Describing Apples Phenotypically

With John Bunker

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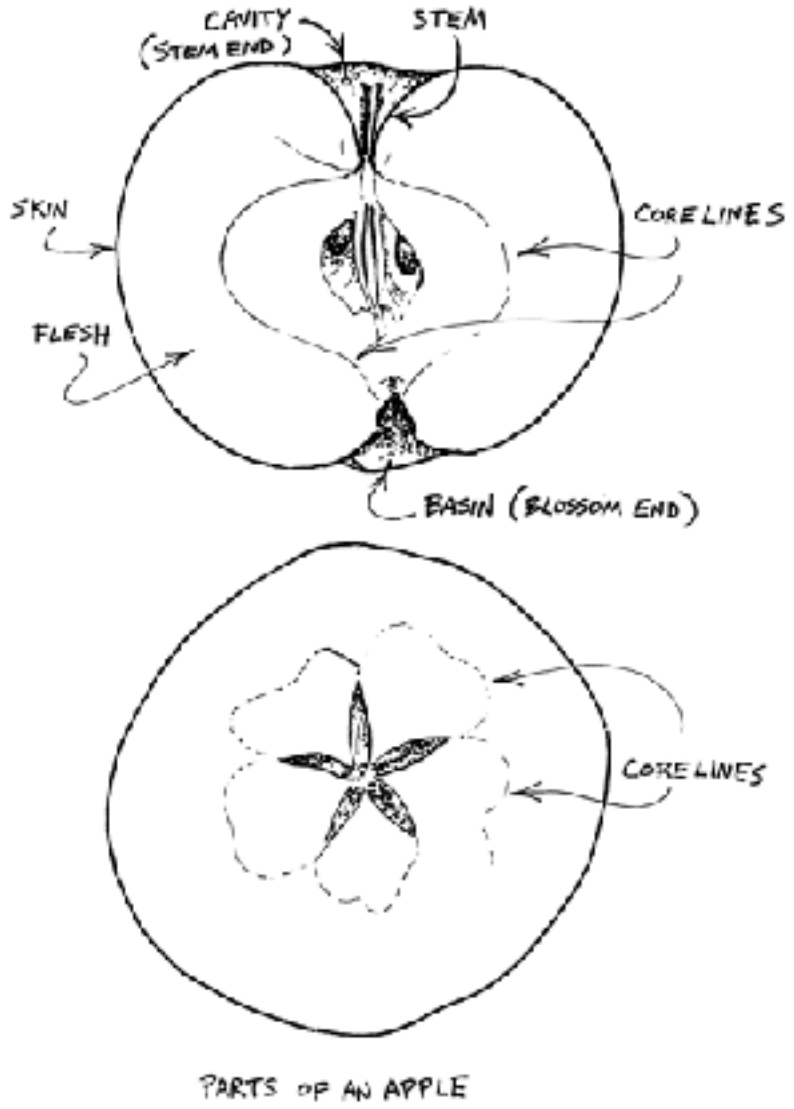
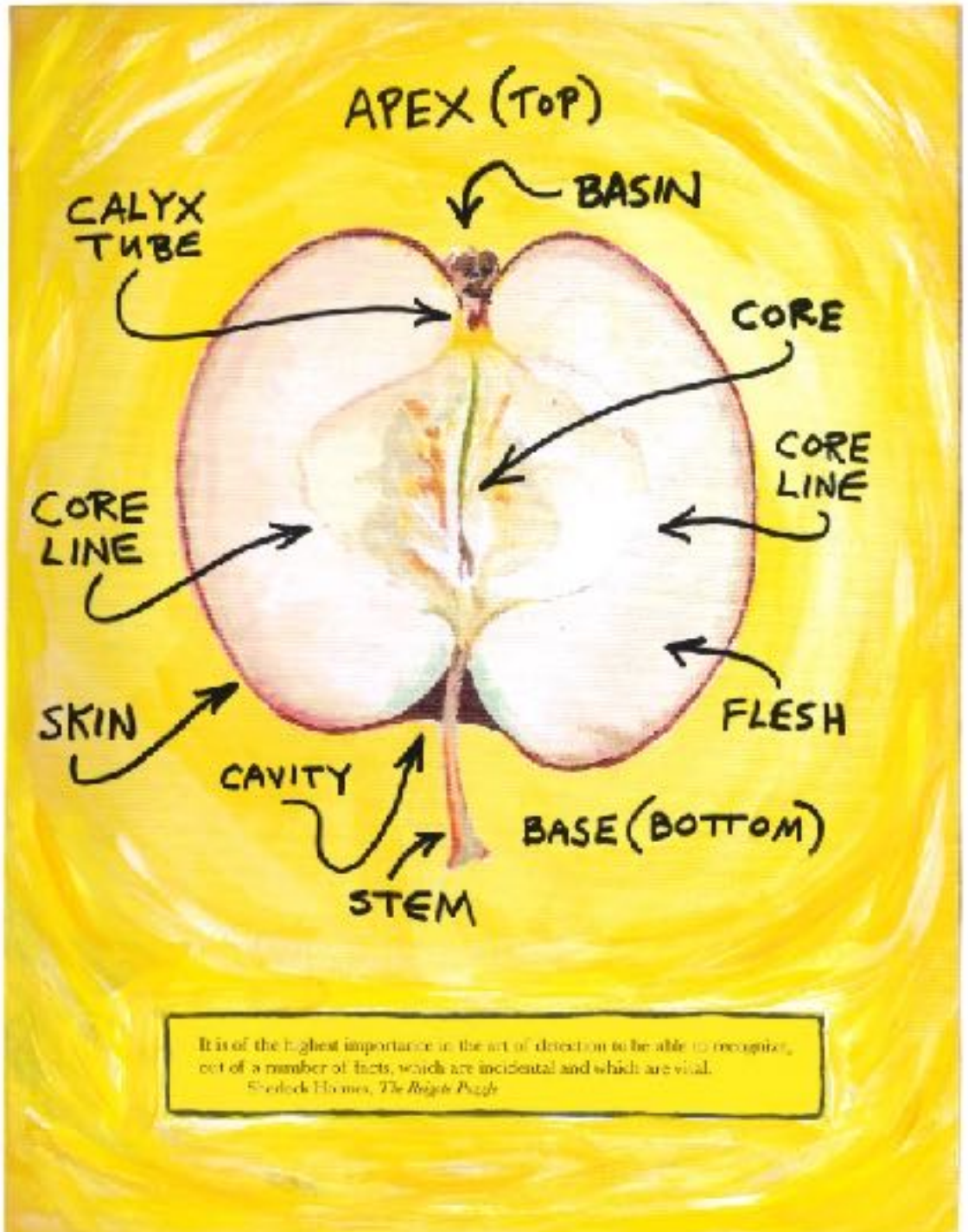


PARTS OF AN APPLE



Phenotypic description means: describing apples by their physical characteristics

(this apple is right-side up!)

Why we do phenotyping

To get to know the apples we grow

To solve unidentified apple mysteries

To document cultivars for preservation

To help us in the field when fruit exploring

To confirm or correct mistakes in our orchards and nurseries

To standardize and share data with others

To add to the National DNA reference panel

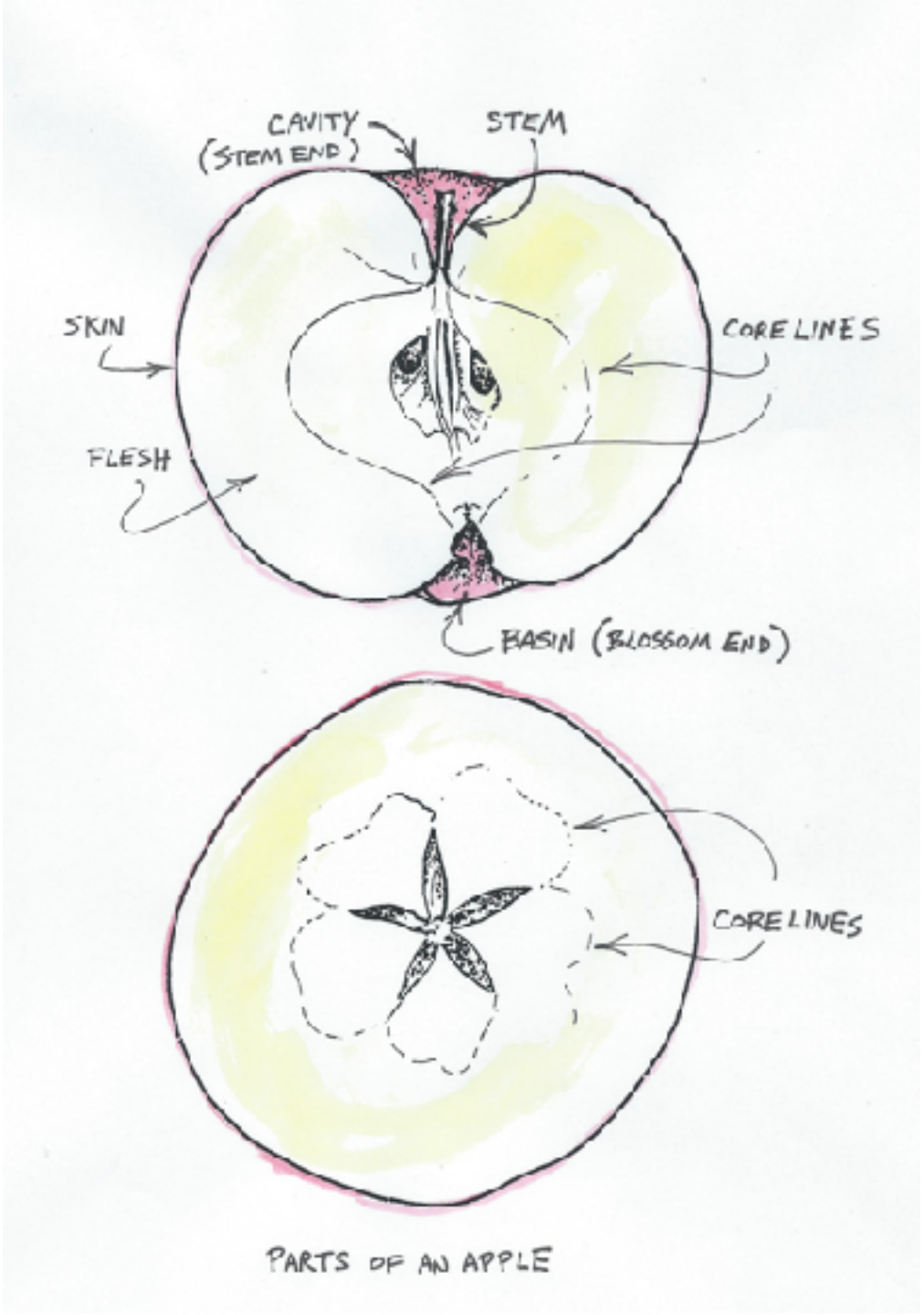
Challenges with phenotyping

Agreement on definitions of the parts and the terminology used to describe them

Errors throughout nurseries, orchards, and even classic pomological texts

The variability of each apple on the same tree of the same cultivar

The variability of the same cultivar from site to site, region to region, and year to year



Getting Started

1. Your name (or initials) and today's date

2. Name of the apple (or some unique identifier)

3. Location of specimen tree (road, town, county, state)

4. Maturity Season (when is the apple ripe)

5. DNA profile number and results (if known)

6. Synonyms (if known)

7. Parentage (if known)

8. Historical origin (if known)

9. Resembles (what cultivars does this apple resemble)

10. Vintage (heirloom, modern, seedling, etc.)

What cultivar-type does your apple resemble

The SIZE of the apple means the DIAMETER

- Very small below 1.5” (4cm)
- Small 1.5-2” (5cm)

(a crabapple is just a small apple!)

small

medium

- Small-medium 2-2.5” (6.5cm)
- Medium 2.5-3” (7.5cm)
- Medium-large 3-3.5” (9cm)

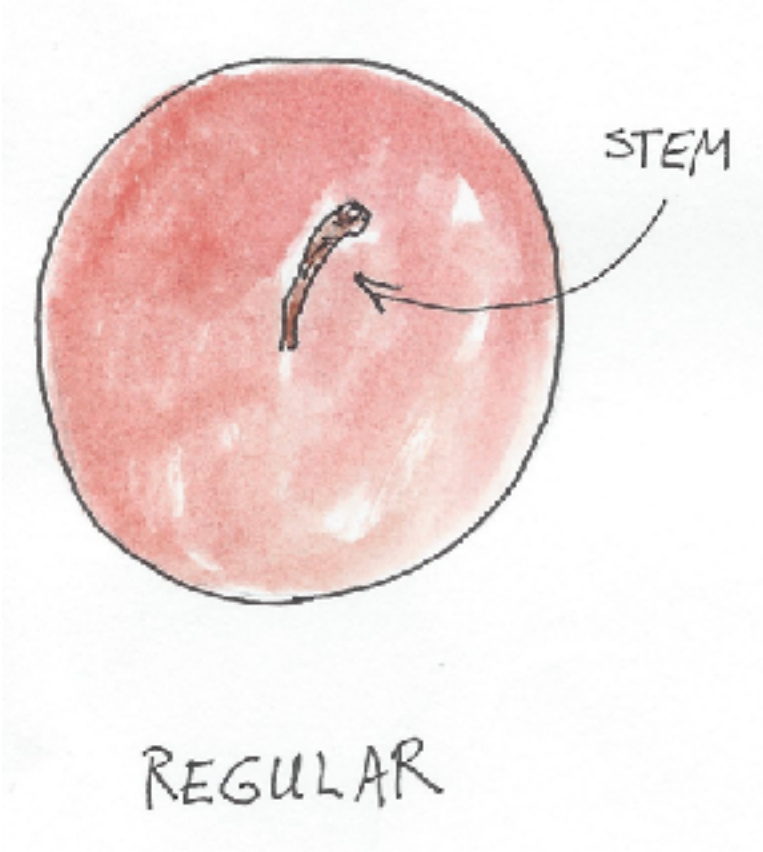
very small

large

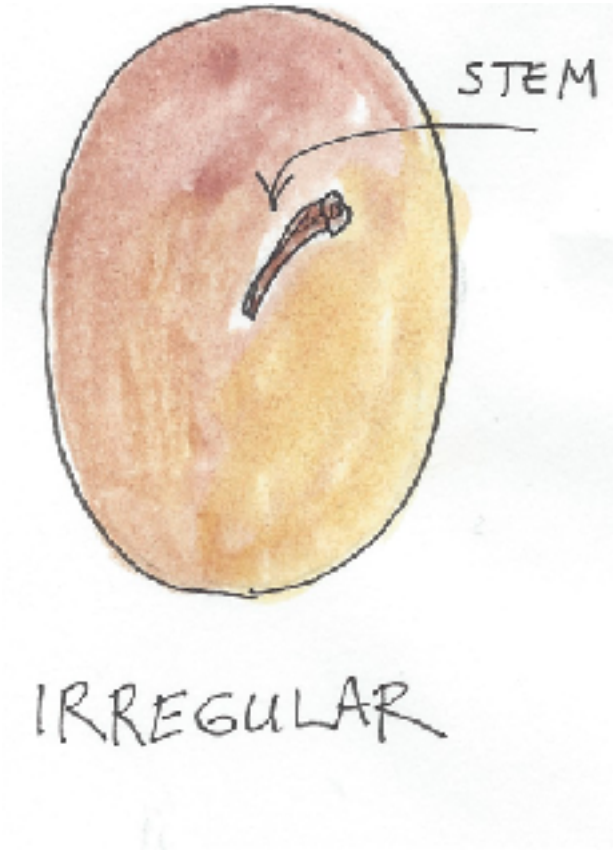
- Large 3.5-4” (10cm)
- Very large 4”+ (10cm+)

The shape: indicate all that apply

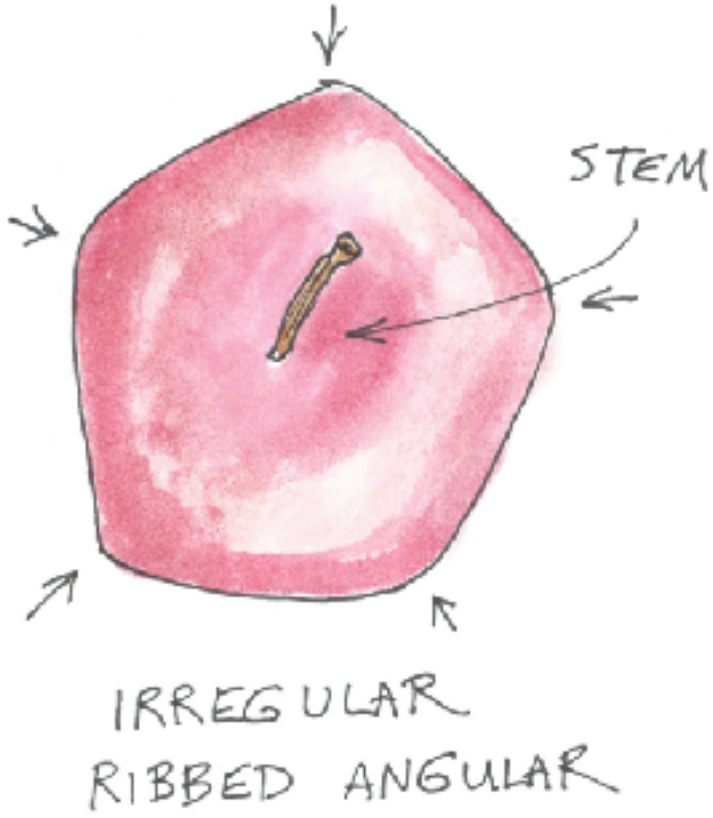
Regular or irregular and ribbing



Not ribbed



Not ribbed



Ribbed

Overall color

The ground color is what’s under the stripes and blush

Don’t be fooled by the stripes: this is a light yellow apple!

