

FAMILIAR LECTURES

ON

BOTANY.

INCLUDING

Practical and Elementary Botany,

WITH

GENERIC AND SPECIFIC DESCRIPTIONS

OF

THE MOST COMMON NATIVE AND FOREIGN PLANTS,

AND

A VOCABULARY OF BOTANICAL TERMS,

FOR THE USE OF

HIGHER SCHOOLS AND ACADEMIES.

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Hartford:

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Plate 1.

ARTIFICIAL CLASSES.

THE CLASSES OF LINNEUS.

These are founded upon distinctions observed in the Stamens. According to this system, all known plants are divided into twenty-one classes.

The first twelve classes are named by prefixing Greek numerals to ANDRIA, which signifies stamen.

CLASSES.

Names.

- 1. MON-ANDRIA,
- 2. DI-ANDRIA,
- 3. TRI-ANDRIA,
- 4. TETR-ANDRIA,
- 5. PENT-ANDRIA,
- 6. HEX-ANDRIA,
- 7. HEPT-ANDRIA,
- 8. OCT-ANDRIA,
- 9. ENNE-ANDRIA,
- 10. DEC-ANDRIA,
- 11. Icos-ANDRIA, (Etkosi.)
- 20. POLY-ANDRIA, (Polus.)

Number of Stamens.

Number and position.

Definitions.

- One Stamen.
- Two Stamens.
- Three Stamens.
- Four Stamens.
- Five Stamens.
- Six Stamens.
- Seven Stamens.
- Eight Stamens.
- Nine Stamens.
- Ten Stamens.
- Twenty or more Stamens inserted on the Calyx.
- Many Stamens inserted on the Receptacle.

The two following classes are named by prefixing Greek numerals, to DYNAMIA, which signifies power or length.

- 13. DI-DYNAMIA,
- 14. TETRA-DYNAMIA,

Number and relative length.

The two following classes are named by prefixing Greek numerals, to the word ADELPHIA, which signifies brotherhood.

- 15. MON-ADELPHIA,
- 16. DI-ADELPHIA,

Connexion.

The next class is named by prefixing SYN, signifying together, to GENESIA, which signifies growing up together.

- 17. SYN-GENESIA.

Five united anthers, flowers compound.



Number of Stamens



Nº & Length



Connexion



Position



Natural

Mis. Lc. 4th. Illustr. & Tibbop. 62.

Plate 1.

Top of Henderson's Green set from the head of the bear.

ARTIFICIAL CLASSES.

The next class is named by an abbreviation of the word *CYNIA*, which signifies pistil, prefixed to *ANDRIA*, showing that the stamens and pistil are united.

18. *GYN-ANDRIA*. { Stamens growing out of the pistil.

The two following classes are named by prefixing numerals to *CECIA*, which signifies a house.

19. *MON-CECIA*. { Stamens and Pistils on separate corollas, upon the same plant, or one house.
20. *DI-CECIA*. { Stamens and Pistils, in separate corollas upon different plants or two houses.

Position.

The name of the last class is a compound of two Greek words *CYPTO* and *CAMIA*.

21. *CYPTO-CAMIA*. { Stamens and Pistils invisible, or too small to be seen with the naked eye.

Natural.

The number of classes as arranged by Linnaeus was twenty-four. Two of them *Poly-adelphia*, (many brotherhoods,) which was the eighteenth class, and *Poly-gamia*, (many unions) the twenty-third class were rejected as unnecessary.

The eleventh class *Dodecandria*, which included plants whose flowers contain from twelve to nineteen stamens, has been more recently omitted. The plants which belong to these have been distributed among the other classes.

A few Botanists retain the whole twenty-four; among American writers who adopt but twenty-one, are Eaton, Torrey, and Nuttall.

