

PIGEONS AND DOVES

Order COLUMBIFORMES

Vol. I., p. 6; Vol. II., p. 10.

IN the Malay Peninsula, as a whole, about twenty species of pigeons and doves are found. Three of these are represented by geographical races, or subspecies, not found elsewhere, but closely allied races inhabit other parts of Indo-China or Malaysia. As in the case of the game birds, these peculiar forms are confined to the high mountains.

The following brief characters will serve to define the order as represented in Malaya :

Bill, with a swollen hard tip and a soft basal portion (the cere) on which the nostrils, which are covered with an operculum, open. Legs, covered with hexagonal scales, generally feathered on the upper part; toes, always four, on the same level, the soles in some species much broadened. Tail feathers, varying in number from twelve to twenty. Plumage, always thick, the shafts of the body feathers much broadened.

Monogamous in habit, pairing for a season, or possibly, in some cases, for life. Nest very simple, consisting of a few small sticks, loosely placed together in a tree or shrub. Eggs, one or two to the clutch, white, or occasionally slightly tinted, and usually glossy in texture. Young hatched naked, remaining in the nest for a long time and fed by the parents with a partially digested regurgitated secretion from the crop. Entirely vegetarian, feeding on seeds or fruits, which are sometimes swallowed whole, and of extraordinary size for the bird.

The order is cosmopolitan in its distribution, occurring everywhere, with the exception of the circumpolar regions. Over six hundred species and subspecies have been described.

Several species of small green fruit-pigeons are very common in the lowlands of the Peninsula, where they are collectively known as "punai" and are favourite sporting birds. At higher levels, with the exception of the big fruit-pigeon, *Ducula badia*, whose deep booming note is often heard, members of this order are not particularly abundant in individuals, or perhaps escape notice owing to the thickness of the vegetation; species, however, remain fairly numerous. Three families of the order are often recognized, all of which have Malayan representatives—viz. *Treronidæ*, or fruit-pigeons, birds of arboreal habit, with the soles broadened and the plumage usually of bright colours;

Columbidæ, in which the soles are normal, the tail of twelve feathers, and the plumage duller but with metallic gloss; and the *Peristeridæ*, in which the tarsus is longer than in the other families.

The Burmese Red Turtle Dove (*Enopopelia tranquebarica humilis*) breeds in Perak, but the local stock seems to have been introduced. The species will be described in detail in the next volume of this work.

KEY TO THE MALAYAN SPECIES OF PIGEONS

I	{	Large birds with the wing more than 8.25 in. in length	2
		Smaller birds, wing never 8.25 in. in length	6
2	{	With elongated hackles on the hind neck	<i>Calenas nicobarica nicobarica</i> , p. 64
		Feathers on hind neck not elongated	3
3	{	General colour above, maroon	4
		General colour above, not maroon	5
4	{	Tail with apical grey band	<i>Ducula badia badia</i> , p. 51
		Tail black	<i>Columba punicea</i> , p. 56
5	{	General colour ivory-white; wings and tail black	<i>Myristicivora bicolor bicolor</i> , p. 53
		General colour grey; wings and tail black	<i>Columba argentina</i> , p. 55
		General colour above, metallic green	<i>Ducula ænea ænea</i> , p. 50
6	{	Always with metallic green in the plumage	<i>Chalcophaps indica indica</i> , p. 63
		Always with non-metallic green in the plumage	7
		With no conspicuous green in the plumage: general colour brownish	18
7	{	Tail graduated	8
		Tail square	9
8	{	Abdomen yellow	<i>Sphenurus sphenurus robinsoni</i> , p. 38
		Abdomen white	<i>Sphenurus seimundi seimundi</i> , p. 36
9	{	Top of head and chin magenta	<i>Ptilinopus jambu</i> , p. 49
		With no magenta in plumage	10
10	{	Wing exceeding 7 in. in length	<i>Butorion capellei capellei</i> , p. 39
		Wing less than 7 in.	11
11	{	Bill, thick; swollen towards tip	<i>Treron c. curvirostra</i> and <i>T. c. nipalensis</i> , p. 40
		Bill, slender; not markedly swollen towards tip	12

12	{	Wing less than 5 in. in length . . .	<i>Treron olax olax</i> , p. 47
	{	Wing more than 5 in.	13
13	{	Upper parts largely chestnut or maroon	<i>Treron fulvicollis fulvicollis</i> (male), p. 43
	{	Upper parts mostly green	14
14	{	An orange patch on the breast	15
	{	No orange patch on the breast	16
15	{	Throat grey	<i>Treron vernans abbotti</i> (male), p. 44
	{	Throat green	<i>Treron bicincta prætermissa</i> (male), p. 46
16	{	Top of the head grey	<i>Treron f. fulvicollis</i> (female), p. 43
	{	Top of the head green	17
17	{	Grey band at tip of under side of tail more than $\frac{1}{2}$ in. in width	<i>Treron bicincta prætermissa</i> (female), p. 46
	{	Grey band on under side of tail merely a narrow edging	<i>Treron vernans abbotti</i> (female), p. 44
18	{	Feathers of hind neck bifurcate and chequered black and white	<i>Streptopelia chinensis tigrina</i> , p. 60
	{	Feathers of hind neck normal	19
19	{	Outer tail feathers broadly tipped with white	<i>Geopelia striata striata</i> , p. 61
	{	Outer tail feathers not tipped with white	20
20	{	Outer tail feathers grey	<i>Macropygia unchall unchall</i> , p. 57
	{	Outer tail feathers rufous	<i>Macropygia ruficeps malayana</i> , p. 59

Sphenurus seimundi seimundi

Seimund's Pintail Green Pigeon

Vol. II., p. 12.

Sphenocercus sp., Robinson, *Journ. Fed. Malay States Mus.*, ii., 1909, p. 168.

Sphenocercus seimundi, Robinson, *Bull. Brit. Orn. Club*, xxv., 1910, p. 98 (Semangko Pass, Selangor-Pahang boundary); Robinson and Kloss, *Ibis*, 1910, p. 672, pl. x.; Robinson, *Journ. Fed. Malay States Mus.*, v., 1914, p. 25 (Gunong Kerbau).

Malay Name.—Punai gunong.

Description.—Tail feathers much graduated, centre pair much elongated and pointed; bill very stout; region between cere and eye, naked.

Adult male.—General colour, green above, tinged with ochraceous on forehead, brighter on rump; a flush of dove-grey on the mantle; angle of wing, black, the lesser inner coverts, maroon, the outer and greater wing coverts, black, the latter edged with pale yellow towards the tips, forming a double bar on the wing, with similar edges to the secondaries. Primaries and secondaries, slaty black, the primaries, except the first and the innermost,

finely beaded on the outer web, with yellowish white; inner aspect of wing, pale slate, the axillaries and under wing coverts, darker slate. Middle pair of tail feathers, uniform slate, gradually darkening to the tips, remainder, slate, lower aspect, blackish, with pale slate tips. Beneath, throat and breast as the back; sides of the neck with a patch of pinkish ochraceous connected with a flush of the same colour on the breast; lower abdomen, *pure white*, the flanks and sides of the vent and thighs, dark green, with broad bright yellow tips; under tail coverts, bright yellow, dark olive-green at the extreme base, and with narrow green shaft stripes.

Adult female.—Like the male, but the tail shorter, a darker green above; no maroon shoulder patch or pinkish ochraceous neck patches; under tail coverts with the dark green centres much more extensive, carried down as wedges, nearly to the tips of the feathers.

Soft Parts.—Iris, outer ring, pink, inner, heliotrope; tip of bill, greenish-lead, the remainder, the cere and the orbital skin, purplish-cobalt, darker above the eye; feet, crimson-lake; claws, lead-colour.

Dimensions.—Total length, about 11.5 in.; wing, *male*, 5.9 to 6.2 in.; *female*, 5.9 to 6.1 in.; tail, *male*, 6 to 6.5 in.; *female*, 5.5 to 5.8 in.; tarsus, 0.7 in.; bill from gape, 1 to 1.05 in.; culmen, 0.85 in.

Range in the Malay Peninsula.—The mountains of the main range from Gunong Kerbau, Perak, to the Semangko Pass, Selangor, also on one occasion on Pulau Rumbia, one of the Sembilan Islands, off the Perak river estuary, and once at Tanjong Katak in the Dindings.

Extralimital Range.—The bird described is possibly indigenous to the Malay Peninsula. A recently described form from the mountains of Annam, *Sphenurus seimundi modestus*, is, however, very closely allied, differing only in the rather lighter colour above, and the absence of the pinkish ochraceous patches on the sides of the neck.

Nidification.—Unknown.

Habits.—We know extremely little of the habits of this handsome green pigeon, which has been obtained only at four localities. At the Semangko Pass it is occasionally not uncommon, flying across the valley from one hill to another usually at a very great height, so that it is generally impossible to obtain specimens. Our Dyak collectors found it not rare on Gunong Kerbau, at a height of between 4500 and 5000 ft., and obtained a small series from high trees on which they were feeding. Curiously enough, the first specimen ever obtained was secured from amongst a flight of *Treron vernans*, on a small island some miles out to sea. Possibly, like the mountain imperial pigeon, the species also resorts to the sea at certain seasons. A female taken at Bangkok, Siam, in January 1932, cannot be distinguished from Malayan females, but it may, of course, belong to the northern subspecies, *S. seimundi modestus*.

*Sphenurus sphenurus robinsoni***The Malayan Wedge-tailed Green Pigeon**

Vol. II., p. 14.

Sphenocercus robinsoni, Ogilvie-Grant, *Bull. Brit. Orn. Club*, xix., 1906, p. 12 (Gunong Tahan); id. *Journ. Fed. Malay States Mus.*, iii., 1908, p. 53; Robinson, *Journ. Fed. Malay States Mus.*, ii., 1909, p. 168.

Malay Name.—Punai bukit.

Description.—Tail, wedge-shaped, the middle feathers not specially elongated or pointed; space between cere and eye feathered.

Adult male.—Head, light yellowish green; mantle, washed with grey; back, scapulars, rump and upper tail coverts, darker olive-green; angle and inner margin of wing and scapulars, dark maroon. Primaries and secondaries, slaty black, very faintly edged with whitish, but with no conspicuous bars of yellow on the wing; inner aspect of wing, grey, the third primary conspicuously scooped on the inner web; axillaries and under wing coverts, darker grey. Tail feathers, bronzy olive-green, all but the centre pair with a broad sub-terminal black band viewed from above; inferior aspect blackish, with a paler grey tip. Beneath, olive-green, more yellow on the middle of the abdomen; the flanks and thighs dark green, with pale yellow edges to the feathers; under tail coverts reaching the tips of the tail feathers, the lateral ones with dark green centres and pale yellow edges, the larger ones pale cinnamon towards the base, pale primrose-yellow towards the tips, and at the edges usually with a dark green stripe along the shaft.

