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Ladies' Botany

Or, a Familiar Introduction to the Study of the Natural System of Botany

VOLUME 1

JOHN LINDLEY

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LADIES' BOTANY:

OR

A FAMILIAR INTRODUCTION

To the Study

OF THE

NATURAL SYSTEM OF BOTANY.

BY

JOHN LINDLEY, PH. D. F.R.S.

ETC. ETC. ETC.

PROFESSOR OF BOTANY IN THE UNIVERSITY OF LONDON.

Dich verwirret, Geliebte, die tausendfältige Mischung,
Dieses Blumengewühls über dem Garten umher;
Viele Namen hörest du an, und imme verdränget
Mit barbarischem Klang, einer den andern im Ohr.
Alle Gestalten sind ähnlich, und keine gleichet der andern;
Und so deutet das Chor auf ein geheimes Gesetz,
Auf ein heiliges Räthsel. O! könnt ich dir, liebliche Freundinn,
Ueberliefern sogleich glücklich das lösende Wort.—GÖTHE.

LONDON:

JAMES RIDGWAY AND SONS, PICCADILLY.

MDCCCXXXIV.

PREFACE.

THIS little book has been written in the hope that it may be found useful as an elementary introduction to the modern method of studying systematic Botany.

There are many works, of a similar description, to explain or illustrate the artificial system of Linnæus, the simplicity of which might have rendered such labours superfluous; but no one has, as yet, attempted to render the unscientific reader familiar with, what is called, the Natural System, to which the method of Linnæus has universally given way among Botanists. All seem curious to know something about this celebrated System, and many, no doubt, take infinite pains to understand it; but it is to be feared, that a large part of those who make the attempt, are far from meeting with the success their industry deserves. On all hands they are told of its difficulties; books, instead of removing those difficulties, only perplex the reader by multitudes of unknown words, and by allusions, which, however clear they

may be to the experienced Botanist, are anything rather than illustrative in the eyes of a beginner, who is often fairly lost in a labyrinth of resemblances, differences, and exceptions. One would think modern Botany was like "the art unteachable, untaught," only to be understood by inspiration.

The cause of this lies, not in the science itself, so much as in the books that are written concerning it. Since the appearance of my *Introduction to the Natural System of Botany* in 1830, several works of great merit have been published on the same subject, both in this country and abroad, so that the student is abundantly supplied with guides; and if his object be to understand it, as an important branch of Natural Science, they are sufficiently well adapted to his purpose; but for those who would become acquainted with Botany as an amusement and a relaxation, these works are far too difficult. Treating the subject, as they do in great detail, and without consideration for the unlearned reader, the language, the arguments, and the illustrations employed in them must be unintelligible to those who have no previous acquaintance with Botany; the characters of the Natural Groupes or Orders, into which the Vegetable Kingdom is divided, are not as a whole, susceptible of such an analysis as a young student is capable of

following; and I can quite understand how the whole system may appear to be an unintelligible mass of confusion. It has, therefore, occurred to me that if, without sacrificing Science, the subject should be divested of the many real and of the still greater number of imaginary difficulties that frighten students, and if they could be taught to recognize the Natural tribes of plants, not by mere technical characters, but by those simple marks of which the practised Botanist exclusively makes use, a work in which such objects are attained might be found of some utility.

It is now admitted on all hands that the principles of the artificial system of Linnæus, which were so important and useful at the time when they were first propounded, are altogether unsuited to the present state of science; and in the latest work that has been published in this country, upon that system, the learned and amiable author is forced to rest his defence of his still following it upon "the facility with which it enables any one, hitherto unpractised in Botany, to arrive at a knowledge of the genus and species of a plant." But if a system of Botany is to be nothing more than a contrivance to help those who will not master the elements of the science, to determine the name of a plant; and if it is really neces-

sary to have a mental rail-road on which such persons may be impelled without any exertion of their own; then indeed the analytical tables of the French are infinitely better contrivances than the Sexual System: because if well executed they meet every case and lead with certainty to positive results.

