TAXONOMY AND HABITS OF PIGEONS

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THE taxonomic groupings of the species of pigeons and doves are based primarily on structural characters. Classifications differ in the rank assigned to these characters. In the last fifty years the ranking has fluctuated between extremes. Thus, Salvadori (1893) divides the order Columbae into the suborders Columbae and Didi. W. L. Sclater (1930) reduces these suborders to family rank, Columbidae and Raphidae. Salvadori recognizes five families within his suborder Columbae: Treronidae (fruit pigeons), Columbidae ('true' pigeons), Peristeridae ('ground doves'), Gouridae (crowned pigeons), and Didunculidae (tooth-billed pigeon). Sclater, dealing with African birds only, embraces the first three in his family Columbidae, which carries the implication that he must include therein also Salvadori's Gouridae and Didunculidae. He does not even accord Salvadori's families the rank of subfamilies. Peters's (1937) classification follows Sclater's scheme of two families: Raphidae and Columbidae, but divides the latter into four subfamilies: Treroninae, Columbinae, Gourinae, and Didunculinae. Within the Columbinae, Peters's order of listing is virtually that of Salvadori's families Treronidae, Columbidae, Peristeridae, Gouridae, Didunculidae, and I might add, of Salvadori's subfamilies as well. The taxonomic pendulum alternately swinging from lumping to splitting of genera will perhaps in time prove to be a cultural phenomenon of the same order as the alternations in dress fashions (cf. Richardson and Kroeber, 1940).

Best suited for this discussion is the hierarchical grouping set forth by Salvadori. Naturally, I am concerned only with his suborder Columbae, which he divides into five families: Treronidae, Columbidae, Peristeridae, Gouridae, and Didunculidae. I have never kept members of Gouridae nor of Didunculidae. I have had a few Treronidae, but never bred them. The ensuing remarks concern some of the characteristic actions of the living birds and the extent to which these actions coincide with the taxonomic groupings. On the whole there is some degree of correlation between Salvadori's groupings and the actions of the living birds. The following brief notes on characteristic actions of certain pigeons and doves are based on observations of individuals of a number of species, which the writer has kept as aviary inmates at various times over a considerable number of years.

SUBORDER COLUMBAE

Certain activities of pigeons are well known and serve to distinguish them as one of the best-marked major groups of birds. Such are: (1) feeding the young by regurgitation; (2) drinking by immersing the bill and sucking in the water, often at a single draught; (3) division of incubation duties, males sitting during the day, females during the night; (4) monogamy and mating for life.

A high degree of 'paternal instinct' is manifested in the feeding and care of the young. In some individual pairs, at least, I have observed only the males feeding the young after they have left the nest. Indeed, I have observed female *Chalcophaps indica* and *Oena capensis* fly away from pleading young and leave them to the male parents to feed. Contrariwise, I have seen a hen *Macropygia unchall,* that had laid only infertile eggs, repeatedly feed a young *Tympanistria tympanistria.* Consequently, what I refer to as 'paternal instinct' is a tendency rather than a hard and fast rule.

The duration of family life in which parents and offspring form a social unit is brief and is usually terminated when the young have molted partially from juvenal into adult plumage. After that, adults and young ignore one another, or the young are driven away when coming too close to the adults. Sometimes the young may drive the parents away. The reciprocal attitude of parents and young becomes that of unrelated birds. While the young are still in juvenal plumage, it is a common thing for them to perch with the parents, often between the parents. Frequently the parents show marked solicitude, preening the squabs' head-feathers, just as they frequently do one another's. Sometimes doves of other species show similar interest in strange squabs.

In an aviary with permanent boxes for nesting, recognition and defense of property rights prevail during nesting only. Once the young leave the nest, the parents cease to drive intruders from its vicinity.

Most doves and pigeons that I have kept are enthusiastic bathers, especially when first rains come after a long dry spell. They lie on the side with one wing raised, so as to allow the drops to strike under the wing. They will do the same thing when spray is supplied with a hose. They are equally ardent sun-bathers, lying belly down with tail and one wing spread against the ground, or lying on the side with the upper wing partly spread.

Duration of incubation is somewhat variable. For the family Gouridae it is four weeks, for the subfamily Caloenadinae it is

three weeks, for the genus *Columba* about sixteen days, for the Peristeridae two weeks.

FAMILY TRERONIDAE

To live indefinitely in captivity, fruit pigeons require soft food. They can be induced to partake of seed by mixing it with the soft food and gradually increasing the quantity until they are entirely on a seed diet. On such a seed diet, however, they do not thrive and usually die after a year or two.

