
XI. *Observations on the natural Group of Plants called POMACEÆ.*
By Mr. John Lindley, F.L.S.

Read April 4 and 18, 1820.

THE natural group of plants comprehended in the first section of Jussieu's *Rosaceæ* has, on account of its near affinity to *Rosa*, lately occupied much of my attention; and as an apparent uniformity in the structure of its genera has been the cause of much dispute respecting their limits, an attempt to ascertain these with something like precision may not perhaps be unacceptable to the Society.

Linnæus admitted but four genera, *Cratægus*, *Sorbus*, *Mespilus*, and *Pyrus*; from which Jussieu distinguishes *Malus* and *Cydonia*. Medicus, in his "*Geschichte der Botanik unserer zeiten*," published in 1793, out of these formed eleven, in which he has been partially followed by Borkhausen and Mönch. His genera are unfortunately by no means natural; and the characters upon which they are founded have been considered unimportant by most botanists, who have therefore adopted the genera of either Jussieu or Linnæus. Sir James Smith, aware of the uncertainty in number of styles by which those of the latter have been principally distinguished, has in *Flora Britannica* and Rees's *Cyclopædia* (article *Mespilus*) reduced all the genera to two; characterizing *Pyrus*, to which he refers *Cydonia* and *Sorbus*, by the thin texture of its endocarp, and *Mespilus*, including *Cratægus*, by the osseous substance of the same part, or, as he, following Linnæus, expresses it, by its berry.

But

But in an order so strictly natural as this is, greater difficulty is always to be expected in finding characters for genera, than in those of which our knowledge is more imperfect, and whose series of individuals may therefore be considered less complete. There also appear to be some important modifications of structure to which the attention of botanists has not hitherto been directed; and they promise to afford better distinctions than have yet been employed.

The form of leaves has usually been considered a mark by which certain genera might be distinguished. Sir James Smith has however justly pointed out the general insufficiency of these differences even in their most decided form. Thus *Sorbus* with pinnated leaves differs in scarcely any other respect from *Pyrus*, where they are simple. Nor can the *Cratægi* with angular leaves be distinguished from such as have a regular outline. Yet, entire and serrated leaves are almost certain indications of different genera; *Photinia integrifolia* offering the only instance to the contrary. And the fruit of this, which has not yet been seen, may determine it to be a genus distinct from that to which I have referred it.

Bracteæ are generally subulate, quickly withering and falling off. In *Mespilus* they adhere to the tube of the calyx; and in *Raphiolepis* are persistent and leafy.

Inflorescence can rarely be employed even as a secondary character; for in *Pyrus* we have all the gradations from a nearly simple to a very compound form. Nevertheless, the nearly sessile flowers of *Mespilus* distinguish it from *Eriobotrya* and *Cratægus*. The great terminal bunches of *Photinia* are very unlike the lateral flowers of the last genus. The scaly racemes of *Raphiolepis* and the naked axillary ones of *Chamæmeles* are peculiar to themselves.

The limb of the calyx is usually cup-shaped and persistent; but

but not much thickened. In *Raphiolepis* it is infundibuliform and deciduous; in *Chænomeles* campanulate and fleshy. It is generally five-toothed; in *Cydonia* and *Mespilus* five-parted and foliaceous; in *Chamæmeles* as it were truncate, with five very small denticulations.

The petals are roundish and spreading; in *Amelanchier* long and narrow; in *Cotoneaster* short and erect; in *Photinia* reflexed.

The fruit is usually closed by the thickened disk and connivent divisions of the calyx. But in *Mespilus* the top of the cells is absolutely naked; and this is one of the distinctions between it and *Cratægus*. In *Chænomeles* it splits into five valves, according to Thunberg. In its young state it is composed of from one to five ovaria, usually united into a single mass and adhering to the calyx, which then appears superior; but in *Cotoneaster* the ovaria are absolutely distinct from each other, and only cohere with the calyx; in *Photinia* they are united with each other, but not with the calyx, except by somewhat less than their lower half. As the fruit ripens, the calyx and ovaria increase simultaneously in size. The substance of the latter, however, varies considerably. They become fleshy, and form with the calyx a five-celled fruit, with cartilaginous or chartaceous endocarp in *Pyrus*, and osseous endocarp in *Mespilus*; and to these the term *pomum* may be strictly applied. Linnæus and his followers have considered the fruit of *Mespilus*, &c. as a *bacca*; but if this is a term by which those fruits are distinguished whose seeds are lodged in pulp, and usually lose their point of attachment when ripe, it can only have been used in this order through a very common mistake of the part containing for the part contained; or, in other words, of the inner coat or putamen of the cells for the seeds themselves. In *Cotoneaster* I have already said, that the ovaria are parietal; and the ripe fruit consists of five pericarpia

carpia attached to the side of the fleshy calyx. *Photinia* has a little bilocular capsule inclosed in the fleshy calyx.

