BOOK NO.
1089

THE GAME-BIRDS OF INDIA, BURMA AND CEYLON



INDIAN GAME BIRDS

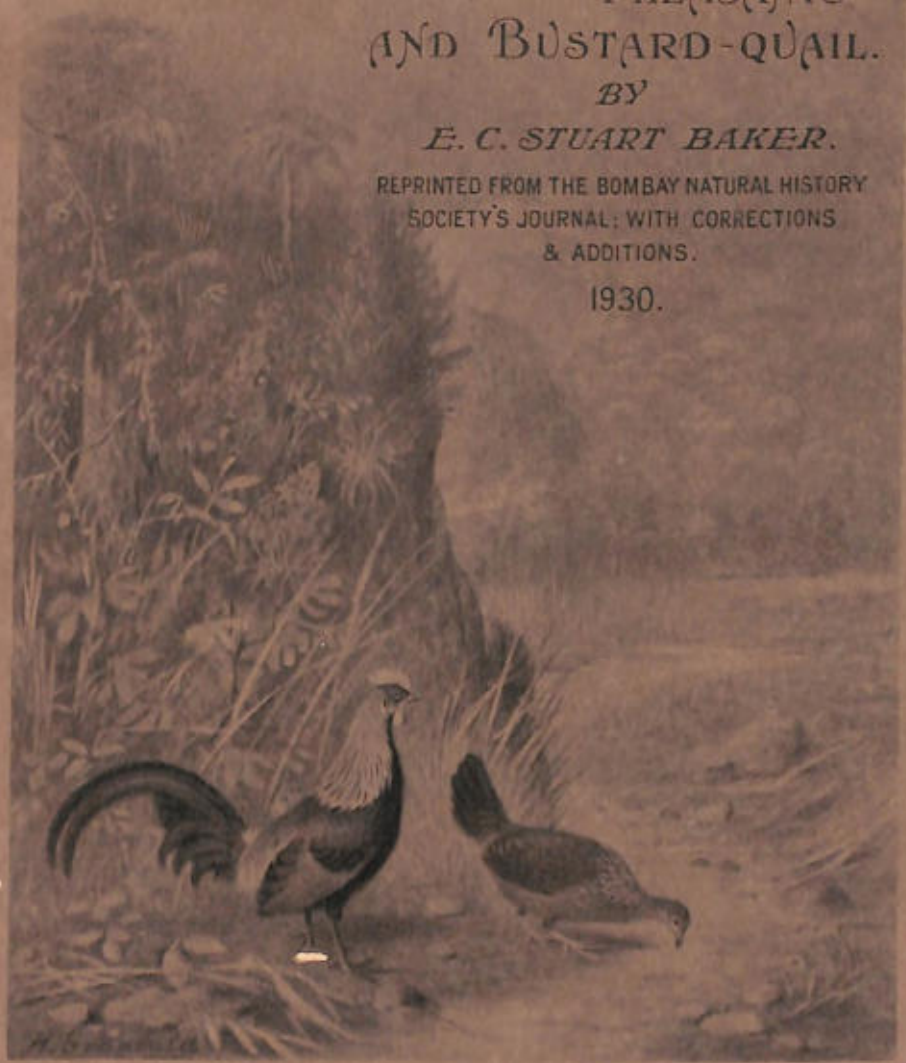
PHEASANTS AND BUSTARD-QUAIL.

BY

E. C. STUART BAKER.

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1930.



THE GAME-BIRDS OF INDIA, BURMA AND CEYLON

PHEASANTS AND BUSTARD-QUAIL

VOL III.

BY

E. C. STUART BAKER, O.B.E., F.L.S., F.Z.S., M.B.O.U., H.F.A.O.U.

WITH ELEVEN COLOURED AND NINE BLACK AND WHITE PLATES.



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INTRODUCTION.

THE present volume of Game-Birds is the third of the series which it is proposed to bring out, the two previous volumes having been devoted to (1) The Swans, Geese and Ducks and (2) The Snipes, Bustards and Sand-Grouse.

The contents of this volume have appeared already in the pages of the Journal of the Bombay Natural History Society, but they are now added to and brought up to date. As with the earlier volumes so with this, the principal object has been to combine in one work a thoroughly scientific review of our Indian Game-Birds which shall yet be of interest to sportsmen from a sporting point of view whilst enabling them easily to identify any Pheasant they may shoot.

As nomenclature is now very carefully and deeply studied many names have had to be altered to comply with the rules of the International Congress. From a sentimental point of view we cannot help regretting many of these imperative changes, but we older members of the sporting fraternity can only console ourselves with the fact that, once names are stabilized, our future generations will not have the troubles to face in nomenclature which have worried us.

All details concerning each bird have been written in the same sequence as in the Volumes already published so as to facilitate reference, whilst the index also has been prepared on the same lines.

The illustrations have been painted by H. Grönvold and fully maintain the high standard of this artist's work. An additional interest is also given to this volume by the photographs of Game-Birds taken by Mr. D. Seth-Smith and kindly given for reproduction.

No bibliography has been given in this volume, as it would be merely a repetition of that already given in Vols. I and II.

E. C. Stuart Baker.

London,
March, 1930.

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BUSTARD-QUAIL.

Order HEMIPODII.

THE *Hemipodii*, or Bustard-Quails, are an order of small birds which in general appearance closely resemble true Quails but, so far as our Indian birds are concerned, can always be identified at a glance by the fact that they have but three toes, the hallux, or hind toe, being absent. According to some naturalists two genera are contained in the one family, *Turnicidæ*, i.e., the Three-Toed Bustard-Quails of the genus *Turnix* and the Plain Wanderers with four toes, of the genus *Pedionimus*, which are confined to Australia. Other systematists, however, put this latter genus in a separate family but, as it is not represented in Asia, this point does not interest us.

The nearest relatives of the Bustard-Quails are to be found amongst the *Gallinæ*, or Game Birds, the *Pterocletes* or Sand Grouse, and the two Families *Rallidæ* (Rails), and *Charadriidæ* (Plovers).

The principal anatomical difference between the *Gallinæ* and the *Pterocletes* and the present order lies in the formation of the vertebræ. In the two former orders the last cervical and anterior dorsals are all anchylosed in fully adult birds, whereas in the Bustard-Quail they are free; in the two former, also, the last dorsal vertebra is united with the lumbar vertebræ to form the sacrum.

In the *Gallinæ* and the *Pterocletes* the sternum has two notches, though in the latter the second notch may be much reduced; in the *Hemipodii* there is one deep, long notch only, on each side of the posterior border, and the episternal process is partially perforated to receive the inner ends of the coracoids.

The palate is schizognathous, as in the *Gallinæ*, but the palatines, pterygoids and basipterygoids are more like those of the Plovers.

The nasals are schizorhinal.

The muscles of the thigh are Galline except that the accessory femoro-caudal is absent; in our genus *Turnix* the deep plantar tendons unite, as in other birds with but three toes, and then the combined tendons again split up to supply the three toes.

In other respects the Bustard-Quails resemble the Game Birds; the young are hatched covered with down and can run and feed themselves almost as soon as they are hatched.

The eggs are practically invariably four in number and are somewhat conical, being laid in the nest in the same manner, point to point, as that in which the Plovers lay their eggs.

Family TURNICIDÆ.

Genus TURNIX.

Turnix, Bonnat., Tabl. Encycl. Meth. i, pp. lxxxii, 5 (1790).
Type, *Tetrao sylvaticus* Desfon.

Bill like that of the *Gallinæ* but rather small and slender. The wings are pointed, with the first quill longest; legs and feet moderate, the latter in some species rather long.

Our Indian species are resident throughout their range, but move higher up in the mountains during the warmer months of the year, whilst they may also move about locally in certain parts of India under stress of climatic influence.

Ogilvie-Grant recognized twenty-one species of Bustard-Quail in the Catalogue of the British Museum and twenty-two species in his Manual of Game Birds, in which he added the species *Turnix whiteheadi* from Luzon. To these twenty-two species Grant further added two sub-species and, of these twenty-four species and subspecies, five species and one subspecies are, according to him, represented in India.

As regards the subspecies, they are a matter of no little difficulty but, as I shall deal in detail with these under the various species with which they are connected, further comment is here unnecessary.

The family *Turnicidæ* is composed of birds of which the female is the larger, generally the higher coloured and, always, the dominant partner in all domestic matters, for, beyond laying the eggs, she has nothing to do with the rearing of the young.

Key to the Species.

A. Breast barred right across with black and white or quite black . . . . . *T. suscitator*, p. 5.

B. Breast never barred or black in the centre . .

a. Central tail feathers lengthened, pointed and edged with buff; bill dark, not yellow . . *T. dussumieri*, p. 29.

b. Central tail feathers neither lengthened nor pointed and with no buff margin; bill yellow *T. maculatus*, p. 36.

The Indian and Burmese *Hemipodii* have been variously divided into species, subspecies or races, since the time of Jerdon, who himself recognized three species of the Common Bustard-Quail, viz., *Turnix taijoor* from the plains of India, *Turnix ocellatus* from the Hills of Northern India, and *Turnix pugnax* from Java. Ogilvie-Grant divided the species *taijoor* into two, *taijoor* and *pugnax*, whilst Sharpe, in the Hand-List, and Oates, in his Manual, combined them all under the one name *pugnax*.

Ogilvie-Grant dealt at some length with the genus *Turnix* in the 'Ibis' for 1889 where he wrote:—

> "I am convinced that there is only one species (*T. taijoor*) which ranges through India, Burmah, Malay, Siam and China to Formosa and the Loochoo Islands, and that the key to the constant variety in the tone of the plumage is to be found in the effect of the amount of the annual rainfall in the country which the birds inhabit. By going through the whole of our huge series, I find this theory exactly borne out; for where rain is abundant the prevailing colour of the upper parts is dark brown, where it is moderate the tone is more rufous, and where it is small the birds are very bright rufous."

With this conclusion, i.e., that variation in plumage coincides with variation in rainfall, we shall all agree; the only question to be decided is whether these variations of rainfall together with other possible geographical factors cause definite local variations in plumage sufficiently constant to enable one to form subspecies. I certainly agree with Ogilvie-Grant that all the Indian Bustard-Quails, of the *suscitator* or *javanica* group, together with the others he mentions do come under one species but, it seems to me, they can be divided into a certain number of subspecies, capable of differentiation by plumage, which have definite geographical areas of habitat.

It is now generally accepted that the use of the trinomial system is imperative and that geographical races, where they can be well defined, must be described as subspecies. Accepting this as the proper course to follow, we find that the Bustard-Quail is a species essentially divisible into certain well-marked races, the difference between which consists, principally in the amount of rufous and depth of colouring on the upper parts and, to a rather less extent, in size.

The British Museum has a magnificent series of specimens of the

species *Turnix suscitator* (*pugnax* and *javanica auctorum*), and I have also had the advantage of examining those in the Calcutta Museum, in addition to a very great number which have passed through my hands from collectors in various parts of India. A careful study of this material led me in 1914-15 to the conclusion that there were four well-marked subspecies of Bustard-Quail of the species originally described as *javanica* by Rafinesque from Java (1814), a bird which can hardly be distinguished from that found in Ceylon, named *leggei*.

In 1927-8 I again reviewed this genus and species, this time with much added material, especially from the Eastern and Southern-Eastern portions of the Empire. Mr. H. Robinson's fine collections were of immense assistance and with his collaboration we found it necessary to recognize three additional races, these all being forms the differences in which I had previously drawn attention to. As the nomenclature of the Bustard-Quails has also had to be revised and, unfortunately, greatly altered, it may be as well to deal with the races and their differences here before proceeding to deal with each one in detail.

TURNIX SUSCITATOR.

Tetrao suscitator, Gmelin, Syst. Nat. i, p. 763, 1780.

Type locality.—Java.

As we had to discard *pugnax* of Temminck, late 1814, because it was antedated by *javanica* of Rafinesque, early 1814, so now we must discard the latter for *suscitator* of Gmelin, 1787, which antedates both.

The typical form from Java is differentiated from all our Indian and Burmese races by its very small size and very dark colour.

The nearest race to this form is, as is so often the case, that at the extreme opposite end of the Indo-Burmese triangle in Ceylon, which differs only in being a slightly darker, blacker bird with less rich chestnut colour. This form is named *Turnix s. leggei* and is confined to Ceylon.

Throughout the greater part of India a much paler and more rufous bird is found extending from Cape Cormorin to the extreme South of the Punjab but not in Sind. This bird is *Turnix s. taijoor*. Next, in a comparatively small area in the districts round Calcutta

we have a pale isabelline form named *T. s. bengalensis*, whilst from Northern India, from the montane and submontane tracts of Nepal and Sikkim extending through the Northern Burmese Hill districts to Western China we have a larger, much darker bird, rather like the Ceylon form but with no rufous collar on the female and more rufous marking elsewhere in both sexes. This race must be known by Hodgson's name of *plumbipes*.

In Southern and Western China, extending into our area in the Shan States and Karenni, we have a rather large bird with very rich black and rufous plumage which bears the name *T. s. blakistoni* of Swinhoe.

In Peninsula Siam and Burma this race is replaced by a form in which the upper parts are very grey and less maculate than in any of the others, whilst the whole tone is very dull. This we have named *T. s. interrumpens*.

Finally in the dry zone area of Central Burma we have a race which approximates *T. s. taijoor* of India but which has the general tint rufous-grey rather than pale rufous. This is called *T. s. pallescens*.

Key to Subspecies.

A. Upper plumage very dark and boldly marked with black and, to a less extent, with rufous.

a. A well-marked rufous collar on female. . *T. s. leggei*, p. 7.

b. No rufous collar on female.

a[1]. General plumage dark, boldly marked with black and less with rufous . . *T. s. plumbipes*, p. 12.

b[1]. General plumage duller, more uniform and less richly marked with black and rufous . . . . . *T. s. interrumpens*, p. 27.

B. Upper plumage very dark and rich, the rufous markings exceptionally strong . . . . . *T. s. blakistoni*, p. 25.

C. Upper plumage decidedly paler.

c. General tint of upper plumage pale rufescent . . . . . *T. s. taijoor*, p. 22.

d. General tint of upper plumage pale isabelline . . . . . *T. s. bengalensis*, p. 26.

e. General tint of upper plumage rufous-grey *T. s. pallescens*, p. 28.

TURNIX SUSCITATOR LEGGEI.

THE CEYLON BUSTARD-QUAIL.

Turnix javanica leggei, *Stuart Baker, Bull. B.O.C.* xliii, p. 9 (1920) (Ceylon); *id. Avifauna B.I.* (2nd ed.) v, p. 442 (1928) (Ceylon).

Turnix taijoor, *Jerdon, B. of In.* iii, p. 595 (part); *Hume & Marsh, Game-B.* ii, p. 169 (part); *Legge, B. of Ceylon* iii, p. 361; *Oates* in *Hume's Nests and Eggs* (2nd ed.) iii, p. 367 (part); *Ogilvie-Grant, Cat. B.M.* xxii, p. 530 (part); *A. L. Butler, J.B.N.H.S.* x, p. 313.

Turnix pugnax, *Sharpe, Hand-List* i, p. 48 (part); *Oates, Cat. Eggs B.M.* i, p. 69 (part); *Ogilvie-Grant, Game-B.* i, p. 265; *Blanford, Avifauna, B.I.* ii, p. 150 (part); *Stuart Baker, J.B.N.H.S.* xxiii. p. 391 (1915); *Wait, Spolia Zeylonica* x, p. 378 (1917).

Description. Adult Female.—Upper plumage dull, rufous-red to dark, rather brownish-grey; the head is usually a trifle darker than the other parts, whilst the rump and tail-coverts may be slightly paler; feathers of the crown in the centre tipped white, often forming a definite coronal streak, the rufous on either side more or less barred and spotted with black; lores, supercilia and sides of the head white with narrow margins or small spots of black; nape, shoulders and upper back finely barred with black, these parts, especially the nape, being often much spotted with white; a broad, well-marked nuchal collar of rufous, sometimes quite unmarked with other colours, rarely slightly spotted with black and white on the lower neck and upper back; lower back, rump and upper tail-coverts much more boldly barred with black and with white marks, either lines or large spots, on the outer webs of the lower back- and rump-feathers and the tips of the upper tail-coverts; scapulars like the back but often a little paler, still more boldly marked with black and white, the latter predominating. Wing-coverts like the back but rather paler, the greater and median boldly spotted with buff and black, the amount varying in individuals and the buff on the outer webs often forming a fairly distinct broad bar across the closed wing; lesser coverts and shoulders of wing less conspicuously barred; quills brown, not very

dark and bordered on the outer webs of the primaries with pale buff; primary coverts the same but often much freckled or barred with buff; the innermost secondaries are like their greater coverts and those nearest them are tipped pale and barred to a slight extent on the outer webs at their ends; chin, throat and centre of neck and breast deep velvety black; sides of lower neck and breast buffish-white to buff, broadly barred with black, with a few bars extending across the breast below the black and the barring sometimes continued well down the flanks; remainder of lower parts rufescent-buff or deep rusty buff, usually darkest on the vent and under tail-coverts; under aspect of the wing and axillaries dark silver-grey.

Colours of Soft Parts.—Iris white, occasionally yellowish; legs and feet slate or leaden grey; bill dark bluish-slate or plumbeous-grey, the culmen slightly darker, especially at the base, where it is quite a dark brown.

Measurements.—Total length about 130 to 140 mm.; wing 81 to 88 mm.; tarsus about 25 mm.; culmen about 13 mm.; tail about 25 mm. Legge gives the total length as about 6·3 to 6·5 inches and the wing as 3·4 to 3·55 inches, but none of the specimens from Ceylon in the British Museum have a wing as large as this latter. Legge, however, perhaps includes Indian birds in his measurements and those from Upper India run very large.

Adult Male.—Like the female but has the chin white instead of black, the breast and fore-neck banded black and buff like the sides instead of pure black. As a rule, the markings are somewhat less bold in character and the general appearance duller.

Colours of Soft Parts.—As in the female, but the iris more often straw-yellow.

Dimensions.—Wing 76 to 81 mm., and other measurements proportionately smaller than in the female.

Young females, probably in their second year, only differ from the adult in having chin, throat and upper breast like these parts in the male.

Quite young birds of both sexes after the first moult have the plumage similar to that of the adult male but the black on the upper parts is more plentiful, though duller; the secondaries are more marked and freckled with buff or rufous and the primaries

are also rather more widely margined with the same. The breast is spotted with large drops of black, which are sometimes rather arrow-head in appearance or sometimes become broadened into broken bars but never form complete bars as in the adult. The variations in the colour of the tail follow the same range as that of the old birds.

The chick when hatched is covered with pale whitish-buff down on the lower parts and dark chestnut buff above. There is a broad white line from the lores through the eye to the nape; a dark coronal streak, almost black; pale buff and black crescentic marks on the back; the wings have a dark and a pale bar; the inside of the thighs are chestnut.

Certain naturalists have claimed that the black throat of the female is merely a seasonal change and is lost after the breeding season. When a bird has so variable a breeding season as the Bustard-Quail has, it is very difficult to assert that such is, or is not, the case, the probabilities, however, seem against it. The hen assumes this black during the process of a moult, possibly taking two years before she fully acquires it; birds may, however, be found in *every* month of the year with the black fully developed. At the same time hens in captivity do, undoubtedly, assume a non-breeding plumage, losing the black on the throat and on the breast. If we could follow the changes of plumage in the wild state it is quite possible that we should find that the females always assume a non-breeding plumage for a portion of the year.

Distribution.—Ceylon. Legge thus records its habitat within the Island of Ceylon :—

> "This Bustard Quail is scattered over most of the open country in Ceylon, being more numerous in some localities than in others. In the maritime districts of the Western Province, including the sea-board from Manaar southwards to Chilaw, and in suitable localities round the South-West Coast, it is perhaps more common than elsewhere. Again, in portions of the Eastern Province where the ground is sandy and covered with low bushes, it is numerous, as in the Yala district, where Mr. Bligh writes me it was abundant; and in the Northern parts of the low country it is found in old clearings overgrown with grass and shrubs, and also on open bush lands on the borders of tanks. It is common in the Cinnamon Gardens, Negombo, Colombo, and Morotuwa, and breeds even in public resorts, such as the Circular, etc., where there are bushes to afford it the necessary cover."

Legge did not find it at any great elevations but I have received it from nearly 4,000 feet and, doubtless, it will be found even higher than this, provided there is suitable open country.

Nidification.—Wait and Phillips between them have taken eggs in every month of the year except August. The nest varies considerably; sometimes it is just a hollow under a tuft of grass or bush with a few wind-blown scraps of grass; at other times quite a well-made pad of grass is put together for the eggs to rest on. The hollow may be a natural one or one made by the birds, whilst the site selected may be almost anywhere in among grass and bushes in gardens, round about villages, between patches of rice and other cultivation or in grass-lands or thin scrub. Tea gardens and rubber plantations seem to be exceptionally favoured localities. The normal full clutch of eggs is four, but Wait says that three are not uncommon, whilst, exceptionally, two only may be incubated. Except in size the eggs do not differ from those of the other races, a description of those of this subspecies sufficing for all. The ground-colour is generally a greyish-white, sometimes tinged with yellow or red and, very rarely, rather warmer in colour. The markings consist of tiny specks of yellowish- and reddish-brown with others, fewer in number, of blackish-brown and, again, if very carefully examined, secondary specks of grey and lavender. In most eggs the former specks cover the whole surface profusely but, in nearly all they are larger and more numerous still at the broader end. In a few eggs the specks give place to larger blotches and black spots. In shape they vary from peg-top to broad obtuse ovals, whilst in texture they are fine, very hard and stout, often with a pronounced gloss. Forty-seven eggs average 23·3 × 19·1 mm.; maxima *25·3* × 19·1 and 24·2 × *19·6* mm.; minima *22·0* × *17·3* mm. The domestic arrangements of this race are like those of the Burmese Bustard-Quail, which are more fully described later on.

Legge refers to the polyandrous habits of these birds, which they share with others of the genus, and describes the way the hens fight for the possession of the cock. He writes, "they fight like the common hen, stretching up their heads and trying to circumvent each other, pecking out vigorously all the while," and elsewhere he records that so intent do they become on their fights that he has driven up to and

stopped his carriage within a few yards of a pair fighting by the roadside, without their taking any notice of him.

Habits.—This Bustard-Quail is found over most of the plains of Ceylon where the ground is more or less open and cultivated. It is less common in the hills but ascends occasionally as high as 4,000 feet, whence I have had eggs sent me with the cock-bird caught on the nest. It is an inveterate little skulker but not shy of humanity, often entering and breeding in gardens and, perhaps, more common in patches of grass or scrub round villages than anywhere else. When forced to rise they fly straight as a dart with whirring wings and very fast for fifty or sixty yards, and then drop as if shot into cover again. They run with great speed. Their food consists of seeds and insects and they are generally very fat and make delicious morsels on toast for those who can find it in their hearts to shoot them.

TURNIX SUSCITATOR PLUMBIPES.

THE BURMESE BUSTARD-QUAIL.

Hemipodius plumbipes *Hodg. Incon. ined. in Brit. Mus.* Nos. 126, 127; *id. Bengal Sporting Mag.* 1837, p. 346.

Hemipodius atrogularis, *Eyton, P.Z.S.* 1839, p. 107.

Turnix ocellatus, *Blyth, Cat. B. Mus. As. Soc.* 1849, p. 29; *Swinhoe, Ibis,* 1863, p. 398 (Formosa); *Godwin-Aus., J.A.S.B.* xliii, pt. ii, p. 174; *Jerdon, B. of I.* iii, p. 597.

Turnix taijoor, *Oates,* in *Hume's Nests and Eggs,* 2nd ed. iii, p. 367 (part); *Ogilvie-Grant, Cat. B.M.* xxii, p. 530 (part); *id. Game B.* i, p. 265 (part).

Turnix pugnax, *Gray, Hand-List B.* ii, p. 271; *Stoliczka, J.A.S.B.* xxxix, pt. ii, p. 333 (part); *Hume & Oates, Str. Feath.* iii, p. 178 (Pegu); *id., Nests and Eggs* iii, p. 553 (part); *Hume & Inglis, Str. Feath.* v, p. 45 (Cachar); *Ogilvie-Grant, Cat. B.M.* xxii, p. 534; *Sharpe, Hand-List* i, p. 48 (part); *Oates, Cat. Eggs B.M.* i, p. 69 (part); *Blanford, Avifauna, B.I.* iv, p. 150 (part); *Stuart Baker, J.B.N.H.S.* xii, p. 492; *Inglis, ibid.* p. 677; *Mears, ibid.* xviii, p. 89; *Harrington, ibid.* xix, p. 365; *id. ibid.* xx, p. 377; *id. ibid.* xx, p. 1011; *Venning, ibid.* xxi, p. 632; *Hopwood, ibid.* p. 1215.

Turnix plumbipes, *Blyth & Wald. Cat. Mam. & B. of Burmah,* p. 152 (1875); *Oates, Str. Feath.* v, p. 164; *Hume & Davies, ibid.* vi, pp. 450-521; *Hume, ibid.* viii, p. 69; *Scully, ibid.* p. 350; *Hume & Marsh. Game B.* ii, p. 177; *Gammie, Str. Feath.* viii, p. 453; *Hume, Cat.* No. 833; *Oates, B. of Burmah* ii, p. 337; *id. Str. Feath.* x, p. 236; *Hume, ibid.* xi, p. 310.

Turnix pugnax plumbipes, *Stuart Baker, J.B.N.H.S.* xxiii, p. 395 (1915); *Gyldenstolpe, Ibis,* 1920, p. 607.

Turnix suscitator plumbipes, *Stuart Baker, Fauna B.I., Birds,* 2nd ed., v, p. 445, 1928 (Nepal).

Vernacular Names.—*Timokpha* (Leptcha); *Tinisk* (Bhutia); *Ngon* (Burmese); *Sunsorai* (Assamese); *Daoduma* (Cachari); *Inruibuma* (Kacha Naga); *Vohbubum* (Kuki); *Purjoh Peyoo-Kabun* (Malay); *Guskecoone, Vock-coone* (Siamese).

Description. Adult Female.—Similar to the Ceylon Bustard-Quail but wanting the rufous nuchal collar. It is also a rather darker bird

with more rufous on the upper parts, and the black not quite so rich or velvety. The under parts are usually paler.

Adult Male differs from the female as does the male of *leggei*.

Colours of Soft Parts.—Same as *T. s. leggei*.

Measurements.—Wing ♀ 82 to 98 mm.; ♂ 77 to 95 mm. Hume gives the measurements as follows:—

> "Females.—Length, 5·44 to 6·37 inches; expanse, 11·0 to 12·5 inches; wing, 3·0 to 3·45 inches; tail from vent, 0·9 to 1·38 inches; tarsus, 0·9 to 1·02 inches; bill from gape, 0·68 to 0·78 inches. Weight, 1·7 to 2·25 oz."
>
> "Males.—Length, 5·6 to 6·25 inches; expanse, 10·9 to 12·3 inches; wing, 3·12 to 3·5 inches; tail from vent, 1·0 to 1·4 inches; tarsus, 0·95 to 1·12 inches; bill from gape, 0·7 to 0·81 inches. Weight, 1·5 to 2·65 oz."

I give Hume's measurements and weights in full, but cannot understand them, as they are almost exactly contrary to my own measurements, which, in agreement with other observers and naturalists, show the female to be a decidedly bigger bird than the male. Jerdon gives the wing measurement of this form as 3·6 inches and says that the male is smaller.

Distribution.—The North and North-West Chin and Kachin Hills, N. Arrakan, Chittagong and its Hill Tracts, the whole range of country, plains and hills, extending west as far as Sikkim throughout Assam and the Bengal Dooars and Nepal, together with the wetter, better-forested districts at their base, from Mymensingh to Bettiah in Behar, where, however, it meets the Southern form *taijoor* and intergrades with it.

Rothschild records three geographical races, *plumbipes*, *taijoor* and *rostrata* (= *blakistoni*) from Yunnan but only the last-named can occur there, some individual birds perhaps somewhat approaching *plumbipes*.

Nidification.—They breed practically all the year round, principally between April and September, whilst one hen will apparently go on laying eggs as long as she can find a supply of husbands to hatch the eggs she lays and to look after her innumerable progeny when hatched.

Dr. H. E. Butler, quoting from the German of Huth, tells us that

in 1890, a female *Turnix nigricollis* laid no less than eight clutches of eggs, from three of which young were hatched. It must, however, be noted that Huth speaks of the female of this species as being "a pattern of love, attention and solicitude towards the little chick."

I have had *plumbipes*, *tanki* and *dussumieri* in captivity, but I found that though I could keep any number of the males together, I could not keep two females, as they always fought until one was disabled.

Unfortunately I never managed to induce them to breed, though the hens would drop casual eggs here and there, of which they took no notice.

It is the cock bird that has to do all the hatching and looking after the young, for the hen, as soon as she has laid her first set of eggs, goes off to hunt up another male to look after her second set of eggs and, so on, until matrimony palls for the season and she either indulges in lonely blessedness or joins one or two other ladies who are also grass widows for the time being.

The male, having hatched the eggs, a process which takes about twelve days, then looks after the young and brings them up, performing his duties in the most admirable manner, feeding, tending them with the greatest solicitude, brooding them at night and fighting for them against all possible enemies, sometimes including their mother, with the greatest bravery.

Whether, when in a state of freedom, having brought up one family, he thereupon undertakes the duties of a second it is impossible to say; but in captivity, when he is the only gentleman available, the lady generally enforces these duties upon him, at least twice, if not more often.

As regards the nest, Hume says:—

> "Sometimes this species makes no nest at all, and merely scratches a hollow at the base of, or in the midst of, some tuft of Sirpatta grass, or occasionally some little dense bush adjoining or surrounded by long grass. Sometimes it makes a little pad of rather soft, dry grass, three, or at most, four inches in diameter, and half an inch in thickness, which it places as a lining to the hollow.
>
> "Generally it does scratch a hollow for itself, but at times natural hollows or the hoof prints of cattle are accepted and used, with or without a lining, without so much as a trace of the lazy little bird's feet being visible."

Hume adds an amusing account of how the male is forced, according to native ideas, by the female to sit on the eggs, who

> "thereafter gives him a tremendous thrashing if ever she catches him away from these . . . an old Moghul Shikari . . . used to aver that he had often watched the males feeding near the nest, rush on to the eggs at the sound of the female's call, and sit there looking as if they had not left the nest for at least a week, until the female appeared, walked once or twice round the nest, and strutted off again, wailing vociferously, as much as to say, 'Lucky for you it's all right, my little friend.' "

Hume, in writing this, includes all the different forms of Bustard-Quail under one name, and it is quite possible that his description is quite accurate in so far as it refers to the Common Bustard-Quail of the Plains.

Personally, though I have seen many hundreds of nests of *plumbipes*, I have never seen the eggs laid on the bare ground. As a rule the nest is placed just inside scrub, grass, or bamboo jungle alongside some open piece of ground, whilst a very favourite place for the nest is at the edges of the paths used by the hill villagers. These paths are cleared every year for a width of some 6 to 10 feet, but each rainy season the grass springs up and covers, more or less thickly, all but the centre, which is trodden hard by the constant traffic. Time after time, when walking or riding along these primitive tracks, I have put up the bird from my feet, and looking down have seen the eggs snugly tucked away at the roots of a thick tuft of grass.

In nineteen cases out of twenty, or perhaps even more, the nest consists of a thick pad of fine grass from 3½ to 4½ inches in diameter, fitting into some natural hollow, deepened, cleared and made circular by the birds themselves. In the centre the pad is from ½ to 1½ inches deep, and the sides curl up a little with the sides of the hollow. Often the nest is wedged in amongst the actual roots of a tuft of grass, the central blades being beaten down or forced aside to form the requisite space, the softer parts of the broken grass helping to form the pad itself. As a rule the mid-ribs of the coarser grasses are discarded and only shreds from the sides of the blades used, whilst now and then one may find a few roots, tendrils, fern fronds, or other similar materials made use of in the construction of the pad. When made in comparatively thick grass, more especially where this is

sun-dried or withered, the Bustard-Quail sometimes makes a regular domed nest, though I have never seen one made quite as elaborately as that described by Mr. D. Seth-Smith as being built by *Turnix maculatus* (*tanki*). I think, as a rule, the dome is as much accidentally as purposely made; the birds get into a tangle of grass, more or less withered and broken down and, in making the foundations for the nest pad, they force themselves this way and that, push pieces of grass to one side or upwards, thus making a hollow, which they line, and over which the twisted grasses form a dome.

The number of eggs laid is normally four and this number is very rarely exceeded, whilst three eggs, hard set, are just as rarely found in a clutch.

Jerdon talks of as many as eight eggs being laid in the same clutch, whilst Hume says that in thirty nests taken by himself he has seen two clutches of five and one of six. I am afraid to say how many nests I have seen of this bird, but it must be nearer 1,000 than 500, yet amongst all these I have known but one clutch of six eggs—that was brought to me—and perhaps four clutches of five eggs.

In North Cachar I have seen—not necessarily taken—as many as a dozen nests in a day, and I worked this district for fifteen years; after this I was in Dibrugarh five years and in the Khasia Hills yet another five, in both of which places *Turnix suscitator plumbipes* was most plentiful; certainly no year passed without my seeing twenty clutches of its eggs.

After this experience it may be safely asserted that clutches of anything but four eggs are abnormal.

