

SCIENCE AS A

HUMAN ENDEAVOUR

Nature and development of science

Naming living things

Figure
6.2.15

Linnaeus renamed the carnation so that it had only two names:
Dianthus caryophyllus L.

Carle von Linné was born in Sweden in 1707. He made changes to the way living things were classified and named. Three hundred years later taxonomists still use his ideas.



Figure
6.2.16

Carolus Linnaeus developed the binomial system for naming living things.

From a very early age Carle von Linné loved studying the living things in his garden and in the fields around his home. Like all educated people in Europe at that time, he wrote all his scientific work in Latin. He loved the Latin language so much that he even changed the spelling of his name to the Latin form Carolus Linnaeus, and it is by this version of his name that he is remembered. He is pictured in Figure 6.2.16.

As a young man Linnaeus travelled throughout Lapland, collecting, describing and naming species. He collected over one hundred dried and pressed specimens that were new to science.

The method that Linnaeus and other scientists of his time used to name these new species used a genus name followed by a description. As more and more types of organisms were discovered, it became increasingly difficult to come up with a unique description for them. For example, *Canis* is the genus name for a dog (a canine). If a new species of dog was found in the woods, then it could be the 'canine' that 'lives in woods'. If another canine was found living in the woods it would have to be described differently.

It could be the 'canine' that 'lives in woods; dark coat in winter; found only in the north'—and so the names expanded.

As an example, a carnation needed nine words to describe it: *Dianthus floribus solitarius, squamis calycinus subovatus brevissimis*. It literally means the dianthus (or carnation) with a single flower within a scaly, short calyx which is below the ovary.

Linnaeus thought that there must be a better system. He organised the classification of organisms into a hierarchy, with kingdom at the top and species as the lowest level. The name given to an organism would be the name of the genus to which that organism belonged, followed by one descriptive name for the species—each living thing would only have two names. With this, binomial naming (also known as binomial nomenclature) was born. Instead of the carnation having nine names, it now has two. It is known as *Dianthus caryophyllus* L. The L. after the name tells us that the species was named by Linnaeus.

Latin was used as the language for naming because it was a language then understood by all well educated people throughout Europe. Also, it was not a spoken language, and therefore the meanings of the words did not change. Words develop slightly different meanings and spellings over time when a language is spoken. This does not happen in Latin.

Binomial nomenclature is now used internationally regardless of the language spoken in the country the organism or scientist comes from. The system has been used for plants since 1753, for animals since 1758, and for bacteria since 1980.

Linnaeus never stopped working and eventually named 4235 species of plants and about 6000 species of animals. He also wrote letters to others interested in studying plants. For example, Linnaeus corresponded with the botanist Joseph Banks, who sailed to Australia with Captain Cook on the *Endeavour* (Figure 6.2.17) in 1768.



Figure 6.2.17

Banks and Solander sailed to Australia on the *Endeavour* with Captain Cook.

Also on board was Daniel Solander, one of Linnaeus's students. Between them Banks and Solander collected more than 1000 species of plants new to science.

6.5

SciFile

Revenge!

After an argument with the French scientist Georges Louis de Buffon, Linnaeus named a stinky weed after him! He gave it the genus name *Buffonia*.

Science as a human endeavour**Verbal/Linguistic**

Refer to the Science as a Human Endeavour on pages 211 and 212 of your student book to answer the following questions.

- 1 **Explain** how plants and animals were named when Linneaus first started collecting and describing them.

- 2 **Outline** the concept of binomial nomenclature.

- 3 If two organisms have the same first part to their name, **recall** what that says about their relationship to each other.

- 4 Could a plant and an animal have the same first part to their name? **Explain**.

- 5 Could a plant and an animal have the same second part to their name? **Explain**.

- 6 **Explain** why Latin is used for the naming of species.

- 7 **Describe** the benefits of using binomial nomenclature.

- 8 Since binomial nomenclature was developed, is Linneaus the only person to have used it? **Explain**.

To answer questions 9 and 10, try using the Latin words from Worksheet 6.4.

- 9 Go back to a time before binomial nomenclature and **propose** descriptive names that may have been given to these animals. The animals were discovered and named in the order their descriptions are presented.

Bear	Description	Descriptive name
A	The bear was like no other seen before. It had fur as black as coal.	
B	The bear had shiny black fur and warty lumps around its mouth and snout.	
C	The bear had shiny black fur and warty lumps around its mouth and snout. This bear was bigger than any bear seen in this region before.	
D	The bear was like the giant bears described before but as it walked, it flopped its large, flat feet on the ground in an ungainly way.	

- 10 (a) **Identify** characteristics that could be used to distinguish one bear from the other.

- (b) **Propose** names for the bears using binomial nomenclature.

Bear	Characteristic	Biological name
A		
B		
C		
D		