The cells of the ovarium in *Amelanchier* are completely divided in two by a dissepiment, which is quickly obliterated by the growth of the ovula ; so that the ripe fruit does not differ in this respect from the rest of the order. Nor indeed is the ovarium so materially dissimilar as would at first sight appear ; since its cells are made bilocular by a spurious dissepiment, having a different origin from that of plurilocular fruit in general, inasmuch as it is opposite to the style and not alternate with it. It is not connected with any corresponding increase in the number of styles, either apparent or hypothetical ; nor can it be considered an extension of the placenta, as are the false septa of many fruits. On the contrary, it originates from the axis of the back of the cell, as is proved by *Pyrus arbutifolia* and *Photinia integrifolia*, in which it is rudimentary only. It, therefore, is probably analogous to the partial dissepiment of certain *Malvaceæ*, such as *Thespesia populnea*.

The *direction* of seeds is usually ascending. In *Cratægus Oxyacantha*, and those species more immediately connected with it, the seeds are peltate ; and by this character I have formerly proposed to distinguish *Cratægus* from *Mespilus*. But in some other species, such as *C. glandulosa* and *pyrifolia*, I have since observed the usual direction of the order to exist. In *Chamæmeles*, in which the ovarium is simple, the ovula are absolutely erect.

The *number* of seeds in the chief part of the order is two, or one by the abortion of the other. In *Cydonia* and *Chænomeles* their number is indefinite. In *Osteomeles* they are solitary in their youngest state.

The *testa*, in all the genera with osseous endocarp, is membranaceous ; but in *Pyrus* it is cartilaginous ; and in *Raphiolepis*

coriaceous; so that the thinner the lining of the cells is, the thicker becomes the coat of the seeds; as if some sort of powerful covering were indispensable for the protection of the embryo, and therefore supplied by the testa when the pericarpium is insufficient.

The chalaza is generally conspicuous, in the form of a somewhat depressed areola, situated at that end of the seed which is next the hilum. Its presence proves the coriaceous envelope of the abortive seeds of *Raphiolepis* to be testa and not endocarp.

The embryo has the same form as the seed, in consequence of the almost absolute absence of albumen, which only exists in the form of a very thin scale adhering to the testa in certain species of *Pyrus*. The *cotyledons* are flat, and parallel with the placenta; the *radicula* small and conical, obliquely turned towards the hilum; somewhat longer in the pinnated *Pyrus* than in the rest of that genus.

Three-fourths of the species are found in the temperate regions of Europe, North America, and Asia; a few are peculiar to the north of India, and one species comes from the Sandwich islands. They would therefore have nearly the same geographical distribution as Roses. But two species have been found in Peru by Ruiz and Pavon; and a *Pyrus* from Mexico, sent to this country by M. Pavon, exists in the herbarium of Mr. Lambert. It is much to be regretted that we have no information of the altitude at which these southern species were observed.

We have only now to consider whether the foregoing genera should be retained as a distinct natural order, as has been proposed by M. Richard (see *Analyse du Fruit*, Eng. edit. p. 23), or be understood only as a section of *Rosaceæ*, according to the decision of M. de Jussieu.

The principal peculiarity by which M. Richard proposes to characterize *Pomaceæ* appears to be the ascending direction of
their

their seeds, as opposed to the suspended seeds of most true *Rosaceæ* (Nestler's *Potentilleæ*). But whatever may be the value of this distinction in other instances, it must in the present family be considered of generic importance only: for *Dryas*, *Waldsteinia* and *Geum*, with all the habit and other characters of *Rosaceæ*, have seeds with the same direction as *Pomaceæ*; and certain *Cratægi* with angular leaves exhibit a passage from one to the other. Nor can the inferior fruit of *Pomaceæ* distinguish them from *Rosaceæ* with more certainty than the direction of their seeds, as is manifest from the structure of certain genera I shall presently have occasion to propose. It is true that *Pyrus*, *Mespilus*, and some others, have fruit absolutely inferior, or cohering with the calyx and each other by their whole surface; but in *Cotoneaster* this cohesion is very partial, and in true *Photinia* scarcely exists in any degree. There is however one circumstance which is universal in *Pomaceæ*, and I believe does not exist in *Rosaceæ*; namely, that the ovula of the former are collateral, and of the latter, when more than one, vertical, or placed one above the other. This character may therefore be employed to distinguish *Pomaceæ* as a section from *Rosaceæ*, but can scarcely be sufficient to separate it as an order; especially as the same disposition of ovula, when reduced to a single pair, exists in *Spiræa*.