Adult female.—Like the male, but rather lighter above, with no flush of grey on the mantle or maroon on the scapulars, or shoulders. Primaries more brownish, under tail coverts with heavier green centres and no cinnamon tint on the longest feathers.

Immature male.—The maroon on the shoulders and the cinnamon on the under tail coverts reduced.

Immature female.—Indications of pale yellow fringes to the feathers of the upper parts; median and greater wing coverts with pale yellow edges, forming a distinct double bar on the wing.

Soft Parts.—Iris, pale blue, the outer ring, pink; bill, purplish mauve, greenish horn at tip; feet, lake; soles, yellowish.

Dimensions.—Total length, about 12 in.; wing, 6.5 in.; tail, 4.7 to 5 in.; tarsus, 0.9 in.; bill from gape, 0.9 to 1 in.; culmen, 0.7 in. Females slightly smaller, with a shorter tail.

Range in the Malay Peninsula.—Mountains of Perak, Selangor and Pahang.

Extralimital Range.—Confined to the Malay Peninsula. Related to forms from Sumatra and Java, and more remotely to races from the Himalayas and French Indo-China.

Nidification.—Unknown.

Habits.—No more is known about this than the preceding species. It

has been met with sparingly from Maxwell's Hill to the summit of Gunong Ijau, in the Larut Hills, is fairly numerous near the summits of Gunong Ulu Kali and Gunong Mengkuang Lebar, in Selangor, and on Robinson's first visit to Guning Tahan was abundant for a few days at moderate elevations, 3000 to 4500 ft., but has never been obtained since. Both this and the preceding bird feed on lofty trees, growing on steep slopes, and on the Malay Peninsula are therefore rarely seen, and even when seen, with difficulty shot and retrieved. It is possible that they are, in certain areas, as common, or nearly as common, as their representative forms in Java and Sumatra.

The present species has a rather deep whistling "coo," varied by a curious grunting note. Flight is exceedingly swift and powerful—much more rapid than the smaller green pigeons of the genus *Treron*. On the two or three occasions on which they have been met with the parties have been small in number, never exceeding a dozen. It may be hoped that a revival of interest in the ornithology of the Malay Peninsula may elicit further specimens and more information about the very interesting birds of this genus—two of the most outstanding members of our avifauna.

Butreron capellei capellei

The Larger Thick-billed Green Pigeon

Vol. II., p. 15.

Columba capellei, Temm., *Pl. Col.*, 1823, p. 143 (Java).

Butreron capellei, Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 32; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 52; Stuart Baker, *Faun. Brit. Ind.*, *Birds* (2nd ed.), v., 1928, p. 197.

Butreron capellei, Blanford, *Faun. Brit. Ind.*, *Birds*, iv., 1898, p. 13.

Butreron capellei, Robinson and Kloss, *Journ. Nat. Hist. Soc. Siam*, v., 1921, p. 26.

Malay Names.—Punai bėkkok lėngguak; lėngkua.

Description.—*Adult male.*—Above and below, olive-green, greyer on the forehead and more yellowish on the throat, middle of the chest and abdomen and on the upper aspect of the tail. On the breast a large patch of orange, slightly vinaceous on the sides. Under tail coverts, maroon chestnut, the shortest on each side broadly edged with cinnamon-buff and with the centre green. Wings, slaty black; the outermost primaries and secondaries very narrowly and minutely beaded with whitish on the outer webs; the innermost secondaries with broad yellow edgings. Lesser upper wing coverts, greyish olive-green, those at the angle of the wing, slaty black; median and greater wing coverts, greyish black, with yellow edges to the outer webs. Under wing coverts and axillaries, grey, with dull green edges. Tail above, with the two middle pairs of feathers, yellowish green, the next pair yellowish green on the outer web only; the remaining feathers, blackish grey, with a greyish white apical band; under side of the tail, blackish, tipped with pale grey.

Adult female.—Similar to the male, but not so bright; the breast merely

tinged with yellowish orange, and the tail coverts, dull green, broadly edged with cinnamon-buff.

Soft Parts.—Iris, dark ; bill, pale green, cere and base darker ; orbital skin, yellowish green ; feet, lemon-yellow. The irides seem very variable in colour and are recorded by different observers as ashy, deep reddish brown, light yellow or dull red.

Dimensions.—Total length, 14 in. ; wing, 7·7 in. ; tail, 5·2 in. ; tarsus, 1 in. ; bill from gape, 1·35 in.

Range in the Malay Peninsula.—Through the Malay Peninsula to South Johore, but not on Singapore or any of the other islands. Specimens are on record from Penang, but we doubt the occurrence at the present day.

Extralimital Range.—From the Mergui Archipelago south to Sumatra, Borneo and Java.

Nidification.—Nothing is on record about its nesting habits ; eggs from Sumatra, in the Nehr Korn collection, are described as white ; approximate measurements, 1·45 by 1·06 in.

Habits.—This species appears to keep almost exclusively to old and fairly open jungle, and is not as a rule met with near the coast or in open and orchard land like many other species of pigeons. It is gregarious, flying in large flocks, which may number as many as two or three hundred individuals. It usually feeds at the top of very lofty trees. The note is a deep booming *coo*, more like that of *Ducula* than that of the other green pigeons.

It is not often seen at high elevations, but occasionally appears on Fraser's Hill.

Dr E. Jacobson, who has observed the species in Sumatra, writes : " Near the coast these pigeons are very numerous. The birds are easily shot at dawn, when they are making from their roosting-trees, which they choose among those with dense foliage, and to which they return every night. Curiously enough these big birds are brought down with a very moderate charge, whereas the Imperial pigeons are exceedingly hard to kill."

Note.—This pigeon was originally described from Java, but it is very rare in that island and we have never seen specimens ; the Malayan race described above seems identical with that occurring in Borneo and most parts of Sumatra. If this differs from the Javan bird, which is most likely, it will have to be known as *Butoreron capellei magnirostris* (Strick.).

Treron curvirostra curvirostra

The Southern Lesser Thick-billed Green Pigeon

PLATE 5

Vol. II., p. 15.

Columba curvirostra, Gmel., *Syst. Nat.*, 1789, p. 777 (New Hebrides *errore* ; ultimately designated as Rawang, Selangor).

Treron nipalensis, Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 34 (part) ; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 53 (part).

Malay Names.—Punai daun ; punai kërïchau.

Description.—*Adult male.*—Crown to occiput, including the face between the eye and the gape, ashy grey, palest on the forehead; hind neck and nape, greyish green, shading into grey. Upper mantle, vinaceous, passing into maroon on the lower mantle, upper back, scapulars and lesser upper wing coverts. Rump olive-green, becoming brighter on the upper tail coverts. Middle tail feathers, entirely yellowish green above; remaining tail feathers, olive-green on the outer webs, with the rest of the feather grey, with a black subapical band and a broad pale grey tip; practically no trace of green on the outer three pairs, except on the extreme margin; beneath, entire tail, greyish, with a broad subapical black band and a broader pale grey tip; under surface of central pair of feathers, uniform pale grey. Throat and sides of the neck, greyish green; breast and belly, brighter green, with a trace of fulvous on the breast in some specimens, the bases of all the feathers, grey; sides of the breast, lead-grey; sides of the abdomen and the thighs, olive-green, tipped and mixed with creamy white; outermost under tail coverts similar, but the longest, chestnut-cinnamon, and nearly reaching to the tip of the tail. Primaries and secondaries, slaty black, the inner secondaries broadly, the outer secondaries more narrowly edged with bright yellow; the outer primaries faintly beaded with white on the outer web; median and great upper wing coverts also broadly edged with yellow. Wing lining, slaty grey, as also the under wing coverts and axillaries.

Adult female.—With no maroon on the upper surface, which is dull olive-green; the under surface a more greyish green; the breast less yellowish and with the under tail coverts buffy white, barred with olive-green. Yellow bars on the wing, paler and narrower.

Immature male.—Like the female at first; assuming the maroon of the mantle, etc., by a gradual moult.

Juvenile.—Like the female, but the middle of the belly more whitish and the upper surface with narrow, whitish yellow edges to the feathers.

Soft parts.—Iris, orange-red, with a blue inner ring; sometimes pale cream, but this is possibly a post-mortem change; orbital skin, apple-green; bill, pale yellowish green or greenish horn-colour, with the region of the nostrils and the base of the lower mandible bright crimson; feet, lake or bright coral-red.

Dimensions.—*Male.*—Total length, 9 in.; wing, 5'25 in.; tail, 3'25 in.; tarsus, 0'85 in.; bill from gape, 0'8 in.

Females are perhaps slightly, but by no means constantly, smaller.

Range in the Malay Peninsula.—From rather north of Perlis to the extreme south of the Peninsula. It also occurs on the islands of Penang and Singapore, but not, so far as is known, on the islands off the east coast.

Extralimital Range.—We consider that the range of this race extends through the Rhio Archipelago to Sumatra, Banka, Billiton and Borneo; to the north very closely allied subspecies are found through Indo-China to Yunnan and Nepal; in the south other races have been described from the Philippines.

Nidification.—We have seen birds with fully formed oviduct eggs at the end of February, on Pulau Ubin, a small island between Johore and Singapore, but the only definite information we have about the nesting of this pigeon in the Malay Peninsula has been kindly forwarded by Mr A. T. Edgar, who

found a nest on 29th June 1935 in the Dindings. It was a typical pigeon's nest of sticks placed about ten feet from the ground on an outer branch of a young rubber-tree growing on the edge of the forest at the foot of the hills. The two incubated eggs are long ovals, almost equally rounded at both ends, slightly glossy and, of course, white. Mr Edgar considers that the shells are rather fragile for pigeon's eggs. The eggs measure about 1 by 0.65 in.