I have, however, been always at issue with the Linnean school of Botany as to their system accomplishing even the little that it pretends to; and if I may be permitted to appeal to my own personal experience of the difficulties of a beginner who is unassisted by a tutor, (and few could have had fewer difficulties to contend against than myself,) I should say that it is totally opposed to such a conclusion. I began with the Linnean system, which I was taught to believe little less than an inspired production; I had plenty of books compiled according to that system to consult, and I was fairly driven to seek refuge in the Natural System from the difficulties and inconsistencies of that of Linnæus.

It seems to me that there is a confusion of ideas in what is urged in favour of the Linnean system, and that its theoretical simplicity is mistaken for practical facility of application. That the principles of the Linnean system are clear, and simple, and easily remembered is indisputable; that student indeed

must be remarkably dull of apprehension, who could not master them in a day. But is its application equally easy? that is the point. When, for example, a specimen of a Monopetalous plant has lost its corolla, or when the stamens or pistils are absent, either accidentally, or constitutionally, as in Dicœcious plants, what Linnean Botanist can classify the subject of inquiry? Or where a genus comprehends species varying in the number of their stamens, as for instance, Polygonum, Salix, Stellaria, and hundreds of others, who is to say which of the species is to determine the classification of the rest? or when this point has been settled, how is the student to know what passed in the mind of the Botanical Systematist? The latter puts a genus into Octandria, because out of ten species, one has constantly, and two occasionally, eight stamens, and he includes in the same class and order, all the other species of the genus, although they have five, six, or ten stamens. Suppose the student meets with one of the last, and wishes to ascertain its name by the Linnean system, he will look for it in Pentandria, or Hexandria, or Decandria, where he will not find it. After wasting his time, and exhausting his patience in a vain pursuit, he must abandon the search in utter hopelessness, for there is no other character that he can make use

of as a check upon the first. At last some one will tell him that his plant is a Polygonum; he turns to his book, wondering how he could have overlooked it; and he finds Polygonum in Octandria. Should he inquire how this is, he will learn that his species belongs to Octandria, not because it is octandrous, *but because it is so very like other Polygonums that it cannot be separated from them, and they belong in most cases to Octandria.* This is the unavoidable answer; and what does it really mean, except that it is not in consequence of its accordance with the system that the student's Polygonum is to be discovered, *but in consequence of its natural relation to other Polygonums;* so that it is necessary to understand the Natural System, to make use of the Artificial System! This is no exaggerated case, but one of common occurrence. It is undoubtedly true that in some books such inconvenience is guarded against by special contrivances; but those contrivances form no part of the system.

Granting, however, for argument's sake, that these and other objections are overstated, and that the Linnean system does really facilitate the discovery of the class and order to which a plant belongs, let us next consider what advance towards the determination of the genus and species, or in other words the name of a plant, a student has really made, when the

class and order are ascertained. If this argument were conducted, as in strictness it ought to be, with reference to the whole Vegetable Kingdom, it would be easy to shew that the student had in fact gained almost nothing that is of use to him; but, in order to give the friends of the Linnean system every advantage in the discussion, let us see of what use it will be to him in regard to the few hundred plants that grow wild in England. For this purpose take the generic characters in Diandria Monogynia, as stated in Dr. Hooker's British Flora, a work in which the subject is treated with all the skill and perspicuity of which it is susceptible, and in which the Linnean system is seen to the greatest advantage. The characters are these:—

* *Perianth double, inferior, monopetalous, regular.*

1. LIGUSTRUM, *Linn.* Privet.—*Cor.* four-cleft. *Berry* two-celled, with the cells two-seeded.

** *Perianth double, inferior, monopetalous, irregular. Seeds enclosed in a distinct pericarp* (*Angiospermous*).

2. VERONICA, *Linn.* Speedwell.—*Cor.* four-cleft, rotate, lower segment narrower. *Caps.* two-celled.

3. PINGUICULA, *Linn.* Butterwort.—*Cal.* two-lipped, upper lip of three, lower of one bifid segment. *Cor.* ringent, spurred. *Germen* globose. *Stigma* large, of two unequal plates or lobes. *Capsule* one-celled, with the seeds attached to a central receptacle.

4. UTRICULARIA, *Linn.* Bladderwort.—*Cal.* two-leaved, equal. *Cor.*

personate, spurred. *Stigma* two-lipped. *Caps.* globose, of one cell. *Seeds* fixed to a central receptacle.