ROSACEARUM sectio prima *Juss.*

(*POMACEÆ Richard Anal. du Fr. ed. Angl. 23.*)

Hinc Myrtaceis baccatis, mediantibus Chœnomele et Cydonia pariter polyspermis, affinis; inde Rosaceis cæteris per Cratægos semine peltato.

CHARACTER

CHARACTER NATURALIS.

Arbores fruticesve.

Rami alterni, glabri v. pubescentes, laterales sæpe aphylli spiniformes.

Folia stipulata, alterna, simplicia v. composita, margine incisa v. integerrima, decidua v. persistentia, glaberrima v. (sæpius subtus) lanata. *Stipulæ* deciduæ, liberæ, v. paululum adnatæ.

Inflorescentia terminalis, in racemum v. cymam multifloram, quandoque abortu unifloram, congesta; v. axillaris; nunc nuda, nunc bracteis floribus longioribus et persistentibus squamosa. *Bracteæ* sæpius subulatæ, sphacelatæ, deciduæ.

Flores hermaphroditi, rarissimè polygami. *Calyx* campanulatus, maturitate carnosus; limbo 5-partito v. dentato, sæpius persistente, modò deciduo; *tubo* cum ovariis cohærente v. semi-libero. *Petala* 5, unguiculata, æstivatione quinconciali, fauce calycis inserta, eoque plerumque longiora, decidua.

Stamina definita v. indefinita, æstivatione inflexa, modò alternatim inæqualia, disco serie simplici rarò duplici inserta, patentia v. erecta, rarò dentibus calycinis breviora. *Filamenta* subulata, v. rariùs filiformia, distincta. *Antheræ* subrotundæ, anticæ, incumbentes, 2-loculares, longitudinaliter dehiscentes. *Pollen* sphæricum.

Discus sæpius carnosus, mellifluus, raro tenuissimus; nunc hypopetalus, nunc per parietem limbi calycis extensus.

Ovaria apice sæpius villosa; nunc parietalia, discreta, unilocularia, facie hirsuta, nunc villosa, connata, calyce semidiscreta; vel calyce et invicem coadunata, loculis tum quandoque septo spurio divisis; *ovula* collateralia.

Styli simplices, numero ovariorum, filiformes, staminum longitudine, v. rariùs brevissimi lana ovarii obvoluti; discreti v. partim

partim connati, nudi v. infra medium lanam gerentes. *Stigmata* plerumque emarginata, nunc plana simplicissima.

Fructus calyce baccato inclusus; nunc *pomum* 1—5-loculare, endocarpio* cartilagineo ceu osseo, rarò siccum? quinquevalve; nunc achenopses uniloculares, parietales, facie sæpiùs hirsutæ; vel pericarpium pilosum, biloculare, semisuperum. *Loculi* quandoque dissepimento spurio ex axe dorsi enato divisi.

Semina oblonga v. subglobosa, hinc planiuscula, basi acuta; plurilocularibus ascendentia, collateralia, definita v. indefinita; uniloculari erecta. *Testa* membranacea, endocarpio tum osseo; v. cartilaginea, v. mucosa, v. coriacea. *Hilum* conspicuum lineare. *Rapha* simplex, rectilinea. *Chalaza* apicularis, sæpe obscure colorata, conspicua.

Embryo albus, exalbuminosus, semini conformis. *Cotyledones* planæ, ovaes, carnosæ, placentâ parallelæ. *Radicula* infera, ad hilum versa, conica.

* For the explanation of this and other carpological terms, *vide* Richard on the Structure of Fruits and Seeds, Eng. edition.

GENERUM ANALYSIS.

Endocarpium cartilagineum.

Semina indefinita.

Pomum 5-valve *Chænomeles* (I.)Pomum clausum *Cydonia* (II.)

Semina definita.

Ovula solitaria (ob loculos 2-partitos) . *Amelanchier* (VI.)

Ovula gemina.

Ovarium uniloculare *Chamæmeles* (X.)

Ovarium bi- triloculare.

Calycis limbus infundibuliformis,
deciduus *Raphiolepis* (XI.)Calycis limbus altè divisus persis-
tens.