Habits.—Very common throughout the Peninsula up to a height of about 3500 ft. Though not so strictly tied to old jungle as are *Sphenurus* and *Butorion*, this green pigeon is never found far from old forest, and it is not nearly such an open country and seaside bird as are *Treron vernans*, *T. olax* and *T. fulvicollis*. In its habits it is very similar to *T. vernans*, but it is, as a rule, more noisy and quarrelsome when feeding. The note is much the same as that of *vernans*, but not so loud or clear. The species is subject to local movements both in the autumn and the spring. It is often caught at light on Fraser's Hill at the end of February, and numbers were also obtained at the One Fathom Bank Lighthouse, in the Straits of Malacca, in November and December.

The birds flight in fairly large flocks, consisting of up to forty individuals in number, but they do not fly either so fast or as high as *Treron vernans*.

The birds figured are a pair (half natural size) collected by the late Mr C. J. Wilson, on Penang Hill, 22nd December 1923.

Treron curvirostra nipalensis

The Northern Lesser Thick-billed Green Pigeon

Toria nipalensis, Hodgs., *Asiat. Res.*, xix., 1836, p. 164, pl. ix. (Nepal).

Treron nipalensis, Oates in Hume's *Nests and Eggs Ind. Birds* (2nd ed.), ii., 1890, p. 370; Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 34 (part); Blanford, *Faun. Brit. Ind., Birds*, iv., 1898, p. 14 (part); Oates, *Cat. Birds' Eggs, Brit. Mus.*, i., 1901, p. 82.

Treron curvirostra nipalensis, Robinson and Kloss, *Journ. Nat. Hist. Soc. Siam*, v., 1921, p. 26.

Malay Names.—Punai daun; punai kërïchau.

Description.—*Adult male.*—Very similar to *Treron c. curvirostra*, but paler above, the grey cap lighter, the maroon on the mantle lighter; the rump and the centre tail feathers more yellowish green, the latter washed with bronzy; beneath, more yellowish, especially on the throat. Also less grey on the flanks and with the breast often washed with ochreous.

Adult female.—Lighter above and more yellowish and less greyish green below than the corresponding sex of the southern subspecies.

Soft Parts.—As in *Treron c. curvirostra*.

Dimensions.—Averaging slightly larger, the wing running up to 5.7 in. in length; the bill a little heavier.

Range in the Malay Peninsula.—Almost everywhere from Perlis northwards; the Langkawi and Butang Islands, off the west coast, and the islands of the Bandon Bight, on the eastern side of the Peninsula.

Extralimital Range.—This northern subspecies extends through Siam, Burma and French Indo-China to Yunnan and Nepal.

Nidification.—There are no records of the nest and eggs of this race from within our limits. Bingham found it breeding in the Thoungyeen forests, Central Tenasserim, throughout the end of February and the whole of March. The nests were flimsy little platforms of straw on horizontally growing bamboos, about 10 ft. from the ground, and contained two young. The single egg in the British Museum collection is pure white, rather pointed at both ends, and is rather less glossy than those of other green pigeons; it measures 1·12 by 0·87 in.

Habits.—Apparently identical with those of the southern race.

Note.—We have with some hesitation inserted this subspecies under the above title, as it is by no means certain that the birds inhabiting the large tract of country from Central Burma to Cochin-China, through Siam and south to Tenasserim and Peninsular Siam, are strictly identical with the bird from Nepal described by Brian Hodgson.

Treron fulvicollis fulvicollis

The Cinnamon-headed Green Pigeon

PLATE 6

Columba fulvicollis, Wagler, *Syst. Av.*, *Columba*, sp. 8, 1827 (Java errore substitute Sumatra).

Osmotreron fulvicollis, Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 52; Blandford, *Faun. Brit. Ind., Birds*, iv., 1898, p. 10; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 54.

Treron fulvicollis fulvicollis, Robinson and Kloss, *Journ. Nat. Hist. Soc. Siam*, v., 1921, p. 30.

Dendrophassa fulvicollis fulvicollis, Stuart Baker, *Faun. Brit. Ind., Birds* (2nd ed.), v., 1928, p. 189.

Malay Name.—Punai bakau.

Description.—*Adult male.*—Head and neck, all round, rusty chestnut, becoming vinaceous on the mantle and shading into maroon on the upper back and wing coverts; rump, dark slaty grey, becoming olive-green on the longer upper tail coverts. Chest and breast, orange-ochraceous, shading off into the chestnut of the sides of the neck; belly, greenish; the bases of the feathers, grey; sides, grey; flanks, mingled grey, dark green and bright chrome-yellow; under tail coverts, rufous buff, the lateral ones tipped with pale buff. Tibial plumes, bright yellow. Middle tail feathers, olive-green, the next three pairs somewhat washed with green, the centre pairs blackish; all except the middle pair with a broad terminal band of pale grey. Primaries and secondaries, black, the outer primaries narrowly beaded with pale yellowish white on the outer webs; the inner secondaries more broadly edged with bright yellow; median and greater wing coverts broadly edged with bright yellow; wing lining, under wing coverts and axillaries, slaty grey.

Adult female.—Top of the head and nape, dark grey with no maroon or

chestnut in the plumage, these colours being replaced by olive-green; tail, above more washed with olive-green; flanks, greenish mixed with buff; under tail coverts, pale buff, their bases dull olive-green and streaked with the same colour. Tibial plumes, bright yellow.

Soft Parts.—"Iris, buffy pink; orbital skin, plumbeous green; edge of eyelid, orange; legs and feet, purplish pink; claws, white; lower mandible to angle of gonyx, and upper mandible to just beyond the nostril, deep red; rest of bill dead white, strongly tinged with greenish blue.

"*Female.*—Iris with an outer ring of pink and an inner ring of ultramarine; legs and feet, paler and pinker than in the male" (*Davison*).

Dimensions.—Total length about 10.3 in.; wing, 5.6 in.; tail, 3.5 in.; tarsus, 0.8 in.; bill from gape, 0.8 in. There is no perceptible difference in size between the sexes.

Range in the Malay Peninsula.—Sparingly distributed throughout its whole length and on Singapore Island, but not, apparently, on the other small islands.

Extralimital Range.—The extreme south of Tenasserim, Sumatra, Banka, Billiton and Borneo, except in the north of the latter island, where it is replaced by another race, *T. f. baramensis*. It has also been recorded from Cochin-China.

Nidification.—Butler found this pigeon nesting on a low tree on a sandy island in the lower course of the Pahang river in May, and Kellow in heavy forest near the banks of a stream at Simpang, near Taiping, Perak, in the months of January, February, May and June. The nests and eggs, two in number, are described as similar to those of other species of the genus. The white eggs measure about 1.12 by 0.86 in.

Habits.—Quite the rarest of the genus in the Malay Peninsula. In our experience it is found in small numbers along the coast, generally in the mangrove belt, though Wray and others have found it farther inland. All observers who have come across the bird, both in Malaya and in Borneo, state that it is apparently migratory and only occurs in any one district during part of the year. It is not found in such large flocks as *Treron vernans*, though large bags of the latter shot on the coast generally contain one or two of this species. Outside the Malay Peninsula it appears to be everywhere a rare bird.

The birds figured (half natural size) are a male from Teluk Anson, Perak, 25th November 1913, and a female from Pulau Bintang, Rhio Archipelago, near Singapore, 11th June 1930.

Treron vernans abbotti

The Pink-necked Green Pigeon

Vol. I., p. 9.

Osmotreron vernans (auct.), Kelham, *Ibis*, 1881, p. 526; Salvadori, *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 60; Oates, in Hume's *Nests and Eggs Ind. Birds* (2nd ed.), 1896, ii., p. 375; *ib.*, *Cat. Birds' Eggs, Brit. Mus.*, i., 1901, p. 83; Stuart Baker, *Indian Pigeons and Doves*, 1913, p. 59.

Dendrophassa vernans abbotti, Oberholser, *Journ. Acad. Sci. Wash.*, xiv., 1924, p. 298 (Trang).

Dendrophassa vernans griseicapilla, Stuart Baker, *Fauna Brit. Ind., Birds* (2nd ed.), v., 1928, p. 194.

Malay Name.—Punai.

Description.—*Adult male.*—Top and side of the head, ear coverts, chin and upper throat, pale French grey; occiput, nape, sides of the neck and breast, pale vinaceous, with a purplish tinge; a large ochreous-orange patch on the breast. Upper mantle, grey; lower mantle, back, rump and wing coverts, green, washed with grey; upper tail coverts, greyish fulvous, tinged with gold. Abdomen, green, the middle pale sulphur-yellow, sides darker green mixed with grey. Flanks and vent mingled olive-green and pale yellow, the tibial plumes mainly lemon-yellow. Under tail coverts, reaching to the tip of the tail, chocolate, the outermost tipped with cinnamon-buff. Primaries, outer secondaries and primary coverts black, the outer primaries faintly beaded with yellowish white, the inner secondaries and tertials and wing coverts, green; the greater wing coverts and tertials broadly edged with pale yellow, forming a bar on the wing. The wing lining, under wing coverts and axillaries, lead-grey. Tail feathers above grey, with a black subterminal band, broadening towards the outer feathers, and with a narrow grey tip, almost obsolete on the centre pair. Aspect of the tail beneath, blackish, with a narrow grey tip.

Adult female.—No grey, vinaceous purple, or orange in the plumage. General colour, green, more yellowish on the breast, forehead and sides of the head. Under tail coverts, buffy white on the outer webs, pale cinnamon-buff on the inner, freckled towards the base with greyish.

Young male.—Like the adult female at first, gradually assuming the special plumage of the adult male, which is probably not completely acquired until the middle of the second year. Lesser upper wing coverts and tertials edged with pale sulphur-yellow.

Young female.—A half-grown female has the upper tail coverts like the back and the feathers of the upper surface and the wing coverts broadly edged with buff.

Soft Parts.—Iris, yellow, with an orange ring round the pupil; bill, bluish horn, paler at the tip; feet, deep lake-pink. Of Sumatran birds Jacobson notes that in the male the iris is purplish red, fading soon after death to creamy yellow, in the female, orange.

Dimensions.—*Male*: total length, 10.5 in.; wing, 5.75 in.; tail, 3.9 in.; tarsus, 0.78 in.; bill from gape, 0.75 in. *Female*: total length, 9.7 in.; wing, 5.5 in.; tail, 3.5 in.; tarsus, 0.75 in.; bill from gape, 0.7 in.

Range in the Malay Peninsula.—Universally distributed over the whole length of the Peninsula and on nearly all the adjacent islands, even the smallest.

