Feathers of Fowl

Feathers act as a protective covering for fowl. Chemically feather is composed a type of protein called keratin. Number of feathers varied greatly in different birds. Song birds have 2500 feathers, where as swan may have over 10000. This is about 4-9% of live weight of poultry.

Functions of Feather

Feathers protect bird from cold, rain, sun and injury. It is important for the feathers to be relatively broad and tightly joined together. This is the desired feather type for most breeds. Flight feathers help the bird to fly. Feather patterns and color serve as a valuable aid in identifying numerous varieties of fowl. Functions of feathers are given below.

1. Flying
2. Help keep them warm
3. Controlling body temperature
4. Protection from wind, rain, water and sun
5. Feathers attract others
6. Swimming
7. Floating
8. Snow- shoeing
9. Hearing (Owl –face feather)
10. Making sounds
11. Foraging (Heron makes umbrella on their head to see fish easily in water)
12. Constructing nest (Water birds)
13. Transporting water (Water fowl)
14. Escaping from predators
15. Sending visual signal (mating and rival)
16. Camouflage (saving and hunting)

Uses of feathers

1. Feather color helps to differentiate males and females fowl
2. Feather patterns and color serve as a valuable aid in identifying numerous varieties of fowl.
3. To make fancy item
4. To make pillow, cushion mat etc
5. To make sports goods
6. To decorate house wall
7. Formulation of planting pots in nursery
8. To make absorbent feather-based products including diapers, filters, insulation, paper
9. Feather meal is produced by a high-pressure steam processing method similar to autoclaving, followed by drying. Heat and steam hydrolyze the feathers into a cysteine-rich, high-protein product that is 60% digestible
10. Use in clothing
11. Use to make fishing fly

Different type of feathers

A. Plumules are small downy feathers covered by contour feathers in adult birds. They provide insulation and help to retain body heat. Plumule feathers are fluffy because they lack barbicels and hamuli for interlocking.

B. Filoplumes intermediate type of feathers characterized by plumulaceous structure but having a distinct rachis.

C. Contour feathers include all other feathers covering the body of bird e.g., flight feathers of wing and tail, the cover feathers which grow over the bases of the flight feathers and contour feathers which streamline the body.

Structure of Feather

Look at a bird feather close up sometime. It is really an amazing part of a bird's anatomy, made to serve many functions. The image shown in figure. It is labeled with its basic parts to understand how complex it really is. The feather is epidermal in structure. The basic structure includes Quill or Calamus, Aftershaft or Afterfeather, Shaft, Barbs,Barbules, Hooklets and Vane.

Calamus

Commonly called the quill, it is the smooth, non-colored part of the feather shaft, which extends under the skin.

Rachis

The portion of the central shaft that rises above the skin. It is the base from which the barbs extend.

Vane

The part of the feather that has barbs.

Barbs

Set of fibers, which come off the rachis at a 45-degree angle.

Barbules

Very small fibers found on the barb. Barbules from one barb cross those of the next at a 90-degree angle.

Hooklets

Barbules have these, to hook the barbules together, forming a tight, smooth surface.

Afterfeather

Some feathers have a small growth at the base of the vane, which have barbs but no hooks.

Moulting in poultry

Moulting is the act or process of shedding and renewing feathers. The shedding and renewal of feathers normally occurs once a year, though it may occur in certain individuals twice in a year and more rarely, only once in a period of two years. Hens usually moult in the following order: (1) head, (2) neck, (3) body (including breast, back and abdomen), (4) wing and (5) tail. Not only this, but there is a high degree of regularity about the order of moult within the several sections. For example, the wing primaries, begin to drop before the secondaries.

Birds inherit the tendency to shed their plumage annually. An early moulter, under normal conditions, is a poor layer. A late moulter, under normal conditions, is a good layer. The nature of moulting both at the starting time and its duration should be considered while judging a birds laying ability.

