

15–2 Ideas That Shaped Darwin's Thinking



Copyright Ross Warner

Belief of his time

- 1. Earth was young (~4,000 years old)**
- 2. Plants/ animals never changed**



Fossils challenged both of these Beliefs

Geologist gave evidence for an older earth

-  James Hutton

- Charles Lyell



–Earth is many millions of years old

–the processes that changed Earth in the past = same processes that operate in the present.

Hutton and Geological Change

geological forces act slowly

Lyell's *Principles of Geology*

Past events explained by processes that they can actually observe.

Processes continue in the present.

15–2 Ideas That Shaped Darwin's Thinking → An Ancient, Changing Earth

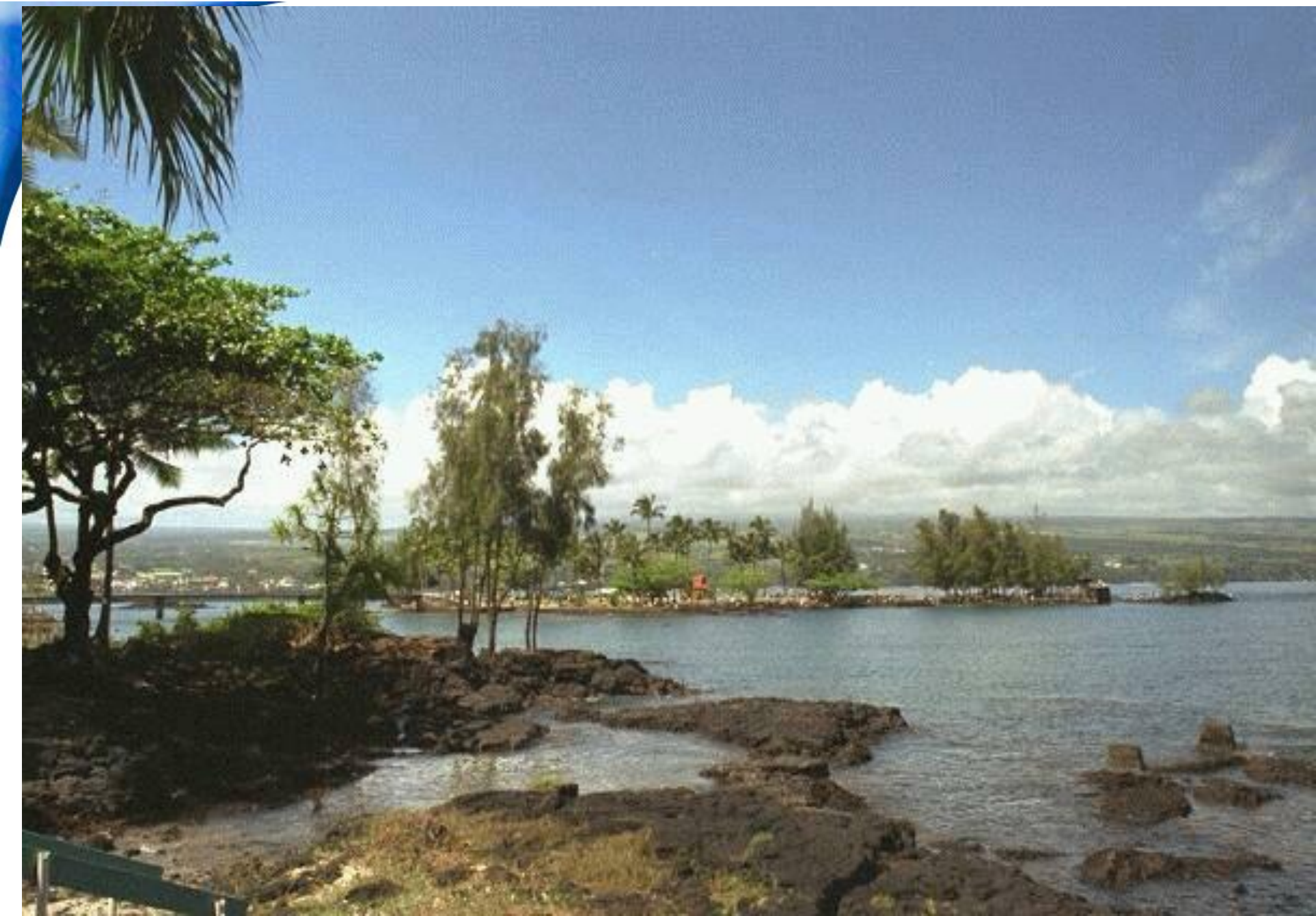




V.K. Tyler



HAWAIIPICTURES.COM





V.K. Jyoti



15-2 Ideas That Shaped Darwin's Thinking →

Darwin's Thinking





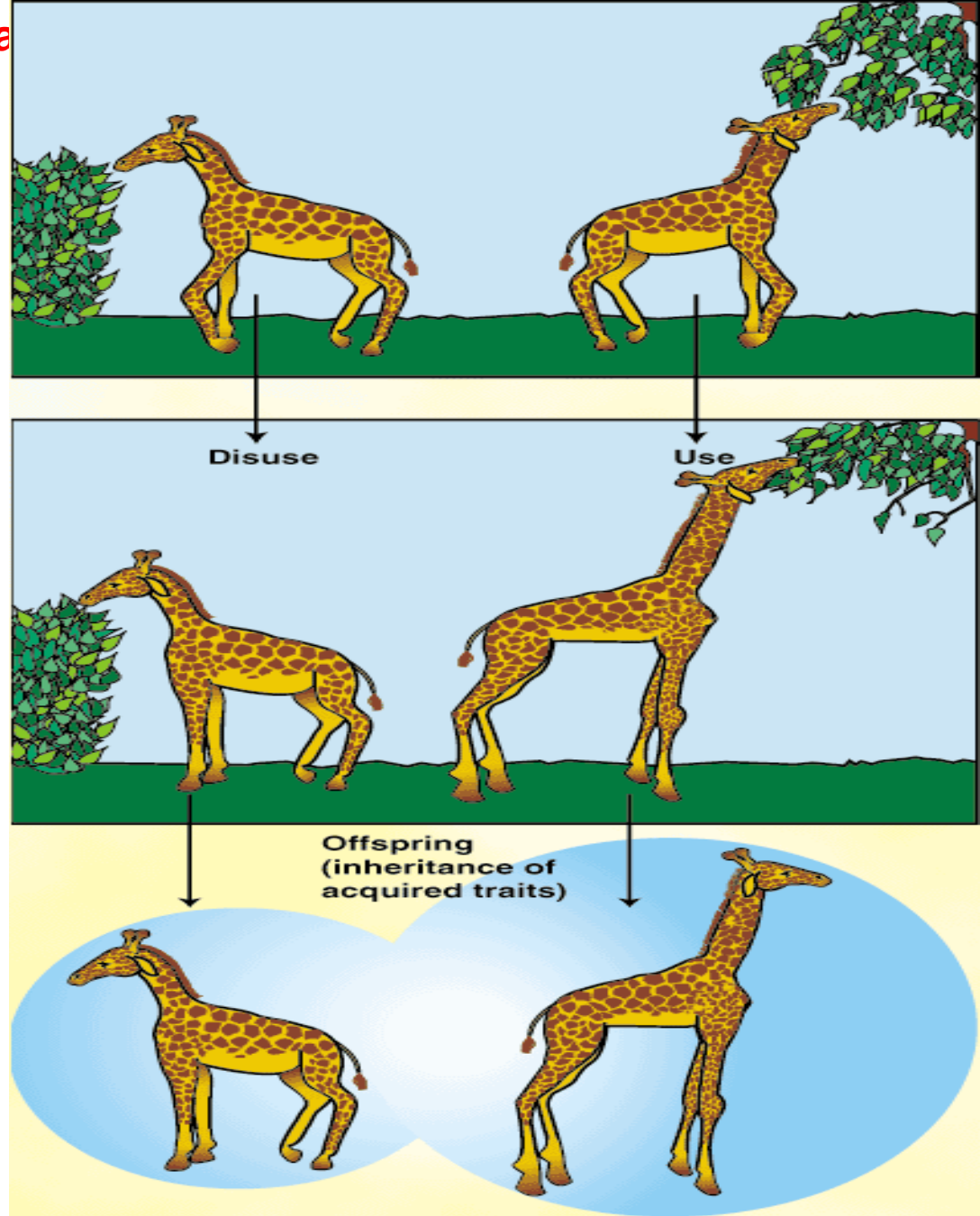
Darwin thought...

- If the Earth could change over time, life might change as well.
- It would have taken many years (millions) for life to change

This would have been possible only if the Earth were extremely old.