Extralimital Range.—South Tenasserim, Siam and French Indo-China; the larger islands of the Malay Archipelago, east to Sumbawa; Celebes and the Philippine Islands. The species, however, has been divided into many local races or subspecies of varying distinctness.

Nidification.—This pigeon makes the usual fragile nest of sticks in small

trees and shrubs, not infrequently only three or four feet above the ground. The breeding season is from December onwards, and is largely dependent on the fruiting of certain species of figs. It is possible that two broods are reared. Robinson obtained hard-set eggs on Koh Pennan on 27th May, and there are eggs in the British Museum, from Kussoum on the mainland near Junk Zeylon, dated 7th July. One or two eggs constitute the clutch. They are regular ovals, white, with very little gloss.

Mr A. T. Edgar has kindly contributed the following notes. In Perak, the main nesting season is from December to February, but odd nests have been found in March, April, July and November. The nest is usually placed in mangroves at heights varying from six to twenty-five feet from the ground, or in scrub. One nest was in an abandoned village, on top of a *Melastoma* bush and partly supported by a fallen coconut frond. Generally, except when the nest is in mangrove, there appears to be some attempt at concealment. Exceptionally, the nest is lined with dry leaves. The eggs average 0.97 by 0.78 in. in size; one egg measures 1.13 by 0.81 in.

Habits.—The pink-necked green pigeon is by far the commonest of its genus in the Malay Peninsula, and the most widely distributed. It prefers the coastal districts and is not found at any height on the hills except as a quite occasional visitor, nor does it occur in high or heavy jungle, where its place is taken by the much larger bird, *Butoreron capellei* (the large thick-billed green pigeon, Malay, *Lěngkua*).

During the breeding season it is found in pairs or small parties of five or six, but when that is finished the species congregates in large flocks, which may amount to many hundreds of individuals. On the coast they roost among the mangroves, and when flying to and from their feeding-grounds in the early morning and late afternoon afford magnificent shooting. The food is largely figs and other similar fruits, but the birds are exceedingly fond of the sticky fruits of the shrub commonly known as the Straits Rhododendron, a species of *Melastoma* belonging to the family *Melastomaceæ*. The note is a double whistling coo, the second note much prolonged.

Treron bicincta prætermissa

The Orange-breasted Green Pigeon

PLATE 7

Osmotreron bicincta, Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 57 (part); Oates in Hume's *Nests and Eggs Ind. Birds* (2nd ed.), ii., 1890, p. 374 (part); Blanford, *Faun. Brit. Ind., Birds*, iv., 1898, p. 11 (part); Oates, *Cat. Birds' Eggs, Brit. Mus.*, i., 1901, p. 82; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 54.

Treron bicincta prætermissa, Robinson and Kloss, *Journ. Fed. Malay States Mus.*, x., 1921, p. 203 (Koh Lak, South-West Siam); Robinson and Kloss, *Journ. Nat. Hist. Soc. Siam*, v., 1921, p. 29.

Dendrophassa bicincta prætermissa, Stuart Baker, *Faun. Brit. Ind., Birds* (2nd ed.), v., 1928, p. 193.

Malay Name.—Punai siam.

Description.—*Adult male.*—Differs from that of *Treron vernans* in the following points. Forehead, sides of the head, and throat and foreneck, yellowish green, not grey. Vinaceous band on neck narrow, broadening on the sides but not extending on to the mantle; patch on breast lighter orange. General colour below more yellowish, especially on the middle of the belly; under tail coverts shorter, chestnut-buff, not deep chocolate. A fulvescent wash on the feathers of the mantle; tail with a broad pale grey apical tip.

Adult female.—Like that of *Treron vernans*, but general colour much brighter and more yellowish, especially on the under surface. Occiput and nape, clear lead-grey, and the tail with a broad apical grey tip.

Soft Parts.—Iris with the outer ring pale orange, the inner ring blue; bill, ivory-white, greenish at the tip; feet, pink.

Dimensions.—Total length, 11.5 in.; wing, 6.5 in.; tail, 4 in.; tarsus, 0.9 in.; bill from gape, 0.9 in. There is practically no difference in size between the sexes.

Range in the Malay Peninsula.—Common in the northern districts, but only sporadic in the British portion south to Malacca; not recorded from the east coast. Known from Junk Zeylon, but not from any of the other islands.

Extralimital Range.—Eastern Assam, the greater part of Burma, Manipur, Tenasserim and Siam, except the eastern and south-eastern parts, which are inhabited by the very closely allied subspecies, *T. b. javana*.

Nidification.—Has not yet been recorded within our limits; elsewhere, in Pegu and Assam, the nests and eggs are described as very similar to those of *Treron vernans*. As is usual in the genus, the eggs are two in number, white and slightly glossy; the size is about 1.16 by 0.9 in.

Habits.—In the west of Peninsular Siam and in Junk Zeylon this bird is almost as common as *Treron vernans*, and it is not infrequent in the vicinity of Taiping, Perak, but from Selangor and Malacca only a few specimens are on record, and in all cases the birds have been obtained singly from large flocks of the commoner species, usually in the winter months. In its habits it seems precisely like *Treron vernans*.

The birds figured (half natural size) are a male collected on De Lisle Island, west coast of Peninsular Siam, on 19th February 1919, by Messrs H. C. Robinson and C. Boden Kloss, and a female shot near Taiping, Perak, on 24th November 1924, by Mr E. Seimund.

Treron olax olax

The Little Green Pigeon

Vol. I., p. 11.

Columba olax, Temm., *Pl. Col.*, 241, 1823 (Sumatra).

Treron olax, Kelham, *Ibis*, 1881, p. 525.

Osmotreron olax, Salvadori, *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 64; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 53.

Malay Name.—Punai siul.

Description.—The smallest species of the group.

Adult male.—Head and neck all round, mantle, rump and upper tail coverts, lead-grey, lightest on the chin and forehead, darkest, with a tinge of green, on the upper tail coverts. Lower mantle and upper back and lesser wing coverts, purplish maroon. Feathers of the angle of the wing, dark slaty. A broad orange patch across the breast; abdomen, yellow-green; sides, slaty; flanks, tibial plumes and vent, mingled grey, dark green and chocolate-buff. Under tail coverts, nearly reaching to the end of the tail, chocolate. Wing, black, the median and greater wing coverts broadly edged with pale yellow, the primaries and secondaries narrowly beaded with the same colour on the outer web. Wing lining, under wing coverts and axillaries, dark slate-grey. Tail, slaty black, with an apical pale grey band, palest beneath, and hardly visible on the upper surface of the middle pair of tail feathers.

Adult female.—Crown, lead-grey; general colour above, dark olive-green; tail as in the male, but the middle pair of feathers strongly, and the others faintly, washed with olive-green. Under surface, dull green, brighter on the breast, and greyer on the throat. Flanks, mingled buffy and dark green; tibial feathers, pale buff; under tail coverts, pale cinnamon-buff, with dark green bases and greenish black centres.

Soft Parts.—Iris, outer ring, terracotta-red; inner, white; bill, yellowish green; feet, bright coral.

Dimensions.—*Male*: total length, 8.25 in.; wing, 4.8 in.; tail, 3.1 in. *Female*: total length, 8 in.; wing, 4.75 in.; tail, 2.9 in.

Range in the Malay Peninsula.—From Junk Zeylon (Salanga) to the southern extremity of the Peninsula. Sparingly in Penang and Singapore islands.

Extralimital Range.—Borneo, Sumatra, Java, the Rhio Archipelago. Minute differences are alleged to occur between the birds from the different islands.

Nidification.—Not recorded in the Peninsula.

Habits.—This little fruit-dove is not so common as *T. vernans abbotti*. It lives, as a rule, in more thickly forested districts, and flights in much smaller parties—rarely exceeding seven or eight individuals. It is found at some height on the hills, and with two or three other species of fruit-pigeons appears to perform limited migrations at night, as at the end of February 1904 specimens were captured at night at the Semangko Pass, between Selangor and Pahang, height, 2700 ft. The food is mainly the fruit of jungle figs, and when such a tree is in full fruit this bird and many others collect on it in large numbers. The note is a soft whistling coo, rather like that of *T. vernans*, but softer.

At times it is not uncommon in gardens. At one time it frequented the Public Gardens, Kuala Lumpur, in considerable numbers, but has become rare of late years.

*Ptilinopus jambu***The Pink-headed Fruit-Dove**

Vol. II., p. 11, pl. 1.

Columba jambu, Gmel., *Syst. Nat.*, ii., 2, 1788, p. 784 (Java *errore* = Sumatra).

Ptilopus jambu, Sharpe, *P.Z.S.*, 1887, p. 432; Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1923, p. 80; Hartert, *Nov. Zool.*, ix., 1902, p. 539; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 51; *id. op. cit.*, ii., 1909, p. 169.

Malay Names.—Punai jambu; punai gading.

Description.—*Adult male.*—Top of the head to the level of the eyes, sides of the face, malar region and a narrow line across the upper throat, deep crimson-lake, more pinkish on the back of the crown; chin and middle of the throat, very deep maroon, almost black. Whole upper surface, deep grass-green, the feathers with inconspicuous bronzy edges; hinder part of the ear coverts, sides of neck and abdomen, ivory-white, more yellowish on the sides of the chest and abdomen; on the middle of the breast a large patch of pale rose; sides, flanks, thighs and under wing coverts, greyish green; under tail coverts, deep chocolate. Tail, above, bronzy green, with a yellowish green apical band; below, blackish grey, with a pale grey tip. Lesser median and greater secondary coverts like the back. Primaries and their coverts, black, the outer webs bluish green, the outer five primaries somewhat scalloped on their webs towards the tips, the first primary abruptly attenuated for the terminal three-quarters of an inch; secondaries and tertials, bluish black on the inner webs, greenish on the outer, narrowly bordered towards the tips, as are also the inner primaries, with buffy white.

Adult female.—Top of the head and periocular region, dull purplish, mixed with green; throat stripe, chocolate. Throat and breast, dark greyish green, rest of under parts greyish; the middle of the abdomen ivory-white; under tail coverts, cinnamon-buff. The first primary is not attenuated at the tip.

Immature male.—Like the adult female, but the crown green, the throat stripe paler and more diffused. The adult plumage is acquired by a gradual moult.

Immature female.—Duller than the adult, with the base of the bill dark.

Soft Parts.—Iris, rich chocolate, almost red, with a very narrow ring of whitish next the pupil; bill, rich orange; feet, dull maroon-red.

