the garden to continue as it was, he assisted him in forming a plan of his own. Accordingly, *Linnæus*, together with *van Royen*, examined the plants at *Leyden*, and gave them new names, and they were all put in order, whereby *Linnæus* gained *van Royen*'s entire confidence. During this time, *Linnæus* was every day at his friend *Gronovius*'s, and assisted him in his *Flora Virginica*, which was published about the same period as van Royen's *Hortus Leydensis*, both of these [*botanists*] having adopted *Linnæus*'s names and principles. That the evenings might not pass uselessly, *Linnæus* worked at his *Classes Plantarum*, which he published here, and also his late friend Pehr Artedi's *Ichthyologia*, in 5 parts, his own *Corollarium Generum*, and his *Methodus sexualis*.

In the year 1738, the office of Ordinary Physician at *Surinam* became vacant, and was to be filled up by *Boerhaaven*, who wished *Linnæus* to go thither, representing to him that the person who had been there before earned, within 5 years, some tons of gold, for there was no other physician at the place,— and that excellent plants might be met with in so fine a climate. But, as *Linnæus* would not accept of the appointment, *Boerhaaven* left it to him to propose the most proper person, for there was no one who was better acquainted with the young physicians, and those who at the same time possessed most knowledge of natural history, than *Linnæus*. The latter then mentioned *Johan Bartsch*, of *Königsberg*, his most intimate friend, who had been instructed by *Linnæus*, not only in botany, but likewise in entomology; he was immediately appointed, and set out the same year (but in an unfortunate moment for him) to *Surinam*.

During *Linnæus*'s stay at *Leyden*, there was a club formed, in which were Dr. *Johan Frederic Gronovius*, Dr. *van Swieten*, Dr. *C. Linnæus*, *Joh. Lawson*, a learned Scotchman, who had travelled very much, and been a particular friend of *Linnæus*, having many times asked him if he stood in need of money, and, on *Linnæus* answering in the negative, given him 60, 80, and 100 guelders, remarking that he had still enough for himself; he loved both *Linnæus* and *Gronovius* very much, and was a man of great judgment, ——— *Lieberkuhn*, a Prussian, having in his possession incomparable microscopes, ——— *Johan Kramer*, a German, who possessed a wonderful talent of remembering every thing that was read to him, and who had been a student in all

all the faculties, ——— *Johan Bartsch*, a genteel, handsome, ingenious, and well-behaved young man. They assembled at one another's houses, and the person at whose house they met was required to demonstrate something in his own line of pursuit, as *Gronovius* in botany, *van Swieten* in *praxis medica*, *Linnæus* in natural history, *Lawson* in history and antiquities, *Lieberkuhn* in microscopics, *Kramer* in chemistry, and *Bartsch* in physics.

Before the time of *Linnæus*'s intending to leave *Leyden*, *Boerhaaven* had been attacked with *hydrops thoracis*, and consequently with great difficulty of respiration; he had therefore given orders that no person should be admitted to see or speak to him, for he could not lie down in his bed, but was obliged constantly to sit up. *Linnæus* was the only person in whose favour an exception was made, that he might see him, and kiss the hand of his great instructor, to bid him a sorrowful adieu. The venerable invalid had still strength enough left to stretch out his hand, and (putting it to his lips and kissing it in return) to say—"I have lived my time out, and my days are at an end. I have done every thing that was in my power. May God protect thee, with whom this duty remains. What the world required of me, it has got, but from thee it expects much more. Farewell, my dear Linnæus!" Tears prevented him from saying more, and, on *Linnæus*'s return to his lodgings, he sent him an elegant copy of his Chemistry.

In this manner *Linnæus* passed his time at *Leyden* until the spring, when, having received intelligence from *Sweden* that one of his friends was trying all he could to insinuate himself into the favour of his father-in-law, with a view to gain the lady to whom *Linnæus* was engaged, he prepared to set off without delay; but he was attacked by a very bad ague, of which he was cured by Dr. *van Swieten*; yet he had a relapse, attended with *cholera*, which would have certainly killed him, had not Dr. *van Swieten* done all in his power, so that at last *Linnæus* got the better of it. *Clifford*, though he had been much displeased, went to see *Linnæus*, and requested him to accompany him into the country, if it were only for one night, representing to *Linnæus* how dangerous it would be for him to pursue his journey, as he was still very weak;—offering him also his former situation, the use of his horses, or the liberty of taking a walk whenever he pleased, and, moreover, the salary of a ducat [*about* 9*s.* 6*d. English*] a day so long as he would stay at his house. *Linnæus* remained there for some weeks,

and enjoyed every thing that had been promised. He never fully recovered his health, however, until he left *Holland* and reached *Brabant*, when his whole frame was, in one day, quite renovated, as it were, and freed from something that was a burthen to it. He passed through *Antwerp*, *Trefontain*, *Mecklin*, *Brussels*, *Mons*, *Valenciennes*, *Cambray*, *Peronne*, *Roy*, *Pont à pont* to *Paris*.—When *Linnæus* took leave of Professor *van Royen*, at *Leyden*, the latter wrote a letter, and sent it by him to the Professor of Botany, at *Paris*, the contents of which (being afterwards shown to *Linnæus* at *Paris*) were as follow, *viz.*

"*Viro clarissimo Antonio de Jussieu, Medico experientissimo, Botanices Professori celeberrimo, et Academiæ regiæ scientiarum in Galliis socio, et membro dignissimo S. P. D. A. van Royen.*

"*En Carolum Linnæum, scientiæ botanicæ (si quem noverim) facile principem, qui ni scriptis innotuerit, experimentis innotescat. Hic in plerisque historiæ naturalis partibus versatissimus, hasce tibi tradet literas. Hunc vere doctum, eruditum, et humanissimum tibi tuæque curæ commendo, ut per te, quantum potest fieri, opportunitatem habeat omnia quæ ad hoc negotium spectant perlustrandi: quidquid autem ei feceris beneficii, mihi, cum per aliquod tempus intimus fuit, factum reputabo. Vale, fratremque cum Nob. D. de Fay meo nomine salvere jube. Dabam Leydæ die 7. Maii* 1738."

From this and other circumstances, it may be judged what *Linnæus* had done within the three years he was in *Holland*; he had there written more, discovered more new things, and reformed botany more than any one had, before his time, been able to do during his whole life. On this account he was always visited at *Clifford*'s garden by the greatest botanists living. Thus it happened several times, that *Gronovius*, *van Royen*, *Burmann*, *Serrurier*, *Andry Lawson*, and others met one another there without having made any appointment to do so. *Linnæus* had the pleasure of hearing his *Principia* and *Fundamenta Botanica* publicly lectured upon at that distinguished university, in which he was himself a student, and the young men pointed him out one to another as the author of the system. Nay, Nature herself favoured *Linnæus*, in causing, through his diligence and care, the fine *Musa* to flower in *Holland*, for the first time,—which was looked upon through the whole country as a wonder. Even *Boerhaaven* himself came thither [*to Hartecamp*], in order to get from *Linnæus* his.

his demonstration of this *Musa*, described for posterity in the treatise that was afterwards published, under the name of *Musa Cliffortiana*, whereby every gardener has been enabled to bring forward its flowers. At *Burmann*'s, in *Amsterdam*, *Linnæus* was always welcome to examine his *Ceylon* and *African* plants. At *Gronovius*'s, in *Leyden*, *Linnæus* was exactly as if he had been at home, and had there an opportunity of seeing the plants of *Virginia*. From *van Royen*, *Linnæus* always got all the greatest rarities for the garden of *Clifford*, and he visited every month the gardens at *Amsterdam*, *Utrecht*, and *Leyden*, but every day that of *Hartecamp*. After *Linnæus* had thus acquired great reputation, and a great knowledge of plants, in *Holland*, he left that country. As soon as he reached *Brabant*, he made the reflection that he was come out of a fine garden into a poor pasture ground; both the people and their habitations were poor. The city of *Antwerp* had antique and magnificent buildings, but the inhabitants in general were in a state of poverty. At *Brussels*, he saw fine fountains in the streets, and a valuable arsenal; the Emperor's sister lived here, and the Romish religion was in the most prosperous state. He often went to a wall on the western side, where he had a view of the whole of this fine city. On the eastern side, it had suffered very much [*by bombardments*] from the French. At *Mons* there was a strict examination, and no person was permitted to pass who had more than 50 livres with him; however, *Linnæus* passed, though he had 200 ducats. This town, though not very large, had eleven apothecaries. In its neighbourhood there was dug stone, coal, and slate for roofs. At *Valenciennes*, *Linnæus*'s trunk was sealed up, as he had a great number of new books, having carried with him a copy of every one he had published in *Holland*. Thence he passed the plains of *Flanders*, resembling those of *Skåne*. The houses were for the most part built with a kind of *Marmor sectile*, or stone between sandstone and chalk. At *Cambray*, every time the clock struck, two wooden figures of men were seen striking the bell. The road was paved with a kind of argillaceous limestone (*Marmor margaceum*. Syst. Nat. 12. Vol. 4. p. 44.).

On *Linnæus's* arrival at *Paris*, he was recommended by the old Professor *Antoine de Jussieu* (who was constantly occupied by his practice as a physician) to his brother, the botanical demonstrator, *Bernard de Jussieu*. Here *Linnæus* employed.

employed himself in viewing the fine garden, the *herbaria* of the *Jussieus*, *Tournefort*, *Vaillant*, *Surian*, and others, as also the large collection of books belonging to *D'Isnard*. *Bernard de Jussieu* made excursions to *Fontainbleau* and *Burgundy*, solely for the purpose of showing *Linnæus* the finest plants that were to be met with in the neighbourhood of *Paris*, and they were accompanied by *La Serre*. These excursions put *Linnæus* to no expense, and *Bernard de Jussieu* every day gave him new proofs of his friendship. Thus *Linnæus* enjoyed here the conversation of both the *Jussieus*, *Reaumur*, *Obriet* (draughtsman and fellow traveller of the late *Tournefort*), *La Serre*, and the widow *Vaillant*, as also of Mademoiselle *Basseport*, botanic paintress in the royal garden. On the 14th of June, *Linnæus* requested *Du Fay*, at that time chairman, to obtain permission for him to attend the Academy of Sciences; when the sitting was over, *Linnæus* was told to wait a little while, and was afterwards informed that the Academy had chosen him a Corresponding Member. *Du Fay* proposed to *Linnæus* to become a Frenchman, should the Academy appoint him one of their members with an annual salary, but *Linnæus*'s greatest inclination was to go to his native country. After *Linnæus* had seen the King's palace, *Versailles*, and the country round *Paris*, the libraries, museums, collections of plants, and *Reaumur*'s cabinets, during which time he lived almost every day with the two *Jussieus*, and of course without expense, he prepared to set out for *Sweden*, as his intention was not to learn French manners, or foreign languages; being of opinion that time is never bought so dear as when people go abroad only for the sake of languages. Indeed, *Linnæus*'s time did not allow him to study languages; but it ought also to be observed that his genius was so little disposed to the attainment of them, that he learned neither *English*, *French*, *German*, *Laplandish*, nor even *Dutch*, although he staid in *Holland* three whole years. Nevertheless, he found his way every where, well and happily. *Linnæus*, having now seen every thing remarkable at *Paris*, went to *Rouen*, and thence sailed with fair wind and weather to the *Categate*, where the wind shifted, and he landed at *Helsingborg*, from which place he proceeded to *Stenbrohult* to see his aged father. Having halted some days at that place, *Linnæus* set out for *Fahlun*, where he found that his confidential friend *Johan Browallius* was already made Professor of Natural Philo-

sophy at *Åbo*, and that the object of his affections [*Miss Moræa*] was longing for his return. *Linnæus* was now formally betrothed to her, and they went to *Stockholm*, in order further to try his luck.

Stockholm received *Linnæus* in the month of September, 1738, as a foreigner. He intended to establish himself here as a physician, but, being unknown to every body, people were unwilling to trust their lives into the hands of an inexperienced practitioner; nay, they would not even trust him with their dogs, so that *Linnæus* often doubted whether he should ever get forward in this kingdom. At every place abroad he had been honoured as *Princeps Botanicorum*, and in his own country he was looked upon as a *Klim*, arrived from the subterranean world: had *Linnæus* not been in love, he would certainly have left *Sweden*, and gone abroad again. The only mark of attention he obtained was at a sitting of the Academy of Sciences of *Upsala*, on the 4th of October, at the illustrious senator's, Count *Bonde*'s (then president) of *Stockholm*, when he was unanimously chosen one of its members.

In the year 1739, *Linnæus* seeing that he could not get practice at all, began to frequent public places, where he saw many young men of distinction who had suffered severely *in castris Veneris*; he advised them to take courage, and to drink a quarter [*about 3 quarterns English measure*] of *Rhenish* wine, assuring them that he would cure them within a fortnight's time; when at last two persons, who had been for a long time under a course of medicine to no purpose, committed themselves to his care, and he cured them immediately. Hence, within a few months he had the greater part of the young men under his hands, and by these means his reputation began to increase in the small-pox and agues, then prevailing; so that as early as the month of March he had acquired considerable practice.