In shape the eggs are generally broad ovals with the small end pointed rather sharply, and they vary from broad obtuse ovals to typical, if squat, peg-top-shaped eggs. The normal egg has a greyish white ground colour, sometimes tinged with a suspicion of yellow or red, and they are covered all over with innumerable dots and specks of dull yellowish and reddish brown with other spots and blotches, some so dark as to appear dull vandyke-brown or black. The secondary markings are of pale purple or lavender-grey, but are in most cases almost obliterated by the superior markings.

In some eggs the markings are all reduced to the very finest dots

in others they are all rather bolder, whilst in others again the two are intermixed. In a few the big dark blotches outnumber the smaller marks and give a more handsome appearance to the egg. As a rule the spots, etc., of whatever nature they may be, are distributed thickly all over the egg, but even more so towards the larger end where they sometimes form a well-defined ring or cap, the markings in which are bolder and darker than elsewhere.

In a few eggs in my collection the ground colour is decidedly reddish, whilst the markings, which consist of reddish and deep brown, are very large and handsome, giving the whole egg quite a bright red tint. Fewer still than these, yet now and then met with, are eggs in which yellow predominates rather than red.

The surface is fine and close, often having a considerable gloss, whilst the shell is very stout for so small an egg. The internal membrane is pure white.

The eggs are just bigger editions of those of the Ceylon Bustard-Quail. Sixty average 24·9 × 20·2 mm.; maxima *27·5* × 20·8 and 25·3 × *20·9* mm.; minima *22·1* × *17·0* mm.

General Habits.—This Bustard-Quail is found in the hills at all heights up to 8,000 feet and, again, well out into the plains, but though it is a bird of more or less open patches of country, it is also essential that such open country should be interspersed with forest and jungle and well watered.

Hume seems to have thought that to a certain extent Bustard-Quails are migratory, moving about according to the season in the plains and higher or lower in the hills in the hot and cold months. In the drier portions of their habitat in the plains, it is probable they are only to be found after the rains commence, leaving them again as soon as the winter drought begins to take effect; on the other hand they may be found at Darjiling at 8,000 feet elevation all the year round. So also in the North Cachar, Khasia and Naga Hills they will be found to be equally numerous all the year, either in the plains at their foot, or in the higher hills. In North Cachar I found it quite common at 6,000 feet in December and January.

It may be found in almost any kind of country other than dense forest without openings, or, the opposite extreme, sandy open grass land without any forest near it. Perhaps it prefers, above all other

kinds of ground, thin grass or scrub jungle, more or less broken up with bare patches or by cultivation. At the same time, it may be found almost equally often in bamboo jungle or in thin tree forests which have lots of low grass or other light undergrowth.

In North Cachar it was extraordinarily numerous, and one could not go along the narrow village paths for an hour's walk or round any field of hill-rice without putting up several. In the plains I have nowhere seen them so common as this, and Hume, writing of the Burmese form, *plumbipes*, in comparison with the Indian form, *taijoor*, says :—

> "They seem to me to be more sparsely distributed than is the Indian bird. Of the latter you might in many places, with good dogs and small charges, bag by hard work at least a dozen and possibly twenty couple in a day, whereas, from what I know myself, and from what I hear from others, I doubt if you could anywhere shoot even half the number of *plumbipes*, fag as you might."

I think, however, there are some places in North Cachar where one could get as many as twenty couple in a day *if* anyone ever desired to get them but, of course, it would be necessary to cover a lot of country, have some useful dogs to help and, also, hold straight.

They are not really as easy birds to kill as one would imagine, until their ways are learned. They generally get up very close to the shooter, often at one's very feet, and they then buzz straight off for some twenty yards or so and tumble headlong into the grass again. They fly at quite a good pace, though perfectly straight, in fact, very much as a common Quail does; but they are so tiny that if fired at close and hit, there is nothing left to pick up, whilst if time is allowed for them to get a fair distance, they take advantage of it to make one of their disconcerting dives into the grass. Many men will not agree with the dictum that there is no sport in shooting them, as one has to be very quick to kill these little birds with any certainty and, once missed, there is little chance of ever seeing them flushed again. Where the grass and bushes are extensive, even good dogs find it a hard job to flush a bird twice; I think, however, they generally rise fairly well the first time, though even then not until they are almost trodden underfoot by the gunner or nearly caught by his dog.

They are wonderful little runners and seem to be able to keep ahead of the fastest dog in grass or bush if the latter tries to follow them up by scent whilst, if the dog tries to rush them, they just slip to one side and allow the animal to shoot past. I had a very good example of this once when shooting some of these Bustard-Quail for specimens in a patch of grass half eaten down by village buffaloes and intersected in all directions by small paths and buffalo tracks. I had two Bhutia dogs with me, both keen sportsmen, with excellent noses but impetuous temperaments, and the dogs and I had all seen three or four of these Bustard-Quail driven into this patch from others a few yards away. The patch was not 10 yards wide by 50 long, yet in half an hour's bustling we got but one bird, and that I shot as he raced across a strip of open to another patch. Three or four times a bird would come out a foot or two into the open and then double back as one of the dogs came rushing past it.

Although such a little skulker, the Bustard-Quail by no means shuns humanity or human habitation, and is often found in gardens of bungalows, scraps of bush and grass round about, and even in the middle of villages. They are common in tea gardens, and feed continually within very short distance of women plucking tea, or men hoeing the ground between the bushes. In many parts of India they seem to be peculiarly partial to the borders of rough grass growing at the edges of tanks, or to the softer grass in Mango topes or orchards. In Sylhet and Cachar I also often found them in small strips of dry grass, surrounded on all sides by water and swamp, and we often added one or two to our bag when out snipe shooting by making a man beat the small pieces of high grass land dotted about, here and there, in amongst the rice fields.

It is excellent for the table, and Bustard-Quail on toast, though a much smaller, is quite as good a morsel as any real Quail.

In this species, as in all others of the genus, the female bird is the one which "wears the breeks" in their family arrangements, and it is she who fights for the male whom, when fought for and won, she completely dominates and henpecks. In a wild state, the hen bird attracts the male to her with a loud booming call, generally described as a purr or as a cross between a purr and a coo. Mr. D. Seth-Smith writes of their call :—

> "The call note uttered by the Hemipodes seems to be much the same with all—a soft booming, which is more or less ventriloquial. The female utters the note far more frequently than the male, and I am not sure that he calls at all, but I believe he does occasionally. This note may be almost called a 'Coo'; I have frequently mistaken it for the coo of the Bronze-winged Pigeon in the distance. Some writers have likened it to the distant bellowing of a bull, and the Mediterranean form, *T. sylvatica*, is known as 'Torilla' or 'little bull.'"

The sound is also not unlike the deep guttural purr, or grunt of a tiger and, sometimes, when hurrying along a lonely jungle path as evening was coming on, it would give one quite a start to hear the call come soft and deep from just behind. On moonlight nights during the breeding season, the female birds call incessantly and in the stillness and darkness their voices sound extraordinarily loud. I think the bird often mounts a convenient hillock to "boom," but she never gets on to a stump or branch. Her attitude when calling is crouched rather low on the gronnd with wings outspread on either side and gently quivering.

The females are very pugnacious at all times, though more especially so when breeding, and their pugnacity is taken advantage of by natives of many parts of the country to trap them. Jerdon thus describes how the first cousin of this bird, *taijoor*, is caught in the South of India:—

> "For the purpose a small cage with a decoy bird is used, having a concealed spring compartment, made to fall by the snapping of a thread placed between the bars of the cage; it is set on the ground in some thick cover, carefully protected. The decoy bird begins her loud purring call, which can be heard a long way off, and any females within earshot run rapidly to the spot and commence fighting with the caged bird, striking at the bars. This soon breaks the thread, the spring cover falls, ringing a small bell at the same time, by which the owner, who remains concealed near at hand, is warned of a capture, and he runs up and secures his prey and sets the cage in another locality. In this way I have known 12 to 20 birds occasionally captured in one day, in a patch of thick, bushy jungle in the Carnatic, where alone I have known this practice carried on. The birds that are caught in this way are all females, and in most cases are birds laying eggs at the same time, for I have frequently known instances of some eight or ten of these captures, so far advanced in the process as to lay eggs in the bags in which they were carried, before the bird catcher had reached his house."

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In North Cachar the Nagas had a somewhat similar way of catching them. A hen bird was pegged down by one leg to the ground by a piece of string about a couple of feet long and, all round her, at a distance of five feet or so, where the ground had been partially cleared, were placed innumerable nooses of goat's or mithun hair tied to inconspicuous creepers.

As soon as the decoy bird settled down, the Naga would get behind a bush, whilst I, when I looked on, would select a tree where from a few feet above the ground one could see all that took place. After being left alone for a few minutes, the hen would preen and clean herself and, presently, start booming, at first sitting up in a semi-erect position, but gradually lowering her breast to the ground, with outstretched wings, and blowing herself out with each boom until she looked like a little feather balloon. As a rule we had not long to wait before there was an answering boom, and almost immediately a Bustard-Quail would slink up and, if not caught in one of the outer nooses, would also squat a second or two and then boom back at her opponent once or twice, after which she would rush headlong to the fight. As a rule she was caught at once in the nooses, but sometimes she would escape these and, seizing the tethered female, engage in a mortal combat. In such cases the two birds were always so keen on the fight that it was easy to throw a cloth over them and secure the wild with the tame.

That the boom is a call to the male as well as a challenge to the female was shown by the fact that cock birds as well as hens were sometimes caught. I once saw a male snared and his attitudes and modest demeanour as he approached his lady love were most amusing. There was no cooing or purring on his part, but he slunk up close to where she was and then squatted in the grass, back to her, some six feet away. Here he lay quite still while she boomed away, bowed, danced, and scraped to him in a perfect ecstasy, yet prevented from approaching any nearer to him by her tether. At last, seeing that she would not go to him, the male commenced sidling up to her, only a few inches at a time, until he stepped into a noose, and was trapped.

So pugnacious are these birds that they will often continue to fight in their small cages immediately after they are trapped, and it would be impossible to keep breeding hens together with any safety.

TURNIX SUSCITATOR TAIJOOR (Sykes).

THE COMMON BUSTARD-QUAIL.

Hemipodius taijoor, *Sykes, P.Z.S.* 1832, p. 155 (Deccan); *Bengal Sporting Mag.* 1836, p. 171.

Turnix taijoor *Jerdon, B. of I.* iii, p. 595 (part); *Bell, Str. Feath.* ii, p. 428; *Stoliczka, J.A.S.B.* xlii, pt. ii, p. 250; *Butler, Str. Feath.* iv, p. 7 (N. Guzerat); *David. & Wen. ibid.* vii, p. 87 (Deccan); *Ball. ibid.* vii, p. 226 (Ganges to Godaveri); *Hume & Marsh. Game-B.* ii, p. 169 (part); *Vidal, Str. Feath.* ix, p. 77 (S. Konkan); *Butler, Cat. B. of S. Bombay*, p. 70; *Hume, Cat.* No. 832; *Ball, Str. Feath.* ix, p. 424; *David., ibid.* x, p. 317 (Kandesh); *Davidson, ibid.* p. 412 (Mysore); *Macgregor, ibid.* p. 441 (Deccan); *Taylor, ibid.* p. 465 (Mysore); *Macpherson, ibid*, p. 119; *Barnes, B. of Bombay*, p. 317; *Butler, B. of Sind*, p. 55; *Oates, Hume's Nests and Eggs* (2nd ed.) iii, p. 367 (part); *Ogilvie-Grant, Cat. B.M.* xxii, p. 530 (part); *id. Game-B.* i, p. 265 (part); *Barnes, J.B.N.H.S.* vi, p. 9.

Turnix pugnax, *Butler, Str. Feath.* vi, p. 222 (Deesa); *Fairbank, ibid.* p. 409 (Palni Hills); *Sharpe, Hand-List* i, p. 48 (part); *Oates, Cat. Eggs B.M.* i, p. 69 (part); *Blanford, Fauna B.I., Birds*, 1st ed., iv, p. 150 (part); *Moss King, J.B.N.H.S.* xxi, p. 101; *Whitehead, ibid.* p. 168.

Turnix pugnax taijoor, *Stuart Baker, J.B.N.H.S.* xxiii, p. 403 (1915).

Turnix suscitator taijoor, *Stuart Baker, Fauna B.I., Birds* 2nd ed., v, p. 447, 1928 (Deccan).

Vernacular Names.—*Gulu, Gundlu, Gundrā, Salui-gandra* (Hind.); *Pured*, female, *Kalada*, male (Telegu); *Kurung-kadik*, female, *Ankadik*, male (Tamil); *Durwa* (Ratnagiri); *Karechaki* (Canarese).

Description. Adult Female.—Differs from *leggei* in being much paler and much more rufous, many birds appearing, as a whole, to be a bright, but rather pale rufescent red. The pale fulvous edges to the feathers of the back, scapulars, etc., are larger and paler, increasing the pale effect of the plumage, whilst the under parts are generally very much paler. The black spots on the wing-coverts, though smaller, are more in the nature of bars than they are in either of the other three subspecies.

Colours of the Soft Parts.—As in *T. s. leggei*.

Measurements.—The Common Bustard-Quail follows the general avian rule in being smaller in the south than its more northern and eastern representatives.

The British Museum series—a large one—gives an average wing measurement for females of just 81·6 mm., ranging between 77 and 88 mm.

Adult Male.—Differs from the female much in the same way and degree as does that of the other subspecies.

Measurements.—The male, as usual, is decidedly smaller than the female; wing 72 to 85 mm. Hume's measurements for this form agree with mine in so far as they make the male out to be smaller than the female, but his wing dimensions greatly exceed mine.

> "Females.—Length 6·12 to 6·7 inches; expanse 11·75 to 12·75 inches; wing 3·4 to 3·7 inches; tail from vent 1·0 to 1·4 inches; tarsus 0·95 to 1·12 inches; bill from gape 0·7 to 0·81 inches. Weight 1·5 to 2·56 oz." (*Hume*).
>
> "Males.—Length 5·6 to 6·25 inches; expanse 10·75 to 11·7 inches; wing 2·85 to 3·1 inches; tail from vent 0·9 to 1·2 inches; bill from gape 0·6 to 0·72 inches. Weight 1·5 to 1·9 oz." (*Hume*).

From the above it will be seen that Hume makes out *taijoor* to be about as big as *leggei*, but it is rather difficult to say what exactly Hume included in the two subspecies, so that for matters of comparison his figures are not of much value, though they are, otherwise, of the greatest interest.

Distribution.—The whole of India south of the habitat of *T. s. plumbipes* down to Cape Cormorin. It has not yet been recorded from Sind, but I have recently had it sent to me from the Punjab, where it would appear to be only a rare straggler.

Nidification.—Not to be distinguished in any way from that of *plumbipes*, though, if Hume is correct, this continental form would appear very often to be contented with laying its eggs in some hollow without making a true nest. Even in such cases, however, a rough collection of scraps of grass, etc., is always placed in the hollow before the eggs are laid.

The season for laying may vary somewhat in different places but, really, it may be said to last more or less all the year round. Scarcity

of food naturally checks breeding, so that in the driest portions of its habitat the driest months of the year will form a gap in breeding operations whilst, on the contrary, where the rainfall is heaviest, the birds will cease breeding during the height of the rains.

The eggs are exactly like those of *T. s. plumbipes* and vary in colour to the same extent. Sixty average 24·7 × 19·4 mm.; maxima *26·5* × 20·1 and 23·9 × *20·4* mm.; minima *23·0* × 18·1 and 24·2 × *17·9* mm.

In Hume's Nests and Eggs Oates gives the average of thirty eggs, practically all from Southern India, as 0·94 × 0·78 inches (= 23·7 × 19·8 mm.) and in the Catalogue of Eggs in the British Museum he again gives the extremes of measurement, for the same series, i.e., between 0·8 × 1·04 inches (= 20·3 × 26·4 mm.) in length; 0·71 to 0·85 inches (= 18·0 × 21·6 mm.) in breadth; but these measurements include some Eastern and Formosan eggs.

TURNIX SUSCITATOR BLAKISTONI (Swinhoe).

THE CHINESE BUSTARD-QUAIL.

Areoturnix blakistoni, *Swinhoe, Ibis*, 1871, p. 401 (Canton).

(**Turnix rostrata**, *Swinhoe, Ibis*, 1865, pp. 542-544 [Formosa]).

Turnix taijoor, *Oates* in *Hume's Nests and Eggs* (2nd ed.) iii, p. 367 (part); *Ogilvie-Grant, Cat. B.M.* xxii, p. 530 (part); *id., Game-B.* i, p. 265 (part).

Turnix pugnax, *Sharpe, Hand-List* i, p. 48; *Oates, Cat. Eggs B.M.* i, p. 69 (part); *Blanford, Avifauna B.I.* iv, p. 150 (part).

Turnix pugnax atrogularis, *Stuart Baker, J.B.N.H.S.* xxiii, p. 405 (1915).

Turnix pugnax rostrata, *Rob. & Kloss, Ibis*, 1919, p. 411.

Turnix suscitator blakistoni, *Stuart Baker, Fauna B.I., Birds*, 2nd ed., v, p. 448 (1928).

Vernacular Names. — *Guske-coone, Nock-coone* (Siamese); *Ngôn* (Burmese).

Description. Adult Female.—This is the most richly coloured of all the forms of the Bustard-Quails, the upper parts being very boldly marked with black and deep rufous, the latter of a darker, redder tint than is found in any of the other subspecies.

The colours of the soft parts are the same as in *T. s. leggei*.

Measurements. Females.—Wing varying between 88 and 94 mm. The males, as usual, are decidedly smaller with a wing of only 78 to 92 mm.

Distribution.—South and Western China, the hill-ranges of Yunnan and Northern Siam into the Eastern Shan States; Annan, Tonkin and Karenni.

Nidification.—Exactly the same as that of *T. s. plumbipes* and the eggs are not to be distinguished from those of the latter bird. Thirty-two average 24·1 × 20·4 mm.; maxima *27·2* × *21·1* mm.; minima *22·1* × 19·0 and 24·0 × *18·3* mm.

Habits.—So far as is recorded, there appears to be nothing to note in the habits of this bird differing in any way from those of its nearest relations. It is found alike in the plains, certainly up to 4,000 feet in the hills, and probably higher in the loftier ranges. Like other Bustard-Quails also it keeps much to openings in partly forested country and is often found in cultivation and round villages.

TURNIX SUSCITATOR BENGALENSIS.

THE CALCUTTA BUSTARD-QUAIL.

Turnix bengalensis *Blyth, Cat. B. Mus. As. Soc.*, p. 256, 1852; (vicinity of Calcutta).

Turnix suscitator isabellinus *Robinson & Stuart Baker, Bull. B.O.C.* xlviii, p. 62 (1928) (Calcutta); *Stuart Baker, Fauna B.I., Birds*, 2nd ed., v, p. 448, 1928 (Calcutta).

Turnix pugnax, *Blanf. & Oates* ix, p. 150 (part).

Vernacular Names.—*Gulu, Gundra* (Hind.).

Description.—A very pale form, nearest perhaps to the pale form from the dry zone in Burma but with the general tint more isabelline and less rufous; the white lines on the upper plumage are very fine; the under parts are very rufous and dark in comparison with the upper.

Colours of soft parts as in the other forms.

Measurements.—Wing, ♀ 83 to 84 mm., ♂ 77 mm.

Distribution.—Calcutta; 24 Parganas, Hooghly, Nadia; there are three specimens in the British Museum Collection and I have seen others from the districts mentioned.

Nidification.—Jerdon and Parker both took numerous nests of this race in the Botanical Gardens and round about Calcutta during July and August. I personally took eggs in other parts of the 24 Parganas as well as in Hooghly and Nadia, though they were not common except in the first-named district. The eggs were always four in number, both they and the nests being indistinguishable from those of the other races. The only eight I have measured average 24·2 × 19·9 mm.

Habits.—Those of the species. This little Quail was common in the scrub round about Calcutta, Barrackpore and Serampore, often entering the gardens and parks on the outskirts of these places.

TURNIX SUSCITATOR INTERRUMPENS.

THE TENASSERIM BUSTARD-QUAIL.

Turnix suscitator interrumpens, *Robinson & Stuart Baker, Bull. B.O.C.* xlviii, p. 60 (1928) (Kossoom); *Stuart Baker, Fauna B.I., Birds*, 2nd ed., v, p. 449, 1928 (Kossoom).

Turnix pugnax, *Blanf. & Oates*, iv, p. 150 (part).

Vernacular Names.—*Ngôn* (Burmese); *Gaske-coone, Nock-coone, Nok-hum-maw* (Siamese).

Description.—This race is rather close to *plumbipes* but has the upper plumage very grey, nearly devoid of rufous markings and with the black bars almost obsolete; on the other hand, the buff and white markings are also inconspicuous, the upper plumage having a very uniform appearance when compared with *T. s. atrogularis*, the South Malayan form.

Colours of soft parts as in the other races.

Measurements.—Wing ♀ 81 to 90 mm., ♂ 73 to 87 mm.

Distribution.—Peninsular Siam and Burma to North-East Siam. In Burma the northern limit is approximately lat. 20°, running up further north on the east.

Nidification.—Herbert found this Quail breeding during June, July and August in Siam, and gives the average size of the eggs taken by him as 23·5 × 20·0 mm.

Habits.—Those of the species.

TURNIX SUSCITATOR PALLESCENS.

THE PEGU BUSTARD-QUAIL.

Turnix suscitator pallescens, *Robinson & Stuart Baker, Bull. B.O.C.* xlviii, p. 60 (1928) (Thayetmyo); *Stuart Baker, Fauna B.I., Birds*, 2nd ed., v, p. 450, 1928 (Thayetmyo).

Turnix pugnax, *Blanf. & Oates*, iv, p. 160 (part).

Vernacular Names.—*Ngôn* (Burmese).

Description.—This is a much paler dry-zone form, approximating the dry-zone form, *T. s. taijoor*, of India; the white striations on the upper surface are broad and conspicuous but there are no red bars as in *T. s. blakistoni* or black ones as in the southern forms. The tint is decidedly rufous-grey, not isabelline as in *T. s. isabellinus*.

Colours of soft parts as in the other races.

Measurements.—Wing, ♀ 80 to 88 mm., ♂, 80 to 83 mm.

Distribution.—The dry zone of Central Burma in Pegu, roughly from Rangoon to Thayetmyo and Tounghoo but not, so far as is yet known, crossing the Sittoung.

Nidification.—Oates took the eggs of this form in Pegu in August, and Hopwood and Wickham took others between June and that month. They are just the same as those of the other races, but no measurements have been recorded.

Habits.—Those of the species.

TURNIX DUSSUMIERI.

THE LITTLE BUTTON-QUAIL.

Hemipodius dussumieri, *Temm. Pl. Coll.* v, p. 454 (1828), India.

Hemipodius variabilis, *Hodg. Bengal Sport. Mag.* (1837), p. 345.

Hemipodius sykesi, *Smith, Ill. Zool. S. Afri.* ii (1838).

Turnix dussumieri, *Blyth, Ibis* (1867), p. 161; *Gould, B. of Asia* vii, pl. 10 (1869); *Hume, Str. Feath.* i, p. 277; *Adam, ibid.* ii, p. 338; *Ball, ibid.* p. 428; *Butler, ibid.* iv, p. 9; *Fairbank, ibid.* pp. 262, 266; *Davis. & Wen., ibid.* vii, p. 87; *Hume, ibid.* pp. 186, 226; *Butler, ibid.* p. 186; *Ball, ibid.* p. 226; *Cripps, ibid.* p. 296; *Butler, Cat. B. of Sind.* p. 56; *Hume & Marsh., Game-B.* ii, p. 193; *Hume, Cat.* No. 835; *Vidal, Str. Feath.* ix, p. 77; *Butler, Cat. B.S. Bombay*, p. 70; *Reid. Str. Feath.* x, p. 64; *Oates, ibid.* p. 237; *Davidson, ibid.* p. 318; *Oates, B. Burmah* ii, p. 336; *Hume, Str. Feath.* xi, p. 312; *Barnes, B. of Bom.* p. 319; *Ogilvie-Grant, Cat. B.M.* xxii, p. 540; *Oates* in *Hume's Nests and Eggs* (2nd ed.), iii, p. 371; *Blanford, Avi. B.I.* iv, p. 152; *Oates, Game-B.I.* i, p. 2; *Ogilvie-Grant, Game-B.* ii, p. 273; *Le Mess., Game, S. & W.B.* p. 114; *Sharpe, Hand-List* i, p. 48; *Oates, Cat. Eggs B.M.* i, p. 71; *Barnes, J.B.N.H.S.* vi, pl. i, fig. 825; *Stuart Baker, ibid.* xii, p. 493; *Moss King, ibid.* xxi, p. 101; *Whitehead, ibid.* xxi, p. 169; *Stuart Baker, ibid.* xxiii, p. 406 (1915); *id. Fauna B.I., Birds*, 2nd ed. v, p. 450.

Turnix sykesi, *Jerdon, B. of I.* iii, p. 600; *King, J.A.S.B.* xxxvii, pt. ii, p. 216; *Godwin-Austen, ibid.* xliii, pt. ii, p. 174.

Vernacular Names.—*Ginwa Lawa, Chota Lawa, Dabki, Tura Shimaj* (Muttra); *Libbia* (Purnea); *Darwi* (Ratnagiri); *Chinna* or *Tella-Dabba Gandla* (Telegu); *San Gundla* (Ooriya); *Choto San-sorai* (Assamese); *Dao-duma Kashiba* (Cachari); *Inrui-buma gajeba* (Naga); *Tutu-butera* (Sind); *Ngôn* (Burmese).

Description. Adult Male and Female.—A distinct mesial stripe from forehead to back of crown pale buff, sides of the crown rufous-brown to brown, generally much mixed with black, whereas the mesial stripe is often unspotted and seldom heavily marked; lores, supercilia and sides of the head white, or buffy-white, speckled with black: back of the neck ferruginous-red to dull ferruginous; back,

rump and upper tail-coverts barred black and rufous, the rufous varying from a bright tint to a dull greyish-rufous and the amount of black varying greatly in individuals; here and there, more especially on the rump, a few of the feathers are very narrowly margined with whitish and some of the outer tail-coverts have the outer webs edged with buff; the black is nearly always more strongly developed on the rump and upper tail-coverts than on the back; scapulars, inner wing-coverts, and innermost secondaries like the back, but with broad buff margins to each feather; other wing-coverts rufous with a black spot on the outer web and with broad buff margins, in some birds this buff margin occupying nearly all the visible portion in the closed wing; bastard wing and primary coverts grey-brown with buff edges; primaries brown, or grey-brown, with buff edges, broad and distinct on the outer, narrow and sometimes abraded on the inner; chin and throat white, centre of breast rufescent, sides of breast white or buffy-white, with bold drops of black and more or less numerous patches of chestnut; remainder of lower parts white, often tinged buff and sometimes with chestnut; remainder of lower tail-coverts nearly always of this latter colour.

Colour of the Soft Parts.—"Legs and feet vary from pale fleshy-white to light lead colour; the bills from leaden-white to lavender or plumbeous; the irides are light yellow to straw-white" (*Hume*).

"Legs fleshy-white or pale blue-grey, bill the same" (*Finn* in *Indian Field*).

Measurements.—Wing, ♀ 73 to 75 mm., ♂ 61 to 71 mm.; tail about 31 to 37 mm.; tarsus about 18 to 20 mm.; culmen about 10 to 11 mm. Weight 1¼ to 1½ oz.

Young Birds.—"In the young birds the whole of the upper plumage is reddish brown, becoming brighter rufous on the nuchal region, indistinctly barred with blackish brown and spotted with white, especially on the wing-coverts and chest. The latter is paler buff than that of the adult and spotted all over with black" (*Ogilvie-Grant*).

The chick in down is not distinguishable from the nestling of *Turnix suscitator leggei*.

It is quite impossible to divide this little Bustard-Quail into subspecies. Two specimens from Formosa, both females, in the British Museum Collection can be picked out from the rest by their

rich plumage, as can one from Sambalpur, another from the Deccan and yet one more from East Burdwan. All these five are, however, identical and their distribution, over so scattered an area, at once disposes of the question of their difference in coloration being of a subspecific value, moreover they are closely approached by a few specimens from Raipur and other parts of Central India.

It is curious to note that specimens from Pegu are rather paler than birds from other parts of Burmah, just as are specimens of *Turnix suscitator*, though these latter agree otherwise with the dark Malayan and Eastern form rather than with the South Indian ferruginous bird.

The range of variation in *Turnix dussumieri* is not nearly so great as it is in *Turnix suscitator*, consisting principally in the amount of black barring in the upper plumage and the extent of the buff margins to the feathers of the wings and scapulars. As these are plentiful, or the reverse, so is the general aspect of the bird itself, dark or pale. The rufous of the nape and neck does not vary much in colour, though a good deal in extent, but the rufous of the upper back is often a more grey-brown than a red and this, of course, also affects the general appearance considerably.

Distribution.—This tiny Game Bird is found practically throughout India, as far south as Travancore, from the southern part of which I have received two male specimens with their eggs. From this State it extends north in every direction as far as the Himalayas, ascending then to the height of at least 8,000 feet. It occurs in all the Hill Ranges of Assam and I have personally often taken it in the Khasia Hills, Cachar Hills, Naga Hills, as well as up the Assam Valley, as far east as Dibrugarh and Sadiya. It is also found in the plains of Cachar, Sylhet, Tippera, Chittagong and in the Chittagong Hill Tracts. Further east it has been obtained by one of my native collectors in the Shan States. Oates got specimens in Pegu and Swinhoe obtained it in Formosa and Hainan.

Doubtless it will be found to occur in all the districts of Burmah and throughout the lower Hill Ranges into Western China.

As regards elevation, it certainly ascends as high as 8,000 feet, as it has been found above Darjeeling, above Simla, and nearly as high

on the highest peaks of North Cachar; on the highest parts of the Nilghiris where, however, it seems to be extremely rare.

Naturally from certain parts of the country it is debarred by the humidity and denseness of the forest or, on the other hand, by the dryness and bareness of the plains. To the north-west it, perhaps, only wanders during the rains and in these parts it is semi-migratory, to the extent of moving when, literally, a place becomes too hot to hold it. Elsewhere it is certainly a resident bird, breeding wherever found.

Nidification.—With this, as in the other *Turnicidæ*, the female bird is the one who courts the male and fights with other females for him. She is as pugnacious as her larger relatives and, sad to relate, is just as negligent of her maternal duties and of her moral obligations. Until she has won her husband, she will fight for him as if he was the one and only thing she desired in this life, but her frenzy of love soon dies and, after a very short spell of wedded life, she leaves the poor little henpecked husband to hatch the four eggs she has laid, and wanders forth in search of new adventures and more husbands.

Her purr, coo, or boom, however we may describe her call, is, I think, a good deal softer and weaker than that of the bigger Bustard-Quail, otherwise it is of exactly the same description and is uttered in the same way and for the same purpose, i.e., to call the male or to challenge another female. Captain Butler told Hume that its call was:—

> "A mixture of a purr and a coo, and when uttering it a bird raises its feathers and turns and twists about much in the same way as an old cock pigeon";

and he might have added, with the same motive, that is to say, in order to captivate its mate.

Doubtless this bird, like the others of its genus, breeds more or less throughout the whole year, though it is, perhaps, not quite so irregular as the common Bustard-Quail. Generally speaking, it may be said to breed principally from April to October and, more especially, from June to September. The hen must lay several clutches in the year, for she will go on breeding, apparently, so long as she can find husbands to hatch her eggs and bring up her young. In North

Cachar I found this bird called and bred from late in April to the end of August; in the Khasia Hills, adjoining these, she began in early April and went on until late in September, a difference, doubtless, due to the excessive rainfall in parts of the latter district. Davidson considered it a late breeder, and recorded :—

> "In Sholapur I got, or had brought to me, four nests, one on August 17, and the others at the very end of September, and I shot a hen in October, 1878, containing one unshelled egg.
>
> "In the Panch Mahals I shot a bird containing a perfect, very highly-coloured egg late in October."

Theobald also found them breeding in the Punjab late in August, whilst near Deesa Captain A. E. Butler found eggs from the end of May to the end of August.

In Behar and Bengal, Coltart, Inglis, Hervey and others have found it breeding during the rains only, commencing at the end of June and continuing until the end of September.

The nest is similar to, and is placed in the same kind of position as, that of the last bird, so requires no separate description though I do not think it is so often domed or covered in. I may have seen some forty or fifty nests of this bird, all told, but I do not think I have seen half a dozen of the domed variety.

The number of eggs laid is almost invariably four, and I have never seen a complete clutch with less, only four nests with five eggs in them and never one with six.

The ground colour of the eggs is generally greyish white, occasionally yellowish white, or still more rarely, with a faint reddish tinge. The whole surface is closely stippled or speckled and spotted with minute spots of yellowish or greyish brown, with here and there some rather largish spots and small blotches of blackish brown, in some cases a rather rich reddish brown. As a rule, these bolder markings are rather sparse and rather small, but in a few clutches they are numerous and bold, some of the blotches being as much as 0·2 inches in their longest diameter. Most eggs have the superior markings of all kinds fairly equally distributed over the whole surface, but in some the bolder blotches and spots form a wide zone or cap at the larger end. The secondary, or subsurface, marks are of lavender grey or pale purple in the shape of irregular spots and blotches, almost concealed by the surface markings.

Taking these eggs as a series, they are decidedly more boldly marked than are those of any of the other birds of the genus except the Indian Button-Quail. In both of these birds clutches of eggs are not uncommon in which the whole of the surface is densely marked with comparatively large blotches of deep velvety black, giving them an unusually handsome appearance. In Karwar this seems to be the normal type of egg, and most of my clutches received from Western India from Messrs J. Davidson, T. R. Bell, and other collectors have been of this type. In Bengal and Behar the two types are about equal, whilst in Eastern Bengal the freckled form is that most often seen.