Dimensions.—*Male.*—Total length, 10.5 in.; wing, 5.75 in.; tail, 3.8 in.; tarsus, 0.8 in.; bill from gape, 0.75 in.; culmen, 0.6 in. *Female.*—Total length, 9.6 in.; wing, 5.2 in.; tail, 3.3 in.; tarsus, 0.75 in.; bill from gape, 0.7 in.; culmen, 0.6 in.

Range in the Malay Peninsula.—From Perlis southwards to Johore; Penang; small islands in the Straits of Malacca; Singapore; Tioman Island.

Extralimital Range.—Sumatra; Borneo; Banka and Billiton.

Nidification.—The nest and eggs of this bird have not been described.

Other members of the genus build a nest of twigs of the usual flimsy type in trees, and lay one or, rarely, two glossy white eggs.

Habits.—This very beautiful fruit-dove is very local in its range, though wherever and whenever it does occur it is common, and at certain seasons it will probably be found, at all the hill-stations, up to an altitude of about 4000 ft. It appears to perform local migrations, and at the Semangko Pass rest-houses has frequently been known to fly into the windows on dark and windy nights, while on occasion it has been captured at light both in Kuala Lumpur and Singapore. During the autumnal migration it is very common on the small islands and lighthouses in the Straits of Malacca, while Whitehead also records that it appears at Labuan during the S.E. monsoon (June), but it is not met with in other months. Smedley obtained a single female on Tioman Island in May. At times it appears to be not uncommon in the mangroves.

The bird is shy and retiring in its habits and is not social, like the green pigeons, keeping to the shelter of thick foliage, amongst which it is very difficult to discern. The note is a low soft "coo" which is not often uttered. Flight is swift and powerful, with a noisy clapping of the wings.

Ducula ænea ænea

The Green Imperial Pigeon

PLATE 8

Columba ænea, Linn., *Syst. Nat.*, 12th ed., 1766, p. 283 (Flores).

Carpophaga ænea, Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 190; Blanford, *Faun. Brit. Ind., Birds*, iv., 1898, p. 19; Oates in Hume's *Nests and Eggs Ind. Birds*, 1890, p. 366; Oates, *Cat. Birds' Eggs, Brit. Mus.*, i., 1901, p. 85; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 50.

Muscadivora ænea ænea, Robinson and Kloss, *Journ. Nat. Hist. Soc. Siam*, v., 1921, p. 31; Stuart Baker, *Faun. Brit. Ind., Birds* (2nd ed.), v., 1928, p. 207.

Malay Name.—Përgam.

Description.—*Adult.*—Head, neck all round, mantle and the whole of the lower surface, vinaceous grey, whitish on the chin and forehead, more vinaceous on the nape and ear coverts. Under tail coverts, dark chestnut. Back, rump and upper tail coverts, bronzy green, with bluish reflections. Primaries and secondaries, black, the outer webs of the inner primaries and secondaries with bluish-green reflections, the whole powdered with greyish; tail feathers above bronzy-bluish green, below, brownish black. The sexes are alike in colour.

Soft Parts.—Iris and edge of the eyelid, dark red; bill, grey, cere, tinged with crimson; feet, livid crimson.

Dimensions.—*Male.*—Total length, 16.5 in.; wing, 9.3 in.; tail, 6.4 in.; tarsus, 1.5 in.; bill from gape, 1.4 in.

Range in the Malay Peninsula.—Fairly abundant throughout the Malay Peninsula, but not as a rule at all common far from the coast, being more

abundant among the mangroves. Common on nearly all the small islands off both coasts, though it has not yet been obtained on Pulau Jarak, or on the Sembilan Islands off the Perak coast.

Extralimital Range.—This pigeon has been divided into many local races. Broadly speaking, the *species* may be said to extend throughout India, Indo-China and Malaysia, thence east to the Philippines and Flores. The typical race, as found in the Malay Peninsula, extends as far north as Raheng in Western Siam, and is also found in Sumatra, Borneo, Java, many of the neighbouring small islands, and east to Flores.

Nidification.—The nest is the usual flimsy structure of sticks placed in a tree, at any height from ten or twelve to fifty or sixty feet above the ground. The egg, of which one only is laid, is pure white and slightly glossy, somewhat pointed at one end, and measures about 1·8 by 1·3 in. The breeding season is usually from January to March, but eggs have been obtained on Pulau Tioman off the east coast of the Peninsula in the middle of September. In the Malay Peninsula this pigeon breeds almost exclusively in the mangrove forests.

Habits.—In the Malay Peninsula this handsome imperial pigeon is very much more common, or at least far more in evidence on the coasts and islands than elsewhere. It is found at times at some distance up the larger rivers when certain fruits are in season, but is emphatically not a jungle or hill-country bird, as it is in other parts of its range. It is found in small parties, rarely more than fifteen or twenty in number, usually less, and flies very high, with an appearance of leisureliness, which is very deceptive. The note is a booming *coo*, like that of its congener, *Ducula badia*, but not so loud. At night this species roosts in the taller trees in the mangroves, or on their verge, making use of the same spot with great regularity. Many observers record it as drinking from streams and pools. It is a very thirsty bird, and in some localities is trapped together with *Ducula badia* by the use of troughs of water, fixed in the tree-tops, over which a fall net is set.

The bird figured (two-fifths natural size) is a male collected on Koh Pipidon, west coast of Siam, on 4th November 1919, by Messrs H. C. Robinson and C. Boden Kloss.

Ducula badia badia

The Mountain Imperial Pigeon

Vol. II., p. 16.

Columba badia badia, Raffles, *Trans. Linn. Soc.*, xiii., 1922, p. 317 (Sumatra).

Carpophaga badia, Sharpe, *P.Z.S.*, 1887, p. 443; Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 218; Hartert, *Nov. Zool.*, ix., 1902, p. 539; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 50.

Ducula badia, Butler, *Journ. Straits Branch, Roy. Asiat. Soc.*, No. 32, 1899, p. 29.

Ducula badia badia, Robinson and Kloss, *Journ. Nat. Hist. Soc. Siam*, v., 1921, p. 32; Stuart Baker, *Faun. Brit. Ind., Birds* (2nd ed.), v., 1928, p. 202.

Malay Name.—Përgam bukit.

Description.—*Adult male.*—Sexes alike. Top and sides of the head, lavender-grey, the hind neck, vinaceous; mantle, upper back, lesser and median wing coverts, chestnut-maroon, brighter on the edges of the feathers, the bases blackish; lower back, much darker maroon, the upper tail coverts almost black. Primaries, secondaries and greater wing coverts, blackish brown, browner on the inner secondaries and wing coverts, the latter obscurely edged with maroon. Tail above, blackish brown, with a broad terminal band, dark grey; beneath, dark ashy, the terminal band much paler. Beneath, chin and throat whitish, rest of the under surface, vinaceous grey, lower part of belly and thighs tinged with rusty buff; under tail coverts, pale whitish buff.

Immature.—Much less vinaceous on the head and neck, the lower back dark slaty grey, with no maroon tinge, and the wing coverts lighter, edged with a rusty brown, not maroon.

Soft Parts.—Iris, white to ashy, "always with a dark grey outer ring" (*Jacobson*), orbital skin, crimson-lake; bill and cere, pinkish maroon, the tip, whitish horn; feet, pinkish claret; claws, horn.

Dimensions.—Total length, 16 to 17 in.; wing, 9 to 9.5 in.; tail, 7 to 7.5 in.; tarsus, 1 in.; bill from gape, 1.15 in.; culmen, 0.9 in. The sexes do not differ materially in size.

Range in the Malay Peninsula.—Not recorded from Peninsular Siam; from North Perak to Southern Selangor and in Malacca, but not recorded from Negri Sembilan, Johore, or any of the islands; Pahang.

Extralimital Range.—The extreme south of Tenasserim and certain of the islands of the Mergui Archipelago, Sumatra, Borneo and Java. The locality Yunnan, recorded by Ogilvie-Grant (*Ibis*, 1900, p. 605), is an error, Captain Wingate's specimens proving to be *D. b. griseicapilla*.

Nidification.—This handsome pigeon breeds on most of the high mountains of the Malay Peninsula above 4000 ft., generally near the summits or ridges, the season being from December to February. The nest is a very unsubstantial one, consisting of only a few sticks, and is usually placed in a stunted tree, sometimes among the leaves of a pandanus. There is almost invariably only one egg, a regular oval in shape, white, very slightly pitted and somewhat glossy. The dimensions average 1.72 by 1.28 in.

Habits.—This imperial pigeon is the commonest of its species on the higher mountains, and occurs on nearly all the hills of the main range, on the Larut Hills and on Gunong Tahan in Pahang, probably, also, on Mount Ophir on the Malacca-Johore border, but not apparently on Kedah Peak. At certain seasons, from March onwards, it visits the coasts, as the Malays say, in search of salt, and then occurs in large numbers in the mangrove swamps from the neighbourhood of Penang south to Selangor, and at one time to Malacca. On such occasions in the past, especially in the Perak estuary and near Tanjong Karang, in Selangor, it was trapped in large numbers in wicker cages, baited with fresh water.

In the hills the birds are much in evidence, flying in small parties of four

or five from one summit to another, usually at a great height. The food is fruit and seeds, often of a very large size, swallowed whole, but in the mangroves leaves and shoots and unopened buds are also largely eaten. The call, constantly heard in the early morning, especially on a misty day, is a resonant booming note, deeper than that of the green imperial pigeon, and with great carrying power.

For the pot, the bird is indifferent, the flesh being dry and often rather bitter, perhaps owing to some item in its food.

Myristicivora bicolor bicolor

The Pied Imperial Pigeon

PLATE 9

Columba bicolor, Scop., *Del. Flor. et Faun. Insubr.*, ii., 1786, p. 94 (New Guinea).

Carpophaga bicolor, Oates in Hume's *Nests and Eggs of Ind. Birds* (2nd ed.), ii., 1890, p. 369.

Myristicivora bicolor, Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 228; Blanford, *Faun. Brit. Ind., Birds*, iv., 1898, p. 23; Oates, *Cat. Birds' Eggs, Brit. Mus.*, i., 1901, p. 86; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 51.

Myristicivora bicolor bicolor, Robinson and Kloss, *Journ. Nat. Hist. Soc. Siam*, v., 1921, p. 34; Stuart Baker, *Faun. Brit. Ind. Birds* (2nd ed.), v., 1928, p. 211.

Malay Name.—Rawa.