One of their most conspicuous characteristics is grasping with the toes; some species are almost parrot-like in their ability to hold themselves upside down or in a vertical position, whence the German characterization of Papagei-tauben. Grasping with the toes is also a characteristic of squabs of all species of the families Columbidae and Peristeridae and is particularly manifested when one lifts a squab from a nest. It would seem almost that this is an infantile pigeon characteristic that is held over in adult life in the family Treronidae.

FAMILY COLUMBIDAE

Subfamily Columbinae.—Next to the Treronidae, these pigeons grasp with their toes to greatest extent and are most arboreal or perching in their habits. There seems insufficient differentiation in the habits of the various species of *Columba* to warrant elevating the several subgenera to generic rank as was done by Ridgway (1916).

All Columbinae which I have kept partook of seed readily.

Subfamily Macropygiinae.—Experience with this subfamily is limited to three species: *Macropygia unchall, M. tenuirostris,* and *M. rufa.* They are very long-tailed, short-legged birds, which, in their preference for perching, substantiate Salvadori's placing them next to the Columbinae, rather than next to the genus *Geopelia* of the family Peristeridae, where Baker (1913, 3: 237, 252) puts them.

On the ground they are clumsy, for their short legs and long tails militate against an easy gait. Often the long tail is carried slightly elevated, apparently to avoid dragging on the ground. In cooing to the hen, the cock expands his crop region extensively so that it touches the ground. He bows slightly, raises and lowers the front of his body slowly. His tail is kept horizontal and slightly spread. Their actions suggest that they belong with the Columbidae rather that with the Peristeridae.

FAMILY PERISTERIDAE

The wide variation in behavior in this family seems to warrant grouping into subfamilies, although within certain of these the behavior is not so uniform as might be expected. All that I am acquainted with feed one another just prior to coition.

Subfamily Zenaidinae.—This American group is quite homogeneous. The males of the species that I have kept make conspicuous display of the iridescent neck and crop regions when cooing. The expansion of these parts gives prominence to the brilliant coloring.

Subfamily Turturinae.—This Old World group is another homogeneous one in habits. In paying his addresses to the hen, the cock points his bill somewhat downward, expands his throat, and bows rapidly and repeatedly, sometimes taking a few steps toward her if she moves away. The tail is only slightly expanded if at all, and is not elevated above the normal level.

Subfamily Geopeliinae.—The genus *Geopelia* is Asiatic, Malaysian, and Australian in distribution, while *Scardafella* is American.

Gymnopelia erythrothorax, the single species of a monotypic genus, put by Salvadori in this subfamily, has been placed now in the genus *Metriopelia* under the name of *Metriopelia ceciliae* (Peters, 3: 102). That it does not belong in the subfamily Geopeliinae is apparent from its short tail and different behavior. That it belongs with the other *Metriopeliae* from the standpoint of habits, I am unprepared to say, as I have never kept other *Metriopeliae.* In appearance and actions *Gymnopelia erythrothorax* is very different from *Geopelia* and *Scardafella.* It runs as rapidly as a quail on the ground, suggesting *Lophophaps* in this respect. In cooing it does not spread and elevate the tail to a nearly vertical position as do the *Geopeliae.* (Incidentally, *Stictopelia cuneata* certainly agrees with the genus *Geopelia* in this respect.) In perching and cooing *Gymnopelia* raises and lowers the tail slightly without spreading it. Indeed, in the mating season it keeps its tail in motion like a pipit. In doing this the tail is not moved far from a horizontal position. This behavior is different from anything I have seen in *Geopelia.* I think its removal from Geopeliinae is warranted on the basis of actions. Except for *humeralis* which has a cuckoo-like call, the species of *Geopelia* have a croaking, more or less frog-like *coo.*

Subfamily Peristerinae.—This American group comprises several genera, of which I have experience only with *Chamaepelia* (*Columbigallina*), *Claravis,* and the afore-mentioned *Metriopelia ceciliae.*

Chamaepeliae have one very characteristic action, the rapid twitching of one wing by the male, when he is paying his address to the hen.

This takes place either when sitting on a perch beside her or when cooing to her. This is least noticeable in *C. cruziana,* but very characteristic of *C. passerina, C. minuta,* and *C. talpacoti. C. cruziana* has at times been placed in a monotypic genus, *Eupelia* (Ridgway, 1916: 282). Unlike other *Chamaepeliae,* it has a call that is so like the croaking of a frog as to be mistaken for such if the bird is not visible.

Claravis pretiosa has two noticeably distinctive acts. When alighting, the head is darted forward, then quickly pulled back to normal position. In cooing to the hen, the cock lifts his feet very high and puts them down slowly.