The shape, texture and surface of these eggs differ in no way from those of the Black-breasted Bustard-Quail, though the size differs to the extent one would have expected.

Sixty eggs average 21·3 × 17·3 mm.: maxima *23·2* × *19·2* mm.; minima *19·7* × *15·9* mm.

Habits.—This little Hemipode has much the same habits and frequents much the same kind of cover as the Common or Black-breasted Bustard-Quail. It may be found in any sort of jungle, except dense evergreen forest, whilst even into this it wanders a little way when it borders open cultivation or grass lands. It likes bamboo jungle, especially that which is composed of small clump bamboos, which afford it excellent shelter with but little undergrowth. It is found in gardens, orchards, patches of sun grass, near tanks and ponds, as well as in the half trodden-down scrub jungle, which surrounds so many villages in Eastern Bengal. It may also be flushed occasionally from any kind of crop, such as hill-rice, millet, wheat, or even from various Dahls, standing as high as six feet, and from young sugar-cane, jute, etc. Undoubtedly, however, its favourite haunts are fairly wide stretches of sun grass, not necessarily either very long or very dense, for the little bird seems to enjoy places where it can run about with ease and freedom.

It is an inveterate little skulker and a wonderful runner, so that it is an even harder bird to flush than its bigger relative, *Turnix suscitator*. So hard is it to induce to rise, that I have shot over wide stretches of grass for Florican and other game without seeing a single bird, though we had close lines of beaters working through with us;

yet, on setting alight to this same grass, the fire has forced a dozen or more of these birds to leave its shelter.

They love basking in the sun in tiny open spaces in the grass, and I have more than once come across them in some small hollow scratched in the dust or sand in the middle of the patch, lying in luxurious ease half on their sides, with uppermost wing and legs stretched out, and eyes blinking in self-satisfied enjoyment, until they rest on the intruder, when in a second they are off with a whirr in a headlong flight. But their flight only lasts for a few yards and they then pitch suddenly into the grass, or cover, not to get up again, however closely one may search. I once came across a little family party thus sunning themselves in the middle of a jungle path. I was wearing rubber shoes and had approached with complete silence, so that it was not until I had watched them for some moments that they spotted me and flew off. The young were tiny things, not half grown, but they flew as fast as the old bird, all pitching within a few yards of where he did and, presently, I heard the faint "cluck-cluck" of the anxious parent as he called to his chicks who, doubtless, ran to him at once, for the clucking soon stopped.

The young seem to hatch in ten or twelve days; the Cacharies say ten days, but judging from what Seth-Smith says of its nearest relations, it is probably twelve. In a very short time they become wonderfully independent and, when less than a fortnight old, can fly short distances with ease and celerity, their wings looking disproportionately large in comparison with their body.

Like the various races of their larger relations they eat both insects and seeds, whilst they are also fond of the blades of growing rice, just as it begins to spring up, for more than once I have taken these from their stomachs. Their actions while feeding are ludicrously like those of the Domestic Fowl; they scratch in the soil and bustle about from one likely spot to another, seize an ant or spider with a little run, hop up and catch a grasshopper on the wing, or turn over the soil and pebbles in search of the insects which harbour beneath them. At the same time their actions impress one as being very secretive, for they have a rather furtive look as they run about, all their energy never disturbing the complete silence.

TURNIX MACULATUS.

The Larger Button-Quails form two good races differing very considerably in size, that from the North-east and East being much larger than that from the rest of India. For some reasons the name "*maculatus*" of Vieillet has been rejected by authors as meaning the same as *maculosus*, a quite insufficient reason and it has, therefore, to be reinstated.

Key to Subspecies.

A. Larger; wing, ♂, over 90 mm. . . . . *T. m. maculatus*, p. 47.
B. Smaller; wing, ♂, under 90 mm. . . . . *T. m. tanki*, p. 37.

TURNIX MACULATUS TANKI.

THE INDIAN BUTTON-QUAIL.

Turnix tanki, *Blyth, J.A.S.B.* xii, p. 180 (1843); *Ogilvie-Grant, Ibis* (1889), p. 466; *Oates*, in *Hume's Nests and Eggs*, 2nd ed., iii, p. 370; *Ogilvie-Grant, Cat. B.M.* xxii, p. 544; *Blanford, Avifauna B.I.* iv, p. 153: *Oates, Game Birds of India* i, p. 63; *Sharpe, Hand-List* i, p. 49; *Oates, Cat. Eggs B.M.* i, p. 72; *Le Mess., Game, S. & W.B. of Ind.*, p. 115; *Ogilvie-Grant, Game-B.* ii, p. 278; *Seth-Smith, J.B.N.H.S.* xvii, p. 238; *Whitehead, ibid.* xx, p. 969; *Moss King, ibid.* xxi, p. 101; *A. E. Osmaston, ibid.* xxii, p. 544.

Hemipodius joudera, *Hodgs.* in *Gray's Zool. Misc.* p. 85; *E. A. Butler, B. of Sind, etc.*, p. 56.

Turnix dussumieri, *Blyth, Cat.* p. 256; *Jerdon, B. of Ind.* iii, p. 599; *Godwin-Austen, J.A.S.B.* xliii, pt. ii, p. 174.

Turnix joudera, *Gray, Cat. M. & B. Nepal*, p. 129 (1846); *Ball, Str. Feath.* iv, p. 236; *Butler, ibid.* p. 8; *Hume, ibid.* p. 225; *Butler, ibid.* v, p. 231; *Ball, ibid.* vii, p. 226; *Butler, Cat. B. of Sind*, p. 56; *Hume & Marsh., Game-B.* ii, p. 287; *Butler, Cat. B. of S. Bomb.* p. 70: *Reid, Str. Feath.* x, p. 64; *Davidson, ibid.* p. 318; *Davison, ibid.* p. 412; *Macgregor, ibid.* p. 441; *Terry, ibid.* p. 479; *Taylor, ibid.* p. 479; *Barnes, B. of Bomb.* p. 318; *id. J.B.N.H.S.* vi, pt. i.

Turnix albiventris, *Hume, Str. Feath.* i, p. 130; *id. ibid.* ii, p. 281; *id. ibid.*, pp. 279-293; *id. Cat.* No. 834 ter.; *Hume & Marsh., Game-B.* ii, p. 199; *Ogilvie-Grant, Cat. B.M.* xii, p. 445; *Blanford, Avifauna B.I.* iv, p. 154; *Oates, Game-B.* i, p. 66; *Sharpe, Hand-List* i, p. 49; *Le Mess., Game, S. & W.B. of India*, p. 115; *Ogilvie-Grant, Game-B.* ii, p. 280.

Turnix tanki tanki, *Stuart Baker, J.B.N.H.S.* xxiii, p. 593 (1915).

Turnix maculatus tanki, *Stuart Baker, Fauna B.I., Birds* 2nd ed. v, p. 454, 1928 (India).

Vernacular Names.—*Lowa* (Upper India); *Pedda dabba gundla* (Telegu). In most places the natives do not distinguish between this bird and the Common Bustard-Quail.

Description. Adult Female.—From forehead to nape barred buff and brown with indications, sometimes well defined, of a buff mesial stripe; nape, neck and extreme upper back bright ferruginous red; remainder of upper parts, including inner wing-coverts and innermost

secondaries, greyish brown, occasionally an almost vinous tint, profusely barred with fine wavy lines of deep brown or dull black, giving these parts a vermiculated appearance; remaining wing-coverts buff or brownish buff with a broad subterminal drop or short bar of deep brown; inner secondaries like the back; those next them more or less freckled with rufous near the tip and also with black and buff on the outer web near the tip; primaries, outer secondaries and primary coverts greyish brown edged with buff on the outer webs; edge of shoulder buff; below from chin to upper breast reddish ferruginous albescent, often pure white on chin and throat and of the same colour on the upper breast as on the neck, these parts forming a broad collar; remainder of lower surface buff, deepest on the breast and flanks and sometimes almost pure white on the centre of the abdomen; the breast next the collar in the centre, the sides of this and the rest of the breast and flanks nearly as far down as the thighs with large, round or crescentic spots of black.

Females, adult but not so old as that above described, have the mesial line more strongly marked, the sides of the head are often much marked with rufous, whilst the black barring is very broad and prominent; the whole of the upper parts are much more heavily spotted and barred with black; the scapulars, and sometimes the back also, have drops of buff, succeeded by black on the outer webs of the feathers, sometimes becoming buff streaks on the former; the inner secondaries and the wing-coverts are a purer buff, and the black drops or bars are far more numerous; the inner secondaries also as a rule have a good deal of rufous mixed with the vermiculations; below, the colour is much the same as that of the older female, but the grey-brown colour of the back often encroaches on the sides of the breast; the black markings are more numerous and are occasionally mingled with pale buff spots; the chin and throat are nearly always paler and almost, if not quite, white, whilst the buff of the belly is whitish; the centre of the abdomen is often pure white.

Colours of the Soft Parts.—Iris straw-colour or white, probably always white in old birds; bill, fleshy-white, greyish-white or pale plumbeous, always with a yellowish tinge at the base and sometimes darker and brownish on culmen; legs and feet yellow-fleshy or fleshy-grey, sometimes with a tinge of orange; claws the same.

Measurements.—Wing, ♂ 92 to 96 mm., ♀ 97·5 to 105 mm.

Mr. D. Seth-Smith has a most interesting article on this Bustard-Quail in the 'Avicultural Magazine' of 1903 (pp. 317 *et seq.*), and from what he records it would really appear that the nuchal red collar is only assumed by the female during the breeding season. He says:—

> "It will be seen from the coloured illustration that appears with this, that in *Turnix tanki* the rufous nuchal collar is a very well marked feature of the female, and my two examples of this sex, when obtained on the 24th of October last, were in perfect full colour. However, as the winter approached, they commenced to moult, and *the collar was completely lost*, the plumage becoming apparently similar to that of the male, though I did not handle the birds to examine them minutely. The two females at this time exactly resemble some specimens in the series at the Museum, which are labelled immature, but which, I am now led to suppose, are really adults in winter plumage. Another fact which tends to prove this conclusion to be correct is, that a young female whose history I am about to relate, had developed a perfect rufous nuchal collar, at the age of six weeks. In March the females gradually regained their rufous collars."

Adult Male.—The adult male is similar to the first stage adult female, but entirely wants the chestnut collar, the centre of the breast is a paler, duller rufous-buff, and the general appearance of the upper parts is less bright, though the vermiculations are larger, in places becoming almost bars.

The younger male resembles the second stage of female described but has no rufous collar. The colours of the soft parts are the same as in the female, but the bill is said to be brown on the culmen and at the tip. I have not noticed any difference myself between the bills of males and females.

Quite young females after the first moult have the nuchal collar very indistinctly shown and are plentifully spotted with white, whilst the feathers of the upper part are profusely barred with dull black; the white and buff markings on the scapulars and inner quills are almost entirely wanting, being represented only by a few pale spots on the outer webs of the quills and coverts; the primaries are margined and freckled with dull rufous on the outer webs, and the other secondaries have pale margins with blackish submargins to the outer

webs which are much freckled with dull rufous; the under parts are duller than in the adult and are less boldly spotted with black and rufous.

The nestling closely resembles that of *Turnix suscitator leggei* already described.

Until recently *Turnix albiventris* from the Nicobars and *Turnix blanfordi* (now *maculatus*) have both been treated as good species but after a very careful examination of all the material at my command, I cannot discover any difference between *T. tanki* and *T. albiventris* upon which it is possible to make the one a different species or even subspecies to the other. The alleged differences between the two according to Ogilvie-Grant are as follows :—

(1) *Albiventris* is smaller, having a wing of 3·2 inches as against 3·4 inches in *tanki*.

(2) It retains the rufous feathers in the back in old age.

(3) It has the nuchal collar wider and deeper rufous.

(4) *Albiventris* has the upper parts blotched and vermiculated with black like *blanfordi*, and the markings of the head like *tanki*.

Blanford gives the following differences between the two :—

(1) *Tanki*.—Adults retain much of the black and rufous barring and mottling on the dorsal feathers.

(2) The feathers on the side of the crown are black with rufous edges in *albiventris*.

(3) The collar in the female *albiventris* is much darker and broader than in *tanki*.

Thus, Blanford only adds one more difference, that of the head, to the differences alleged by Ogilvie-Grant. We have therefore five alleged differences to deal with.

In the British Museum we have seventeen females of *Turnix tanki* and eight of the supposed *T. albiventris* for purposes of examination, and I have also examined birds from other collections.

(1) As regards size, I found that the average wing measurement of *tanki* is 3·43 inches for the female and 3·06 inches for the males, whilst that of *albiventris* is 3·16 inches for females, and 2·94 inches for males. At first sight this would

seem to prove that the two are separable as subspecies on account of size. An examination of individuals, however, disproves this, for in the small series of eight *albiventris* in the Museum Collection, I find two birds with wings of 3·30 inches and 3·20 inches, whilst in the series of seventeen *tanki* there are four with wings of 3·30 inches or under; of these one has a wing of only 3 inches, and is possibly wrongly sexed, but there is yet another with a wing of only 3·15 inches. Thus, with two small series containing birds which overlap in size to such an extent, it is impossible to accept an *average* difference of measurement as sufficient grounds for division into species or subspecies unless there are other and better differences with which to support it.

(2) As regards the nuchal collar, I must premise my remarks by pointing out that some of the adult birds in the British Museum series labelled *tanki* have their necks so injured that the red collar has practically disappeared; on the other hand, of the seven adult *albiventris*, no less than five have their necks drawn out and so arranged that the width of the collar is exaggerated. The other two if compared with the best specimens of *tanki* will not be found to differ to any appreciable extent in the width of the rufous collar. As regards colour, it would also be easy to select two *tanki* to put with these two *albiventris* so closely resembling each other in this respect that no one could name them except by chance.

(3) As regards the colouring of the upper parts, I consider this only individual; thus, there is a specimen of *tanki* from Allahabad (No. 89.5.10.445) which has more rufous on the back than any specimen of *albiventris*. Again, there are many specimens of young *tanki* which have the back as much mottled with black as the young *albiventris* have. Therefore, the only difference left as regards the coloration of the back is the allegation that *albiventris* never assumes the vermiculated unblotched appearance of *tanki*. But this stage of plumage appears only to be assumed by *very* old females, and is quite exceptionable. In the Museum Collection I find only two such specimens of *tanki* and, of the many hundreds of these birds

which have passed through my hands, I do not think that I have seen half a dozen birds in this, so-called, adult female plumage. With so few *albiventris* available for examination, it cannot be said that we have enough material to lay it down as a demonstrated fact that *albiventris* does not ever assume this plumage.

(4) Next we have Blanford's assertion that in *albiventris* "the feathers on the sides of the crown are black with rufous edges" and the attendant inference that this is never so in *tanki*. This again is an individual character and the specimen of *tanki* from Allahabad, to which I have already referred, will be found to have this phase of plumage quite as strongly marked as it is in most of the specimens of *albiventris*. Again, if we examine the head of specimen No. 89.5.13.129, an *albiventris* from the Nicobars, we shall see that this bird has far less black on the head then the majority of *tanki*.

I think, therefore, upon consideration of the points of difference brought forward, and a very careful examination of the skins available, there are not sufficient grounds to justify the Nicobar bird being named even as a subspecies, far less to make it a good species. Further material may, of course, show that the two forms are divisible and it is to be hoped it will soon be obtained.

Distribution.—The Indian Button-Quail is found over practically the whole of India but it does not, apparently, occur in Ceylon. Hume received specimens from South Travancore; I have had specimens sent me from near Tinivelli in the extreme south of Madras and also specimens from Mysore, whence it had not previously been recorded. In the north-west it straggles into the Punjab, though probably only during the rainy season; it is found throughout Bombay and the North-West Province and thence east everywhere so far as Calcutta. In the furthest north-east it extends throughout the Assam Valley to Dibrugarh and Sadiya, but south of the Brahmapootra Valley it is replaced in most parts by *Turnix m. maculatus*, though a specimen from Tippera in the Hume Collection is nearer to *T. m. tanki* than to that bird. I never came across it either in the Cachar Hills, Khasia Hills or Surma Valley and, I think I may say, it does not

occur there. It ascends the hills to a considerable height, for it has been found in the Nepal Hills up to 4,000 feet; Finn found it in Darjeeling at over 6,000; in native Sikkim it has been obtained up to 7,500 feet (in the month of June) and in the Travancore Hills and Palnis up to 4,000 feet; finally, it occurs commonly in the Nicobars and also in the Andamans.

Nidification.—Wherever the Indian Button-Quail is found it breeds, though there is curiously little recorded, so far, as to its habits in this respect in a wild state.

Hume records eggs taken on July 15 and August 26, whilst there are others in the Hume Collection in the British Museum taken on April 29 and one in June. From Bengal and Behar I have eggs taken in May and June, but the normal months are July, August and September; Dibrugarh in July and August; Gowhaty, May and June, and Tezpur, June. There appear to be no records of its breeding in any of the cold weather months from November to March, so that it would really seem as if this Hemipode, unlike others of the genus, except *T. m. maculatus*, had a regular breeding season, commencing, as a rule, with the break of the rains in the middle of June and continuing until early October.

The few nests I have personally seen were just like those of the Common Bustard-Quail and, like those of that bird, the nests are sometimes roughly domed, sometimes well made pads, sometimes rather meagre affairs of grass and roots in a natural hollow.

The nest is placed in much the same sort of position as is that of its relations already described but this Button-Quail adheres more closely to grassland for nesting purposes and, also, it likes grass which is rather thin and scanty with ample room to run about in.

All Hemipodes, in India at all events, are very easy birds to keep in captivity and some aviculturists at home have also been very successful with these birds, whilst they have obtained much information of great interest as to their polyandrous habits.

Mr. Seth-Smith, in the article to which I have already referred, gives a most interesting account of this bird's breeding habits in captivity :—

> "The pair," he relates, "as a rule, kept fairly close together, but otherwise appeared to take very little notice of one another. As

the days lengthened they seemed to become somewhat interested in a certain corner. The hen would sometimes squat in this corner with her breast on the ground and her tail pointing upwards, and made a peculiar soft clucking noise. The cock would then go and take his turn in the same corner, the hen having moved out. At this time, the hen would often be seen rocking her body backwards and forwards in a peculiar manner, but I saw nothing approaching actual nuptial display by either sex, in fact, they seemed to regard one another almost with indifference, except when I threw a mealworm to the hen when she would generally (though not always by any means) hold it in her bill, and stretching out her body, remain motionless, glancing sideways at the male, until he ran up and took it. Probably she actually called him, though I could detect no sound. At any rate, she presented tit-bits to him, precisely the same way as he, later on, presented food to his chicks.

"Just as the males of other Gallinaceous birds will pick up dainty morsels and gallantly present them to their wives, here we have a case in which the order is exactly reversed, the females, most unselfishly, presenting the most attractive morsels to their husbands.

"On April 24th a slight nest of hay was observed in the above mentioned corner, and on the following day I discovered one egg in the nest. On the 27th a second egg was laid, and a third on the 28th, on which day the male began to sit, and, although the nest was in a perfectly open place, and I was obliged to disturb him each morning as I went to feed the birds, he continued his task in a most praiseworthy manner, and, on May 10th, hatched all three eggs, incubation having been completed in the incredibly short space of twelve days.

"From the day she laid her third egg, the female appeared to take no notice whatever of the nest, and even when the young were hatched, apparently ignored the presence of both her mate and offspring. In fact, I found that she ate most of the food that was provided for the chicks, and so shut her in a separate place.

"The little cock took the greatest care of his charges, brooding them most tenderly, and attacking any living creature, including myself, that might approach them too closely. He would pick up minute insects and hold them in his bill until the chicks came and picked them from him, and, for the first day or two, the chicks, so far as I was able to observe, never picked up food for themselves."

As with all other Hemipodes the full clutch of eggs laid is four, and I have never seen a greater number than this or a smaller number which showed signs of incubation.

The eggs, except in size, agree in every detail with those of the Common Bustard-Quail, but on an average are more boldly coloured.

Specimens with big bold blotches are decidedly common, though the majority are merely profusely stippled and speckled with reddish or greyish brown, with a few quite small dots and spots of black or blackish.

Sixty eggs average 22·8 × 17·9 mm.: maxima *24·4* × 19·0 and 24·2 × *19·1* mm.; minima *20·1* × 17·1 and 22·0 × *16·8* mm.

Habits.—The Indian Button-Quail frequents much the same kind of country as does the Black-breasted Bustard-Quail and the Little Button-Quail but, on the whole, is found even less often in forest than are these birds, preferring grass lands to bush jungle, though often found in the latter. It also frequents all kinds of crops, from the lowest to the tallest, such as sugar-cane when dry and the young jute before it has been flooded. Nowhere, that I have heard of, can this bird be said to be common, one or two in the course of a long day's shooting being all that is usually met with. Perhaps the most favourite haunt of this little Button-Quail is thin thatching grass on the edge of dry cultivation. Hume's experience was much the same as mine, for he says that in the North-Western Provinces, Oudh and the Central Provinces, he found them much wedded to grass, but he adds that he has known *several* flushed out of patches of grass half an acre in extent. Tickell, writing of this bird, records that it is

> "found scattered about here and there throughout Bengal in open, sandy, bushy places in and about jungles or fields and dry meadows in cultivated country; frequently in low gravelly hills of *Kunkur* (nodular limestone)."

So also Jerdon:—

> "This species is found in open grassy glades in forests or jungles, both on the plains, and more especially in the hilly countries, and is also found in grass jungles throughout Bengal, and the countries to the eastward. It is always seen singly, in patches of long grass or thick cultivation, flying but a short distance, and is very difficult to flush a second time."

It is an even greater skulker than the Bustard-Quail, and though resembling this bird in its manner of flight, it is not so strong or noisy on the wing, and drops even more quickly into cover. Hume says that:—

> "It rises only when you are about to step on it with occasionally a low double chirp, barely audible to my ears. . . . It glides

> bee-like through the air for a few paces, just skimming the waving tops of the grasses, and drops suddenly as if paralysed, almost before you can bring your gun to the shoulder."

They feed both on grain, grass seeds, green shoots of crops, etc., and on insects, more especially ants. Their flesh is not bad to eat, though rather dry unless very fat. Tickell, however, considers them "most delicious, and when in good plight as fat and delicate as an ortolan." Hume, on the other hand, "always found them insignificant, dry, insipid little things."



T. m. blanfordi.
Male.

T. m. blanfordi.
Female.

THE BUTTON QUAIL.
Turnix maculatus maculatus.
Female.

TURNIX MACULATUS MACULATUS.

THE BURMESE BUTTON-QUAIL.

Turnix maculatus, *Vieill. Nouv. Dict. d'Hist. Nat.* xxxv, 1819, Assam.

Turnix blanfordi, *Blyth, J.A.S.B.* xxii, p. 80 (1843); *Blyth & Walden, B. Burma*, p. 151; *Ogilvie-Grant, Cat. B.M.* xxii, p. 542; *Blanford, Fauna B.I., Birds* iv, p. 155; *Sharpe, Hand-List* i, p. 49; *Oates, Game-B.Ind.* i, p. 68; *Le Mess., Game, S. & W.B. Ind.* p. 115; *Ogilvie-Grant, Game B.* ii, p. 177; *Stuart Baker, J.B.N.H.S.* xii, p. 493; *Seth-Smith, ibid.* xvii, p. 238; *Harington, ibid.* xix, p. 365; *id. ibid.* xx, p. 377; *Hopwood, ibid.* xxi, p. 1215.

Turnix maculosa, *Apud Gray, Hand-List B.* ii, p. 270; *Hume & Dav., Str. Feath.* vi, p. 452; *Hume, Cat.* No. 834 bis.; *Hume & Marsh., Game-B.* ii, p. 183; *Bingham, Str. Feath.* ix, p. 196; *Hume, ibid.* p. 208; *Oates, B. Burm.* ii, p. 335; *Hume, Str. Feath.* xi, p. 312.

Turnix tanki blanfordi, *Stuart Baker, J.B.N.H.S.* xxiii, p. 601; *Gyldenstolpe, Ibis*, 1920, p. 607.

Turnix maculatus maculatus, *Stuart Baker, Fauna B.I., Birds*, 2nd ed. v, p. 453, 1928 (Assam).

Vernacular Names. — *Ngôn* (Burmese); *Dao-duma gajao* (Cachari), *Inruibuma ghêhérba* (Naga).

Description. Adult Male and Female.—Similar to the last bird but very much bigger. Adults are darker and retain a greater amount of black barring on the back; the sides of the crown are more marked with black and the pale edgings to the feathers of the back are very conspicuous.

Colours of the Soft Parts.—Irides white. In the male the bill is pale horny-brown with a tinge of yellowish flesh colour or yellowish at the base of the maxilla and on the mandible, tip and apical half of culmen a darker brown; legs, feet and claws yellowish, in some cases rather fleshy, in others a more distinct Chinese yellow.

In the female the bill is paler and more yellow or, according to Hume:—

> "Lower mandible, gape and base of upper mandible chrome-yellow."

Measurements.—Wing, ♂ 92 to 96 mm., ♀ 97·5 to 105 mm.

I have now examined a comparatively large series of this subspecies, including 21 males and 25 females in the British Museum Collection, and I cannot find that any of the alleged specific differences in coloration between *tanki* and *blanfordi* mentioned by Blanford hold good.

It is quite true that as a body the Eastern form is darker than the Western, though individuals can be obtained in either subspecies to agree with specimens in the other.

There is, however, so great a difference in the size of the two birds that this is quite sufficient in itself to constitute the Eastern and Western forms as good subspecies.

Even in these two subspecies, however, certain individuals approach one another in size, though they do not overlap as the different forms of *suscitator* do. Thus the largest *T. tanki* has a wing of 88·9 mm., whilst the smallest *T. maculatus*, a bird from Chefu, has a wing of 92·4 mm.

Oates, in the Birds of British Burmah, writes:—

> "The plumage of both is identical,"

and Hume remarks:—

> "So far as plumage goes, both these species and *joudera* are inseparable. At any rate, nine out of ten variations in tint, amount and extent of markings, etc., in this species (*blanfordi*) can be exactly matched in specimens of *joudera* and *vice versâ*.

Distribution.—The Burmese Button-Quail extends from north-east India, throughout the whole of Burmah, so far south as the south of Tenasserim, through the Shan Hills, Siam, throughout the west and south of China and as far as Manchuria in the extreme north-east.

Within Indian limits it is found throughout Burmah, Shan States, Chin Hills, Lushai Hills and thence through the Chittagong Hill Tracts, Hill Tippera, and North Cachar Hills into the Khasia Hills. It is also found in the Plains districts of Chittagong, Comilla, Sylhet, and Cachar, though a bird collected by Tickell in Tippera was *T. maculatus tanki*. In the Naga Hills also the typical form takes the place of *T. m. maculatus*, the Cachar Hills and Manipur seeming to be the limit of the latter to the north-west.

Nidification.—Needless to say, the hens of this species are polyandrous, or bigamistic would be better, as they only have one husband at a time, though the time is very short.

As a general rule, the nest and eggs of *Turnix m. maculatus* cannot be distinguished from that of *T. s. plumbipes*, but probably on the whole the former is not so well and compactly built, not so well finished off and not so often domed. Moreover, twice I have taken its nest in open bamboo jungles, at the foot of one of the clumps, well hidden, but the nest consisting of little more than a pile of the leaves and roots of bamboos in a small natural hollow.

In the Khasia Hills the birds frequent the great open grass plains so common in these hills and will seldom, if ever, be found either in the pine forests or in the wetter nullahs of evergreen jungle. Their nests also therefore will be found almost exclusively in grass, though on rare occasions one may be found in a stony ravine with bush jungle in it.

If a clutch of hard set eggs is found, the vicinity should always be carefully searched for another nest, as the hens, directly they have laid the fourth egg of one clutch, obtain another male and again start laying. The eggs take less than a fortnight to hatch, but before one set of chickens are ready to appear, the hen is generally laying again, and often somewhere quite close to her first clutch.

The regulation number of eggs is, of course, four, and as regards appearance and size there is nothing to add to the description of the eggs of *T. s. plumbipes*, from which it is impossible to distinguish them, though the eggs of Blanford's Button-Quail average much larger. One hundred eggs average 25·5 × 20·8 mm.; maxima *28·1* × 21·1 and 27·0 × *22·2* mm.; minima *22·2* × 20·0 and 25·3 × *18·8* mm.

This subspecies, unlike *Turnix suscitator*, does have a definite breeding season; in Cachar and the Khasia Hills they commence breeding at the end of April, continuing until the end of August, a few extra energetic hens laying as late as the end of September.

General Habits.—There is very little on record about this form of Button-Quail, but its habits differ in no way from those of the other species.

Davison, as quoted by Hume, says:—

> "I have always found this species about gardens or in the immediate vicinity of cultivation, but it is very rare, being only occasionally met with, and always singly or in pairs. It is hard to flush, and only flies a short distance before again dropping, but it then runs a considerable distance before halting, and thereafter lies very close. It feeds like other Quails in the mornings and evenings, lying hidden during the heat of the day. On cloudy or rainy days it moves about all day. I do not know the call of this species."

Oates writes about this bird to much the same effect:—

> "This Quail is invariably found about gardens in the jungle singly or in pairs. I have shot it also in bamboo jungle where there was an undergrowth of grass. It is less common on the hills than in the plains. On the whole this is perhaps the most abundant and universally distributed of all the Quails of Burmah, but nowhere will enough be found together to furnish sport."

In North Cachar the Burmese Button-Quail is very common, and they are also to be found in great numbers on the Khasia Hills; everywhere else in India it is a comparatively rare bird and, contrary to Oates's experience, everywhere it appears to be much more rare on the plains than on the hills. It ascends to a considerable height, for in North Cachar I came across it at Laisung and Boro Ninglo, both villages with much scrub and grass land between them and the forest, at elevations of about 5,000 feet. A Khasia also trapped me a specimen, a male on its eggs, on the Shillong Peak, which is about 6,000 feet. As a rule, though, in both these districts the birds do not wander much over 4,000 feet, and as high as this only in the hot weather.

In North Cachar I found it occasionally in grass lands or in bamboo jungle with light undergrowth, but more often in the dense secondary growth, which grows very rapidly on all deserted ex-cultivated land. Out of such jungle I often got several of these birds when beating for Junglefowl. On the wing it is impossible to discriminate between the Button-Quail and the Bustard-Quail, so that until I had picked the bird up, I could never say which it was. As a rule they would just fly across the path where I stood awaiting the beaters, and make their headlong dive into the jungle on the far side. Being then loaded with big shot, it was useless firing but, the

beat over, I would sometimes have the jungle again beaten and my gun being reloaded with No. 10, would often get a shot as the small birds footed it, at racing pace, across the open. Sometimes I found I had bagged a Bustard-Quail, but generally one of these Button-Quails would be picked up.

My own impression is that the Burmese Button-Quail is not hard to flush the first time he is disturbed. True, he does not get up until you are almost on him and, if not approached within a few feet or even inches, will remain quietly where he is and not rise at all. But he does not *run at first* and, if approached near enough, he always rises and goes away on the wing but, once he has again dropped, he will run great distances and refuse to rise unless absolutely forced to do so. Generally, indeed, if compelled to pass over small open spaces, he will do so on foot in preference to taking to flight.

On one occasion, when waiting for a leopard which used to come and drink at a pool near my house, I was enabled to watch the actions of a cock bird and his three chicks for some time. I was seated on the ground in a comparatively open space in some thin bush jungle which grew round a Cachari village and, shortly after dawn, a cock Button-Quail came down to drink, leaving his little family a foot or two behind him whilst he came down to the edge of the pool. The young, which were two or three days old, did not drink but, as soon as the little cock had had his fill, he came back and began busily turning over and scratching up the sand, apparently hunting for ants. He was so close to me, that I could distinctly hear him now and then give a little "chuck," whereupon his children gathered round him, and he would then present one with some insect or other article too small for me to see what it was. So far as I could watch the young ones—they were so quick and restless that they were hard to follow—they picked up nothing themselves, except once, when their parent took them a heap of dried cow droppings, in which they seemed to be feeding themselves with something. After feeding for about half an hour, during which time they were in and out of sight amongst the bushes, the cock settled down within a couple of yards of me and gathered his chicks under him, but an unfortunate movement on my part at this moment sent parent and chicks scurrying away into the undergrowth and I saw no more of them.

They are principally seed and vegetable eaters but undoubtedly take ants and other small insects as they come across them, whilst a tame bird I had for a few weeks ate gentles and spiders greedily.

The call of the Burmese Button-Quail is, to me, indistinguishable from that of the Bustard-Quail, for I could never tell which bird was calling unless they were afterwards put up and shot. They are more common than the Bustard-Quail and the females, when they come across one another, fight just as fiercely as these birds do. Two hens were once brought to me in camp, in a little split bamboo basket, and the two continued to fight at intervals all day until I eventually released them, one on either side of my hut, whence they boomed defiance at one another until sunset.

Order GALLINÆ.

The Order *Gallinæ* contains the whole of the true land game-birds, including the Megapodes, or Mound Birds, but excluding those land birds which have already been dealt with in the previous volume of the Game-Birds of India. In the present order will be found the Megapodes, Peafowl, Junglefowl, Pheasants, Spur Fowl, Partridges and Quails all represented in India, as well as the Grouse, Turkeys, Guinea Fowl, Curassows and Guans, of which we have no representatives and of which, with the exception of the first named, none are ever found in Asia.