Description.—*Adult.*—Sexes alike. General colour ivory-white, with a strong creamy tinge, more pronounced on the head and neck; under tail coverts in some cases with faint blackish tips or with rounded black tips to the outermost. Primaries, bastard wing, primary coverts and secondaries, black with a slaty bloom; under wing coverts, white. Tail with the terminal half to one-third black, this colour decreasing in extent towards the outer feathers, the whole of the outer web of the outermost pair black, with a diagonal white streak towards the tip.

Immature.—The whole plumage duller and more washed with grey, without the ivory-creamy tint so pronounced in adult birds.

Nestling.—All the feathers of the upper surface, under surface, the wing coverts and tertials strongly tipped with sandy apricot-buff, the bases of the feathers greyish.

Soft Parts.—Iris, dull hazel to reddish brown; feet, pale purplish blue with a lavender tinge, the claws, lead-colour; bill, lead-blue, duller at the tip, the cere more purplish.

Dimensions.—Total length, 16 in.; wing, 9 in.; tail, 4.9 in.; tarsus, 1.2 in.; bill from gape, 1.3 in.

Range in the Malay Peninsula.—Throughout the Peninsula on the coasts, and on most of the smaller islands off both east and west coasts.

Nidification.—The only published account of the nesting habits of this bird seems to be that of R. Shelford, who, in the "Report of the Sarawak Museum for 1900," wrote: "In 1899 the collectors visited Pulo Burong, a small rocky island off the Sarawak coast, and brought back a considerable number of skins, nests and eggs of the fruit pigeons, *Columba grisea* (Bp.) and *Myristicivora bicolor* (Scop.), which simply swarm in the island during their breeding season; the nest and eggs of the two species are very alike; the egg of *C. grisea*, however, appears constantly to be somewhat larger and of a more chalky texture than that of *M. bicolor*."

Habits.—Very little is on record concerning the habits of this rare pigeon, which seems to be almost exclusively an inhabitant of small islands. The specimens obtained by Mr E. Seimund were flying with *Myristicivora bicolor*, as was the single bird obtained by Dr Abbott on Pulau Taya. When Chasen visited the Natuna Islands he found that it was well known to even the younger inhabitants of Bunguran, in the northern group of islands, as the "kapoh," although the Malays recognize that it is not so common as the "Rawa" or pied pigeon. It is stated to appear in flocks composed of about fifteen birds when certain trees are fruiting, and to be common on Pulau Laut, the northernmost island of the Natuna group.

Columba punicea

The Purple Wood-Pigeon

Alsocomus puniceus, Tickell in Blyth, *Journ. Asiat. Soc. Bengal*, xi., 1842, p. 461 (Chota Nagpur); Oates in Hume's *Nests and Eggs Ind. Birds* (2nd ed.), ii., 1890, p. 345; Blanford, *Faun Brit. Ind., Birds*, iv., 1898, p. 38; Robinson and Kloss, *Journ. Nat. Hist. Soc. Siam*, v., 1921, p. 33; Stuart Baker, *Faun. Brit. Ind., Birds* (2nd ed.), v., 1928, p. 232.

Columba punicea, Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 306; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 55.

Malay Name.—Unrecorded.

Description.—*Adult male.*—Top of the head, whitish grey, sharply defined from the neck. Nape, mantle, upper back, lesser and median wing coverts, rich chestnut, with amethystine and greenish gloss, most pronounced on the mantle, rump and upper tail coverts, dark slaty, also with metallic reflections; throat, brick-red; remainder of under parts, vinous chestnut, with metallic reflections; the under tail coverts, slaty grey; tail, blackish above and below. Primaries and primary coverts, blackish slate, some of the primaries washed with grey on the outer webs and narrowly edged with dirty-white; median wing coverts and secondaries, brownish; edge of wing, under wing coverts and axillaries, slaty mixed with chestnut.

Female.—It has been stated that the female is duller than the male and has the cap a darker grey, but some females are exactly like males; others, perhaps not fully adult, certainly are duller and have the cap darker.

Immature.—With no metallic lustre; the head, brown, like the back.

Soft Parts.—Iris, inner ring, yellow, outer, orange ; bill, plum-coloured at base, whitish horn at tip ; feet, pinkish maroon.

Dimensions.—Total length, about 15 in. ; wing, 8·45 in. ; tail, 6 in. ; tarsus, 1 in. ; bill from gape, 0·95 in.

Range in the Malay Peninsula.—The islands off the west coast of Siam south to Terutau : as it has been collected at Koh Lak, in South-Western Siam, it can be expected to occur elsewhere in Peninsular Siam.

Extralimital Range.—North through Indo-China, Burma and Assam, to North-East India ; not known from Southern India, but rather doubtfully recorded from Ceylon.

Nidification.—Not recorded from within our limits. Oates found a nest containing one egg in Pegu in July : Mr Stuart Baker took eggs in Assam in June, July and, very rarely, May. According to the latter author the nest is built in bamboo clumps or small saplings, either in bamboo and scrub jungle or in evergreen forest. The eggs measure about 1·5 by 1·16 in.

Habits.—This fine pigeon is fairly common in the winter months on the islands off the west coast of Siam, though whether it is a resident or a seasonal visitor is unknown. On the east coast it is, apparently, much rarer. On one small island we found it roosting in mangroves behind a sandy beach, apparently feeding on the mainland, distant about three miles, during the day. As Bingham describes it, the note is a booming *coo*, somewhat like that of *Ducula ænea*, but not nearly so loud or deep. A specimen in the Raffles Museum was shot by a native collector on the ground on the banks of a rocky stream on Terutau Island, and was solitary.

Macropygia unchall unchall

The Larger Malaysian Cuckoo-Dove

Vol. II., p. 18.

Columba unchall, Wagler, *Syst. Av.*, *Columba*, sp. 38, 1827 (Java).

Macropygia sp., Sharpe, *P.Z.S.*, 1887, p. 443.

Macropygia leptogrammica, Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 341 ; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 54 ; Ogilvie-Grant, *op. cit.*, iii., 1908, p. 53.

Malay Name.—Tëkukor api bësar or tēkukor api gunong.

Description.—*Adult male.*—Top and sides of the head, buffy grey, strongly shot with greenish and amethystine reflections ; back and sides of the neck with the feathers blackish at the bases, their tips strongly metallic greenish and amethystine, with ochraceous bars. Mantle, back, rump, upper tail coverts and lesser and median wing coverts, blackish, irregularly barred with dark chestnut-rufous. Primaries, secondaries and primary coverts, blackish brown, the primaries, except the outermost, with faint whitish edges to the outer webs. Inner aspect of wing, grey, the under wing coverts and axillaries blackish grey, faintly tipped with chestnut. Three outer pairs of tail feathers, greyish, with a broad diagonal subterminal bar of black, the next two pairs blackish, with faint indications of rufous-chestnut bars, the median pair

regularly barred with black and dull rufous, the rufous bars bent towards the tip of the feather at the shaft. Beneath, chin and throat, pale vinaceous buff; chest and breast, vinaceous, each feather with two bars of black and strongly shot with amethystine reflections. Sides and flanks mingled vinaceous and grey; middle of the belly and vent, pale ochraceous buff; under tail coverts, pale cinnamon.

Note.—With advancing age birds tend to become more and more uniform beneath, losing the dark bars, but the series of Malayan specimens available for study is limited.

Adult female.—Forehead and throat, whitish buff; crown and nape, blackish grey with purplish amethystine reflections. Rest of the upper surface as male, but the rufous-chestnut bars narrower and more irregular. Wings as in the male. Tail, with a rufous spot on the inner web of the outer three pairs of feathers, largest on the outer pair. Under surface, buff, thickly barred with brownish black, less so on the middle of the abdomen, the breast with a faint greenish lustre. Under tail coverts as in the male.

Immature.—Always more barred and with more rufous rusty on the base of the tail feathers than in the adults.

Nestling.—Almost naked, thinly clad in golden-buff down.

Soft Parts.—Iris, amethystine, with an inner ring of white; eyelid, crimson, the orbital skin, purplish slate; bill, black; feet, dull red; claws, brownish black.

Dimensions.—*Male.*—Total length, 15.5 in.; wing, 6.8 to 7 in.; tail, 7 to 7.2 in.; tarsus, 0.9 in.; bill from gape, 0.85 to 1 in.; culmen, 0.7 in.

Female.—Rather smaller; wing, 6.5 in.

Range in the Malay Peninsula.—Along the main range from South Perak to South Selangor and on the Larut Hills. Not yet recorded from Pahang.

Extralimital Range.—High mountains of Java and Sumatra. A larger form occurs throughout the Himalayas and is represented in French Indo-China, South China and Hainan; but the species is so variable that subspecific separation is difficult, and in some cases fallacious.

Nidification.—In the high mountains of Selangor breeds from December to March, building a flimsy nest of sticks in a sapling ten or twelve feet from the ground, sometimes on the crown of a pandanus, usually near the crest of a ridge. There is rarely more than one egg, which is a regular oval, evenly pointed at both ends, slightly glossy and somewhat pitted, pearly white in colour, and averaging 1.30 by 0.97 in.

Habits.—Decidedly rare in Malaya, being found only on the higher parts of the Larut Range, on Cameron's Highlands, at above 4000 ft., and at about the same elevation on Gunong Ulu Kali and Gunong Mengkuang Lebar, in Selangor. It is met with in parties of three or four, feeding on the ground, amid tangled vegetation, usually in damp places. When alarmed it takes to flight, with a noisy clapping of the wings, but soon settles again. The note is a very deep "coo" ending in a curious kind of gurgle.

*Macropygia ruficeps malayana***The Little Malayan Cuckoo-Dove**

Vol. II., p. 19.

Macropygia ruficeps malayana, Chasen and Kloss, *Bull. Raffles Mus.*, 5, 1931, p. 82 (Semangko Pass).

Macropygia ruficeps (nec Temm.), Stoliczka, *Journ. Asiat. Soc. Bengal*, xxxix., 1870, p. 331 (Prov. Wellesley); Butler, *Journ. Straits Branch, Roy. Asiat. Soc.*, No. 32, 1899, p. 30; Hartert, *Nov. Zool.*, ix., 1902, p. 540; Stuart Baker, *Ind. Pigeons and Doves*, 1913, p. 247.

Malay Name.—Tĕkukor api.