The skin can have stripes or not

Brock

The skin can have a blush or not

The skin often has blush AND stripes

Aston Bitter with stripes and blush

Some apples have “bloom.” Most do not

Blue Pearmain with its signature dusty bloom

Some apple have russet patches, netting or are entirely russetted

Gray Pearmain with russet netting

Roxbury Russet with russet patches

GR1 aka
Golden Russet of Western NY

The dots (lenticels) can be: Very Prominent (Very Conspicuous), Prominent (Conspicuous) or Not Prominent

- Malus tschonoskii

The dots can be abundant or not

Cox Orange Pippin: prominent but only moderately abundant

Dots can be abundant or not

Bethel with numerous dots

Dots come in various colors: typically white, gray or russet

Redfield (WHITE dots)

Ashmead’s Kernel (GRAY dots)

Stone (RUSSET dots)

Dots can be small, medium or large

Binet Rouge

Beauties of Wellington

Malus ombrophila

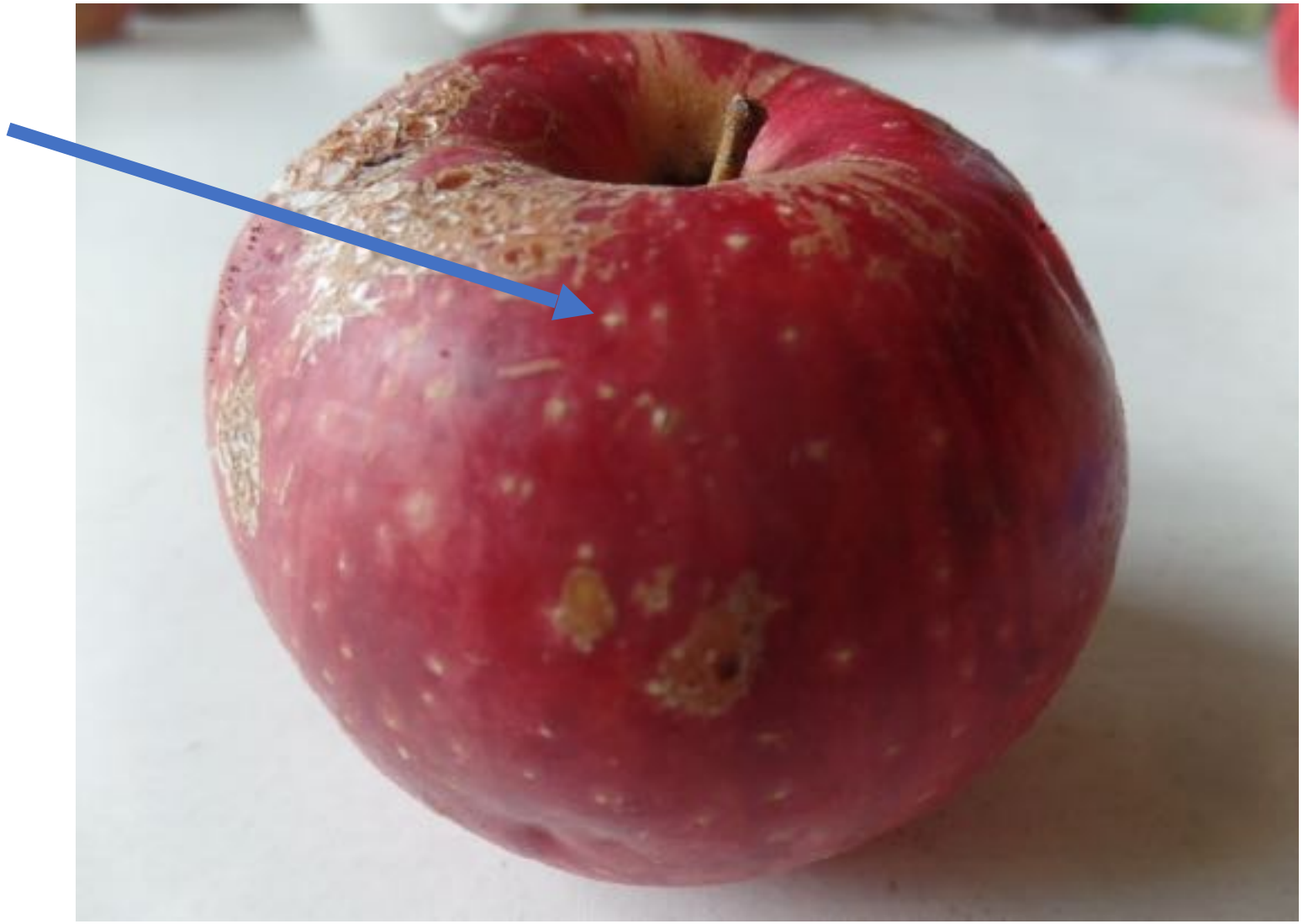
Dots (lenticels) can be rough, sunken, stellate or areolar

Rough

Dots (lenticels) can be rough, sunken, stellate or areolar

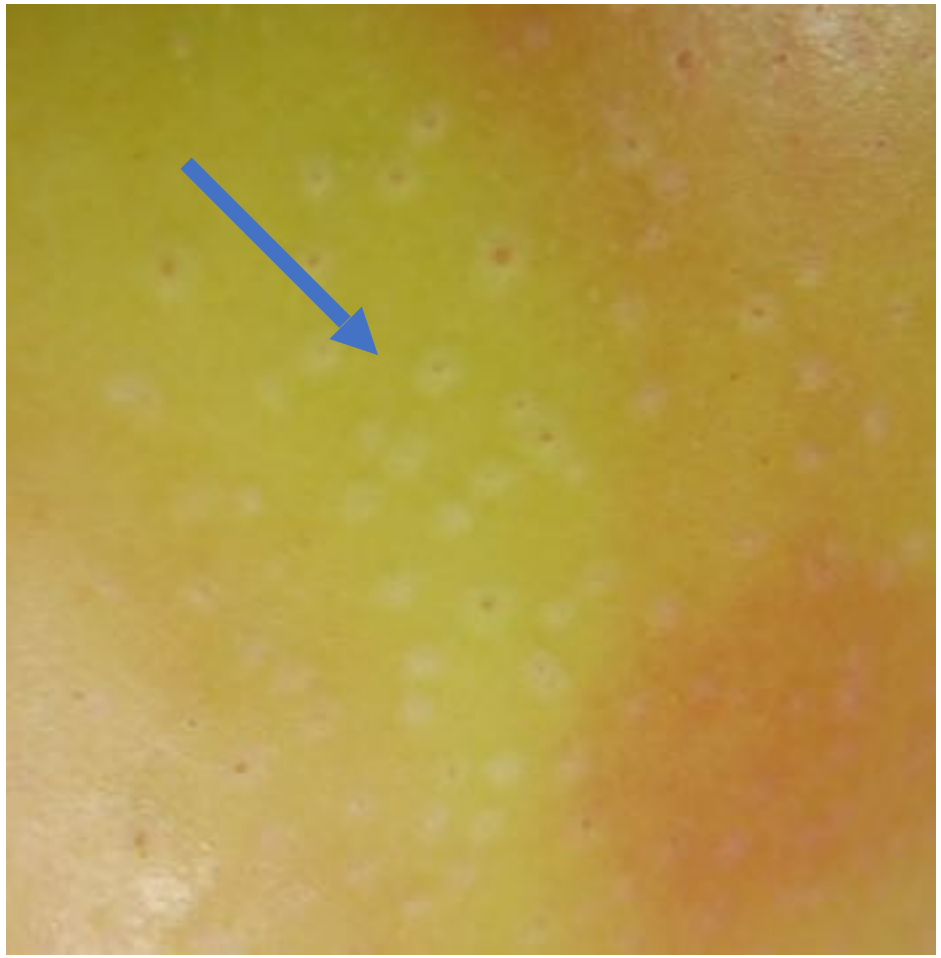
Sunken
aka Submerged

Dots (lenticels) can be rough, sunken, stellate or areolar



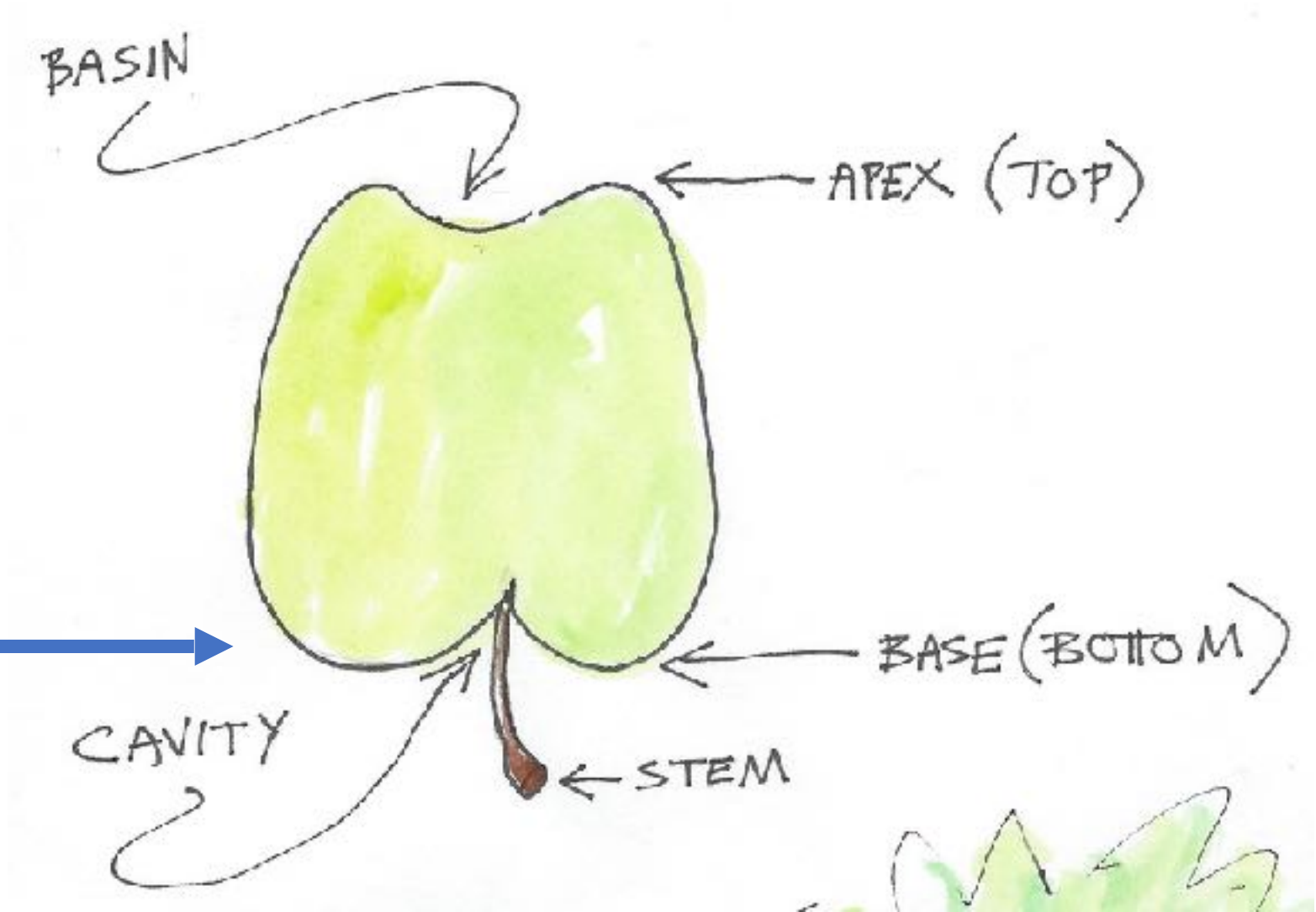
Baxter with areolar dots

Dots (lenticels) can be rough, sunken, stellate or areolar



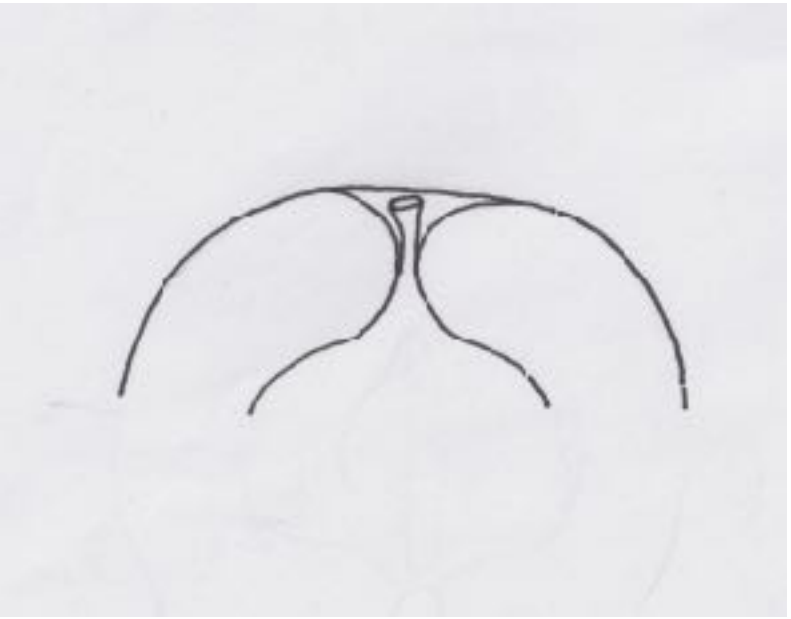
Northwestern Greening: areolar

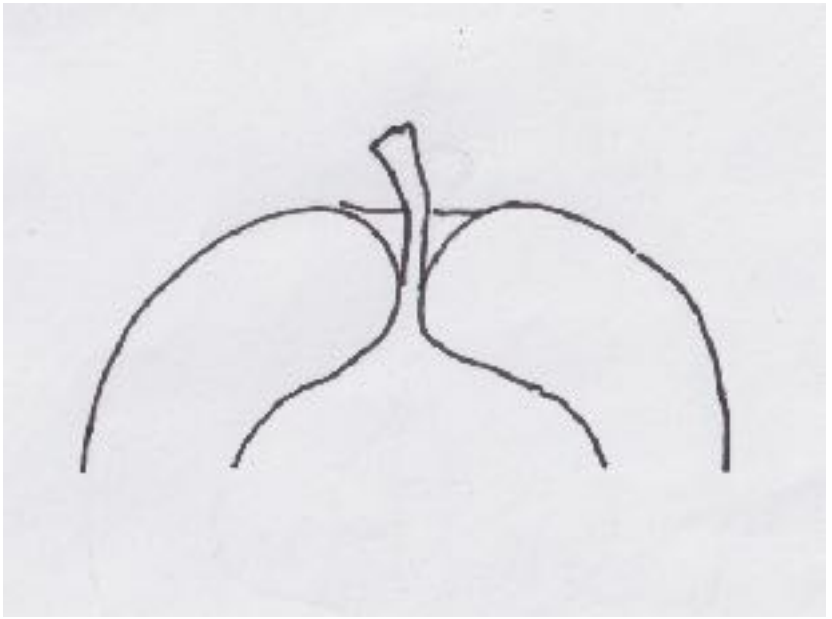
The base is the stem end and the location of the cavity

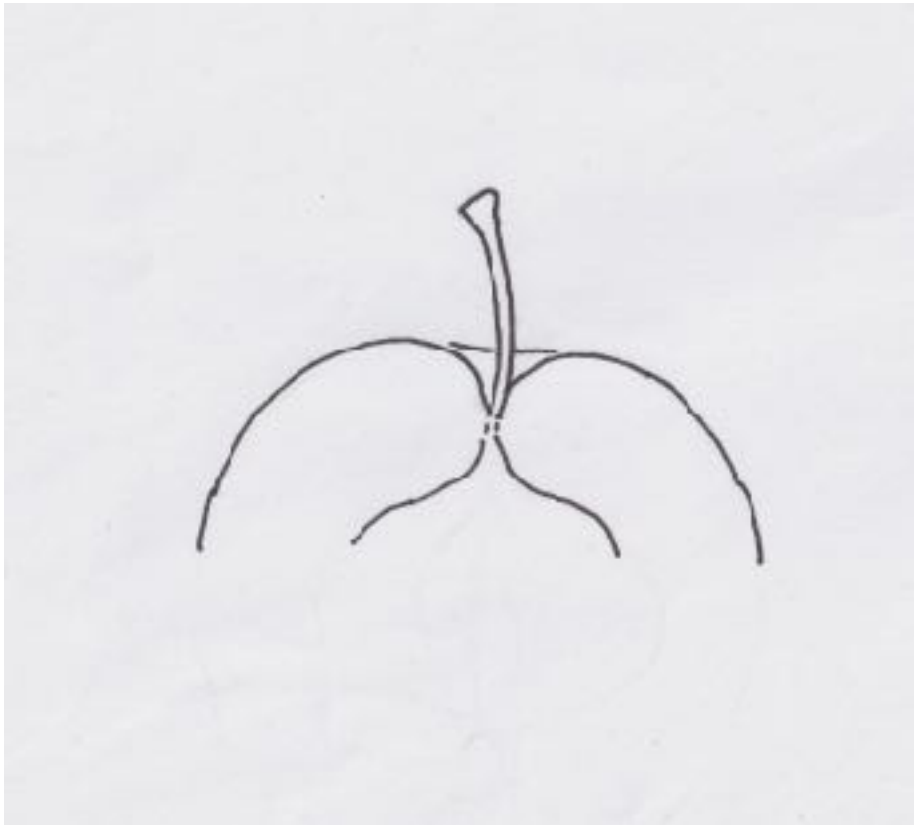


The BASE is the base…
not the basin !