Hens seldom lay and shed feathers at the same time. A high producing bird may, for a short time, moult and lay simultaneously; but usually she sheds more rapidly, and is declining in production when moulting beings. When her wing feathers commence to drop, it is a sign that she is nearly or quite through laying. The fact that an early moulter hen that sheds rapidly is better than the early moulter that sheds slowly. Most probably, a hen does not stop laying because her physical condition is such that she cannot support egg production and continue nourishment of the feathers.

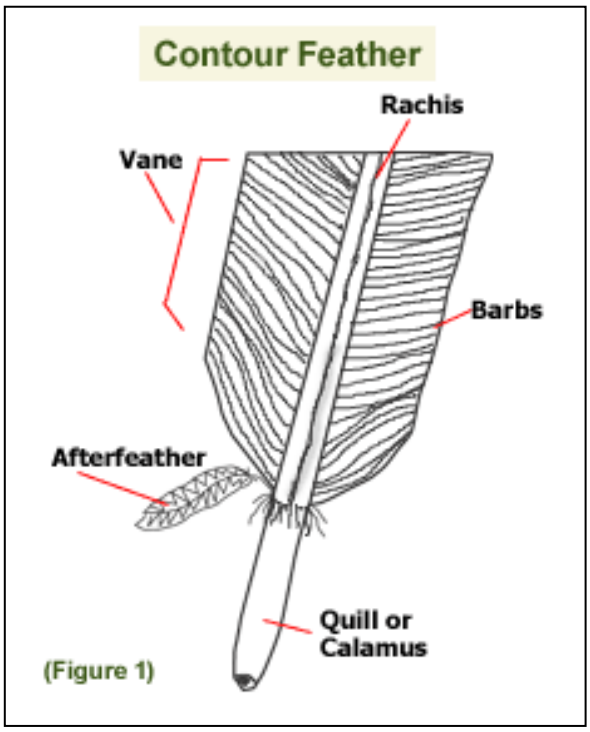
In general it may be said that there're three kinds of moulters in the birds hatched during the usual spring season: early, medium and late.

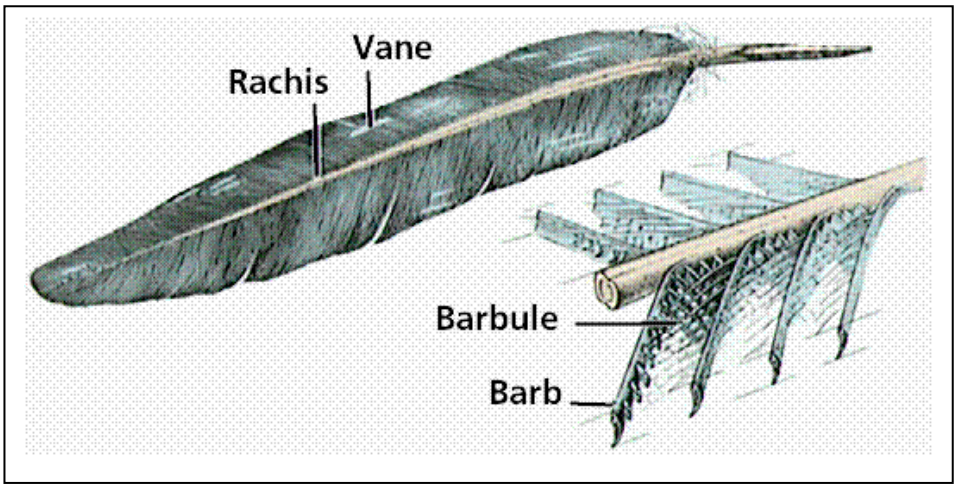
1. *Early moulter.* The bird ceasing to lay in June, July or early August, shows that she has a short laying period, that she probably started late and lacks the vitality, laying capacity, or inherited tendency to discontinue. The early moulter sheds and grows feathers so slowly that a person may not observe the process unless the bird is handled. She rarely completes her moult in less than 3 or 4 months. She then rests for a short time and frequently does not get back into production for some time. In brief, she takes a longer vacation and that type of bird should be culled from the flock.

