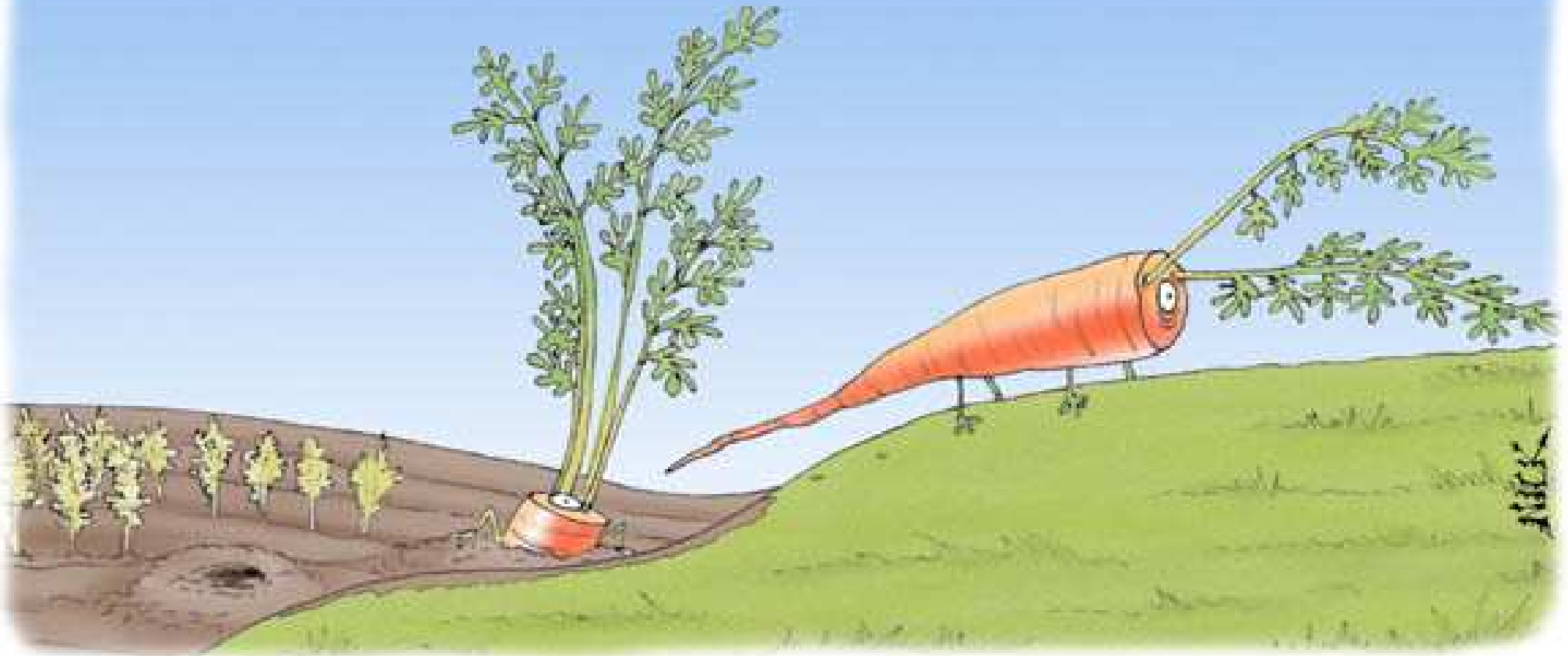


Lamarck and Darwin

Varying Views of Evolution

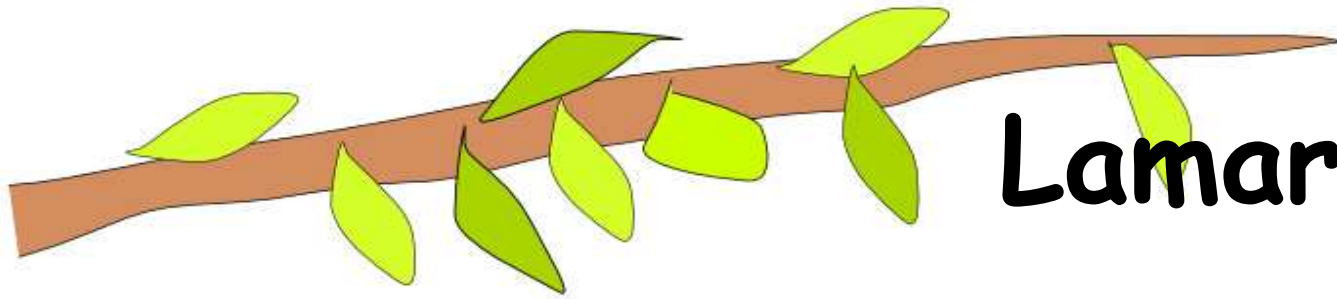


The next great step in carrot evolution.



