



**DAWN**  
by  
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The message of Dawn retells "Japan's most beloved folk tale" and expresses the importance of love and the destruction of greed. If a feather is examined with a magnifier, it is possible to see how birds manage to fly so well and stay so warm in cold weather.

Feathers are modified scales which serve two functions: providing lift for flight and conserving body heat. There are three main kinds of feathers. Down feathers provide an insulating undercoat, especially helpful for nesting birds. Contour feathers provide a streamlined shape, protective coloration, and additional insulation. Flight feathers are specialized contour feathers found on the wing and tail. The structural design of feathers combines maximum strength with minimum weight.

**MATERIALS:** a feather, magnifier, vegetable oil, water, liquid detergent

**ACTIVITY:** Examine a feather with magnifier and identify its parts. The attached diagram can be used for the correct scientific names for the parts of the feather. An additional exercise would be to put the feather in water containing vegetable oil and examine it again using the magnifier. Then try to wash the oil out of the feather using the liquid detergent.

**EXTENSION:** See the February 1992 WONDERSCIENCE.

**SOURCE:** MODERN BIOLOGY, Albert Towle, Holt, Rinehart, and Winston, 1989, p.589.

**STANDARDS:**

**BSL:** 1.2, 1.3, 1.6, 1.7, 1.9, 2.1, 5.2, 11.3, 12.1

**NCTM:** 4d

**SCS:** A1, C1, C3, H5

Bang, Molly. Dawn. Mulberry Books, 1983. ISBN#0-688-10989-6.

Figure 39-2 The small rectangular area on the drawing of the complete feather is shown in detail in the drawing above.