Top of Humboldt's 21000 feet from the level of the Sea - Vol. 11. 1800

image3.jpg

LEAVES.

the autumn to their original dust, and enriching the soil from which they had derived their nourishment. In the regions of the torrid zone, the leaves are mostly persistent and evergreen; it is said they seldom fade or decay in a less time than six years; but these same trees, removed to our climate, sometimes become annual plants, losing their foliage every year. The Passion flower is an evergreen in a more northern climate.

Leaves with respect to *Colour*.
Leaves have not that brilliancy of colour which is seen in the corolla or blossom; but the beauty of the corolla, like most other external beauty, has but a transient existence; while the less showy leaf remains fresh and verdant, after the flower has withered away.

The substance of leaves is so constituted as to absorb all the rays of light, except green; this colour, the only one, with very few exceptions, which leaves reflect, is, of all others, best adapted to the extreme sensibility of our organs of sight. This in evident accommodation to our capacities, the ordinary dress of nature is of the only colour upon which our eyes can for any length of time rest without pain.

A small quantity of iron, united to oxygen in the vegetable substance, and acted upon by rays of light, is said to give rise to the various colours of plants.* If this theory is correct, the different shades of colour in plants, must be owing to the different proportions in which the iron and oxygen are combined.

To quote the words of a celebrated Chemist, "When Nature takes her pencil, iron is the colouring she always uses."

The manner in which leaves reflect rays of light, gives rise to a variety of shades in their colour; from the light green of the birch, to the dark shade of the yew tree, and the pine. The contrast between these various shades, in forests, where different families of trees are grouped together, has the effect, when remarked at such a distance, as to give a view of the whole in a mass.

* This idea coincides with the supposition, that the green colour of leaves is changed to brown by the loss of an acid principle; that when the petals of flowers turn from purple to red, they have an increase of an acid. The basis of this acid is oxygen.

PLATE V

LEAVES



Miss Lee del.

Ilmms & Pilsrow Sc.

Plate 1

Top of Henderson's 2100 feet from the level of the sea. (The leaves are from the same tree.)

ARTIFICIAL ORDERS.

THE ORDERS OF LINNEUS.

The orders of the first twelve classes are founded upon the number of styles* or stigmas if the style is wanting. The orders are named by prefixing Greek numerals to the word GYNIA, signifying pistil.

ORDERS. No. of styles, or stigmas.

- 1. MONO-GYNIA,
- 2. DI-GYNIA,
- 3. TRI-GYNIA,
- 4. TETRA-GYNIA,
- 5. PENTA-GYNIA,
- 6. HEXA-GYNIA,
- 7. HEPTA-GYNIA,
- 8. OCTO-GYNIA,
- 9. ENNEA-GYNIA,
- 10. DECA-GYNIA,
- 11. POLY-GYNIA,

Orders found in the first twelve classes. 6. this order seldom found. 7. this still more unusual. 8. very rare. 9. very rare.

The classes vary as to the number of orders which they contain.

The orders of the class Didynamia, are but two. 1. GYMNOSPERMA. From GYMNO, signifying naked, and SPERMA, signifying seed, implying that the seeds are not covered.

2. ANGIO-SPERMA. From ANGIO, signifying bag or sack, added to SPERMA, implying that the seeds are covered.

The orders of the 14th class, Tetradynamia are two, both distinguished by the form of the fruit.

1. SILICULOSA. Fruit, a silicula, or roundish pod.

2. SILIQUOSA. Fruit, a siliqua, or long pod.

The orders of the 15th class, Monadelphia, and the 16th class, Diadelphia, are founded on the number of stamens, that is, on the characters of the first twelve classes, and have the same names, as Monandria, &c.

The 17th class, Syngenesia, has its five orders distinguished by different circumstances of its florets, as,

1. EQUALIS.† Stamens and pistils equal, or in proportion, that is, each floret is perfect, has a stamen, a pistil, and one seed.

* Style often is used instead of pistil.

† The term Polygamia is omitted on the authority of Nuttall.