French naturalist
Jean-Baptiste de
Lamarck
(1744-1829)

"The theory of
Acquired Traits"



Lamarckism #1

Giraffe seeks food,
and stretches its
neck to acquire the
leaves

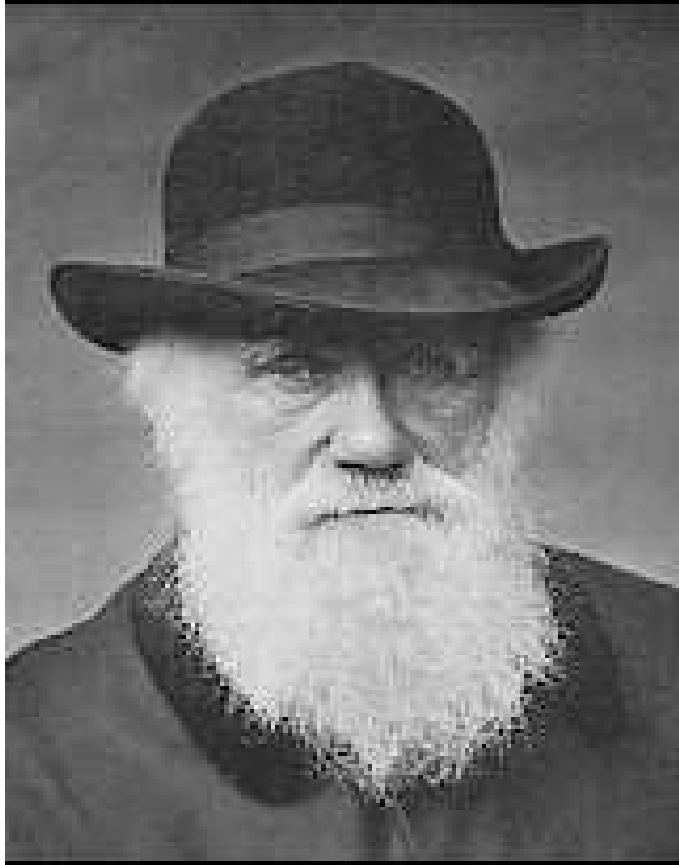




Lamarckism #2

Continual stretching
results in longer neck.
Longer neck is passed on
to offspring.





**British naturalist
Charles Darwin
(1809 -1882)**

**"The theory of
Natural Selection"**



Influences on Darwin

1. British tradition of selective breeding of livestock and domestic pets





Influences on Darwin

2. Observations made while serving on HMS Beagle during a journey to the Galapagos Islands (1831 - 1836).



Galapagos Islands

Pinta

Marchena

Genovesa

900 km to Ecuador →

Santiago

-Bartolomé

-Rábida

-Seymour Norte

-Baltra

Fernandina

Santa Cruz

-Plaza Sur

Isabela

Pinzón

Santa Fé

San Cristobal

-Tortuga

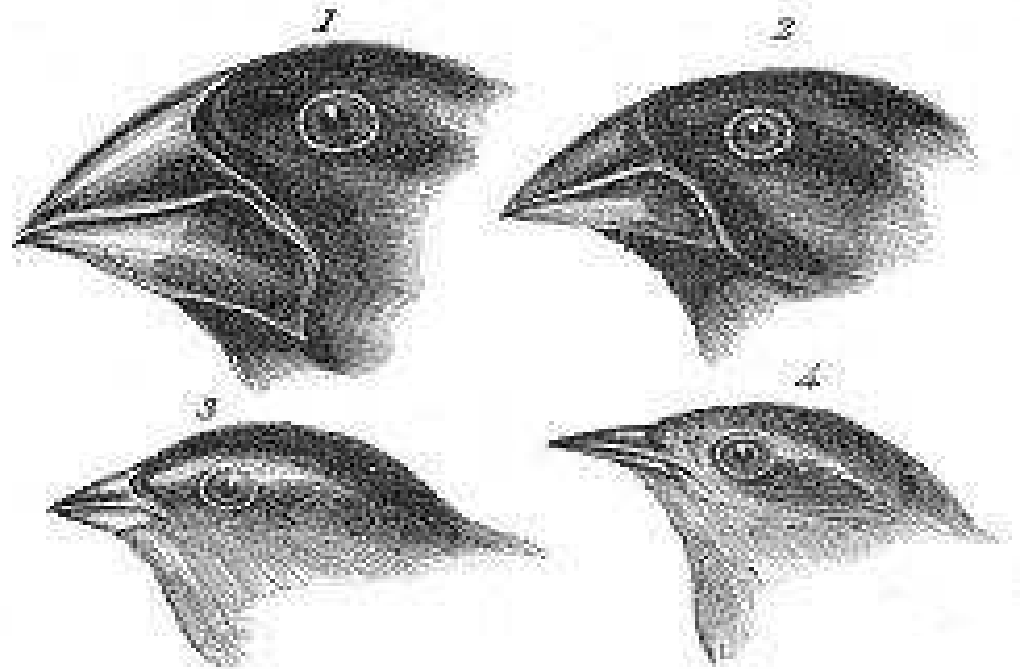
Floreana

Española



Darwin's Finches

Darwin observed differences in the beaks of finches on the islands. He assumed the finches all descended from common ancestors that migrated from the mainland.



