

Birds

Most obvious things that distinguishes
birds from other animals are their
feathers

Feathers

Modified scales developed from
follicles in the Skin

Birds molt and release their feathers,
but not usually all at Once

Two Functions

Lift for flight

Conserve body heat

Contour Feathers- cover the bird's body and give adult bird's shape

Flight feathers found on

wing and tail

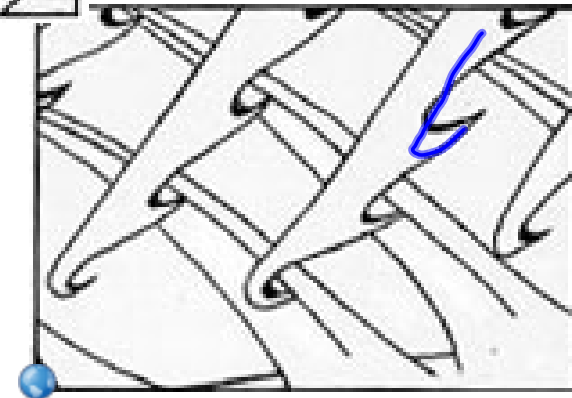
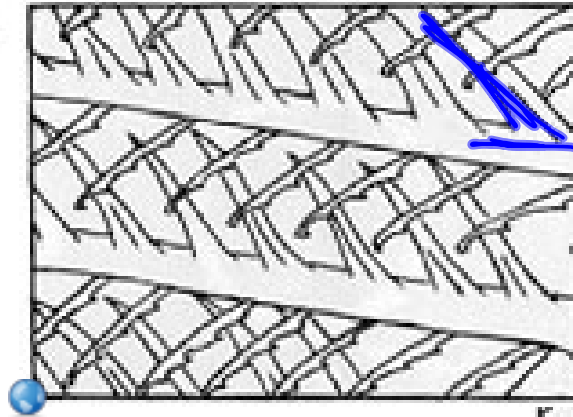
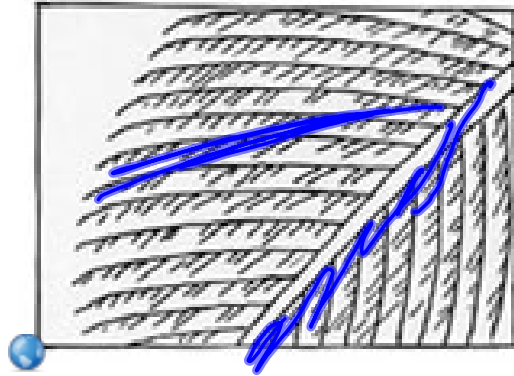
Down Feathers cover young birds and are found beneath adult contour feathers.

Soft, fluffy, good insulation

Contour feather has branches called barbs

Each barb has barbules with hooks

The hooks creates a continuous shape in the feather while keeping it flexible.



<http://www.nhm.org/birds/guide/pg007.html>

Preening- bird pulls its feather through its beak re-hooking the hooks

Also spreads oil (from the preen gland) over its feathers.

The oil is for Cleaning and water proofing.

Feathers may also camouflage the animal and Selection of a mate

Strong lightweight skeleton

Bones are thin and hollow

Endothermic Metabolism

They create heat through metabolism

Maintain a body temperature of 40 to 42 degrees Celsius (104 to 108 F)

The high temperature is due to the increased metabolism used for flight

Completely divided ventricle

Four Chambered heart

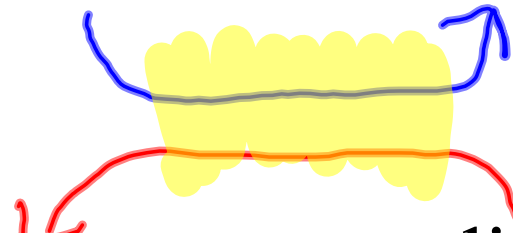
Oxygen rich and oxygen poor blood
are completely Seperate

Highly efficient lungs

Lungs have a larger surface area than the lungs of amphibians

There is a limit to how much surface area can help of the lungs also need to be modified.

The air also passes over the surface in one direction



There are two advantages to one direction airflow

1. the lungs are exposed to fully oxygenated air
2. The flow of blood in the lungs runs in a different direction than the air flow

Birds are adapted for Different Ways of Life

There are 28 orders of birds, but 60% belong to the Passeriformes

There are 5,276 species in this order

Birds are adapted by their beaks, legs,
and feet

Carnivorous birds have talons and
sharp beaks

Ducks have webbed feet and flat beaks
for water

Finches have a short, thick beak for crushing seeds and Curved toes to cling to branches

Penguins wings and feet are modified for
Swimming