2. SUPERFLUA. Florets of the disk perfect, of the ray containing only pistils, which without stamens are superfluous.

3. FRUSTRANEA. Florets of the disk perfect, of the ray neutral, or without the stamen or pistil, therefore frustrated, or useless.

4. NECESSARIA. Florets of the disk staminate, of the ray pistillate, the one necessary to the perfection of the other.

5. SECREGATA. Florets separated from each other by partial calyxes, or each floret having a perianth.

The orders of the 18th class, Dioecia, like the 15th and 16th Monœcia, and the 20th class, Gynandria, of the 19th class, classes, depend on the number of stamens.

The orders of the 21st class, Cryptogamia, are distinguished into six natural families.

- 1. FILICES,---includes all Ferns, the fruit is on the back of the leaves.
- 2. MUSCI,---Mosses.
- 3. HEPATICÆ,---Liverworts, or succulent mosses.
- 4. ALGÆ,---Sea-weeds, and frog spittle.
- 5. LICHENES,---Lichens, found growing on the barks of old trees, and on old wood.
- 6. FUNGI,---Mushrooms, mould, blight, &c.

NOTE.---No confusion is produced in thus taking the character of some classes, for orders in other classes; for example: if you have a flower with ten stamens, united by their filaments into one set, you know by the definition of the classes that it belongs to the class Monadelphia, you can then, because it has ten stamens, place it in the order Decandria.

Plate 1. Ship of Humberg 2000 feet from the head of the Bay.

of plants to furnish suitable exercises in botanical analyses. The publisher knowing that Mrs. Phelps, (formerly Mrs. Lincoln,) was about giving to teachers of Common Schools a series of Lectures on the best methods of teaching the natural sciences, applied to her to prepare a "Botany for Beginners," one that should serve to instruct the Teacher as well as the pupil. He now offers to the public this volume, not indeed with the expectation that it will give an enlarged view of the science of Botany, but serve as an introduction to the "Familiar Lectures," Eaton's Manual, and other larger works.

Hartford, April, 1833.

The first edition of the Botany for Beginners having been sold in less than six months from its publication, and a second having been disposed of with equal rapidity, the publisher offers to the public a third, and in some respects a much improved, edition. The author has bestowed much pains in its revision, correcting where former editions were defective, and adding much new and valuable matter. Besides many useful remarks interspersed throughout the work, she has added to the different *genera* here noticed, their various significations and derivations. In its present amended form it is believed to unite all the requisites of a compendious and useful introduction for beginners in the popular science of which it treats.

Hartford, July, 1835.

THE AUTHOR'S NOTE TO TEACHERS.

This book is intended chiefly for the use of Primary Schools, and for the younger pupils in Higher Schools and Seminaries. So much has, of late, been urged by those who take an interest on the subject of education, in favour of introducing the Natural Sciences into Common Schools, that it is to be hoped that the time is not far distant when plants and minerals will be as familiar objects of study in our District school-houses, as the spelling book now is. Perhaps some parent or teacher may be ready to inquire, whether it is recommended that such studies shall take the place of reading, spelling, or writing—by no means; but every teacher knows that there are many listless and vacant moments when even the most active of his pupils seem tired of their monotonous pursuits;—habit and respect for their teacher may lead them to sit still and do no mischief; they may even look demurely upon the open page before them, as if intent upon studying a spelling or reading lesson, or it may be of geography or grammar lessons which they have (to use a homely phrase) *hammered their minds upon*, until they have become unconscious of any impression from them; but it is not difficult to perceive by the heavy eye, and inanimate countenance, that the intellect slumbers. These are the moments when the experienced teacher feels the need of some new stimulant to be applied to the torpid powers, which it is his business to strengthen and develop by keeping in action. Instead then of saying with magisterial dignity, or peevish fretfulness, "John, (or Lucy,) you have been sitting idle this half hour! why don't you mind your book?"—he who understands the operation of the human mind, is aware that this is the very way still more to disgust his pupil with his pursuits; and such a teacher will assuredly be ready to adopt some new method of awakening attention. We will suppose then, instead of a rebuke for idleness, the teacher should kindly address his pupil in something like the following terms. "You have been so long engaged upon a certain set of studies, that I perceive they have become tiresome; I think of introducing a new study into school; to-morrow I shall give a lecture on Botany; you may bring with you all the wild lilies, (or all the violets, or any

kind of common flower,) that you can find in the fields—in the mean time, here is a 'Botany for Beginners' which I will lend you to look over, and carry home for your parents to examine;—should they approve of it, I should like to have them furnish you with the book, that you may commence the study immediately."