Pomum.

Seminis membrana propria
chalazâ insignita . . . , *Pyrus* (III.)Seminis membrana propria
obliterata *Eriobotrya* (VIII.)Pericarpium semisuperum, bilo-
culare *Photinia* (IX.)

Endocarpium osseum.

Pomum apertum. Sepala persistentia . . *Mespilus* (V.)

Pomum clausum.

Styli glabri *Cratægus* (XII.)Styli infra medium barbati exserti. Ovu-
la solitaria *Osteomeles* (IV.)Achenopses parietales *Cotoneaster* (VII.)

I. CHÆNOMELES.

Pyri species *Thunb. Willd.*

Cal. campanulatus, 5-dentatus, carnosus. *Stamina* erecta, serie duplici inserta. *Pomum* quinquevalve, polyspermum.

Frutex (*Japoniæ*). *Folia lucida, coriacea, crenata.* *Flores terminales, coccinei.*

Pyrus Japonica Thunb.

The fruit is only known from Thunberg's description, who says it splits into five valves. The insertion of the stamens in a double series, and the great fleshy persistent limb of the calyx, are alone sufficient to distinguish it from *Cydonia*.

II. CYDONIA.

Cydonia Tourn., Juss. *Pyri Sp. Linn.*

Cal. 5-partitus: laciniis foliaceis. *Pomum* clausum, polyspermum. *Semina* testa mucilaginea.

Arbor mediocris (*Europæ et Japoniæ*). *Folia integerrima, subtus lanata.* *Flores solitarii, sessiles.* *Bracteæ sæpius solitariae, foliaceæ.* *Calyx lanatus.* *Petala magna, conspicua.* *Styli infra medium lana densa coherentes.*

Pyrus Cydonia Linn.

III. PYRUS.

Pyrus Tourn., Linn., Juss. *Malus Juss.* *Lazarolus, Hahnia, Aucuparia, Medic.* *Sorbus Linn.* *Aroniæ pars Pers.*

Cal. 5-dentatus. *Petala* subrotunda. *Pomum* clausum, 5-loculare, putamine cartilagineo. *Loculi* dispermi. *Testa* cartilaginea.

Arbores v. arbusculæ (*Europæ, Asiæ et Americæ septentrionalis*).

Folia simplicia v. composita, serrata. *Cymæ patentes, terminales, multifloræ.* *Bracteæ subulatæ, deciduæ.* *Petala subrotunda, patentia, v. erecta, tum concava, conniventia.* *Styli glabri v. basi lanati, liberi v. partim coherentes.*

1. FOLIA SIMPLICIA.

Pyrus communis, *pollveria*, *nivalis*, *Malus*, *dioica*, *spectabilis*,
prunifolia, *baccata*, *coronaria*, *angustifolia*, *salicifolia*, *Aria*,
intermedia, *Willd.*; *elæagrifolia*, *Pall.*; *amygdaliformis*, *Vill.*
Malus acerba, *Decand.* *Sorbus latifolia*, *Pers.*
Pyrus arbutifolia, *melanocarpa*, *Willd.* *Aronia alnifolia?* *Nutt.*

2. FOLIA PINNATA V. ALTE PINNATIFIDA. (*Sorbus*.)

Pyrus hybrida *Willd.* *Sorbus aucuparia*, *hybrida*, *domestica*,
Willd.; *auriculata?* *Pers.*; *microcarpa?* *Pursh.*

3. FOLIA SIMPLICIA. PETALA PARVA, ERECTA, CONCAVA,
CONNIVENTIA. (*Chamæespilus*.)

Mespilus Chamæespilus *Willd.*

To the first section must be added several undescribed species from India and China in the herbaria of Sir Joseph Banks and Mr. Lambert, with one from Mexico in the collection of the last gentleman. *Malus* of Tournefort and Jussieu has styles united towards their base. But this is scarcely of even specific importance; for it occurs in *Cratægus Oxyacantha*, which has commonly separate styles, and is variable in *Chanomeles* and *Ame-lanchier Botryapium*.