All the genera, as contained in this Order, are birds with strong, well-built legs, well fitted for progress on the ground; the tarsus is frequently furnished with one or more spurs, in some cases on that of the male only, in others on the tarsi of both sexes. The hallux, or hind-toe is always present, whilst the nails or claws are, in all but the *Megapodiidæ*, short, blunt, very strong and almost straight on their lower outline. The bill is short and stout and, on the whole, very constant in shape. The wings are rather short and rounded, the first primary either shorter, or very little longer, than the tenth or last. The fifth secondary is always present.

The great majority of these birds lay their eggs on the ground, but the Tragopans nest on trees, while the Megapodes make huge mounds in which they bury their eggs. The young are hatched covered with down or feathers, and can run about almost immediately after leaving the egg.

The body feathers always possess an after-shaft; the spinal feather tract is well defined on the neck, continuing straight down the back. Except in *Argusianus* an oil-gland is present in every genus.

The deep plantar tendons are connected by a fibrous vinculum but divide again, the *flexor perforans digitorum* to supply the three

front toes, and the *flexor longus hallucis* the hallux. The ambiens muscle, accessory femoro-caudal, semitendinosus, accessory semitendinosus are always present, and the femoro-caudal in all but the Peafowl and Turkeys. The palate is schizognathous, the nasals holorhinal.

"True basipterygoid processes are wanting, but there are sessile facets situated far forward on the sphenoidal rostrum. Cervical vertebræ 16. The sternum has two deep incisions on the posterior border on each side of the keel; the inner xiphoid process between the two is shorter than the outer which is bent over the inner ribs and expanded at the end. The episternal process of the rostrum is completely perforated to receive the inner ends of the caracoids" (*Blanford*).

The Order *Gallinæ* contains two suborders, both of which are represented in India, the *Peristoropodes* and the *Alectoropodes*.

Key to Suborders.

Inner notch of sternum less than half the length of the entire sternum. Hallux and anterior digits on the same level ... ... *Peristoropodes.*

Inner notch of sternum more than half the length of the entire sternum. Hallux raised above level of anterior digits ... ... *Alectoropodes.*

Suborder PERISTOROPODES.

In the suborder *Peristoropodes*, Ogilvie-Grant includes two Families, the *Megapodiidæ* and the *Cracidæ*, the first containing our Megapodes and the second the South American Curassows, but Sharpe in his Hand-List elevates both these Families to be suborders and designates them *Megapodii* and *Craces*. Of the latter Family, however, there are in India no representatives and we need not discuss it.

In the *Peristoropodes* the inner posterior notch on each side of the sternum is less than half its length; the hallux or hind-toe is on the same level as the front toes and its tarsal phalanx is equal to that of the third or middle front toe.

The Family *Megapodiidæ* as defined by Ogilvie-Grant contains seven genera, of which only one, *Megapodius*, occurs within Indian limits. The genus contains fifteen species according to Ogilvie-Grant, and seventeen in Sharpe's Hand-List, two species, *affinis* and *senex*, being added by him. Of these seventeen species one, *Megapodius nicobariensis*, is found in the Nicobars and so comes into our Indian avifauna.

Genus MEGAPODIUS.

Megapodius, Quoy and Gaim, Voy. 'Uranie,' p. 125 (1824).

Type.—*Megapodius freycineti.*

In this genus the bill is moderate; the nostrils large, oval and longitudinally elongate; legs and feet very large and powerful, the front of the tarsus broadly scutellated; the claws long and straight, the hind-claw longest; wings short and rounded, the fifth primary longest and the first subequal to the tenth; tail of twelve feathers, short and rounded. Sexes alike.

Numerous species and subspecies are known extending from the Nicobars to Australia and New Guinea. One species only is represented in India.

MEGAPODIUS NICOBARIENSIS.

Key to Subspecies.

A. Paler in colour and larger ... ... *M. n. nicobariensis*, p. 57.

B. Darker in colour and smaller ... ... *M. n. abbotti*, p. 66.



THE NICOBAR MEGAPODE.

Megapodius n. nicobariensis.

MEGAPODIUS NICOBARIENSIS NICOBARIENSIS.

THE NICOBAR MEGAPODE OR MOUND BIRD.

Megapodius nicobariensis, *Blyth*, *J.A.S.B.* xv, pp. 52, 373 (1846); *id. Cat. Mus. As. Soc.* p. 239; *Ball*, *J.A.S.B.* xxxix, pt. 2, p. 32; *id. Str. Feath.* i, p. 82; *Hume*, *ibid.* p. 313; *id. ibid.* ii, pp. 276, 499; *id. Cat.* No. 803; *Hume & Marsh.*, *Game-B.* i, p. 119; iii, p. 428; *Oates* in *Hume's Nests and Eggs*, 2nd edit., iii, p. 449; *Ogilvie-Grant*, *Cat. B.M.* xxii, p. 447; *Blanford*, *Fauna of B.I.*, *Birds*, iv, p. 147; *Sharpe*, *Hand-List* i, p. 12; *J. H. St. John*, *Journal Bom. N.H.S.* xii, p. 213; *Butler*, *ibid.*, p. 689; *Oates*, *Cat. Eggs B.M.* i, p. 15; *Ogilvie-Grant*, *Game-B.* ii, p. 165; *Oates*, *Game-B. of I.* i, p. 384; *Le Mes.*, *Game, Shore and Water Birds*, p. 112; *Richmond*, *Pro. Nat. Mus. U.S.A.* xxv, p. 311; *Stuart Baker*, *J.B.N.H.S.* xxiv, p. 2, pl., 1915 (part); *Sewell*, *ibid.* xxviii, p. 982, 1922.

Megapodius trinkutensis, *Sharpe*, *Ann. Mag. N.H.* xiii, p. 448; *Hume*, *Str. Feath.* ii, p. 499.

Megapodius nicobariensis nicobariensis, *Stuart Baker*, *Fauna B.I.*, *Birds*, 2nd ed., vol. iv, p. 437, 1928.

Vernacular Names.—*Kongah* (Nicobarese).

Description. Adult Male and Female.—The feathers of the nape, the sides of the head and those surrounding the posterior portions of the crown greyish; chin and throat sparsely feathered with pale grey, sometimes rufescent, sometimes albescent. Remainder of plumage rufescent brown, generally darker above than below. The lower plumage is often a rufous grey, in a few cases becoming almost a pure grey.

The general tone of the upper plumage is usually rather a bright rufescent, but is occasionally duller and, rarely, has a somewhat olive tinge.

The feathers round the neck are generally sparse, whilst this part is often nearly bare, whilst in some specimens the feathers of the head are also much abraded and knocked about.

Ogilvie-Grant remarks about this species in a footnote in the British Museum Catalogue (in *loc. cit.*).'

"Some specimens as has already been remarked by Lord Tweeddale have a curious tendency to lose the feathers on the crown and assume a naked callosity. In a female adult from Nancoury I. the crown is entirely naked, and covered with a thick black-looking skin, which appears almost in the nature of a scab. The same peculiarity is almost equally developed in an immature male from Camorta; while in three other specimens (both adult and immature) the crown is partially denuded, and the skin is of the same black colour. In all the other specimens the skin of the top of the head is red.

"I am of opinion that the naked head in the above-mentioned specimen is abnormal, and possibly caused by disease."

The sexes are alike in size, but vary a great deal individually. Hume gives the following dimensions for a series of fifteen birds, and also notes the colouring of the soft parts:—

"Length, 14·5 to 17; expanse, 28·0 to 32·5; wing, 8 to 9·5; tail from vent, 2·75 to 3·5; tarsus, 2·6 to 2·75; bill from gape, 1·2 to 1·3; bill at front, 0·94 to 1·1; wings when closed, reach to within from 1 inch to quite the end of tail; in weight they vary from 1 lb. 5 oz. to 2 lb. 2 oz."

The above measurements probably include a large proportion of not quite mature birds, for I find that in the British Museum Collection of about fifty skins no adults have a wing under 9·0 inches (228·6 mm.) and they run from this up to 9·8 inches (248·9 mm.), males and females alike being of the smallest and biggest sizes. The measurements are as follows: "Total length 374·5 to 409·5 mm." (*Richmond*); wing 228 to 250 mm.; tail 69 to 88 mm.; tarsus about 59 to 68 mm.; culmen about 23·5 to 26 mm. The other measurements of these birds all come within those given by Hume. Richmond records the total length of the males as between 381 and 400 mm., and of the females between 374·5 and 409·5 mm., whilst the weight of the latter varies from 30 to 36 oz.

Colours of the Soft Parts.—"Legs and feet; front of tarsus dark horny, in some greenish horny, scutæ often irregularly marked with lighter horny, front of toes darker, darkening still more towards claws; claws dark horny above, lighter horny beneath, and tipped light horny; soles pale carneous, sometimes pale yellow; tibio-tarsal articulation, back and sides of tarsi dull brick or litharge-red. Bill light greenish or yellowish horny, yellower along the edge of mandibles; lores and whole orbital and aural region, and visible portions of the skin of the neck, showing through between the sparse

feathers, varying from a light somewhat cherry red to a bright brick red; irides light brown or hazel brown" (*Hume*).

Richmond gives the colours of the soft parts as follows :—

"Eyelids red; sides of head vermilion; skin of throat pale mauve pink; iris clear brown; bill greenish horn; legs dull reddish, brown in front; soles dull ochraceous, claws black."

Birds not quite adult have the head and neck completely clothed in feathers, those on the chin and fore-neck being greyish white. It seems also that in such birds the under parts are always brown or rufous brown with no tinge of grey.

"The quite young bird, when rather less in size than a quail, is a uniform snuff brown all over, everywhere densely feathered, even about the throat and neck, and with the feathers of the forehead and back of the head much longer, actually and not merely relatively, than in the adult, no bare space in front of or around the eye, no tail developed, only a large bunch of fur-like feathers, but the wings large, strong, and well formed; the bill very short. One such bird measured 5·5 in length, had a wing of 4 inches, tarsus 1·1; and bill at front 0·3" (*Hume*, 'Str. Feath.').

Distribution.—The Nicobars, where they have been found on every island except Choura, and Car Nicobar. Butler has recorded them as occurring on Battye Malve, though Hume and Davison did not find them there. Hume also saw traces of their mounds on Table Island, one of the Andamans, and was told by the European lighthouse-keeper that he had shot birds which he described as corresponding exactly to Megapodes. Oates at a later date went over the same island together with Captain Shopland and failed, not only to find any trace of the bird but even of their mounds. Butler also found no traces of birds or their mounds, though he worked this island very thoroughly. On the Great and Little Nicobar Islands the next bird takes the place of this.

Nidification.—Davidson is quoted by Hume in 'Stray Feathers,' etc., to the following effect :—

"I have seen a great many mounds of this bird; usually they are placed close to the shore, but on Bompoka and on Katchall I saw two mounds some distance inland in the forest; they were composed of dry leaves, sticks, etc., mixed with earth, and were very small compared with others near the sea coast, not being above 3 feet high,

and 12 or 14 feet in circumference; those built near the coast are composed chiefly of sand, mixed with rubbish, and varied very much in size, but average about 5 feet high and 30 feet in circumference, but I met with one exceptionally large one on the Island of Trinkut, which must have been at least 8 feet high and quite 60 feet in circumference. It was apparently a very old one, for, from near its centre, grew a tree about 6 feet in diameter, whose roots penetrated the mound in all directions to within a foot of its summit, some of them being nearly as thick as a man's wrist; I had the mound dug away almost to the level of the surrounding land, but only got three eggs from it, one quite fresh, and two of which had the chicks somewhat developed.

"On this mound I shot a Megapode, which had evidently only just laid an egg; I dissected it, and from a careful examination it would seem that the eggs are laid at long intervals apart, for the largest egg in the ovary was only about the size of a large pea, and the next in size about as big as a small pea. These mounds are also used by reptiles; for out of one I dug besides the Megapode's eggs, about a dozen eggs of some large lizard.

"I made careful enquiries among the natives about these birds, and from them I learnt that they usually got 4 or 5 eggs from a mound, but sometimes they got as many as ten; they all assert that only one pair of birds are concerned in the making of a mound, and that they only work at night. When newly-made, the mounds (so I was informed) are small but are gradually enlarged by the birds, the Natives never dig a mound away, but they probe it with a stick, or with the end of their *daos*, and when they find a spot where the stick sinks in easily, they scoop out the sand with their hands, generally, though not always, filling in the holes again after they have abstracted the eggs. The Nicobarese and the Malay and Burmese traders take numbers of these eggs, which they generally cook by placing them in hot ashes, but they also sometimes boil them quite hard, and they do not seem to be very particular whether the egg is fresh or contains a chicken in a more or less advanced stage of development. The Nicobarese, at any rate, appear to relish a boiled or roasted chicken out of the egg, quite as much as they do a fresh egg.

"The eggs are usually buried from 3½ to 4 feet deep, and how the young manage to extricate themselves from the superincumbent mass of soil and rubbish seems a mystery. I could not obtain any information from the natives on this point, but most probably they are assisted by their parents, if not entirely freed by them; for these latter, so the natives affirm, are always to be found in the vicinity of the mounds where their eggs are deposited.

"We obtained about 70 of these eggs, 62 of which were

preserved; these vary much both as regards colour and size, and they undoubtedly darken very materially by being buried in the sand, for I have found that eggs containing chickens in a more or less advanced stage of development were dark coloured, the depth of shade increasing as the eggs approached the hatching point; but it does not follow from this that all dark-coloured eggs will be found to be not fresh, for very often dark-coloured eggs are laid. There are three types of eggs—a dull clayey pink, an earthy yellow and an earthy brown of several shades.

"The surface soil of the mounds only is clay; at about a foot from the surface, the sand feels slightly damp and cold, but as the depth increases the sand gets damper but at the same time increases in warmth."

Commenting on this account Hume then continues in his own words:—

"I cannot myself agree with Davison about the colouring of the eggs. On the contrary the brightest pink egg we got was one which the bird had not even time to bury before she was surprised. Moreover the *shells* tell their own tale, almost all the small holes in pink eggs and nearly all the largest holes in the brownish ones.

"I saw a considerable amount of these mounds, chiefly in Galatia Bay, and there I examined some of them very minutely. These were situated just inside the dense jungle which commences at Spring-tide high-water mark. It appears to me that the birds first collected a heap of leaves, coconuts, and other vegetable matter, and then scraped together sand which they threw over the heap, so as not only to fill up all interstices, but to cover everything with about a foot of pure sand. I say sand, but this term is calculated to mislead, because it does not contain much silex, but consists mainly of triturated coral and shells. After a certain period, whether yearly or not I cannot of course say, the birds scrape away the covering sand layer from about the upper three-fourths of the mound, cover the whole of it over again with vegetable matter, and then cover it over again with the sand. In the large mound, an old one into which I carefully cut a narrow section from centre to margin, this arrangement was very perceptible; in it I thought I could trace by the more or less wedge-shaped portions of pure sand along the base, the remnants of successive outer coverings of sand, the basal portions of which have never been removed, ten or perhaps eleven successive renovations of the mound; even the central portion was perfectly cool. The vegetable matter had in a great measure disappeared, leaving only the hard woody portions behind, but showing where it had been by the discoloration of the sand. The decay of the vegetable matter and the birds' habit (as I judged from

appearances) of not removing the basal portion of the sandy covering at each renovation, sufficiently explain why the mounds increase so much more in radius than in height.

"A smaller mound, as I take it still in use, though I could find no eggs in it, contained a much greater amount of vegetable matter, and was sensibly warm inside. I could make no section of it, as it was too full of imperfectly decayed vegetation. I believe that the bird depends for the hatching of its eggs solely on the warmth generated by chemical action. The succulent decaying vegetation, constant moisture, and finely triturated lime all combined in a huge heap, will account for a considerable degree of artificial heat.

"I am by no means satisfied that one pair of birds used the same mound. On the contrary, the Nicobarese I had with me that day, explained, as I understood, that the one pair begin the mound, they and all their progeny keep on using and adding to it for years, and as '*Cuxem*,' or whatever the wretch's sobriquet was, interpreted, the men with us had during the previous month, taken at one time some 20 eggs out of one and the same mound, which also they took us to see, and which was perhaps 5′ high and 16′ or 18′ in diameter, and which was the freshest looking I had seen.

"The eggs are excessively elongated ovals, enormously large for the size of the bird. They vary a great deal in size, and a good deal in shape; all are much elongated, but some are more like turtle's eggs than those of a bird. When first laid they are of a uniform ruddy pink as we know from having obtained one before the bird had even time to bury it; after being buried, so long as the egg remains quite fresh, it continues a pale pink, but as the chicken develops within, the egg becomes a buffy stone colour, and when near about hatching it is a very pale yellowish brown. The whole colouring matter is contained in an excessively thin chalky flake, which is easily scraped off, having a pure white chalky shell below; this outer coloured coat seems to have a great tendency to flake off in spots, specks, and even large blotches, as the chicken develops within. Quite fresh laid eggs rarely exhibit any white marks of any kind, while those more or less approaching hatching (one cannot say incubation in this case) are invariably more or less mottled with white. Occasionally fairly fresh eggs are dug out, bearing along their entire length on one side, two parallel white lines made apparently by the claws of the mother bird when scraping the sand over them. The eggs are always a little pointed towards one end, and some, especially the less cylindrical ones, are conspicuously so. The shell is entirely devoid of gloss, and the surface is everywhere roughened with innumerable minute pores which occur equally in the exterior coloured flake, and the white somewhat less chalky shell beneath.

> "In length the eggs vary from 3·01" to 3·4" and in breadth from 1·90" to 2·25", but the average of 62 eggs I have carefully measured is 3·25" × 2·07".

Reducing Hume's measurements in inches to millimetres we have a length between 76·4 and 85·3 mm., and a breadth between 48·2 and 57·1 with an average of 82·5 × 52·5 mm. Eighty-four eggs measured by myself average 82·6 × 52·3 mm.: maxima *85·5* × 50·3 and 83·0 × *57·1* mm.; minima *76·4* × 49·9 and 81·6 × *46·2* mm.

The question as to whether the old birds pay any further attention to the young after they are hatched is by no means settled. It is true that young birds have been seen associating with full-grown ones, but it would appear that the young have been of various ages, as one would expect, and that there have been generally more than two adult birds, which one would not have expected. The young can fly directly they are hatched, for, as already stated, they are born fully feathered, not covered with down and, if sufficiently precocious to fly without being taught, why should they not be sufficiently so to know how to feed themselves also?

Butler says that he thinks the young birds find their way out of the mound unaided by the parents, and remarks:—

> "For one thing the birds could never know—with eggs in different stages of incubation in the same mound—when to dig down to save a new hatched young one from suffocation; further, the eggs can be hatched by packing them in a box in the material of the mound in which they are found, and Mr. E. H. Man, who hatched a chick on his verandah by this means, told me that it not only extricated itself from the sand, but flew up on the verandah railing directly it was approached."

The eggs seem to be abnormally tough in constitution, for Lieut. St. John records how some eggs which were taken away in buckets of sand were forgotten, the sand taken away and the eggs left exposed to open air and rain without any protection, yet of the dozen collected some five or six hatched out.

St. John says that these young ones were fed entirely on white ants, on which they thrived well.

Habits.—Almost the only existing accounts of this bird and its habits we owe to Hume and to Mr. J. Davison, who, for many years, collected for him, and whom every writer on the Megapode has quoted

since Volume 2 of 'Stray Feathers' was written. In this volume *Davison* says :—

> "The Megapode never wanders from the seashore, and throughout the day keeps in thickest jungle, a hundred yards or so above high-water mark. It never, so far as I observed, emerged on to the open grass hills that form so conspicuous a feature in so many of the Nicobars, but throughout the day hugged the belt of the more or less dense jungle that in most places, along the whole coast-line, supervenes abruptly on the white coral beach. At dusk during moonlight nights, and in the early dawn, glimpses may be caught of them running about on the shore or even at the very water's edge, but during the daylight they skulk in the jungle.
>
> "They are to be met with in pairs, coveys, and flocks of from 30 to 50. They run with great rapidity, and rise unwillingly, running and flying just like jungle hens. They often call to each other, and when a party has been surprised and dispersed, they keep on calling to each other incessantly, half a dozen cackling to each other. The note is not unlike the chuckling of a hen that has recently laid an egg, and is anxious to publish the stupendous fact on nature's pages; it may be syllabled in a variety of ways, but several of us agreed that on the whole 'Kuk-a-kuk-kuk' most nearly represented their chuckling, cackling call.
>
> "The stomachs of all we examined contained tiny land shells, sometimes with the animals not yet dead, larvæ of insects, dissolved matter, apparently vegetables, and minute fragments and particles of quartz and other hard rocks.
>
> "When by any chance you can get up to them they are easy to shoot. They are most abundant where the soil is light and sandy, and the ground at the bases of the magnificent trees that overshadow one from above, is therefore comparatively penetrable, and in such localities, with a few good dogs, they would afford very pretty shooting.
>
> "As game they are unsurpassed. The flesh very white, very sweet and juicy, loaded with fat is delicious, a sort of *juste milieu* between that of a fat Norfolk Turkey and a fat Norfolk Pheasant.
>
> "The eggs, too, are quite equal if not superior to that of the Peafowl, and to my mind higher commendation cannot be given."

A friend writing to me from the Andamans after his first interview with these birds says :—

> "To me they appear like large and very fat Barn-door Fowls with abnormally small heads compared to their heavy fat bodies, but even these latter were small in comparison to their powerful legs and huge

feet. We found it difficult to make them fly, though when they did do so, they went quite a decent pace as soon as they had got fairly started. Curiously enough some quite small chicks we saw were quicker away and actually faster on the wing than the full-grown bird. They all ran at a tremendous pace, heads and sterns held low, like a jungle-fowl on the run, but were even quicker than that bird."

Davison, who saw more of these birds than anyone else, even Hume, never saw more than six birds in a flock, but one of the convicts told him that he saw about thirty of them together on Trinkut.

MEGAPODIUS NICOBARIENSIS ABBOTTI.

OBERHOLSER'S NICOBAR MEGAPODE.

Megapodius nicobariensis abbotti *Oberholser, Proc. Nat. Mus. U.S.* lv, p. 400 (1919); *Stuart Baker, Avifauna B.I.* 2nd. ed, vol. iv, p. 439, 1928.

Megapodius nicobariensis.—*Blanf. & Oates* iv, p. 147 (part); *Stuart Baker, J.B.N.H.S.* xxiv, p. 2, 1915 (part).

Vernacular Names.—*Kongah* (Nicobarese).

Description.—Differs from the preceding race in being darker on both upper and lower plumage, the primaries especially being darker on the outer webs and contrasting less with the inner webs.

Colours of soft parts as in the typical form.

Measurements.—Oberholser gives the measurements of the wings of six specimens as 215 to 230 mm. against 206 to 234 mm. in the Northern Nicobar bird.

Distribution.—Great and Little Nicobar Islands in the south of the Nicobar group.

Nidification.—Eggs taken by Osmaston on April 11 are, of course, quite indistinguishable from those of the Common Nicobar Megapode. Four were taken from one mound and four from another. The eight average 83·1 × 50·8 mm.

Habits.—Those of the species.

Suborder ALECTOROPODES.

The principal external feature in which this suborder differs from the *Peristoropodes* consists in the hind-toe being raised above the other three. In addition to this it is much shorter, its basal phalanx being shorter than that of the middle or third toe.

The inner posterior notch on each side of the sternum is more than half the length of the latter instead of less than half, as in the *Peristoropodes*.

FAMILIES.

Ogilvie-Grant divides the *Alectoropodes* into two Families, the *Tetraonidæ* and *Phasianidæ*, the former having the nostrils feathered and the toes naked and pectinate or feathered, whilst the latter have the nostrils clear of feathers and the toes without pectination and not feathered.

An additional character used by him to differentiate between the two Families, i.e., the feathering of the tarsus, does not hold good throughout, for though all the *Tetraonidæ* have the tarsi feathered, one species, *Lerwa*, of the *Phasianidæ* also has the tarsus well feathered and a second, *Tetraogallus*, has it partially so covered. In spite of this, however, I consider his diagnosis of the two Families the best put forward so far, and when considered together with the general appearance of the birds and their habits, the reasons given appear to be fully sufficient to authorize the division, and I therefore accept the two Families.

Of the *Tetraonidæ*, or true Grouse, we have no representatives in India, but the *Phasianidæ* are very well represented.

Family PHASIANIDÆ.

Subfamilies.

When we come to consider in what way the Family *Phasianidæ* can, or should, be divided into subfamilies, we are faced with a most difficult problem. Jerdon, who like Ogilvie-Grant, divided his game birds into two Families, *Phasianidæ* and *Tetraonidæ*, divided each of these again into three subfamilies, the first into *Pavoninæ*, *Phasianinæ* and *Gallinæ*, and the second into *Tetraoninæ*, *Perdicinæ* and *Coturnicinæ*. But these divisions are admittedly more popular than scientific, and there is no really definite dividing line between the various groups as formed by him. Ogilvie-Grant, in Game Birds, divides his *Phasianidæ* into two divisions, *Phasianinæ* and *Perdicinæ*, basing his division on two features, (1) comparative length of tail and (2) length of first primary in comparison with the tenth. Neither of these features, however, are consistent, though on the whole they work fairly well. Finally Blanford, in the Fauna of British India, Birds, failing to find any satisfactory characters for, or method of, division, attempts none, keeping all the *Phasianidæ* together as one undivided family.

To the sportsman and field naturalists the majority of the game-birds form themselves into four fairly definite groups, viz., Peafowl, Argus Pheasants, Pheasants, and Partridges, to which we may possibly add the Junglefowl as a fifth, for these birds in outward structure and general habits do not seem to agree well with any of the others. Hitherto there has, however, been no sound scientific data discovered upon which it was possible to define these superficially self-apparent divisions, while the large number of genera which cannot be placed with certainty in any one particular division have defied scientific classification.

In July, 1914, Beebe wrote in 'Zoologica,' the publication of the N.Y. Zoological Society, a most interesting article on the *Phasianidæ* in which he explains how he proposed to divide this Family into four subfamilies according to the formula for the moulting of their

rectrices. According to this ornithologist the Partridges (*Perdicinæ*) commence by moulting the central tail-feathers and finish with the outermost pair; with the true Pheasants (*Phasianinæ*) the exact reverse obtains; the Argus Pheasants (*Argusianæ*) commence by moulting the third pair from the centre, and the Peafowl (*Pavoninæ*) commence with the fifth pair.

By this classification the Junglefowl are included with the Pheasants, an arrangement which agrees with nearly every system hitherto accepted, but one concerning which I cannot but feel doubtful. Beebe says himself that he only puts forward this scheme *faute de mieux*, and frankly adds that he hopes that some still better one may be found to succeed it; he also remarks that he has been unable to examine thoroughly many of the genera he includes in his *Perdicinæ*.

As a whole I accept Beebe's classification; it is the only one which has any scientific basis, and it is convenient from the point of view of the sportsman and field worker.

Key to Subfamilies.

Moult of rectrices commencing:—

A. With the fifth pair . . . . . *Pavoninæ*.
B. With the third pair . . . . . *Argusianinæ*.
C. With the outermost pair . . . . . *Phasianinæ*.
D. With the central pair . . . . . *Perdicinæ*.

The above key is, unfortunately, of no use to the sportsman, who may find the following one easier to understand, though it must be confessed that it is not a very sound one scientifically.

A. Feathers of tail or tail-coverts with large metallic ocelli.
  a. Wing over 15 inches . . . . . *Pavoninæ*.
  b. Wing under 15 inches . . . . . *Argusianinæ*.
B. No ocellations.
  c. Wing over 8 inches; tail longer than wing except in *Lophophorus* and *Lophura* . . . *Phasianinæ*.
  d. Wing under 8 inches except *Tragopan*, *Ithagenes* and *Tetraogallus*; tail much shorter than wing except *Tragopan*, in which they are equal . . . . . *Perdicinæ*.

Of the two exceptions to this key in the *Phasianinæ*, *Lophophorus* and *Lophura* are both big birds with crests and with a wing of over 11 inches, a combination obtaining in none of the *Perdicinæ*. In the *Perdicinæ* both *Ithagenes* and *Tetraogallus* have the wing very much longer than the tail, whilst the birds of the genus *Tragopan*, in which wing and tail are about equal, can always be discriminated from all others by their peculiar fleshy horns and wattles.

Subfamily PAVONINÆ.

In this subfamily the two species, of which it consists, commence the moult of their tails with the fifth pair of feathers.

The birds themselves are so well known that no details are required to enable the sportsman and field naturalist to identify them at a glance.

Genus PAVO.

Pavo, Linn., Syst. Nat., 10th ed., i, p. 156, 1758.
Type, *Pavo cristatus* Linn.

The birds of this genus are distinguished by their erect occipital crest of feathers and the greatly lengthened upper tail-coverts of the males; the tail is long, slightly graduated and of twenty feathers; wings rounded, the first quill shorter than the tenth; tarsus very long and strong and armed with a spur. The genus is found in India, the Indo-Chinese countries and the Malay Archipelago.

Key to Species.

A. Crest-feathers ending with spatulate, half-moon-shaped drops . . . . . *cristatus*, p. 72.
B. Crest-feathers pointed at the tips . . . . . *muticus*, p. 87.

PAVO CRISTATUS.

THE COMMON PEAFOWL.

Pavo cristatus, *Linn. Syst. Nat.* i, 10th ed., p. 156 (1758); *Lath., Ind. Orn.* ii, p. 616 (1790); *Sykes, P.Z.S.* (1830), p. 151; *Blyth, Cat. Mus. As. Soc. Bengal*, p. 239 (1849); *Jerdon, Birds Ind.* iii, p. 506 (1863); *Elliot, Monog. Phas.* i, pl. iii (1872); *Stoliczka, Journ. Asiat. Soc. Beng.* xxxvii, pt. 2, p. 67; *id. ibid.* xli, pt. 2, p. 249; *Hume's Nests and Eggs*, p. 516 (1873); *Blanford, J.A.S.B.* xxxviii, pt. 2, p. 189; *Godwin-Austen, ibid.* xxxix, pt. 2, p. 272; *Adams, Stray Feathers*, i, p. 392 (1873); *Hume, ibid.* ii, p. 276 (1874); *Ball, ibid.* ii, p. 426 (1874); *Butler, ibid.* iv, p. 5 (1876); *Fairburn, ibid.* iv, p. 262 (1876); *id. ibid.* v, p. 409 (1877); *Marshall, B. Nest India*, p. 59 (1877); *Hume, Stray Feath.* vii, p. 67 (1878); *Davidson & Wenden, ibid.* vii, p. 86; *Butler, ibid.* vii, p. 177 (1878); *Ball, ibid.* vii, p. 225 (1878); *Hume & Marshall, Game-B. India* i, p. 81, plate (1878); *Scully, Stray Feath.* viii, p. 342 (1879); *S. Doig, ibid.* viii, p. 371 (1879); *Wilson, ibid.* viii, p. 492 (1879); *Butler, ibid.* viii, p. 493; *Butler, Cat. Birds Sind.* p. 53 (1879); *Legge, Birds of Ceylon*, iii, p. 731 (1880); *Vidal, Stray Feath.* ix, p. 75 (1880); *McInroy, ibid.* ix, p. 202 (1880); *Butler, ibid.* ix, p. 421 (1880); *Reid, ibid.* x, p. 61 (1881); *Davidson, ibid.* x, p. 316 (1882); *Davison, ibid.* x, p. 409 (1882); *Taylor, ibid.* x, p. 464 (1887); *Hume, ibid.* xi, p. 300 (1888); *Oates'* ed. *Hume's Nests and Eggs* iii, p. 405 (1890); *Ogilvie-Grant, Cat. Birds B.M.* xxii, p. 368 (1893); *id. Hand-List Game Birds* ii, p. 77 (1897); *Oates' Manual Game Birds* i, p. 274 (1898); *Blanford, Faun. Brit. Ind.* iv, p. 68 (1898); *Sharpe, Hand-List Birds* i, p. 61 (1899); *Oates, Cat. Eggs B.M.* i, p. 61 (1901); *Bourdillon, J.B.N.H. Soc.* xvi, p. 3 (1904); *Ward, ibid.* xvii, p. 944 (1907); *Stuart Baker, ibid.* xvii, p. 971 (1907); *Finn, Avicult. Mag.* (3) i, p. 128 (1909) (Notes on "In Captivity"); *King, J.B.N.H. Soc.* xxi, p. 100 (1911); *Whitehead, ibid.* xxi, p. 168 (1911); *Dodsworth, ibid.* xx, p. 108 (1912); *Stuart Baker, J.B.N.H.S.* xxiv, p. 11 (1915); *Whistler, Ibis*, 1916, p. 98 (Jhelum); *id. ibid.* p. 768 (Kangra); *id., J.B.N.H.S.* xxvi, p. 184 (1918, Ambala Dist.); *id.* p. 594 (1919, Ludhiana); *Jones, ibid.* p. 619 (1919, Simla Hills); *Whistler, ibid.* p. 775 (1919, Fagoo, near Simla); *Basil Eduardes, ibid.* xxxi, p. 574 (1926, Delhi); *Finn, Ibis*, 1926, p. 802 (Hybrids); *Higgins, J.B.N.H.S.* xxxi, p. 819 (1926, Assam); *Salim Ali, ibid.* xxxii, p. 51 (1927, Bajour); *Stuart Baker, Fauna B.I.*, 2nd ed., v, p. 282 (1928); *Whistler, Handb. In. Birds*, p. 313 (1928).



THE BURMESE PEAFOWL.



THE INDIAN PEAFOWL.

Pavo assamensis, *McClell., Ind. Rev.* (1838), p. 513.

Pavo nigripennis, *Sclater, P.Z.S.* p. 221 (1860); *Oates, B. of Burm.* ii, p. 313 (1883); *Finn, Avi. Mag.* (3), i, p. 128 (1909).