Linnæus became acquainted with the learned Captain *Triewald*, who had gained great respect every where, in consequence of having introduced into the kingdom a more general taste for experimental philosophy. At this time Captain *Triewald* was projecting the institution of an Academy of Sciences in the metropolis, concerning which he frequently consulted Baron *Höpken*, and Dr. *Linnæus*; and with these *Jonas Ahlström*, a man deserving well of his country, was also associated. These persons met, formed their regulations, and laid the foundation of the Academy in the month of May. They drew lots for the offices,

offices, and that of President fell on *Linnæus*. In the mean time, *Linnæus* rose more and more in reputation. During the Diet which was then held, the Marshal of the Diet, Count *Carl Gustaf Tessin*, sent for *Linnæus*, and asked him if there was any thing he wished to request of the Diet, as he [*the Count*] was fully convinced that the States of the Kingdom would feel a pleasure in showing favour to a Swede, who had distinguished himself so much abroad; but *Linnæus* having nothing to request just then, *Tessin* desired him to consider, and return an answer the next day. Meanwhile, Captain *Triewald* advised *Linnæus* to make application to the Board of Mines for the 200 ducats annually, which he, *Triewald*, had formerly enjoyed, and which were not yet disposed of. Count *Tessin* received this petition on the 14th of May, and desired *Linnæus* to call again at dinner time. In the *interim*, *Tessin* presented the petition to the committee, and at dinner time he congratulated *Linnæus*, informing him that the States of the Kingdom had granted his petition, on condition that he would give public lectures on botany, in the summer at the House of Nobles, and in the winter on the collection of minerals belonging to the Board of Mines.

Count *Tessin* had, in the mean time, spoken to Admiral *Ankarkrona* about giving the office of naval physician at *Stockholm* (which was vacated by Dr. *Boïje*), to *Linnæus*; whereupon *Linnæus* was sent for by Admiral *Ankarkrona*, who informed him that this office was vacant, and, representing to him the opportunities which a botanist would have of investigating the properties of simples in the naval hospital, said that if *Linnæus* wished to have it, he alone should be recommended: which happened; and on the 3d of May *Linnæus* was appointed by his Majesty Physician to the Navy. Within one month therefore *Linnæus* was appointed a public teacher at the House of Nobles, with a pension; Physician to the Navy, with pay; and first President of the Academy, with distinction; and Count *Tessin* offered *Linnæus* not only to live in his [*the Count's*] house, in the same apartment where he himself used to lodge when he was a bachelor, but also to eat at his table, where the greatest men in the kingdom met during the Diet. As this was the Diet when the two parties of *Hats* and *Caps* [*Hattar och Mossor*] chiefly began, *Linnæus* was jokingly styled in general by the *Hats*, their Archiater, from which circumstance *Linnæus*'s practice increased so much that he alone had as much as all the other

physicians collectively, and from this time was in the receipt of as much as 9000 copper dollars [*about £250 sterling*] annually, at *Stockholm*. He therefore considered this as the proper time for enjoying the fruits of his labour, and begged that the wedding might take place; accordingly, on the 26th of June 1739, he was married to *Sara Elisabeth Moræa*, at *Sveden*, near *Fahlun*, the country-house of his father and mother-in-law. Having passed a month at *Fahlun*, he again went to *Stockholm* to resume the duties with which he had been entrusted, and at the end of September he laid down the Presidency of the Academy of Sciences. By their laws it was ordained that a short discourse should be delivered by the person who went out of office, but *Linnæus* made a formal oration *on what is remarkable in Insects*, which pleased every body, and the custom of giving an oration was followed by all the presidents afterwards. *Linnæus*'s oration was printed by order of the Academy.

In the spring of the year 1740, Professor *Olof Rudbeck* died, when *Rosen*, *Linnæus*, and *Wallerius* were put up as candidates, and Count *Tessin*, who was then at *Paris*, having heard a good deal about *Linnæus* in that city, recommended him to Count *Gyllenborg*, at that time Chancellor. Count *Gyllenborg* arranged matters among the competitors in such a manner that *Rosen* was to succeed to this, and *Linnæus* to the office of Professor *Roberg*, who was about to resign on account of age, but that *Linnæus* and *Rosen* should afterwards change professorships with each other, which they agreed to do, because he [*Count Gyllenborg*] as Chancellor, thought it but right that *Rosen*, who had been so long a time in the service of the universities, should obtain the first vacancy; I do not know for what reason this nobleman afterwards altered his opinion, and recommended *Linnæus* to his Majesty, so that *Rosen* was on the point of losing the professorship this time, had not another circumstance taken place. *Rosen* got the professorship. *Roberg* afterwards resigned, and all sorts of shifts and evasions were employed at *Upsala* to hinder *Linnæus* from getting the other professorship, the year passing without any thing being decided upon. Dr. *Gotsch Wallerius*, in a public dissertation, attempted to lower the merits and reputation of *Linnæus*, when Professor *Beronius* (afterwards Archbishop), and the Master of Arts *Klingenberg*, proved openly in the University that *Wallerius* was in the wrong. These proceedings came before the States

of the Kingdom, assembled in the year 1741, who all disapproved of Dr. *Wallerius*'s conduct, and orders were sent to the Consistory, to make out the presentation, without harassing *Linnæus*, who both at home and abroad had made himself celebrated. In the mean time, the war began between *Sweden* and *Russia*, which made *Linnæus* apprehensive that, being Physician to the Navy, he should not avoid being commanded to attend to the fleet, but, having received an order from the States of the Kingdom to travel through *Öland*, *Gothland*, and *West Gothland*, for the purpose of describing the produce of those countries, he considered himself fortunate. He received, on the 5th of May, 1741, the grant of the Professorship of the Theory and Practice of Medicine, in the room of Professor *Roberg*. He now took with him six bachelors, *viz.*, *P. Adlerheim*, *J. Moræus*, *H. J. Gahn*, *G. Dubois*, *F. Ziervogel*, and *S. Wendt*, on an immediate expedition to *Öland* and *Gothland*, where he noted down the most remarkable things he met with; and he published his travels through *Öland* and *Gothland*, in 1745.

As soon as he returned from his travels, which was in the autumn, he removed to Upsala, where he delivered his oration *de Peregrinationum intra patriam necessitate*, which was printed at *Upsala* in 1742, and afterwards at *Leyden* in 1743. He now began his public lectures on the history of diseases to a great number of auditors.

At the end of the year he and *Rosen* divided the Professorship with each other in the following manner, *viz.*, *Rosen* took upon himself the superintendance of the hospital, anatomy, physiology, aitiology, therapeutics, and pharmacy; *Linnæus*, on the other hand, took upon himself the superintendance of the university garden, *materia medica*, semiotics, dietetics, and natural history. This arrangement was confirmed by His Majesty.

In the year 1742, *Linnæus* laid before the university a requisition for repairing the academical garden, and pointed out the necessity of building a green-house; and it was resolved that the garden should be laid out anew, that a green-house should be erected, and that the superintendant's house should be pulled down and rebuilt. Baron *Carl Harleman* gave a magnificent plan for the garden. The garden was enlarged, and the ground divided into quarters and walks. The old house, of stone, (built by *Olof Rudbeck*, father of the other *Rudbeck*)

Rudbeck) in which there was not a single piece of wood, the posts and beams being of iron, was converted from an owl's nest into a lodging fit for the Professor*.

In the year 1743, the green-house, with both its wings, was ready, and the garden put in order, and provided with many foreign plants, which were augmented from year to year by the seeds which *Linnæus* procured from his friends and foreign correspondents. *Linnæus* now gave public lectures on dietetics, with experiments and observations, of which he had collected more, in the course of his reading and travelling, than any author before him; hence his audience was extremely numerous. On the 31st of May, this year, *Linnæus* was chosen a Member of the Academy of Sciences at *Montpellier*.

In the year 1744, *Linnæus* improved botany very much, and worked on the necessary books, without which the Professorship would not have been of so much use as it ought to be. He also laid out the garden agreeably to his system, and at a promotion held at that time he delivered his oration *de Telluris Habitabilis incremento*. When his Royal Highness Prince *Adolph Fredrick* viewed the university, and the Professors were presented to him by the Chancellor Count *Gyllenborg*, Professor *Andreas Celsius* and *Carl Linnæus* were denominated *Lumina Academica*, on account of their knowledge, which was celebrated as well within as without the kingdom; and the same year, when the Rector and four of the Professors (of whom *Linnæus* was one) waited on her Royal Highness to congratulate her on her delivery, *Linnæus* was the only one who was ordered to proceed to *Ekholmsund*, and he had there a special audience of her Royal Highness.

On the 12th of October *Linnæus* was appointed Secretary of the Royal Society of Sciences at *Upsala*, in the room of the celebrated late Professor of Astronomy *Andreas Celsius*, and on the 24th of November the same year he was chosen *Inspector Nationis Smolandicæ*, also in the place of Professor *Andreas Celsius*.

In the year 1745, *Linnæus* established in the green-house at *Upsala* a mu-

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* *In the margin of this part of the Diary is the following insertion, viz.,*

"On the 21st of May, Professor Roberg died, when Linnæus obtained the whole salary, having up to this time enjoyed nothing besides his pension."

seum of natural history, with the many rare animals given by the Chancellor Count *Carl Gyllenborg*, and also the large collection which his Royal Highness [*Prince Adolph Fredrich*] was pleased to present, and which *Linnæus* every day augmented by means of his correspondents, so that this [*museum*] became one of the best. This summer *Linnæus* went to *Fahlun*, in order to take possession of his wife's inheritance from her father, who died at the end of last year; however, he had left the greatest part of the property to his mother-in-law. At this time *Linnæus* caused to be printed two books of great importance to his science, the *Flora* and *Fauna Suecica*, on the latter of which he had laboured for 15 years; without these *adminicula* natural history could not have been carried on with the ardour that was requisite.

In the beginning of the year 1746, both their Royal Highnesses visited the university, and gave the Professors gold medals; though all the other Professors received but one each, *Linnæus* received two, as a mark of particular favour.

Immediately afterwards *Linnæus* undertook a journey to *West Gothland*, through *Örebro*, *Mariastad*, *Lidköping*, *Skara*, *Sköfde*, *Falköping*, *Borås*, *Alingsåhs*, *Gotheborg*, *Bohus*, *Marstrand*, *Uddewalla*, *Wenersborg*, *Amål*, *Carlstad*, *Philipstad*. He returned home in the autumn, and wrote this journey, which was published the year afterwards.

When the charter of the East India Company was about to be renewed, the Senator Count *Tessin* agreed with the East India Company that they should allow a student in natural history a free passage out to *China*, and home; more especially on this account, that the Master of Arts *Ternström*, whom *Linnæus* had sent out the year before, unhappily died on his voyage.

Baron *Hårleman*, Baron *Höpken*, Baron *Palmstjerna*, and Count *Ekeblad* agreed amongst themselves to distinguish *Linnæus*, and moreover to encourage him by a medal which they caused to be struck, and dedicated to Count *Tessin*. On one side was the head of *Linnæus*, with this inscription, CAROL. LINNÆUS, M. D. BOT. PROF. UPS. ÆT. 39; and on the other side, CAROLO GUSTAVO TESSIN ET IMMORTALITATI EFFIGIEM CAROLI LINNÆI, CL. EKEBLAD, AND. HÖPKEN, N. PALMSTJERNA, ET C. HÅRLEMAN, DIC. MDCCXLVI.

On the 19th of January, 1747, his Majesty was pleased, without any application

cation from *Linnæus*, and without his even expecting it, to honour him with the rank and title of *Archiater*.

On the 14th of February, when the Academy of Sciences at *Berlin* was about to be restored, and members were chosen from all the kingdoms in *Europe*, *Linnæus* was the only *Swede* who became a member thereof.

Professor *Herman*, of *Leyden*, who was sent in the last century by the Dutch, to describe all the plants and spices that grew in *Ceylon*, happily returned thence, but did not complete the undertaking. After his death the herbarium was lost to the learned world, until at last it came into the hands of *Gunther*, the apothecary, at *Copenhagen*, who, wishing to know the names of the dried specimens, sent to *Holland*, where he was informed that nobody was likely to discover the names but *Linnæus*, in *Sweden*; he therefore sent them to *Upsala*, when *Linnæus* discovered the collection to be *Herman*'s, and was rejoiced to be the person to save from destruction this treasure, which had hitherto been missing. He devoted himself, day and night, to examining the flowers, which, from the great length of time they had been dried, rendered his task almost Herculean; and he wrote his *Flora Zeylanica*, which was now about to be printed.

The Justitiar Cancellern* *Löfvenhjelm* presented to the States of the Kingdom a plan for promoting the study of natural history, and represented the great advantages which the kingdom might expect from *Linnæus*. This may be read in Lidbeck's *Disputatio de incrementis Sueciæ*.

Linnæus having for several years wished that a voyage might be made to *America*, and having procured some exhibitions and the Professorship of Œconomy at *Åbo* for his pupil *Pehr Kalm*, who was desirous of embarking in this expedition, *Kalm* was at last sent out.

In the year 1748, *Linnæus* published the *Hortus Upsaliensis*, and the 6th edition of his *Systema Naturæ*, with the essential characters, and promoted the study of natural history so much, that in no kingdom in *Europe* could botany be said to be in a more flourishing state. During his summer lectures, he took out with him about 200 pupils, who collected plants and insects, made observa-

* A law officer in Sweden, whose duties are somewhat similar to those of the *Attorney General* in England. (*Editor.*)

tions,

tions, shot birds, kept minutes, and after having botanized from 7 o'clock in the morning until 9 in the evening, every Wednesday and Saturday, returned with flowers in their hats, and accompanied their leader, with drums and trumpets, through the city to the garden. Several foreigners and people of distinction from *Stockholm*, used to attend *Linnæus*'s excursions; indeed at this time the science had attained the highest degree of popularity.

The Kongl. Cancellie Collegium* issued an edict, prohibiting every Swede from printing or publishing any thing abroad, under a penalty of 1000 silver dollars [*more than £80 sterling*] which was aimed entirely at *Linnæus*, as no one else had published any thing abroad. This tied up the hands and faculties of *Linnæus* so much, that he was on the point of vowing never more to publish any work, except some dissertations.

