

Systematic Pomology.

O. B. Whipple.

I. Introduction.

1. Definition.

2. Importance.

II. History.

III. Theory.

References.

"American Pomology" By Docter Warder.

"Systematic Pomology" By Frank Waugh.

"The American Fruit Culturist" By John J. Thomas.

"Systematic Pomology" By Budd and Hanson.

"Fruit and Fruit Trees of America" By Downing.

"Cyclopedia of American Horticulture" By Bailey.

Systematic Botany.

Introduction.

I. Introduction.

1. Definition.

2. Limitations.

II. Importance.

III. History.

IV. Body.

1. Divisions.

a. Description.

b. Nomenclature.

c. Classification.

V. Conclusion.

Importance.

Systematic Pomology.

Introduction.

The term pomology in its general sense applies to all those subjects, both practical and scientific, which have to do with the growing of fruit. The word comes from the Latin, pomum, a word that was used generically for "fruit." In later Latin it came to be associated more particularly with apple-like fruits. The word is also handed down to us in the French, pomme, meaning "apple." In English we know it as pome, a botanical term used to designate fruits that have the peculiar morphological structure of the apple, pear, and quince. In its true sense we may define pomology as the science of fruits, and its limitations as a science or an art depends upon the use of the term fruit. A concise definition of a fruit, in a horticultural sense is, we may say, impossible.

The science may be divided into three parts: systematic pomology, the classification of fruits, practical pomology, the science of growing fruit, and commercial pomology, the science of marketing fruits. In this treatise I shall limit myself to the field of "Systematic Pomology" with reference to the pome fruits, namely: the apple, pear and quince.

Importance.

With about two thousand varieties of apples, three hundred varieties of pears, and other fruit in proportion the importance of systematic pomology can not be over estimated. The subject is, today, a science which holds out grand opportunities to those who wish to give it their thought. With the vast and growing fruit industry

of our country we can not afford to even neglect what to some may seem a minor point. The better perfection of this branch of fruit growing knowledge would insure more satisfactory results to the amateur fruit grower. Today we still find a very imperfect system of nomenclature. We often find the same variety of apples grown under various names and still more inferior varieties sold under the name of standard sorts. The extent of the fruit growing district makes it very difficult to maintain correct nomenclature. A systematic description and classification is the only method by which the growing of our numerous varieties of fruit under correct names may be maintained.

History.

The science of systematic pomology has grown out of necessity, and as we look back over its history and outline its progress, we are forced to accede to the old proverb, "necessity is the mother of invention." About the middle of the nineteenth century the leading pomologists of America, spurred on by the rapid growth of the fruit industry, began to realize that some system of nomenclature was necessary. As early as 1628 Johann Johnston, a German, gave to the world the earliest classification of the apple. In 1792 Deil, another German, gave to the science the first natural system of classification. The former is of value only in showing the large number of varieties in cultivation at that time, while the latter has been modified and extended and may still be considered the basis of all systems of natural classification. Downing was one of the first Americans to advocate pomological reform, and his influence was directed along the line of culling the nurserymen's list of varieties.

He proposed three rules which if adopted and followed would have greatly simplified matters. The substance of these rules was as follows:

1. "No poor fruit should be entered or retained on the list of named varieties.

2. That no seedling should be entered on the list which was in no respect better than those of the same season of ripening now in cultivation.

3. That in fruits for general cultivation the habit and quality of the tree should be considered as well as the quality of the fruit."

He realized that the thirst for popularity often lead to the introduction of new varieties not worthy of cultivation.

Aroused by a general awakening of interest for pomological reform the leading pomologists and fruit growers of the day met in New York in 1848 under the title of "The National Convention of Fruit Growers." This became a permanent organization under the name of "The American Congress of Fruit Growers." They appointed committees to collect information that would aid in the publication of a list of varieties worthy of cultivation in different parts of the United States. They also recommended the choosing of standard works on pomology as a guide and the placing of the power to name new varieties in the hands of pomologists of acknowledged acquaintance with standard sorts. By 1858 the society had done much to cull out the nurserymen's list and recommend those worthy of cultivation. This organization merged into the "American Pomological Society" which is until the present time an important factor in the advance of modern

pomology. The greatest contributors to the subject of systematic pomology have been Deil and Lucas (German); Robert Hogg (English); and Andrew and Charles Downing, Doctor Warder and John J. Thomas of our own country.

Body.

Systematic Pomology may be divided into three important divisions: description, nomenclature, and classification.

The first step in getting acquainted with any variety of fruit is getting either a mental or a fully written out description of it. This subject has received a just share of the attention of our leading pomologists and is held by many as the most helpful factor in maintaining a correct nomenclature of our cultivated fruits. Downing in his book describes many of the varieties grown today but holds that this is as far as the systematic pomologists can go; that a practical or helpful system of classification is impossible. All the leading pomologists and pomological societies have resorted to this means of fixing the names of varieties. As we look over these descriptions we find them lacking in method and completeness. Many of them do not give characters enough to warrant the assignment of a specimen with any degree of accuracy to any variety. It is often only after combining two or three descriptions as given by different authors that we are able to place a specimen. What we need today is a uniform system of description. With a uniform method and with terms of universal application much could be done to acquaint the amateur fruit grower with the names and characters of many of our standard varieties of fruits. In describing a variety the characters of the tree should not be overlooked but entered on the description blank with the characters of the fruit. The specimen of fruit should be chosen with care, striving to get one

of the most typical shape, size and color. To establish this universal method adjectives used in describing would necessarily need be used with a fixed meaning. In the descriptions of fruits today we often find the same word used in different senses by two authors. As an example the term "obconic" is used by some authors to designate a fruit of a very flat or short cone shape, while by others it is used in its true sense, meaning an invert cone. I will not attempt to define all terms used in my descriptions but think by careful application on the part of the reader the use will define the term. Plate I and II will give some of the forms of apple most commonly met with. A drawing either in pencil or ink will often convey as good an idea of the fruit as the description. A photograph is probably the best method of representation ^{but it is not} practical for all. In extensive collections models are often made and painted to represent the variety. Plate III and IV copied from the United States pomologists report will give an idea of the information conveyed by such drawings and the care used by this department in preparing them.