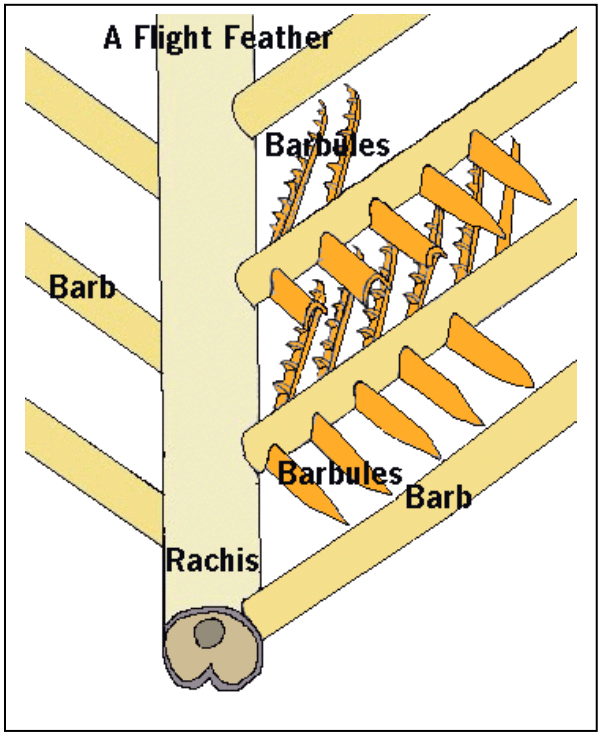
2. *Medium Moulter.* Birds moulting late August or September are termed medium moulters. If artificial illumination is to be used, birds moulting in September may be separated, allowed to recover under favorable conditions for renewing their plumage and recovering their body weight, and placed under lights in October. If after about 4 weeks of non-laying the birds are to be kept for another year they may culled.

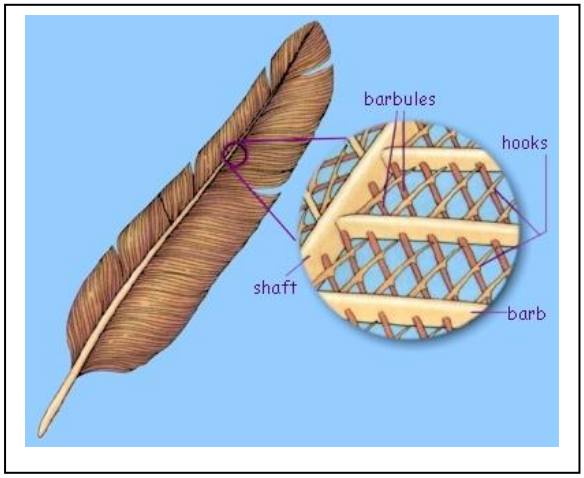
3. Late moulter. A hen moulting in October or later is termed a late moulter. The Feathers are dropped rapidly, and in short time the plumage appears rough. There're may be a few old feathers clinging to the bird, and her body will soon be covered with pin feathers. Hens are rarely seen during July or August in these ragged conditions. While moulting, the late moulter is quite nervous and dislikes to be handled. This is due to active circulation and sensitive nerve development in the feather follicles while new plumage is being grown. At this time the slightest touch hurts the bird.

