

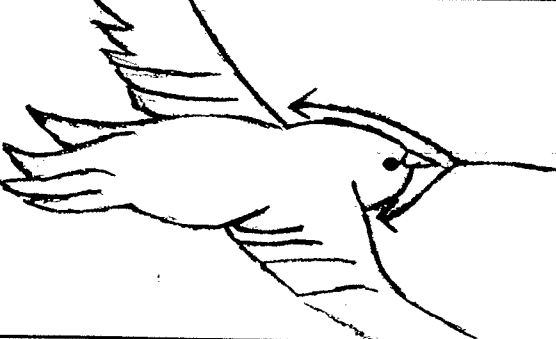
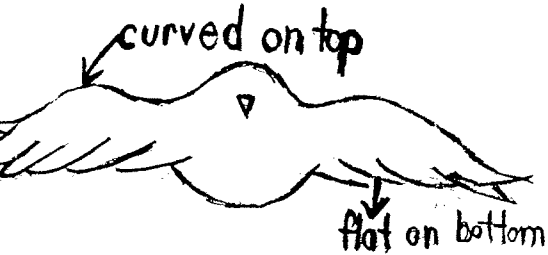

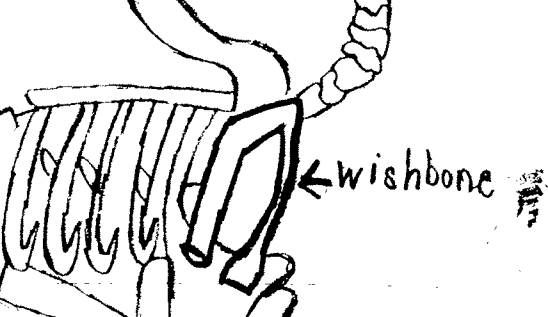
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Fly Like a Bird

Facts about how a bird flies:

Show with diagram and labels:

<p>A bird has a smooth, streamlined shape.</p>	
<p>A bird's wings, and each of its feathers, are shaped much like an aircraft's wing--curved on top and flatter underneath.</p>	
<p>Its flight is powered by large muscles inside its body. Powerful chest muscles flap the wings up and down.</p>	
<p>A bird's collar bone is fused in a "wishbone" shape that forms a rigid frame so its body is not squashed when the powerful wing muscles contract.</p>	

Fly like a Bird Cont'd

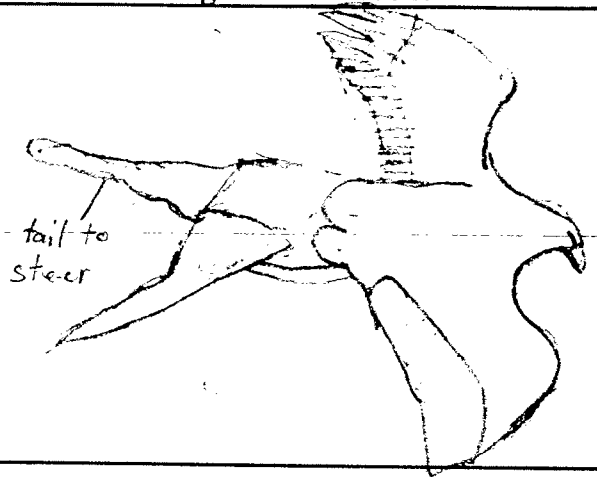
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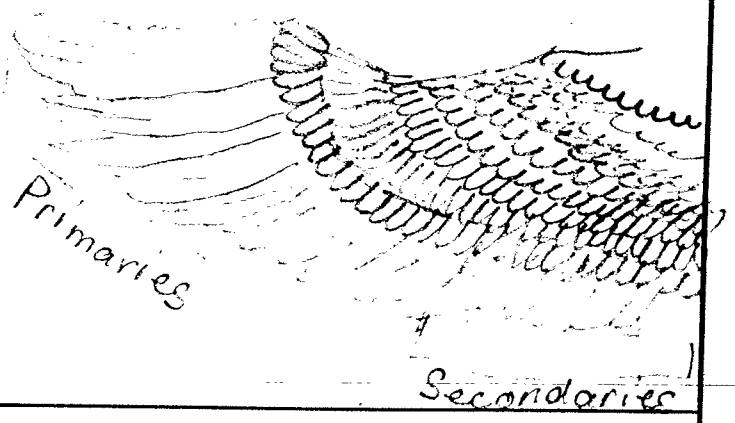
Facts about how a bird flies:

Show with diagram and labels:

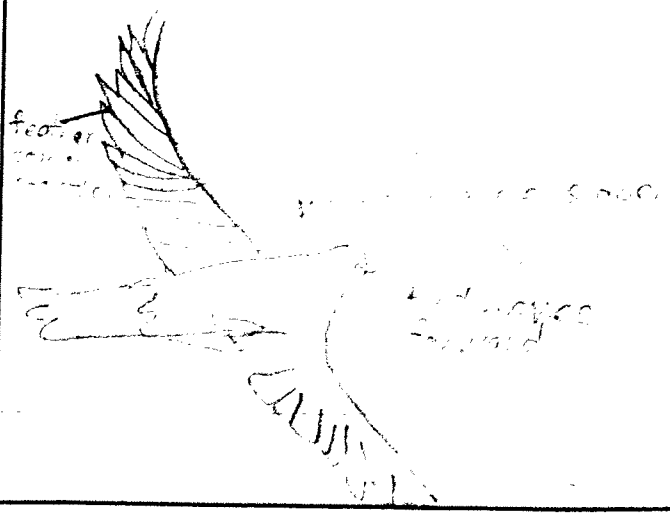
The tail is used for steering.



Wings are covered in tightly fitting feathers that trap the air.