Linnæus received from *Gmelin*, who travelled through *Siberia*, a collection of the greater number of the plants of that country. He had before received, from *Gronovius*, a collection of *Virginia* plants, and from Professor *Sauvages* all those that grew about *Montpellier*.

In order to leave nothing undone in his professorial office, *Linnæus* published his *Materia Medica*, as the most ready means of instructing in that science.

On the 29th of April, *Linnæus* set out on his journey to *Skåne* (as he had been ordered by the States of the Kingdom during the late Diet), and passed through *Christianstad, Cimbrishamn, Yslad, Scanör, Malmö, Lund, Landscrona, Helsingborg*, and *Engelsholm*. On his return he visited his birth-place, where his father died the year before, and where *Linnæus* had the satisfaction to see his only brother succeed to the living.

On *Linnæus*'s return home, he continued his academical occupations, and towards the end of the year was invested with the Rectorship of the University, which office had been held by another person, provisionally, during his absence.

In the year 1750, having executed the office of Rector with great attention, and at the same time given private instructions, he, in consequence of his great exertions, and the spring setting in, had a very painful attack of the gout, which obliged him at the expiration of his Rectorship to keep his bed, and

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* We have no public board in England similar to that above-mentioned, the duties of which are various, but consist chiefly in superintending places of education. (*Editor.*)

with

with very little hopes of living; however, he was restored by eating wood-strawberries.

Linnæus's correspondents had every year requested him to publish his *Philosophia Botanica*, in order that the terms and principles [*of his system*] might be explained in one work, which Linnæus considered as a matter of importance, not only to the learned world, but also to his pupils; wherefore this work was completed. He likewise now wrote and published his journey in *Skåne*, for the benefit of the public.

The garden being now so extremely rich in plants that it rivalled the first academical gardens in *Europe*, *Linnæus* at last prevailed on the university to appoint an assistant and a labourer to attend to the green-house, and also to allow 100 cart-loads of fire-wood annually, and this in addition to the 20 men before allowed.

Linnæus was appointed by the Academy of Sciences of *Thoulouse* one of its members.

Osbeck, one of *Linnæus*'s pupils in natural history, proceeded to *China*, in quality of a clergyman; of this, *Linnæus*, by recommending *Osbeck*, had been in a great measure the cause.

Dr. *Hasselquist* having last year (1749) gone to *Ægypt*, by the advice of *Linnæus*, to try what he could do there in the way of natural history, wrote to *Linnæus*, and complained of want of money. *Linnæus* himself gave him some money, and applied to the Academy of Sciences, that all who loved virtue and the sciences might contribute. All the faculties at *Upsala* gave him exhibitions, and a sum amounting to 4000 silver dollars [*above £330 English*] was collected at *Stockholm*.

1748. His pupil *Montin* went to *Lapland*, and his pupil *Hagström* to *Jemtland*.

In the year 1750, *Linnæus* was requested by the Spanish Ambassador, in the name of the King his master, to procure a botanist to travel over *Spain*, and *Linnæus* appointed for that purpose *Löfling*, the best of his pupils at that time, who left *Sweden* accordingly, in the spring. Thus *Linnæus* had pupils in all parts of the world.

In *America*——*Kalm*, who returned in 1751.

Asia——*Osbeck*, and *Ternström* before him, who returned in 1752.

In *Africa*——*Hasselquist*, who died at *Smyrna* in 1752.
South of Europe——*Löfling*, who died in 1751.
North of Europe——*Montin*,—*Hagström*. 1749.
Gothland——*Bergius*. 1752.
West Gothland——*Tidstrom*. 1752. } At the expense of *Tessin*.

Kalm returned from *Canada*, loaded with a very considerable collection of plants, of every one of which *Linnæus* got specimens. In this manner *Linnæus*'s herbarium increased so fast, that it rivalled every one in the world, he having collected all the *species* that were to be found in *Sweden*, *Lapland*, and in the gardens of *Clifford*, *Leyden*, *Oxford*, *Chelsea*, and *Paris*, besides all the plants from *Virginia* through *Gronovius*, from *Siberia* through *Gmelin*, from *Kamtschatka* through *Demidoff*, from *Languedoc* through *Sauvages*; not to mention those he got from the garden at *Upsala*, and from all his other correspondents.

Linnæus was ill with the gout, when *Kalm* came home; however, he got up, and recovered, through pleasure at the sight of the plants.

Georg Tycho Holm (afterwards Professor at *Copenhagen*), a student sent by the King of *Denmark* to study botany under *Linnæus*, after having staid a year with him, returned home, to the satisfaction of his nation, and to the honour of *Linnæus*. *Löfling*, arriving in *Spain*, kept up a close correspondence with *Linnæus*, the latter having procured this journey for him by his recommendation. *Hasselquist* went this year through the *Holy Land*, and gratified *Linnæus* by his discoveries. All of these were *Linnæus*'s pupils.

Her Majesty the Queen, taking pleasure in natural history, formed a most excellent collection of shells and insects, which had been procured from *India*; so that her cabinet rivalled the finest in the world. *Linnæus* received commands to repair to *Drotningholm*, to describe all these. He was obliged to make a new science in respect to shells, to which nobody had paved a clear way, and to lay a foundation which he had not thought of. He had the honour of conversing daily with this great and excellent Queen, and with his gracious Sovereign. He was obliged to be a courtier, contrary to his inclination.

At this time *Linnæus* commenced a greater work, namely, the *Species Plantarum*, (after having finished, and laid the foundation with, the *Genera*), in order to bring the science down to the present time,—a work which is now the great-

est in botany; but *Linnæus* was at present the only person who had sufficient materials for it, having got so large a collection of plants, and seen so many gardens and collections,—in short, having seen so many more plants than any body else. By such a book, every one could see what had already been discovered; what was new, when it occurred; and how it was to be named, which otherwise would not have been possible.

1752. To *Linnæus*'s great regret, Dr. *Hasselquist*, one of his favourite pupils, died of *Pthisis* at *Smyrna*, on the 9th of February, 1752, in consequence of his fatigues in the *Holy Land*; when all his collections and manuscripts were sequestered. *Linnæus*, however, was not discouraged, but recommended Dr. *Kaehler* to her Majesty, that he might get part of the exhibition founded by *Wrede* for those who should travel abroad, in order that *Kaehler* might proceed on a botanical expedition to the Cape of *Good Hope*. Her Majesty exerted herself for *Kaehler*, and he obtained the exhibition, but the Dutch refused him leave to visit the Cape of *Good Hope*, although applications had been made with that view by the Swedish Ambassador at the *Hague*. Who would have thought that, as the sciences have flourished so much in *Holland* for the last 50 years, this country should be so illiberal as to refuse a person leave to travel at his own expense, in order to do a service alike to himself and to the public, by discovering the wonders of the creation!

1753. At the end of the last year and the beginning of this, *Linnæus* was again commanded to go to court, and he described her Majesty's own collection of natural curiosities at *Ulricksdahl*, and Count *Tessin*'s collection of fossils at *Stockholm*. He was presented by her Majesty with a fine gold ring, which was set with an oriental ruby; and from Count *Tessin* he received a gold watch, and *Rumphius*'s *Herbarium Amboinense*, which were worth 100 *plåtar* [*about £27 English*]. But what pleased *Linnæus* most was, that her Majesty *Louisa Ulrica*, that excellent Queen, inquired after his only son, how he went on, and whether he had any inclination for natural history; and, being informed that he had a taste that way, she promised to send him, when he was grown up, to travel over *Europe* at her own expense, at which gracious promise *Linnæus* heartily rejoiced.

All the manuscripts and collections of Dr. *Hasselquist* were sequestered at Smyrna, for a debt of 14000 silver dollars (*nearly £1170 English*). Nobody

knew how they were to be redeemed. Archiater *Bäch*, *Linnæus*'s only, and most intimate, friend, ventured to propose it to her Majesty, who immediately paid the debt, and gave orders that the collection should be forwarded home. What an instance of the Queen's liberality and greatness of mind!

Their Majesties permitted *Linnæus* to be in their private company the whole day, as if he had belonged to the court, when the conversation turned wholly on natural history, which they graciously attended to and discussed. Count *Tessin* likewise was partial to this science, especially those parts of it which relate to fossils and shells; his Countess loved botany. Thus it seemed as if *Linnæus* had raised the science from nothing, in this kingdom, to its utmost extent, it being loved and cultivated by the greatest people,—nay even by royalty itself! What greater proof could there be of his diligence? *Osbeck* returned from *China*, and made *Linnæus* a present of his collection, consisting of more than 600 Chinese plants.

Löfling's collection of plants from *Spain* and *Portugal* amounted to a similar number.

For two years past, *Gmelin* had sent all the Siberian plants from that country; *Demidoff* the whole of *Steller*'s collection; *Sauvages* had made him a present of the whole of *his* collection; these, in addition to what *Linnæus* had collected in *Lapland*, *Sweden*, *Denmark*, *Zealand*, *Holland*, *England*, and *France*, and what he had received from *Kalm* and *Gronovius* from *North America*, and from all botanists throughout *Europe*, rendered his *herbarium* one of the largest in the world.

April 27. *Linnæus* was dubbed a Knight of the Royal Order of the Polar Star, by his Majesty's own hand, an honour that had never before, in *Sweden*, been conferred on any Doctor, Archiater, or Professor. Indeed, no Gentleman of the Bedchamber, though of noble extraction, had yet been presented with this Star. His motto was *Famam extendere factis*.

The *Museum* of Count *Tessin Linnæus* described, *fugitivis oculis*, when he was at *Stockholm*. His Excellency dedicated it to *Linnæus* himself, and put his medal at the head of it, as a token of the respect he entertained for *Linnæus*'s science.

During the dog-days, *Linnæus*, as usual, instead of drinking mineral waters, ate wood-strawberries, and found himself very well in consequence. Dr.

Kaehler, for whom, through her Majesty's recommendation to Count *Ekeblad*, and through his (*Linnæus*'s) own influence with the consistory, *Linnæus* had procured the *Stipendium Wredianum*, went to *Italy*. *Löfling* was commanded by the King of *Spain* to travel through *South America*, in order to collect specimens for the Spanish Court, the Prime Minister, the King of *France*, the Queen of *Sweden*, and *Linnæus*. It was an honour to *Linnæus* to be remembered along with such great sovereigns, and likewise to have his pupils sent so far about the world.

The 2 volumes of the *Species Plantarum*, one of the most useful of [*Linnæus*'s] works, and which show the greatest experience [*in botany*], were completed towards the autumn. *Linnæus* had employed on them all his abilities; but, owing to his continual sitting, writing, and labouring, he felt a pain in his right side, and laid the foundation for his habitual disease, the stone, of which, before that time, he never had an attack. However, thank God, it passed off in the course of years, and by eating wood-strawberries.

1754. The 7th of April, at 3 o'clock in the afternoon, *Linnæus*'s wife gave him a second son, *Johan*.

The 5th edition of the *Genera Plantarum*, completed by *Linnæus*, was now printed.

Musæum Adolphi Friderici, which *Linnæus* had written at the palace of his great Sovereign, was sent to the press.

1755. The *Flora Suecica*, much augmented with species and œconomical observations, was a second time published, in order to point out to the public the use of our native plants.

When the Academy of Sciences at *Stockholm* first adjudged the premiums, bequeathed by *Sparre*, of two medals, each of the value of 10 ducats [£4 15*s*. *English*] annually, the first was given to *Linnæus*, for having delivered to the Academy, the year before, a memoir on making the mountains of *Lapland* useful and productive to the public, as there could be neither meadows nor corn-fields on them. *Linnæus* had undertaken to investigate all the plants found on foreign mountains, in like climates, that might be used in our œconomy; these indeed were the only means, though they had never been thought of before.

On the 29th of September, the Russian Ambassador came to *Upsala* to deliver

liver to *Linnæus* a letter of invitation, and a diploma to be Member of the Imperial Academy at *St. Petersburg*.

Menetti, who had written against *Linnæus*, repented of it.

Linnæus became a member of the Society at *Florence*.

(Translated from the German).

Göttingen Literary Gazette 1755. p. 692.

Literary news from Sweden.

M. Linnæus, Knight, and Physician to the King, has lately been offered by the King of *Spain* a Barony and the Chief Inspectorship of Botany, to settle at *Madrid*, where he is to enjoy full liberty of exercising his religion; we do, however, hope that if the King* should ennoble him, he will not leave *Sweden*.

1756. The whole of this year, he laboured at the 10th edition of his *Systema Naturæ*, inserting all the species of animals that were known to him.

29th of June. When Lieutenant Colonel *Dahlberg* was going (two years ago) to *Surinam*, *Linnæus*, through some friends of his, prevailed on him to take *Daniel Rolander*, who, after *Löfling*, had been maintained in *Linnæus*'s house, as tutor to his son, and who during that time had wholly applied himself to the study of insects. The chief reason was, that *Linnæus* wished to get cochineals alive. *Rolander* now returned from *Surinam*, and sent to *Linnæus* (who was lecturing just at that time) a *Cactus* with cochineals in a jar. The gardener opened the jar, took out the plant, cleansed it from the dirt (and of course from the insects), and replaced it in the jar, so that the insects, though they arrived alive, were destroyed in the garden, before *Linnæus* could even get a sight of them; and thus vanished all his hopes of rearing them with advantage in the conservatory. This grieved him so much that he had the most dreadful fits of meagrim [*hemicrania*] he ever felt. This ungrateful pupil did not give *Linnæus* any thing he had collected, but slandered him every where.

November 20. On *Linnæus*'s being ennobled, he called himself *Linné*.

1757. March 7. My little son *Johan*, who had just begun to talk a little,

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* Quere,—the King of *Sweden*? (*Editor.*)

was

was attacked with the epidemic cough which now prevailed, and which degenerated into a *tritean* with *aphthæ*; after having been ill eight days, he took leave of this world, in the night, between 12 and 1 o'clock. He had not attained the age of 3 years.