Peacock, *Beebe, Avicult Mag.* iii, p. 127 (1905); (Display in Captivity) *Pocock, Avicult. Mag.* (3) ii, p. 232.

Vernacular Names.—*Mór*, *Manjur* (Hin., etc.); *Taus* (P.); *Landuri* ♀ (Mahr.); *Manja* ♂, *Manir* ♀ (Uriya); *Mabya* (Bhot.); *Mong-Yung* (Lepcha); *Moir*, *Moira* (Assam.); *Dode-Yung* (Garo); *Daodi-Yung* (Cachari); *Voh-tè* (Mikir); *Myl* (Tamil); *Nimili* (Tel.); *Norol* (Can.); *Monara* (Cing.).

Description. Adult Male.—Feathered portion of the head dark metallic green-blue, gradually changing to brilliant Prussian blue on neck, breast and shoulders, shaded in different lights with green and purple-blue; lower breast deeper purple-blue, changing to deep metallic green on abdomen and flanks and, again, to dull brownish-black on vent, centre of abdomen and under tail-coverts; back from shoulders to rump brilliant light bronze-green, each feather black-edged, those nearest the neck with blue central streaks, and those of the rump with wide sub-edges of metallic golden-green; tail dark brown with paler mottling near the shafts; central upper tail-coverts, composing the train, bronze-green with a copper sheen near the tips, each feather with an eye formed by a deep blue heart-shaped spot with four rings; the first ring a narrow one of brilliant smalt blue-green; the second, much broader, of golden bronze, then a very narrow one of gold, and finally one of brown. The outer feathers and the longest of the central ones have no eyes, but terminate in a broad half-moon. A few of the outer shorter coverts have indefinite ocelli of deep copper colour.

Wings: Primaries, their greater coverts and bastard wing, pale chestnut-brown; outer secondaries, with their greater and median coverts, dark brown glossed with deep metallic blue, most pronounced on the median coverts; inner secondaries, all other coverts and scapulars buff with dark brown bars, definite and glossed with green on the scapulars and coverts next them, broken and with practically no gloss elsewhere.

Colours of the Soft Parts.—Bare portion of the face and cheeks livid white; bill dark horny, darkest at the tip and along culmen;

lower mandible paler; iris dark hazel-brown; legs and feet greyish brown to dark horny-brown; claws still darker.

Measurements.—Total length to end of true tail about 3 feet 6 inches; wing 444 to 495 mm.; tail 383 to 458 mm.; tarsus about 127 to 139 mm.; culmen about 37·5 to 42·5 mm. Weight 9 to 12 lb.

> "Length 80 to 92; to end of true tail only 40 to 46; the train in full breeding plumage projects from 40 to 48" (and I have been assured even 54") beyond the end of the true tail; wing 18 to 19; tail from vent 18 to 21; tarsus 5·5 to 5·75; bill from gape 1·9; weight 9 to 11½ lbs." (*Hume*).

A train of one of these birds shot in Malda, and for many years in the possession of my father was full 5 feet 3 inches in length, but I have seen only one other, that of a male shot in North Cachar, which approached this in length.

Adult Female.—Top of the head mostly dark chestnut, each feather bordered with golden-brown, becoming paler on the neck; mantle golden-green; remainder of the upper plumage brownish, marked and barred with brownish white or buff; primary quills and tail-feathers dark brown with paler tips, lower breast and abdomen whitish buff.

Measurements.—Total length to end of tail rather under 3 feet; wing about 395 to 425 mm.; culmen about 37 to 40 mm.; weight about 6 to 8½ lb.; in one instance 9 lb.

> "Females: length 36 to 40; wing 15·75 to 16·5; tail from vent 12·75 to 14·6; tarsus 5·0 to 5·2; bill from gape 1·7 to 1·8; weight 6 to 8½ lbs." (*Hume*).

A female shot by me in the North Cachar Hills weighed full 9 lb.

Young males resemble the adult female but have the primary quills pale chestnut, as in the males, though mottled with dark brown.

Young Bird, Nine Weeks Old.—Top of head pale sandy with black bases to the feathers, crest about ½ inch long, black at the base, brownish chestnut on the terminal half and tipped with black; general colour of the upper parts, including the wings and tail, light brown, barred and freckled with brownish black; under-surface of the body yellowish white becoming browner on the chest.

Chick in Down.—Pale buff with dark brown nuchal mark running from behind one eye to the other and down across the neck; back

deeper rufous brown; quills of wing pale dull chestnut mottled with brown, secondaries barred and mottled with brown and pale tipped.

The form known as *nigripennis* differs from the common one in having the scapulars and wing-coverts black with narrow green edges; the thighs are black and the back is still more golden than in the normal plumage.

There is nothing to prove that this form is other than an abnormal phase, showing, perhaps, an inclination towards melanism. It is very rare and has hitherto never been obtained in birds in a state of nature. Grant suggests that the coloration may be a reversion to the original ancestor of all Peafowl, but there is no proof of its being an atavism, and it appears to me that some tendency to melanism is a more likely cause.

Albinoism is very common, even in a wild state, many such birds having been shot, whilst in a domestic state the form has become a permanent one, breeding true with great regularity.

Distribution.—Practically the whole of India proper and Ceylon with the exception of the Trans-Indus in the North-West and the extreme North-East of the Empire next to Burmah.

In Sind it is now common, though not indigenous, and it is equally so in Rajputana, Cutch and Guzerat. It is not found in the greater part of the Sunderbands in Eastern Bengal, though it occurs rarely in the district of Mymensingh and in Barisal in the low-lying forest bordering the sea coast and tidal rivers. In the twenty-four Parganas, Nadia and adjacent districts, it does not now exist, but probably did so at one time except in the most swampy parts. It used to be comparatively common in the Santhal Parganas and many districts in West Bengal, but is undoubtedly becoming less so year by year.

In Assam it is found on both banks of the Brahmapootra River, north and south, but the watershed of the mountains on the south would appear to be its boundary in that direction. It is very common in the Garo and Mikir Hills, common in the north of the North Cachar Hills, and thence extends along the north of the Khasia Hills and the various Naga Hills as far as Sibsagar and Dibrugarh, becoming more and more rare as one works east.

According to native legends, Peafowl were once common in Manipur, and I have heard of its being shot in the early nineties by some sportsmen north-east of Imphal; presumably, however, these birds, if they ever did exist, were of the Burmese form. In Cachar and Sylhet, south of the watershed, it does not occur, but I have heard of its being shot in Commilla and the Tippera Hill States, though here again the bird is more likely to be the Burmese than the common Peafowl, as the latter form certainly does extend into the south of the Looshai Hills and also into the Chittagong Hill Tracts.

In Travancore, Bourdillon says it is becoming more and more rare and the Peafowl would appear to be one of those birds which increase enormously directly the slightest protection is afforded, yet has a tough fight for existence under less favourable circumstances. In all the lower hills in the north of the Khasia Hills it is said once to have been common but, with the exception of the Kopili Valley, has now almost disappeared.

Nidification.—The breeding season of the Peafowl varies greatly in the different parts of the area it inhabits. In Ceylon, Legge states that the principal breeding season is from January to April; all along the foot-hills of the Himalayas from Assam to Nepal it appears to lay principally in the months of March and April but, elsewhere, according to numerous observers, it does not commence breeding operations until the rains break, that is to say, about the middle of June, continuing up to the end of August or September. Even in the central portions of India, however, the breeding appears to be very erratic, for whilst Wilson says that in the Central Provinces he found it breeding in April and May and McInroy also found it breeding during the former month in Hansoor, Davidson, on the other hand, found it breeding in West Khandesh as late as October. Presumably its breeding is governed to a great extent by the rainfall, and in places where there are showers in the early part of the year and food is plentiful, the birds breed from January to April, whereas, when there is a very long period of drought and, in consequence, food is very scarce, the birds do not breed until the rains commence and food, both insect and vegetable, is once more abundant. It is difficult to say what is the Peafowl's favourite kind of country for breeding purposes for, over so much of its habitat, it is regarded as more or

less sacred and is really in an almost semi-domestic state, laying its eggs in any convenient place. Thus, in Rajputana and in other States where they are preserved, they will deposit their eggs in any patch of jungle, grove, or cluster of bushes, quite close to the villages and in the centre of cultivation; or, if other cover is not available, they will make use of thick high crops, such as sugar-cane, dhal, &c.

In countries in which it is not held in reverence it is a shy bird, only breeding well away from the haunts of man. In such places the two conditions which would appear to be then essential are dense cover, thorny if possible, and the propinquity of water.

In North Cachar, as well as in similar foot-hills along the mountain ranges south of the Brahmapootra River, its favourite breeding haunts are in forests growing alongside hill streams in which the undergrowth consists of *Ber* bushes and thorny creepers. The *Ber* bushes grow some 10 or 12 feet apart, having little foliage for the first 2 or 3 feet, above which they spread out into table-shaped tops which meet one another and form a dense flat mass. This sort of cover allows Peafowl and other small living creatures to move about in its shade with the greatest ease, whilst to man and the larger animals movement at any speed is impossible. In country such as this I generally found the nests placed in broken ground, small ravines or sloping banks at the foot of one of the *Ber* bushes. Concealment was not attempted, though the masses of fallen leaves which covered the ground were of much the same colour and size as the eggs, so that care in this respect was hardly necessary. Sometimes the eggs were laid on the ground with no real nest other than the fallen debris which had accumulated thereon but, once or twice, I found that the natural hollow which had been selected to receive them had been well filled with a mass of leaves, small sticks and grass, some of which must have been brought from a considerable distance.

Higher up in the hills, in the open oak forests, the birds were much more particular in selecting nesting places well screened from view. In April, after the grass had all been burnt, the country hereabouts much resembled an endless English park; mile after mile of rolling hill covered with brilliant green grass, amongst which the black stems of numerous oaks stood out in vivid contrast. From a distance the whole plateau looked as if natural cover was non-existent,

but on closer acquaintance one found tiny nullahs and rivulets running between the swelling hills, each bank well covered with bushes, tall reeds and brambles, amongst which the Peafowl found all they wanted in the shape of protection. Here, too, the nests were often much better made, consisting of dense layers of sticks filling up the bases of large natural hollows; above this again there was a well-matted covering of coarse grass, whilst the four or five eggs were half buried in small leaves and finer grasses.

I also once found a nest, from which the young had been hatched, placed in a tangle of creepers and fallen rubbish on the top of a low bush, but Anderson found them in even queerer places than this. He writes (*vide* Hume) :—

> " Three years ago, a chuprassy, who from long practice had become somewhat arboreal in his habits, brought me three fresh eggs from an old nest of *Gyps bengalensis*. Shortly afterwards I saw the nest, which was situated on a huge horizontal bough of a burgot, in the centre of some dhak jungle, and on which all the Peafowl in the neighbourhood were in the habit of roosting. I have every reason to believe my chuprassy, because he had no object in wishing to deceive me, and my own experience is in favour of these birds laying at high elevations, for I have on several occasions taken their eggs from the roofs of huts in deserted villages, from high mounds, and from the top of *pucca mujids*, on which rank vegetation grew to a height of 2 or 3 feet."

Even more curious than this is a pair of eggs taken by Col. A. E. Ward in Kashmir, upon which a Neophron was actually sitting. Of these eggs one is that of the sitting bird, but the other is beyond all doubt that of a Peafowl.

Professor Littledale, also, writing from Baroda records that there, when the flat country gets flooded, the Peafowl resort to big trees for nesting purposes, and he records having obtained three fresh eggs which had been laid in a hollow formed by the bifurcation of several massive branches of a banyan tree.

Hume says :—

> " Canal banks fringed with trees and traversing rich cultivation are their especial delight, and in such localities I have found a great many nests."

The number of eggs laid by the Peahen is generally three to five, sometimes six, but very rarely more. Eight was the largest

clutch ever found by Hume, whilst Marshall, Anderson and others never took more than six. Personally I have never seen more than five in a nest and have taken three and four highly incubated. Miss Cockburn certainly declared that they lay from ten to fifteen eggs in the Nilghiris but much of her information was evidently obtained from natives and not first hand, for no other observer in these hills has corroborated her statement, which may, I think, be dismissed as quite incorrect.

The hen sits fairly close when the eggs are nearly hatching but at other times sneaks quietly away before she is spotted and, though so big a bird, the silence with which she will move away amongst dried leaves and rustling grass is very striking, especially when compared with the noise and fluster she creates when suddenly startled.

Hume describes the eggs as:—

> "Typical Rasorial ones, much like gigantic guinea-fowl's eggs, with thick, very strong and glossy shells, closely pitted over their whole surface with minute pores."

In colour they vary from a very pale cream or fawn to a warm buff or *café-au-lait*, the majority being a rather decided, though pale, buff or cream. Occasionally one comes across eggs which are freckled with a colour the same as, but darker than, the ground colour and I have one egg in my collection which is mottled all over with a dull grey which makes the egg look as if mildewed. Hume also mentions eggs freckled with reddish brown as thickly as those of the Monal, but such eggs are very exceptional. In shape the eggs are broad blunt ovals, with both ends almost the same, though they vary a good deal, whilst I have seen one abnormal clutch of eggs almost as peg-top-shaped as a Plover's.

I have no eggs bigger than the biggest in the Hume collection, which measure 3 inches (= 76·2 mm.) in length, and 2·2 inches (=55·8 mm.) in breadth, but I have a remarkable clutch from the Khasia Hills of which the five eggs average only 2·5 inches (= 63·5 mm.) × 1·8 inches (= 45·7 mm.), and of which the smallest is only 2·45 inches (= 62·2 mm.) × 1·42 inches (= 35·7 mm.).

Eighty eggs average 69·5 × 52·0 mm.; maxima *76·2* × 54·1 and 73·4 × *58·9* mm.; minima *61·2* × *43·1* mm.

Incubation of Peafowl's eggs is said to take thirty-two to thirty-five days in England but is shorter in India, seldom exceeding thirty days.

The Peafowl is, as is well known, polygamous, his harem consisting of from two to five hens, but he takes no interest in the eggs when laid or in the young when hatched, leaving the incubation of the former and care for the latter to the females.

Habits.—Wherever it is found the Peafowl is resident, whether in the plains or in the hills. On the whole it is a bird of the plains and lower hills rather than of the higher mountains, generally keeping below 2,000 feet, though in many places it is found at considerably higher elevations. Thus it has been found in Nepal and the borders of the Sikkim Hills up to 4,000 feet, though it is but rarely met with so high up. Colonel Ward records that it is found in Jummu and Kashmir, but does not say to what height, merely remarking that it is confined to the lower hills. In the Nilghiris it ascends as high as 5,000 feet but keeps lower than this, so far as is known at present, in the other hill districts of Southern India. The greatest height at which it has been recorded is by the late Mr. P. Dodsworth in Simla. This gentleman found it very common in the Dhami Reserve at 5,500 feet, and notes that a pair was seen on the Kalka-Simla Railway near Tara Devi Station at an elevation of 6,050 feet.

It is not easy to write of the habits of the Peafowl in general terms, for there are two distinct birds under this name which, though outwardly the same, vary in character almost as greatly as it is possible for them to do so.

Over a great part of Hindoo India Peafowl are considered sacred birds and are strictly preserved by the natives, who bitterly resent any interference with them, so that these birds have been the cause of frequent trouble between "Tommy Atkins" on the shoot and the natives of the villages near where they pursue their sport. Even where the natives do not consider the bird to be actually sacred, there are many parts of India where the bird is venerated to a certain extent, or they are considered lucky and never persecuted. In such places there cannot well be any more confiding bird than the Peafowl. Here he haunts the immediate vicinity of villages, feeding openly in

the cultivation in the early mornings and evenings, scarcely moving off the roads when disturbed by passers-by, and leading his wives and their families into groves and orchards, or into the low scrub jungle so often found all round Indian villages, where they may be sought, found, and watched by whosoever will.

But take the Peafowl in his haunts in those parts of India where man, instead of protecting him, takes every opportunity of slaughtering him either for the sake of his flesh or, to a less extent, for his beautiful feathers, and it will indeed be hard to find a bird more wary or clever in avoiding observation and pursuit.

On the banks of the hill streams which run north from the North Cachar Hills into the Brahmapootra River the bird was by no means rare. On these rivers our usual mode of travel was upon two dug-outs fastened together with a platform of plaited split bamboo, upon which was erected a semicircular grass hut about 3 feet high, running some 10 feet or so along the platform. The current of the little river was the only means of propulsion down stream, though one man squatted in the bows and another in the stern to guide the craft down the rapids and in amongst the rocks. In appearance there was little to distinguish this floating hut from a couple of logs piled up with drift and rubbish and, so long as the men sat immovable, most wild animals and birds allowed a very close approach before taking to flight. Buffalo, when wallowing at the water's edge, would allow us to approach, if the wind was right, within 40 or 50 yards. As a rule when within about a couple of hundred yards they would heave themselves on to their feet and stand with noses high in the air, grunting querulously until they suddenly turned tail and took to ponderous flight.

Deer seldom moved until we were within long shot, whilst even tiger, leopard and bison often allowed me to drift slowly down until it was too late for them to escape. Bear and pig, of course, in their usual stolid manner would quietly go on feeding and rooting about until we had glided past and once more disappeared from sight. As regards Peafowl, however, never, during the many years I lived in North Cachar, did the birds allow me to approach within gunshot.

Often as we lazily floated down the long stretches of smooth, deep water which divided one rapid from another, the two boatmen

crouching down in the boat and myself seated under the little thatch roof, we would see far away in the distance a party of Peafowl on some grass-covered spit of land running into the stream. When first noticed they were generally busily engaged in turning over the rubbish at the edge of the stream or hunting along the border of the bushes for fallen berries but, before we were within a quarter of a mile, they would begin to fidget and crane their necks to get a better view of us. The cocks were always the first to get suspicious, the alarm being generally started by one of them ceasing his search for food and putting his long neck and head into every conceivable position of inquiry as he tried to make out what the curious object was which was approaching him. He would very quickly communicate his fears to his male comrades, who would then join him in striking attitudes, though the hens would often still continue to scratch round in the sand. Presently one of the cocks would come to the conclusion that it was inadvisable to risk further delay, whereupon down would go his head and long train, and he would slink away through the bushes into safety, followed in quick succession by the rest of the flock.

They never sought safety in flight, unless we suddenly came round some sharp corner practically on the top of them, but invariably slunk away in a manner which reminded me of some big cat or leopard trying to steal away without being seen.

After I had learnt their ways I sometimes managed to circumvent them by getting out on to the bank and letting the boat float on to within some 200 or 300 yards of the flock. This was near enough to excite their suspicions and intense curiosity, yet not near enough to frighten them away, whilst I found the boat so completely occupied their attention that it was sometimes possible to slip round them and get a shot from the opposite direction. Even working it this way, however, I think they had more often than not cleared out before I got up to them. A crack of a fallen twig or the rustle of a few dried leaves would have put them on the *qui vive* and sent them at once into the safety of the bushes.

It is wonderful the way a cock Peafowl in all the pride of plumage and gorgeous lengthy train will slip through jungle which one would imagine dense enough to stop his movements altogether with such an encumbrance. He seems to be as sinuous as a snake in his movement,

as stealthy as a cat in his tread and as wary as an old bull bison in watching for foes. On foot a sportsman has no chance of pressing Peafowl hard enough to induce them to rise, but a small dog very quickly flushes them, when the old cocks, with the hens too, will rise with a tremendous commotion and fluster, sometimes flying well away before again landing and taking to their legs, sometimes flying straight up into the larger branches of the nearest lofty tree.

The flight of the Peafowl is generally alluded to in very contemptuous terms by both naturalists and sportsmen but, as a matter of fact, once they are on the wing they fly at a very fair pace, and though they make an enormous target, they may be easily missed or tinkered unless a good speed is allowed for. Personally the first bird I ever fired at I missed clean through underrating the pace he was going at, the second I tinkered, knocking out most of his long train, whilst the third bird I treated as a pheasant and with success.

Unless one is in want of the train feathers for any purpose, an adult bird is not worth shooting, for they form poor food, being desperately tough and stringy and by no means delicate in flavour. Birds of the year are, however, excellent eating, especially when they have fed some time in the mustard fields, when they get very fat and tender.

Peafowl are almost omnivorous in their own diet and will eat all and any kind of grain, young green crops, insects, small reptiles, mammals and even snakes. They are also much given to swallowing small pebbles and grit, some young birds which I shot on a river bank having their gizzards full of sand mixed with tiny water snails. The latter they had evidently obtained at the edge of the stream, whilst the sand may have possibly been picked up with them, though more probably it had been taken as a digestive.

Wherever Peafowl are found the natives have legends connecting them with tigers and leopards. The cats are always credited with being particularly partial to a meal of Peafowl, whilst the latter are alleged to be so overcome by curiosity or fright when they see a leopard that they fall an easy prey. There seems to be some ground for these beliefs, for there is no doubt that the Peafowl, in spite of his wiliness, does constantly fall a prey to the bigger cats. When wandering about in the jungles, I have often come across their

remains scattered about in all directions, the bird having evidently formed a meal for either leopard or tiger.

Colonel Tytler tells an amusing tale of how, when once he was stalking a Peafowl, he was surprised to find that it was so completely taken up with watching something else that it allowed him to approach quite close to it. Looking to see what the bird was gazing at so intently, he discovered a leopard slowly crawling towards the bird ; he continues, according to Hume, " that he had never heard of leopards in the neighbourhood, but his astonishment exceeded all bounds when, on raising the gun, it suddenly threw up both its paws, and shrieked out : ' No, Sir, no Sir, don't fire,' and the supposed leopard turned out to be a professional fowler. These men had learnt that the easiest way to get near a Peafowl was to pose as a leopard, by which means it was easy to get near enough to shoot it with a bow and arrow."

The call of the Peacock is rather a fine cry when heard in the wilds far from any human habitation, though so penetrating and unpleasant when at close quarters in a farmyard. It has often been likened to the call of a cat and is, in fact, a sort of cross between the sound of a trumpet and the miaou of this animal. They often call on moonlight nights and sometimes when, after a long tramp following a wounded buffalo or gaur, we have been caught by night and forced to camp out, I have lain awake listening to these birds. Except for the constant drone and hum of insects the Indian nights are very silent, the occasional call of a nightjar or other night bird only emphasizing the silence which succeeds it. Suddenly with startling loudness the loud " phi-ao phi-ao " of a cock Peafowl would ring out in the stillness, the call being taken up by bird after bird until the last cries died away in the distance.

They like to roost on high boughs, from which they can have a good look out all round. If in forest they will choose one of the higher trees, but frequently I have known them to select a tree well out in the open. One such tree comes very vividly to my mind ; a huge pine running up clear of all branches for a good 60 feet, at which point it threw out three great limbs, upon which many generations of Peafowl had roosted at night. There were no villages within many miles, but round about were a number of small deserted quarries from

which the Hill Tribes had once taken limestone. Bears had superseded the Khasias as tenants of these places, affording me many a good afternoon's and evening's sport, and sometimes my way home took me under this pine after twilight had fallen. High up in the pine, night after night, one season after another, I found the branches occupied by a magnificent peacock and his harem of Peahens.

What, however, struck me more than anything else about this tree and its occupants was the fact that once darkness had fallen the birds never took the slightest notice of us, although we passed right under their roosting-place. If the twilight was not yet far advanced, we were always spotted before we got within shot, the birds flying off at once but, if we hid in the grass or bushes adjacent, they would shortly return. First we would hear a low chuckle in the grass by the tree, a scurry of legs and half-open wings through it and, then, an old hen would fly up to her perch, followed by the rest of the harem and, finally, their lord and master would also take his place. A few minutes' pushing and shoving, a little craning of necks in the attempt to see whether there was any cause for alarm below and they quickly settled down to sleep. This is rather contrary to Colonel Tickell's experience, for he says :—

> "The cock bird invariably leads the way, rising suddenly from the brushwood near the roosting tree, with a loud 'kok-kok-kok-kok' and being presently followed by his harem—four or five hens. If marked to their roosting-place, and if it be a clear moonlight night, they may be easily shot, for, not knowing where to go, they will frequently remain on the tree until fired at two or three times. When forced to quit, they fly to the ground and pass the rest of the night as well as they can."

Perhaps when the birds go to roost in forest the cock may generally lead the way, though once they have been disturbed, he is always the last to leave cover, nor does he do so until the hens have made sure the way is safe. As regards their remaining on the ground all night after being frightened, this is quite unusual in the places I have seen them where, as already stated, they take but little time in getting aloft once more.

Peafowl nearly always call when disturbed by any of the bigger forest animals ; whilst, however, they merely acknowledge the presence

of elephant, bear or deer with a few loud calls, the cat tribe they will continue to abuse and shout at as long as they are within sight, often following them from one tree to another for a considerable distance. I have seen and heard them do this when annoyed at the presence of a jungle cat and, on one occasion two hens followed up their hated foe for a hundred yards, and would possibly have continued their pursuit had they not suddenly caught sight of an even more bitter enemy in my own person.

PAVO MUTICUS.

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Pavo muticus, *Linn. Syst. Nat.* i, p. 268 (1766); *Lath, Ind. Orn.* ii, p. 617 (1790); *McClelland, Calcutta Journ.* ii, p. 144 (1842); *Blyth, Cat. Mus. Asiat. Soc.* p. 239 (1849); *Jerdon, Birds of India* iii, p. 508 (1863); *Elliott, Monog. Phasianidæ* i, pl. 5 (1872); *Hume, Stray Feath.* ii, p. 411 (1874); *Hume & Oates, ibid.* iii, p. 165 (1875); *Blyth & Walden, Cat. Mamm. and Birds Burmah*, p. 147 (1875); *Hume & Davidson, Stray Feath.* vi, pp. 425, 520 (1875); *ibid.* vii, p. 455 (1878); *Anderson, Bird W. Yunnan*, p. 668 (1878); *Hume & Marshall, Game Bird, Ind.* i, p. 93, plate (1878); *Hume, Stray Feath.* viii, p. 68 (1879); *Bingham, ibid.* ix, p. 195 (1880); *Fasson, ibid.* ix, p. 202 (1880); *Oates, ibid.* x, p. 235 (1882); *Hume, ibid.* xi, p. 300 (1883); *Oates, Birds Burmah* ii, p. 312 (1883); *Ogilvie-Grant, Cat. Birds B.M.* xxii, p. 371 (1893); *id. Hand-List Game Birds* ii, p. 82 (1897); *Oates, Manual Game-B.* p. 280 (1898); *Blanford, Faun. Brit. Ind.* iv, p. 70 (1898); *Sharpe, Hand-List* i, p. 40 (1899); *Oates, Cat. Eggs Brit. Mus.* i, p. 62 (1901); *Hopwood, Journ. Bom. Nat. Hist. Soc.* xviii, p. 433 (1908); *Harington, ibid.* xix, p. 309 (1909); *Hopwood, ibid.* xxi, p. 1214 (1912); *Gyldenstolpe, Birds, Swedish Ex. to Siam*, p. 65 (1913); *Gairdner, Journal N.H. Siam* i, p. 40; *Barton, ibid.* ii, p. 108 (1914); *Finn, Avicult. Mag.* (3), i p. 129 (1909); *Harington, B. of B.* p. 119 (1909); *Stuart Baker, J.B.N.H.S.* xxiv, p. 23 (1915); *Inglis, ibid.* xxv, p. 500 (1918); *id., ibid.* xxvi, p. 673 (1919, Chittagong Hills); *Stuart Baker, Fauna B.I., Birds*, 2nd ed., v, p. 284 (1928).

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Pavo javanicus, *Horsfield, Trans. Linn. Soc.* xiii, p. 185 (1821).

Pavo aldrovandi, *Wilson, Illust. Zool.* pls. 14-15 (1831).

Pavo spicifer, *Shaw & Nodder, Natur. Miscell.* xvi, pl. 641 (1806); *Schinz, Nat. Vög.* p. 150, pl. 73 (1853).

Vernacular Names.—*Doun, Udun* or *Udaung* (Burmese); *Marait* (Talain); *Tusia* (Karen); *Bourong marah* (Malay); *Pegu-majura* (Bengali, Calcutta).

Description. Adult Male.—Head from forehead to nape, lores, chin and throat brilliant metallic blue-green, with a purple sheen in some lights; neck and extreme upper breast and mantle golden-bronze,

the centre of each feather deep purple-blue, bordered with verdigris-green and obsoletely fringed with the same. On the neck the blue centres are hidden, but on the upper mantle they show prominently and, on this part, the feathers are boldly fringed with black. Back brilliant emerald-green, each feather edged with black, and centred with bronze. Below, the breast is bronze, each feather edged with deep blue-green and centred with the same; remainder of lower parts and flanks duller, deeper green fading to dull brownish-black on the centre of the abdomen, vent and under tail-coverts.

Wing-coverts next the scapulars bronze-green with deep blue centres and dark margins; other coverts deep metallic blue-green, changing to copper bronze on the coverts of the inner secondaries; bastard wing, greater coverts and primaries light chestnut, with dark brown shafts and tips; secondaries dark brown with metallic green lustre on the visible portions; tail dark brown with paler mottlings next to the shaft; tail-coverts which form the train similar to those of the Common Peacock.

Colours of Soft Parts.—Naked skin round the eye bluish green, cheeks yellow to pale orange; bill dark horny-brown, darkest at the tip and paler at base of lower mandible; legs and feet dark grey-brown or horny-brown, claws blackish; iris dark brown or deep hazel-brown.

"The facial skin is of two colours, smalt blue and chrome yellow.

"The blue runs from a point in front of and below the nostrils, where it is palest, to the gape and thence in a curved line past, and 0·15 in front of the orifice of the ear to within 0·35 of the top of the head, from thence curving round over the eye, and about 0·2 above it, down to the point below the nostrils already referred to; the blue is brightest just behind the eye.

"The chrome yellow extends as a broad irregular band over the posterior portion of the face, immediately behind the blue. It is widest on the cheeks, where it may be 0·8 wide and narrowest at the oral orifice, which it encloses, where it may be 0·45 wide. It begins at the gape and goes as high up as the blue" (*Hume*).

Measurements.—Wing 375 to 506 mm.

"Length to end of true tail, 40·0 to 48·0; train projects beyond the tail 24·0 to 44·0; expanse 50·5 to 60·0; wing 16·75 to 19·75; tail from vent 15·6 to 17·5; tarsus 5·5 to 6·3; bill from gape 1·95 to 2·05; weight 8·5 lbs. to 11 lbs." (*Hume*).

Hume says that the finest bird of which he has any record was no less than 90 inches from the tip of its bill to the end of its train.

Adult Female.—Has no train and differs from the male in the following respects: The whole back and rump are brownish black, more or less barred and marked with buff, the feathers next the scapulars with faint metallic green edges. The feathers of the breast have the bronze and black borders more broken up in appearance. The primaries, bastard wing and greater coverts are more or less mottled on the outer webs. The upper tail-coverts are no longer than the tail and are much mixed with brown and light buff. Tail brown with narrow bars and tips of paler brown.

Measurements.—The female is but little smaller than the male, the wings of those in the British Museum being about 17 inches (431·8 mm.).

Young Male.—Resembles the adult female, but the feathers of the lower back are greenish bronze and the upper tail-coverts are golden-green tipped with bronze. They fall short of the tip of the tail by about 6 inches.

The young male soon commences to show the sexual differences in coloration, though the metallic parts are more bronze and less green than in the adult. The primaries and their coverts remain like those of the female, whilst the secondaries and their coverts are dark brown with narrow pale bars, the inner webs much mottled with buff. The green part shows as a metallic sheen on the darker markings. The longer upper tail-coverts are mostly a brilliant copper flame-colour broken by the narrow buff bars and by faint indications of the green gloss.

The crest, even when of practically full size, is dull-coloured and nearly entirely blackish brown.

In the Burmese Peafowl the reflections on the metallic parts vary greatly in different lights, in some the green predominates, whilst in others the deep blue almost alone shows, whilst in certain lights the whole tail looks almost copper-coloured.

Distribution.—The whole of Burmah, Siam, Cochin China, the Malay Peninsula, Java and, very doubtfully, Sumatra. In Indian limits it is only to be found in Chittagong, the Chittagong Hill Tracts and the

Looshai Hills, but is extremely rare in all these districts. It is possible that at one time the Burmese Peafowl extended through the Looshai Hills and Manipur into the North Cachar Hills, and other suitable hill ranges south of the southern water-shed of the Brahmapootra.

Between 1880 and 1900 a few birds of this species were to be found wild in the high grass uplands to the north of the North Cachar Hills, but they were probably stock from tame birds which had been imported generations previously. The local Mikir *Mozedar*, or chief, had still two pairs of these Peafowl in 1888-89, which he told me had been imported from Imphal, the principal town of Manipur. He also said that at one time the Burmese Peafowl was to be found in Manipur and Cachar wherever the country was suitable.

In the Looshai Hills and Chittagong Hill Tracts they are very rare and very local and Mr. Sneyd Hutchinson who, for many years, resided in the latter district, never saw a specimen, though he informs me that a few were still to be found in one or two places in the south-east. He mentions in special the two localities, Gurunia and Ramoo, which are amongst those enumerated by Fasson in ' Stray Feathers.'

Nidification.—There is very little on record about the breeding of this magnificent bird. I had some eggs brought in to me on May 21, 1888, when camping in the Mikir Hills on the Kopili stream, and going out at once, saw the nest from which they had been taken and shot the male bird, which was in the scrub jungle alongside the nest. This, the nest, consisted of a large mass of reed blades, grass and leaves chucked carelessly into a hollow between the buttresses of an enormous cotton tree. The nest was underneath a dense thicket of thorny bushes almost impossible to get at without lying on the ground or else cutting away the jungle.