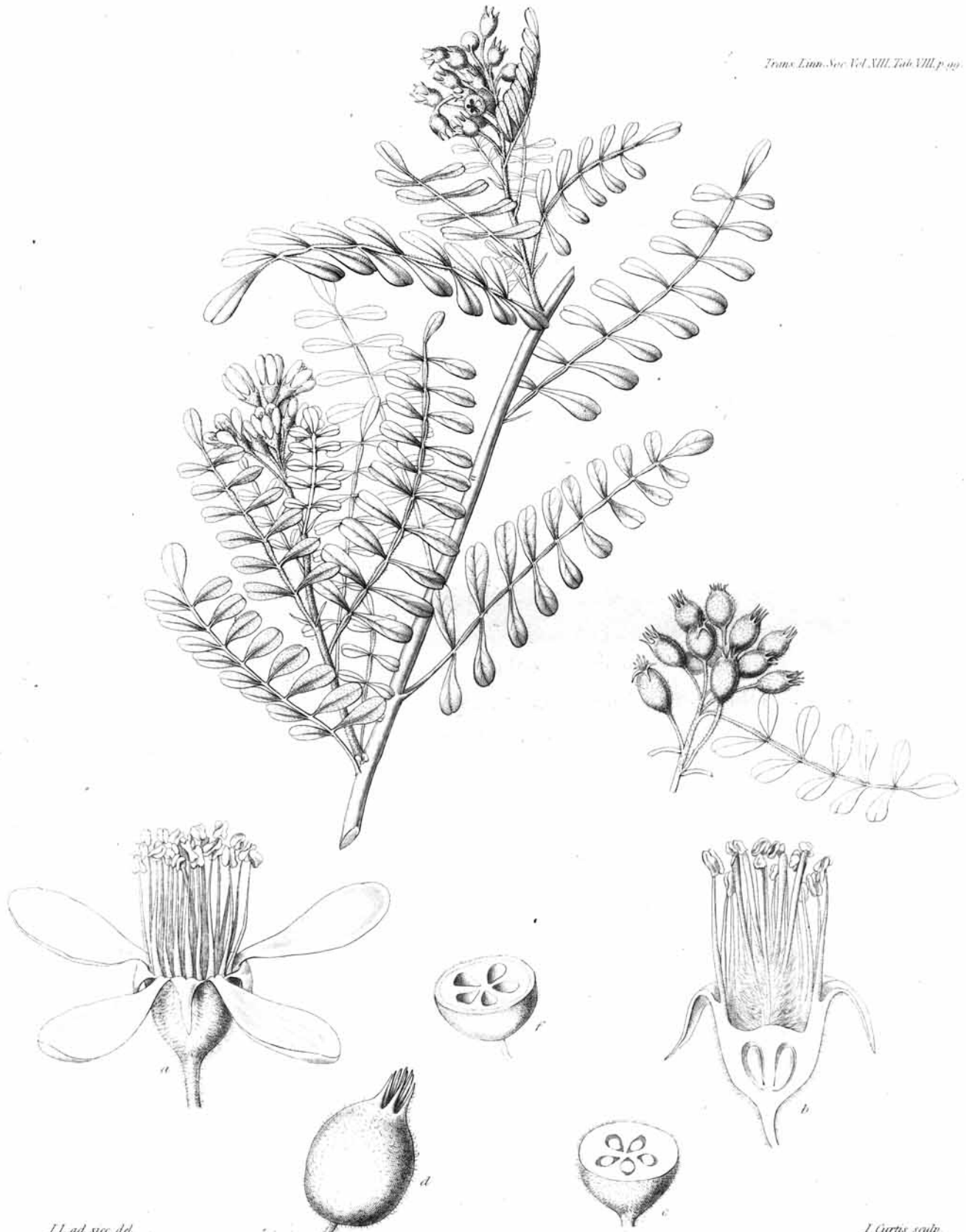
Pyrus arbutifolia, and perhaps those allied to it, has the rudiment of a spurious dissepiment.

IV. OSTEOMELES.

Pyri Sp. *Smith.*

Cal. 5-dentatus. *Petala* oblonga, plana. *Styli* exserti, infra medium barbati. *Ovula* solitaria. *Pomum* clausum, (lanatum,) 5-loculare, endocarpio osseo.

Frutex



L.L. ad. sic. del.

J. Curtis sculp.

Osteomeles anthyllidifolia.

Frutex (*Insularum Sandwich*). Folia pinnata : foliolis integerrimis. Bracteæ subulatae, deciduae, sub calyce oppositæ. Pomum parvum, stylis et sepalis coronatum.

1. OSTEOMELES ANTHYLLIDIFOLIA.

TAB. VIII.

Pyrus anthyllidifolia. Smith in Rees in l.
Hab. in insula Owhyhee. Menzies (v. s. sp. *Herb. Banks*).
Foliola obovata apiculata, subtus sericea.