June 24th. *Linnæus* published the travels of *Hasselquist*. This year, *Linnæus* laboured at the 10th edition of the *Systema Naturæ*.

July. Received the melancholy intelligence that *Löfling* was dead in *America*. He was the best of all my pupils, and communicated a great many remarkable observations made during his travels. When the King of *Spain* requested me to send a botanist, *M. Löfling* was appointed. He was two years in *Spain*, collected, discovered, and communicated a great deal. Afterwards he was sent to travel through *South America*, but was laid up in a tertian ague, became dropsical, and died.

Dr. *Kaehler* returned from *Italy*, *Apulia*, &c. with a large collection.

I began the publication of the 10th edition of the *Systema Naturæ*, being a summary of every thing I have seen in the world,—a work to which natural history has never had a fellow.

November 8. Towards 8 o'clock in the evening, my daughter *Sophia* was born dead [*to all appearance*], but by means of *insufflatoria medicina* came to life in the space of half an hour, and was baptized on the 9th of November.

1758, 3d of March. Received from his Excellency Count *Tessin* the handsome gold medal which he had caused to be struck in remembrance of me, for the lately published *Systema Naturæ*. On one side of it is, as on the former medal, *Linnæus*'s head, and on the other side are three crowns; the first crown exhibiting heads of animals, the second flowers, and the third crystals and stones, which a light from above irradiates; with the inscription *Illustrat.*

Linnæus likewise published the late *Löfling*'s *Iter Hispanicum*, in order that there might remain some memorial of so worthy a pupil.

Hammarby and *Söfja* were bought for 80000 dollars [*upwards of* £2330 *English*].

1759. January. My only son was appointed Demonstrator of the *Upsala* garden.

Two volumes of the 10th edition of the *Systema Naturæ* were published, and also the 4th volume of the *Amœnitates*.

During

During the autumn term I was Rector, their Majesties and Prince *Gustaf*, with the Princess, visited the university, and I made an oration. They were very much pleased with the oration, which was in Swedish.

1760. I got a premium of 100 ducats (specie) from the Imperial Academy of *Petersburg*, for [*the answer to*] the question relative to the sexes of plants. Dr. *Burmann*, afterwards Professor at *Amsterdam*, and *Schreber*, afterwards Professor [*at Erlangen*], were here a year to hear me.

1761. The new *Fauna* was published, and I instructed the *Demidoffs*, of *Russia*, who gave me 3500 dollars [*upwards of £100 English*].

Adam Kuhn came from *America* to hear me, and staid here till the middle of 1765; he became the first Professor at *Philadelphia*.

Linnæus drew many foreigners to this place, where before his time they were not common.

In the month of November, 1761, I had his Majesty's sign-manual to the patent of nobility. It was antidated the 11th of April, 1757.—A new proof of royal favour!

In 1762, at the closing of the Diet, it was resolved that those whom his Majesty had created noblemen should remain so, and consequently amongst others *Linnæus* also continued a nobleman, under the name of LINNE'. His arms were three fields, sable, vert, and gules, indicating the three kingdoms of nature; on these an egg; and in the helmet the *Linnæa*. *Tilas*, however, the Censor in Heraldry, had entirely altered the original design.

It having been understood in the Diet that *Linnæus* possessed the art of making pearls, he was ordered to attend, and discovered the whole art, for which he received from *Bagge*, the merchant at *Gothenberg*, 1800 copper dollars [*upwards of £520 sterling*]. *Linnæus* obtained permission from his Majesty to depute any one of his pupils to execute his office.

Linnæus finding that he began to be infirm, and wishing that his children might have a house in the country, built one at *Hammarby*.

Linnæus published his *Species Plantarum* a second time.

The French Academy of Sciences having a right to nominate 8 foreign members, and the great astronomer *Bradley* being dead, Archiater *Linnæus* was, on the 8th of December, appointed in his stead. This honour is esteemed by the learned the highest that can be attained, and had never before been conferred on a *Swede*.

1763.

1763. *Linnæus* was excused from his professorial services, and his son, on account of *Linnæus*'s merits, obtained a grant to fill his office, though he was no more than 21 years of age. However, the father continued to act as professor until the son was fully competent. By these means, his valuable library, inestimable manuscripts, and collection of natural curiosities, not to mention several other things, were preserved.—At last, *Linnæus* received Tea alive from *China*, which he had tried to succeed in for so many years, and which nobody before had been able to procure, as neither the seeds, nor the root would bear the voyage. *Linnæus* desired that, the moment before the ship set sail from *China*, the seeds should be put in earth, and watered as a hot-bed. God blessed him even in this point, that he was the first who had the satisfaction to see Tea imported into *Europe* [*alive*]; it was by means of *Ekeberg*. He looked upon nothing to be of more importance than to shut that gate through which all the silver went out of *Europe*.

On the 3d of May, 1764, *Linnæus* was attacked by a violent pleurisy, from which he with great difficulty, and through the kind assistance of *Rosen*, escaped; and he repaired to *Hammarby* (where his building had lately been completed), in order to enjoy the fresh air, and he now conceived for *Rosen* an intimate regard.—On the 9th of July, he celebrated his *Silfver Bröllop* [*a Swedish custom, of commemorating a couple's nuptials after they have been married 25 years. The literal meaning of the words is* Silver-Wedding.]

On the 12th of July, his eldest daughter, *Lisa Stina*, was married to *Carl Fred Bergencrantz*, Lieutenant in the *Upland* Regiment.

The 6th edition of the *Genera*, much improved, was published.

In the month of September, *Linnæus* was informed that his beloved pupil *Forskåhl*, who had been Professor at *Copenhagen*, and had gone into *Arabia*, died in that distant country last year, which grieved *Linnæus* very much, as the science had thereby suffered an irreparable loss. However, he was glad that he had been able to make known (what people had always tried in vain to discover) the genus of *Opobalsamum*, viz. *Amyris*.

In the year 1765, he worked at the 12th or last edition of the *Systema Naturæ*, and, the whole of the autumn, on the *Clavis Medicinæ*, which would have employed the most learned men for an age.

1766.

1766. *Linnæus* was ordered to arrange for the last time her Majesty's cabinet, at *Drotningholm*.

Got ready the first volume of the System,—an excellent performance.

The King of *Denmark* presented *Linnæus* with two valuable works, *viz.* the *Flora Danica*, and the *Museum Conchyliorum* [*of Regenfus?*]. *Linnæus* was nominated the first foreign member of the Academy of Sciences at *Drontheim*.

1767. *Linnæus* was chosen a member of the Œconomical and Scientific Society at *Celle*.

The 2nd volume of the System was published.

1768. The 3d volume of the System is ready. The introduction is of great importance, not to mention other things.

1769. *Linnæus* built at his country-place a museum, which was on a hill, and in which he kept his plants, zoophytes, shells, insects, and minerals. It commanded one of the finest views that could be seen. All the curious visited this place, in order to inspect it. Lord *Baltimore*, who saw it, made *Linnæus* a present of a gold box, of the value of 100 ducats. The *Duc de Rochefoucault* viewed it with the greatest admiration. The paper-hangings, in his parlour, exhibited drawings of plants from the *East* and *West Indies*, and in his bedroom were paintings of insects, the whole more splendid and handsome than any tapestry that was to be seen.

Received an incomparable collection of dried plants, bulbs, and seeds, from Governor *Tulbagh*, at the Cape of *Good Hope*, and likewise a similar one made by M. *König* at the same place, and at *Maderaspatan*.

MEDICINE.

Linnæus practised physic at *Stockholm* from 1739 to 1741; he was physician to the great naval hospital there, and had, besides, as much practice as all the other physicians collectively; but, on being made Professor, he relinquished the whole of it, because either that or his duties as a Professor must otherwise have been neglected. From this period therefore he attended only his friends and the poor.

PHYSIOLOGY derived from him an important discovery, namely *Generationem ambigenam*. *Harvey* maintained that the *rudimentum futuri fœtûs* lies in *ovi puncto saliente*; *Leeuwenhoek*, that it lies in *genituræ vermiculis spermaticis*; *Linné*, on the other hand, that from the mother comes *Carina Malpighii*, *rudimentum encephali*, and from the father *punctum saliens cordis*, *et inde totum corpus*. This he proved by observations on hybrid animals, hybrid plants, &c. Thus, sense and temper, with tenaciousness of life, proceed from the mother, but external appearance and habit, with strength of constitution, from the father. The *Medulla spinalis* would grow *in infinitum*, if it were not confined by the *spina dorsi tandem ossificata in pubertate*; *et a retropressione libido*. The contrary happens in *Tæniæ*, and in vegetables which have no bone in their composition. *Ossea crusta* will grow *in infinitum*, *cæteris paribus*. The object of respiration, he thought, is to extract the electric fluid from the air by the lungs, and thus to transmit it to the *medulla*, becoming the *spiritus animalis*, as it were; and hence that the chief office of the lungs is not to accelerate the motion of the blood. Some foreigner has considered this as an *hypothesis* only, but *Linnæus* as an axiom.

PATHOLOGY is a subject on which he corresponded more than 30 years with the learned *Sauvages*, above 100 of whose letters are in his hands.

GENERA MORBORUM have not been so clearly defined by any one; there is not a single word in them that is not useful; his work on this subject is an excellent compend for a *tyro*. He has divided fevers into 3 classes, after a method entirely his own: EXANTHEMATICÆ, *typo scabiei*, *ab exanthematibus vivis contagiosis*; CRITICÆ, *typo Rheumatis* (Fluss), *ab acido seri sanguinis*; PHLOGISTICÆ, *typo inflammatorio*, *a putrido cruoris sanguinis*.

He was the first to explain, that the *Tænia* has no head, and grows *in infinitum*, and also that fragments of this creature sprout again.

That *Lepra* is caused by a species of *Gordius*, found principally in herrings, has since been confirmed by the Norwegians.

To show that *Raphania* is occasioned by the *Raphanistrum*, required a thorough acquaintance with natural history.

He maintained that *Scorbutus* is caused by culinary salt.

DIET nobody has treated of in a more solid and satisfactory manner, though he did not publish any thing on the subject. His doctrines, like those of the

later natural philosophers, are deduced from experience, and his system, like theirs, may therefore be called *experimental.* Every thing was deduced from occurrences in common life, cited in their proper places as examples; on which account his auditors were never more numerous than when he lectured on this subject. Several persons took notes at these lectures, but all the notes I have seen are incorrect.

PATHOLOGY, the foundation of the whole medical art, and of all medical theory, has been more improved by *Linnæus*, in his *Clavis Medicinæ* of 8 pages (which is a master-piece in its way, and one of the greatest treasures in medicine) than by a hundred authors and books in folio.

The *Mechanical* Physicians indeed had shown that the action of the *Sapida* consists in *relaxing* or *constringing*, according to the nature of their taste; but neither the *species saporis*, nor their contraries were explained,—much less the nature of the *Olida*. *Linné* was the first who saw that nature is balanced by contraries, and acted upon *numero quinario*. He saw that the Creator had given to animals two senses, *viz.* taste and smell.

That the *Sapida* act only on the fluids and solids, or on the fibres.

That the *Odora* act only on the brain and nerves.

He found that *Vitia Corporea*, as well in the fluids as the solids, are only *5* in number.

That the *Vitia Encephali, vel Systematis Nervosi* are likewise *5*; each with the same number of contraries.

He likewise found that the *Sapida* and *Odora* are also *5*, with as many contraries; and that the right indication results from a comparison of contraries with contraries. He proved this by examples. What can be stronger?

For this was required all the knowledge that *Linnæus* possessed of diet, natural history, medicine, *materia medica*. Few physicians had been conversant with all these branches together. Fortunate were those students who, before his time, could acquire this knowledge.

Not to mention, that *Linnæus* was the first who said that all our principal medicines are *poisons*; that physicians ought not to condemn poisons, but to use them, as surgeons their knives, cautiously.

The MATERIA MEDICA likewise was in a confused state, and many articles were imperfectly known, until *Linnæus* reformed it. He introduced the genus, specific

specific difference, select synonyms, place of growth, cultivation; deduced their medicinal effects and uses from the impressions they produce on the organs of taste and smell; and, lastly, described the several compositions, all of which had been either confounded, or superficially treated of before, but by *Linnæus* were distinctly explained in his *Materia Medica*.

He was the first person who determined *Sarcocolla*, *Balsam of Tolu*, *Quassia*.

Introduced several new articles; revived the use of others which had been forgotten: *Ophiorrhiza*, *Fungus Melitensis*, *Senega*.

Dulcamara. Linnæus was the first who brought this plant into general use in *Sweden*. He cured *Syphilis* and *Scorbutus* with it. *Act. Paris.* 1761. p. 53. *Virgo scorbuto summa afflicta, quum omnis generis remedia frustra essent adhibita, ejusque gradus ad summum pervenisset, Medicus* Razout, *concilio* Sauvagesii, *eam perfecte curavit solo usu decocti Dulcamaræ, quod remedium* Sauvages *ab Ill^o.* Linnæo *acceperat. Dulcamaræ decocto multos syphiliticos curavit* Sauvages *hujus usu à* Linnæo *edoctus.*

Sauvagesium *paucis ante obitum annis lippum, ut vix legeret librum, curavit* Linné *infuso caryophyllorum, ut ipse in literis fatetur* 'tibi debeo oculos meos.'

Ledum. He was the first person who taught that it was the chief specific against the hooping cough.

Moschus. He was the first who introduced it for the cure of contagious diseases, and as a preservative or *expellens horum, ex principio febrium contagiosarum ab exanthematibus vivis*;—now common.