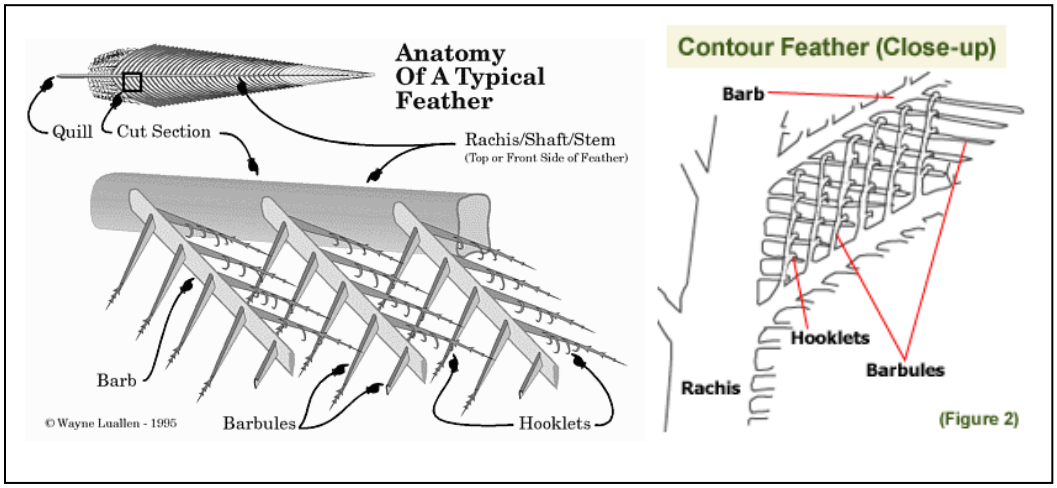
The feathers grow in rapidly, as soon as the moult is over and most of the birds are back in production. Such a moult indicates that the bird has high vitality and therefore usually is a superior producer.

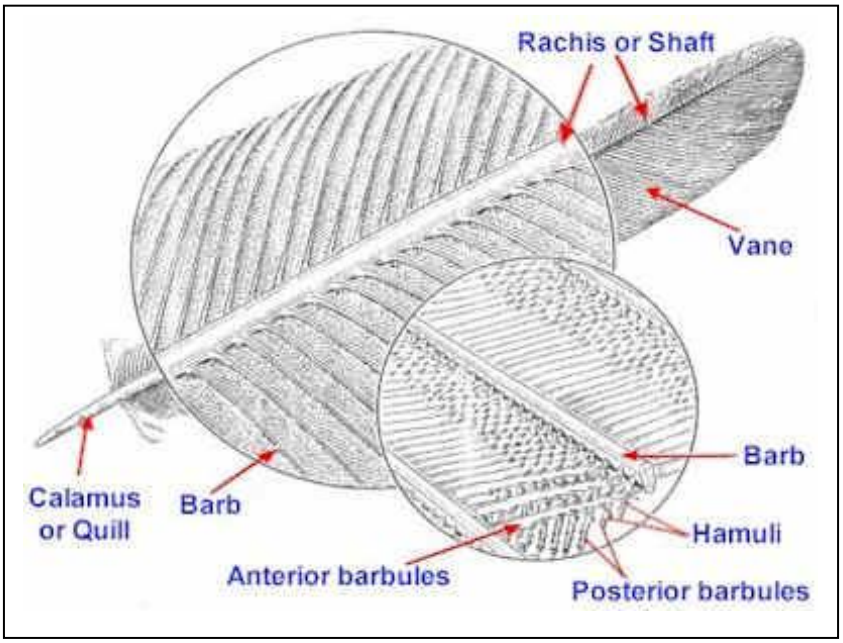





A Flight Feather
Barbules
Barb
Barbules
Barb
Rachis


barbules
hooks
shaft
barb


Anatomy
Of A Typical
Feather
Quill
Cut Section
Rachis/Shaft/Stem
(Top or Front Side of Feather)
Barb
Barbules
Hooklets
© Wayne Luallen - 1995
Contour Feather (Close-up)
Barb
Hooklets
Barbules
Rachis
(Figure 2)


Rachis or Shaft
Vane
Barb
Calamus
or Quill
Barb
Hamuli
Anterior barbules
Posterior barbules