This curious plant was gathered by Mr. Menzies near the summit of the Wharrarai mountain of Owhyhee. Sir James Smith, who had not seen the fruit, from its resemblance to the pinnated *Pyri*, published it in Rees's *Cyclopædia* under the name of *Pyrus anthyllidifolia*. There is, however, no instance of leaves with an entire margin among *Pyri*; and the fruit which is preserved in Sir Joseph Banks's herbarium proves it to be a very distinct genus, differing from *Pyrus* in having bony fruit, and from *Cratægus* in shape of petals, solitary ovula, persistent styles, which are woolly on their lower half, and whole habit. Nor do the filaments of *Osteomeles* spread, as is the case with *Cratægus*.

Eriobotrya is distinguishable by its very much shorter styles, which are slightly downy all over, twin ovula, bearded petals, and fleshy fruit.

V. MESPILUS.

Tourn., Linn., Juss.

Cal. 5-partitus, laciniis foliaceis. *Discus* magnus, mellifluus.
Styli glabri. *Pomum* turbinatum, apertum, 5-loculare : endocarpio osseo.

Arbores mediocres (*Europæ*). Folia lanceolata, serrulata, decidua.
Flores magni, sessiles, subsolitarii. Bracteæ persistentes.

Petala orbiculata, patentia (marginè crispa). Loculi cultarum sæpissimè vacui.

1. *Mespilus germanica Willd.*
2. *M. grandiflora Smith Exot. Bot.*

To plants with these characters I propose to limit *Mespilus*, which will then include those species only with eatable fruit. It will be distinguishable from all the other genera with osseous endocarp by the foliaceous segments of its calyx, and fruit whose cells are naked at the top, and not covered over by the incrassated disk and connivent segments, as in *Cratægus*, &c.

The remainder of the genus in Willdenow is a mass of species differing as much from each other as from true *Mespili*. Thus, *M. japonica* constitutes my genus *Eriobotrya*; *M. Pyruantha* is not distinct from *Cratægus*; *M. Chamamespilus* is a *Pyrus*; and *Cotoneaster* and *tomentosa* belong to Medicus's genus *Cotoneaster*.

VI. AMELANCHIER.

Amelanchier. Medicus. Aroniæ pars. Persoon.

Cal. 5-dentatus. Petala lanceolata. Ovarium decem-loculare.

Ovula solitaria. Pomum 3—5-loculare endocarpio cartilagineo.

Arbusculæ (Europæ et Americæ septentrionalis). Folia simplicia, serrata, decidua. Flores racemosi, compacti, terminales v. laterales. Bractææ lineari-lanceolatæ, deciduæ. Stamina calyce sæpius breviora. Styli glabri. Loculi angulo interiore (facie) pilosi.

1. *Pyrus Amelanchier Willd.*
2. *Pyrus Botryapium Willd.*
- 3? *Pyrus ovalis Willd.*
4. *Pyrus cretica Willd.*

VII. COTO-



LL. ad sicc. dd.

Cotoneaster acuminata.

J. Curtis sculp.

VII. COTONEASTER.

Cotoneaster. *Medicus*. Mespili species. *Linn.*, *Willd.* *Pyri*.
Mönch.

Flores polygami.

Cal. turbinatus, obtusè 5-dentatus. *Pet.* brevia, erecta. *Stamina* dentium longitudine. *Styli* glabri, staminibus breviores. *Achenopses* parietales, calyce inclusæ.

Arbusculæ (*Europæ*, *Americæ septentrionalis*, et *Indiæ*). Folia *simplicia*, *integerrima*, *infrà lanata*. *Corymbi laterales*, *patentes*. *Bracteæ subulatae*, *deciduae*. *Petala parva*, *persistentia*.

vulgaris. 1. *C. foliis ovatis basi rotundatis, calycibus pedunculisque nudis.*

Mespilus Cotoneaster. Willd.

Hab. in *Europæ alpestribus*; *Sibirix Pallas* (*v. v. c. et s. sp. Herb. Banks.*).

tomentosa. 2. *C. foliis ellipticis utrinque obtusis, calycibus pedunculisque lanatis.*

Mespilus tomentosa. Willd.

Hab. in *alpihus Tyrolensibus, Von Born* (*v. v. c. et s. sp. Herb. Banks.*).

affinis. 3. *C. foliis ovatis basi attenuatis, calycibus pedunculisque lanatis.*

Hab. *Chittong, Buchanan* (*v. s. sp. Herb. Lambert.*).