But it may be said, "there are many teachers who are not capable of giving a *lecture* upon Botany." It is expected that many will use this book, who have never heard a lecture upon the subject; but every teacher who is in any degree fit to be such, can learn as much of the science from the work as will enable him to understand its leading principles; and he can explain them to his pupils: this will be *lecturing upon botany*. With respect to the questions that accompany the Book, they are added for the use of young and inexperienced Teachers: others are not in general confined to any set of questions:—The great object in view is that the pupil shall understand the subject; an ingenious teacher will, with every recitation, vary his manner of questioning, in order to ascertain this.

In reciting from this book, the pupil should be taught to vary the pronoun from the second to the first person. For instance, in the beginning of Chapter I., when the teacher asks "what is said of the study you are about to commence?"—the pupil should answer, "We are now about to commence a study," &c. This little exercise, trifling as it may seem, will of itself be useful, by leading the pupil to consider the sense of what he says, and occasionally to make other variations in the phraseology of the book.

For more particular directions for teaching Botany, the author would refer Instructors to her Familiar Lectures, pages 6th and 7th of the 4th edition. Suffice it to say here, that when flowers can be obtained, their examination should make a part of each exercise. In winter, when the analysis of plants must be suspended, the pupil may study with profit, the chapters which treat of the parts of plants, as the root, stem, leaf, &c. germination of the seed, &c. and the explanation of Botanical terms.

INTRODUCTION.

CHAPTER I.

*Advantages of the Study of Botany.**

1. You are now about to commence a study which was formerly thought too difficult for children, but which is, in reality, much easier than many to which they usually attend.

2. In Grammar, you can have no assistance from maps or pictures,—every thing in this science depends on the powers of the understanding; and it affords no pleasant objects to delight the eye. But Grammar is a very useful study, and should be pursued while you are young; and other studies, especially the one you are about to commence, will help you to understand it.

3. (Geography is easier than Grammar, because you may have maps or pictures of countries before you, and the eye impresses on the mind the relative situation of places, the direction of mountains, the course of rivers, &c.—but if, instead of maps, you could have the countries themselves before you, to examine with your eyes and hands, if you could see the people who live in them standing before you, how much deeper would be your impressions of Geography!)

4. You are now to study Botany; here the objects about which you are to learn, will be placed before you, to see, to touch, and to smell. Thus three of your senses will be called upon to aid the memory and understanding; and as flowers are objects of much beauty and interest, your imagination also may be gratified.

5. Your emotions, too, will be warmed by the thought of His love and kindness who causeth the earth to bring forth, not only

* Note.—It is important, for the teacher to ask the pupils to give the heads of the chapters, either at the commencement or close of the lesson.

1. What is said of the study you are about to commence?
2. What is said of the study of Grammar?
3. What renders Geography an easier study than Grammar?
4. Are the objects about which you study in Botany manifested to the senses?
5. What effect has the contemplation of flowers upon the emotions?

13. 6th. It leads us, to love and reverence God. Flowers are presents which our heavenly Father gives us. It is therefore proper that we should examine and study them. We see that He who made them must be *wiser* and more *powerful* than the greatest of men—for what man could make the least plant? We can imitate flowers in wax and various other ways, but who can give them life?

None can the life of plant or insect give
Save God alone.