As a model or plan of description with common terms to be used in describing the apple I would give the following:

Name of Variety.

Originator.

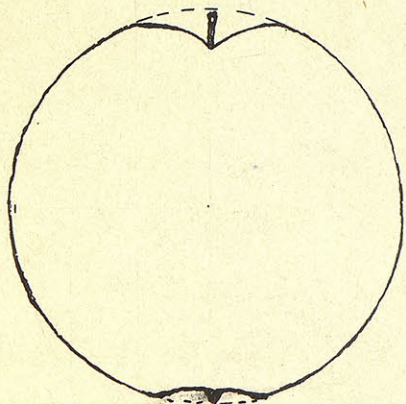
Date.

Described by

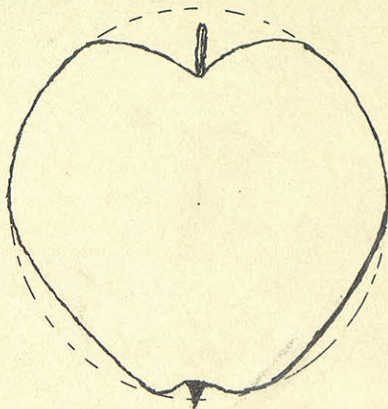
External Characters of fruit.

1. Size: Very large, large, medium, small or very small.
2. Shape: Round, conical, oblong, oblate, truncate, oblong conic, regular or irregular, lopsided, furrowed or ribbed.
3. Surface: Skin thick or thin, smooth, rough, polished, greasy, russeted, with or without bloom.
4. Color: Self-colored, blushed, clouded or spotted, streaked,

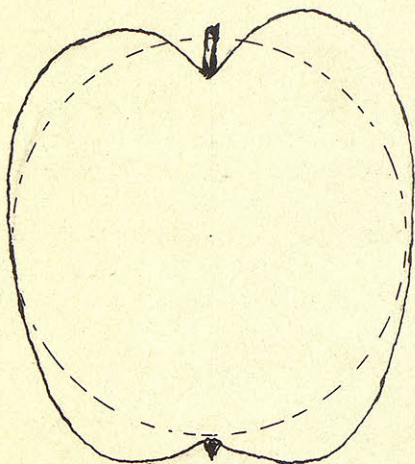
PLATE I.



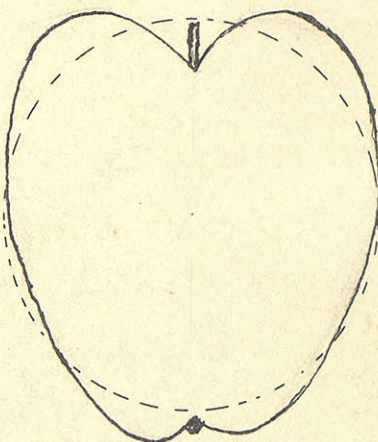
Round.



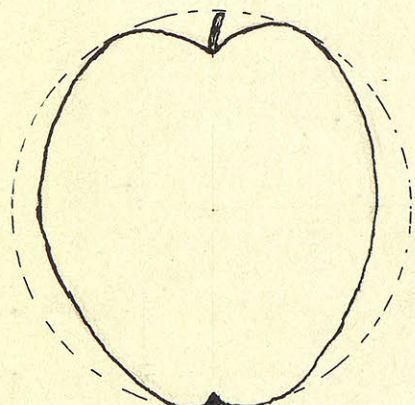
Conical.



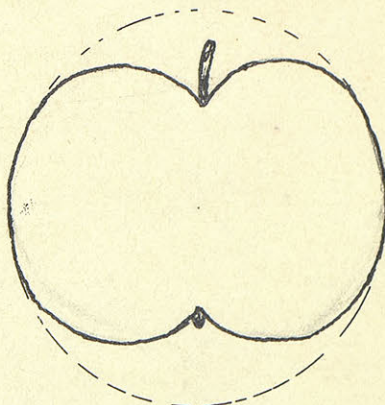
Truncated.



Oblong-conic



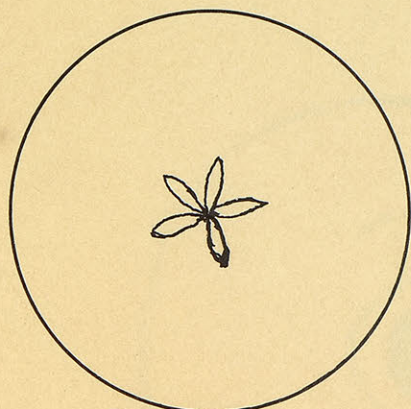
Ovate.



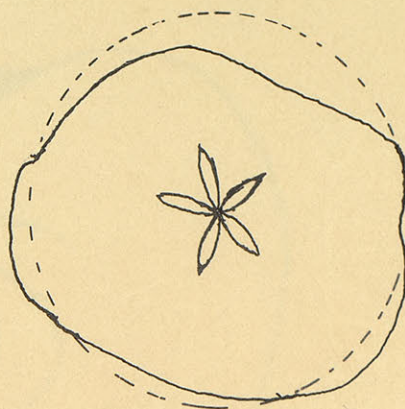
Oblate.

After Warder.

