

TYPES OF FEATHERS

The body of pigeon is covered with different types of feathers, which together constitute the plumage. The feathers are modified reptilian scales. In Carinatae (the flying birds) the feathers are arranged in definite rows called pterylae, which remain separated by featherless interspaces called Apteria.

Categorization : Based on structure, functions and location on the body, feathers are categorized into four different types - Quill feathers, Contour feathers and Filoplumes. In nestlings, a special type of feathers called down feathers are found.



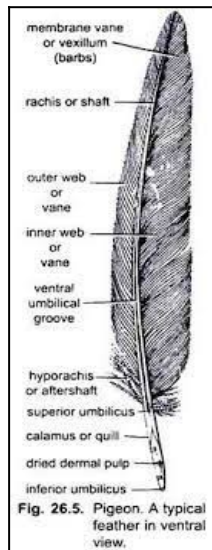
1. Quill Feathers

Quills are typical flight feathers.

- It consists of a supporting central axis and an expanded, blade-like portion called vane or vexillum. The axis has two regions - the proximal calamus and the distal rachis.
 - Calamus or quill is the swollen, hollow part, the basal end of which is inserted into the epidermal follicle of the skin. At the tip of the quill is a small opening called inferior umbilicus through which blood vessels enter the cavity of the developing feather. At the junction of the quill with the rachis is another small opening called the superior umbilicus. A small tuft of soft hair-like processes called the after-shaft or hyporachis is found around the superior umbilicus.
 - Rachis or shaft is the solid, long axis of the vane. A longitudinal furrow, the umbilical groove, runs along the inner surface of the rachis. The vane is the expanded membranous part of the feather on the two sides of the rachis. The vane is formed by an array of numerous parallel, closely packed hair-like structures called barbs. Each barb in its turn bears a double row of many delicate filaments called barbules. The barbules directed towards the base of the feather are called the proximal barbules and those

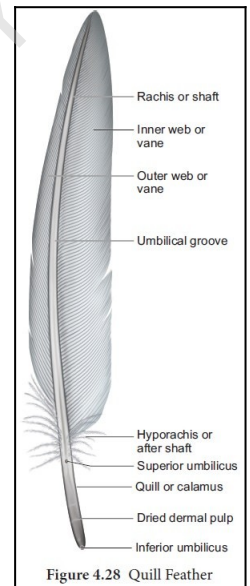
directed towards the tip of the feather are the distal barbules. The distal barbules of each barb possess a row of hooklets called barbicels, which interlock with the grooves of the proximal barbules of the adjacent barb. Such an arrangement of barbs and barbules make the vane a firm, wide and continuous surface that is ideal for striking the air during flight.

Unusual stretching can disrupt the interlocking of the barbs and barbules. However, birds can repair such damaged feathers by preening with the beak.



Quill feathers are of three types - remiges, rectrices and coverts.

Remiges (wing quills) are flight feathers of wings. Their inner and outer halves of the vane are unequal in width. In pigeon, there are 23 remiges in each wing. Of these 11 are attached to the hand and are called primaries. The remaining 12 are attached to the fore-arm and are called Secondaries. Rectrices (tail quills) are arranged like a fan on the uropygium. In rectrices both halves of the vane are equal sized. The rectrices serve as a brake and in steering the flight.



Coverts are small quill feathers found around the bases of rectrices and remiges. Accordingly they are called wing coverts and tail coverts. They cover the intervening spaces between flight feathers and thereby provide a continuous area for flight.

2. Contour Feathers

Contour feathers cover the body and provide a shape or contour for the body. They resemble the typical quill feather but smaller in size. They have a central axis and a vane. They are woolly feathers with weak barbules and hence have poorly developed interlocking mechanism. Their barbs are easily separable.

3. Filoplumes

Filoplumes are small, delicate and bristlelike or hairlike feathers, which are sparsely distributed over the body. They occur on the undersides of the body, beneath the contour feathers. Each filoplume consists of a short calamus and a slender and long rachis. At the free tip

of the rachis may be a few weak barbs and barbules. The filoplumes may probably help keep the other feathers in their place

4. Down Feathers

Down feathers are feathers of the nestling. They are small, soft, woolly feathers without a rachis. Each down feather has a hollow calamus with a tuft on free barbs at the tip. The barbs are long and with short barbules. Barbicels are absent. The free barbs and barbules allow the down feather to trap much air providing an excellent thermal insulation.