14. Flowers may be considered as tokens of God's love to us;—"If God so clothe the grass of the field, which to-day is, and to-morrow is cast into the oven, will he be not much rather clothe us?" He

Scorns not the least of all His works; much less
Man, made in His image, destined to exist,
When e'en, yon brilliant worlds shall cease to be.
Then how should man, rejoicing in his God,
Delight in His perfections, shadow'd forth
In every little flower and blade of grass!
Each opening bud, and care perfected seed,
Is as a page where we may read of God.

CHAPTER II.

Division of the Sciences.—Different parts of flowers.—Importance of Botanical arrangement.

15. We are now about to commence our new study.—There are many sciences to be learned by those who wish to be wise; but yet all things which exist in the whole universe may be classed under *two* heads, *mind*, and *matter*.

16. *Mind* or spirit cannot be seen by us, although it exists in all rational beings, and is that within us which *thinks* and *feels*.

17. God is a spirit; he is not like us confined to any *body*, or *portion of matter*, but as the sun's rays spread abroad over the earth, so the presence of God extends to every part of his creation.

13. What advantages are mentioned sixthly as connected with the study of Botany?

14. How may flowers be considered?

15. Under what two heads may all things which exist be classed?

16. What is observed of mind or spirit?

tion; we do not perceive him, because we cannot see *mind*. When our spirits are separated from the body, or *matter*, they will no doubt at once perceive that they are in the presence of God.

18. The science which treats of the *Deity*, and of our duties to Him, is called *Theology*.*

19. The science which treats of the *Human mind*, is called *Philosophy of the mind*, or *Metaphysics*.†

20. The study of *matter* is sometimes called by the general term *Physics*; it is divided into three general heads.

1. *Natural Philosophy*.

2. *Chymistry*.

3. *Natural History*.

A mere definition of Natural Philosophy and Chymistry would not enable you to understand what these sciences are, but you will soon be able to study them with pleasure and profit.

21. Natural History, or the History of Nature, is divided into,

22. 1. *Zoology*,‡ which treats of animals.

23. 2. *Botany*, which treats of plants.

24. 3. *Mineralogy*, which treats of stones, &c. This science includes Geology, which treats of rocks, the manner of their formation, and the various changes which have taken place on the surface of the globe, since its creation.

25. The word *Botany* is derived from the Greek *botane*, which signifies a plant. The objects of this science are the vegetable kingdom, including every thing which grows out of the earth, having *root, stem, leaf, or flower*.

26. There are two principal departments in Botany; 1st, that which treats of the classes and orders of plants; this is called *Systematic Botany*.

NOTE.—The attention of the pupil should be directed to the notes which point out the derivation of words.

* From the Greek *Theos*, God, and *logos*, a discourse.

† From *meta*, beyond, and *phusis*, nature.

‡ From *zoe*, life, and *logos*, a discourse.

18. What is that science called which treats of the Deity?

19. What is the science which treats of the Human Mind?

20. How is the study of Matter divided?

21. What are the branches of Natural History?

22. What does Zoology treat of?

23. What does Botany treat of?

24. What does Mineralogy treat of?

25. From whence is the term Botany derived, and what are the objects of the science?

26. What is systematic Botany?

27. 2d. That which treats of the different parts of the plants and their uses; this is *Physiological Botany*.

Fig. 1.



28. In beginning to study Botany, it is best to examine first the parts of a flower.

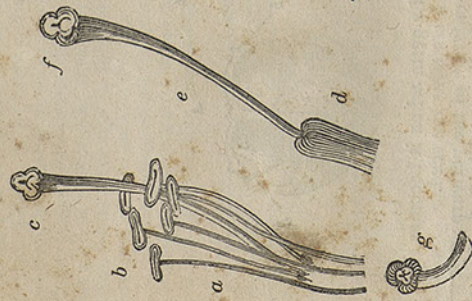
29. Here is a *lily*, Fig. 1; that part of it which you would call the blossoms, is the *corolla*;* this is composed of six parts, each of which is called a *petal*.