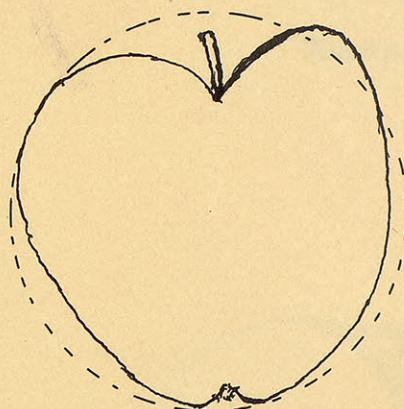
PLATE II.



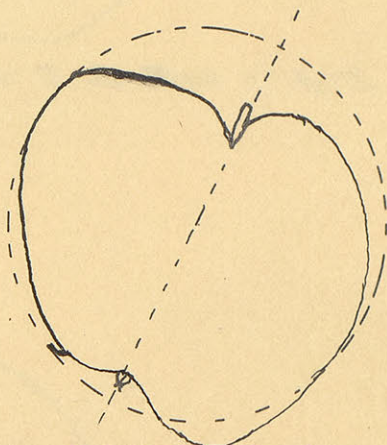
Regular.



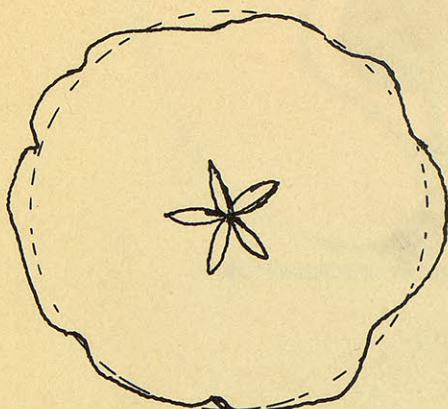
Irregular



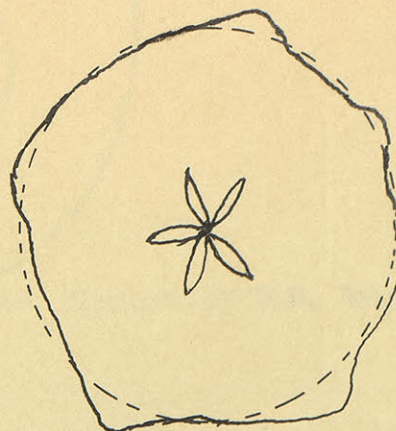
Lop-sided.



Axial-inclined.



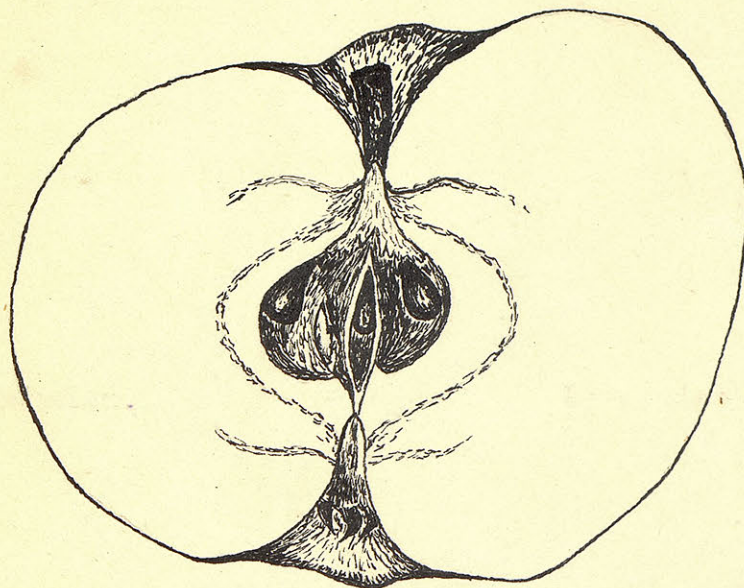
Furrowed.



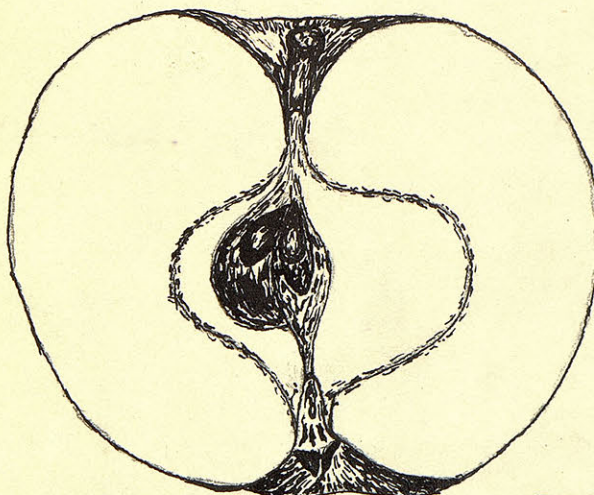
Ribbed.

After Warden.

PLATE III.

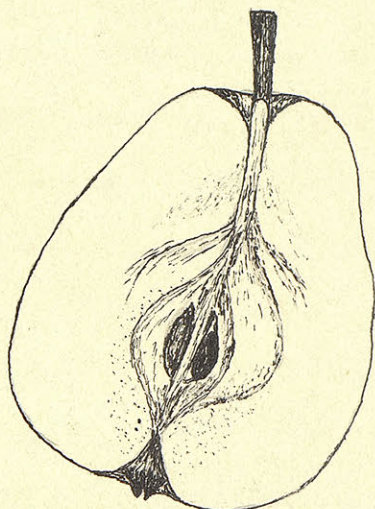


Huntsman. After U. S. Dept of Agri.