Præcedenti similis, sed satis distincta.

acuminata. 4. *C. foliis ovatis acuminatis utrinque pilosiusculis, calycibus pedunculisque nudis. Tab. 9.*

Hab. in *Nepalia, Wallich* (*v. s. sp. Herb. Banks.*).

Rami virgati. Folia non subtus lanata. Pedunculi quam priorum breviores.

VIII. ERIO-

VIII. ERIOBOTRYA.

Mespili species. *Thunb., Willd.*

Cal. lanatus, obtusè 5-dentatus. *Pet.* barbata. *Stam.* erecta, dentium longitudine. *Styli* 5, filiformes, inclusi, pilosi. *Pomum* clausum, 3—5-loculare. *Chalaza* nulla. *Radicula* inter bases cotyledonum inclusa.

Arbores mediocres (*Asia temperatæ et Peruvicæ*). Ramuli tomentosi. Folia simplicia, serrata, infrà lanata. Racemi compositi, terminales, lanati. Bracteæ subulatæ, deciduæ.

japonica: 1. *E. foliis lanceolatis serratis.*

Mespilus japonica. Thunb.

Hab. in Japonia (*Thunb.*); China, *Loureiro* (*v. v. c. et s. sp. Herb. Banks.*).

elliptica. 2. *E. foliis planis ellipticis obscurè denticulatis.*

Mespilus Cuila. Buch. Mss.

Hab. ad Narainhetty, *Buchanan* (*v. s. sp. Herb. Lambert*).

Obs. Facies prioris.

cordata? 3. *E. foliis cordatis serratis.*

Mespilus lanuginosa. Fl. Peruv. t. 425. f. 1. ined.

Hab. in Peruvîâ. *Pavon* (*v. s. sp. Herb. Lambert*).

Rami villis ferrugineis strigosi. *Folia* petiolata cordata obtusa serrata, suprâ plana pilosiuscula glaberrima rugosa, infrâ ferruginea villosa venis prominentibus. *Stipulæ* hirsutæ. *Fructus* (fide iconis) parvus rotundus non lanuginosus.

4? *Mespilus heterophylla. Fl. Peruv. t. 425. f. 2. ined.*

I am obliged to Mr. Brown for my knowledge of the structure of the fruit of this genus, which I have never been able to procure.

IX. PHO-

IX. PHOTINIA.

Cratægi species. *Thunb.*

Cal. 5-dentatus. *Petala* reflexa. *Ovarium* semi-superum, villosum, biloculare. *Styli* 2, glabri. *Pericarpium* biloculare calyce carnosio inclusum. *Testa* cartilaginea.

Arbores (*Asiæ temperatæ et Californiæ*). *Folia simplicia, coriacea, sempervirentia, serrata v. integerrima.* *Paniculæ compositæ, corymbosæ, terminales.* *Fructus parvi, impubes.*

serrulata. 1. *P.* foliis oblongis acutis serrulatis, pedicellis calyce longioribus.

Cratægus glabra. *Thunb.*

Hab. in Japonia (*Thunb.*); China, *illustr. Staunton* (*v. v. c. et s. sp. Herb. Banks.*).

arbutifolia. 2. *P.* foliis oblongo-lanceolatis distanter dentatis, pedicellis calyce brevioribus.

Cratægus arbutifolia. *Ait. Kew. ed. alt. iii. 202.*

Hab. in California. *Menzies* (*v. s. sp. Herb. Banks.*).

Habitus præcedentis. Paniculæ non corymbosæ.

Folia margine revoluta.

integrifolia. 3. *P.* foliis ovalibus integerrimis, ramis pustulatis.

Hab. in Nepalia. *Wallich* (*v. s. sp. Herb. Banks et Lamb.*).

Rami glabri angulati papillis crebris pustuliformibus scabrosi. *Folia* petiolata glaberrima integerrima ovalia, basin versus quandoque attenuata, reticulato-venosa. *Paniculæ compositæ corymbosæ glaberrimæ ebracteata.* *Styli* crassi patentes. *Loculi* dissepimento spurio semi-2-partiti, ideoque ovula quasi solitaria. *Fructus* ignotus.

Charac-

Characteribus priorum paulò recedit ob
loculos ovarii semi- 2-partitos et folia inte-
gerrima. Vix autem genus diversum.

dubia. 4? P. foliis lanceolatis distanter serratis, panicula
pilosa. Tab. 10.

Cratægus Shicola. *Buchan. Mss.*

Mespilus benghalensis. *Roxb. Fl. Ind. ined.*

Hab. in Nepalia, *Wallich (v. s. sp. Herb. Banks et
Lambert.)*.