30. There are within the corolla six thread-like organs; these are called *stamens*; examine them as they appear at Fig. 2. You see that one part, as at *a*, is long and slender; this is called the *filament*, from *filum*, a thread. At *b* is a little knob which is hollow like a box; this is the *anther*.

* So called from the Latin *corolla*, a little crown.

- 27. What is physiological Botany?
- 28. What is the best way of beginning the study of Botany?
- 29. What are the botanical names of the blossom of a lily and its parts.
- 30. Describe the stamens and their parts.

Fig. 2.



31. In the centre of the lily is the *pistil*; this consists of three parts, the *stigma*, (see Fig. 2. *d*) the *style*, (*e*) and the *germ*, (*f*).

32. The end of the flower stem, where the petals of the flower are inserted, is called the *receptacle*; you may see it at Fig. 2. *e*.

33. In most flowers you will observe the corolla standing in a little green cup; this is called the *calyx*.* The lily has no calyx, but the rose and the pink have.

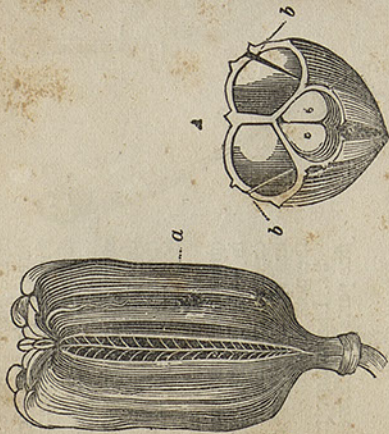
34. I have now told you of five parts of a flower:

- 1. *Calyx*—the cup; surrounding the corolla.
 - 2. *Corolla*—the blossom; the parts are called petals.
 - 3. *Stamens*—enclosed by the corolla; the parts are the filaments and anther.
 - 4. *Pistil*—standing in the centre; the parts are the germ, style, and stigma.
 - 5. *Receptacle*—bearing the other parts of the flower.
35. Besides these, there are two other parts, which are considered as belonging to the flower: viz. the *pericarp* and the *seed*.

* The word *calyx* signifies a cup.

- 31. Describe the pistil and its parts.
- 32. What is the receptacle?
- 33. What is the calyx?
- 34. Name the five parts of a flower which have been mentioned.
- 35. What two other parts belong to the flower?

Fig. 3.



36. The *pericarp* is only the germ when it becomes ripe; it is this part of the flower which contains the seed.

37. At Fig. 3, *a* is a representation of the pericarp; you will perceive it is much larger than the germ at Fig. 2. *f*. At *b* the pericarp appears as if cut across, and shows three divisions, these are called *cells*, each of which contains two seeds in the shape of a triangle, as at *bb*.

38. The *seed* is, as you have seen, carefully packed away in little cells in the pericarp; * this is the most important part of the flower; and it seems as if all the other parts were chiefly intended to nourish and protect this.

39. If you add the pericarp and the seed to the five parts which you have already learned, you will then have *seven* parts of the flower to remember. These are called *Organs of Fructification*, from *fructus*, fruit, and *facio*, to make.

40. I shall hereafter inform you more particularly respecting

* The word *pericarp* is derived from the Greek words, *peri*, around, and *karpov*, fruit.

36. What is the pericarp?

37. Describe Fig. 3.

38. What is the most important part of the flower?

39. How many parts constitute what are called the organs of fructification?

40. What is meant by analyzing a flower?

these organs, or members of the flower; but must now proceed to teach you something about analyzing plants;—The word analyze means, to separate a thing into parts; in one sense, therefore, you have now, in considering the different organs of a flower, analyzed it; but this is only to prepare you for another kind of analysis, by means of which you will be able to tell where a plant belongs in the botanical system, and what is its botanical or true name.

41. In the introductory chapter, I spoke of the importance of systematic arrangement; when you learn something of Botany, you will perceive that this science could not exist without system.