R. Britannicæ [*Rumicis Aquatici radix*] applied to ill-conditioned ulcers, he was first informed of, from *America*, and by him it was communicated to Europeans.

D'Ailland's Powder he asserted to be ♃ [*Pulvis*] *Baccarum Rhamni.*

Guy's Powder against *Cancer* ♃ *Foliorum Actææ.*

BOTANY was the subject of his first and last works, and his favourite study. He overthrew the old systems, and formed a new one, which still maintains its ground. He saw that the *petala*, *calyx*, and *fructus* were not the only parts of fructification, and therefore he included the *involucrum*, *gluma*, *amentum*, *spatha*, *calyptra*, *valva*, *corolla*, *nectarium*, *filamenta*, *antheræ*, *pollen*, *pistillum*, *germen*, *stylus*, *stigma*, *siliqua*, *legumen*, *folliculus*, *pomum*, *bacca*, *drupa*, *arillus*, *receptaculum triplex*;—nay, he introduced

other parts, as *stipulæ*, *bracteæ*, *glandulæ*, *spinæ*, *aculei*, *stimuli*, *cyma*, *scapus*, *petiolus*, *pedunculus*, and all these were regularly defined, either for determining something new, or for supplying deficiencies of former writers.

He defined, and drew the forms of *leaves*, affixing terms of his own. His figures have been copied, and ascribed to those who copied them. If we read authors before and after *Linné*'s reformation, we shall find their style quite different from his.

The SEXES OF PLANTS, which have sometimes been maintained and sometimes opposed and denied, he proved in so clear a manner, that all his adversaries were silenced; and who could do it better than *Linné*? for he had examined all known plants,—an undertaking that required a man's whole time. Nay, he went so far as to found on this most essential part of vegetables, the whole of his *Methodus Plantarum*, or *Systema Sexuale*.

The METAMORPHOSIS OF PLANTS he proved to take place in the fructification, when the *larva vegetabilis* is transformed into a blossom, similarly to the production of insects; and we may see all the parts of plants involved in the fructification, wherein the *cortex* is converted into the *calyx*, the *liber* into the *corolla*, the *lignum* into *stamina*, the *medulla* into *pistilla*.

The FUNDAMENTUM FRUCTIFICATIONIS every one had spoken of, but nobody understood. *Linnæus*'s argument was, that, of all the *genera* of vegetables, there had originally been created but one; that this had accidentally been impregnated by others, whence the internal parts acquired a resemblance to the mother, and the external to the father, as always happens in a hybrid progeny; that in this way so many *species* were produced; and that, consequently, those which agree in fructification are of one family and substance, and of like nature and properties,—in other words, a *natural genus*.

CHARACTERS OF PLANTS, every one formed as he pleased, unstable and insufficient; but *Linnæus* undertook to examine *number*, *figure*, *situation*, and *proportion* in all known plants, and in all the parts of fructification, even to the smallest, and the before neglected *stamina* and *pistilla*. He made a promise (which was fulfilled) that he would furnish characters, by his system of botany, for all the plants hitherto discovered, or that might hereafter be discovered; and the same are now adopted throughout the world.

Natural GENERA OF PLANTS *Linné* investigated with more diligence than

any person who preceded him. He abolished and rejected more than half the number of *genera* of other authors, but made up for this reduction by introducing twice as many, from the plants which he had got from *Africa*, the *East Indies*, and *America*; so that he himself discovered more *genera* than all before him, by double the number. *Linné* rejected more than half the *generic names* of plants, substituted new ones, and showed how they ought to be constituted so as to prevent confusion in the science.

DIFFERENTIÆ SPECIFICÆ, or the specific names of vegetables, as framed before his time, *Linné* entirely abolished, and substituted in their places such as served in a more concise manner to distinguish every vegetable from all the others of its genus; so that people had no need to refer often to authors for determining species.

TRIVIAL NAMES had never been heard of before. Affixing them to all vegetables was like putting a clapper to a bell. Botany acquired new life. Names could now not only be easily remembered, but also spoken and written with ease, whereas, before, it was necessary to have recourse to definitions. Hence botany acquired an entirely new and natural form.

VARIETIES had unnecessarily increased vegetables to double their real number, so that nobody knew whether the name signified the same vegetable or another. *Linnæus* arranged the varieties under their *species*, and thus many thousand names were abolished.

DESCRIPTIONS of plants were loose, prolix, and vague. *Linné* exhibited a mode of describing vegetables in definite terms, in which not a word was without meaning; and the natural structure, which occasioned an unnecessary prolixity, was excluded.

His SYSTEMA PLANTARUM was founded on the sexes of plants, with such perfection as to the *genera* and *species*, that no other system can at this time be compared with it. It was so contrived, that the vegetable should, through the flower or fructification, make known its own name, as well generic as trivial, and the subjoined synonyms whatever had been discovered, *beneficio seculi*, relative to that vegetable.

As to THEORY, there was scarcely any in botany. *Linnæus* mentioned in his *Philosophia Botanica* the several authors, the subjects of which they treated, the parts of plants and of their fructification, rules for constituting *genera* and *species*, with their names, &c.

The GRASSES had been all under one genus, but *Linnæus* pointed out many distinct

distinct *genera* in this obscure tribe, with their characters; as he did also among the FERNS.

PROLEPSIS, the discovery of *Linnæus*, shows how the buds of trees contain within themselves all the parts that will come forward within 5 years, from the evolution of the leaf to the completion of the flower. Nature must therefore *anteimpregnate* plants for this period. Nobody has penetrated further into the secrets of the creation.

The SLEEP OF PLANTS was not attended to before the time of *Linnæus*'s observing it, and giving to the world so much information on the subject.

The CALENDARIUM FLORÆ, and VERNATIO ARBORUM, are placed in quite a new light by *Linné*, in order to make the science equally useful and pleasing; and these subjects will, without doubt, hereafter prove of the utmost consequence to rural œconomy.

HOROLOGIUM FLORÆ; to discover the time of day by the opening and closing of flowers, from morning until evening, was also the invention of *Linnæus*, and will be of an agreeable use to the world.

PAN and PANDORA (or what vegetable every animal, and insect eats) were never thought of before. *Linnæus* published hereupon. His *Pan* is a masterpiece, and required more than could have been expected from one man. It is the foundation of rural œconomy; and it were to be wished that more persons contributed their labour towards improving it.

ŒCONOMIA and POLITIA NATURÆ are two important arguments drawn at the same time from all the three kingdoms of nature, and demonstrate theology, or final causes; for what purpose every thing was created; and the connection that subsists among created things, as to their production, conservation, and destruction. No one has been allowed to penetrate the secret recesses of nature, but *Linné*, who has deserved equally well of all her three kingdoms.

ŒCONOMIA PLANTÆ, or the uses of plants in common life, in rural œconomy, the art of dying, &c. few persons, besides *Ray*, have taken any trouble about. *Linné*, however, has augmented the number prodigiously in his Travels, his *Flora Suecica*, and *Plantæ Œconomicæ*, *Tinctoriæ*, &c.

STATIONES PLANTARUM were formerly overlooked. *Linné* has affixed to every herb its *locus natalis*, or native situation, where it grows wild, so that people are enable l to procure them from those places; nay, he has even specified, wherever it was possible, the situation and kind of *soil*; which practice, it is wished,

ed, should be continued in giving the native places of growth of foreign plants. In this way, he has laid the ground-work of horticulture, which before rested on no fixed principles whatever.

The FLORA SUECICA may be said to be preferable to any other *Flora* in the world. Before its publication, no person knew what grew in his native country; now we know exactly. But before *Linné* could complete it, he was obliged to travel through most of the provinces of the kingdom, and even walk through *Lapland*, a country uncultivated, and with few beaten roads; and he was every where put to incredible trouble in searching for plants.

FLORA LAPPONICA. He confessed, himself, that this *Flora* had alone given him more trouble than all his other travels together. He wished to show what vegetables endured the hardest climate in the world.

FLORA ZEYLANICA. On this *Flora* he laboured a whole year, before he could soften and open all the flowers (which had been dried up for more than a century), and describe and class them under *genera* and *synonyma*.

FLORA PALÆSTINA. A *Flora* formed by Hasselquist. Nor was this composed without great labour and trouble.

The ACADEMIC GARDEN OF UPSALA *Linnæus* broke up from its bad state, and rendered one of the finest and richest in plants, that was to be seen in *Europe*. In no university garden had there ever been sown so many kinds of seeds, notwithstanding several had come from the *Indies*, &c.; were effœte; and the climate was too severe (the summer being too short and cool) for them. Botanists in general contended with each other in sending to *Linnæus* seeds and rare plants.

The **** it has been said, was formerly to be seen in several gardens, but we may be assured that it never grew in any garden earlier than in that of *Upsala*.

Most of the SIBERIAN PLANTS that now adorn and are common in our gardens, were first cultivated at *Upsala*, and thence dispersed; without mentioning an immense number besides, which were first introduced by *Linnæus*.

The NATURAL ORDERS of plants are given as an appendage to the *Genera Plantarum*, which an ignorant person would imagine to be of no use or value; but *Linné* looked upon his performance as a master-piece. Many people have endeavoured to refine upon it, but have all been unsuccessful. He who

who discovers the key to them will have discovered the *Natural Method*; but this discovery may not precede that of squaring the circle. A person using this [meaning probably the *Fragmenta Methodi Naturalis*] for a *Method*, may be considered as building a house without a roof.

Zoology, before *Linnæus*'s time, was an Augean stable, filled with tables and nonsense, and far from being a science or a system. *Linné* entirely reformed it, as well as botany. He constituted 6 classes, and distinguished Vermes from Insecta. He formed *genera* and *species*, giving to each the respective synonyms and differences. He classed *Cete* with the Mammalia, and *Pisces Chondropterygii* with the Amphibia. It was thought, that for the Serpents no distinctive characters could be formed, but he distinguished them by the number of *scuta*. He made this science so easy and comprehensible, that within these few years numerous authors have appeared in it.

As to Pisces, indeed, our excellent *Artedi* had written on them with great ingenuity, but his method was difficult and insufficient. *Linnæus* discovered an entirely new and very easy mode of distinguishing them, namely by the situation of the ventral fins. His descriptions, which rendered it necessary to count the *radii* in the fins, occasioned him incredible labour, he being the first person that set about it.

Insects seemed to be innumerable, and beyond the cognizance of one man. *Linnæus* collected and described every Swedish insect, and procured others from both the *Indies*, nay, even from the southern hemisphere, from which part of the globe not 10 had before been seen, if we except those in Her Majesty's cabinet. He described every one; constituted new *genera*; affixed generic names, specific differences, and trivial names; and ascertained on what vegetables they respectively lived. To detect their synonyms was a most tiresome undertaking. He made that intelligible which before was not to be comprehended. Including insects, *Linné* discovered more animals than all the authors who preceded him, put together.

Shells had been arranged by many persons, but none of their methods were good for any thing. *Linné* found out nature's own key, in the *hinge*; made *genera* and specific differences; and with incredible labour determined synonyms, so that even this branch became plain and perspicuous.

Zoophytes were by some stated to belong to mosses, by others to animals. *Linné* decided that they were between vegetables and animals: vegetables with respect

respect to their stems, and animals with respect to their florescence. This idea is still entertained.

The *Museum of Upsala* was founded by him, being formed from what he procured from patrons and friends, and from what was presented by himself.

Terms were wanted in this science. *Linné* framed many: as, for example,—in the class MAMMALIA, *Suturæ*, *Verrucæ*, *Calli*; in that of AVES, *Capistrum*, *Lorum*, *Armilla*, *Cristus*; in that of PISCES, *Apodes*, *Jugulares*, *Thoracici*, and *Abdominales*; in that of INSECTS, *Palpi*, *Halteres*, *Scutellum*, *Stemma*, *Alæ fenestratæ reversæ*, *Stigma*, *Larva*, *Hemiptera*, *Hymenoptera*, and *Neuroptera*; in that of VERMES, *Tentacula*, &c. &c.

Fauna Suecica was the first *Fauna* of any value the world had seen,—a *compendium* requiring infinite labour and diligence, to collect so many animals, especially insects. Now we know what we have, in this branch.

Historia Animalium. *Linnæus* has given specimens of the proper form of it in the dissertations *de Cane*, *Sue*, *Ove*, *Mure*.

LITHOLOGISTS ought not to be ungrateful to *Linné*. He was one of the first and most eminent men who contended that the sea is decreasing, and that the continents are increasing; and he went as far back as the existence of paradise. *Linné* would willingly have believed the earth to be older than the Chinese assert, had the scriptures allowed him.

Linné said that he had never seen *rudera diluvii universalis*, but *successiva temporis*.

He tried in an ingenious and pleasant manner to explain the stratification of mountains.

He said that he had never been able to get through *rudera ævi* to *terra primogenita*.

He enumerated only 4 orders of TERRÆ, and thought it impossible that there could be more.

He ascribed the origin of all *Lime* to the Animal Kingdom; *Mould* (or *Humus*) to the Vegetable Kingdom; *Clay* to the slime of the sea (*Oceani Viscitudo*); *Sand* to salt water.

From these four kinds of earth he deduced the composition of all fossils.

Flint he affirmed to be produced from *Chalk*, and not *vice-versa*.

Lapidose Crystals, he said, consisted of salt and earth.

The history of *Calculi* he explained in a plain and obvious manner.

Fossil Corals he described and figured very distinctly.

He was the first to introduce system into the mineral kingdom, by defining classes and *genera*, on which mineralogy was afterwards grounded and improved.

His *Concreta*, *Petrificata*, and *Terræ* did not seem to be even hypothetically divisible into more *genera*.

Dissertations and other things of inferior consequence are here, for brevity's sake, passed over. Most of his dissertations, however, are filled with rare, remarkable, or original matter, and it is on this account that they have been so much in request, and printed in the *Amœnitates*.