A bird's wing can change shape. As the wings beat down, they push the air backwards. Special feathers at the tip of the wings come together to help push the air back. This makes the bird move forwards.



Fly Like a Bird Cont'd

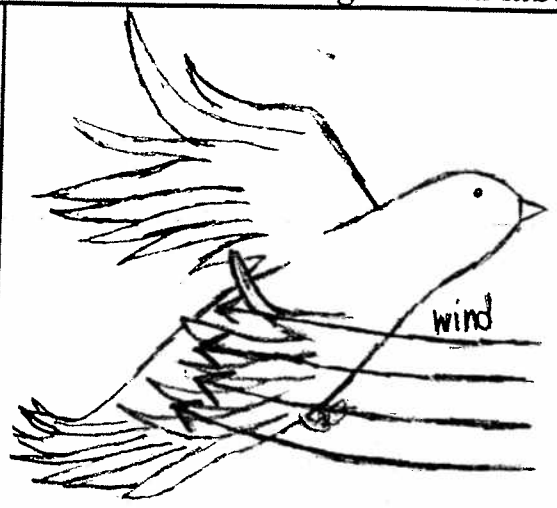
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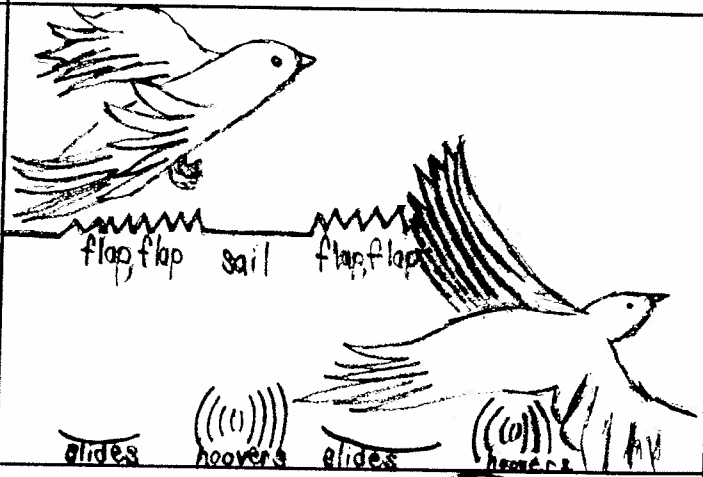
Facts about how a bird flies:

Show with diagram and labels:

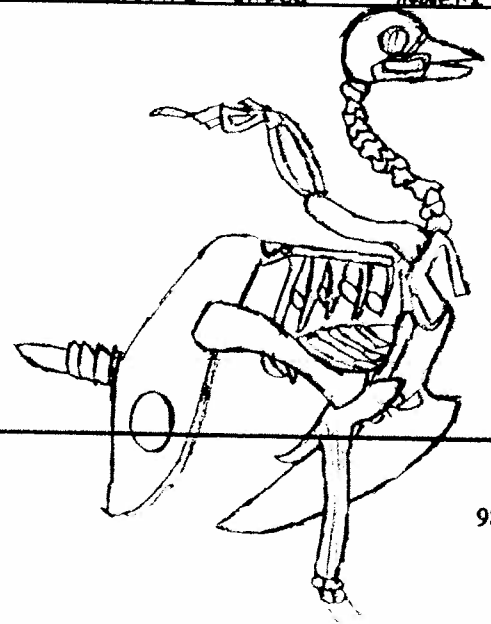
When the wings are pulled up, the tips of the wing feathers move apart to let air flow through. This reduces air resistance and means the bird uses less energy pushing against the air.



To take off, a bird has to beat its wings very hard to force air quickly over the upper surfaces and produce lift. Once it has climbed high enough, the rate of beating can be reduced.

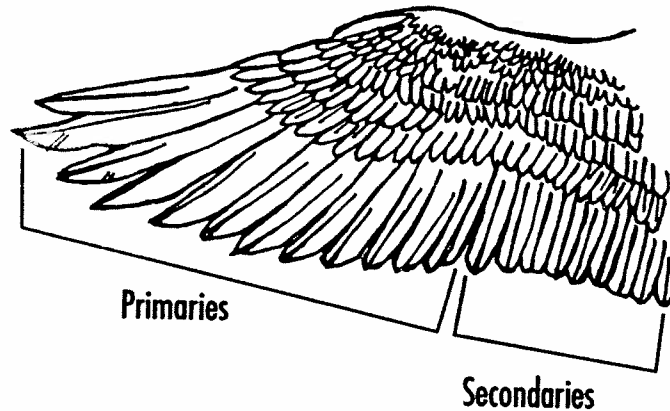


The bones of a bird contain many hollow spaces, making the bird lightweight but strong.



Wings:

- The front pair of legs are modified into wings covered with feathers.
- The wings connected to powerful chest muscles that provide the power to flap the wings.
- Wings are curved outward (convex) on top and are flat or slightly curved inwards (concave) on the bottom. This shape gives lift as the bird flies through the air just like an airplane wing.



Feathers:

- The stiff flight feathers on the wings are hollow and light and their shaft is not centered so that they overlap more tightly along the wing making it more airtight.
- The shaft of the feather is made of a tough material called keratin making the feather stiff but flexible.
- The entire body is covered with contour feathers making the bird streamlined and sleek reducing drag or air resistance.
- The feather's vane is made up of hundreds of barbs which are fringed with barbules.
- Caring for feathers is called *preening*.
- Barbules of one barb link together with the barbules above and below it. Damage to feathers occur when the barbules are pulled apart.
- A bird extracts an oil from its preen gland to rub and repair its feathers (if they're damaged). The bird zips up the barbules between its beak.



Contour feather



Down feather