42. Formerly botanists endeavoured to give descriptions of plants; but having no rules to go by, they were not able to understand each other. If a person wished to learn about any particular plant, he might be obliged to look over a great many pages, or a whole book, before he could find it; because he had no rule to guide him in his search.

43. When you look out a word in a dictionary, you search for the first three letters, and as the words are arranged by rule, you can find immediately what you wish. If all the words in a dictionary were thrown together without any order, how discouraging would be the task of looking for definitions.

44. Now it is just so with respect to describing plants; we must be guided by some rule in their arrangement.—What shall this rule be? Suppose we should arrange the names of plants in alphabetical order, and then give descriptions of them.—But here is one great difficulty; the names by which people who do not understand Botany call plants, are not the same in different places; persons whose gardens are very near each other, will often call the same flower by different names; and in different countries, the names of plants are expressed in different languages; what we call *corn*, is in French, *blé*, and in Latin, *cereales*. Without some general system, therefore, you receive we could not learn any thing of the plants of different countries, and could not understand each other even with respect to our own plants.

45. After a great many attempts had been made to class

41. Is systematic arrangement necessary in Botany?

42. Why were the botanists of former times unable to understand each other?

43. By what rule are words in a Dictionary arranged?

44. Would the description of plants in alphabetical order, serve as a rule for botanical arrangement?

45. How did Linnaeus propose to arrange plants?

plants, Linnaeus, of Sweden, proposed to arrange them under *classes* and *orders*, by means of the *stamens* and *pistils*. He had discovered that these organs existed in all plants; that some had one stamen, others two, three, &c. and that it was the same with regard to the pistils, which, although the lily has but one, are numerous in the rose and some other plants. In the next chapter I shall tell you something more of the classes of Linnaeus, and teach you how to analyze a flower according to his system.

CHAPTER III.

Practical Botany commenced by the analysis of the Pink.
Method of preparing an Herbarium—Botanical excursions
 —The study of nature the duty and privilege of intelligent minds.

46. Plants, as I have told you, are arranged in classes and orders by their stamens and pistils. The largest division is that of *classes*.

47. There are *twenty-one* classes.

48. Each class is divided into *orders*.

49. A plant with one stamen belongs to the first class; as there are some plants here with one pistil, and others with two, there are a first and second order in the first class.

46. What is the largest division of plants?

47. How many classes are there?

48. How is each class divided?

49. What circumstances would place a plant in the first or second order of the first class?

Analysis of the Pink.

Fig. 4.



50. You will understand this better if I give you an example. You shall now analyze a flower in order to find its botanical arrangement and name. Here is a pink. We wish to know in what *class* it is—count the stamens—you say *ten*, therefore this is in the *tenth* class; the name of the class is Decandria (from *deka*, ten, and *andria*, stamens.)

51. We wish to know in what *order* this flower is—count the pistils—you say *two*, it then belongs to the second order of the tenth class; the name of this is Digynia (from *dis*, two, and *gynia*, pistil.)

52. Orders are composed of *families* of plants called *genera*, which is the plural of *genus*.

53. We must, as a third step in our analysis, learn to what *genus* this flower belongs; for this purpose it is necessary that you turn to that part of your book called "*Description of the Genera of Plants*;"* look for Class 10, Order 2.—Now instead of looking a whole book through, you have only to examine the genera which you find under this order, and to compare your flower with each description until you find one which answers to it.

* To find this, see the "Table of Contents."

50. How can you find in what class the pink is placed?

51. How can you know in what order the pink is?

52. Of what are the orders of plants composed?

53. What is a third step in the analysis of the pink?

BOTANY FOR BEGINNERS:

AN

INTRODUCTION TO MRS. LINCOLN'S

LECTURES ON BOTANY.

FOR

THE USE OF COMMON SCHOOLS AND THE YOUNGER PUPILS
OF HIGHER SCHOOLS AND ACADEMIES.

BY MRS. PHELPS,
AUTHOR OF FAMILIAR LECTURES ON BOTANY.

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