The country all round was more or less open grass-land, the grass at this time of the year being only about 2 feet high, though by the end of the rains it grew to a height of 4 to even 6 feet. Here and there in the pockets were small patches of forest and scrub jungle, whilst dotted about over the whole uplands were fine oak trees and, wherever a stream ran, its banks bore a strip of evergreen forest on either side.

Mr. K. G. Gairdner records finding numerous eggs of this Peafowl in Ratburi and Pechaburi, Siam, whilst Mr. Barton writing of the birds of the Raheng District, Siam, quotes Mr. Keddle to the following effect :—

> "On April 9th, 1912, found a Pea-hen's nest with three eggs, chicks half formed. On 18th March, 1913, heard a Pea-hen and chicks on an island. Maung Hpo Loke said he saw them, and they were about a fortnight old. He did not know how many there were, but he saw two."

Blanford records the breeding season as being during the monsoons, i.e., the end of June to September near Moulmein and about March near Pegu. It probably extends over most of its habitat from February to May, whilst the majority of eggs will be found in March or April. The number of eggs laid will certainly prove to be about the same as is laid by the Common Peafowl, that is to say, anything between three and six, very rarely more.

Mr. C. M. Inglis, who has been successful in breeding this bird in captivity, sent me four eggs, a full clutch, which were laid in May. I have also the clutch taken in North Cachar and have seen half a dozen other specimens laid by wild birds. In the British Museum collection there are unfortunately only four eggs, all of which were laid by birds in Zoological Gardens. These four eggs vary between 2·75 inches and 3·4 inches in length and 2·50 inches and 2·15 inches in breadth (= 69·85, 86·3, 63·5 and 54·6 mm. respectively).

Twenty eggs average 73·4 × 53·6 mm.: maxima *86·3* × 55·0 and 75·6 × *66·2* mm.; minima *67·4* × *51·0* mm.

They are of course indistinguishable from the Common Peafowl's eggs in shape, texture or colour, though the clutch given to me by Mr. Inglis is extraordinarily richly coloured, somewhat like the eggs of a Brahma fowl.

Habits.—Throughout the whole of this Peafowl's range it is a bird of the most retiring, shy disposition, keeping to haunts little frequented by mankind, even shunning the vicinity of villages in the jungles.

It is a curiously local bird in its distribution, being found in isolated patches here and there with wide intervening spaces where

it is never met with, although many parts of it may seem equally suitable to its wants.

Oates in his Manual of Game Birds writes :—

> "The places frequented by these birds are generally well known to the natives, for the birds remain there constantly. In some parts of Upper Burmah this Peafowl is very abundant, and on some of the higher reaches of the Irrawaddy, above the third defilé, large flocks may be seen in the mornings and evenings on the sand banks and shingly margins of the river. I have counted as many as fourteen in one flock. Wherever this bird is found it is extremely shy, and it is not often secured with a shotgun."

Over the greater part of the area in which it is found it is not a common bird, though doubtless its retiring habits and the nature of the cover it frequents may make it appear even more rare than it really is. Even in such places, however, one would imagine its presence could not be concealed, for its loud cry must proclaim it wherever it may be.

Count Gyldenstolpe, writing of this bird in Southern Siam, declares it to be the shyest bird he met with and by no means common. In Northern Siam it was still more rare, though he sometimes heard them calling, especially in the dry forests near Den Chai and Pak Pan.

Gairdner also speaks of these birds as abundant in Siam, but most of my correspondents in Malay and Burmah seem to consider it a rare bird, though Hopwood and Mackenzie say it is extremely common in parts of Pegu.

It is difficult to say what sort of country it has a preference for. In one place it will be found almost exclusively in elephant grass, in another in open dry forest, whilst in yet another it remains in the densest thorn and bush undergrowth of evergreen forests. One thing, however, must be common to all these places, and that is the near supply of good and plentiful water. Perhaps on the whole, the haunts to which it is most partial are the banks of the smaller, clear, running rivers, which are well wooded, and which have an abundance of low undergrowth, not too dense close to the ground to curtail the freedom of their movements.

Where rice fields, mustard and other cultivation encroaches on the jungle, the birds will come into the open in the early mornings

and late evenings, though even then it is practically impossible to obtain a shot. They are not only too keen-sighted to allow of an approach in the open but, also, too sharp of hearing to permit anyone to creep through the jungle to within shot. The crackle of loose branches, or the brushing aside of the coarse grass is quite enough to send them all scurrying into safety. Like the Indian bird, the Burmese Peafowl prefers to trust to his legs rather than to his wings for escape and he can run at an amazing pace, even when in possession of a full train.

As regards the time during which the train is worn, the evidence is conflicting, though it appears that it is generally acquired during the autumn moult, being worn until the following spring, when it is gradually moulted. Oates himself gives very conflicting views upon this matter. In 1883 in his Birds of British Burmah, he says that the train commences to grow in February and is lost again by August; fifteen years later in his Manual of Game Birds, he says that:—

> "The train commences to grow at the autumn moult, and by the end of November attains its greatest development . . . and by the commencement of the rains little of the train remains."

In North Cachar the tame birds, which however lived in a practically wild state, *began* to acquire their train in the October moult, but it was not until January or February that they were at their best. The wild cock I shot in May had a gorgeous train which had only just begun to moult, and was very little frayed or worn.

The cock birds are extremely pugilistic and fierce, and have been quite frequently known to kill each other in their combat and even to kill hens to whom they had taken a dislike. Their display of spreading train, drooping wings and strutting walk is similar to that of the Indian Peafowl and, like that of that bird, is used as a means of intimidation as well as of incitement to the hen bird.

Mr. Gairdner in the article I have already quoted records how some tame chicks of his acted:—

> "It was amusing to watch chicks of three weeks old erecting stumpy tails and lowering wings to intimidate a young Macaque, or a ground lizard; or, when a little older, trying to frighten a woodpecker which had excited their wrath by tapping on dry bamboo poles."

Finn mentions the same fact and notes that he has seen Peafowl "showing off" prior to attacking a pheasant and in order to frighten a crow.

It would appear, though this is not yet accepted as proved, that in birds the attitudes assumed by them which are generally known as "showing off" are merely the display of almost any uncontrollable emotion and may be—indeed often are—caused as much by such emotions as sudden fear, intense anger, etc., as by an anxiety to attract the female.

Subfamily ARGUSIANINÆ.

The present subfamily consists of birds of grey plumage with ocellations of metallic colour, brilliant in the male but sometimes duller or absent in the female. The tail-feathers vary in number from twelve to twenty-four.

The sides of the head and face are naked to some extent; the tarsus is sometimes spurred with one or more spurs, sometimes without any. The general character of the plumage is very soft and lax.

According to Beebe all the genera of this subfamily moult their tail-feathers commencing with the third from the central pair and proceeding thence outwards and inwards simultaneously.

Key to Genera.

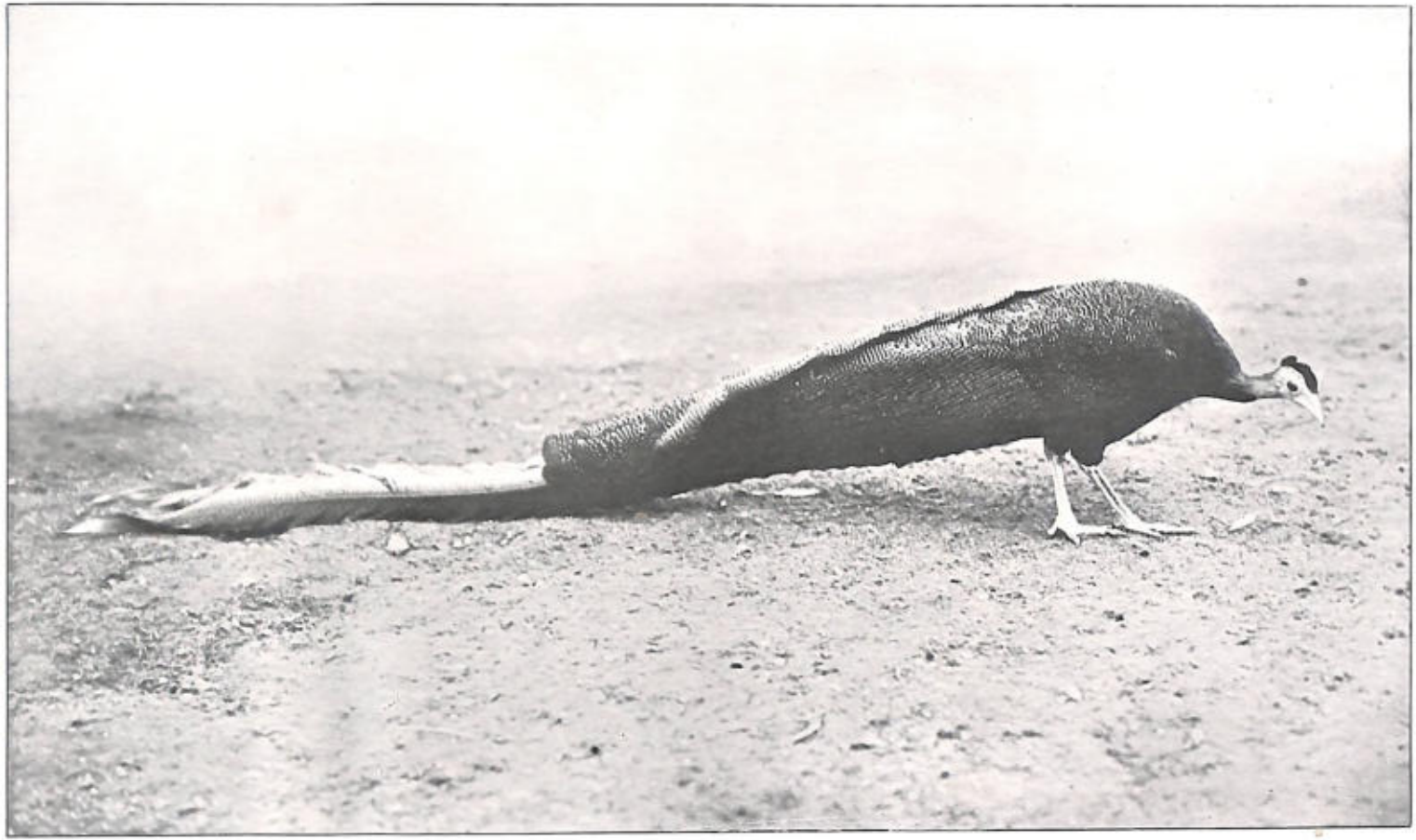
Secondaries longer than primaries; tail-feathers 12 ...	*Argusianus.*
Secondaries no longer than primaries: tail feathers from 20 to 24 in number	*Polyplectron.*

Genus ARGUSIANUS.

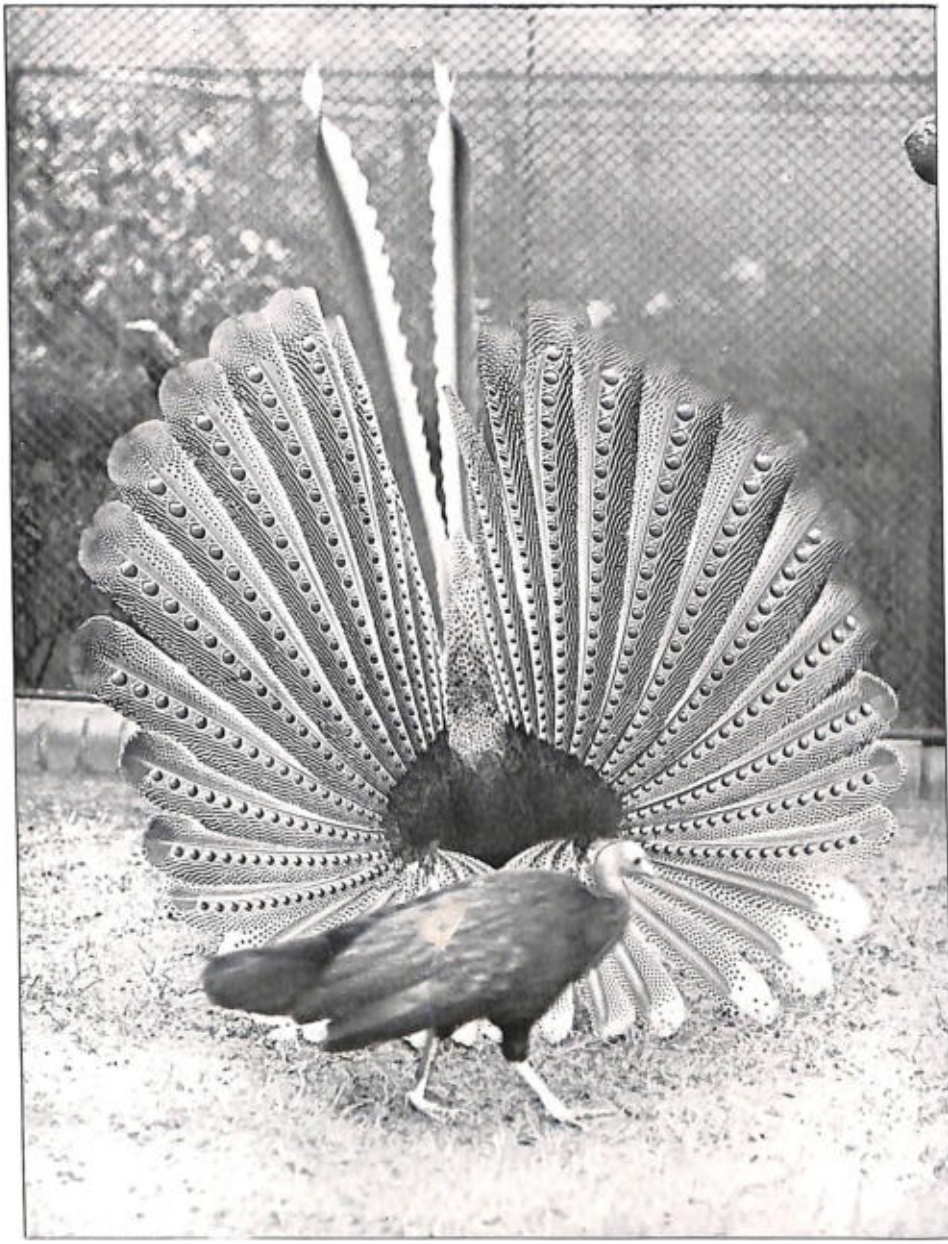
Argusianus, Rafinesque, Analyse, p. 210 (1815).
Type, by mon., *Phasianus argus* (Linn.).

The genus *Argus* is distinguished from all other Indian Game-Birds in having the secondaries longer than the primaries; in the male bird the former being practically twice the length of the latter. The genus *Rheinardtius* is very closely allied to *Argusianus* but is not represented within our limits. In *Argusianus* the central tail-feathers are nearly twice the length of the next pair, the remaining pairs being graduated, whilst in *Polyplectron* all the feathers are graduated.

Three species of this genus have been admitted hitherto, i.e., *argus*, *grayi* and *bipunctatus*, but the last is named from a single feather which appears to me to be nothing more than an abnormal primary feather of *argus*. The two webs of this feather both spring from practically the same source, i.e., the extreme upper edge of the vane instead of from the two sides, consequently both webs derive their pigmentation from the same source and have the same coloration. Under the circumstances the species must undoubtedly be suppressed. The origin of the feather is not known but it was named by a Mr. Wood, who gave it to Mr. Bartlett, who in turn made it over to the British Museum. It is probably an abnormal wing-feather of a captive bird.



THE ARGUS PHEASANT.
Male.



FULL DISPLAY OF ARGUS PHEASANT.

ARGUSIANUS ARGUS (Linn).

THE ARGUS PHEASANT.

Phasianus argus, *Linn., S.N.* i, p. 272 (1766); *Lath. Ind. Orn.* lxxxviii, p. 629 (1790).

Argus giganteus, *Temm., Pig. et Gall.* ii, p. 410 (1813); *Gray, List of B.* pt. 3, *Gal.* p. 23 (1844); *Blyth, Cat. Mus. As. Soc.* p. 242 (1849); *Elliot, Mon. Phas.* i, pl. 11 (1872); *Hume, Str. Feath.* ii, p. 481 (1874); *id. ibid.* iii, p. 324 (1875); *Hume & Davison, ibid.* vi, p. 427 (1878); *Hume & Marsh., Game B. Ind.* i, p. 99 (1878); *Hume, Str. Feath.* viii, p. 68 (1879); *id. Cat.* No. 803 ter.

Argus pavonius, *Vieill. N. Dict. d'Hist. Nat.* ii, 507 (1816).

Argus pavoninus, *J. E. Gray, Ill. Ind. Zool.* i, pl. 36 (1830-2).

Argusianus giganteus, *Gray, List Gallinæ Brit. Mus.* p. 25 (1867); *id. Hand-L.* ii, p. 257 (1870); *Blyth and Wald., Cat. Mamm. & B. of Burmah*, p. 148 (1875).

Argusianus argus, *Tweedd., Ibis* (1877), p. 322; *Oates, B. of Burmah* ii, p. 313 (1883); *Murray, Avi. B.I.* ii, p. 530 (1890); *Ogilvie-Grant, Cat. B.M.* xxii, p. 363 (1893); *id. Game B*, ii, p. 70 (1897); *Blanford, F.B.I. Birds* iv, p. 71 (1898); *Oates, Man. Game B. of Ind.* i, p. 286 (1898); *Butler, Birds Larut Hills*, p. 22 (1899); *Sharpe, Hand-L.* i, p. 41 (1899); *Oates, Eggs of B.B.M.* i, p. 61 (1901); *Ogilvie-Grant, Fasc. Malay*, p. 123 (1904); *Finn, Indian Sport. Birds*, p. 167 (1914); *Stuart Baker J.B.N.H.S.* xxiv, p. 203 (1916); *id., Fauna B.I., Birds*, 2nd ed., v, p. 286 (1928).

Vernacular Names.—*Quou, Borong Quou, Kwang, Burong Kuang* (Malay); *Kyek* or *Kyet-wah* (Siamese, Bankasoon).

Description. Adult Male.—Centre of crown from forehead to nape black, the feathers of the latter rather longer, forming an incipient crest; feathers of the back of the neck sparse and barred black and white, the latter changing to rufous towards the back; sides of head and all round the eye, chin, throat and sides of the neck nearly bare with fine shaft-like feathers scattered thinly over the whole surface; upper back, scapulars and wing-coverts blackish brown spotted, barred and edged with buff and dark rufous; lower back, rump and shorter tail-coverts rufous-buff very finely edged and boldly spotted with black, the tail-coverts palest and dullest; longest and outer tail-coverts

white, densely covered with kidney-shaped spots of black centred buff; primaries purple-grey, changing to buff on the innermost, freely spotted with kidney-shaped spots like those on the tail-coverts, most numerous on the outer webs and bases; on the inner webs there is a broad line of pale rufous or cinnamon densely covered with minute white specks; this line is shortest on the first and longest on the innermost primary and, connecting this band with the shafts throughout their lengths, are fine bars of black; the shafts themselves are blue; the outer secondaries are like the primaries, but have broad whitish margins to the inner webs, whilst the spots on the outer webs are developed into black longitudinal bands; on the outer webs next the shafts, also, there are ocelli of iridescent buff, green-grey and purple surrounded with black and with an outermost ring of pale buff; the inner secondaries are without ocelli and are mottled black, rufous and brown with white spots, over all of which there is a very faint purple sheen; on all the secondaries there is a broad ill-defined terminal band of deep purple on which the markings are reduced to white spots and specks and faint rufous bars; central rectrices black shading to rufous-chestnut on the edge of the outer web and to pale French grey on the inner web, both webs spotted with white, these spots being smaller and surrounded by black on the outer webs; tips dull white; remaining tail-feathers blackish, spotted and speckled with white and mottled indistinctly.

Below, from upper breast to vent rufous-chestnut, dotted with black and white on the fore-neck, mottled and barred with black elsewhere; centre of vent dull unmarked ashy.

Colours of Soft Parts.—Iris brown, hazel or greenish brown; legs and feet red, varying in tint from dull crimson-pink to vivid scarlet-red; claws pale bluish-horny; bill light bluish-horny; bare skin of head and neck dull pale slate to blue-grey or bluish-lead colour.

> "Iris greenish hazel, feet pale coral pink, bill whitish horn, skin of head pale cobalt blue" (*Robinson*).
>
> "The male has the legs and feet bright red, sometimes even a vermilion red. The female has them a paler and duller red, sometimes a litharge red; the bill and claws are white, slightly tinged blue; the cere, in the male, is the same colour as the bill, in the female pale brown; irides wood to dark brown; the facial skin pale indigo to dark plumbeous blue" (*Hume*).

Measurements.—Total length from bill to end of longest rectrices about 6 feet. Wing to end of primaries 17·5 inches (444 mm.) to 19·5 inches (495 mm.), and to end of secondaries anything between 30 and 40 inches (762 and 1,016 mm.); tail to end of central pair of rectrices up to 56 inches (1,422 mm.), generally in fine adult specimens between 46 and 50 inches (1,168 and 1,270 mm.) and roughly twice the length of the next pair; tarsus 4·2 inches (106·68 mm.) to 4·5 inches (114·3 mm.), mid-toe and claw about 3·0 inches (76·2 mm.); bill at front about 1·4 inches (35·5 mm.) and from gape about 1·8 inches (45·7 mm.).

"Weight, 4·5 to 5·5 lb." (*Hume*).

Adult Female.—From forehead to nape dull rufous-buff, the feathers broadly edged black, especially in the centre, where the black forms an indistinct coronal streak; a full crest of bristly dark grey feathers; nape bright rufous-chestnut with faint dark vermiculations at the bases of the feathers; on the mantle the chestnut becomes less bright and the vermiculations more numerous; the upper back, scapulars and wing-coverts about equally black and chestnut, the latter colour paling posteriorly; lower back, rump and upper tail-coverts the same but with definite bars of black mottled with buff; rectrices purple-chestnut thickly mottled with black; primaries chestnut, lightly speckled with black on both webs, but brighter on the outer than on the inner webs; secondaries boldly mottled with black and buff, tinged with chestnut on those next the primaries. Below chestnut, brightest and almost immaculate on the fore-neck, dullest and inclined to buff on flanks and abdomen, vermiculated with narrow black bars increasing in extent from breast to vent; under tail-coverts dull brown, very finely stippled with dull rufous. The vent is usually like the under tail-coverts and the feathers immediately surrounding it are often the same.

Colours of the Soft Parts.—Iris dark brown; legs and feet pale vermilion or litharge-red; bill and claws horny-white, dull white, or tinged with grey; cere dull to dark brown; skin of face and neck dull grey or plumbeous-blue to dark blue.

Measurements.—Wing to end of primaries 11·8 inches (299·7 mm.) to 13 inches (330·2 mm.), and to end of secondaries 14·0 inches (355·6 mm.) to 15·5 inches (393·7 mm.); tail 12 inches (304·8 mm.)

to 14 inches (355·6mm.); tarsus about 3·75 inches (95·25 mm.); mid-toe and claw about 2·80 inches (71·1 mm.); bill at front about 1·35 inches (34·2 mm.) and from gape 1·45 inches (36·8 mm.).

"Weight, 3·25 to 3·75 lb." (*Hume*).

Young Male after First Moult.—Like the adult female, but without crest developed as in that sex and with a longer tail.

Chick in First Plumage.—Like the female but with a bristly crest undeveloped and dark chestnut-brown instead of black; the general tint is more ruddy, whilst the under plumage is more boldly marked, the vermiculations running into definite bars. Even at this stage the inner secondaries exceed the primaries in length.

Chick in Down.—Below rufescent brown, paler on chin and albescent on vent; forehead plain, rich, rufous-brown; head the same, vermiculated with blackish brown; upper back still darker; lower back and rump velvety blackish brown with two longitudinal broad lines of pale buff extending from the scapulars to the tail; wing-coverts like the upper back, the quills and greater coverts vermiculated rufous and dark brown with well-defined rufous tips and subterminal dark bands.

Distribution.—The Malay Peninsula, Sumatra, Siam and the extreme south of Tenasserim. According to Oates and Blanford it is found round about "Bankasoon, Malewoon, and the Upper Pakchan" in the latter district.

Nidification.—There is practically nothing on record about the breeding of this remarkable bird, beyond Davison's oft-quoted note in 'Game Birds.' He writes:—

> "I was unable to find the nest, but from what I could learn, the female builds a rude nest on the ground in some dense cane brake, laying seven or eight eggs, white or creamy, minutely speckled with brown like a turkey's, and hatching and rearing her brood without any assistance or interference from the male. They are said to have no regular breeding season, the females laying at all times except during the depth of the rains. I secured two nestlings about a week old on the 28th February."

There is still no evidence on record as to whether the male is polygamous or monogamous, but probably he is neither in the proper

meaning of these terms and the sexes only meet intermittently when the female is urged by the procreative instinct to visit the male. At the same time the latter has a most wonderful display which, according to most naturalists, even of the present day, is employed to attract and incite the female and, it may be, that though the sexes keep very much apart during the greater part of the day, the males yet have their own particular harem as do many others of the *Phasianidæ*.

The display of the male is very similar to that of the much better known Peacock-Pheasant and is given at least as freely in captivity as in freedom. The normal full display is a frontal one, in which the bird sinks its breast slowly to the ground, raises and spreads its tail to the greatest extent possible and, at the same time, forces the carpal joints of the wings on to the ground whilst it raises the ends of the feathers in a circular fan-shaped manner, so that the tail is practically concealed with the exception of the long central rectrices which wave over the centre. Sometimes the bird hides its head and neck amongst the scapulars and feathers of the back, when the general appearance presents much that of a Japanese feather screen.

A male in the possession of Routledge in Calcutta, which I saw frequently, never gave this frontal display but would walk round the full extent of his cage, encircling two or three females in the centre and at the same time gradually erecting and spreading his tail; during these perambulations one wing was carried almost perpendicularly over his back, whilst that nearest the female was spread downwards until it touched the ground. Occasionally the bird would stop in his walk and force itself hard up against the wire netting which formed the enclosure and apparently make an effort to still further expand both wings and tail. On several occasions I saw one of the females respond to the male with a minor display, after which she approached close to him and squatted on the ground evidently inviting his attentions.

It is probable that Davison's estimate of seven or eight eggs to the clutch may be excessive, as one of my collectors was informed that two or three eggs constituted a clutch and that more than this number was exceptional.

Two eggs laid in confinement in Zoological Society's Gardens are described by Oates as "blunt ovals, smooth and fairly glossy." In

colour they are pale reddish buff, freckled with pale reddish brown In one specimen the freckles are coarse and distributed all over the shell, in the other they are minute and clustered round the two ends.

"The dimensions of two examples are respectively 2·55 by 1·85; 2·6 by 1·9."

I have two eggs in my own collection taken by Waterstradt or one of his collectors which were laid by wild birds. These two eggs, which are of different clutches, vary very considerably. The one is a pale *café-au-lait*, so minutely stippled with a darker shade of the same that the egg appears almost unicoloured; the other egg is a pale clear cream. Both eggs are very smooth in texture, though not glossy; the grain is fine and close but the shells are fragile for such large eggs. The two measure, respectively, 2·65 inches (67·3 mm.) × 1·67 inches (42·4 mm.) and 2·72 inches (69·1 mm.) × 1·82 inches (46·3 mm.).

Habits.—Although so many years, nearly fifty to be exact, have passed since Davison wrote his most interesting account of this bird's habits, no other description has been written to modify or to contradict it, or which gives us a further insight into them. He writes:—

"They live quite solitarily, both males and females. Every male has his own drawing-room, of which he is excessively proud, and which he keeps scrupulously clean. They haunt exclusively the depths of the ever green forests, and each male chooses some open level spot, sometimes down in a dark gloomy ravine, entirely surrounded and shut in by dense cane brakes and rank vegetation, sometimes on the top of a hill where the jungle is comparatively open, from which he clears all the dead leaves and weeds, for a space of six or eight yards square, until nothing but the bare clean earth remains, and thereafter he keeps this place scrupulously clean, removing carefully every dead leaf or twig that may happen to fall on it from the trees above.

"These cleared spaces are undoubtedly used as dancing grounds, but personally I have never seen a bird dancing in them, but have always found the proprietor either seated quietly in, or moving backwards and forwards slowly about them, calling at short intervals, except in the morning and evening, when they roam about to feed and drink. The males are always to be found at home, and they roost at night on some tree quite close by.

"They are the most difficult birds I know of to approach. A male is heard calling, and you gradually follow up the sound, taking care not to make the slightest noise, till at last the bird calls within a few yards of you, and is only hidden by the denseness of the intervening foliage. You creep forward, hardly daring to breathe, and suddenly emerge on the open space but the space is empty; the bird has either caught sight of or heard or smelt you, and has run off quietly. They will never rise, even when pursued by a dog, if they can possibly avoid it, but run very swiftly away, always choosing the densest and most impenetrable part of the forest to retreat through. When once the cleared space is discovered, it is merely a work of a little patience to secure the bird by trapping it. The easiest way is to run a low fence of cut scrub round the spot, leaving four openings just sufficiently wide to enable the bird to pass through, and in these openings to place nooses fastened to the end of a pliant sapling, which is bent and kept down by a catch. This is the usual way, and the one I adopted to secure most of my specimens, as I found it as difficult to shoot as it was easy to trap them. The natives, however, have other ways of securing them, all dependent on taking advantage of the bird's idiosyncracy about keeping its home clean.

"One of these plans, which, though I have never actually seen it in operation, is, I am informed, really practised, is as follows: A bit of bamboo, about 18 or 20 inches long, and a quarter of an inch wide, is shaved down till it is the thickness of writing-paper, the edges being as sharp as a razor. This narrow pliant piece ends in a stout sort of handle at one end, 6 or 8 inches long, which is driven firmly into the ground in the middle of the cleared space.

"The bird, in trying to remove it, scratches and pecks at it, trying to dig it up, but finding all its efforts vain, it twists the narrow pliant portion several times round its neck, and taking hold of the bamboo near the ground with its bill, it gives a sudden spring backwards to try to pull it up; the consequence is that its head is nearly severed from its body by the razor-like edges of the bamboo.

"Another method is to erect two small posts, about 4 feet high and 3 feet apart, in the clearing, across the top of which a bar is firmly fastened; over this bar a string is run, by one end of which a heavy block of wood is suspended just under the bar, while the other end is fastened to a peg lightly driven into the ground immediately beneath the block. The bird commencing, as usual, to clear away these obstructions, soon manages to pull up the peg, and thus releases the heavy block of wood, which falls and crushes it.

"The males are not at all quarrelsome, and apparently never interfere with each other, though they will answer each other's calls. The call of a male sounds like 'How-how,' repeated ten or a dozen times, and is uttered at short intervals when the bird is in its clearing,

one commencing and others in the neighbourhood answering. The report of a gun will set every male within hearing calling, and on the least alarm or excitement, such as a troop of monkeys passing overhead, they call.

"The call of the female is quite distinct, sounding like 'How-owoo, how-owoo,' the last syllable much prolonged, repeated ten or a dozen times, but getting more and more rapid until it ends in a series of 'owoo's' run together. Both the call of male and female can be heard to an immense distance, that of the former especially, which can be heard at the distance of a mile or more. Both sexes have also a note of alarm, a short, sharp, hoarse bark.

"The female, like the male, lives quite solitary, but she has no cleared space, and wanders about the forest apparently without any fixed residence. The birds never live in pairs, the female only visiting the male in his parlour for a short time.

"The food consists chiefly of fallen fruit, which they swallow whole, especially one about the size and colour of a prune, which is very abundant in the forests of the south, but they also eat ants, slugs and insects of various kinds. These birds all come down to the water to drink about 10 or 11 a.m., after they have fed and before they, or at any rate the males, return to their parlours."

Genus POLYPLECTRON.

Polyplectron Temm., Pig. et Gall. ii, p. 363 (1813).
Type, *Pavo bicalcaratus*, Linn.

The genus *Polyplectron* contains Pheasants of grey, grey-brown or buff plumage, freely vermiculated or barred with darker, and with metallic-coloured ocelli on the tail and wings.

The tail consists of twenty to twenty-four feathers, the central rectrices greatly exceeding the others in length, graduated to the outermost which are the shortest. The inner secondaries are comparatively long though not greatly lengthened as in *Argusianus*. The sides of the face are bare ; the tarsi have two or more spurs on either leg and the plumage is very soft and lax.

The females are similar to the males but smaller, duller, and in some cases less ornamented with ocelli.

Sharpe admits six species in the genus, including in it Hume's *intermedius*; Ogilvie-Grant admits the same with the exception of that bird. I am doubtful if *napoleonis* should be included in this genus, and would exclude it from it, leaving only the five birds which are typical Peacock-Pheasants with ocelli on the upper plumage as well as on the tail. *Napoleonis* seems to form a connecting link between the genera *Polyplectron* and *Chalcurus*.

Within the limits of the present work we have two forms of *Polyplectron*, i.e., *bicalcaratum* and *malaccensis*.

Key to Species.

A. Crest of short, hairy feathers . . . . *bicalcaratum*, p. 107.
B. Crest of pointed metallic feathers . . . *malaccensis*, ♂, p. 120.
C. No crest and feathers of crown normal . *malaccensis*, ♀, p. 121.

Hartet has shown (in *loc. cit.*) that the "paon de chine" of Edwards and Brisson is really the bird with two ocelli on the tail-feathers, and the name *bicalcaratus* which Linnaeus created for this bird is therefore applicable to the form which has been generally known as *chinguis*, whilst the species hitherto known as *bicalcaratus* must bear the name *malaccensis* (Scop.) of 1786.