Whoever wishes to see *Linné*'s nice discrimination and clear manner of writing, ought to read his introduction to the *Systema Naturæ*, and the whole of its 3 kingdoms, with their classes; and then let it be said who has composed any thing similar.

LINNÉ'S PERSON.

The portrait prefixed to the *Philosophia Botanica*, of 1751, is the best.

His stature of the middle sized; rather short than tall; neither thin nor fat; rather masculine limbs, and large veins, from his infancy.

His head large, *occipite gibbo ad suturam lambdoideam transverse depresso.* Pili *in infantia nivei, dein fusci, in senio canescentes.* Oculi *brunnei, vivaces, acutissimi, visu eximio.* Frons *in senio rugosa; verruca obliterata in bucca dextra et alia in nasi dextro latere.* Dentes *debiles, cariosi ab odontalgia hæreditaria in juventute.*

Animus *promptus, mobilis ad iram et lætitiam et mœrores; citò placabatur; hilaris in juventute, nec in senio torpidus, in rebus agendis promptissimus; incessu levis, agilis.* He was no way inclined to quarrel, and for that reason he never answered those who wrote against him.

Curas domesticas committebat uxori, ipse de naturæ productis unice intentus; incepta opera ad finem perduxit, nec in itinera respexit. He was neither rich nor poor, but afraid of incurring debt. He did not write his works *pro sostro*, but *pro honore*. He never neglected any lecture. *Consistoralia* he treated as *aliena*. He always caused his audience to listen to his lectures with pleasure. He possessed an excellent memory, until he was 60 years of age, when proper names began to be forgotten by him whose head had contained many more of that kind than most other persons'. *A linguis addiscendis facile omnibus*

omnibus alienus, during his whole life-time. He could not willingly dissemble, nor play the hypocrite.

He was in the highest degree averse from every thing that bore the appearance of pride.

He was not luxurious, but lived as temperately as most people.

During the winter he slept from 9 to 7, but in the summer from 10 to 3.

He never deferred doing what was necessary to be done. Every thing he observed, he noted down in its proper place immediately, and never trusted it to memory.

Every thing he wrote was written briefly and nervously.

He every where shows himself to have been methodical.

He used to say that he would rather receive three cuffs from Priscian than one from Nature.

He read the earth, minerals, vegetables, and animals, as in a book.

He was one of the greatest observers we have had, and therefore to be considered as an *author*, not as a *compiler*.

Over the door of his room he caused this sentence to be inscribed:

INNOCUE' VIVITO.—NUMEN ADEST!

He always entertained veneration and admiration for his creator, and endeavoured to trace his science to its AUTHOR.

"*Tu decus omne Tuis, postquam Te fata tulere.*" (VIRGIL.)

Having been brought to the point of death by the gout, in the year 1750, but cured by eating wood-strawberries, he ate every season as much of this fruit as he could, and as his stomach would bear; by which means he not only escaped the gout entirely, but also from so doing derived more benefit than others from drinking mineral waters, and got rid of the scurvy which every year rendered him heavy.

The Lord himself hath led him with his own Almighty hand.

He hath caused him to spring from a trunk without root, and planted him again in a distant and more delightful spot, and caused him to rise up to a considerable tree.

——— inspired him with an inclination for science so passionate as to become the most gratifying of all others.

He hath given him all the means he could either wish for or enjoy, of attaining the objects he had in view.

——— favoured him in such a manner, that even the not obtaining of what he wished for, ultimately turned out to his greatest advantage.

——— caused him to be received into favour by the *Mæcenates Scientiarum*; by the greatest men in the kingdom; and by the Royal Family.

——— given him an advantageous and honourable post, the very one that, above all others in the world, he had wished for.

——— given him the wife for whom he most wished, and who managed his household affairs whilst he was engaged in laborious studies.

——— given him children who have turned out good and virtuous.

——— given him a son for his successor in office.

——— given him the largest collection of plants that ever existed in the world, and his greatest delight.

——— given him lands and other property, so that though there has been nothing superfluous, nothing has he wanted.

——— honoured him with the titles of

Archiater,
Knight,
Nobleman, and with
Distinction in the learned world.

——— protected him from fire.

——— preserved his life above 60 years.

——— permitted him to visit his secret council-chambers.

——— permitted him to see more of the creation than any mortal before him.

——— given him greater knowledge of natural history than any one had hitherto acquired.

The Lord hath been with him whithersoever he hath walked, and hath cut off all his enemies from before him, and hath made him a name, like the name of the great men that are in the earth. 1 Chron. XVII. 8.

No person ever acquitted himself of the duties of his professorship with greater zeal, or had a larger audience at our university.

——— was more conversant with, or made more discoveries in, natural history.

No

No person has ever had a more solid knowledge of all the three kingdoms of nature.

——————— proved himself a greater botanist or zoologist.

——————— formed so good a plan of, or written so well on, the natural history of his country, its *Flora*, and *Fauna*, and Travels.

——————— written more works in a more precise and methodical manner, and from his own observation.

——————— so completely reformed a whole science, and created therein a new æra.

——————— arranged all the productions of nature with so much perspicuity.

——————— had so extensive a correspondence all over the world.

——————— sent his pupils to so many parts of the globe.

——————— given names to a greater number of vegetables, insects, and, in short, to all parts of nature.

——————— seen so many of the works of the creator, with so much exactness.

——————— become so celebrated all over the world.

——————— sowed in any academical garden so many seeds.

——————— discovered so many animals (in fact, he discovered as many as all preceding naturalists put together).

——————— was ever chosen into a greater number of scientific societies.

Stockholm 1739 (one of the Founders; first President; and Secretary 20 years).

Upsala. 1732. x. 4.

Petersburg. 1754. ix. 23.

Berlin. 1737. ii. 14.

Imperial Acad. N. C. 1736. x. 3. (under the name of *Dioscorides 2ndus.*)

Celle. 1766. viii. 19.

Berne.

London.

English Œcon. Soc. 1762. vi. 16.

Edinburgh.

Thoulouse.

Montpellier.

Montpellier. 1743. v. 31.
Paris. 1762. XII. 11. (One of the eight Foreign Ordinary Members.)
Florence. 1759. XII. 27.
Drontheim. 1766. (First of the Foreign Members.)

No Swede had before this time been an Ordinary Foreign Member of the French Academy. The physicians at present holding that rank in it are *Morgagni*, *Haller*, *van Swieten*, and *Linné*. It is the highest honour that could be conferred on a learned man.

He was styled by all botanists *Princeps Botanicorum*. See their letters to him, in all of which he is called *Princeps*. *Bauhin*, *Tournefort*, *Sherard*, *Dillenius*, and *Linnæus*, were called *Principes sui ævi*.

OPERA et DIES.

" *Hæc non sola mihi patefecit opinio famæ*
" *Vulgaris, quæsita libris, nec lectio priscis,*
" *Sed labor et studium, quibus otia longa dierum*
" *Postposui.*"

1735. Diss. de Febribus interm. *Harderv.* 4to.
Systema Naturæ. *Leydæ fol.* primum.
1736. Bibliotheca Botanica. } *Amstel.* 8vo. { prima.
Fundamenta Botanica. } { prima.
Flora Lapponica. *Amstel.* 8*vo.* *c. fig.* prima.
Musa Cliffortiana. *Leydæ* 4*to.* *c. fig.* prima.
1737. Hortus Cliffortianus. *Amstel. fol. c. fig.* primus.
Critica Botanica. *Leyd.* 8*vo.* prima.
Viridarium Cliffortianum. *Amst.* 8*vo.*
Genera Plantarum. *Leyd.* 8*vo.* prima.
Corollarium Generum. *Leyd.* 8*vo.*
Methodus Sexualis. *Leyd.* 8*vo.*
1738. Classes Plantarum. *Leyd.* 8*vo.* prima.
Artedi Ichthyologia. *Leyd.* 8*vo.* prima.
1739. Ferbers Hortus. *Holm.* 8*vo.*
Tal om Insecterne. *Holm.* 8*vo.* prima.
1740. Systema Naturæ. *Holm.* 8*vo.* auctum.
Systema Naturæ. *Halæ* 8*vo.*

1740.

1740. Fundamenta Botanica. *Aboæ* 8vo.
Fundamenta Botanica. *Holm.* 8vo. parum aucta.
1741. Fundamenta Botanica. *Amst.* 8vo.
Oratio de Insectis. *Leyd.* 122. Belg.
1742. Genera Plantarum. *Amst.* 8vo.
Oratio de Peregrin. Patriæ. *Upsal.* 4to.
1743. Genera Plantarum. *Paris.* 8vo. Nomin. Gallicis.
Oratio de Peregrin. Patriæ. *Leyd.* 8vo.
1744. Oratio de Tellure. *Leyd.* 8vo.
Systema Naturæ. *Paris.* 8vo. Nominibus Gallicis.
Fundamenta Botanica. *Paris.* 8vo.
1745. Flora Suecica. *Holm.* 8vo. prima.
Iter Œland. Goth. *Holm.* 8vo. primum.

Some persons may attribute to Linnæus an itch for writing. Those who do so will only copy his works and notice his diligence; not mentioning his innumerable discoveries, the most difficult task of all. He never ventured to procrastinate, for he considered time as the most uncertain thing in the world. Hence it was that his *Systema Naturæ* became so extensive a work; and the *Genera* and *Species Plantarum*.

1746. Fauna Suecica. *Holm.* 8vo. prima.
1747. Flora Zeylanica. *Holm.* 8vo.
Iter Westrogoth. *Holm.* 8vo. primum.
Tal om Insecterne. *Holm.* 8vo. 2ndo auctum.
Systema Naturæ. *Halæ* 8vo. 4to. *obl.*
Bibliotheca Botanica. *Halæ* 8vo.
Classes Plantarum. *Halæ* 8vo.
Genera Plantarum. *Halæ* 8vo.
1748. Systema Naturæ. *Holm.* 8vo. auctius.
Systema Naturæ. *Lips.* 8vo.
Hortus Upsaliensis. *Holm.* 8vo. primus.
1749. Materia Medica. *Holm.* 8vo.
Amœnitates Academicæ. *Leydæ* 8vo.
Amœnitates Academicæ. *Lipsiæ* 8vo. Auctoris editio.
1750. Philosophia Botanica. *Holm.* 8vo. *fig.*

1751.

1751. Amœnitates Academicæ. 2. *Holm.* 8vo.
Bibliotheca Botanica. *Amstel.* 8vo.
Iter Scanicum. *Holm.* 8vo. primum.
1752. Genera Plantarum. *Halæ* 8vo.
1753. Systema Naturæ. *Holm.* 8vo. auctius adhuc.
Species Plantarum. *Holm.* 8vo.
Museum Tessinianum. *Holm. fol. c. fig.*
1754. Museum Regis. *Holm. fol. c. fig.*
Genera Plantarum. *Holm.* 8vo. aucta.
1755. Flora Suecica. *Holm.* 8vo. reformata.
1756. Amœnitates Academicæ. 3. *Holm.* 8vo.
Systema Naturæ. *Leydæ* 8vo.
Regnum Vegetabile. *Florent.* 8vo.
Iter Scanicum. *Lips.* 8vo. Germ.
1757. Iter Hasselquisti. *Holm.* 8vo.
1758. Iter Loeflingii. *Holm.* 8vo.
Systema Naturæ. *Holm.* 8vo. longe auctius.
Oratio regia. *Upsal. fol.*
1759. Amœnitates Academicæ. 4. *Holm.* 8vo.
Species Animalium. *Leydæ* 8vo.
Systema Naturæ. 2. *Holm.* 8vo.
1760. Amœnitates Academicæ. 5. *Holm.* 8vo.
Systema Naturæ. 2. *Holm.* 8vo.
Discursus de Sexu. *Petrop.* 4to.
1761. Fauna Suecica. *Holm.* 8vo. reformata.
1762. Systema Naturæ. *Lips.* 8vo.
Species Plantarum. *Holm.* 8vo.
Amœnitates Academicæ. 2. *Holm.* 8vo.
Miscellaneous Tracts. *Lond.* 8vo. 7. Dis. ex Amœn. Anglicè.
1763. Species Plantarum. 2. *Holm.* 8vo.
Amœnitates Academicæ. 6. *Holm.* 8vo.
Genera Morborum. *Upsal.* 8vo.
1764. Genera Plantarum. *Holm.* 8vo.
Museum Reginæ. *Holm.* 8vo.

1765. Introduction to Botany. *London* 8vo. Versio J. Lee.
Specimen Bot. *Vien.* 8vo.
Clavis Medicinæ. *Holm.* 8vo.
1766. Systema Naturæ. V. 1. *Holm.* 8vo. perfectissimum.
1767. Systema Naturæ. V. 2. *Holm.* 8vo. perfectissimum.
1768. Systema Naturæ. V. 3. *Holm.* 8vo. perfectissimum.
1769. Amœnitates Academicæ. V. 7. *Holm.* 8vo.

EDITIONES Operum.

[N. B. The asterisks denote the author's own editions.]

Fundamenta Botanica. * Amstel. 1736. 8vo. prima.
Aboæ 1740. 8vo.
* Holmiæ 1740. 8vo. auctoris.
Paris. 1744. 8vo.
Halæ 1747. 8vo.

Systema Naturæ. * Leydæ 1735. fol. primum.
* Holmiæ 1740. 8vo. auctum.
Halæ 1740. 4to.
Paris. 1744. 8vo. Nominibus Gallicis.
Halæ 1747. 8vo.
* Holmiæ 1748. 8vo. auctius.
Lipsiæ 1748. Nominibus Germanicis.
* Holmiæ 1753. 8vo.
Leydæ 1756. 8vo.
Florent. 1756. 8vo. Nomine Regni Vegetabilis.
Holmiæ 1758. 8vo. Vol. 2. auct.
Halæ 1760. 8vo. Vol. 2.
Lipsiæ 1762. 8vo.
* Holmiæ 1766. 8vo. Vol. 3. perfectum.