The stem can be short, medium or long

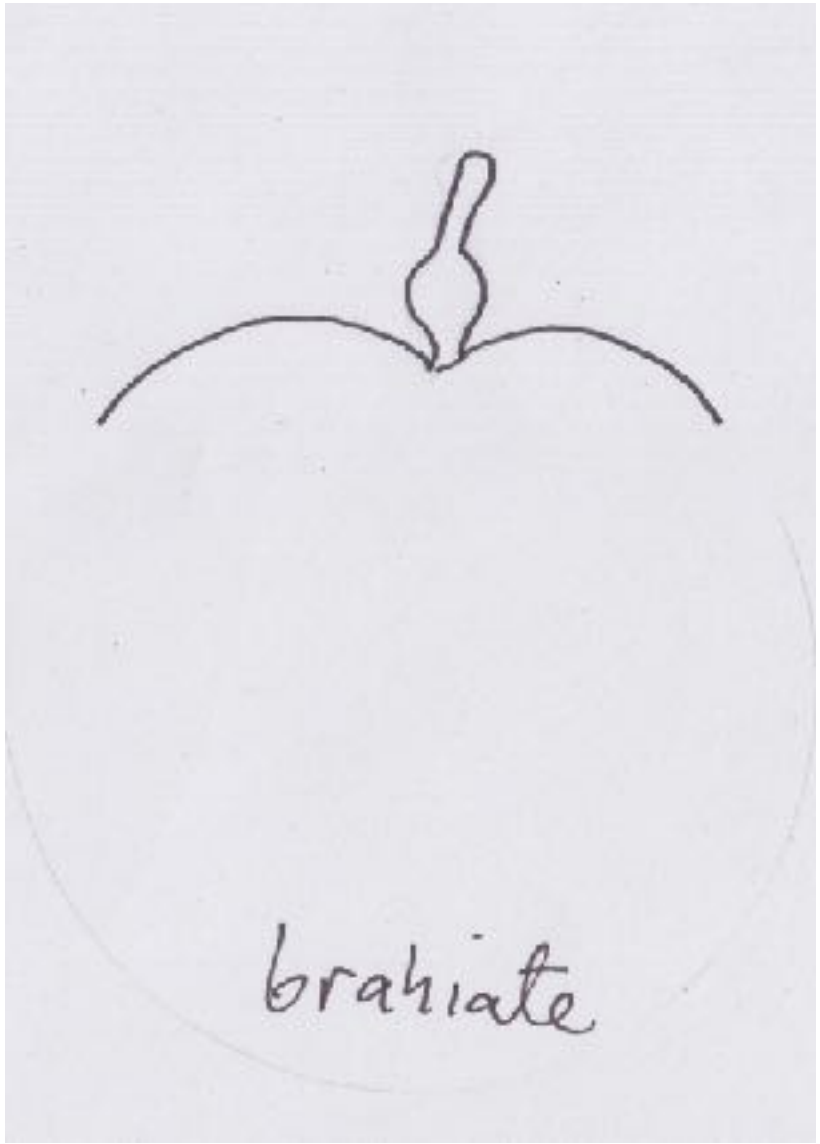




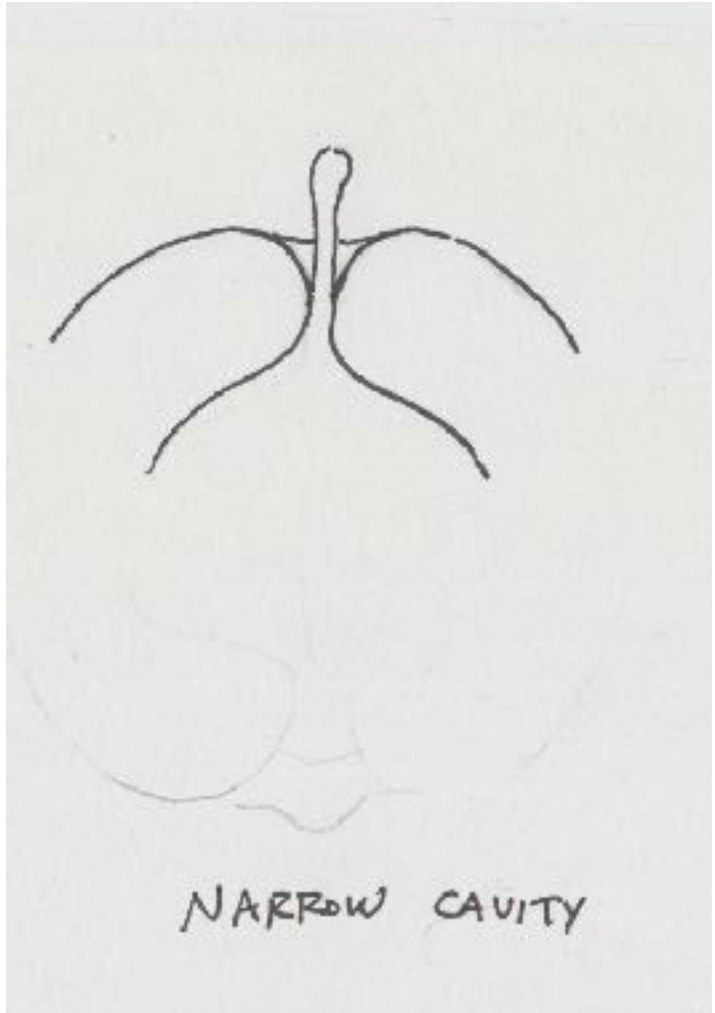


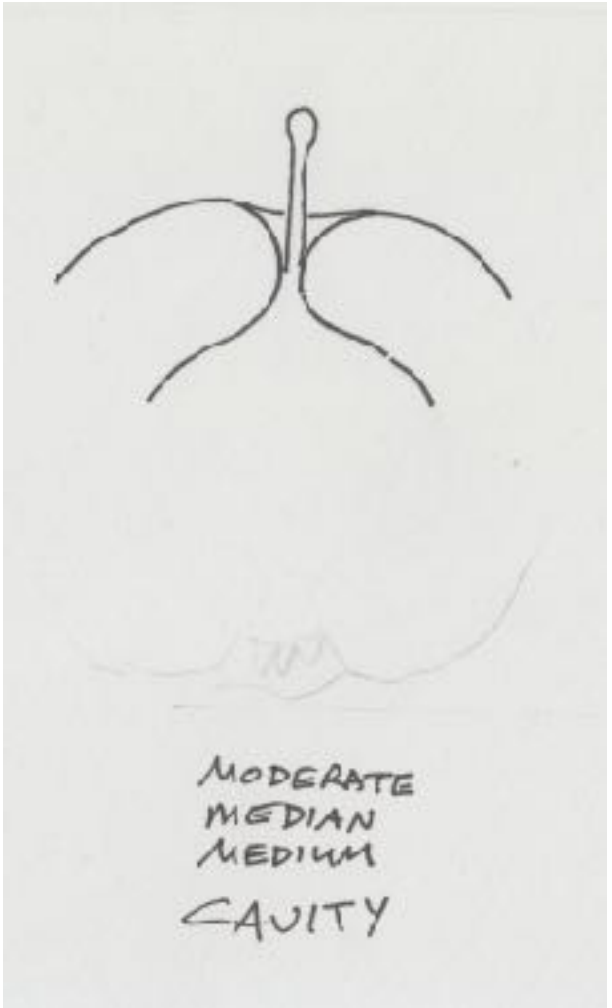
The stem
(many are variable)