Obs. Species generis dubii. Forte *Photiniâ* di-
stincta ob fructum inferum unilocularem et
semen magnum solitarium testâ laxâ vesti-
tum. Sed cum petala sint reflexa et ovarium
semi-superum biloculare, hùc referre quam
genus alterum efformare malui.

An hùc referendæ *Cratægus villosa et lævis
Thunbergii*?

X. CHAMÆMELES.

Cal. truncatus, 5-denticulatus. *Petala* parva, erecta, erosa. *Fi-
lamenta* filiformia. *Ovarium* inferum, monostylum, uniloculare.
Ovula bina, erecta.

Frutex (Maderæ). Folia *simplicia, coriacea, nitida, obsolete crenata.*
Stipulæ membranaceæ, deciduæ. Racemi axillares, basi foliosi.

1. CHAMÆMELES CORIACEA.

TAB. XI.

Cratægus coriacea. Soland. Mss.

Buxo Maderensibus.

Hab. in Maderæ rupibus. *Masson (v. s. sp. Herb. Banks).*

Inermis? foliis cuneiformibus subaveniis. *Racemi pilosius-
culi.*

Stamina



L. L. ad. nec det.

Photinia dubia.

L. Curtis sculp.



L.L. ad sic. del.

Chamamelic coriacea.

J. Curtis sculp.

Stamina 10—15 basi vix dilatata, erecto-patentia. *Discus* tenuis. *Ovarium* nudum. *Stylus* crassus subclavatus, basi pubescens. (*Fructus* immaturus dispermus. *Sol.*)

Variat foliis majoribus et minoribus.

That variety of *Cratægus Oxyacantha* which has been called *monogyna*, can by no means affect the importance of the character by which I propose to distinguish this genus; because in the former the unilocularity of fruit is not connected with a corresponding structure of ovarium, but arises from the abortion of one style. In the present plant the ovarium in its youngest state is absolutely unilocular.

XI. RAPHIOLEPIS.

Cratægi species. *Linn.*

Calycis limbus infundibuliformis deciduus. *Filamenta* filiformia.

Ovarium biloculare. *Pomum* disco incrassato clausum, putamine chartaceo. *Semina* gibbosa. *Testa* coriacea crassissima.

Frutex (*Chinensis*). *Folia simplicia crenulata coriacea reticulata.*

Racemi terminales bracteis foliaceis persistentibus squamosi.

1. *Cratægus indica* *Linn.*

2? *Cratægus rubra* *Lour.*

XII. CRATÆGUS *Linn., Willd.*

Mespili pars. *Smith, Willd.* *Pyri* sp. *Willd.* *Hahniæ* pars. *Medicus.*

Cal. 5-dentatus. *Petala* patentia orbiculata. *Ovarium* 2—5-loculare. *Styli* glabri. *Pomum* carnosum oblongum dentibus calycinis v. disco incrassato clausum, putamine osseo.

Frutices (*Americæ septentrionalis, Europæ, Asiæ temperatæ et Africa borealis*) spinosæ. *Folia angulata v. dentata, nunc sempervirentia.*

Cymæ terminales plerumque multifloræ patentes.

Bracteæ subulatæ deciduæ.

Cratægus cordata, coccinea, pyrifolia, elliptica, glandulosa, parvifolia, flava, punctata, Crusgalli, Oxyacantha (including *monogyna*), and *Azarolus Willd.*; *crenulata, Roxb.*; *Mespilus Pyracantha, W.*; *tanacetifolia, Smith*; *Pyrus terminalis, W.*

And probably

Cratægus viridis, maura, pentagyna, Willd.; *nigra, W. et K.*; *apiifolia, spathulata, Mich.*; *turbinata, Pursh*; *melanocarpa, orientalis, Bieberstein.*

Cratægus thus limited is a strictly natural genus divisible into two sections, of which the first may contain the species with evergreen nearly entire leaves, and the other those with angular deciduous ones. Each will be increased with several unpublished plants in the Banksian herbarium; and among the drawings of the Chinese is a species with quinate leaves.

Mespilus Pyracantha L. is referable to the first section, notwithstanding it differs in some respects.

TABULARUM EXPLICATIO.

- a.* Flos integer.
- a.** Idem petalis avulsis.
- b.* Idem verticaliter sectus.
- c.* Ovarii sectio transversa.
- c.** Ovarium sejunctum.
- d.* Fructus integer.
- e.* Idem per axin divisus.
- f.* Ejusdem sectio transversa.
- g.* Pericarpium sejunctum.
- h.* Semen.