Genera Plantarum. * Leydæ 1737. 8vo. prima.
Leydæ 1742. 8vo. emendata.
Paris. 1743. 8vo. Nominibus Gallicis.
Halæ 1747. 8vo.
Halæ 1752. 8vo.
* Holmiæ 1754. 8vo. aucta.
* Holmiæ 1764. 8vo. perfecta.

Species Plantarum. * Holmiæ 1753. 8vo. primæ.
* Holmiæ 1762. 8vo. perfectæ. Vol. 2.
Hortus Cliffortianus. * Amstel. 1737. fol. c. fig.
Hortus Upsaliensis. * Holmiæ 1748. 8vo.
Flora Suecica. * Holmiæ 1745. 8vo. prima.
* Holmiæ 1755. 8vo. aucta.
Flora Lapponica. * Amstel. 1736. 8vo. c. fig.
Flora Zeylanica. * Holmiæ 1747. 8vo.
Bibliotheca Botanica. * Amstel. 1736. 8vo. prima.
Halæ 1747. 8vo.
Amstel. 1751. 8vo.
Classes Plantarum. * Leydæ 1738. 8vo. prima.
Halæ 1747. 8vo.
Critica Botanica. * Leydæ 1737. 8vo. prima.
Philosophia Botanica. * Holmiæ 1751. 8vo. prima.
Londini 1765. 8vo. per Lee contracta.

If *Linné* had not published
Artedi's Ichthyology,
Hasselquist's Travels,
Löfling's Travels,
Forskål's Opobalsamum,
the discoveries recorded in those works would have been lost to the world.

Fauna Suecica. * Holmiæ 1746. 8vo.
* Holmiæ 1761. 8vo. aucta.
Ichthyologia Artedi. * Leydæ 1738. 8vo.
Iter Œland. Goth. * Holmiæ 1745. 8vo.
Iter Westrogoth. * Holmiæ 1747. 8vo.
Iter Scanicum. * Holmiæ 1751. 8vo.
Lipsiæ 1756. 8vo. Germanice.
Iter Hasselquist. * Holmiæ 1757. 8vo.
Iter Löflingi. * Holmiæ 1758. 8vo.
Berlin. 1766. 8vo. Germanice.

Museum Ad. Fr. prodr. Holmiæ 1764. 8vo.
Museum Regis. * Holmiæ 1754. fol. c. fig.
Museum Reginæ. * Holmiæ 1764. 8vo.
Museum Tessinianum. * Holmiæ 1753. fol. c. fig.
Amœn. Acad. 1. Leydæ 1749. 8vo.
* Lipsiæ 1749. 8vo.
Londini 1762. 8vo.—Angl. mut.
2. * Holmiæ 1751. 8vo.
* Holmiæ 1762. 8vo. auctum.
3. * Holmiæ 1756. 8vo.
4. * Holmiæ 1759. 8vo.
5. * Holmiæ 1760. 8vo.
6. * Holmiæ 1763. 8vo.
7. Holmiæ 1769. 8vo.
Materia Medica. * Holmiæ 1749. 8vo.
Clavis Medicinæ. * Holmiæ 1766. 8vo.
Genera Morborum. * Upsal. 1763. 8vo.

LEVIORA.

Musa Cliffortiana. * Lugd. B. 1736. 4to.
Ferber Hortus. * Holmiæ 1739. 8vo.
Viridarium Cliffortianum. * Amstel. 1737. 8vo.
Methodus Sexualis. * Leydæ 1737. 8vo.
Corollarium Generum. * Leydæ 1737. 8vo.
Disquisitio de Sexu Pl. * Petrop. 1760. 4to.
Dissert. de Febribus. * Harderov. 1735. 4to.
* Holmiæ 1739. 8vo.
Oratio de Insectis. Leydæ 1741. 12mo. Belgice.
de Peregrinat. * Upsaliæ 1742. 4to.
Leydæ 1743. 8vo.
de Tellure. * Leydæ 1744. 8vo.
Regia. * Upsaliæ 1759. fol.
Species Animalium. Leydæ 1759. 8vo. locum primum Systematis.

Dissertations translated into Swedish.

Sponsalia Plantarum. Wahlbom. *Holm.* 1750. 8vo.
Flora Œconomica. Aspelin. *Holm.* 1749. 8vo.
Œconomia Naturæ. Biberg. *Holm.* 1750. 8vo.
Cui Bono. Gedner. *Holm.* 1753. 8vo.
Canis familiaris. Lindecrantz. *Aros.* 8vo.
Plantæ Esculentæ. Hjort. *Holm.* 1752. 8vo.

Every word taken from Linnæus.

The Knowledge of Nature. Hoffberg. *Holm.* 1768. 8vo.
The Vegetable Kingdom. Haartman. *Holm.* 1753. 8vo.
Miscellaneous Tracts. Stillingfleet. *Lond.* 1762. 8vo.
Flora Virginica. Gronovii. *Leid.* 1739. 8vo.
Prodromus Leidensis Royeni. *Leid.* 1740. 8vo.
Husbandry. Loevenhjelm. *Stockh.* 8vo.
Specimen Botanicum. Lipp. *Vienn.* 1755. 8vo.
Regnum Vegetabile. Manetti. *Florent.* 1756. 8vo.
Nomenclator Extemporan. Clerck. *Holm.* 1759. 8vo.

[N. B. Here follows an enumeration of the dissertations contained in the 7 first volumes of the *Amœnitates Academicæ*, with the following note at the bottom of the list, *viz.*]

Several besides those above mentioned were defended under the Presidency of Linnæus, but he does not acknowledge them as his own.

" Tu decus omne tuis, postquam te fata tulere."

VIRG.

JUNCKERUS Profess. Halens. in Orat. ad Dissert. Heissenii *de Insectorum noxa*, 1757, ostendebat Deum Adamo hoc negotium primo dedisse, ut res creatas cognosceret et denominaret. Hanc cognitionem vero lapsu Adami iterum deperditam esse proponit, ut postea nemo inveniatur, qui tantam creatarum cognitionem habuerit, excepto Salomone, cujus tanta fuit cognitio, ut ipse S. Sanctus ejus in Sacris Literis mentionem facere non dubitaverit. Post eum multos quidem fuisse dicit, qui ut justam harum cognitionem obtinerent, naturæ studuere, omnes vero prejudiciis ducti a recta via aberrasse, et *Linnæum* esse unicum, cui tam amplam naturæ cognitionem dedit Deus, quam ante eum nemini, ita tu hic non tantum longe plura naturalia vidisset et examini subjecisset, quam ullus.

ullus unquam ante eum, sed etiam naturalem earum connexionem et affinitatem, adeoque fines et œconomiam naturæ melius perspexisset, quam antecessorum ullus; simulque magis ad Dei ac naturæ cognitionem viam monstrasset ac illi. Æquum ideo esse ut gratiam hanc Divinam in illum collatam cum submissa Dei laude melius agnoscamus et veneremur, magisque ejus vestigia sequi studeamus, quam forte huc usque factum est.

HUDSON, in *Floræ Anglicanæ* præf. VI.

" At exortum est his diebus novum sidus, quod orbi Botanico lucem affudit, ne in somniis quidem antea visam, qui partes plantarum minutissimasque non omnino observatas detexit."

SCOPOLI in *Floræ Carniolicæ* præf.

" In dubiis rebus *Linnæo* sæpius fidem adhibui, et cur non crederem viro, quo nemo stirpium characteres adspexit propius, nemo majores in Rei Herbariæ gratiam labores iniit, nemo denique mortalium, per plurima sæcula, tanta præstitit, quod unus ille princeps Botanicorum, cujus eximia merita æternumque nomen grata nunquam non agnoscet posteritas, nullaque livoris macula dissipabit."

STILLINGFLEET in Præfat. ad *Miscell. Tracts.* p. XVIII.

" When we consider *Linné* in this light of a master, he must appear like *Homer* at the head of the Poets, *Socrates* at the head of Greek Moralists, and our *Newton* at the head of the Mathematical Philosophers."

SUHM in *Hist. Lit.* (Actis Nidrosiensibus inserta). Of those who have gained the praise of the learned world, six only are mentioned as *immortal*, the highest appellation that can be bestowed on philosophers.

Galileo	*Boerhaave*
Newton	*Linné*
Leibnitz	*Gram.*

HALLER *de Studio Medico*, p. 280, gravis auctor, minime Linnæi Amicus.

" Systemate Naturæ primum innotuit celeberrimus *Linnæus*, qui fortissimo concilio Botanicen penitus eruere et ordinare de integro sibi sumpsit. Hoc opere totam naturam in nova genera novasque classes redegit.

" In Animalibus et Mineralibus idem quod in Plantis secutus consilium. Nova Epocha ab eo tempore in Botanicis numerari potest."

Amicus ad me scripsit verba *Senecæ* de *Augusto* in *Mæcenaten*, mutatis mutandis.

" Tot

" Tot habenti millia hominum unum reparare difficile est.
Cæsæ sunt legiones et protinus scriptæ,
Fracta classis, et intra paucos dies nova natabat,
Sævitum in opera publica ignibus, surrexerunt meliora;
At tota vita Mæcenatis (*Linnæi*) vacavit locus."

Linnæus's *Herbarium.*

The largest, undoubtedly, that ever was seen.

1. I have collected, from my infancy, all the plants of *Sweden*, together with those of the Swedish gardens.

2. All those of *Lapland* I collected with incredible diligence.

3. On my travels through *Denmark*, *Germany*, *Holland*, *England*, and *France*, I did all I could to procure plants.

4. *Clifford*'s garden, being under my management for the space of 3 years, and as I was empowered to write for all I could get, afforded me a considerable number, which I carefully preserved.

5. *Clifford* had an excellent herbarium, from which he gave me all the duplicates.

6. On my assisting *van Royen* to arrange the garden belonging to the University of *Leyden*, I obtained not only a large number of recent plants, but also many dried ones.

7. When I assisted *D. Gronovius* in examining *Clayton*'s plants from *Virginia*, I got duplicates of most of them.

8. *Miller*, of *Chelsea*, permitted me to collect many in the garden, and gave me several dried specimens, collected by *Houston*, in *South America*.

9. I likewise got many from the garden at *Oxford*, then under the management of *Dillenius*.

10. *Jussieu* also gave me a great many dried specimens, besides the rare ones I got from the *Paris* garden.

11. Professor *Sauvages* had received from *Magnol* (the great botanist) his entire herbarium, which *Sauvages* made me a present of.

12. On *Gmelin*'s return from *Siberia*, in which country he had travelled many years, he gave me a specimen of every plant he had collected, in order to learn my opinion of each.

13. *Steller*, who was *Gmelin*'s assistant on his travels in *Siberia*, and who went as far as *Kamtschatka*, and the northern part of *America*, (born as it were to collect plants,) died at *Kiumeni*, on his return home. *Leubel* took

took his collection and sold it to *Demidoff*, who forwarded to me the whole of it, that I might affix the names, with permission to keep all the duplicates.

14. *Brown* made a fine collection of plants in *Jamaica*, and published on them in folio, when he returned to *London*. On his return to *America*, he sold the collection to me. It was a fine and rare herbarium.

15. Prof. *Kalm*, born to investigate plants, collected a vast number in *North America*, and gave me a specimen of each.

16. Prof. *Löfling*, who with incredible care collected the *Spanish* plants, likewise presented to me one of every kind.

17. I have a specimen of every one of the plants found by *Hasselquist*, in *Natolia*, *Egypt*, and *Palestine*.

18. Pastor *Osbeck* gave me one of every species he found in *China* and *Java*.

19. Doctor *Baster*, of *Zealand*, sent me a collection of plants from *Java*, consisting of more than 300 plants.

20. *Lagerström*, Director of the *East India* Company, ordered the Captains of the *East India* ships, every year, to collect plants, and gave all that were collected to me.

21. *Alströmer*, having travelled observantly through *England*, *France*, *Spain*, and *Italy*, sent me several excellent packets, which he had partly collected himself, and partly received from others.

22. In no garden have there been sown so many kinds of seed as in that of *Upsala*, during my time. I have received seeds from all the curious throughout the world, and have never neglected preserving such of the plants raised from them as I had not before.

23. *Kleinhof*, who formed the largest botanical garden in *Java*, and there raised a great many *East India* plants, on his return home to *Holland* sent me a large trunk full.

24. All the botanists of my time contended, as it were, in sending me specimens of new and rare vegetables, in order to hear my opinion, and to gratify me with something remarkable: for instance, *Jacquin*, *Schreber*, *Haller*, *Arduino*, *Turra*, *Bassi*, *Miller*, *D. Royen*, *L. N. Burmann*, *Scopoli*, *Duchesne*, *Gouan*, *Seguier*, *Allioni*, *Hudson*, and *Garden*.

25. *Koenig*, on his return home from *Iceland*, sent me the *Iceland* plants, among which the collection of *Fuci* and other marine plants was incomparable.

26. Prof.

26. Prof. *Burmann* has at several times sent me plants from the Cape of *Good Hope*, and I believe that I possess one of the largest collections of plants from that place.

27. *Rolander* collected in the islands near *America* a great many plants, which he gave to *M. de Geer*, Chamberlain of the Household, who made me a present of every one of them.

28. *Tulbagh*, Governor of the Cape of *Good Hope*, made me a present of above 200 of the rarest plants that grow there, all put up with great care, besides a number of roots and bulbs alive, for the purpose of being planted in the garden.