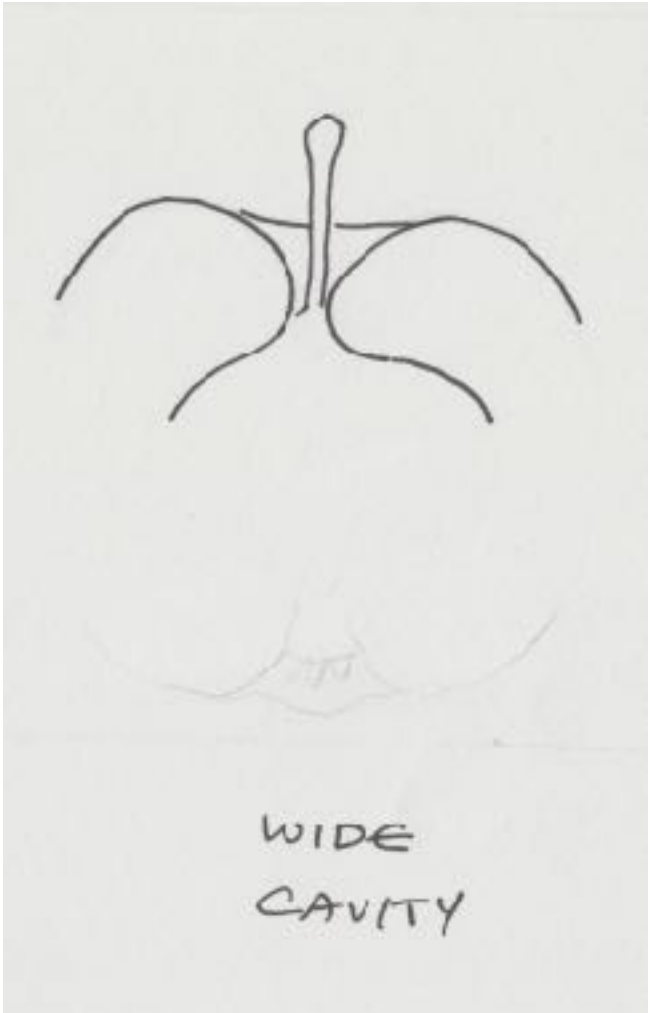
The stem can be clubbed or brachiate



the cavity can be narrow—medium—wide

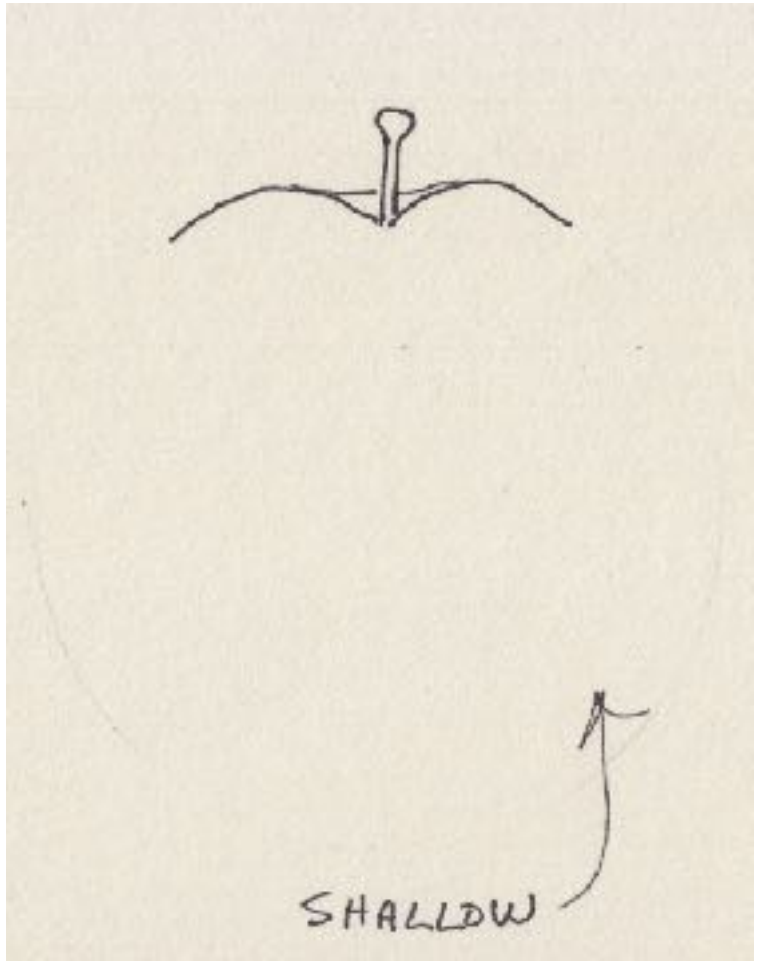


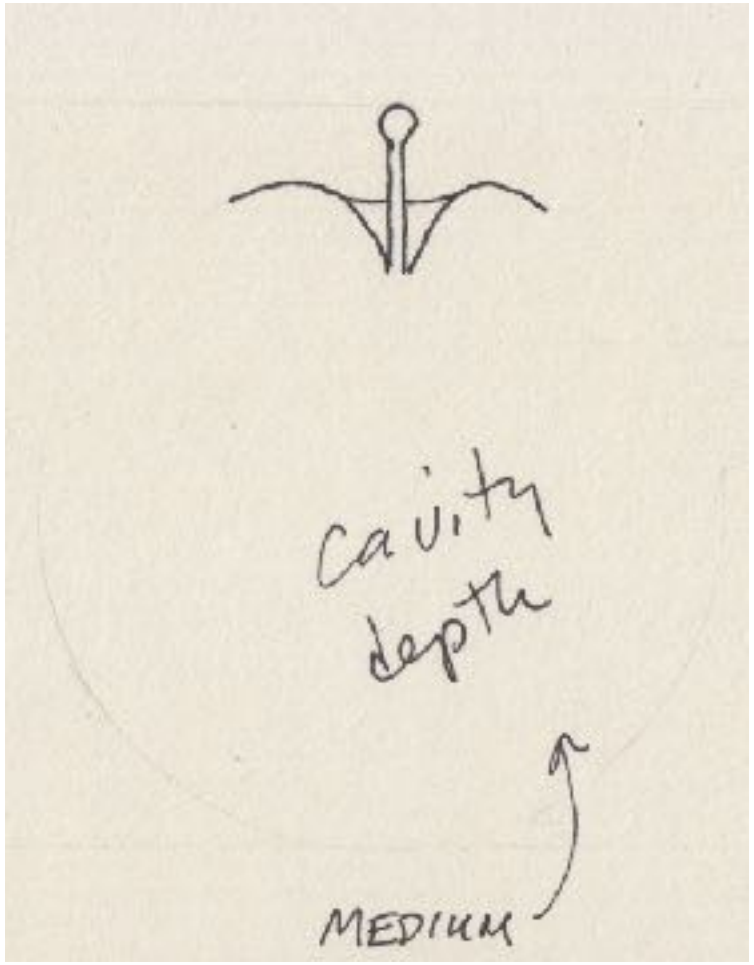


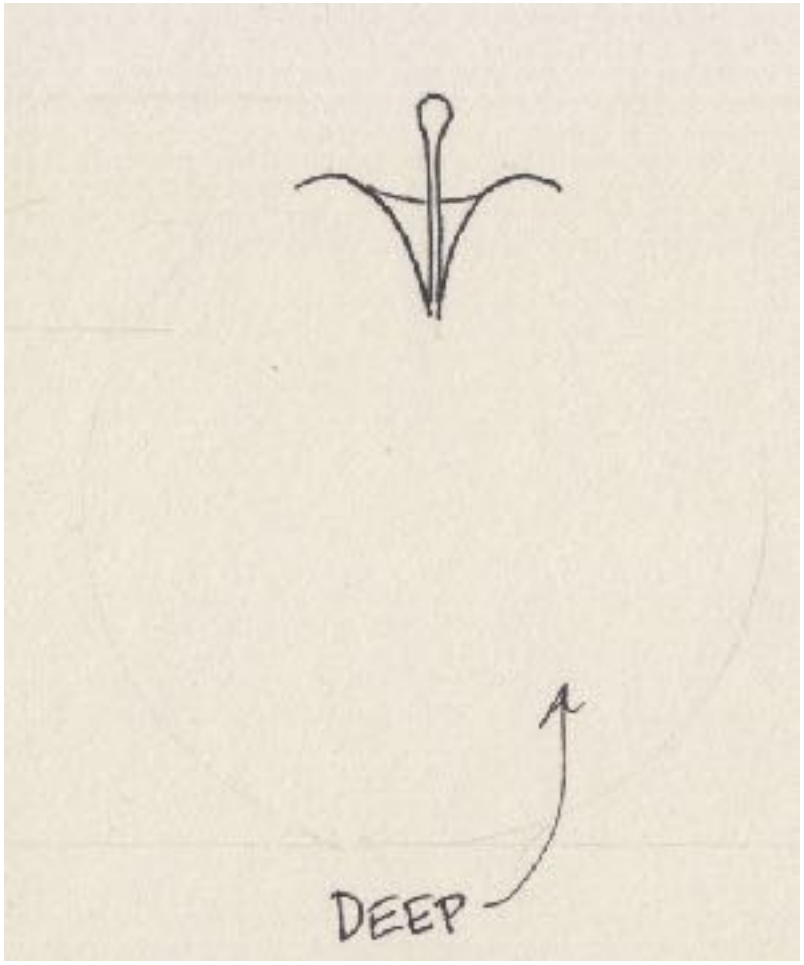


The cavity can be narrow—medium—wide

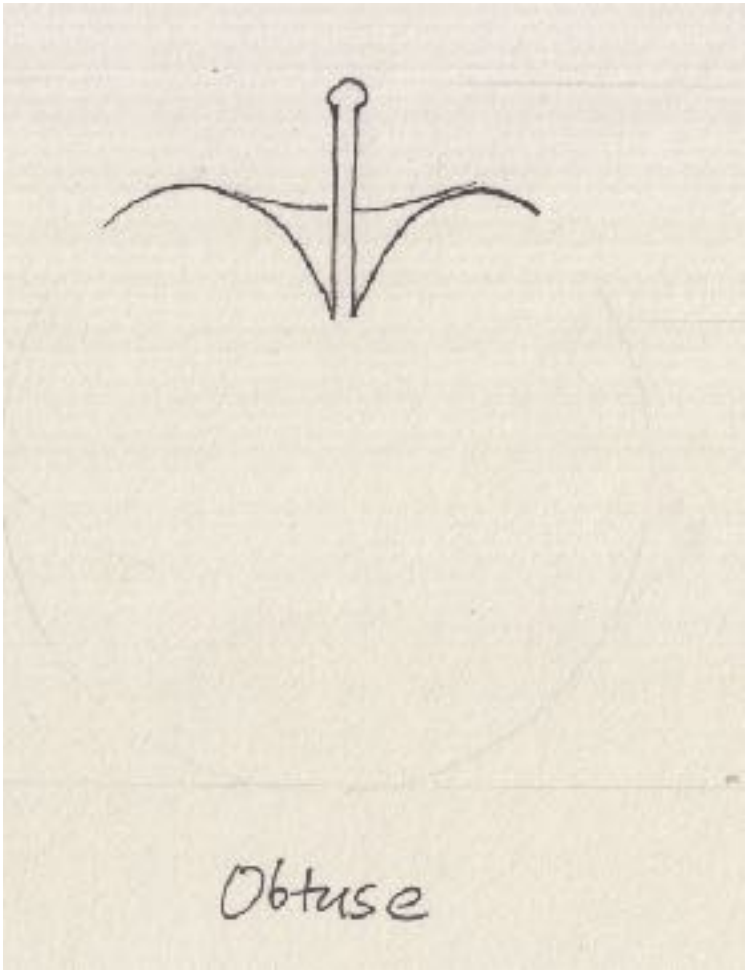
The depth of the cavity relative to surface of the base can be shallow, medium or deep

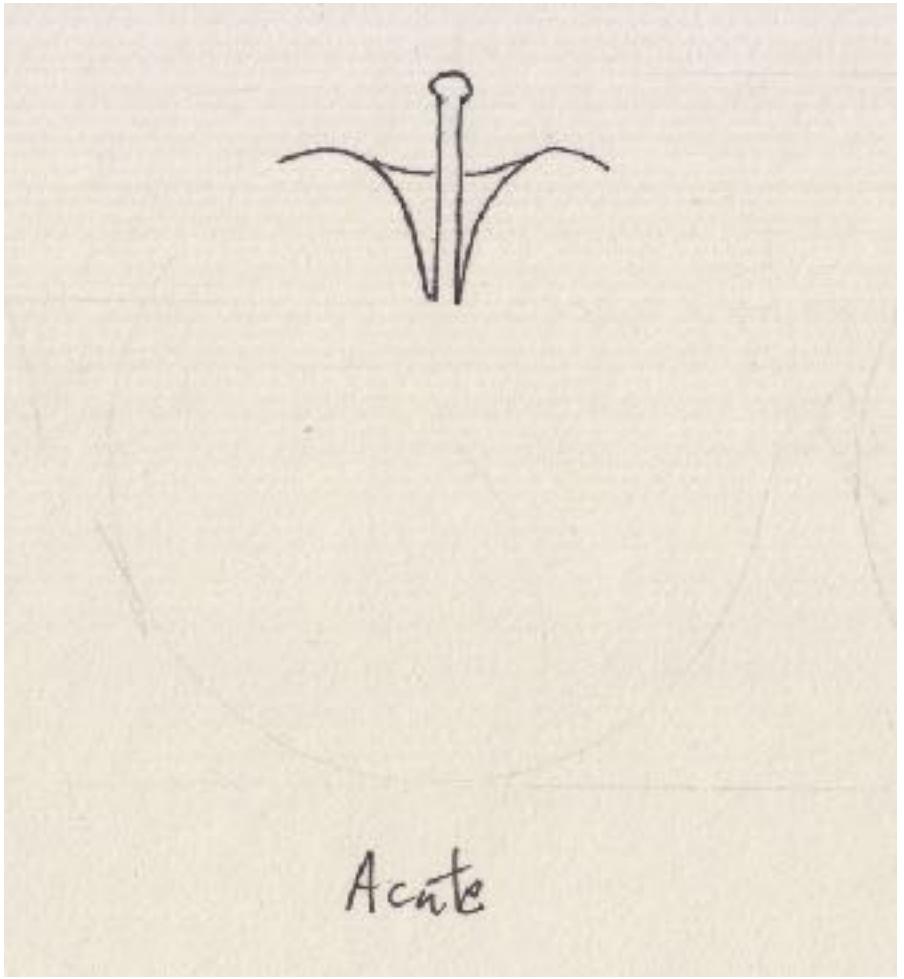


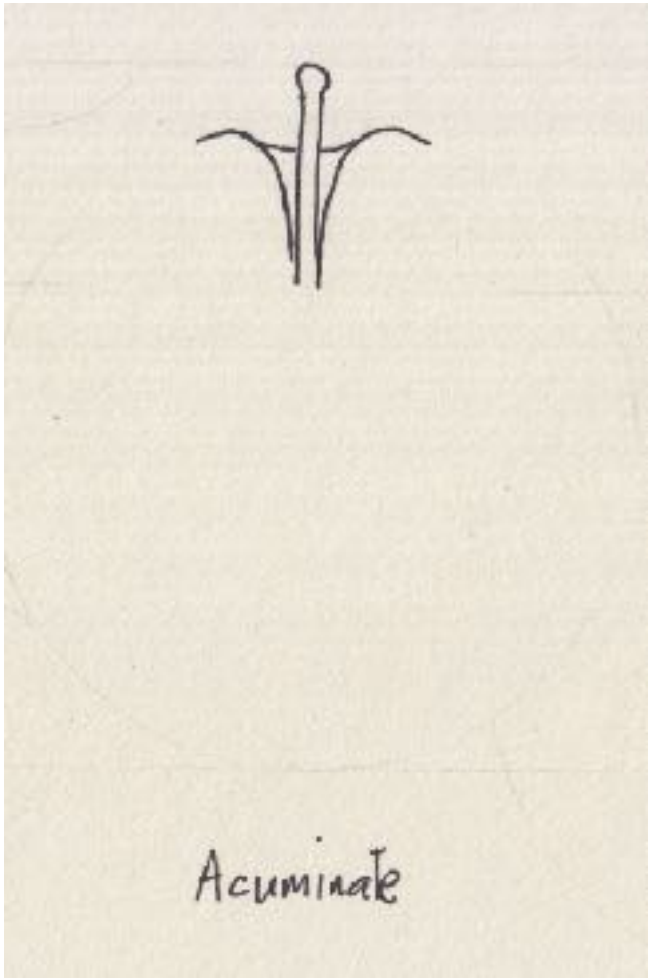




In the cavity
The slope angle relative to the stem can be
obtuse (gentle slope)—acute (medium)—acuminate (steep)







The cavity can be lipped

The cavity can be russetted or not

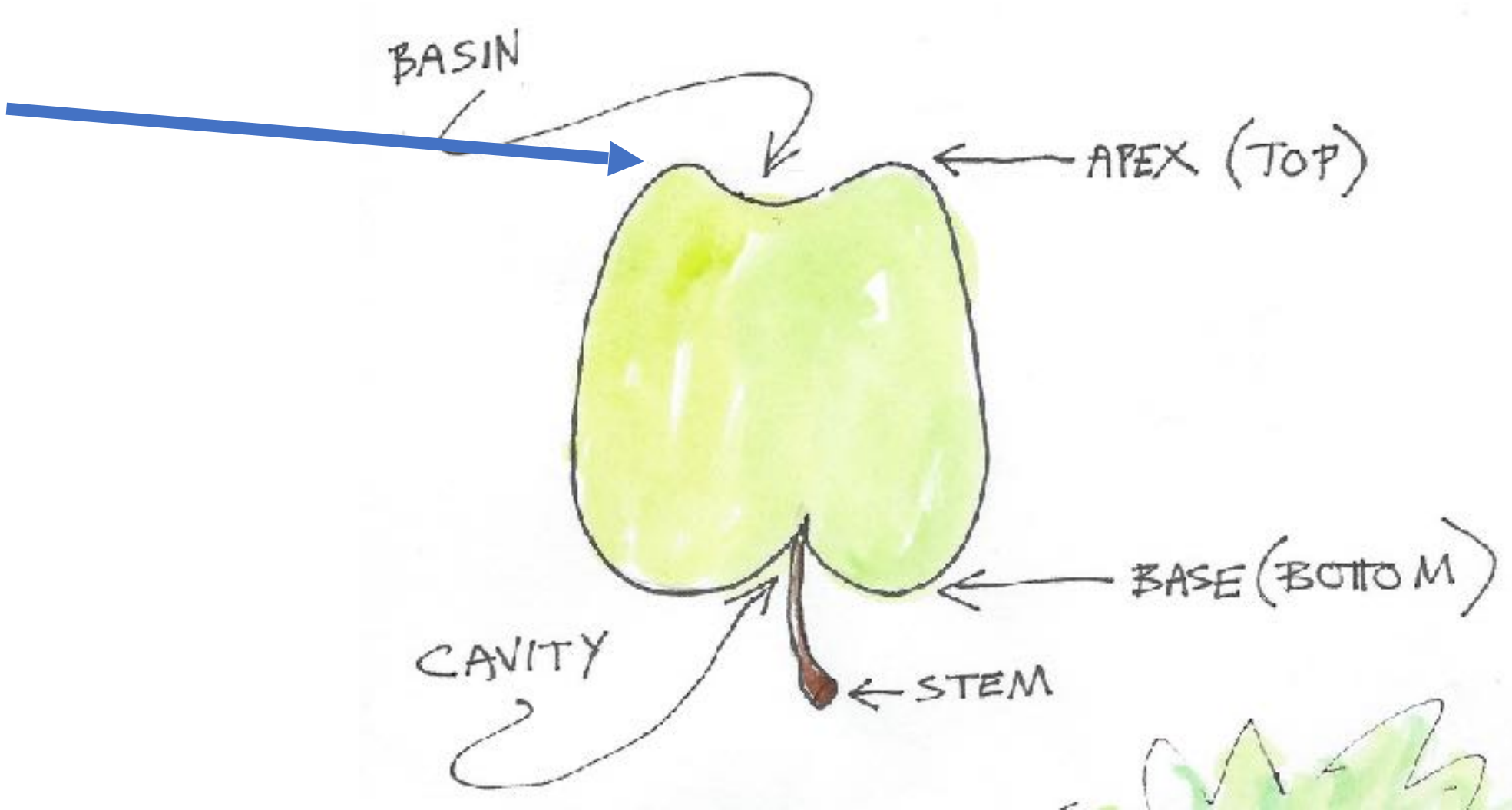
Bramtot

Chisel Jersey

Some cavities are greenish

Liberty

The Basin end is the apex (top) of the apple
The Basin depression is the location of the calyx (dried flower)



The calyx can be large, medium or small and it can be open or closed or partly open

Kingston Black with open calyx

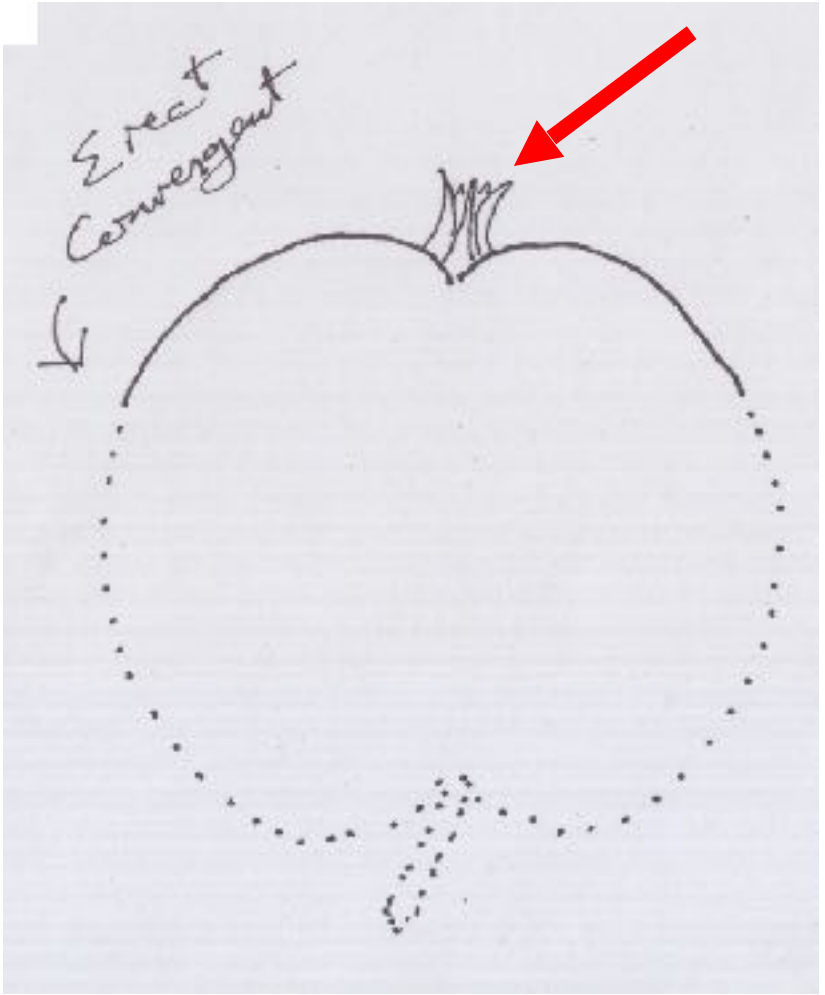
Nehou with open calyx

The calyx can be large, medium or small and it can be open or closed or partly open