POLYPLECTRON BICALCARATUM.

Key to Subspecies.

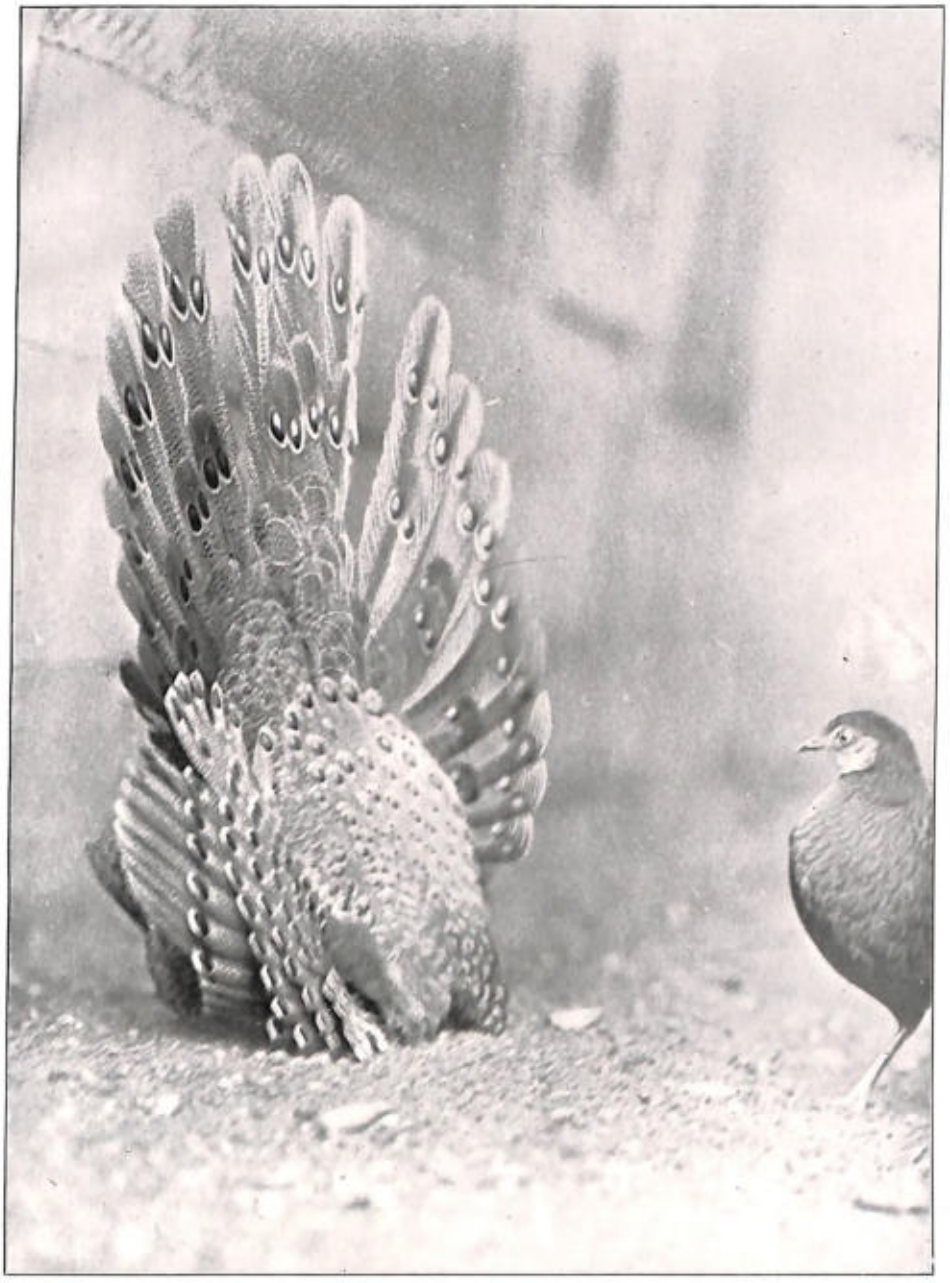
A. General colour more buffy-brown. . . *P. b. bicalcaratum*, p. 107.
B. General colour more grey and less buff . *P. b. bakeri*, p. 111.



Male Female.

THE BURMESE PEACOCK-PHEASANT.

Polyplectron b. bicalcaratum.



FULL DISPLAY OF BURMESE PEACOCK PHEASANT.

POLYPLECTRON BICALCARATUM BICALCARATUM Linn.

THE GREY PEACOCK-PHEASANT.

Pavo bicalcaratus, *Linn., S. Nat.*, 10th ed. i, p. 156 (1758).

Pavo chinguis, *Mull., Suppl. to Linn. S.N.* p. 121 (1776).

Pavo tibetanus, *Gmel., Syst. Nat.* i, pt. ii, p. 731 (1788); *Lath. Ind. Orn.* ii, p. 617 (1790).

Pavo bicalcaratus, *Lath., Ind. Orn.* ii, p. 617 (1790).

Pavo iris, *Bonnat., Tabl. Encl. Meth.* i, p. 178, pl. 83 (1792).

Polyplectron chinguis, *Temm., Pig. et Gall.* ii, p. 363 (1813); *Blyth, Cat. Mus. As. Soc.* p. 241 (1849); *Gould, B. Asia* vii, pl. 50 (1871); *Blyth & Wald. Cat. Mamm. and B. Burm.* p. 148 (1875); *Ogilvie-Grant, Cat. B. B. Mus.* xxii, p. 354 (1893); *Ogilvie-Grant, Game B.* ii, p. 61 (1897); *Pocock, Avi. Mag.* 1910-11, p. 229.

Polyplectron albo-occellatum, *Cuv. Reg. Anim.* (2nd ed.) i, p. 474 (1829).

Polyplectron cyclospilum, *Gray, List Gallinæ B.M.* p. 23 (1867).

Polyplectron atelospilum, *id. ibid.* p. 24 (1687).

Polyplectron eniscospilum, *id. ibid.* p. 24 (1867).

Polyplectron tibetanum, *Gray, Genera B.* iii, p. 495 (1845); *Elliot, Mon. Phas.* i, pl. 6 (1872); *Hume & Davison, Str. Feath.* vi, pp. 432, 521 (1878); *Hume & Marsh., Game B.* i, p. 105 (1878); *Oates, Birds Burm.* ii, p. 315 (1883).

Polyplectrum tibetanum, *Godwin-Aus., J.A.S.B.* xxxix, pt. ii, p. 272; *id. ibid.* xlv, pt. ii, p. 83; *Hume, Cat.* No. 803 quat. (1879); *id. Str. Feath.* viii, p. 68 (1879); *Bingh. ibid.* ix, p. 195 (1880); *Fasson, ibid.* p. 203; *Hume, ibid.* xi, p. 390 (1888); *Waddell, Gazet. Sikkim*, p. 220 (1888).

Polyplectron bicalcaratus, *Hartert, Nov. Zool.* ix, p. 539 (1902).

Polyplectron helenæ, *Oates, Ibis*, 1883, p. 136; *id. B. Burma* ii, p. 316 (1883).

Polyplectrum chinguis, *Blan., F.B.I., Birds* iv, p. 73 (1893); *Oates, Game-B.* i, p. 233 (1898); *Sharpe, Hand-L.* i, p. 39 (1899); *Stuart Baker, Jour. B.N.H. Soc.* xii, p. 486 (1899); *Inglis, ibid.* p. 676; *Stuart Baker, ibid.* xvii, p. 971 (1905); *Harington, ibid.* xix, p. 309 (1909); *id. ibid.* xx, p. 377 (1910); *Venning, ibid.* xxi, p. 332 (1912); *Hopwood, ibid.* p. 1214 (1912); *Gairdner, Jour. N.H. Siam* i, No. 3, p. 151 (1915).

Polyplectron bicalcaratum, *Stuart Baker, Jour. B.N.H. Soc.* xxiv, p. 209, pl. (1916); *Inglis, ibid.* xxvii, p. 153 (1920) (Jalpaiguri, Bengal).

Polyplectron bicalcaratum bicalcaratum, *Lowe, Ibis*, 1925, p. 484; *Stuart Baker, Fauna B.I., Birds*, 2nd ed. iv, p. 289 (1928).

Vernacular Names.—*Katmor* (Chittagong); *Doun-Kalak* (Arrakan); *Shwe-dong* (Tenasserim); *Yit* (Burmese); *Wograw* (Kachin).

Description. Adult Male.—Whole upper plumage buffy-brown; the hairy feathers of the head and neck are finally vermiculated with buffy-white or buff and the rest of the upper surface with pale buff spots, which tend to collect and to form indefinite bars on the lower back, rump and upper tail-coverts; the feathers of the mantle, the wing-coverts, except the outermost lesser coverts, and the inner secondaries have violet green-blue ocelli at their tips, each ocellus surrounded with a narrow brownish black band and a second broader one of white; similar ocelli on the tail-feathers in pairs an inch, or rather more, from the tips; these ocelli are larger than those on the mantle, oval in shape and greener in colour with an outer ring of pale brown instead of white; chin, throat and sometimes the fore-neck pale buff; remainder of lower plumage like the back but with the bars better defined on the breast and flanks; on the under surface of the tail the ocelli show as blackish blots.

Colours of the Soft Parts.—Iris white or pearl-grey; facial skin yellowish flesh-colour, sometimes more reddish; bill black at the tip and on the culmen, remainder creamy flesh-colour; legs and feet dark slaty or greenish plumbeous to blackish.

Measurements.—Total length about 560 to 760 mm.; wing 203 to 228 mm.; tail 304 to 402 mm.; tarsus about 72 to 78 mm.; culmen 17·5 to 19 mm. Weight about 1¼ to 2 lb.

Very old females are practically indistinguishable from the younger, duller coloured males, though they are smaller and have comparatively shorter tails.

Younger females, perhaps those of three years and under, have the ocelli on the upper parts less brilliant, whilst the surrounding circles of black and white are replaced by broken bars of black and white above and below them. The ocelli on the shorter tail-feathers are sometimes absent, but the white spots on the rump and upper tail-coverts are bolder, whilst some of the shafts of these feathers are also

white; the white on the throat generally extends further on to the foreneck than it does in the male. The crest is more developed and more feathery in the female than it is in the male.

Colours of the Soft Parts.—Irides grey or, in quite young birds, a grey-brown or deep grey. Facial skin duller flesh colour than in the male. The legs and feet are also paler, generally a dull brownish plumbeous, never black.

Measurements.—The female is considerably smaller than the male. The wing varies from 7 inches to 8 inches (177 to 203 mm.), the latter very exceptional, whilst the tail seldom exceeds 10 inches (254 mm.) and is usually less than this.

Weight about 1 lb. or rather less.

Young males of about a year old are like the females.

In quite young birds the whole plumage, especially the quills and coverts of the wings, is much more boldly mottled with buff and white than in the adults.

The ocelli commence to show in the autumn of the first year as blackish spots, those on the longest tail-feathers early acquiring a slight green sheen.

Young in Down.—Above, dark chestnut with two faint darker streaks down the sides of the back with broad streaks of yellow-buff outside these. Below, the colour is a pale dull buff, rather richer and brighter on the flanks and chin. A dark spot or spots on the wings.

The number of spurs on the tarsus differs in different individuals and, often, on the two legs of the same individual. In a few cases I have seen as many as four on either leg, often three and, sometimes, three on one and two on the other. The females have small blunt spurs, either one or two or, rarely, three on each leg.

Distribution.—Chittagong, Chin and Kachin Hills south to North Tenasserim, east to Siam.

Nidification.—I have eggs taken in Tenasserim in March and in Upper Burmah in April, and the nidification does not appear to differ in any way from that of the next bird. My eggs vary from 45·4 × 37·0 mm. to 50·9 × 38·3 mm. None of my correspondents have ever found more than two eggs in a clutch.

Habits.—Similar to those of the Sikkim race. In some parts of

Burmah the *Polyplectron* is so common and so easy to trap that the villagers bring them instead of village fowls to the officers who are touring their districts, selling them at a cheaper rate than they do the latter.

In Siam also this Pheasant appears to be very common. Mr. Gairdner writes in the 'Siam Natural History Society Journal':—

> "The Grey Peacock-Pheasant (*Polyplectron thibetanum*) was exceptionally common, and the call when heard from a great height above the valley resembles that of a hoarse goat. Near at hand it is 'qua-qua-qua' repeated with lessening intervals until the bird apparently becomes apoplectic, and can only screech. I have been told by trustworthy men that the Peacock-Pheasant is the 'khaw-kaw' bird, and that on a sudden clap of thunder a captive bird was actually seen uttering the sound. On the crash caused by falling trees or on a clap of thunder, this 'kaw-kaw' is instantly heard, together with the barking of any langurs within hearing, and I have only heard this 'kaw-kaw' in jungle inhabited by the Peacock-Pheasant."

POLYPLECTRON BICALCARATUM BAKERI.

THE BHUTAN PEACOCK-PHEASANT.

Polyplectron bicalcaratum bakeri, *Lowe*, *Ibis*, p. 477 (1925) (Bhotan Duars); *Stuart Baker*, *Fauna B.I.*, *Birds* iv, p. 291 (1928).

Polyplectrum chinquis, *Blanf. & Oates* iv, p. 73 (part).

Vernacular Names.—*Monnowar*, *Deyodahuk*, *Deoderick* (Assam); *Deodurrug* (Garo); *Dao-dip*, *Dao-dai-dip* (Cachari); *Burruminrui* (Kacha Naga).

Description.—Both sexes differ from the preceding form in being much greyer and much less buff in colour. Most of the buff markings are replaced with white.

Colours of soft parts and measurements about the same as in the Burmese form.

Distribution.—Sikkim, Bhutan to East Assam, Cachar, Sylhet and Manipur. Comilla birds are intermediate whilst Chittagong birds are nearer true *Polyplectron bicalcaratum*.

Nidification.—There is very little on record about the nidification of this Pheasant in a state of nature, though it has often been successfully bred in captivity. In Cachar, Sylhet, Dibrugarh and other districts of Assam, in which province I was stationed for many years, the bird was common, in many places extremely so, and consequently I have seen numerous nests.

The breeding season commences in the last few days of March, in Burmah a little earlier, and continues through April and May into June, but the great majority of eggs are laid in April in the lower portion of the range and in May on the higher hills.

The nests themselves are, so far as I have seen, nothing more than a rough and often scanty mass of grasses, dead leaves and other fallen rubbish collected together in some hollow, generally a natural one, at the foot of a clump of bamboos, or in scrub jungle amongst thick bushes. Sometimes even I have seen the eggs merely deposited on the ground upon the dead vegetation which lay as it had dropped,

no attempt having been made by the birds to scrape the leaves, etc., together as a bed for them to lie on.

At the same time Clarke describes a nest of this Pheasant as being "made of twigs and leaves roughly put together, with an apology of a lining of this bird's own feathers, and possessed sufficient cohesion to permit of its removal, eggs and all, to my bungalow."

The site selected is always one in very dense jungle, and even when it is placed at the foot of a bamboo clump, this is always growing in mixed scrub and bamboo, never in the open bamboo forest which covers so much of the country this Pheasant haunts. A very favourite breeding place is in the tangled secondary growth which grows up in cultivation clearings after they have been deserted for a year or two. This growth is always very matted and impenetrable close to the ground, so that it is therefore almost impossible for any enemy, human or beast, to approach near enough to catch the bird whilst actually on its nest.

They breed well into the Plains at the foot of the hills, but undoubtedly the great majority nest in the low foot-hills, between the level of the Plains and about one thousand feet, which are found all along their range of habitat. There is, however, one thing necessary in addition to dense cover, and that is the proximity of water. Even when, as is sometimes the case, they are found breeding at far greater altitudes, 6,000 feet occasionally, I believe their nests will never be found more than two or three hundred yards from the nearest stream or pool.

Normally two eggs only form a full clutch, but I have several times taken three or four in a nest, once or twice five, and there is also in my collection a clutch of six taken by Dr. H. N. Coltart in Margherita, Assam.

Mr. C. W. Beebe and others have examined many female birds and have assured me that in no case have they found more than two ova in the ovaries, and certainly no captive bird has ever been known to lay more than two eggs.

Some of my nests, however, have been found under circumstances which would appear to effectively disprove the suggestion that the larger clutches are the productions of more than a single hen pheasant.

One such instance I can well recall. I was at the time camping on the Diyung River in North Cachar and my camp, a cluster of rough grass huts, was placed in the middle of a number of "jhums" (rice-clearings) on the hill-side, divided from one another by narrow strips of dwarf bamboo and bush jungle. The "jhums" extended practically without interruption for nearly three-quarters of a mile along the river bank whilst they also ran up the sides of the hills for a distance of a quarter to half a mile from the river. At one place, however, the ground had proved too broken to allow of easy cultivation, so that after it had been partially cleared it had been again abandoned and, for about a hundred yards either way, there had grown up a wild tangle of raspberry canes, shrubs and high grass, interspersed with clumps of bamboos, a few young saplings and one or two big trees which had escaped being cut by the cultivators.

I had been busy fishing in the stream below this patch, and was just about to return to my camp when I heard the hoarse chuckle of a Peacock-Pheasant in the bushes close above me. It was too late then to search for the eggs, if any, but very early the next morning, with the assistance of two or three Nagas, I commenced hunting all through in the hopes of finding the nest and, in about half an hour, one of the Nagas announced the find. The nest lay in a bed of weeds and nettles and contained five eggs; the vegetation around was untrodden by the birds, but a well-worn tunnel through the weeds showed how they approached and left it. A few nooses were set by the Naga inside the tunnel and, within half an hour, the female was caught, after which a beat through the bushes put up the cock bird which was shot. With the exception of a couple of Bustard-Quail this patch of cover held no other game bird and, from its isolated position, it would appear most unlikely that two other hens should have discovered this nest and ventured across the open cultivation to lay in it.

The only nest recorded by Hume and Marshall is that described by Mr. Clarke, who says of the eggs: "One egg hatched, the others went bad"; so in this case also there were more than two.

The eggs of the Grey Peacock-Pheasant are just like small eggs of the domestic fowl. In colour they are usually a rather rich *café-au-lait* or cream, but range from a pale cream to an almost

chocolate-buff. Almost invariably they are covered with specks, small blotches and stipplings of white, in some cases of a somewhat chalky appearance, but often looking merely as if the colouring pigment on the shell was wanting.

In shape they are remarkably constant, being broad ovals with the smaller end obtuse and not greatly differing from the larger. The shell is stouter and stronger in comparison than that of a Jungle-fowl or Kalij Pheasant, the texture is close and very hard and often has a distinct gloss.

The average size of 40 eggs is 46·5 × 35·9 mm. Maxima *50·3* × 37·0 and 48·2 × *38·1* mm.; minima *43·2* × 35·0 and 44·0 × *34·0* mm.

Many years ago the manner was recorded in which the hen Pheasant screened her chicks under her tail and Hume also refers to this curious habit. He says :—

> "A Bantam hen was employed as a foster mother and the chicks *would* follow close behind her, never coming in front to take food, so that, in scratching the ground, she frequently struck them with her feet. The reason for the young keeping in her rear was not understood until, on a subsequent occasion, two chicks were reared by a hen *P. tibetanum*, when it was observed that they always kept in the same manner close behind the mother, who held her tail widely spread, thus completely covering them; and there they continually remained out of sight, only running forward when called by the hen to pick up some food she had found, and then immediately retreating to their shelter."

I was once fortunate enough to observe this same behaviour in a wild bird. I was riding along a narrow, twisting forest path, the ground covered with moss and so soft and wet that my pony's feet fell almost noiseless with each step. As I turned one corner I noticed a Peacock-Pheasant scurrying along in front of me and, pressing forward on my pony, I forced her to half fly, half scuttle into the bushes and, as she did so, noticed that two tiny chicks appeared from under her tail and dived after her.

The cock bird is not, I think, polygamous. As a rule each pair of Pheasants seems to have a well-defined area, within which no other birds are allowed to enter during the breeding season and, although once the young have left their parents they are never found in flocks,

they remain in pairs all the year round; at all events, if a bird of one sex is shot or trapped, a second of the opposite sex is almost always sure to be found close by.

Habits.—On the whole, the Peacock-Pheasant is a bird neither of the higher hills nor of the Plains. It is true that it wanders up at least as high as 6,000 feet in the Darjiling Terai and possibly in the Chin Hills, whilst on the other hand again it may sometimes be found in dense scrub jungle in the Plains at some distance from the mountain ranges. To make sure of finding it, however, one must work the lower hills below an elevation of some 2,000 feet, where it will be found more especially haunting the ravines, valleys and low hills where the mountains and plains meet.

It does not mind much what kind of jungle it has to reside in so long as there is ample undergrowth and, as I have already mentioned, easy access to water. I have found it in the finest of evergreen forest, in bamboo jungle, in scrub and grass, in abandoned cultivation, in the bush jungle growing on and in the edges of streams and sometimes even amongst the tea bushes in tea gardens.

It is generally considered to be a rare bird over most of the area in which it occurs, but this is because it is such an inveterate skulker that it is never seen unless one is content to spend much time and trouble in searching for it and, even then, it is necessary to know its manners and customs before success can be hoped for.

Once, however, one knows the character of this Pheasant, its haunts and its voice, it is not really a hard bird to locate. The cock crows, morning and evening, especially during the breeding season, when it may be heard for hours on end. When thus employed it mounts on an ant-hill, a stump, or even on the larger bough of some big tree a few feet from the ground, and then calls every minute or so with a loud chuckling, laughing note, sometimes accompanied by a flapping of the wings, the soft "frip-frip" of which is audible when one is a few feet away. There is never, of course, the noisy flapping indulged in by the Junglefowl or some of the other Pheasants, for the plumage of the *Polyplectron* is so soft and lax that all feather movement of this bird is very noiseless, reminding one very much of the flight of Owls and Nightjars.

The females do not crow, so far as I know, but they keep up a

conversational chuckle as they hunt about for food and I have often had the good fortune, as I lay nearly buried in fallen leaves and dead grass, to have them come within a few feet of me.

Both male and female when thus employed keep up a continuous murmur of sound, "croo-croo-chuckle-chuckle-croo-croo," every now and then rising to a rather harsh rendering of the same syllables, and then again sinking to a whispering chuckle, inaudible a dozen yards away. To watch them with success one must be absolutely motionless; the slightest movement and they are off, running at a great pace into safe hiding, otherwise they do not appear very keen-sighted, and I have sometimes remained undiscovered for ten minutes or a quarter of an hour, although well within view.

Their actions are much like those of barn-door fowls but are slow, methodical and very secretive. Thus they do not hurl leaves, earth and other scraps in every direction as they scratch for food, but turn these same over with a very quiet and restrained movement and, again, though they move with great speed they do not, unless frightened, progress in little rushes as they chase insects hither and thither. In moving, heads and tails are both normally held low, and they quietly slink in and out amongst the lowest obstructions rather than hop over them.

It is doubtless this last trait which makes them such easy birds to trap. The Nagas and other hill tribes catch them by making a little brushwood fence not more than a few inches high across strips of jungle frequented by Pheasants, leaving here and there little openings in and about which they place mithna-hair nooses. The birds, as they hunt for food, come across this fence and, rather than go over it, will wander along it until they come to an opening and, in this way, walk into the nooses and are caught. They are also, as described by Inglis in Game-Birds often caught by the Kukies (and he might have added all the other hill tribes) by a noose set with a bait. Inglis describes the trap thus:—

> "The snare consists generally of a sapling, or branch of a tree bent towards the ground; one end of a piece of string is tied to the sapling, and on the other end is a noose; the noose is spread round a small hole in the earth; the trap itself is a simple contrivance of a few split pieces of bamboo; the bait is a small red berry of which

> the bird is very fond; the berry is firmly attached to the trap, and the bird, pecking at the berry, releases the catch; the sapling flies up, and the bird is noosed by the neck or feet."

Mr. Pocock, in the 'Avicultural Magazine,' has given us a most graphic account of the display of the Peacock-Pheasant which agrees well with what I have seen shown by wild birds.

On one occasion when I was lying on the ground by a tiny forest stream which rippled and fell in pigmy cascades over boulders and mossy banks, a pair of Peacock-Pheasants wandered out of the dense undergrowth into a tiny open space just in front of where I was lying. For a few minutes they scratched about for insects and then, without a moment's warning, the cock bird began to display to the hen. At first he confined his attentions to running round her with tail partially extended and slightly raised and both wings drooping and spread. In a minute or two, however, he ceased to run round and sank slowly to the ground until his breast rested on it. His tail and wings were then raised until the three were fully spread in the manner of a fan, the tips of the inner secondaries of the wings almost meeting above and in front of the tail, whilst the shoulders were brought down to the ground. The head was then withdrawn momentarily into the soft mass of feathers, but immediately protruded again on the hen moving.

At first the latter, the hen, took little if any notice of the cock bird's prancings and posturings but, after a minute or two, she became decidedly interested and actually began herself to display in response, though her display was not as full as that of the cock; this, however, may have been because he did not give her time to complete it.

This display of the hen's is especially interesting and it probably accounts for the unusually small amount of difference in the plumage of the two sexes.

As Pocock has so pithily expressed it:—

> "Birds do not display because they are decorated, but are decorated because they display."

Decorative effects in birds, whether consisting of brilliancy in colour or excessive growth in any portion of the plumage, such as

the possession of crests, lengthened plumes, tails, wings, etc., are the result of superabundant energy.

This extreme vitality not being necessary to the continuation of life in its normal condition is therefore expended in the creation of abnormal feathers which depend in the main on local muscular activities.

Nor must we forget that quiescent muscular display may be as energetic as movement, for great tension may require as much muscular and nerve effort as great vibration. Thus we have in some birds a display of expanded plumage, as in the *Polyplectron*, whilst in others, our English Warblers for instance, energy is usually shown by intense rapidity of wing motion.

In those species of birds in which the female is the dominant partner, i.e., possesses the greater vital energy, such as the Hemapodes, Painted Snipes, etc., the signs of such superiority will be found in this sex, as in the males of other birds, either in more brilliant coloration or extravagance in some portion of the plumage, generally, if not invariably, connected with a corresponding display.

As vitality is at its highest during the breeding season so, it follows that the signs or results of this vitality often come into existence on the approach of this period and again disappear at the end of it, though in many birds they have in the course of ages become permanent or partially so.

To return, however, to the object of the present article. A sight of the display of the Peacock-Pheasant is one not likely to be often viewed in a state of nature, for I know of no game bird which is a more determined hider or which is harder to force out of thick jungle. A dog, of course, if a persistent worker, will eventually put it up and, when the Pheasant can no longer escape by running, it will in such cases take refuge on the bough of a tree, where it will often allow of an approach for an easy shot.

But for its beauty and for the fact that it is fairly good eating, it would not be worth shooting, for its flight is comparatively slow and feeble and its soft lax plumage offers no resistance to shot.

The flesh is rather hard and dry, though white and of quite good flavour.

Polyplectrons are omnivorous feeders but on the whole more

vegetarian than insectivorous. They devour grain of all kinds, including hill rice, fruit, especially the different *fici*, jhamans or wild plums, the Ber fruit and, above all, the seed of the bamboo. When stretches of bamboos are in seed and the latter begins to fall they become the resort of all kinds of game birds and food is, for the time being, so plentiful that the birds become extraordinarily fat and heavy. I have also watched these Pheasants greedily feeding on white ants aud have taken the remains of snails, centipedes and worms from their stomachs, whilst I have also known them to feed on the young shoots of mustard and other green crops.

POLYPLECTRON MALACCENSIS.

THE MALAY PEACOCK-PHEASANT.

Phasianus malaccensis, *Scop. Del. Flor. et Faun. Insubr.* pt. ii, p. 93 (1786).

Polyplectron chinguis, *Temm., Pig. et Gall.* ii, p. 363 (1813); iii, p. 675 (1815) (part).

Diplectron bicalcaratum, *Vieill. Gal. des Ois.* ii, p. 17 (1825) (part).

Polyplectrum bicalcaratum, *Gray, List of B.* pt. iii, *Gall.* p. 22 (1844); *Blyth, Cat. Mus. As. Soc.* p. 242 (1849); *Gould, B. of Asia* vii, pl. 51 (1870); *Elliot, Mon. Phas.* i, pl. 7 (1872); *Hume, Str. F.* vi, p. 481 (1874); *Hume & Dav. ibid.* vi, p. 434 (1878); *Hume & Marsh., Game B. Ind.* p. 114 (1878); *Hume, Str. F.* viii, p. 68 (1879); *Ogilvie-Grant, Cat. Birds B. M.* xxii, p. 357 (1893); *id. Game-B.* ii, p. 65 (1897).

Polyplectron malaccensis, *Robinson, Cat. B. Malay Pen.* p. 1 (1910). *Stuart Baker, J.B.N.H.S.* xxiv, p. 219 (1916); *Lowe, Ibis*, 1925, p. 484; *Stuart Baker, Fauna B.I.*, 2nd ed., vol. v, p. 292 (1928).

Polyplectron hardwickii, *J. E. Gray, Ill. Ind. Zool.* i, pl. 37 (1830-32).

Polyplectron lineatum, *id. ibid.* pl. 38 (1830-32).

Polyplectron bicalcaratum, *Blanf. F.B.I. Birds* iv, p. 74 (1893); *Oates, Game-B.* i, p. 234 (1898); *H. R. Baker, Jour. B.N.H.S.* xvii, p. 764; *Sharpe, Hand-L.* i, p. 39 (1899).

Polyplectron bicalcaratus, *Gyldenstolpe, Sued. Ex. Siam*, p. 66 (1913).

Vernacular Names.—*Gon-ga-san* (Siamese).

Description. Adult Male.—Head and nape above mottled buff and dark brown with a well-developed crest of metallic green feathers, not hair-like as in *bicalcaratum*; neck and extreme upper back narrowly barred buffish white and dark brown; remainder of upper parts rich rufous-buff, dotted everywhere with black and the feathers of the mantle and most of the wing-coverts with ocelli at their tips; these ocelli are blue-green without the varying reflections shown in that of *bicalcaratum*, and have only an indication of a buff ring surrounding the black one; the ocelli on the tail are similar to those

of the Grey Peacock-Pheasant, but run into one another instead of being separated by a well-defined shaft line; many of the shorter tail-feathers also have an ocellus only on the outer web; on some of the longer rectrices the colouring on the part succeeding the ocelli near the tip is richer than that preceding it.

Below, the plumage is like that of *bicalcaratum*, but browner and more uniform except on the lower neck and upper breast which is often boldly mottled; chin and throat dull buff; under tail-coverts more boldly barred with black and buff than in *bicalcaratum* and with black blotches near the tip.

Measurements.—Wing 7·5 inches (190·5 mm.) to 8·4 inches (213·3 mm.); tail 10 inches (254 mm.) to 13 inches (330 mm.).

Colours of Soft Parts.—Iris white; legs and feet dull greenish black to black; bill dark horn-brown, culmen blackish and tip black; orbital skin dull red.

Adult Female.—Above from forehead to neck dull brown, the centres of the feathers paler; no crest; upper plumage as in the male, but duller and less mottled, the hind neck and extreme upper back being merely finely vermiculated brown and buff. The ocelli on the back are replaced by brownish black markings and those on the tail are smaller and less brilliant; under tail coverts mottled brown and buff, the former in broad bars; chin and throat pale buffy-brown.

Measurements.—Wing 6·8 inches (172·7 mm.) to 7·5 inches (190·5 mm.); tail 6 inches (152·4 mm.) to 9 inches (228·6 mm).

Colours of Soft Parts.—Iris grey or grey-brown; facial skin dull livid or fleshy red; legs and feet dull plumbeous or greenish black; bill horny-brown, darker on tip and culmen.

Distribution.—Malay Peninsula and Sumatra, extending into the extreme south of Tenasserim whence I have received the skin of a female taken on its eggs. Count Gyldenstolpe records it as being common in parts of South West-Siam.

Nidification.—There appears to be absolutely nothing known about the nidification of this Pheasant, though a few eggs have been laid by birds in captivity. A single egg sent to me by my collectors from Tenasserim together with the female was taken on March 3,

and was one of a pair which were then already hard set. One was broken in transit and the other arrived safely. This agrees in every way with my eggs of the Grey Peacock-Pheasant and measures 1·8 inches (45·7 mm.) by 1·45 inches (36·8 mm.).

In colour it is a warm pink *café-au-lait* with innumerable freckles of white all over it.

It was said to have been laid on a nest consisting of a small pile of rubbish lying in dense undergrowth in evergreen forest.

A second egg in my collection, given to me by Herr M. Kuschel and laid in captivity in Berlin, measures 1·95 × 1·66 inches (49·5 × 42·1 mm.) and is, I should imagine, an abnormally large egg. It is a pale yellow-cream and has none of the usual white stippling.

Habits.—In habits the Malay Peacock-Pheasant does not seem to differ from the common Indian bird. Count Gyldenstolpe records it as common in South-West Siam, especially in the ever green forests surrounding the Mek Lem River. As usual, however, the birds were so shy and retiring that he failed to shoot a specimen, though he saw some skins of specimens which had been shot by a European. They keep much to the lower hills and the plains at their feet, but are found up to 4,000 feet.

Subfamily PHASIANINÆ.

This subfamily contains the true Pheasants and the game birds most closely connected with them. The moult of the tail-feathers commences with the outermost pair. With the exception of this character it is not easy to differentiate between the Pheasants and the Partridges as groups, though the typical forms are so marked. Taking them as a whole the Pheasants are big birds with a wing of over 8 inches and the tail is longer than the wing in all genera except *Lophophorus* and *Lophura*. The *Perdicinæ*, or Partridges, on the other hand, are all smaller birds with a wing under 8 inches, except *Ithaginis*, *Tetraogallus* and *Tragopan*.

