CHAPTER IV

LOCOMOTION

INTRODUCTION:

In the avian evolution, since late Cretaceous times, new forms have occurred continuously. With the extinction of giant reptiles, evolution of new plant-forms and emergence of new land masses, birds gained a chance to occupy variety of new habitats. The development of fore limbs as flight organs enabled them to migrate for longer distances. With that the fore limb, in birds, has become useless for terrestrial locomotion. The problem of locomotion on land has been solved by bipedilism which is the great achievement of birds in their locomotory manoeuvring.

For terrestrial locomotion, various types of adaptations are found among birds. Cursorial, graviportal, walking, hopping, climbing, wading and perching adaptations are observed in different terrestrial groups of birds. The partridges and quails are known for their running and fighting habits. The systematic studies in these fields are not carried out with the birds from family Phasianidae. Dharmkumarsinhji (1955), and Ali and Ripley (1969) have described the ground living habits of these birds in their books.
The species characteristic movements are more or less stereotyped. Such movements are quite complicated and involve the use of many muscle groups. In this, the instinctive behavior can be analysed (Lorenz, 1950, Tinbergen, 1942, 1951). The variability in the pattern of muscular contraction is found.

Fights are found among animals which involve various organs. Usually the fighting animals belong to the same sex; and as a rule they are the males. Though members of the many species live together peacefully, during breeding seasons intraspecies fighting occurs.

Feeding, locomotor and other organs are used during fights but all these organs have not been developed primarily for fighting purposes, but they show additional specialisations used in fighting like sharp spurs of the domestic cock.

MATERIAL AND METHODS:

The healthy adult birds were obtained from the local suppliers and locomotion of caged birds was observed. To understand the various positions of the leg elements during locomotion, the feathers were removed from the leg and both the extremities of thigh and shank were marked with the spots of Indian ink. Different gaits were photographed at 24 frames per second (8 mm. film) using a motion picture camera (Cannon) in the laboratory. The cinematographic
studies were carried out mainly to understand the movement of the limb segment which is correlated with the muscle action.

The field studies were also carried out along with the field observations of feeding behavior.

OBSERVATIONS:

The Partridges and Quails:

The partridges and quails are ground living birds. They are very fast on their legs. They fly for the shorter distances when hard pressed and after a short flight these birds continue to run from bush to bush. When they shift from one feeding ground to another, they walk with the moderate gait in more or less single file. Quails are remarkable for their silent motion though it is swift.

At night they roost on trees and hedges. Some forms are noted for their ground roosting habits.

The cocks of some species are very pugnaceous in breeding season. Some use spur during the fight.

F. pondicerianus:

These birds are found in family parties. They run very quickly and loth to take wings unless hard pressed (Ali and Ripley, 1969). It is very hard to chase them. On chasing they run in zigzag way. At night they roost on
The males are very pugnaceous. In India they are favourite cage-birds. They are kept for the fighting and large bets can be won or lost over them. The following is the description of the fighting sequences of tamed cocks.

For fighting, two cocks (mostly belonging to different masters) are made free from their cages and being initiated for fighting by their masters. The cocks, during fight, with the erect stance attack each other. In the beginning they peck each other on the body but later they hold the beaks among themselves. Such 'beak-into-beak' pecking is very common. One cock may try to escape but does not leave the battle and both try to jump on each other. The weaker may still try to escape but the master will induce it to continue the fighting. In natural conditions the submissive cock may flee away or may accept the next rank in the social order. On inducing, once more, the cocks try to jump on the top of the opponents and the dominant may injure the rival with its sharp spurs. The aggressive cock is observed to attend the lateral stance or circling with fairly straight legs and erect body. Flapping of the wings during fight is very common. However, the submissive cock leaves the arena and does not get induced more though the master tries to do so.

During the act of fight, the aggressive pecking, jumping and erect stance are noteworthy. Fighting involves
both feeding and locomotory apparatus.

F. pictus:

They are met within the family parties and leave the covers in mornings and evenings while rest and roost under thick bushes on the branches or on the ground. They are partial to zizyphus and calycopteris undergrowths.

The standing stance and the walk are quite identical to the domestic cock. While running, F. pictus carries its tail partly cocked and keeps the anterior end of the body slightly down towards the ground unlike F. pondicerianus and tilts the body on the opposite side of the lifted leg. F. pictus does not run from bush to bush unlike F. pondicerianus when approached (Abdulali, 1964).

Fight between the rivals is not known in this species, on the contrary the males are very often found living together (as many as 15 birds – Dharkumarsinhji) under the same bush. The males prefer one area at one time and females another, though it is difficult to imagine why it should be (Abdulali, 1964).

Perdicula species:

The two species of Perdicula genus - P. argoondah and P. asiatica resemble each other in their locomotion. When trodden the covey suddenly explodes with a great whirr of wings and dispersing in all the directions and drop in
undergrowth after a short flight and the covey soon reunites with the aid of soft whistling rally calls (Ali and Ripley, 1969). These little bustling ground birds prefer grass-cover and scratch the soil with the claws.

At the beginning of the nesting season these birds break up into pairs. The males are extremely pugnaceous and fight with an energy. In many parts of India they are kept for fighting purposes. \textit{P. asiatica} fight with even greater rancour and with more clamour, than \textit{P. argoondah}. It has been said that \textit{P. asiatica} fights with an energy and persistance in excess of most game birds.

\textit{G. coturnix coturnix}:

It is usually found in pairs and prefers dry cultivation. Its gait resembles with that of \textit{Perdicula}. The bird rises vertically for a few feet with the typically partridge whirr of wings when flushed, and flying low on rapidly vibrating wings straight and fast for a couple of hundred meters before dropping into the crops again (Ali and Ripley, 1969). Fighting is observed also in these birds. They are much prized in West Pakistan and North India as fighting birds.

It is partly resident and partly winter visitor. They travel during night (Ali and Ripley, 1969). Thus it has got good power of flight.
C. coromandelica:

Their habits resemble with the habits of C. c. coturnix. They are more or less restricted to Indian sub-region unlike C. c. coturnix but local migrations during night are not uncommon. Their fleshy grey legs turns pink in the breeding seasons.

The fighting cocks of this species are better rated than C. c. coturnix.