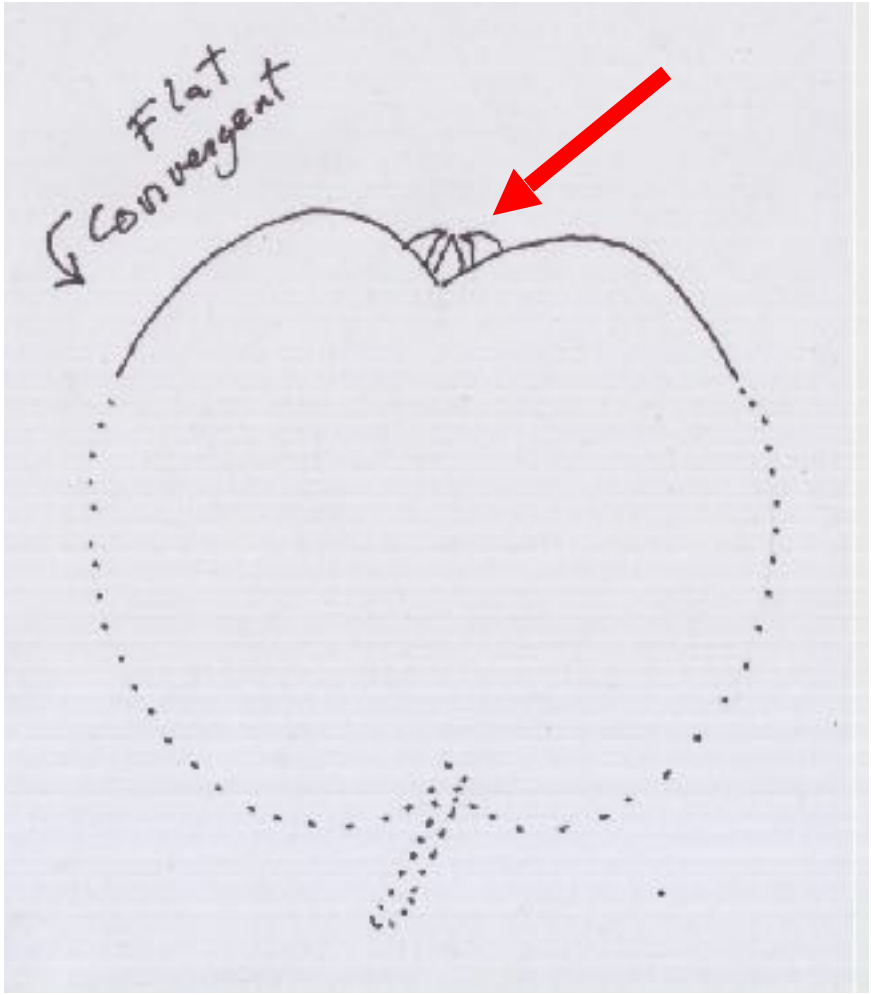
Closed calyx

Closed Calyx

The calyx lobes can be described in several ways

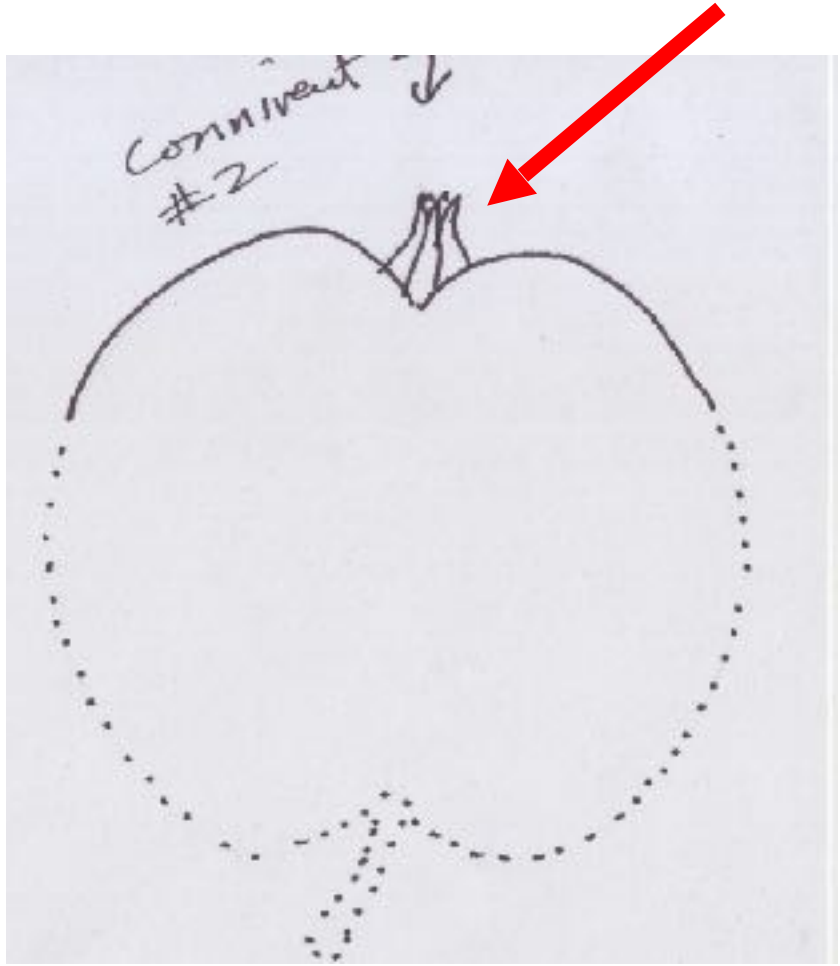


Erect Convergent

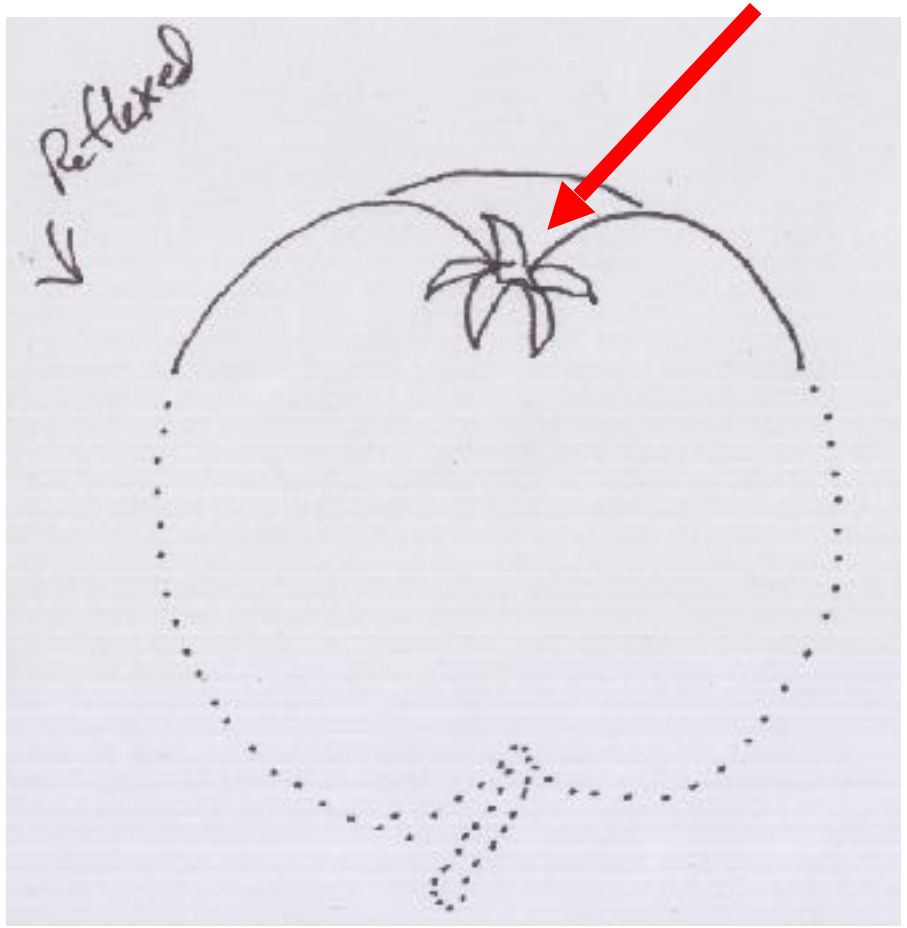


Flat Convergent

The calyx lobes can be described in several ways



Connivent



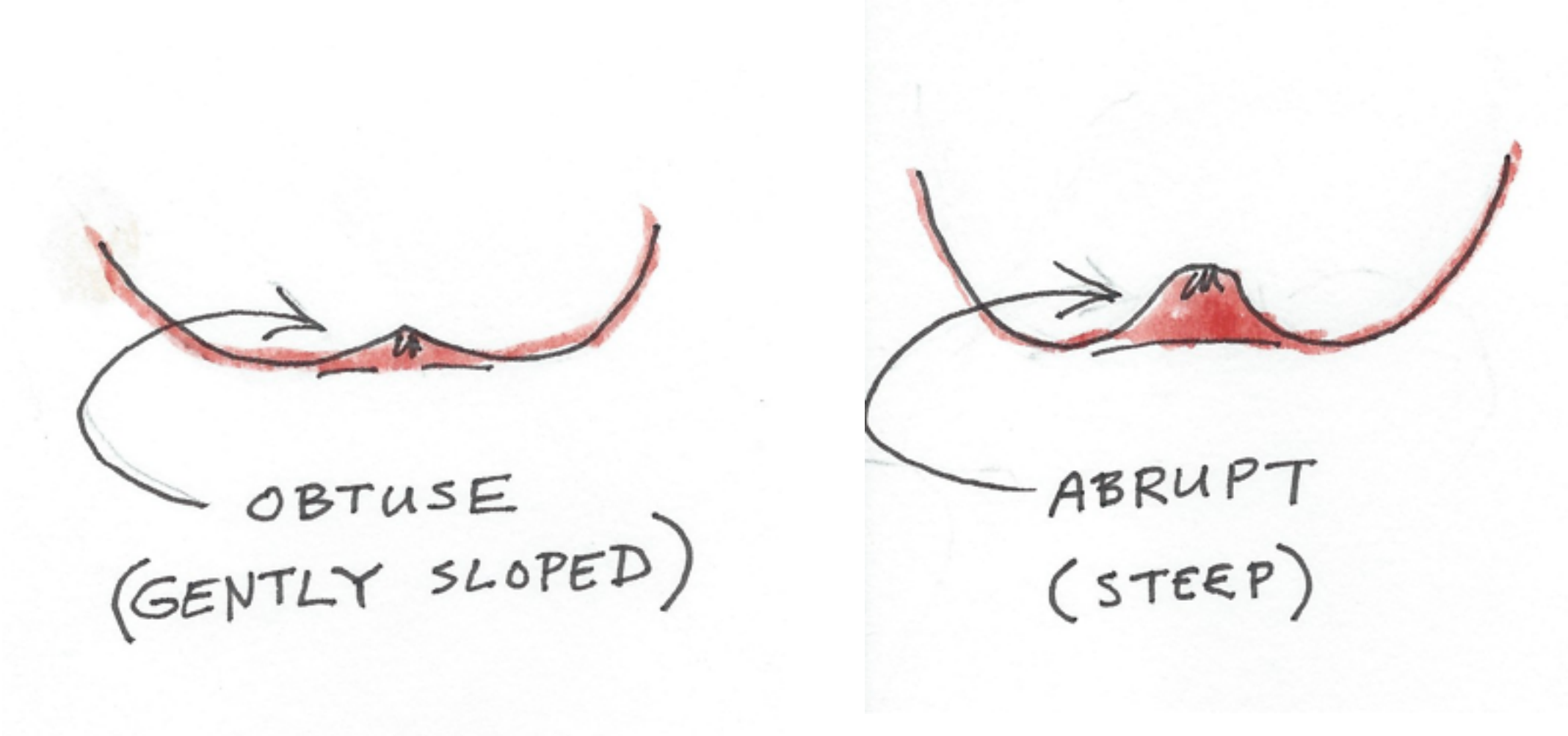
Reflexed

The basin can be very shallow, shallow, medium or deep

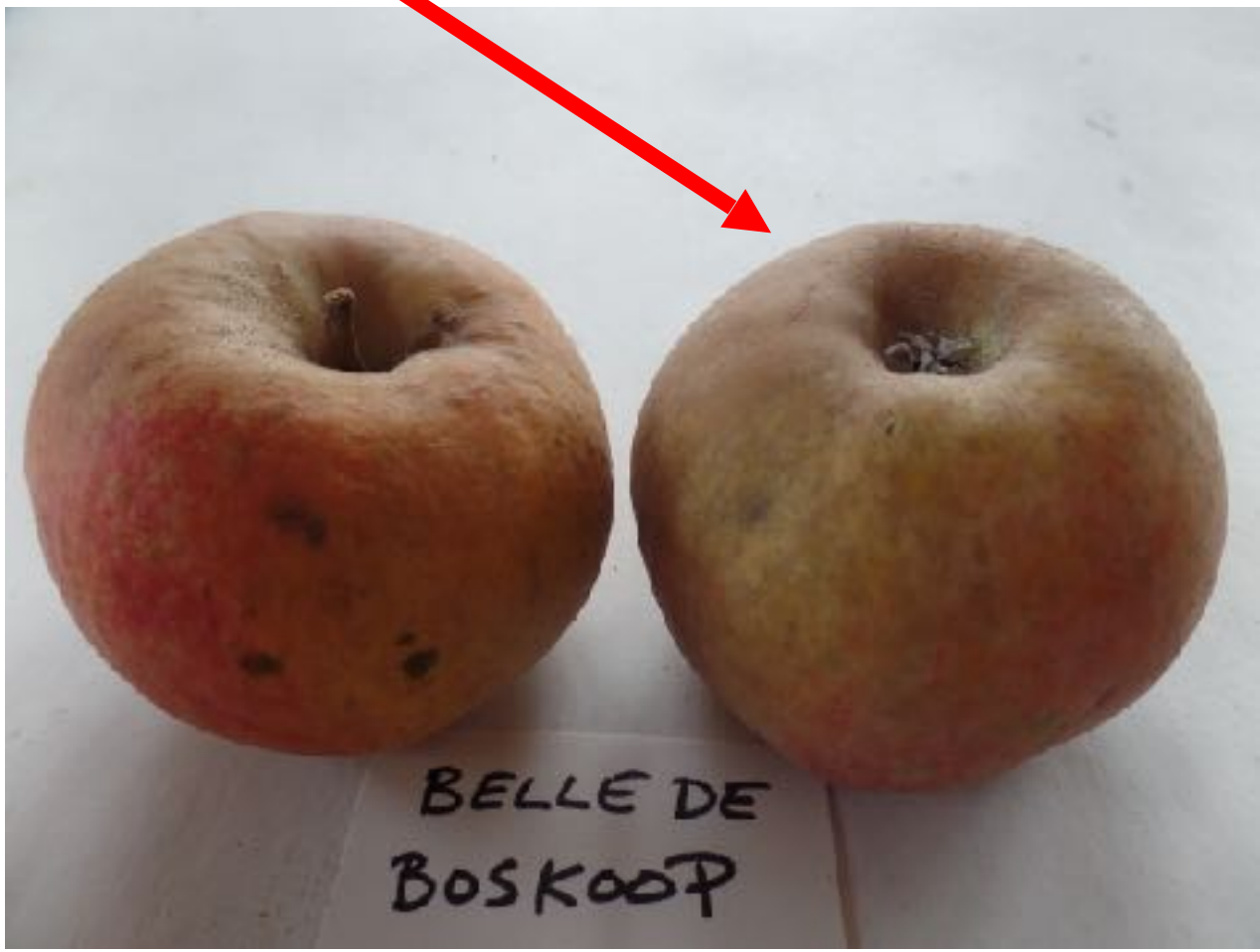
The basin can be narrow, medium or wide

Granny Smith

Basin sides can be obtuse (gentle sloped) or abrupt (steep sloped)

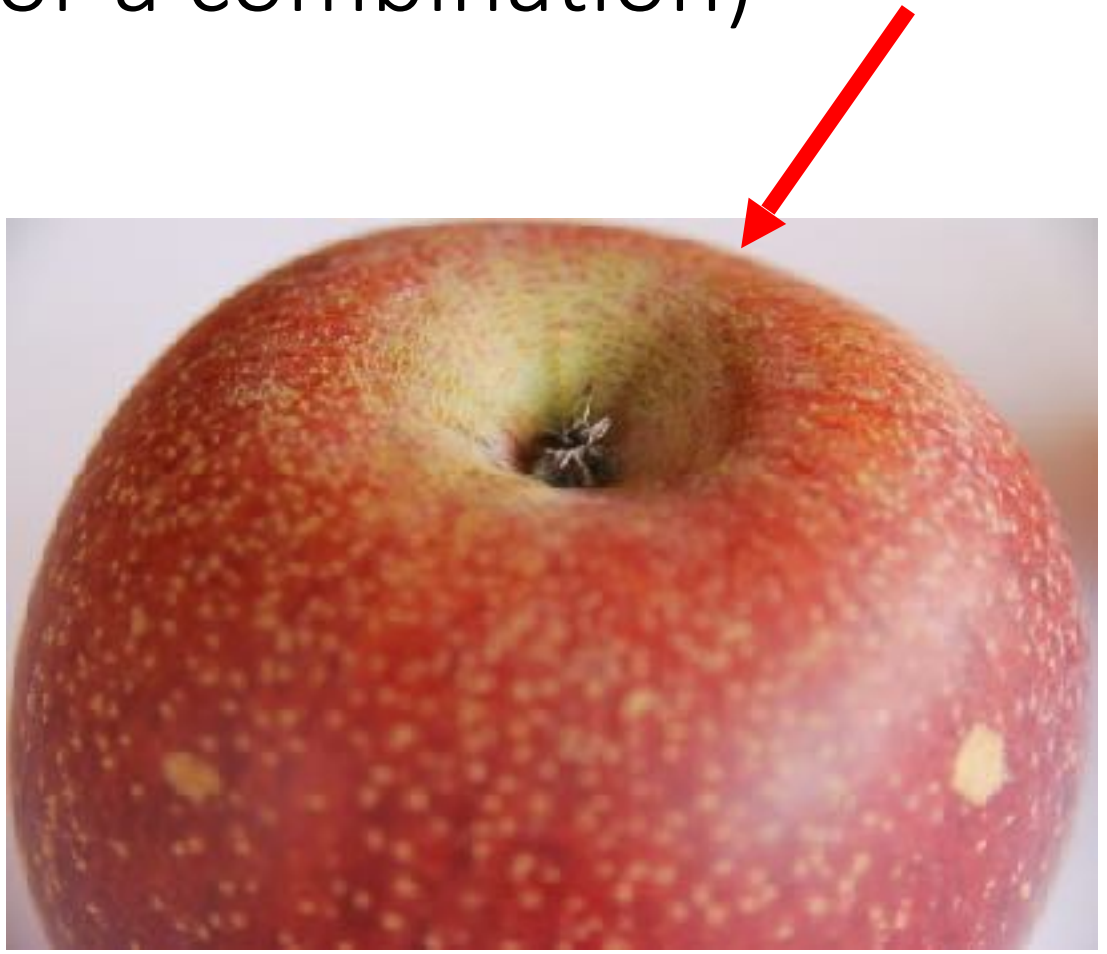


Basin sides can be obtuse (gentle sloped) or abrupt (steep sloped)