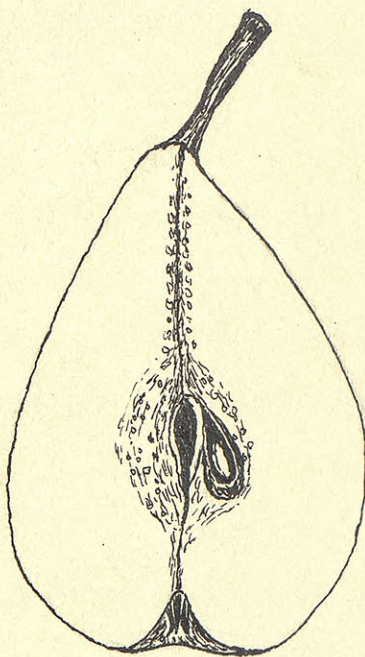


Arkansas Black. After Report of U.S. Dept. Agri.

PLATE IV.



Harley Wilder. After Report of U. S. Dept. of Agri.



Philopena. After Report of U. S. Dept. of Agri.

splashed, stripped, or bronzed.

5. Dots; Large or small, numerous or scattered, prominent or indented, shape, color and color of base.

6. Basin: Deep, shallow or medium, abrupt, narrow and pointed or obtuse and wide; regular, wavy, wrinkled or plaited, russeted.

7. Eye: Large, small, open or closed.

Calyx: Converging or reflexed, long or short, persistent or obsolete.

7. Cavity: Deep or shallow, regular, wavy, folded, wide or narrow, acute or obtuse, green, brown or russeted.

Stem: Long or short, slender, thick, knobbed or clubbed, curved or straight.

Internal characters.

8. Core: Open or closed, shape and size, clasping the eye or barely reaching.

Axis: Long, short, straight, or inclined.

9. Seeds: Numerous or few, size, color and shape.

10. Flesh: Color, firm or soft, fine or coarse, granular or gritty, tender or tough, dry or juicy, rich or poor.

11. Flavor: Vinous, sub-acid, acid or sweet, flat or highly flavored.

12. Quality: Inferior, fair, good, very good or best.

13. Use: Table, culinary, market or home.

14. Season: Summer, fall or winter.

Tree characters.

Shape: Upright, spreading, drooping or straggling.

Vigor: Thrift, hardiness and prolificacy.

Foliage: Color, dense or thin.

Bark: Color on trunk, smooth or rough.

Branches: Slender or stout, straight.

Twigs: Smooth or pubescent, color of bark.

Leaves: Size and shape.

The pear and quince would be described on the same general plan and I will not give the outlines. I will give the description with drawings of some of the standard sorts of apples and appears to illustrate the method to be followed. Owing to the lack of specimens I am unable to give any description of the quince.

The subject of nomenclature has been widely discussed by the leading horticultural societies of the United States and much has been done to establish a system by which errors may be corrected, and further errors in naming new varieties prevented. These are, theoretically at least, two methods of correcting and maintaining an accepted system of nomenclature, namely: by authority and by an adopted code of rules. In the early part of our history the former was relied upon. Andrew and Charles Downing were accepted authority for a number of years, and Doctor Warder was also considered authority by his associates. Of later years Professor Budd, Professor Bailey, H. C. Van Deman, Wm. A. Taylor, and G. B. Bracket have been regarded as authority by their limited circle of followers. Such authority has been limited and the circle of friends thus satisfied has become smaller and smaller until today a code of rules is held as the only

practical method of establishing and maintaining an accepted system of nomenclature.

In 1867 Mr. P. Barry proposed a set of rules to the American Pomological Society for their adoption. These rules are very interesting and show the lines along which the science of nomenclature has developed in America. These rules were not adopted but lead to the drafting and adoption of a code of rules in 1883. The rules adopted were intended to guide the society in its official proceedings in its fruit exhibit, and in its published reports. The rules are four in number and are supposed to cover all points in naming over which there might arise disputes. They also gave the general rules to be followed in the naming of new varieties.

In the fall of 1898 the subject of nomenclature came up before the "Lazy Club" (The Horticultural Seminar of Cornell University) and attracted much interest. The rules then in existence were discussed and criticised, and a committee of three was appointed to draw up as nearly as possible an ideal code. After much discussion and consultation with the leading pomologists of the United States the following so-called, "Lazy Club Code for Pomological Nomenclature", was presented and adopted:

"1. The name of a variety of fruit shall consist of one word or at most of two.

2. In the full and formal citation of a variety name, the name of the author who first published it shall also be given.

3. No two varieties in the same group shall have the same name, and the name first published for a variety must always be used to designate it. All names subsequently published must stand as synonyms.

4. Publication consists in (a) The public distribution^{of} printed name and description, the later giving distinguishing characters of fruit, tree, etc., or (b) In the publication of a new name for a variety properly described elsewhere.

5. No one is authorized to change a name for any reason except when it conflicts with these rules."

These rules have no official endorsement and no special public recognition. They have been widely discussed by American pomologists, and all agree that it is doubtless the best code of rules in existence in America today. They contain many of the fundamental principles on which scientific nomenclature is founded, and come nearer covering the actual practice of the best working pomologists of our day. They were designed to express the general laws of nomenclature as applied to pomology and should have a recognized official standing, while the rules of the American Pomological Society were made for the uses of the society they have received official endorsement.

Much has been done of late years in simplifying names and there is still room for improvement. This would do away with much of the dissatisfaction which grows out of conflicting names and synonyms. It is not uncommon yet to find the same variety of apples growing under at least a half dozen names, or two varieties grown under the same name.

The goal which systematic pomology is striving to attain is classification. This subject seems to attract little attention from our scientists of today. Thus far pomology has stood by and witnessed the advance of classification along the line of Botany, Bacteriology, etc., patiently waiting the hand of someone to develop here

Class I. Oblate or flat apples.

Order I. Regular apples.

A. Sweet apples.

a. Self-colored. (Not stripped).

b. Striped or splashed.

c. Russeted.

B. Sour apples.

a. Self-colored.

b. Striped or splashed.

c. Russeted.

Order II. Irregular apples.

A. Sweet apples.

a. Self-colored.

b. Splashed or striped.

c. Russeted.

B. Sour apples.

a. Self-colored.

b. Splashed or striped.

c. Russeted.