15-2 Ideas That Shape Darwin's Thinking

Other scientists think about evolution



Lamarck's Evolution Hypotheses

Lamarck stated:

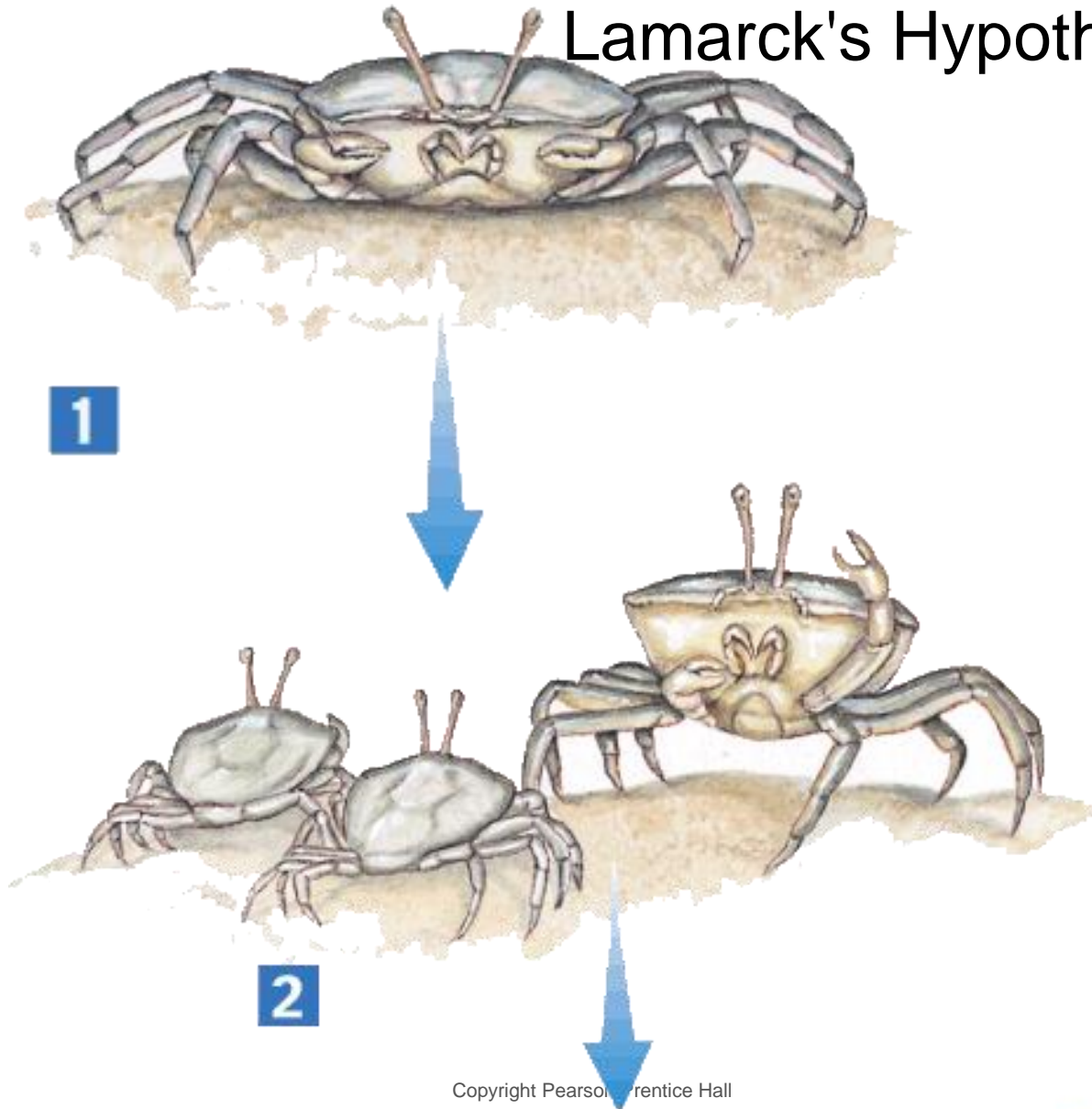
- living things changed over time.
- species were descended from other species.
- organisms were adapted to their environments.