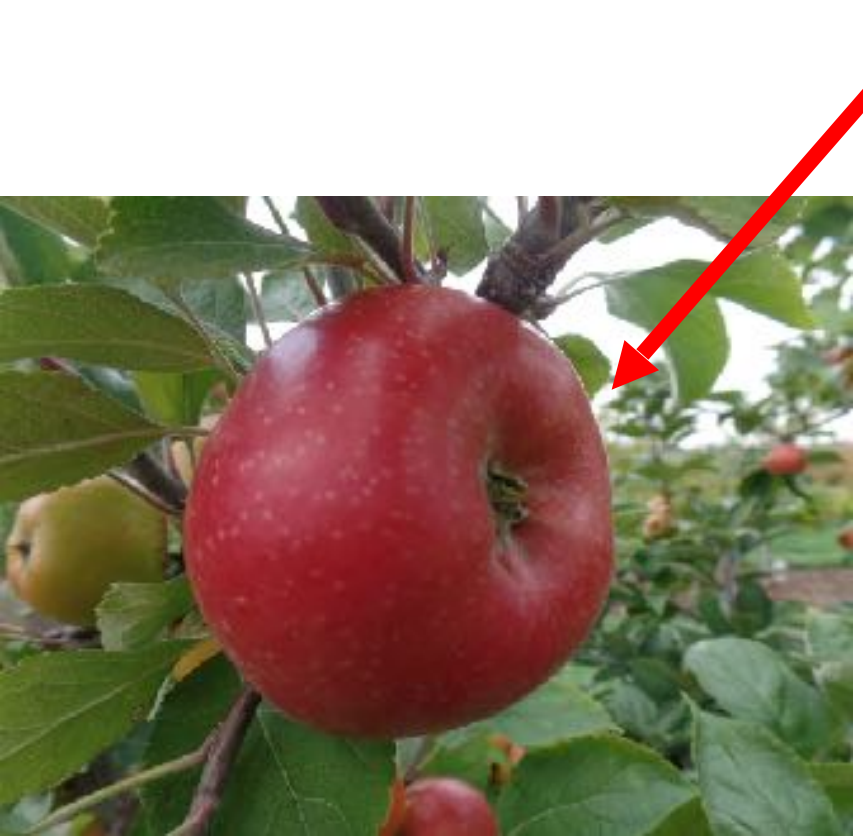
The basin rim “features” can be regular, wavy, furrowed, wrinkled (or a combination)

McIntosh with regular basin

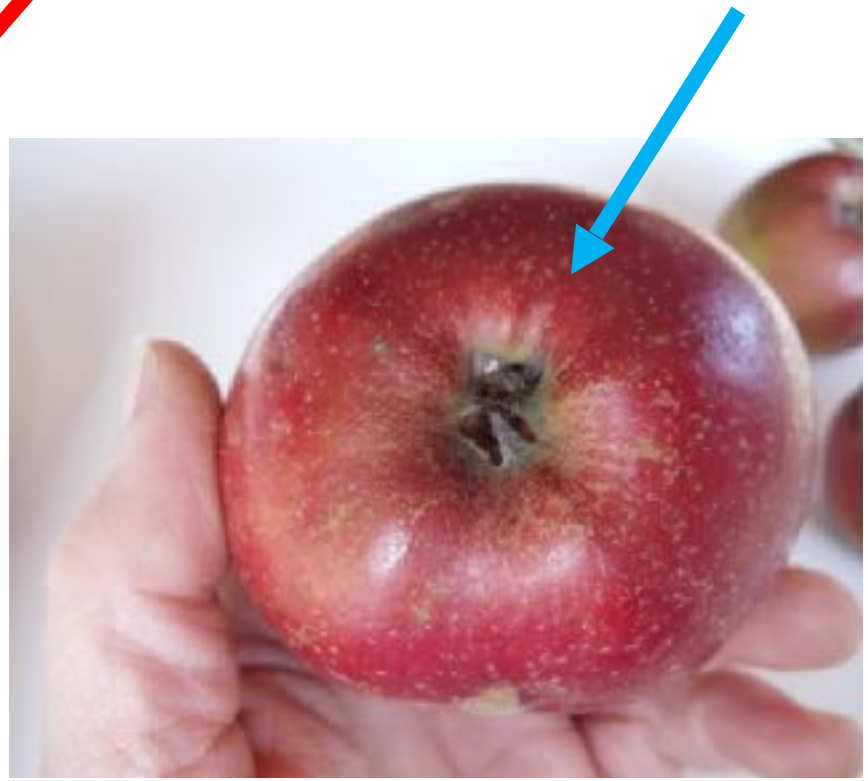


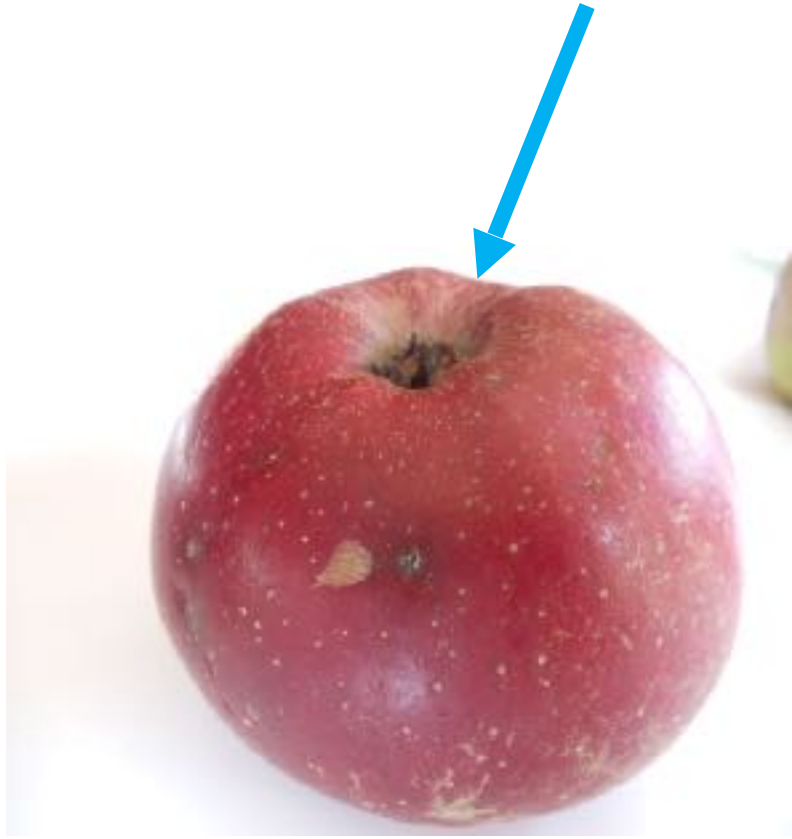
Blue Pearmain with regular basin

The basin rim “features” can be regular, wavy, furrowed, wrinkled



Binet Rouge with wavy basin





Baldwin with furrowed basin

The basin rim “features” can be regular, wavy, furrowed, wrinkled

Calville Blanc d’Hiver with furrowed basin

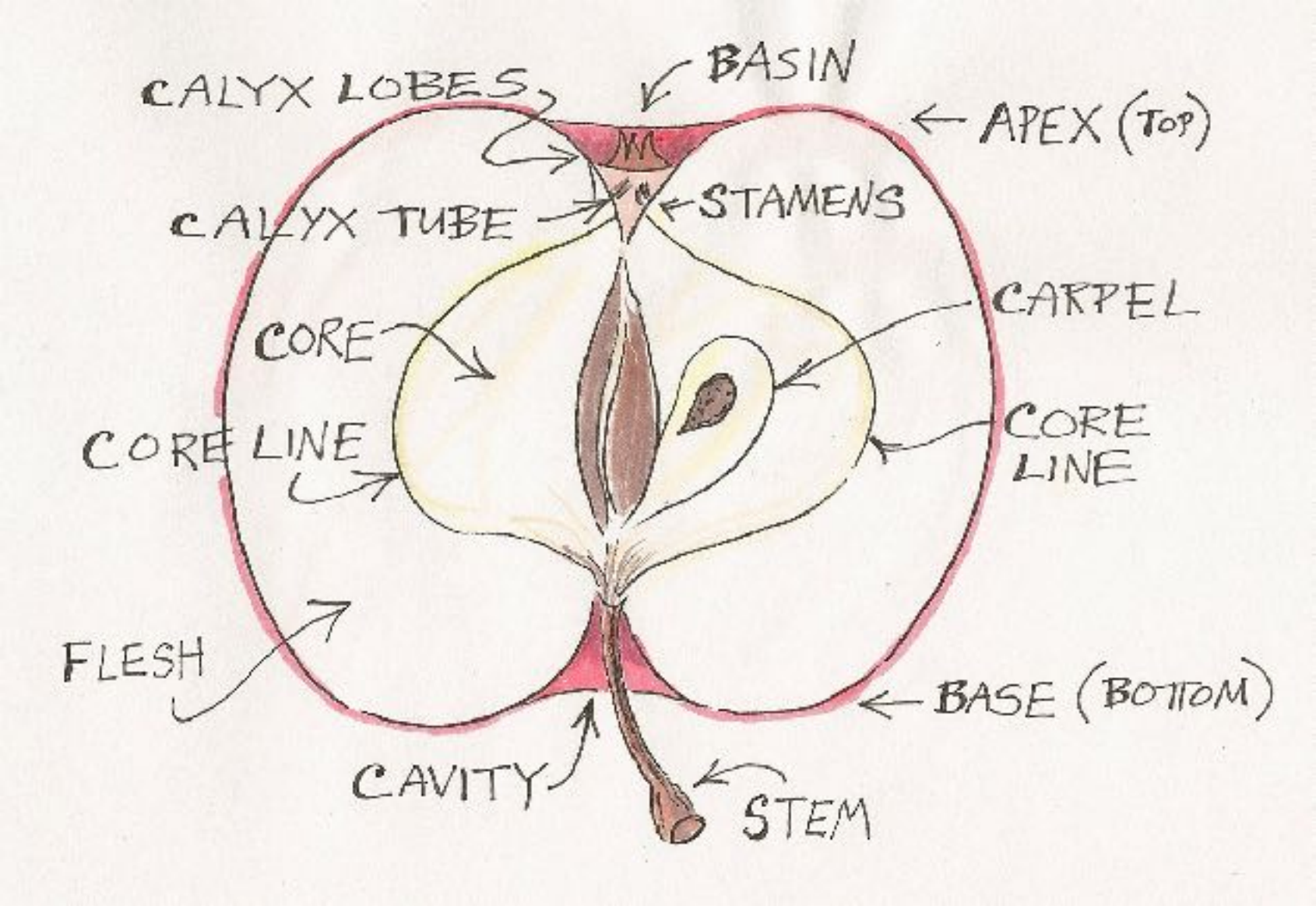
Yellow Bellflower with furrowed basin

The basin rim “features” can be regular, wavy, furrowed, wrinkled

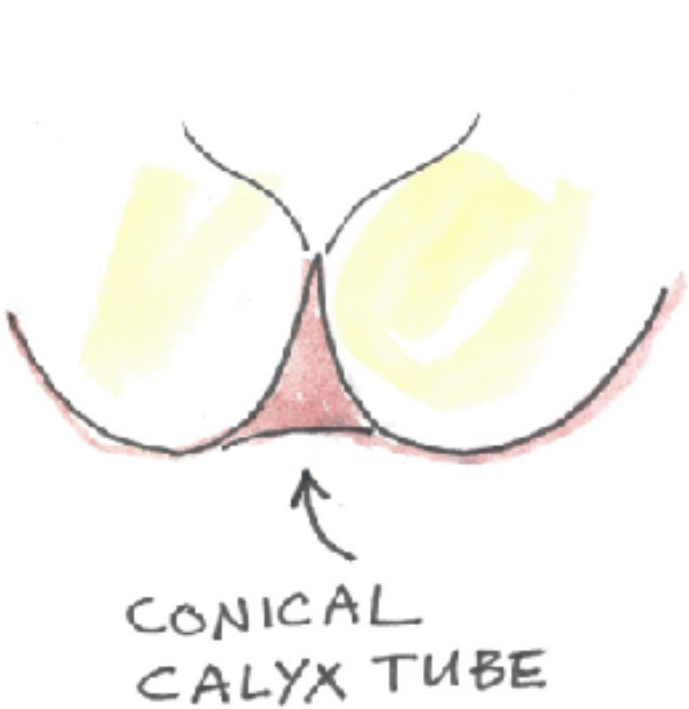
Dabinett wrinkled basin

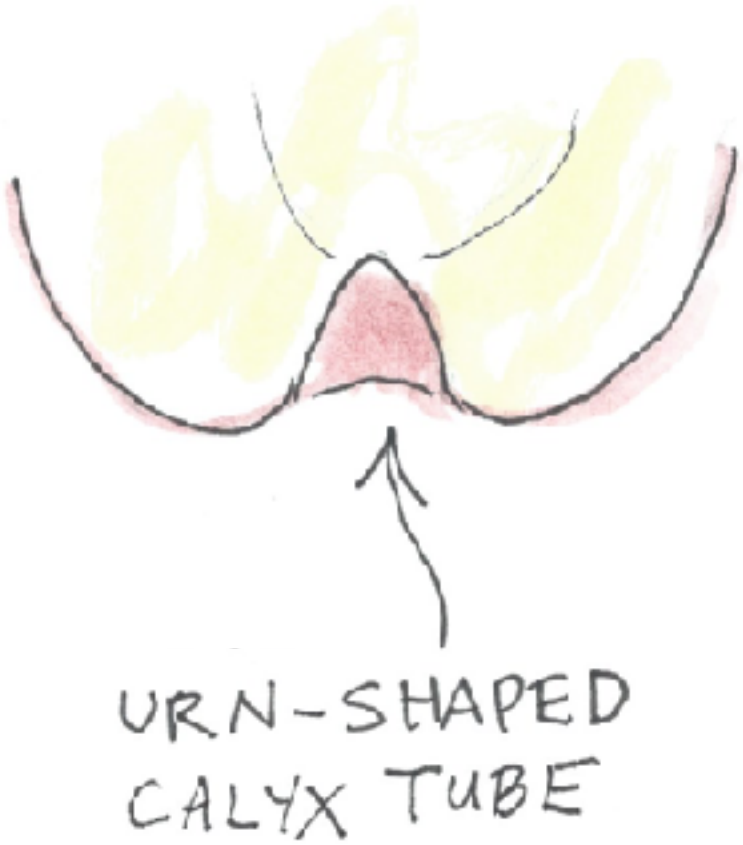
Newtown Pippin furrowed and wrinkled basin

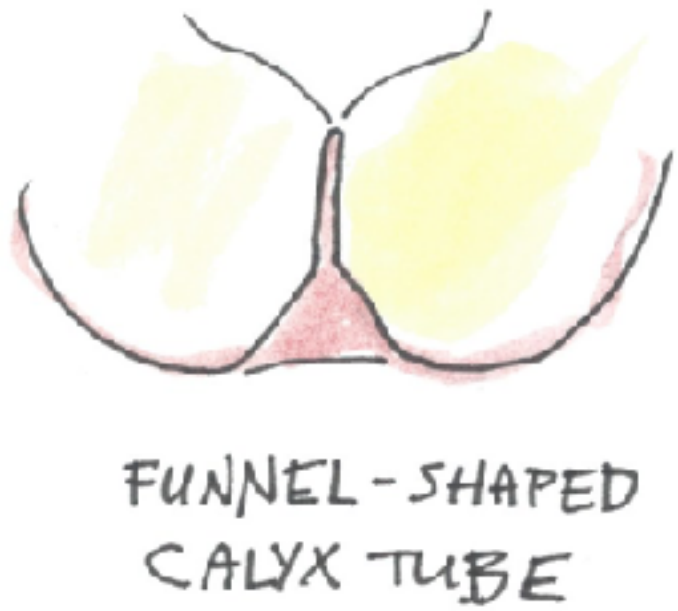
Now cut open the apple from cavity to basin.
Cut though the exact center of the calyx and the cavity !