**** Perianth double, inferior, monopetalous, irregular. Seeds four, apparently naked (closely covered by the pericarp, Gymnospermous).*

5. LYCOPUS, *Linn.* Gypseywort.—*Cal.* tubular, five-cleft. *Cor.* tubular, *limb* nearly equal, four-cleft, upper segment broader, and notched. *Stam.* distant, simple.

6. SALVIA, *Linn.* Sage or Clary.—*Cal.* two-lipped, tubular. *Cor.* labiate, the tube dilated upwards and compressed. *Filaments* with two divaricating branches, one only bearing a perfect single *cell* of an *anther*.

***** Perianth double, superior.*

7. CIRCÆA, *Linn.* Enchanter's Nightshade.—*Cal.* two-leaved, but united into a short tube at the base. *Cor.* of two petals. *Caps.* two-celled; *cells* one-seeded.

****** Perianth single, or none.*

8. FRAXINUS, *Linn.* Ash.—*Cal.* O, or four-cleft. *Cor.* O, or of four petals. *Caps.* two-celled, two seeded, compressed and foliaceous at the extremity. *Seeds* solitary, pendulous. (Some flowers without stamens).

9. LEMNA, *Linn.* Duckweed.—*Perianth* single, monophyllous, membranaceous, urceolate. *Fruit* utricular.

10. CLADIUM, *Schrad.* Twig-rush.—*Perianth* single, glumaceous. *Glumes* of one piece or valve, one-flowered, imbricating; outer ones sterile. *Fruit* a nut, with a loose external coat, destitute of bristles at the base.

This extract from the British Flora makes it evident that in determining to what genus a plant belongs, a great deal of inquiry beyond the discovery

that it has two stamens and one style, is indispensable. The student must be acquainted with the meaning of many technical terms, he must have his plant in different states of growth, he must procure the fruit, he must examine the interior of that part; in short, he must go through a long and careful examination, which is entirely independent of the Sexual System. In other and larger classes, such as Pentandria, Hexandria, Tetradynamia, Syngenesia, Gynandria, and Monœcia, the length and difficulty of such an examination are vastly increased. Now I distinctly assert that there is no difficulty in determining the Natural Orders of plants greater than that of making out the genera in the Linnean system. In fact it is the very same thing, only with a different result: in the one case it leads to the mère discovery of a name; in the other to the knowledge of a great number of useful and interesting facts independent of the name. This, which I hope will be evident from a perusal of the following Letters, is so strongly felt by all Botanists of any experience, that they never think of using the Artificial System themselves; they only recommend it to others.

There is, however, no mistake into which the public is apt to fall much greater than the notion that Botany is a science of easy acquirement. Like

all other branches of Natural History, it is far too complicated in its phenomena, and too diversified in form to be attainable as a science without long and attentive study; nevertheless a certain amount of it may be acquired without extraordinary application. The following pages will, it is hoped, explain sufficiently in what way this may best be done.

What I should recommend to those who take up this work with the intention of studying it is to begin with the beginning, to follow it in the same order in which it is written, and to procure for examination the very flowers that are named in it; they are in most cases within the reach of every one who lives in the country. The specimens should be carefully compared with the descriptions and plates; and when they are all remembered and understood, you will be a Botanist;—not a very learned one—but acquainted with many of the fundamental facts of the science, and able to prosecute the inquiry to any further point, and to study other and more scientific works with ease and advantage.

The course to be pursued by those who would push their inquiries beyond the information in the present work should be of this nature. They should read some Introduction to Botany, in which the modern views of structure and of vital action are well ex-

plained; they should make themselves familiar with technical terms, which, although avoided in the following Letters, cannot be dispensed with in works of a more exact and scientific character; they may at the same time perfect themselves in a knowledge of Natural Orders, by gathering the wild plants that are within their reach, comparing them with each other, and with the characters assigned to them in systematic works. Having thus provided themselves with a considerable amount of fundamental knowledge, they may apply themselves to the study of the Natural System in its great features. They will then, and not till then, be able to appreciate the various modifications of organization that connect one tribe of plants with another, and to understand the infinite wisdom and beautiful simplicity of design which is so visible in the vegetable world; the just appreciation of which, through countless gradations of form, structure, and modes of existence, it should be the constant aim of the Botanist to demonstrate.

TABLE OF CONTENTS.