29. *König* not only sent me all the rarest plants from *Iceland*, but even afterwards, from *Madeira*, the Cape of *Good Hope*, *Maderaspan*, and *Tranquebar*, a large collection, consisting of several hundreds, among which were many quite new.

Indisputably no botanist has ever possessed a larger collection of dried plants, or a richer herbarium. It is placed in order, according to *Genera*, Orders, and Classes, and the *Nomina Specifica* are written on them.

Each of all these *species* I have glued with isinglass on half a sheet of paper, and all the half-sheets that belong to one genus I have put up in a whole sheet of paper, and on the whole sheet I have written the name of the Genus, and on the half-sheet the name of the *Species*. All these whole sheets, or *Genera*, I have arranged according to the Orders and Classes, in 2 presses, with partitions in them suited to the classes, in order that, when the Genus and Class are known, one may immediately find out the specimen. So simple a mode of arrangement has never before existed. When several specimens are required, on account of Varieties or some differences of a Species, there are several quarter-sheets placed between, and the quarter-sheets belonging to the same species are fastened together by a pin at the edges.

[*Linnæus*] himself travelled through *Lapland*, *Dalarne*, *Öland*, *Gothland*, *West Gothland*, *Skåne*.

He persuaded his pupils to travel all over the world.

	Ternström to Pulocondor	1745.
	Kalm to North America	1747.
	Hasselquist to Egypt and Palestine	1749.

Montin to the Mountains of Lulcå	1749
Toren to Surat	1750
Osbeck to Java	1750
Löfling to Spain and America	1751
Bergius to Gothland	1752
Kaehler to Italy	1752
Solander to the Mountains of Pitheå	1753
Rolander to Surinam	1755
Martin to Spitzbergen	1758
Falk to Gothland	1760
Alströmer to the South of Europe	1760
Forskåhl to Arabia	

Pupils.

Mennander, Bishop of Åbo.
Browallius, Bishop of Åbo.
Kalm, Professor at Åbo.
Holm, Professor at Copenhagen, a Dane.
Ascanius, Professor at Copenhagen, a Dane.
Bergius, Professor at Stockholm.
Schreber, Professor at Erfort, a German.
Falk, Professor at Petersburg.
Bäckmann, Professor at Göttingen, a German.
Forskåhl, Professor at Copenhagen.
Löfling, Professor at Madrid.
Fabricius, Professor at Copenhagen, a Dane.
Kuhn, Professor at Philadelphia, an American.
Zoega, Demonstrator at Copenhagen, a German.
Solander, Demonstrator at London.
Liedbeck, Professor at Lund.
Burmann, Professor at Amsterdam, a Dutchman.

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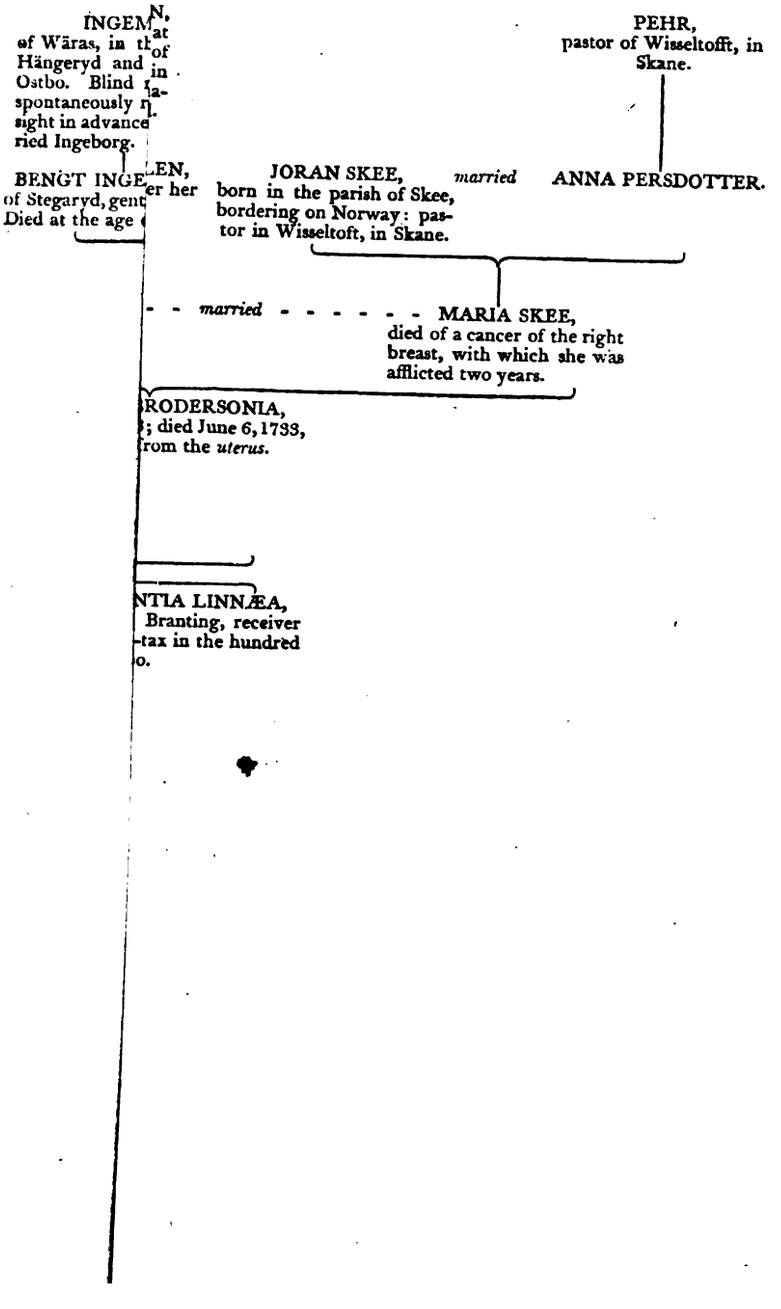

APPENDIX.

Memorial on the subject of Linnæus's discovery respecting the production of PEARLS. (See *p.* 93.)

JAN. 29, 1762.

"THAT there have existed persons who could make *Gold*, I have often heard, but never that there have been any who could make *Pearls*. It is certain, that nature produces pearls every day, and, if any one be able to steal from her this knowledge, it can only be he, whom she has admitted into her interior and most sacred places. I cannot judge of a thing which I do not understand; but I know, that Linnæus possesses an art, which cannot be bought either for pearls or gold.

I saw during Linnæus's stay at the University, his ardent wish to excel in those sciences which he studied; but he was then in such straitened circumstances that he would have been almost overcome by them, had not the Right Honourable Marshal of the Diet, some few others, and perhaps myself according to my circumstances, at that time assisted him.

After this time he went abroad (but with no money at all), where the learned received him even then as an oracle, so that he travelled with more distinction than any body else. He then began publishing his works on Natural History, which were immediately admired by the greatest men in that line, and the criticisms of pretended judges were silenced. Clifford offered him the Professorship of Botany at Utrecht; Boerhaave a similar office at Leyden, on condition that he should first go to the Cape of Good Hope; Dillenius, to be his successor in botany at Oxford; and Du Fay, to be a Member of the Academy of Sciences at Paris, with a salary; but the love of his country made him prefer Sweden.

He took up his abode first at Stockholm, where he had no acquaintance.

He got, however, within a short time, more practice than all the physicians in this city. He then became one of the founders of the Academy of Sciences, to which he attached himself much more from love of science than of gain.

On being appointed Professor, he immediately began to consider whether whilst executing his office as such (taliter qualiter) he should enrich himself by continuing in practice as a physician, or whether he should relinquish that practice, and give himself up wholly to his professorship, for it was impossible to succeed in both. Science gained the preference; and he has acquitted himself in such a manner, that his auditory has always been extremely numerous; he has not only taught, but also excited in the youth of the kingdom an ardent inclination for the sciences.

I have read the notes taken by his pupils from his lectures on Dietetics, which lectures are interspersed with more useful experiments than I have ever seen on this subject.

In *Historia Morborum* I have only one Dissertation of his, which is called *Genera Morborum*, and this is acknowledged to be a master-piece in that way. Scarcely can any thing so full, of the kind, be said in fewer words.

His *Materia Medica* is considered by those who understand the subject, to be also a master-piece, and more methodical than all that has yet been published on this head.

The Garden of the University, without contradiction, rivals all the botanical gardens in Europe, with respect to its number of plants. All the professors at Upsala confess that Linnæus has procured every plant without a single penny having been drawn from the Treasury of the University for that purpose.

In the intervals of his academical courses, he has travelled through the greater part of the provinces; over the mountains of Lapland and Dalarne; through Skånia, West-Gothland, Öland, and Gothland; and has every day discovered gifts of nature before unknown to us. And what I look upon as an essential point, is, that in all the Travels he has published, he has every where shown the application of the produce of the country to rural œconomy. I shall be very much mistaken, if the day does not come, when Government will, in more peaceable times, make use of a great part of these discoveries for the benefit of the country. From the earliest periods, all nations have had at heart the discovery and description of all kinds of natural productions, in their

 respective

respective countries. This *we* had neglected until Linnæus, with inexpressible labour, collected, and in his *Flora* and *Fauna Suecica* described, the *Naturalia* of this kingdom, which, in regard both to plants and animals, are more in number than any other country has been able to produce, though situated in a milder climate.

I have seen his extensive correspondence with curious men, not only all over Europe, but also in the East and West Indies, and I have thus discovered that all naturalists have asked his opinion on rare things.—I will not mention the trouble he has given himself to send his pupils to the most distant places,—to Spain, Italy, England, Canada, Surinam, the Brazils, Egypt, Malabar, China, &c. to the admiration, and almost jealousy, of foreign learned men. It was formerly very uncommon for foreigners to visit our universities; but, to be instructed by Linnæus, Russians, Norwegians, Danes, Germans, Dutch, English, French, and Italians have come to Upsala; nay even Professors of Botany at foreign Universities have sent their sons to him; and now of late a gentleman has come to Upsala quite from America on his account. But what excites most admiration is, that Linnæus has been able to overthrow the whole extensive system of botany, and to construct a new one, on a more solid foundation, and to such a height and extent, that all nations have been compelled, as it were, to acknowledge him as the restorer and prince of Botany, and to follow his system.

My taste, it is true, has not particularly led me to the study of botany; but I am therefore perhaps the more qualified to give the assurance, that Linnæus is no less versed in other branches of natural history than in that. Had he published no other work than what he has written upon animals, that alone would have been sufficient to render his name immortal; for he has so improved and arranged the science of zoology (before quite confused), that he seems to have trodden almost in the very steps of nature. But when I say, that Linnæus alone has discovered more animals than all those who have preceded him, it seems to be incredible, yet it is nevertheless true. He has written and published more than 40 works, consequently more than any one person now living. It would take almost a man's life only to copy them. The number of his works is certainly, in my opinion, not the thing most to be attended to; but the many editions of them are a sure proof that the demand has been

been great, and also that their author has put his experiments and discoveries on a more plain and solid foundation than others. These works have been reprinted by strangers, in Denmark, Germany, England, France, and Italy; but his own editions he has published here at Stockholm, and thereby in another respect benefited the nation. Had Linnæus been able to print his works at his own expense, he would already have been a man of fortune; but he has sold them to others, that he might not be interrupted in his labours. Moreover, Linnæus has had the most advantageous invitations to foreign universities, and he has seen his pupils attain, even among foreigners, more than double the advantages that he has ever been able to obtain for himself. His mode of life is such as not to open to him (what is the case with others) more advantageous situations.

The Right Honourable States have reserved to themselves the privilege of encouraging the sciences within this kingdom. If any one on that score seems to deserve their remembrance, it is certainly Linnæus, who, by his improvement of the sciences, has done honour to himself and to his country, although he has never been honoured with any real reward. Should this reward be omitted, posterity may say of him what he has said of the *Flora Suecica*—*Laudatur & Alget.*

Lastly, I find myself obliged to mention the reasons which have induced me to represent this to the Right Honourable States of the Kingdom, to wit: That, the last time I saw Linnæus (who is an old acquaintance of mine), having commended him for his diligence, but saying that I was sorry to see what encroachments age had made on him, he answered me thus:—"I have tried whether diligence and labour can make a man respected amongst us. In doing this I have so enfeebled my frame, and shortened my days, that only some few can now remain. But what grieves me most is, to reflect that I am killing myself, without being able to leave a sufficient provision for my family, none of whom are of age."

I am told that Linnæus has not announced his invention with respect to pearls, but that the Committee of the States of the Kingdom for œconomical affairs, being informed of his knowing the secret, applied to him about it, and persuaded him to repair hither, promising him, on their words of honour, that he should be rewarded with a sum of money, if he was able to point it out

clearly to them.—This he has done in such a manner that the deputies from the Committee of the States have been perfectly satisfied; therefore, it seems just that this promise should be fulfilled, and the discovery would certainly have been recompensed in a richer country with a larger sum. If he should not be rewarded, he would have reason to complain of injustice, especially as he could not now dispose of his discovery to foreigners,—it being no longer a secret, but known to so many members of the Committee for œconomical affairs."

ADDENDA et CORRIGENDA.

P. 21. l. 3. from the bottom. Before the word *Licentiate* insert the word *Extra*.

29. l. 3. from the top. *Dele* the word *generally*.

101. l. 3. from the bottom. For *de* read *e*.

113. l. 10. Between the word *other* and the semicolon insert *except that he is here styled "* EQU. AUR. ARCHIAT." *instead of M. D.*

136. l. 4. For *Brown* read *Browne*.

143. l. 10. } For *Siphylis* read *Syphilis*.
144. l. 3. }

511. l. 15. For *Torgen* read *Torgeri*.

548. l. 4. For *Menetti* read *Manetti*.

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