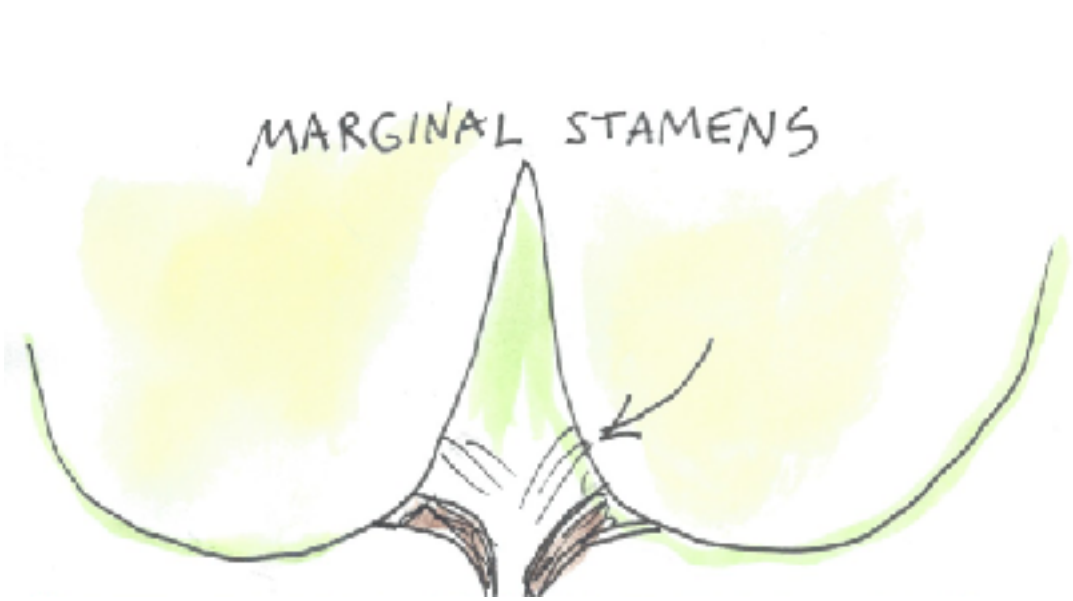
The calyx tube can be conic, urn, or funnel-shaped

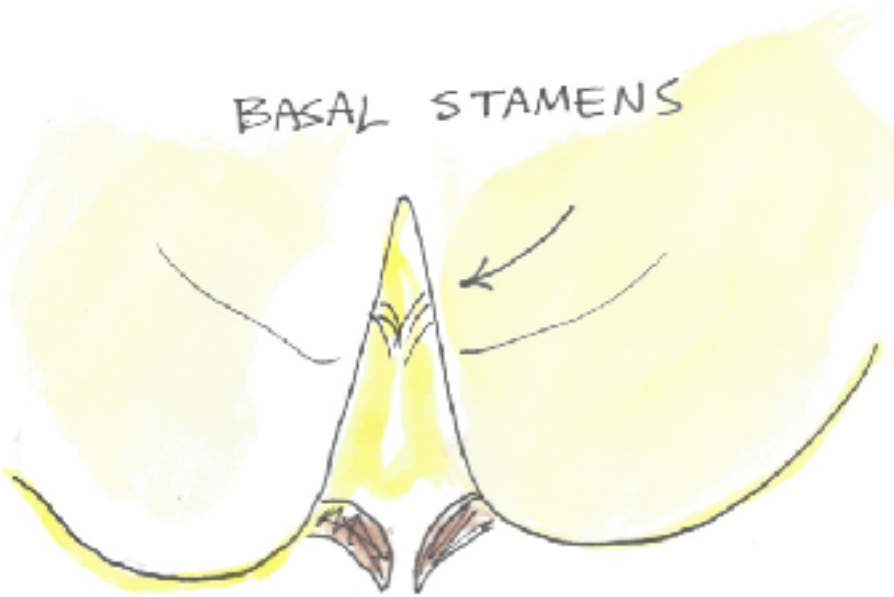


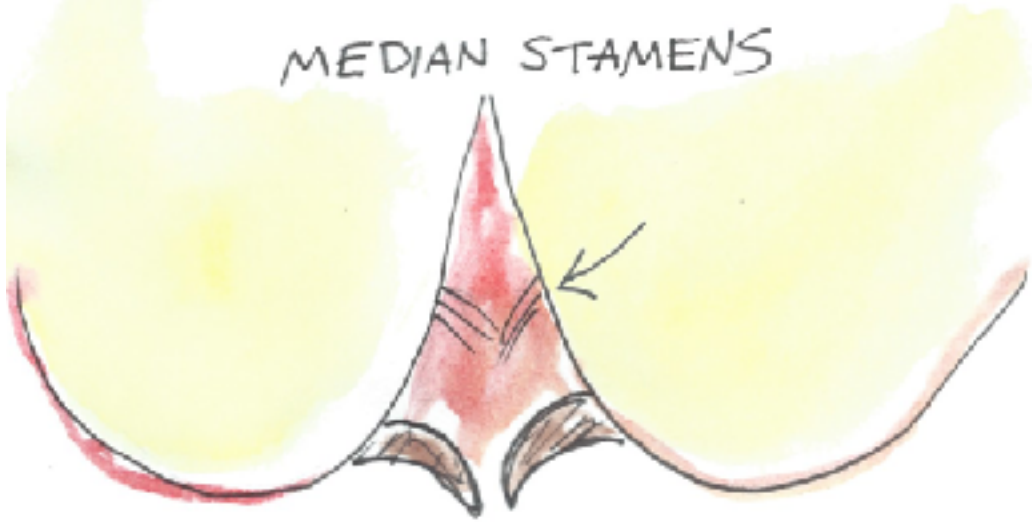




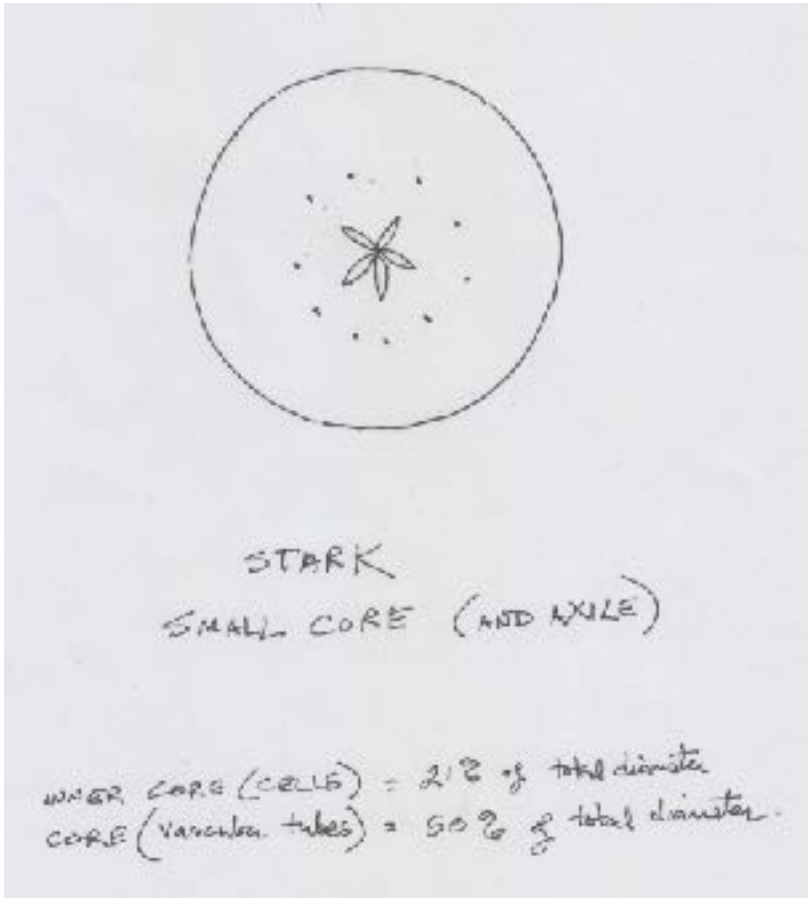
The stamens can be marginal, median or basal



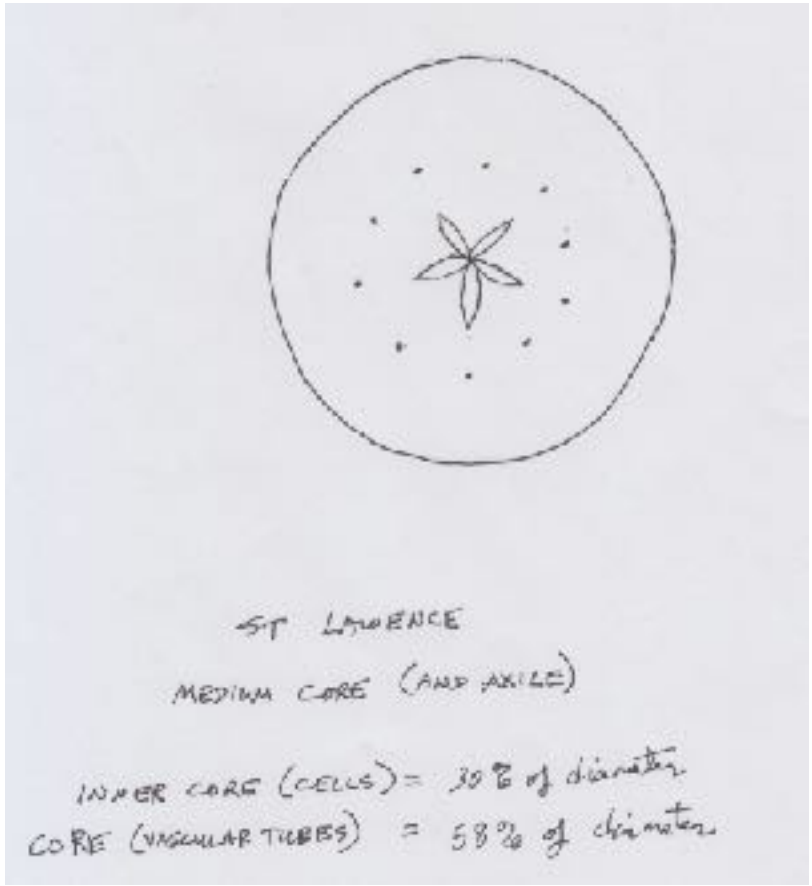




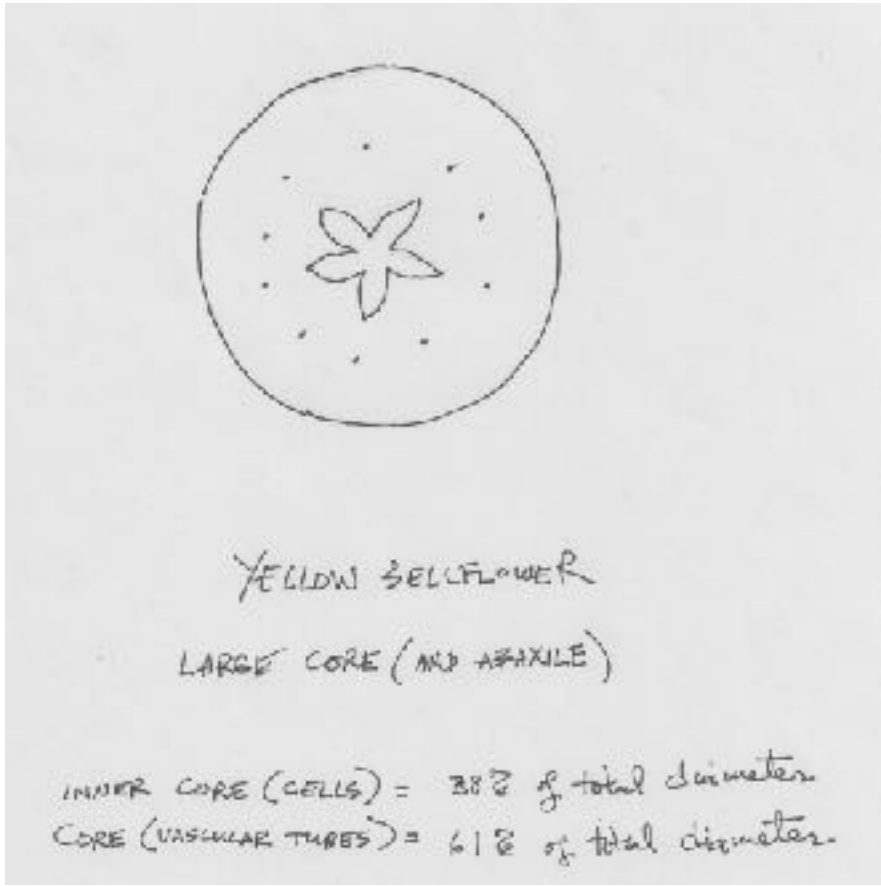
The core size can be small, medium or large



Small size core

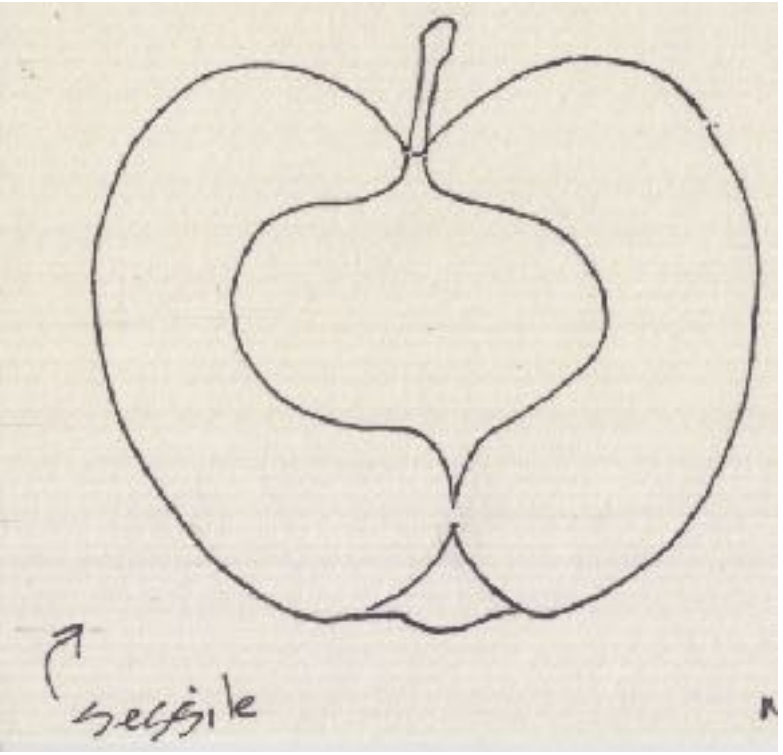


Medium sized core

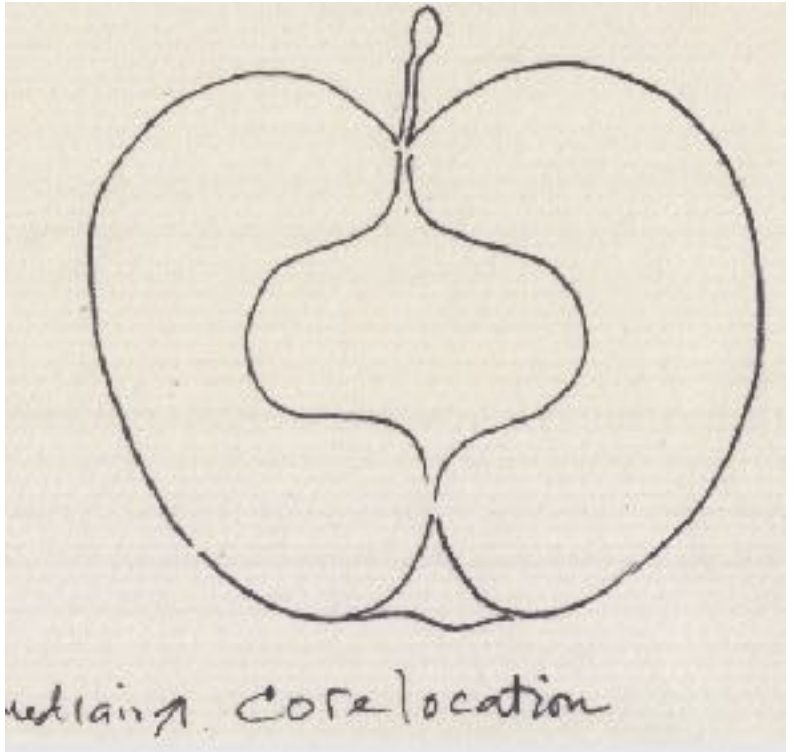


Large size core

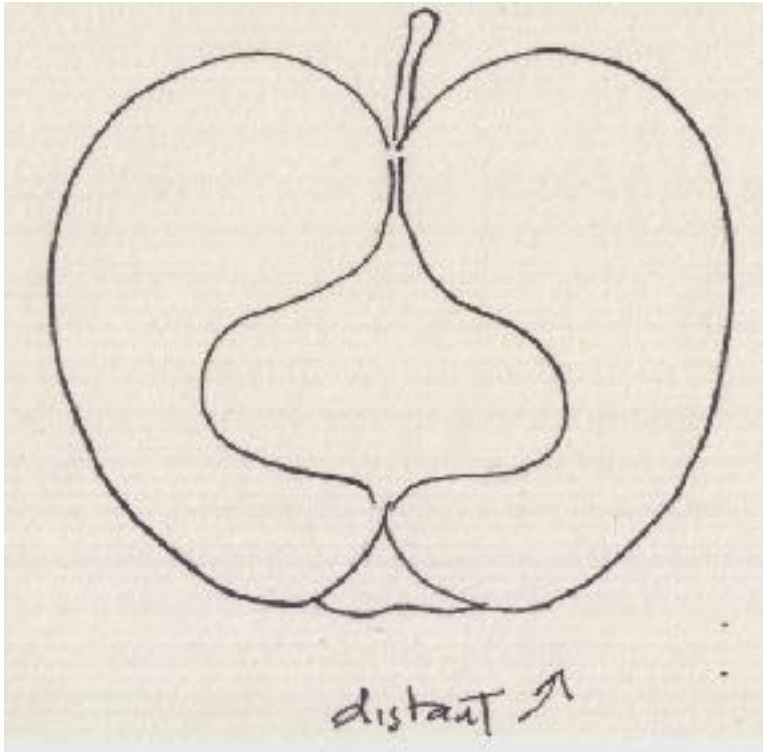
Core location can be sessile (closer to the cavity), median, or distant (farther from the cavity)