Class II. Conical apples.

Class. III. Round or globular.

Class IV. Oblong apples.

Classes II, III and IV subdivided as Class I.

The pear has received little attention in America but the Germans have arranged several systems of classification, both artificial and natural. Lucas has arranged very satisfactory systems by each method, which he intends for use together. The arbitrary method

may be summarized as follows:

Classes: Based on season, 1. Summer, 2. Autumn, 3. Winter.

Orders: Based on shape, 1. Oblate, 2. long, 3. longish, 4. round.

Sections: Based on color. 1. Uncolored. 2. Colored. 3. Russeted.

Sub-sections: Based on calyx. 1. Open. 2. Closed. 3. Deciduous.

Professor Waugh has given probably the best artificial system of classification for the pear in his book, "Systematic Pomology," published in 1903. The outline is as follows:

Class 1. Round or oblate.

A. Summer.

a. Uncolored or self-colored.

b. Colored.

c. Russeted.

B. Autumn.

a. Self-colored.

b. Colored.

c. Russeted.

C. Winter.

a. Self-colored.

b. Colored.

c. Russeted.

Class II. Obconic.

Class III. Pyriform. (pear shaped).

Class IV. Irregular.

These classes are sub-divided as Class I.

The quince owing to the small number of varieties and its lack of commercial importance has received little of the systematic pomol-

ogists' attention. There are probably not over twenty-five varieties now described and no system of classification has been prepared.

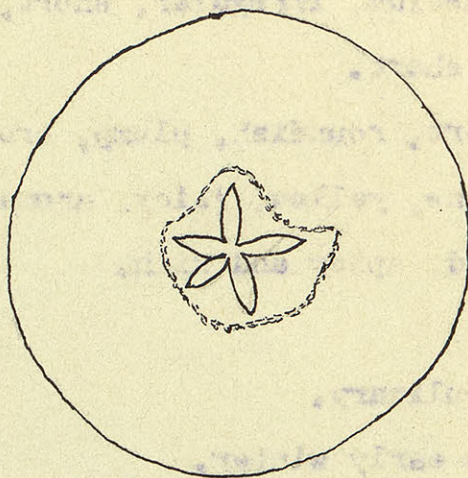
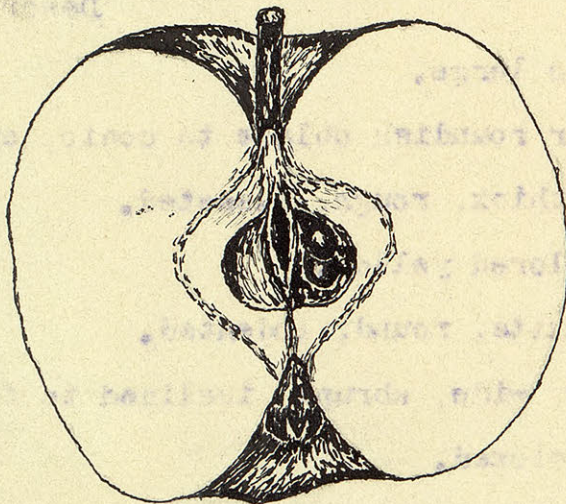
There have been some interesting classifications of the pome fruits presented which I can only mention. The most interesting is the artificial system of the apple, given by Robert Hogg, the leading pomologist of England. He has based his arrangement on the structure of the calyx tube, with reference to the tube, stamens, carpels and sepals. Some have proposed classification based upon flower characters. It is true that nearly all varieties vary in the structure of the flower, but no classification has been worked out. It is claimed by some to be impossible as the flowers of the same variety vary greatly with locality, soil and climate.

The field of classification is yet open for improvement and little has been done along that line of late years. I think it is practical and also possible that a system could be prepared by combining the two methods. This would surely be an improvement over our present systems, and would be as near an ideal system as possible. In actual practice the two systems naturally mix. The arbitrary method is the more easily prepared and the most conveniently used, but does not convey as many facts of relationship as the natural method. The natural method should be the aim of every ambitious systematic pomologist as it is more scientific and gives a broader field for advancement.

Conclusion.

The subject of systematic pomology is a broad one, and it is gradually growing with the fruit industry. It is to be hoped that some one will enter into the spirit of the subject and advance it with the ^{other} branches of pomology. It is safe to say that it is not of

the least importance. We should strive for a more uniform and perfect method of description, a more perfect and more simple nomenclature, and a helpful and enlightening system of classification.



Grimes Golden.

Name,

Date,

1. Siz

2. Sha

3. Sur

4. Col

5. Dot

6. Bas

7. Ca

8. Co

9. Se

10. FL

11. FL

12. Qu

13. Us

14. Se

Tree

Apple.

Name, Grimes Golden.

Origin, Brooke Co., Va.

Date, Oct. 1903.

Describer O. B. Whipple.

1. Size: Medium to large.
2. Shape: Conic or roundish oblate to conic, or cylindrical.
3. Surface: Skin thick, rough, russeted.
4. Color: Self colored yellow.
5. Dots: Small, white, round, indented.
6. Basin: Shallow, wide, abrupt, inclined to fold.

Eye: Large, closed.

Calyx: Converging, persistent, long.

7. Cavity: Deep, wide, regular, russeted.

Stem: Short, knobbed, curved.

8. Core: Closed, medium, irregular, short, cordate, clasping the eye. Axis short.

9. Seeds: Few, short, roundish, plump, brownish yellow.
10. Flesh: Firm, fine, yellow, juicy, aromatic.
11. Flavor: Sub-acid, spicy and rich.
12. Quality: Best.
13. Use: Dessert, culinary.
14. Season: Fall to early winter.

Tree characters.

Shape: Spreading, even top.

Vigor: Medium growth, hardy on alternate bearer.

