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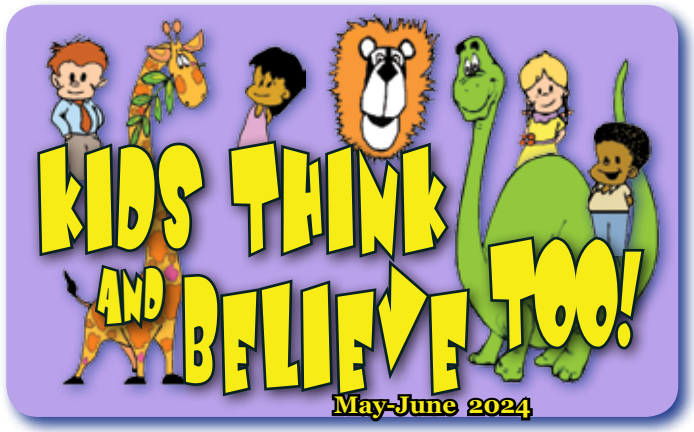


AWESOME FEATHERS

by Lanny and Marilyn Johnson

As the Jones children came in from the outdoors, Mary told her brother Billy to show their father what he had found.

"Look at this feather, Dad!"

"Wow, nice find, Billy. This looks like it came from the Northern Flicker."

"What's a flicker?" Billy asked.

"It's that bird we have seen in our backyard that looks very much like a woodpecker. Billy, did you know that only birds have feathers, and every bird has them."

"What do they use them for?"

"Feathers have a lot of uses that help birds survive. For example, a bird's feathers help keep its body warm, cool, and waterproofed. Feathers also protect the bird's body from bumps and scratches. Feathers come in almost every color under the sun. The colors and markings can be used for camouflage as well as attracting a mate. Another use for feathers is flying of course - although not all birds fly (penguins, ostriches, and emus are a few examples). [1]

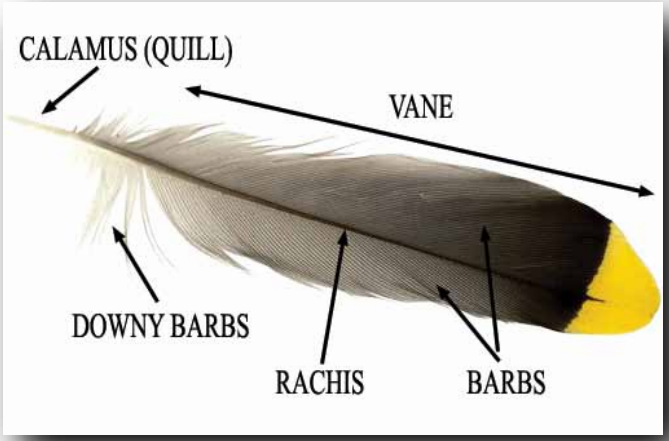
"Birds have two types of feathers: contour feathers and down feathers. **Contour feathers** are stiff and form the contour or shape of the bird. A bird's body, tail, and wing feathers are all contour feathers. **Down feathers** grow next to the body under the contour feathers. They are soft and fluffy and provide insulation. [2, 3]

"Several parts make up feathers. The **rachis** is the main shaft of a feather and is the part from which the rest of the feather grows. The hollow **calamus** (also called the quill) is the bottom part of the rachis. This is hollow and connected to holes in the skin called **follicles**. The **vane** is the flat surface of the feather on either side of the rachis. This is made of hair-like projections called **barbs**. The barbs of a contour feather are linked together with hooks, a bit like Velcro. The linked barbs keep the contour feathers stiff, so they won't lose their shape when the bird is flying. On the other hand, the barbs of down feathers are soft and don't lock together." [4, 5]

"But how do feathers help the bird fly?" Mary asked.

"The long feathers of the wing and tail are called **primary feathers**. These are attached to the skin which is attached to muscles and bones. Working together these allow the bird to shape, slant, and rotate its feathers during flight. When the bird flaps its wings downward the air pressure under the wings causes the barbs to hook together trapping air under the wing. This lifts and pushes the bird upward. Birds also have **secondary flight feathers** which are not attached to muscles, but give additional lift. As the bird raises its wings, the barbs of the secondary and primary feathers unhook letting the air flow through. This allows the upward stroke of the wings to meet with little resistance, but the downward stroke to pump and lift the bird. If this was not the case, each stroke would cancel out the other and prevent the bird from flying. [6, 7]

"Because feathers are so important to birds' survival, they are very fussy about **preening** (or grooming) them. Using their beaks to zip any unhooked barbs back together. They also



use their beaks to waterproof their feathers by applying oil to them. This oil is found in a gland at the base of their tail. Over time, a bird's feathers get damaged or worn out. Therefore, at least once a year, the feathers are completely replaced in a process called **molting**. During this change, new feathers push the old feathers out of their follicles and fill in the vacancies. Each kind of bird molts in different ways and at different times, depending on its lifestyle. Amazingly, when one of the primary feathers molts, the same feather on the other wing falls out and grows back at the same time.This ensures that the bird will not be off-balance when it flies. [8, 9]

"Kids, there is so much more that could be said about bird feathers, but I hope you realize that the design and beauty of feathers is evidence of an awesome Creator." Mr. Jones concluded.

References

1 https://www.activewild.com/bird-feathers/
2 https://natureroamer.com/bird-feathers/
3 https://www.activewild.com/bird-feathers/
4 https://natureroamer.com/bird-feathers/
5 https://www.activewild.com/bird-feathers/
6 Marvels of Creation, Breathtaking Birds, Buddy and Kay Davis,ISBN-13: 978-0-89051-457-3, pgs. 72-73
7 https://natureroamer.com/bird-feathers/
8 https://www.activewild.com/bird-feathers/
9 Marvels of Creation, Breathtaking Birds, Buddy and Kay Davis,ISBN-13: 978-0-89051-457-3, pgs. 72-73

God made birds in all different sizes, shapes, and colors. Can you find the 30 different birds below? For a bonus, see if you can find 5 feathers.

FOR ANSWERS, GO TO:
www.discovercreation.org/kids/newsletteranswers.htm

Puzzles by Lanny Johnson

WORD SEARCH

Look for words used in "AWESOME FEATHERS" in the puzzle below from the WORD LIST below. The hidden word might be up, down, sideways, or slanted.

D	S	E	D	W	N	F	H	O	C	T
B	O	H	D	C	A	C	T	P	O	U
V	A	N	E	P	Q	G	K	J	N	S
C	D	X	T	Z	R	A	K	X	T	O
R	J	Q	B	J	E	E	G	W	O	I
F	R	G	U	B	M	Y	E	J	U	L
G	A	F	V	I	H	Y	D	N	R	C
A	C	E	U	F	L	M	Y	P	X	G
I	H	A	H	F	Z	L	O	N	F	S
L	I	T	C	U	Y	R	C	L	U	H
R	S	H	E	B	C	B	L	M	T	U
A	J	E	T	P	P	P	A	Y	U	R
K	Z	R	S	F	B	L	A	R	C	N
G	D	O	W	N	A	O	X	D	B	Z
C	T	H	L	C	E	L	U	Z	L	V

WORD LIST

BARB - BEAK - CALAMUS - CONTOUR - DOWN - FEATHER - FLY - MOLT - OIL - PREEN - QUILL - RACHIS - VANE

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