Description.—*Adult male.*—Tail, very much graduated; bill, relatively long and slender; top and sides of the head, cinnamon-rufous, rest of upper surface, dark chestnut-brown, paler on the mantle and upper tail coverts, the feathers edged with paler rufous, those of the mantle obscurely barred and shot with metallic greenish and lilac reflections. Primaries and secondaries, brownish black, all except the outermost primary broadly edged on the inner web with chestnut, the under wing coverts and axillaries, chestnut. The two centre pairs of tail feathers, dark sienna-brown, remaining four outer pairs, rufous, with a black diagonal subterminal band extending up the feather towards the base on the inner web. Beneath, cinnamon-chestnut, paler on the throat, darker on the sides and flanks; the feathers broadly tipped with whitish buff and with a black spot on either web, more conspicuous in younger specimens.

Adult female.—Top of head, chestnut-brown; rest of upper surface, dark brown; nape, sides of neck and mantle, barred and freckled with buff. Throat, pale rust-colour; breast, rufous chestnut, with large black spots on either web of each feather. Abdomen, dull yellowish ochraceous brown. Flanks, chestnut. Other parts as in the male, but the wing coverts more broadly edged with rufous chestnut.

Immature male.—At first like the female, gradually assuming the plumage of the adult; the amount of whitish buff on the tips of the pectoral feathers apparently increasing continuously with age.

Soft Parts.—"Iris, varied, sometimes grey, sometimes grey with an inner ring of blue, others pearly white; bill, pinkish red or pale purplish brown; legs and feet, dark brownish red" (*Davison*).

Dimensions.—Total length, 10.5 to 11 in.; wing, 5.3 to 5.6 in.; tail, 5.7 to 6.2 in.; tarsus, 0.7 in.; bill from gape, 0.6 in.; culmen, 0.5 in.

Range in the Malay Peninsula.—From Province Wellesley to Southern Selangor and Negri Sembilan and in Pahang. Not recorded from Malacca territory, Johore, or from any of the adjacent islands.

Extralimital Range.—The species was originally described from Java, and races from the islands farther east, and from Borneo, Sumatra and Tenasserim, have all received names. The bird is found also in French Laos and in North Siam.

Nidification.—Wray records a nest found high in the Larut Hills as consisting of a few twigs on the top of a small palm about five feet high : in other cases the nest is described as a small pad of moss. Stuart Baker states that Mr Kellow found the bird breeding in the hills near Taiping, in January and February and, rarely, in May, the clutch consisting of one egg, or very rarely two. The eggs are ellipses in shape, of a very pale cream or *café-au-lait* colour, and the average size is given as 1.17 by 0.83 in.

Habits.—This cuckoo-dove is fairly common in heavy jungle throughout the central parts of the Malay Peninsula, though it has not yet been recorded from any part of Peninsular Siam. It has a wide range in altitude, from 200 ft. to over 5000 ft., but probably moves up and down a good deal with the ripening of certain berries. It is in the main a ground-feeder, and like other members of the genus is very fond of chillies, and will invade Sakai and Malay clearings where these are grown. It travels in small parties of five or six individuals, and when feeding on the ground continually gives utterance to a very peculiar and monotonous “*coo*,” whose sameness is quite different from any other local pigeon. When alarmed, flight is extremely powerful and rapid, accompanied by much clapping of wings, but is usually low, and never very long continued. The species is one of the best of its family for the table, but, like so many tropical game birds, the flesh is apt to be rather dry.

Streptopelia chinensis tigrina

The Malay Spotted Dove

Vol. I., p. 7, pl. 1.

Columba tigrina, Temm. and Knip, *Pigeons*, i., 1808–1811, pl. 43 (Batavia).

Turtur tigrinus, Blyth, *Journ. Asiat. Soc. Bengal*, xv., 1846, p. 372 ; Kelham, *Ibis*, 1881, p. 528 ; Oates in Hume's *Nests and Eggs Ind. Birds* (2nd ed.), ii., 1890, p. 356 ; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 57.

Spilopelia tigrina, Oates, *Cat. Birds' Eggs, Brit. Mus.*, i., 1901, p. 98.

Streptopelia suratensis tigrina, Stuart Baker, *Indian Pigeons and Doves*, 1913, p. 209, pl. 21.

Streptopelia chinensis tigrina, Stuart Baker, *Fauna Brit. Ind., Birds* (2nd ed.), v., 1928, p. 244 ; Edgar, *Bull. Raffles Mus.*, 8, 1933, p. 122 (Nidification).

Malay Names.—Měrbok, kětikir, tēkukor jěrum : nok khao fai (*Siamese*).

Description.—*Adult.*—Sexes similar. Head lavender-grey, more vinaceous at the back ; feathers of the neck and nape, black, bifid at the tips, with a white spot on each side, causing a chequered appearance. Rest of the upper parts, earthy grey, the feathers with paler tips, those of the mantle, the scapulars, tail and wing coverts with broad blackish shaft stripes. Primaries, secondaries and primary coverts, blackish brown, the outer median series, greyish on their outer webs ; lesser inner wing coverts, near the edge of the wing, grey, the rest and the axillaries blackish. Middle tail feathers uniform

brown, the next pair blackish brown, the third pair broadly tipped with grey and the three outer pairs with a broad terminal band of white. Beneath, chin whitish, throat, chest and breast, clear vinaceous, washed with fulvescent, the centre of the abdomen whitish, under tail coverts, white.

Immature.—Duller and browner above, with the chequering of the nape and sides of the head much less clear and distinct, or almost absent.

Soft Parts.—Iris, orange or pinkish yellow; orbits, dirty-white; bill, dark blackish horn; feet, dull lake.

Dimensions.—*Male*.—Total length, 12 in.; wing, 5.75 in.; tail, 5.5 in.; tarsus, 1 in.; bill from gape, 0.87 in. *Females* are perhaps slightly smaller.

Range in the Malay Peninsula.—Throughout the Peninsula in suitable localities. Islands of Salanga (Junk Zeylon), the Langkawi group, Penang and Singapore.

Extralimital Range.—From Manipur and Burma, throughout Indo-China and the Indo-Malayan Archipelago to Celebes, Timor and the Moluccas, varying slightly in the south-eastern part of its range.

Nidification.—The following information is all from Mr A. T. Edgar's account of the species in Perak (*loc. cit. sup.*). Eggs may be found as early as November, but a greater number from January to March, and others up to the end of May. One nest, on a bamboo stem, was twenty-five feet from the ground, but the usual position is in bushes, or small trees, between four and ten feet from ground-level, often in most exposed places. The nest is a loosely constructed pad of small twigs, rootlets, and sometimes coarse grass, the pad being about six inches in diameter. The two white, glossy eggs are regular ovals in shape and measure about 1.10 by 0.86 in.

Habits.—The Malay spotted dove is very common throughout the Malay Peninsula, more so in the north and east than in the south and west; never in old jungle or on the hills, or in the mangrove zone. It affects open country and sandy plains where there are patches of short grass surrounded by bushes, but also occurs in ricefields with trees surrounding them. Its food is grass and other seeds, picked up from the ground in the early morning and afternoon. During the heat of the day it lies up in low trees in secondary jungle near its feeding-grounds. It is usually found in pairs, but flocks of six or seven or even more occur. The note is a low musical coo, generally three or four times repeated, like that of the common domestic turtle dove. It is a favourite cage-bird with Malays and Chinese, and is seen in almost every village.

Geopelia striata striata

The Barred Ground-Dove

Vol. I., p. 8, pl. 1.

Columba striata, Linn., *Syst. Nat.*, i., 1766, p. 282 (East Indies).

Geopelia striata, Jerdon, *Birds India*, iii., 1864, p. 486; Kelham, *Ibis*, 1881, p. 528; Blanford, *Faun. Brit. Ind.*, *Birds*, iv., 1898, p. 52; Oates, *Cat. Birds' Eggs*, *Brit. Mus.*, i., 1905, p. 56; Robinson, *Journ. Fed. Malay States*

Mus., i., 1905, p. 56; Stuart Baker, *Indian Pigeons and Doves*, 1913, p. 254, pl. 26; *id.* in *Fauna Brit. Ind., Birds* (2nd ed.), v., 1928, p. 258; Edgar, *Bull. Raffles Mus.*, 8, 1933, p. 123 (Nidification).

Malay Names.—Měrbok, těkukor, balam: nok khao cha wah (*Siamese*).

Description.—*Adult.*—Sexes similar. Crown to level of the eyes, French grey; hinder head, earthy grey. Sides of the neck barred black and white, the white with a brownish tinge on the nape. Rest of the upper surface earthy brown, each feather tipped with black, more broadly so on the mantle and wing coverts, the ground-colour of the greater wing coverts much paler. Primaries, secondaries and primary coverts, dark brown, the two former narrowly edged with whitish on the outer webs, and broadly so with pale chestnut on the inner webs towards the base. Under wing coverts barred chestnut, fulvous and black. Beneath, chin, throat to the middle, and sides of the head, French grey; middle of the breast, vinous; rest of the under surface creamy white, the flanks and thigh feathers obscurely barred with brownish black; under tail coverts, white. Middle pair of tail feathers, brownish grey, next two pairs, blackish brown, remaining four pairs, blackish, with broad white tips, the white more extensive on the outer web.

Immature.—Barring much more abundant, above and below, spreading right across the vinous of the breast, which is less clear.

Soft Parts.—Iris, whitish; orbits, silvery verditer; cere, silvery blue; bill, pale horn; feet, dark maroon.

Dimensions.—*Male.*—Total length, 9 in.; wing, 3.9 in.; tail, 4.2 in.; tarsus, 0.78 in.; bill from gape, 0.65 in. *Females* possibly slightly smaller.

Range in the Malay Peninsula.—Throughout the whole length of the Peninsula. Islands of Salanga (Junk Zeylon), Penang and Singapore.

Extralimital Range.—Southern Tenasserim and Siam, through the Indo-Malayan Archipelago to the Philippines, Celebes and Amboina. Not in the Lesser Sunda Islands, east of Lombok. Introduced into the Mascarene islands.

Nidification.—The breeding season in the Peninsula appears to be in the earlier part of the year. Mr A. T. Edgar has found nests in Perak from November to May. According to the same author, the usual position for the flimsy nest is between eight and twenty feet from the ground, on top of small lateral branches. One nest, however, was in a low coconut-palm in the hollow at the junction of frond and stem: two others were in low bushes, only four feet from the ground. Two eggs are laid, white in colour, only slightly glossy, and regular ovals in shape; they average 0.87 by 0.65 in.; though two from Kuala Lumpur measure 0.96 by 0.73 in.