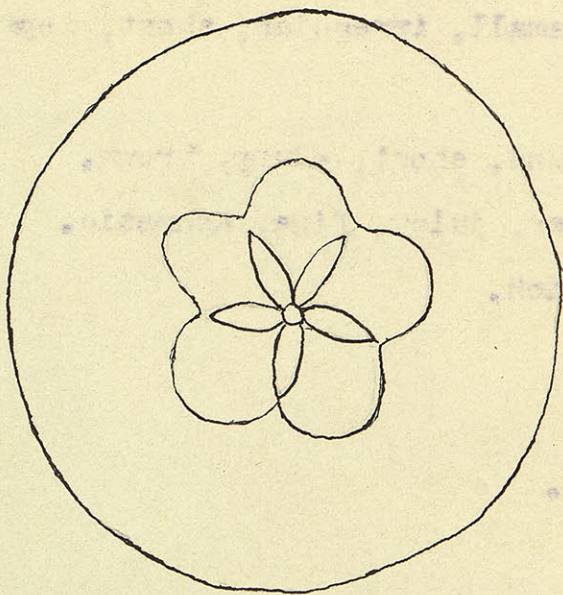
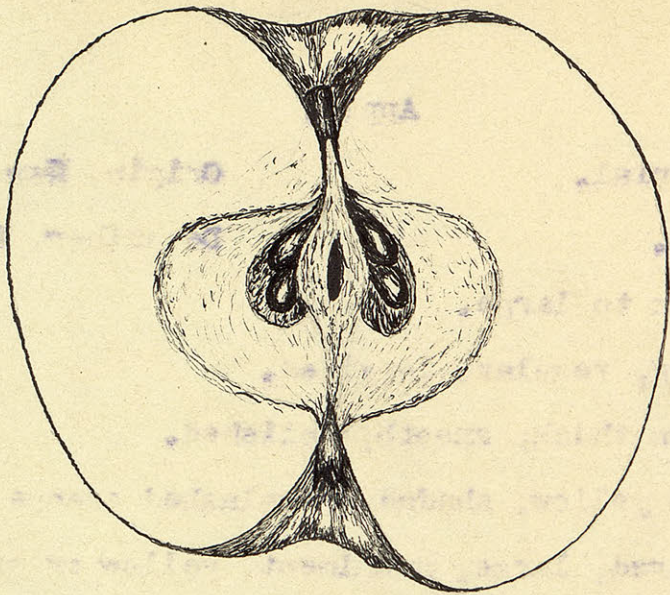
Foliage: Dense, Medium color of green.

Bark: On trunk smooth, brown.

Branches: Medium thickness, straight.

Twigs: Medium thickness, pubescent, bark chocolate color.

Leaves: Medium size, finely toothed.



York Imperial

Name,

Date,

1. Si

2. Sh

3. Su

4. Co

5. Do

6. Ba

7. C

8. C

9. S

10. L

11. L

12.

13.

14.

Tree

Sl

V

F

Apple.

Name, York Imperial.

Origin, New York, Pennsylvania.

Date, Oct. 1903.

Describer, O. B. Whipple.

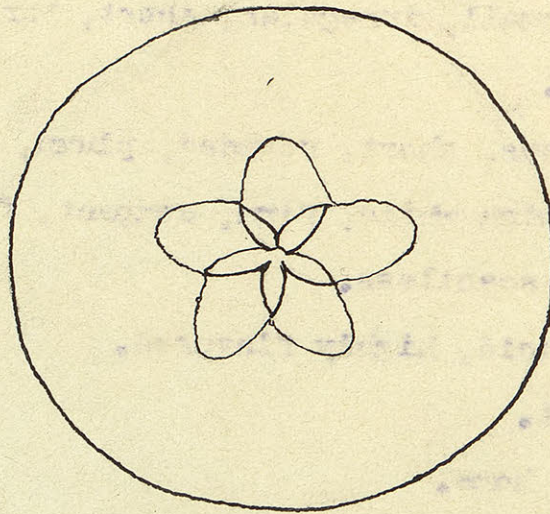
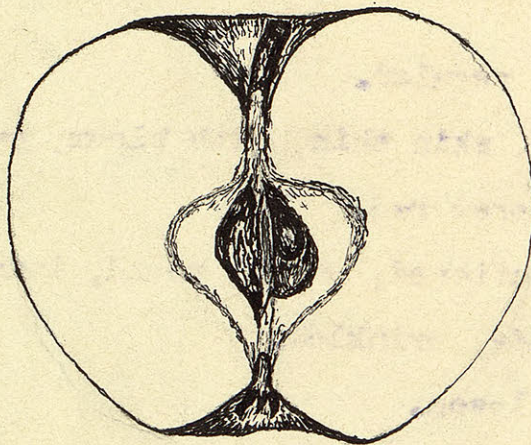
1. Size: Medium to large.
2. Shape: Oblong, regular, lopsided.
3. Surface: Skin thick, smooth, polished.
4. Color: Lemon yellow, shaded or splashed orange or scarlet.
5. Dots: Scattered, large, prominent, yellow or gray base.
6. Basin: Deep, wide, regular, or wrinkled, abrupt.
 Eye: Small, closed.
 Calyx: Converging, short.
7. Cavity: Deep, regular or slightly wavy, green.
 Stem: Short, stout.
8. Core: Mostly open, small, irregular, short, depressed, clasping
 the eye.
9. Seeds: Numerous, round, short, plump, brown.
10. Flesh: Yellow, tender, juicy, fine, aromatic.
11. Flavor: Sub-acid, rich.
12. Quality: Very good.
13. Use: Home, market.
14. Season: Late winter.

Tree characters.

Shape: Spreading.

Vigor: Moderate grower and producer, irregular bearer.

Foliage: Medium dense, light green.



Winesap.

Name	Date
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
Tree	
Sh	
Vi	
Fe	
Ba	
Br	
Tv	
Le	

Apple.