Subfamily Phabinae.—This Old World group is African, Asiatic, Malaysian, and Australian in distribution. It is divided taxonomically into two groups, distinguished by presence or absence of a pair of dark transverse bars on the rump. In the first are the African genera *Oena, Tympanistria,* and *Chalcopelia* (now *Turtur*), and the Asiatic-Australian genus *Chalcophaps.* From the standpoint of actions these should be distinct genera without a doubt.

Oena capensis is a very long-tailed dove, quite butterfly-like in its aërial activities, one of which is a hovering, descending flight with tail spread on the part of the male when disporting before the female. When alighting, both sexes raise and lower the tail. In cooing to the hen, the cock lowers his head, elevates his tail without spreading it, and moves both wings slightly and rhythmically at the rate of about one hundred times a minute.

Tympanistria tympanistria, the Tambourine Dove, is rightly named for its call, which is produced while the male stands perfectly still with the sides of the throat much expanded and palpitating rhythmically as he pipes his call. Sometimes, in displaying to the hen, the cock elevates his unspread tail slightly. There is no bowing motion as with the Turturinae.

Chalcophaps is as distinctive as *Oena* in its mating activities. The display of the cock to the hen can best be described as a ridiculously slow jumping-jack movement in which the cock raises and lowers himself vertically several times beside the hen before mounting her.

Of the second division of the Phabinae, I have kept only *Phaps, Lophophaps, Ocyphaps, Geophaps,* and *Henicophaps.* Unfortunately the last was represented by females only.

The two species of *Phaps* have a very brilliant display, the male spreading wings and tail in a partially vertical position, so that the iridescent coloring on the wings shows to advantage. At the same

time he makes a sort of waddling motion from side to side or he may take a few jumping steps forward toward the hen. Similarity of activities justifies placing these two species in one genus, rather than in two as Mathews (1913: 18) has done.

Monotypic *Ocyphaps* and *Lophophaps,* the latter solely terrestrial in habits and a very fast runner, both have a rapid, dancing, jumping-jack mating display with tail elevated and spread against the partially opened wings, resulting in the iridescent speculum of the wings showing brightly. This 'dance' is much more rapid than the slow jumping-jack movement of *Chalcophaps.* It is accompanied by a marked brightening of the iris. In flying, *Ocyphaps* has whistling wings, and flips its tail up, then down, when alighting.

Subfamily Geotrygoninae.—Quail-dove and Partridge Pigeon are terms which correctly express the galline appearance of these birds with their long legs, short tail, striding gait, and bobbing tails. *Otidiphaps* is quite pheasant-like in walk and actions; the others are quail-like.

When frightened, *Geotrygon, Phlogoenas* (except *Terricolumba*), and *Leucosarcia* have the habit of putting the breast against the ground, often in a corner and elevating the tail so high that the under tail-coverts are toward the observer. The group of *Phlogoenas* or *Gallicolumba,* which Hachisuka (1931) has separated as the new genus *Terricolumba,* lacks this habit. However, it possesses distinctive positive habits, viz., a barking call and a disheveled, loose-winged appearance when courting or fighting. It would seem that the separation is made on good grounds so far as habits are concerned.

Hachisuka's delimited genus *Gallicolumba* (formerly part of *Phlogoenas*) embraces the so-called Bleeding-hearts (*G. luzonica, G. crinigera, G. rufigula,* etc.), birds that are characterized by a carmine, orange, or yellow patch in the center of the breast. Besides the tail-elevation when frightened, other very distinctive acts of these birds are: nodding while walking, and throwing the head back and expanding the breast when cooing, so that the colored spot shows to greatest advantage, an act apparently comparable in purpose to the wing-spreading in *Phaps, Ocyphaps,* and *Lophophaps* to display the speculum and iridescence.

I have observed in both *Geotrygon montana* and *Gallicolumba rufigula* the habit of raising both wings high above the back while standing, or while sitting in the nest. This is part of the courtship, males doing it more frequently and raising the wings higher than females. It is done when the mates are apart. Another habit of these two species, and probably of others of these genera, is stamp-

ing hard on the ground by the males when courting. This is evidently analogous to the high stepping of *Claravis pretiosa* mentioned above.

Starnoenas has the curious habit of stopping short with head up when walking, then in a few seconds gradually lowering the head and resuming its walk.

Mealworms and earthworms are especially relished by *Gallicolumba, Geotrygon, Starnoenas,* and *Otidiphaps.* Also my *Phaps chalcoptera* hunt earthworms whenever damp ground is spaded for them. One day I observed a male *Geotrygon montana* attempting to swallow a newly hatched but dead *Chamaepelia* squab which lay on the ground. Evidently animal food must form a considerable part of the diets of the Geotrygoninae in their native habitats.

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