1. *Geospiza magnirostris*

2. *Geospiza fortis*

3. *Geospiza parvula*

4. *Certhidea olivacea*

Finches from Galapagos Archipelago



small ground finch

Geospiza fuliginosa



medium ground finch

Geospiza fortis



large ground finch

Geospiza magnirostris



sharp-beaked ground finch

Geospiza difficilllis



cactus finch

Geospiza scandens



large cactus finch

(Española)

Geospiza conirostris



large cactus finch

(Genovesa)

Geospiza conirostris



small tree finch

Camarhynchus parvulus



large tree finch

Camarhynchus psittacula



woodpecker finch

Cactospiza pallidus



vegetarian finch

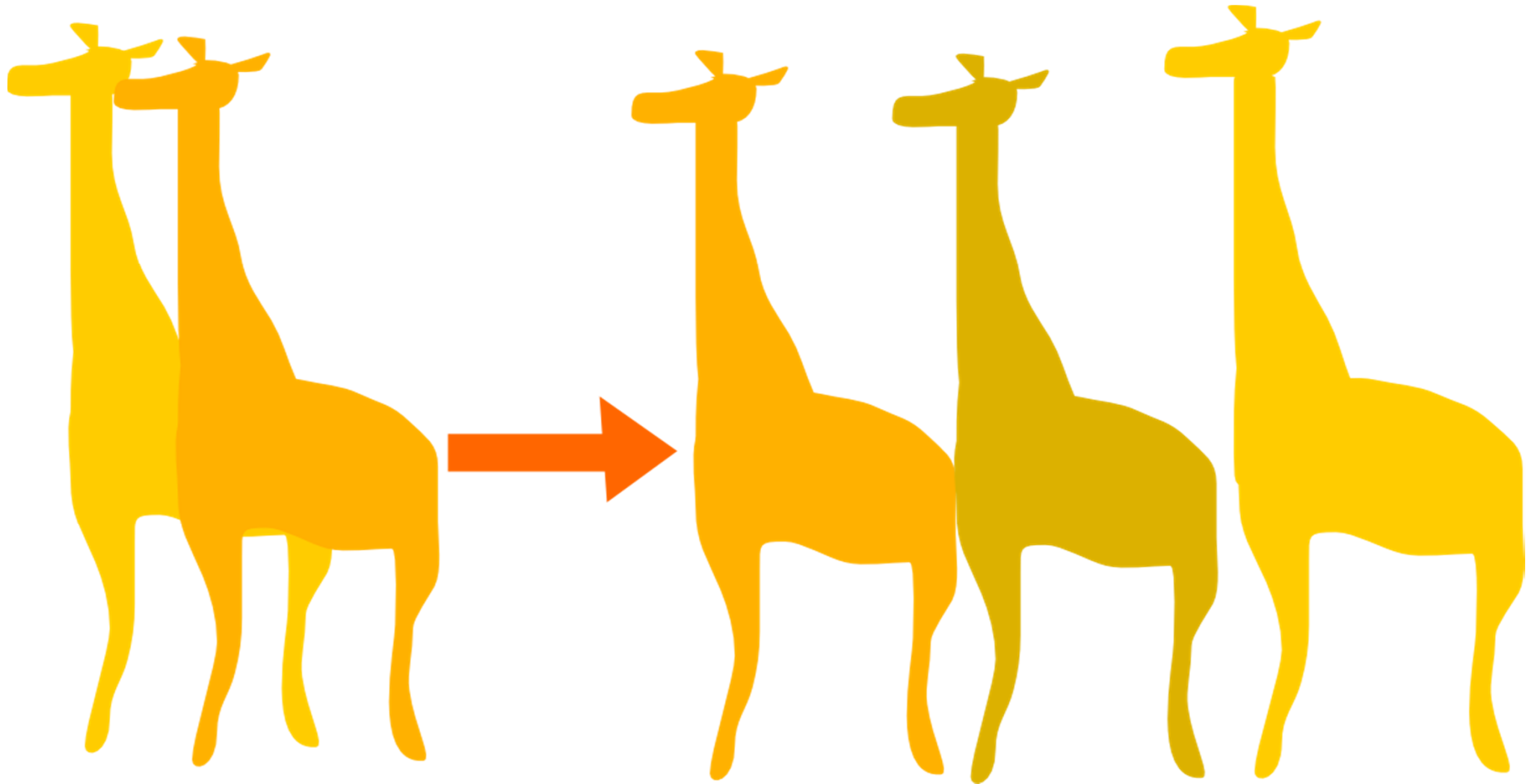
Platyspiza crassirostris



warbler finch

Certhidea olivacea

Natural Selection: Variation within Offspring



Natural Selection



Selective Advantage:
The variation provides an advantage to one of the offspring. The others will not pass on their genes.

Questions that Darwin Couldn't Answer

- What was the source of variation within a species? (**genes, alleles**)
- How did new traits arise? (**mutations**)