Name, Winesap.

Origin,

Date, Oct. 1903.

Describer, O. B. Whipple.

1. Size: Medium.
2. Shape: Conical, regular.
3. Surface: Smooth, skin thin, with bloom, partially russeted.
4. Color: Self-colored red.
5. Dots: Large, scattered, white, round, indented.
6. Basin: Deep, wide, wrinkled.
 Eye: Small, closed.
 Calyx: Converging, persistent, long.
7. Cavity: Deep, regular, wide, russeted.
 Stem: Medium, slender, curved.
8. Core: Open, small, irregular, short, barely reaching the eye.
 Axis short.
9. Seeds: Numerous, short, rounded, plump, light brown.
10. Flesh: Yellowish white, firm, compact, fine, tender, juicy,
 rich, scentless.
11. Flavor: Sub-acid, highly flavored.
12. Quality: Best.
13. Use: Market, home.
14. Season: Winter, December to January.

Tree Characters.

Shape: Drooping, shaggy.

Vigor: Strong grower, hardy, prolific, regular bearer.

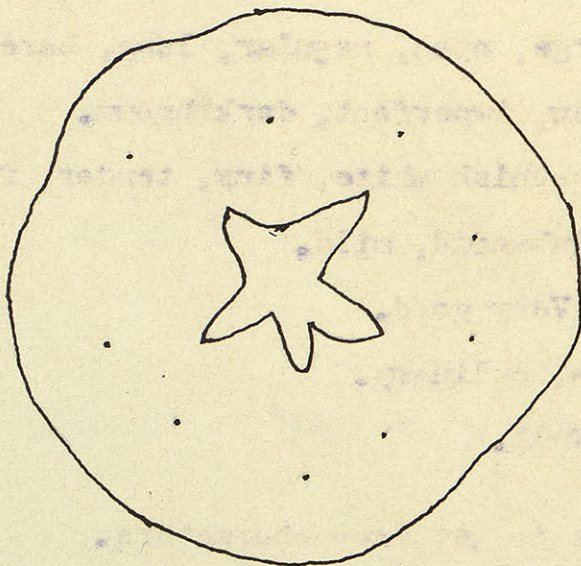
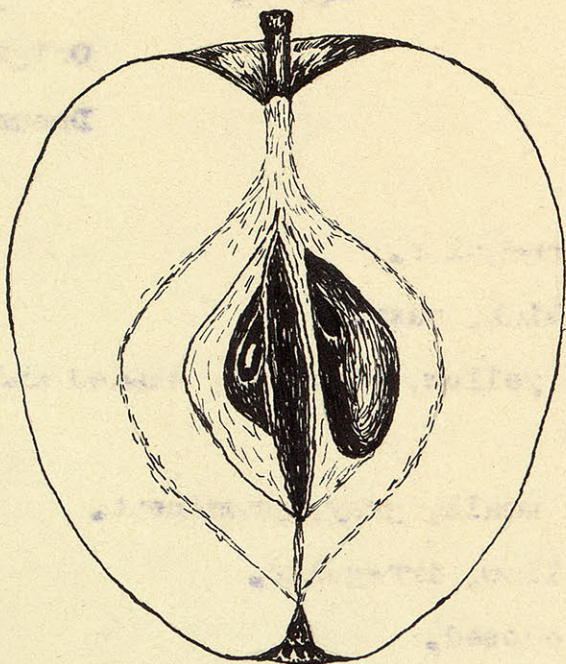
Foliage: Light green or medium.

Bark: On trunk rough, light brown.

Branches: Crooked, stout, zigzag.

Twigs: Strong, bark rich brown.

Leaves: Small, finely toothed but not sharp.



Gilliflower.

Name,

Date,

1. Si

2. Sh

3. Su

4. Co

5. Do

6. Ba

7. C

8. C

9. S

10. F

11. F

12. Q

13. U

14. S

Apple.

Name, Gilliflower.

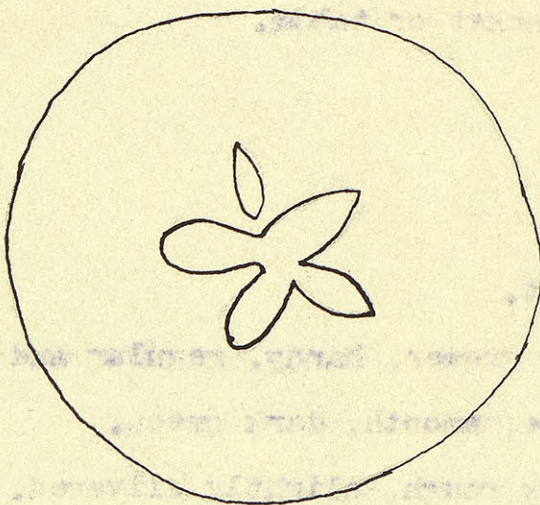
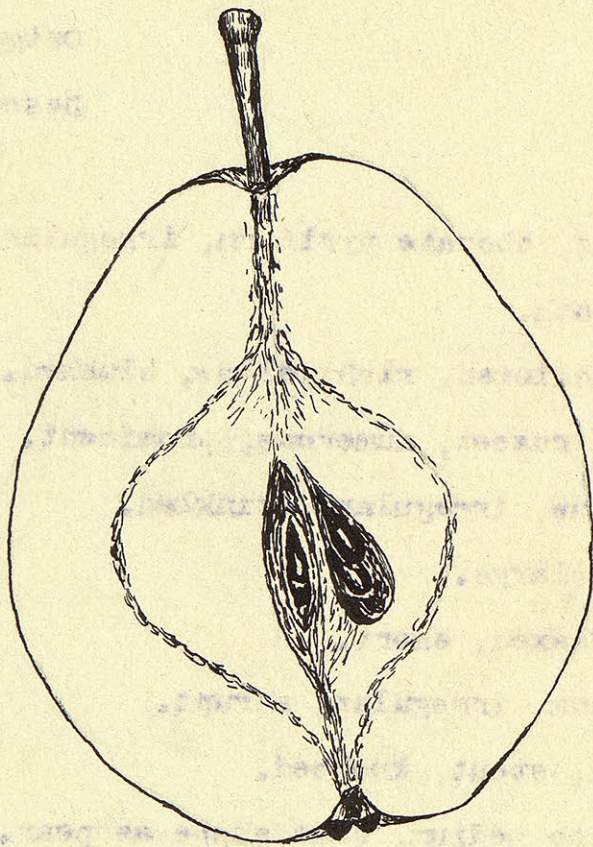
Origin

Date, Oct. 1903.