Tendency Toward Perfection

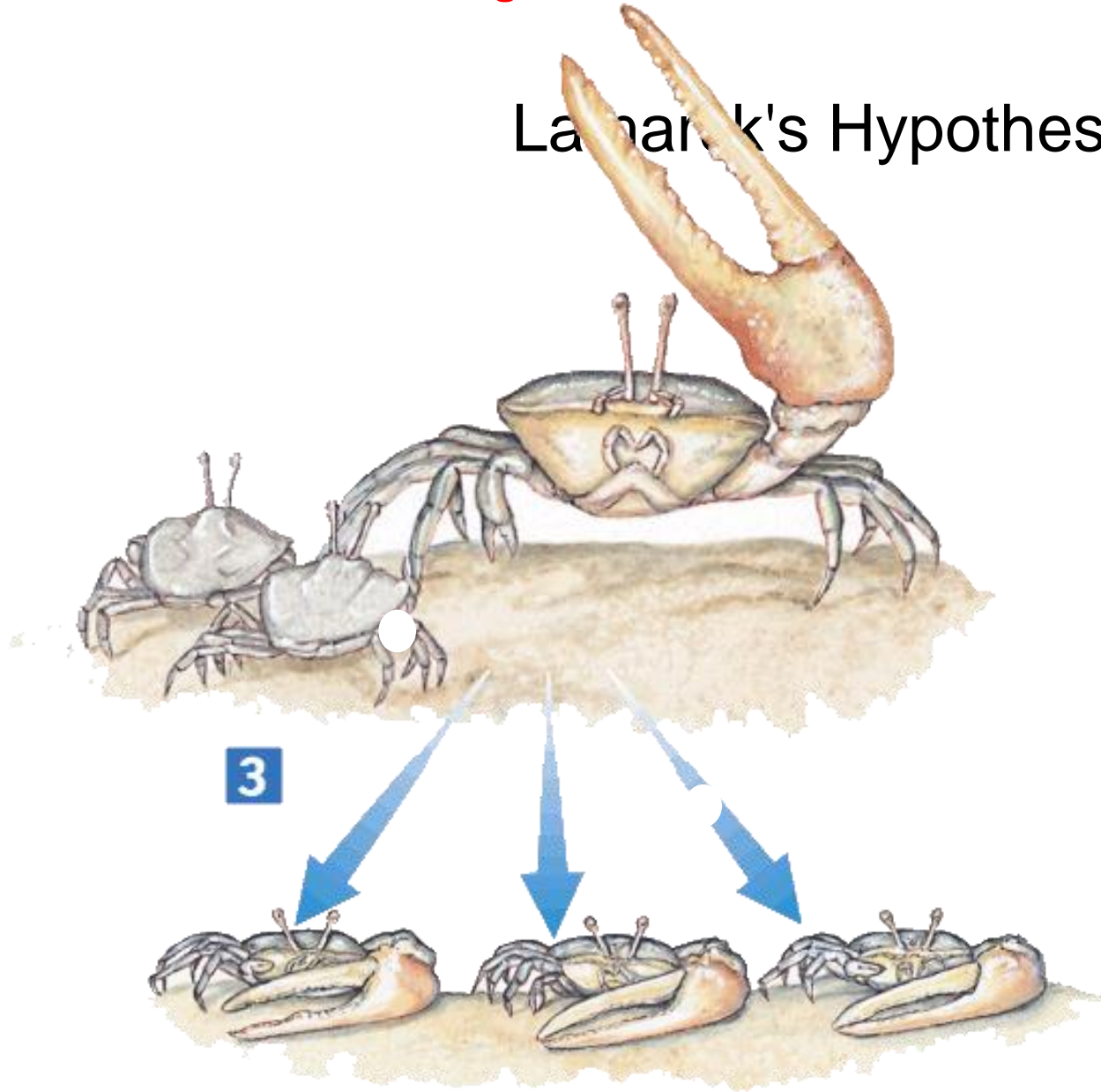
Lamarck: organisms have an innate tendency toward complexity and perfection.

They are continually changing and acquiring features that are adaptations.

Lamarck's Hypothesis



Lamarck's Hypothesis



Evaluating Lamarck's Hypotheses

- Wrong on some Key items
 - An organism can not acquire a trait during its life time.
 - Using a characteristic does not make it inheritable

Population Growth: Thomas Malthus

- noted that babies were being born faster than people were dying of old age.
- The only forces he observed that worked against this growth were war, famine, and disease.

• If the human population continued to grow unchecked, sooner or later there would be insufficient living space and food for everyone.



Darwin applied to plants and animals.

Darwin thought that there is a struggle to survive in nature.





15-2 Section QUIZ

Continue to:

Section QUIZ

- or -

Click to Launch:



15-2 Section QUIZ

1 Hutton and Lyell recognized that geological processes

a. of the past differ from those of the present.

A b. indicate that Earth is many millions of years old.

c. operate quickly, often over thousands of years.

d. always involve violent events like volcanoes, earthquakes, and floods.

15-2 Section QUIZ

2 The discovery of many fossils challenged the idea that

- a. acquired traits could be inherited.
- b. Earth is many millions of years old.

A c. species had never changed over time.

- d. geological changes are slow.

3 Which of the following scientists proposed the hypothesis of selective use and disuse?

a. Charles Darwin

A b. Jean-Baptiste Lamarck

c. Thomas Malthus

d. Charles Lyell

15-2 Section QUIZ

4 The scientist that proposed that Earth is shaped by geological forces that took place over long periods of time is:

a. Malthus

A b. Hutton

c. Darwin

d. Lamarck

15-2 Section QUIZ

5 Darwin's reading of Thomas Malthus made him realize that

- a. because of overpopulation, human beings cannot avoid extinction.
- b. all living things must evolve.

A c. living things produce more offspring than can possibly survive.

d. the basic ideas of Lamarck were wrong.

END OF SECTION