Sessile core

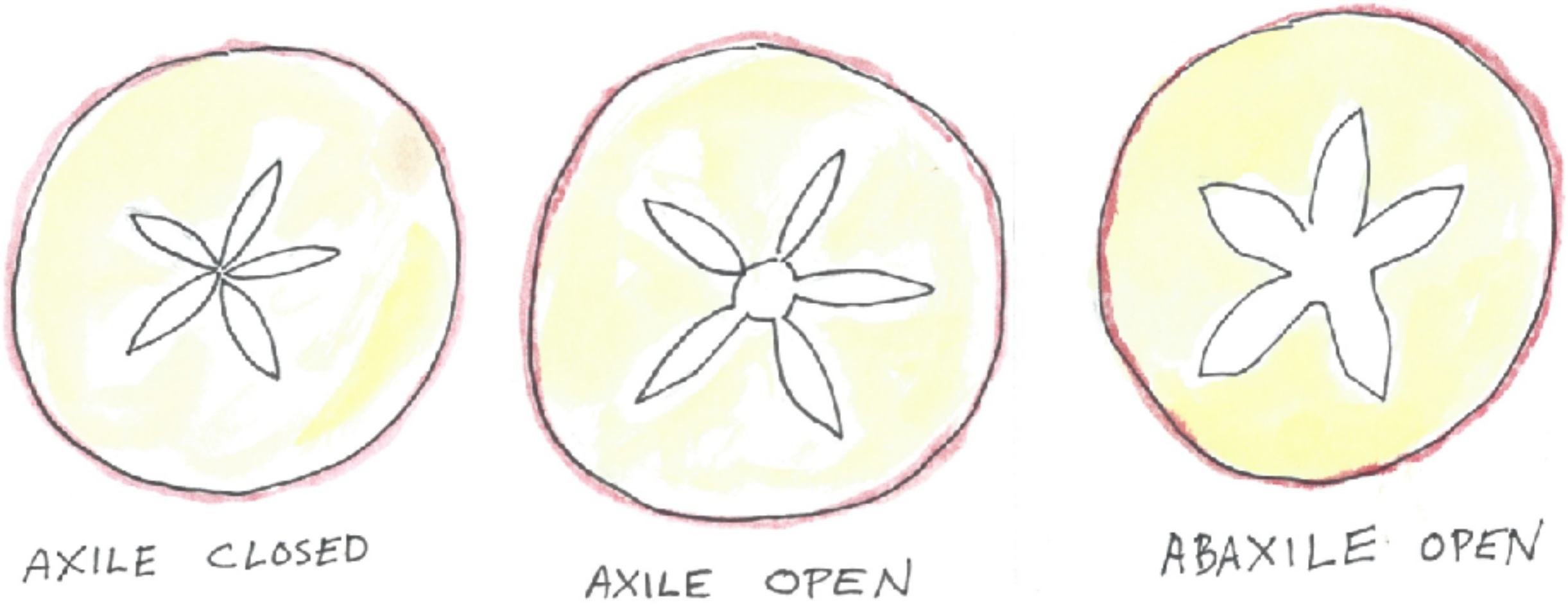


Median Core



Distant core

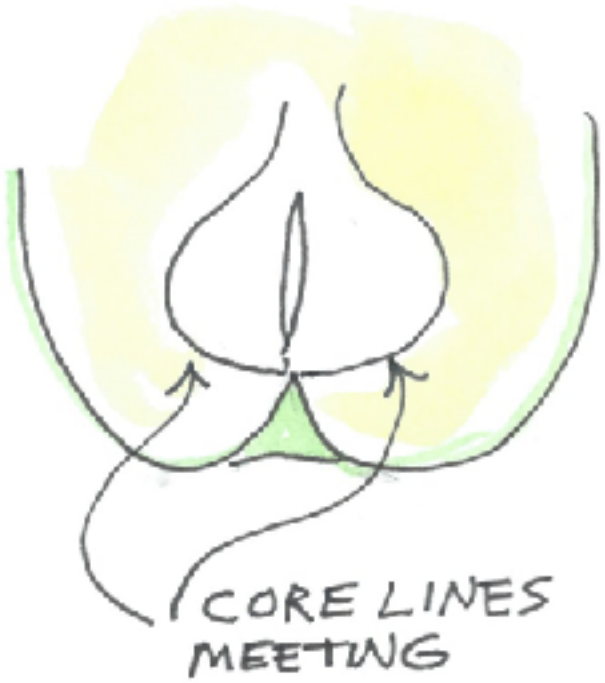
The core “star” can be Axile (on left) or Abaxile (on right)

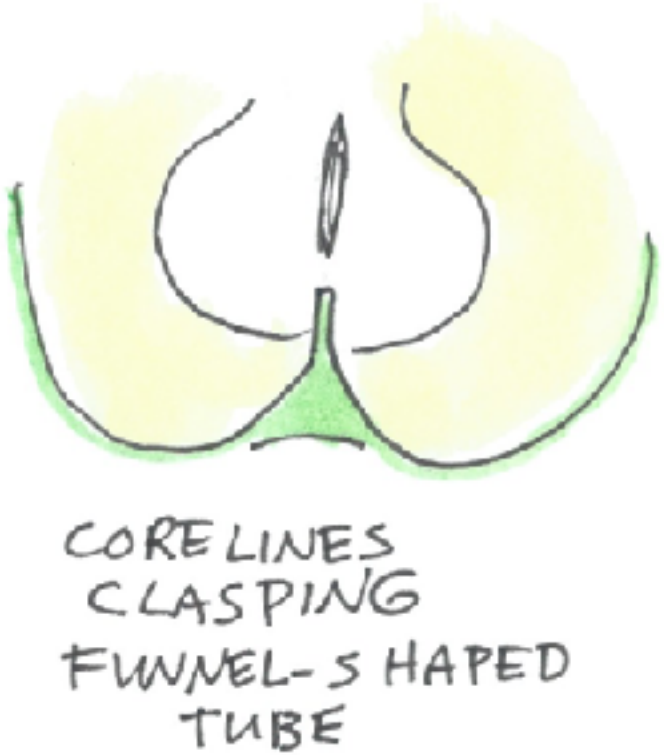


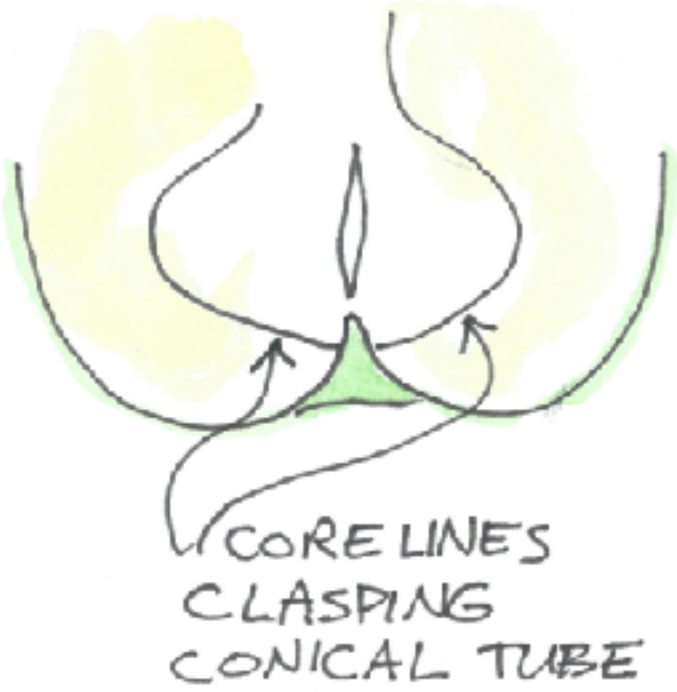
The core-lines can be:

*Meeting (join up together at the inner end of the calyx tube--on left)

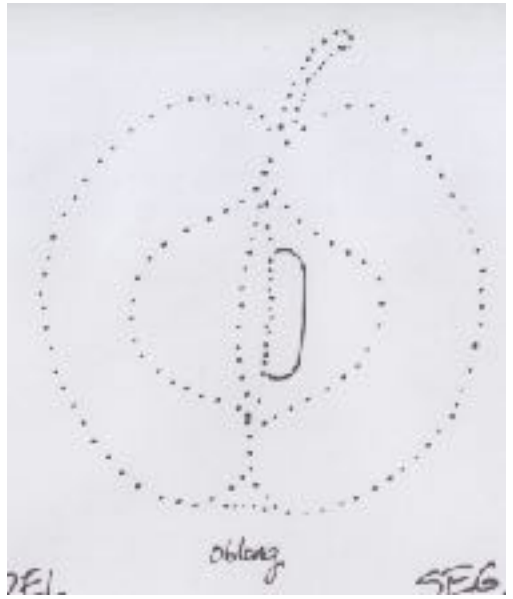
*Clasping (stop at the side of the calyx tube--on right)

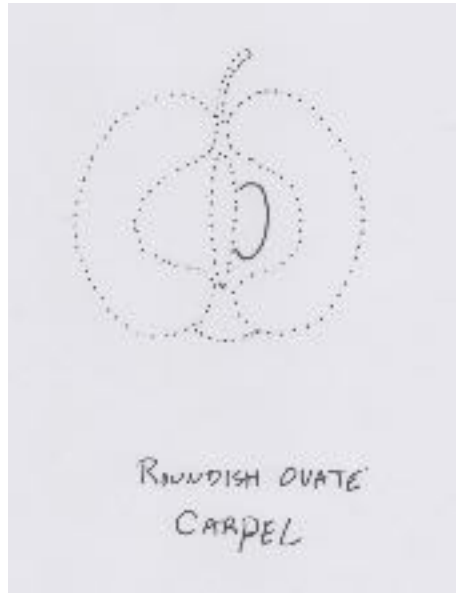


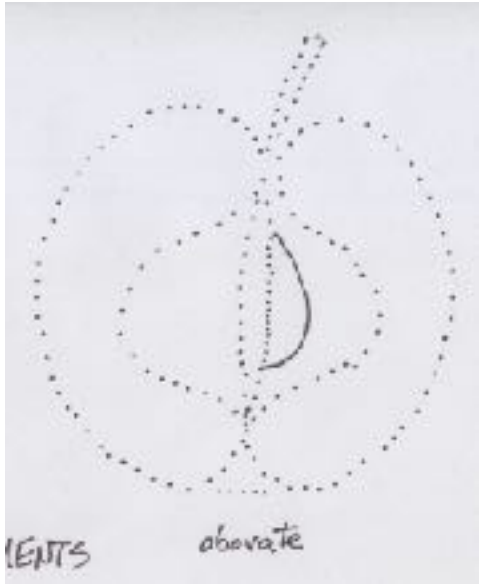


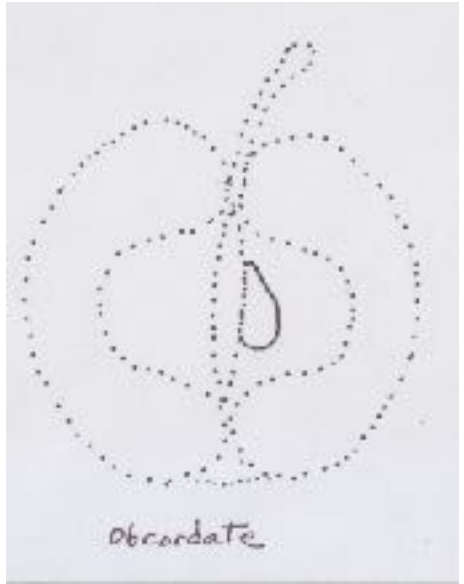


The carpels resemble ½ of a leaf. They can be:

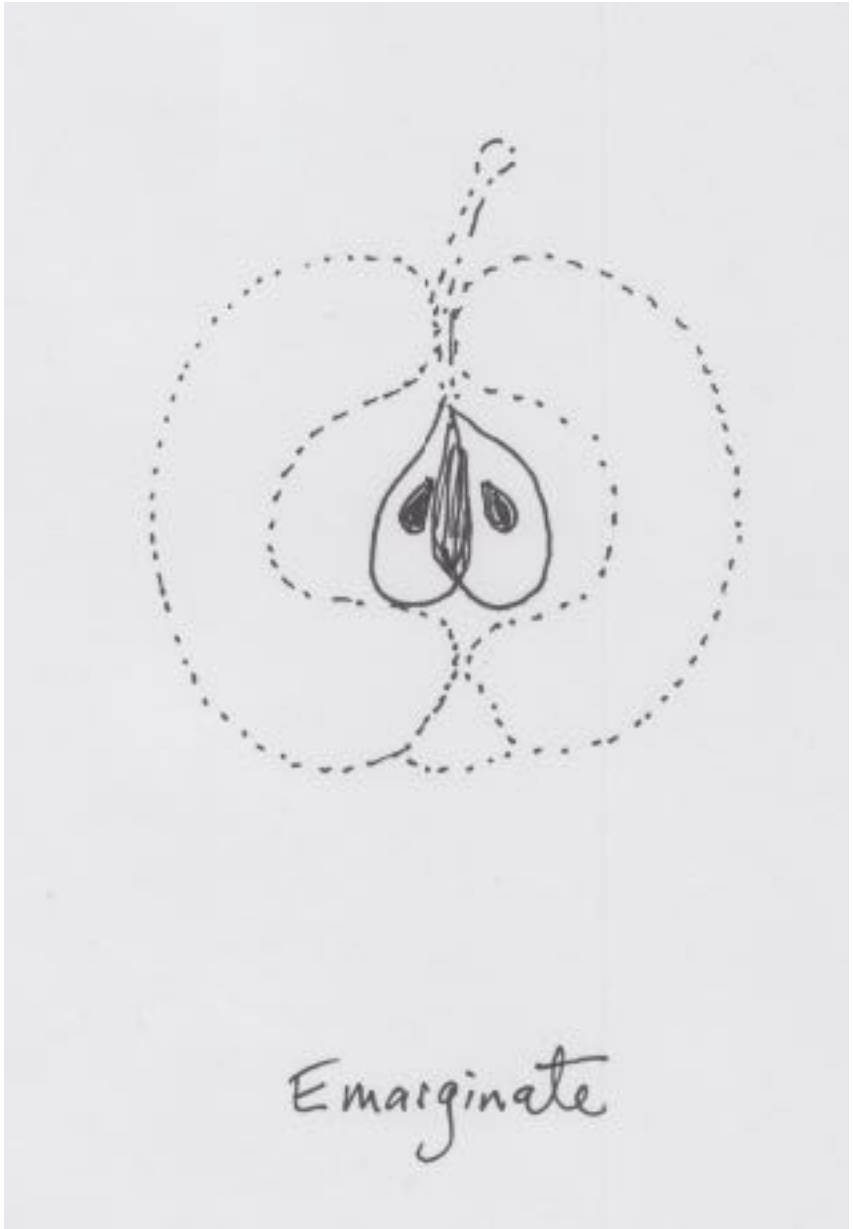


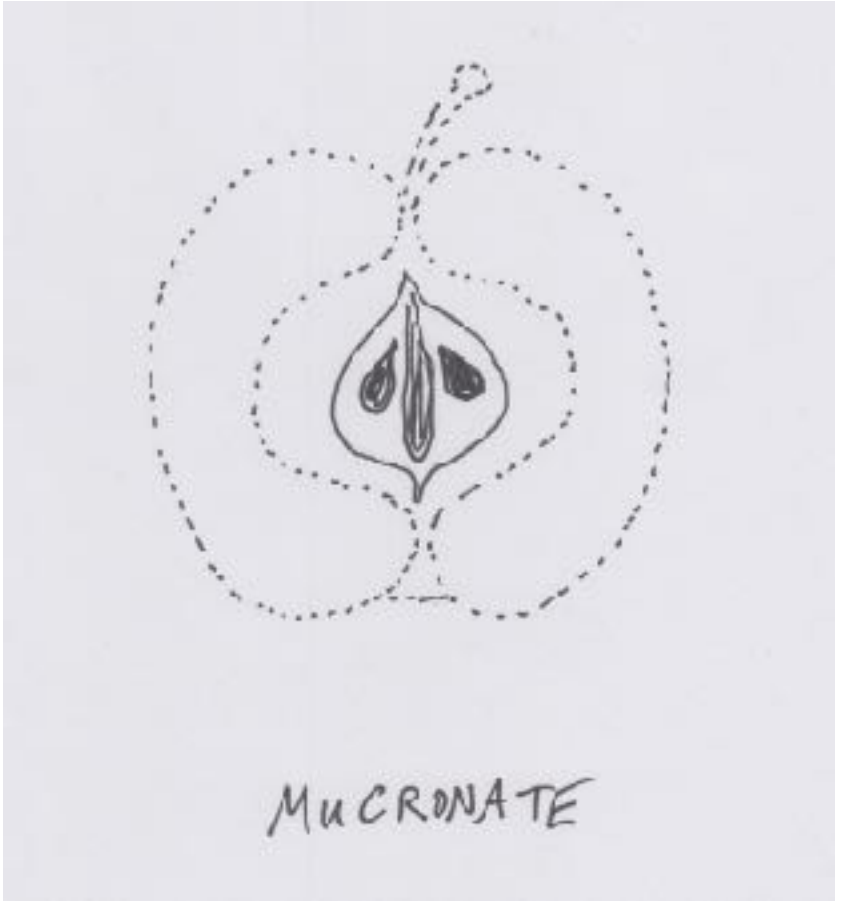






The carpels can be emarginate or mucronate





The carpels can be smooth or tufted

The carpels can be smooth or tufted

The flavor can be:
sweet (low-acid)
tart(subacid/acidic/sharp)
bittersweet
bittersharp

sweet (low acid)

Royal Jersey
bittersweet

Sharp (acidic, subacid)

bittersharp

The last and most important question:

In about 20 words, what is distinctive about this apple?

Or in other words:
how will I know this is it when I find it?

For more information, get yourself a copy of Apples and the Art of Detection, available today at the Cidercon bookstore or from outonalimbapples.org

Thank You !

outonalimbapples.com