Described by O. B. Whipple

1. Size: Medium.
2. Shape: Ovate, irregular.
3. Surface: Skin thick, waxy.
4. Color: Greenish yellow, streaked, shaded and splashed with dull red.
5. Dots: Numerous, small, gray, prominent.
6. Basin: Very shallow, irregular.
 Eye: Small, closed.
 Calyx: Slightly diverging, long.
7. Cavity: Medium, regular, russet.
 Stem: Long, curved, slender.
8. Core: Large, open, regular, long, barely reaching the eye.
9. Seeds: Few, imperfect, dark brown.
10. Flesh: Greenish white, firm, tender, fine aromatic.
11. Flavor: Sub-acid, mild.
12. Quality: Very good.
13. Use: Home, culinary.
14. Season: Fall.

Unable to get tree characters.



Kieffer Pear,

Name,

Date,

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Tree c

Pear.

Name, Kieffer.

Origin

Date, Oct. 1903.

Describer, O. B. Whipple.

1. Size: Large.
2. Shape: Oblong, obovate pyriform, irregular.
3. Surface: Smooth.
4. Color: Self colored, rich yellow, blushed.
5. Dots: Round, russet, numerous, prominent.
6. Basin: Shallow, irregular, wrinkled.
- Eye: Open, large.
- Calyx: Reflexed, short.
7. Cavity: Medium, irregular, abrupt.
- Stem: Long, stout, knobbed.
8. Core: Large to medium, same shape as pear.
9. Seeds: Numerous, pointed, brown.
10. Flesh: Coarse, gritty, tender, melting, juicy.
11. Flavor: Sub-acid, mild.
12. Use: Culinary, market or table.
13. Quality: Fair.
14. Season: Autumn.

Tree characters.

Shape: Upright.

Vigor: Strong grower, hardy, regular and early bearer, prolific.

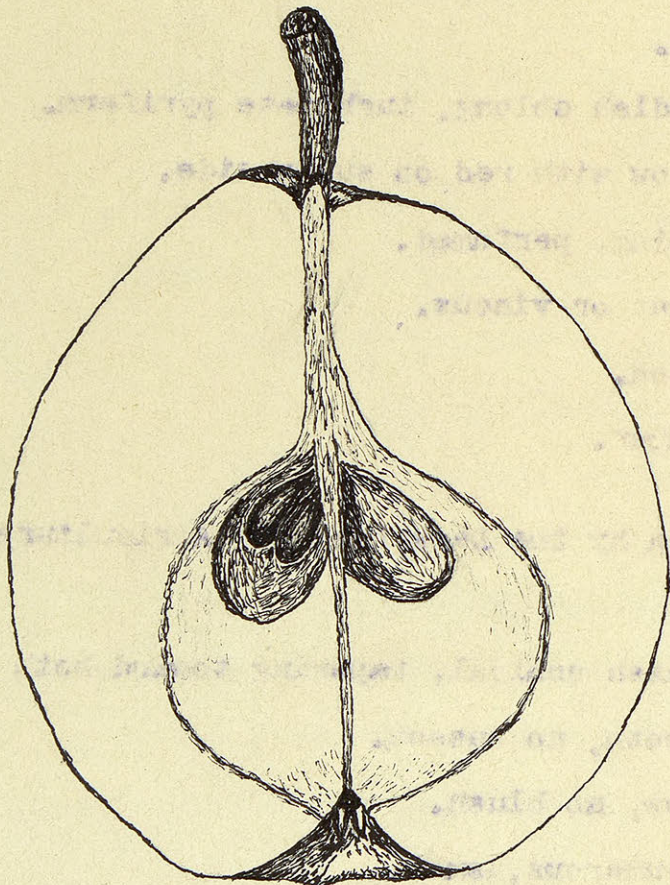
Foliage: Dense, smooth, dark green.

Bark: On trunk rough, slightly silvered.

Branches: Strong, close together, zigzag.

Twigs: Thick, smooth, bark with a tint of yellow.

Leaves: Large, finely toothed, ovate, smooth above and below.



Le Conte. After Report of U. S. Dept. of Agri.

Orig

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Sea

Descr

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Pear. Le Conte.

Origin: A Chinese seedling.

Showing poor description given by Budd and Hansen.

1. Size: Large.
2. Shape: Roundish oblong, turbinate pyriform.
4. Color: Yellow with red on sunny side.
5. Flesh: Melting, perfumed.
6. Flavor: Sweet or vinous.
7. Quality: Good.

Season: Midsummer.

Description given by the Department of Agriculture.

Size: Large.

Shape: Roundish conical, tapering toward both ends.

Surface: Smooth, no russet.

Color: Yellow, no blush.

Dots: Very numerous, small.

Basin: Narrow, deep.

Eye: Small and open.

Calyx: Often deciduous.

Apex: Slightly sunken.

Stem: Medium length and stout.

Core: Large, closed.

Seeds: Large, light colored.

Flesh: Very tender, juicy, rots at core.

Flavor: Not rich but pleasant, some what astringent.

Quality: Medium.