# Built for the Job - Flight

When a bird faces into the wind it is lifted upwards. This is because the feather arrangement on a bird's wing gives it a special shape called an aerofoil. Aeroplane wings are also this shape.

**An aerofoil**

**Investigate aerofoils**

Work with a partner. Follow the instructions and use the diagram to set up your investigation.

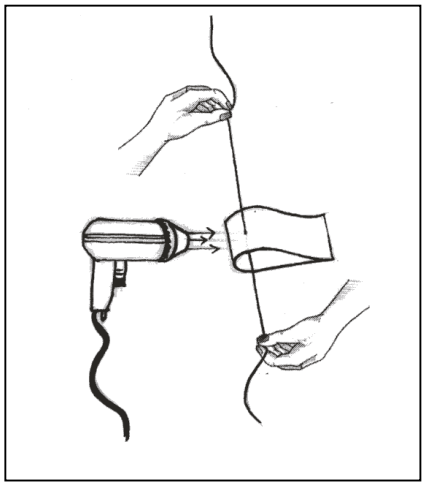
**You will need:**

a hairdryer

a sheet of A4 paper

a glue stick

strong cotton thread



**What to do:**

1. Make a wing shape by folding and sticking the sheet of paper.
2. Thread a length of cotton thread through wing as shown.
3. One person should hold the thread in a vertical position, as shown in the diagram.
4. The other should use the hairdryer to direct a flow of air over the wing.

- Describe what happens as the hairdryer blows over the "wing".
- Repeat your investigation using different wing shapes.
- Explain your results.

# Built for the Job - Feathers

Feathers are designed for two main uses;

- to help birds keep warm
- to help birds fly

Feathers near the body tend to be fluffy to help with warmth, while those on the wing and tail are mostly built for flight. Most feathers however do both jobs at the same time. Different parts of the feather are built in different ways.

Examine some feathers with a magnifying glass.

On the photos of the two feathers mark which parts are built to do which job.
Insert the word “warmth” or “flying”.

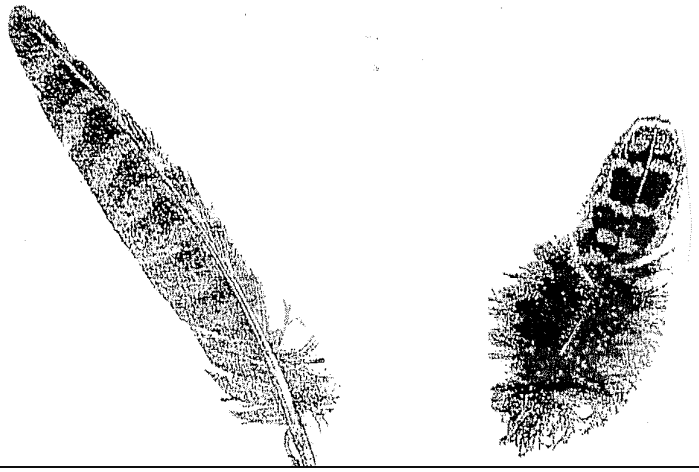
Flight Feather Body Feather

This part of the feather is used for

_____

This part of the feather is used for

_____



This part of the feather is used for

_____

This part of the feather is used for

_____

**Use the words in the middle box to make two lists.**

One will describe the characteristics of a **flight feather**.
The other will describe a **body feather**.

| **Flight Feather** | zipped up for strength<br>weak quill<br>symmetrical<br>traps air<br>strong quill<br>asymmetrical<br>deflects air<br>fluffed out for warmth | **Body Feather** |
|---|---|---|

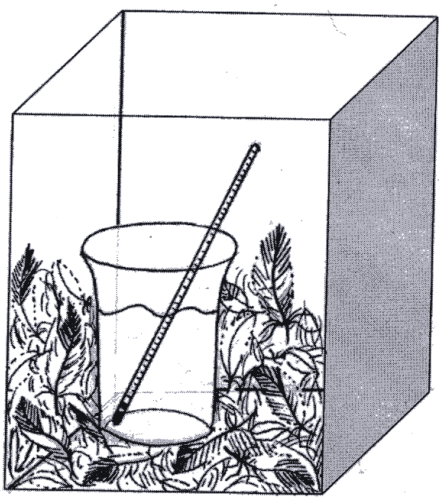
# Built for the Job - Feathers

Feathers keep birds warm. They **insulate** them from the cold by trapping a layer of air close to the body. When birds fluff out their feathers this thickens the layer and traps more air.

**Plan a fair test** to compare how good feathers are at insulating against the cold compared with other materials e.g. polystyrene, cotton wool, hay.

**You will need:**

- a thermometer
- a beaker of hot water
- a clear plastic box with a lid
- down feathers from an old pillow
- other insulating materials



**Write and illustrate your report**

Describe:

- what you did
- what happened
- what your conclusions are

# Built for the Job - Skeletons

All vertebrate skeletons have some similar features. Look at the pictures below closely. Use your knowledge of the human skeleton to draw lines to label the photos of the puffin skeleton.

| |
|---|
| skull |
| eye socket |
| jaw (beak) |
| ribs |
| sternum |
| vertebrae |
| pelvis |
| hand |
| lower arm |
| upper leg |
| ankle |
| toes |

Which parts are like a human skeleton and which parts are different?

**Alike** **Different**