Habits.—Found abundantly in open spaces throughout the Peninsula, though never in old jungle or swampy country. Very numerous in gardens and on lawns; usually in pairs, but occasionally in parties of four or five. The food is almost exclusively grass seed, though Chinese market-gardeners complain of the damage done to their vegetables, both by this and the preceding species. The note is a “*kok-kürr-kürr*,” softly repeated several times while the birds are bowing and scraping to each other. The barred ground-dove is a favourite cage-bird among Malays, and high prices are paid for

“ lucky ” birds—luck or the reverse being diagnosed by counting the number of scales on the toes.

Note.—The artist has portrayed our bird on a branch ; it should be mentioned, however, that it is but rarely seen off the ground, and seldom perches at any elevation.

Chalcophaps indica indica

The Bronze-winged or Emerald Dove

Vol. I., p. 12.

Columba indica, Linn., *Syst. Nat.*, i., 1766, p. 284.

Chalcophaps indica, Kelham, *Ibis*, 1881, p. 538 ; Oates, *Birds, Burma*, ii., 1883, p. 297 ; *id.* in Hume's *Nests and Eggs Ind. Birds* (2nd ed.), ii., 1890, p. 363 ; Blanford, *Faun. Brit. Ind., Birds*, iv., 1898, p. 26 ; Oates, *Cat. Birds' Eggs, Brit. Mus.*, i., 1901, p. 103, pl. 7, figs. 2, 3 ; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 56 ; Stuart Baker, *Indian Pigeons and Doves*, 1913, p. 121, pl. 11 ; *id.* in *Fauna Brit. Ind., Birds* (2nd ed.), v., 1928, p. 215.

Malay Names.—Punai tana, punai dĕkut, lĕmbok.

Description.—Tail short, wing long and pointed. Tarsi long and slender, soles not broadened. Plumage partly metallic. Sexes different.

Adult male.—Forehead and superciliaries, bluish white, becoming lead-grey on the crown, behind the level of the eye, and nape. Sides of the head, upper mantle and under surface, purplish vinous, greyer on the flanks and belly, and with a blue-grey bloom on the mantle. Back, dark metallic bronzy green, with two grey bands ; rump and upper tail coverts, black, the bases of the feathers dark grey. Base of mantle, scapulars, tertials, and lesser and median wing coverts, bronzy emerald-green, the feathers at the angle of the wing with broad white edges, forming a conspicuous patch. Primaries, primary coverts and outer secondaries, blackish brown, their inner webs chestnut towards the base ; outer webs of the inner secondaries, bronzy green. Inner aspect of flight feathers, chestnut, the lesser under wing coverts, rufous chestnut, the greater coverts and axillaries, greyish, freckled with chestnut. Tail, black, with bronzy reflections in old birds, the outer feathers grey at the base, with a narrow grey tip.

Adult female.—Forehead and superciliaries, greyish white ; occiput, nape and mantle, ochreous brown ; under parts, reddish brown, with no purplish or vinous tinge, sometimes freckled with greyish. Feathers at the angle of the wing, brownish chestnut, with grey edges in old birds. Longer upper tail coverts, brownish at the bases, the under tail coverts grey, the largest, chestnut or blackish brown. Two median pairs of tail feathers, brownish black, the next two pairs largely suffused with rufous chestnut. Remaining plumage as in the male.

Immature.—Young males at first resemble the female. Quite young birds have no white at all on the forehead, and are irregularly barred with

rufous and brown beneath. No trace of whitish margins to the coverts at the angle of the wing. Metallic portions of plumage duller and less emerald.

Soft Parts.—Iris, dark brown; bill, coral-lake at the base; feet, dark purplish red; claws, yellowish horn.

Dimensions.—*Male.*—Total length, 10 in.; wing, 5.9 in.; tail, 3.6 in.; tarsus, 1.05 in.; bill from gape, 0.88 in. *Female.*—Total length, 9.5 in.; wing, 5.6 in.; tail, 3.4 in.; tarsus, 1 in.; bill from gape, 0.82 in.

Range in the Malay Peninsula.—Throughout its entire length and on practically all the adjacent islands.

Extralimital Range.—The greater part of India through the Indo-Chinese countries to South China and the Philippines. The Malay Archipelago to Western New Guinea. The form inhabiting Christmas Island, *Chalcophaps i. natalis*, is rather different, but over the rest of its immense range local variation is almost lacking.

Nidification.—The nesting season in the Malay Peninsula is in the earlier portion of the year, and it is probable that there are two broods. We have not, ourselves, obtained nests, which, according to Stuart Baker (*op. cit.*), are more elaborate than is usual in the family, being saucer-shaped structures, composed of roots, grass and dead and living twigs, placed in bushes or saplings a few feet from the ground. The eggs are not white, but very pale cream or buff, which is very unusual in the family, highly glossy, and average 1.08 by 0.82 in. in size; two are laid.

Habits.—This is usually a jungle bird, but it is common and widespread throughout the Peninsula. At one time it was common in Kuala Lumpur town limits. It occurs almost everywhere in jungle, old and secondary, from sea-level to over 4000 ft., though it is scarcer at the higher elevations. For choice it affects damper situations and cool dark ravines, and the banks of jungle streams, where it is found singly or in pairs, though occasionally in small parties of up to six or seven. It is mainly terrestrial in its habits, and when flushed does not travel far. Its flight though not high is rapid and powerful. At night it roosts in trees at some height from the ground. It feeds mainly on seeds and berries, but also on ants and termites. The note is a low and musical coo, and the bird, which is readily domesticated and excellent for the table, though sometimes rather dry, is trapped in large numbers by the use of a bamboo call-pipe some six or eight feet in length (*dēkut punai*), with a noose attached, the hunter concealing himself in a small conical hut camouflaged with branches and leaves, and imitating the bird. As many as fifteen or twenty birds may be caught in succession.

Calœnas nicobarica nicobarica

The Nicobar Pigeon

Columba nicobarica, Linn., *Syst. Nat.* (10th ed.), 1758, p. 164 (*Nicobar Islands*).

Calœnas nicobarica, Oates in Hume's *Nests and Eggs Ind. Birds* (2nd ed.), ii., 1890, p. 365; Salvad., *Cat. Birds, Brit. Mus.*, xxi., 1893, p. 615; Blanford,

Faun. Brit. Ind., Birds, iv., 1898, p. 24; Oates, *Cat. Birds' Eggs, Brit. Mus.*, i., 1901, p. 106; Robinson, *Journ. Fed. Malay States Mus.*, i., 1905, p. 49.

Calœnas nicobarica nicobarica, Robinson and Kloss, *Journ. Nat. Hist. Soc., Siam*, v., 1921, p. 37; Stuart Baker, *Faun. Brit. Ind., Birds* (2nd ed.), v., 1928, p. 213.

Malay Name.—Měrpai mas: burong jinjuni (*Labuan*).

Description.—*Adult male*.—General colour metallic green, with coppery- and bronzy-green reflections, darker on the lower parts. Head, and neck all round, almost black with deep peacock-blue and purple reflections. Long hackles of the hind neck and nape, purplish blue and metallic green, sometimes with an appearance as if powdered over with grey. Primaries black, washed with metallic blue-green externally. Longer upper tail coverts, under tail coverts and tail, white.

Female.—Like the male, but somewhat smaller, the hackles on the neck shorter and the knob on the culmen less developed.

Immature.—Like the female, but with less gloss and with the tail greenish black not white.

Soft Parts.—Iris, hazel; bill and cere, black; orbits, dull pale olive; feet, livid plum-colour. Immature birds have the iris grey and the feet duller. Very old birds are stated to have the iris white.

Dimensions.—Total length, about 16.5 in.; wing, about 9.25 to 11 in.; tail, 3 to 4.25 in.; tarsus, 1.35 in.; bill from gape, 1.3 in.

Range in the Malay Peninsula.—Within the limits of this work the Nicobar pigeon has been obtained on Koh Pipidon, an island near Junk Zeylon in Ghirbi Bay and on Pulau Mohea off the coast of Trang in Peninsular Siam. It is also not rare on small islands of the Langkawi and Butang groups of islands. It is common on Pulau Jarak and on Pulau Rumpia off the coast of Perak and also occurs on Pulau Pisang midway between Malacca and Singapore. There are no records from Singapore or the small islands in the vicinity, though it is known from outlying islands of the Rhio-Lingga Archipelago. On the eastern side of the Peninsula it has been found on Great Redang Island off Trengganu and also on Pulau Tinggi though not on Pulau Tioman. It is reported, probably correctly, from Pulau Aor, the most easterly of the group.

Extralimital Range.—Doubtfully on islands of the Mergui Archipelago. From the Andamans and Nicobars throughout the Malay Archipelago and the Southern Philippines east to New Guinea and the Solomon Islands, but only on quite small islands and never on the larger land masses. Found also on Pulau Condor off the coast of Cochin-China.

Nidification.—A nest in the Raffles Museum was found by Mr E. Seimund on Pulau Jarak in the Straits of Malacca on 5th April 1921. It is a loosely constructed platform of twigs with a very few dead leaves, perhaps introduced accidentally; in size it is an approximate square of 12 in. or rather more, and although in the bottom layers there is some attempt at "weaving" the nest seems little more than a carelessly piled bundle of twigs. The single egg it contained measures 1.87 by 1.35 in. In Mr Stuart Baker's account of the nidification of this bird on Buttye Malve in the Nicobar Islands, it is stated

that it nests in colonies, several pairs of birds building their nests in the same tree and almost every suitable tree being occupied, the nests placed between ten and thirty feet from the ground.

Habits.—It is curious that throughout its immense range, this large and handsome pigeon should be strictly confined to quite small islands, no authenticated instance of its occurrence on any large land mass, such as Borneo, Sumatra or the Malay Peninsula, being on record. The specimen from Kota Bharu, Kelantan, recorded by Bonhote, was certainly a cage-bird brought from the Redang Islands.

In all the localities whence we have obtained the bird it is by no means common, and on the islands of the Straits of Malacca it appears to be absent during the summer months, though it has been frequently searched for on Pulau Jarak, which is only a few hundred acres in extent.

It is almost entirely terrestrial in its habits, rarely flying, though it is strong on the wing, and then soon settling and running with great speed. It keeps to thick jungle and scrub, where it feeds on seeds and fruits, but roosts in trees and, according to Davison, it perches on trees when not feeding.