Of the *Phasianinæ* the two exceptions, *Lophophorus* and *Lophura* are both big birds with crests and with a wing of over 11 inches, a combination found in no *Perdicinæ*. In the latter group the exceptions *Ithaginis* and *Tetraogallus* have the wing very much longer than the tail, whilst the birds of the genus *Tragopan* can always be distinguished by the possession of peculiar fleshy horns and wattles.

Key to Genera.

A. A fleshy erect comb on the crown of the male . . *Gallus*, p. 125.

B. No fleshy comb on the crown of the male; no ear-tufts.

a. Tail longer than wing in both sexes, much longer in males and much graduated.

a^1. No occipital crest; first primary longer than tenth.

a^2. Feathers of rump rounded; bare skin of face not forming wattles . . . . . *Syrmaticus*, p. 174.

b^2. Feathers of rump lanceolate; bare skin of face developed into wattles . . . . . *Phasianus*, p. 187.

b^1. An occipital crest; first primary shorter than tenth.

c^2. No cape of erectile feathers over nape . . *Catreus*, p. 192.

d^2. A cape of erectile feathers covering nape and shoulders . . . . . *Chrysolophus*, p. 227.

b. Tail slightly longer than wing in males, subequal or shorter in females; graduated.

c^1. Sides of head feathered . . . . . *Ceriornis*, p. 202.

d^1. Sides of head naked.

e^2. Crest an erect brush-like tuft of feathers; rump of male fiery red . . . . . *Lophura*, p. 234.

f^2. Crest of long recumbent feathers; no red on rump . . . . . *Gennæus*, p. 246.

c. Tail rounded, not longer than wing in either sex *Lophophorus*, p. 309.

C. No comb or crest, but well-developed ear-tufts . . *Crossoptilon*, p. 331.

Genus GALLUS.

The genus *Gallus* contains the true Junglefowl, of which there are four species entirely confined to the Indo-Malayan region. Junglefowls are closely allied to the true Pheasants; like them the sexes differ in plumage, the males greatly exceed the females in size, and their haunts are well-wooded tracts with an ample water supply. The principal external character of the genus is the tail which in the Junglefowl is sharply compressed, whereas in the true Pheasants it is flat; it is linked, however, with these latter by many intermediate forms such as *Gennæus*, containing the Silver and Kalij Pheasants, *Crossoptilon* or eared Pheasants, etc., in which the tails are almost as compressed as in the Junglefowl.

The males are all furnished with a fleshy crest or comb and with wattles or lappets either hanging from each side of the throat, as in all three of the Indian species, or with a single one from the centre of the throat, as in the Sunda Island bird, *varius*. The tail consists of fourteen feathers in our three species and of sixteen in the last-mentioned bird. The wings are well rounded, the first primary being shorter than the tenth and the fifth the longest. The central tail-feathers in the male are greatly lengthened, being from three to four times the length of the outermost, the shafts are pliant over the greater portion and the feathers droop in a graceful curve when the tail is raised. The feathers of the neck and rump are long and lanceolate, forming hackles, the latter falling well down on either side of the tail. The legs are very powerful and the tarsus, which is furnished with a long sharp spur, is longer than the middle toe and claw together. The females have no spur.

Key to Species.

A. Comb and spurs highly developed.

a. Neck-hackles red or golden-red with no spots.

a[1] Breast black . . . . . *G. bankiva* ♂, p. 127.

b[1] Breast reddish orange . . . . . *G. lafayettii*, ♂, p. 163.

b. Neck-hackles blackish with golden bars or spots . . . . . *G. sonnerati*, ♂, p. 152.

B. No spurs and comb rudimentary.

c. Breast rufous-brown with faint pale shaft lines . . . . . *G. bankiva*, ♀, p. 127.

d. Breast mottled brown and black and white . *G. lafayettii*, ♀, p. 163.

e. Breast white, each feather edged with brown *G. sonnerati*, ♀, p. 152.

There are two very distinct races or subspecies of the Common Red Junglefowl inhabiting, the one India proper excluding the Indo-Burmese districts and the other extending through Burmah, the Malay Peninsula Cochin, China and Siam. In the outer Burmese Indian districts of Eastern Assam and Chittagong we find, as we should expect, an intermediate form between the two.

The Indian form may at once be known by its pure white lappets, the Burmese form having these red, but there are other differences also, the Indian bird, the true *ferrugineus* of older authors, has the hackles of the neck of a red much less deep than they are in the Burmese bird, moreover they are far more yellow or orange-yellow at the base of the neck and, in addition, are more lanceolate, the Burmese form often having the ends comparatively broad instead of produced to a very fine point.

Hume recognized the differences between the Burmese and Indian bird, and thus writes of them :—

> "I have referred to the Indian and Burmo-Malayan races of this bird. The plumage of the latter is said to be redder, and taking a large series there seems to be some truth in this, though individual birds from Dehra Dun and Johore, for instance, can be entirely matched as regards plumage, but in the Burmese and Malayan birds, the small ear lappet is invariably *red*, whereas in the Indian it is almost equally invariably *white* or *pinky white*."

The Javan form will be known as *Gallus bankiva bankiva*, Temm.

The names which the Red Junglefowl should bear have been

much discussed recently, but I follow Rothschild (' Nov. Zool.' xxxiii, p. 206, 1926) in discarding the name *ferrugineus* for any of the races, as it was founded on a bird, described by Sonnerat, which could not under any circumstances have been a Junglefowl. On the other hand, Linnaeus's name *G. gallus* was applied to the domestic fowl and this was again divided by him into several varieties, of which *pusillus*, if any, is apparently applicable to the Indian Gamecock, *Gallus pugnax*. Admittedly *pugnax* is here used merely as an adjective and cannot be applied as a name, either *binomial* or *trinomial*. Nor, however, can *gallus* be used, because, first, it is applied to domestic fowls of *all* kinds and, secondly, because if we use it at all on the present system, we must use it for the first-described bird, which has no relation whatsoever to any known wild form of *Gallus*. The types of domestic fowls Linnaeus divides up as β, γ, δ, etc., and the first name undoubtedly is α, although this letter is omitted, and it is the only one to which *Gallus* can be applied. The final description beginning " *Gallus pugnax* " certainly refers to a Gamecock and this he calls *pusillus*. I consider it quite impossible to use *gallus* as a specific name for any wild form of this genus. We must accordingly use *bankiva* Temm., 1813, the next oldest name which becomes available. For the Burmese subspecies, *ferrugineus* being inapplicable, the name *robinsoni* of Rothschild (in *loc. cit.*) must be employed. Kloss's name *murghi* must be employed for the Indian race, however much we may regret the use of this term.

GALLUS BANKIVA.

Gallus bankiva Temm., Pig. et Gall. ii, p. 246, pl. 87 (1813) (Java).

This form differs from either of our Indian races in having the ends of the hackles of the neck spatulate or truncate.

Key to Subspecies.

A. Neck-hackles much pointed and more golden-yellow on the terminal thirds . . . . . *G. b. murghi*, p. 128.

B. Neck-hackles less pointed and deeper golden-red on the terminal thirds . . . . . *G. b. robinsoni*, p. 147.

GALLUS BANKIVA MURGHI.

THE COMMON RED JUNGLEFOWL.

Gallus ferrugineus murghi, *Robinson & Kloss, Rec. Ind. Mus.* xix, p. 14 (1920) (Behar).

? Phasianus gallus, *Linn. Syst. Nat.* i, p. 270 (1758).

Gallus bankiva, *Jardine, Nat. Lib. Orn.* iv, p. 175, pl. (India); *Hodgs.* in *Gray's Zool. Misc.* p. 85; *Gray, Cat. Hodgs. Coll. B.M. ed.* i, p. 125; *Adams, P.Z.S.* 1858, p. 498; *Blyth, Ibis*, 1867, p. 156.

Gallus ferrugineus, *Blyth, Ann. Mag. N.H.* xx, p. 387 (1847); *id. Cat. Mus. As. Soc.* p. 242; *Adams, P.Z.S.* 1859, p. 185; *Irby, Ibis*, 1861, p. 234; *Jerdon, B. Ind.* iii, p. 536 (part); *Blyth, Ibis*, 1887, p. 154 (part); *Beavan, Ibis*, 1868, p. 381; *Brooks, Ibis*, 1869, p. 60; *Bulger, Ibis*, 1869, p. 170; *Elliot, Mon. Phas.* ii, p. 184, pl. 32 (part); *Hume, Nests and Eggs Ind. B.* p. 528 (part); *Ball, Str. F.* ii, p. 426; *Hume, Str. F.* ii, p. 482 (part); *Blyth & Walden, Cat. Mam. and B. Burma*, p. 149; *Hume, Str. F.* iii, p. 171; *Armst. ibid.* iv, p. 338; *Hume & Inglis, ibid.* v, p. 44; *Oates, ibid.* v, p. 164; *Wardlaw-Ramsay, Ibis*, 1877, p. 468; *Marshall, B. Nest. Ind.* p. 59; *Hume & Marshall, Game B. Ind.* i, p. 217, pl.; *Anders, B. W. Yunnan*, p. 669; *Hume & Davison, Str. F.* vi, pp. 442, 521; *Ball, ibid.* vii, p. 225; *Hume, ibid.* viii, p. 68; *Scully, ibid.* viii, p. 348; *Bingham, ibid.* ix, p. 195; *Fasson, ibid.* ix, p. 205; *Oates, ibid.* x, p. 236; *Marshall, Ibis*, 1884, p. 423; *Taylor, Str. F.* x, p. 531; *Hume, Str. F.* xi, p. 304; *Oates's ed. Hume's Nests and Eggs* ii, p. 417 (part); *Blanf., Fauna B.I., Birds* iv, p. 75 (part); *Sharpe, Hand-L. B.* i, p. 39 (part); *Stuart Baker, Jour. B.N.H.S.* xii, p. 436 (1899); *Inglis, ibid.* p. 676 (1899); *Fulton, ibid.* xvi, p. 61 (1904); *Ward, ibid.* xvii, p. 944 (1907); *Inglis, ibid.* p. 971 (1907); *Magrath, ibid.* xviii, p. 298 (1908); *Osmaston, ibid.* xxii, p. 544 (1913); *Hopwood & Mackenzie, ibid.* xxv, p. 91 (1917) (N. Chin Hills); *Whistler, ibid.* xxvi, p. 184 (1918) (Ambala); *Jones, ibid.* xxvi, p. 619 (1919) (Simla); *Hingston, ibid.* xxvii, p. 570 (1920) (Dharmsala); *Osmaston, ibid.* xxviii, p. 157 (1921) (Garhwal); *Higgins, ibid.* xxviii, p. 289 (1921) (Manipur); *Field, ibid.* xxviii, p. 767 (1922) (Gonda); *Ali, ibid.* xxxii, p. 52 (1927) (Hoshnapur).

Gallus gallus, *Ogilvie-Grant, Cat. B.M.* xxii, p. 344 (part) ; *id. Hand-L. Game-B.* ii, p. 48 (part) ; *Oates, Journal B.N.H.S.* x, p. 106 ; *id. Game-B. of Ind.* (part), i. p. 366 ; *Robinson & Kloss, Ibis*, 1919, p. 411 (S. Annam) ; *Ghigi, Mem. Acc. Sci. Biolog.* iii. pp. 1-6 (1919) ; *Beebe, Monogr. Phas.* ii, p. 172, pl. 40 (1921) (part) ; *Gyldenstolpe, Ibis*, 1920, p. 737 (Siam) ; *Delacour & Jabouille, Ibis*, 1925, p. 220 (Central Annam) ; *Delacour & Kinnear, Bull. B.O.C.* xlix, p. 48 (1928).

Gallus gallus gallus, *Higgins, J.B.N.H.S.* xxxi, p. 819 (1926) (Annam) ; *Ticehurst, ibid.* p. 376 (1926) (down plumage) ; *Whistler, Ibis*, 1928, p. 769 (Kangra).

Gallus gallus ferrugineus, *Stuart Baker, J.B.N.H.S.* xxv, p. 3 (1917) ; *La Touche, Ibis*, 1924, p. 300 (S.E. Yunnan).

Gallus ferrugineus murghi, *Stevens, J.B.N.H.S.* xxx, p. 887 (1925) (Sikkim).

Gallus gallus murghi, *Robin & Kloss, Rec. Ind. Mus.* xix, p. 14 (1920) ; *Delacour & Kinnear, Bull. B.O.C.* xlix, p. 48 (1928).

Gallus bankiva murghi, *Stuart Baker, Fauna B.I., Birds* 2nd ed. v, p. 295 (1928.)

Various Names discussed.—*Kloss, Ibis*, 1918, p. 81 ; *Barys & Pennard, Isoc. New Eng. Zool. Club, Cambr., Mass.* vii, p. 23 (1919) ; *Rob. & Kloss, Rec. Ind. Mus.* xix, p. 14 (1928) ; *Riley, Pro. U.S. Nat. Mus.* lxiv, p. 99 (1924).

Vernacular Names.—*Jungli Murgha, Bun Murgha* ♂, *Jungli Murghi, Bun Murghi* ♀ (Hin. Upper India) ; *Bunkokra, Bunkukra* (Bengali) ; *Bun kukur* (Assamese) ; *Natsu-pia, Magse-ya* (Bhutia) ; *Pazok-tchi, Tangkling* (Lepcha, Sikkim-Dooars) ; *Bir-sim* (Koles) ; *Gera-gogor* ♂, *Kuru* ♀ (Gonds) ; *Lall* (Chanda Dist.) ; *Ganga* (Uriya) ; *Daono* (Cachari) ; *Vok* (Koki) ; *Inrui* (Kacha Naga) ; *Lamyel* (Manipur).

Description. Adult Male.—Crown of the head, nape and upper mantle, together with the sides of the neck, deep bright orange-red, changing to reddish gold or orange on the longest hackles, which are marked with black down their centres ; upper back, below these long hackles, black glossed with Prussian blue or green ; lower back deep maroon-red, highly glossed and gradually changing into fiery orange on the long hackles of the rump ; these latter are more or less centred with black, the centres, however, being concealed by the overlying feathers ; upper tail-coverts and tail-feathers black brilliantly glossed with green, blue-green or copper-green ; the blue generally dominant

on the coverts, whilst the gloss is absent or slight on the outermost tail-feathers. Smallest wing-coverts and shoulder of wing black, glossed like the back with blue, blue-green, or purple-blue; median wing-coverts like the lower back; greater coverts black like the smallest; quills dark brown, in some specimens almost black; the primaries edged on the outer web with light cinnamon and the secondaries with the whole of their visible portions of this colour except the innermost which are of a glossy blue-green with only a part of the outer webs cinnamon; under plumage, under wing-coverts and under tail-coverts deep brown or blackish, faintly glossed with green.

Colours of Soft Parts.—Irides varying from reddish brown in the young bird, through red to bright orange-red in old males. Comb generally a bright scarlet-crimson, sometimes duller, more red or sometimes almost a brick-red; wattles the same in colour, but sometimes a more livid red; ear lappets white, sometimes touched with pinkish on the lower posterior portions, especially in Assam birds; skin of face, throat and upper neck red, generally of a rather bluish or fleshy tint; legs vary between greenish grey and a deep slaty brown, every intermediate tint being met with, the most common colour being a rather dark plumbeous with a faint tinge of brown or purple; the spur is always more or less brown, almost black at the tip. Bill dark horny-brown, the gonys and tip of the lower mandible paler and the former often reddish. The colour of the comb and wattles is much brighter in the breeding season than at other times, both in the male and female, just as it is in barn-door hens when they are in full laying.

Measurements.—Wing 8 inches (203·1 mm.) to 9·6 inches (243·8 mm.); tail anything between 12 inches (304·8 mm.) and 15 inches (381·0 mm.); tarsus about 3 inches (76·2 mm.) or rather more; bill from gape about 1·25 inches (31·7 mm.) and from front about 0·8 inches (20·3 mm.); the spur is generally about an inch (25·4 mm.), but I have seen one or two specimens with spurs a full 2 inches (50·8 mm.). Weight, according to Hume, 1 lb. 12 oz. to 2 lb. 4 oz., but one male shot by me in Cachar weighed only just short of 3 lb., and two or three others well over 2½ lb. The majority weigh just under, rather than over, 2 lb.

Post Nuptial Plumage.—The cock Junglefowl has a sort of post-

nuptial plumage caused by the moult of the neck hackles and the long tail-feathers, the former being replaced by short blackish brown feathers. Often these same blackish feathers may be observed in patches on other parts of the body, principally the back and wing-coverts. These feathers probably replace others lost by accident or from some other abnormal cause.

This post-nuptial plumage is interesting in that it corroborates the theory that all extraordinary coloration or shape in any portion of a bird's plumage is due to excess vitality and, with a reduction in the vitality to a subnormal condition, sombre colours or normal-shaped plumage is assumed. In many cases this post-nuptial plumage is never assumed and cock birds may be shot all the year round in perfect feather. When assumed it is most irregular and may be found in any month between May and October, though generally the hackles are dropped in June and July and reassumed in the September-October moult.

Immature male has the hackles less developed both on neck and rump, with the black centres to these feathers comparatively broader and far more visible; as a rule also the neck hackles are more yellow and less deep orange in tint. The cinnamon of the wing quills is darker and the whole of their surface, except at the basal halves of the outer webs, are finely powdered and vermiculated with blackish; the greater wing-coverts are also more or less powdered in a similar way.

Colours of Soft Parts.—Iris brown, or reddish brown; wattles and undeveloped comb duller than in the adult; skin of face bluish or leaden colour.

Quite young males in their first feathers are similar to females of the same age.

Adult Female.—Top of the head blackish brown, the feathers broadly edged with golden-yellow; in most birds the forehead is more or less metallic crimson, this colour being produced backwards as supercilia above and behind the ear-coverts, whence they widen and meet on the fore-neck in a broad gorget; in some specimens the red will be found to occupy nearly the whole of the fore-crown and to deepen the yellow of the posterior crown to a deep orange; feathers of the nape orange-yellow, with broad blackish centres, changing to

pale golden-yellow on the longer hackles upon the back; upper plumage, wing-coverts and inner secondaries reddish buff or reddish brown, the feathers with pale shafts and vermiculated all over with black or very dark brown; primaries deep brown or brown, sometimes edged on the outer web with rufous. Tail blackish brown, the central tail-feathers more or less mottled with rufous, which in some birds extends to the next two to four pairs of feathers on their outer webs. Breast below the red gorget light Indian red, the feathers with pale shafts, gradually becoming paler and duller on the lower breast, and shading into pale dull cinnamon on the belly, much vermiculated with brown; under tail-coverts black or blackish brown.

Colours of Soft Parts.—Iris brown or hazel; bill horny-brown, gape and lower mandible plumbeous-fleshy or fleshy-grey; comb and orbital skin reddish crimson; wattles very rarely present and very small, like the comb but paler and more livid; legs generally dull plumbeous-brown but varying in tint as in the male. Undeveloped spurs are occasionally present. Tickell obtained such a specimen in Singhbhum, and I have myself shot at least half a dozen females showing spurs, which in one instance exceeded half an inch in length.

Measurements.—Wing 7 inches (177·8 mm.) to 7·7 inches (195·6 mm.); tail from vent 5·5 inches (139·7 mm.) to 6·5 inches (165·1 mm.); tarsus about 2·5 inches (63·5 mm.); bill from front about 0·75 inches (19·05 mm.) and from gape about 1·1 inches (27·9 mm.).

"Weight 1 lb. 2 oz. to 1 lb. 10 oz." (*Hume*).

Young females in their first year are generally more yellow-buff and less red below and have the feathers boldly mottled with brown on the breast and lower parts. The extent of the crimson or rusty-red of the head is also a sign of age, though a few females seem never to acquire this.

Chick in Down.—A broad band down from the centre of the crown to the end of the back a rich plum-brown; a streak of similar colour from the posterior lores produced in a fine line over the eyes and as a wide line down the sides of the neck; lateral bands of buff down each side of the back succeeded by other bands of the same colour at the centre; sides of the body rich warm reddish buff changing to pale buff on throat, fore-neck and centre of breast and belly.

The wing-feathers when they first appear are isabelline finely vermiculated with black, the quills gradually becoming more or less immaculate on the inner webs as they grow larger.

The bills are fleshy-yellow and the legs rather clear olive-greenish.

Distribution.—Hume's very full note on the distribution of the Red Junglefowl leaves little to be added. Eliminating the areas in which the Burmese form occurs, his summary is as follows :—

> "Throughout the lower ranges of the Himalayas, the Dhuns Tarais, and submontane districts and the Siwaliks from the southern outer ranges of Kashmir to the extreme head of the Assam Valley beyond Sadiya.
>
> "Throughout the whole of Assam including the less elevated portions of the Garo, Khasi and Naga Hills, Cachar and Sylhet, the whole of Eastern Bengal, including the Sunderbans. Again in the hilly portions of Western Bengal from the Rajmehal Hills, through Midnapore, and westward of this, through the whole of Chota Nagpore, and the northern and eastern portions of the Central Provinces it is the only jungle-fowl that is found. It is common along the Kymore Range, and extends northwards to the neighbourhood of Punnah and Chairkhari, and southwards on the Maikal or Amarkantak Ranges.
>
> "Southwards and eastwards of these latter, it occupies the whole country north of the Godavari, Orissa, the Tributary Mahals, Ganjam, Vizagapatam, and part of the Godavari District, Joonagurh, Kareall, Nowagurh, Jeypore and other Feudatory States. It occurs also immediately below Pachmarhi."

Forsyth has shown that the habitat of this Junglefowl is practically that of the Swamp Deer (*Cervus duvauceli*) and of the Sal-tree (*Shorea robusta*), and a curious corroboration of this is the occurrence of all three of these in the Deinwa Valley, near Pachmarhi, although there is an intervening country of some 150 miles eastward before the three are again met with. At the same time it must be noted that the Red Junglefowl does not occur in Bhawalpore and Sind where the Swamp Deer is found, though not the Sal-tree.

Nidification.—The Red Junglefowl breeds over the whole of its habitat, the season apparently not varying much in different localities as it does with some birds. Thus even in the hot, dry portions of the Central Provinces and Punjab, etc., they appear to lay from April to June, not waiting until the bursting of the rains ensures more food

and a cooler temperature. At the same time it is certain that although the months just mentioned may be the principal breeding months, a much wider margin of time than is covered by these must be allowed for their nidification. I have personally taken their eggs in the Santhal Perganas, Chota Nagpore, Assam and Cachar in every month of the year except October, November and December. In the last-mentioned month, however, I have seen just hatched chicks, so it would be unsafe to exclude any month of the year from their breeding season. In Assam undoubtedly most birds lay in March and April, many in February and June and the rest at odd times throughout the year.

I have not known them breed above 6,000 feet, but have taken eggs at this height in the Assam Ranges. Mr. P. Dodsworth also took a clutch of eight eggs at Simla at this height, whilst in the Naga Hills and hills in the extreme east of Assam they are found up to 7,000 and even 8,000 feet in summer, almost certainly breeding at this elevation.

They nest in practically any kind of jungle, but undoubtedly prefer for this purpose the dense tangle of secondary growth which is found in deserted cultivation clearings. Next to this kind of jungle, bamboo forest which is dense and which has some undergrowth appears to be a favourite resort and, thirdly, broken hills well covered with dense bush and tree forest. As regards the nest, this may be either a depression scratched in the ground by the birds, or a natural hollow, sometimes devoid of all lining or, on the other hand, well lined with fallen leaves and rubbish. Sometimes there is no hollow even and the eggs are just laid on the ground under the protection of a bush or clump of bamboos, whilst often a mass of leaves, grass and rubbish is collected in a heap, a hollow formed in the centre, and the eggs laid therein. I have also taken several nests made in the centre of bamboo clumps, the eggs being deposited in the mass of leaves and rubbish which always fill up the inside of these clumps to a height of 2 to 4 feet.

As a rule nests are well concealed, especially where they are made in secondary growth, though I have more than once found them so placed that they could be seen from some feet away without any search having to be made for them. One such nest was placed on the

ground in a shallow green mossy ravine running through evergreen forest. A certain amount of dead leaves, bracken and moss had been collected in a depression, whence a large stone had been turned out, and on these the eggs were laid, conspicuous from a distance of about twenty feet in every direction, except from the point at which they were screened by the boulder which still lay where it had fallen on one side. Another quite unconcealed nest lay in a very open bamboo jungle, in a small bare space where nothing grew, and here on a few dead bamboo leaves lay the five eggs, saved from detection and molestation only by their close resemblance in colour to the bamboo leaves.

The period of incubation appears to be twenty days, equivalent in tropical countries to the twenty-one days the domestic fowl takes to hatch her eggs in more temperate regions. The hen sits close, and when forced to leave, creeps away silently through the jungle more like an animal than a bird, though occasionally when very suddenly disturbed she may get up with as much fluster and fuss as a barn-door fowl.

The number of eggs laid is generally five to eight, rarely nine, and whilst five or six is undoubtedly the usual full complement, often only four are laid. Some hundreds of clutches have passed through my hands, or have been actually seen by myself in the nests, whilst Dr. H. N. Coltart must have seen almost as many, yet neither of us has ever known more than nine. Jerdon states that they sometimes lay as many as a dozen, but his oological notes are not very correct, for he, like many others who have made similar statements as to the number of eggs laid, have been probably misled by natives. In appearance the eggs cannot be discriminated from those of the common Indian domestic fowl, only differing from those of the English birds in being so much smaller. They vary in colour from almost pure white merely tinged with cream to a deep cream-buff or *café-au-lait* tint like that of a Bramah Fowl's egg. Now and then one comes across a deep-coloured set of eggs covered with white specks and spots, whilst I once found a clutch of bright pink-buff eggs marked with white blotches and spots over the larger half.

One hundred and fifty eggs average 45·3 × 34·4 mm.: maxima *52·0* × 35·5 and 46·3 × *41·1* mm.; minima *39·6* × 33·2 and 44·0 × *32·0* mm.

So many writers have constantly asserted that Junglefowl hens always cackle and call after laying an egg in the same way as the domestic bird does that I cannot pass over the subject without reference. Having read Tickell's and Rainey's remarks in Hume's Game Birds, I made the most careful investigations and must say that I have never found anything to support their assertions. It is true that time after time I have heard hens cackling and shouting as if full of pride at the recent achievement of laying an egg, yet have never been able to find the egg so laid. Again, I have often heard hens when not breeding calling in the same manner and, sometimes, several birds in one flock all giving vent to their feelings at once. As a rule I am quite sure the cry is the result of fright and is merely the hen's way of expressing indignation and not pride. A tiger or leopard stalking through the jungle will often be abused in this manner, whilst even a jackal may be the mean cause of a similar commotion. Often also when out shooting and stealthily going through the forest I have suddenly come on one or more hens who, after flying a short distance, have relieved their feelings by loud and prolonged cacklings. It seems hardly possible that a wild bird full of anxiety for its future young should announce to all the predatory world, "Here is an egg, come and eat it." It was this inherent improbability in the idea that first made me investigate it, and I have no doubt that there is no foundation for it in fact.

Another common theory which there seems good reason to doubt is that Junglefowl are always polygamous. Hume draws attention to this and says :—

> "Lastly, I am quite certain that they are not always polygamous. I do not agree with Hutton that they are always monogamous, because I have constantly found several hens in company with a single cock, but I have also repeatedly shot pairs without finding a single other hen in the neighbourhood."

There is, however, a good explanation of the first-mentioned condition of affairs, for I think that the young cocks leave the family circle before the young hens do and, in consequence, the male parent may often be seen in company with half a dozen hens and no cocks, so that whilst one seldom finds hens wandering about by themselves, unless they are incubating eggs, one often comes across young cocks,

either quite alone or with one other young cock of like age, probably a brother. It may be that the old cock drives off the young birds, but it is more likely that the latter, being of a more roving independent nature, clear off sooner than the hens.

General Habits.—Junglefowl may be found in practically any kind of country in which there is sufficient cover, though there is little doubt that they prefer country consisting of shallow valleys, low hills and broken ground at the foot of big hills rather than open plains country or the higher hills. As already mentioned, they may be found up to, or even over, 6,000 feet, but they are mere stragglers to such heights, and it is below 2,000 feet rather than over that we must look for them if we want them in number sufficient to make the shooting of them a regular business. Another undoubted attraction is cultivation when it borders on forest or bamboo jungle; nor does it seem to matter much what the cultivation is, whether grain, rice, mustard, cotton or chillies. Any kind of crop seems to offer food, either in itself, in the insects it attracts, or in its semi-open patches which supply an easy hunting ground.

Junglefowl are extraordinarily numerous in the Garo, North Cachar and other hills south of the Brahmapootra, where it is often possible to see hundreds in a morning's or afternoon's wandering. Once when shooting on the Kopili River, a stream which divides the Khasia and North Cachar Hills, I must have seen fully 500 birds during the day. It was then early in March, when the flocks of birds had not yet broken up into pairs to commence breeding, and every afternoon and evening they frequented the long stretches of mustard fields which run along the banks of the stream. Although nowhere wide, seldom over a hundred feet or so, these patches often ran for half a mile or more without the break of a patch of forest, forming simply ideal feeding grounds for every kind of game, from the Junglefowl and barking-deer to elephants and buffaloes. The mustard was high enough to afford good cover for the smaller game so that, in spite of the wiliness of the birds, it was often possible to obtain quite a good bag by wandering along inside the edge of the jungle, whilst a couple of men beat through the mustard about twenty yards behind one. On one such morning before the sun was visible I had got to the first patch and was about to start along the edge of the forest

whilst my men did the beating, when I caught sight of a barking-deer coming out of it and a snap shot with my express turned it over and so commenced a day's lucky shoot.

The shot, however, disturbed everything close by, so as we were only a few hundred yards from the camp, I sent one man back with the deer and waited for his return. By this time the birds had regained confidence and were out feeding once more, and we had hardly started our beat before about a dozen Junglefowl were up with a tremendous fluster and had dived headlong into the forest, leaving a fine old cock on the ground, whilst another bird escaped with a bad scare. A hundred yards further on a second but smaller lot were flushed, again resulting in a miss and a hit, another cock being added to the bag. After this a quarter mile's slow trudge showed nothing but a glimpse of a couple of hens as they scurried on foot into the undergrowth, too far away for a shot; then a single cock got up and was missed and within another two hundred yards I managed at last to bring off a clean right and left at two hens, the last of a lot to get away out of the mustard. This sort of thing went on until by about 9.0 a.m. I had got to the end of the cultivation and had collected eight Junglefowl, a couple of Kalij Pheasant and one Barking Deer, and had expended some twenty cartridges. Of course the great majority of birds got up well out of shot, and in one stretch of about half a mile of mustard well over two hundred birds must have been flushed without my firing off my gun once. In fact the majority of shots obtained were from tiny patches of mustard which lay so snuggled in the forest that the birds could not see us until we emerged from the forest tract into the cultivation. Even in these, however, as often as not, we failed to obtain a shot, though the birds were there in numbers. All we saw as we peeped out of our leafy cover would be the last of a flock as it disappeared, an old cock bringing up the rear of his family, tail and head down as he ran for all he was worth into safety. Of course, on such occasions, when it was possible, a running shot was taken and, when shooting without dogs and especially when shooting to feed oneself and a hungry crowd of coolies, it is absolutely legitimate to do so or else go without any dinner.

Junglefowls are just as great skulkers and runners as are nearly

all other tropical game birds of the Pheasant tribe, almost invariably preferring to seek safety on their legs rather than by wing; in fact, except when one has good dogs or can work cultivated ground as above, it is absolutely impossible to get the birds to rise unless a regular beat is organized.

We used to have quite good shooting for from four to six guns in the North Cachar Hills with a line of twenty to forty coolies. Our method used to be for the guns to keep well ahead of the beaters along jungle paths or the beds of streams, a gun on either side of these latter when possible, whilst two other guns went along the extreme wings of the lines. In the mornings and evenings the birds were always found low down in the valleys near the water, and very favourite haunts were the numerous scrub-covered islets which were dotted all along the stream. The line of coolies worked down the stream and about a hundred or two hundred yards up the sides of the hills on either side. The birds generally ran some distance in front of the shouting line of coolies and then broke across the stream, flying up the opposite hill and so giving real sporting shots at good distances. In this way we would sometimes get thirty or forty birds in a morning and evening, chiefly Junglefowl, but with a few Black-backed Kalij, an odd Bamboo Partridge or so and, perhaps, a deer thrown in.

The Junglefowl is not an easy bird to kill and flies far faster and requires much straighter powder than a novice would imagine. A friend of mine who came out to India with the well-deserved reputation of being a real good Pheasant shot, at first, when asked to do so, absolutely refused to go out and shoot barn-door fowls, as he called them. He was, however, eventually induced to go out after Kalij Pheasant and, in the course of this shoot, succeeded in firing well behind several Junglefowl which were put up to his gun. After this we heard no more contemptuous remarks against them, although, once he had taken their measure he became as fine a shot at these birds as at our home Pheasants.

I have never been present at any very big shoots at Junglefowl, ours being merely scratch affairs got up at a moment's notice when we could get a day or half a day off work, but the Assam Bengal Railway officials, under the leadership of Mr. Vernon Woods, used to have an annual Junglefowl shoot at which very big bags were made.

A great charm about Junglefowl shooting, whether in big beats or alone with a couple of shikaries or beaters, is the wonderful variety of other game one meets with, both large and small.

It is many years now since Hume warned Griffs as to the necessity for being prepared for any eventuality when shooting small game in heavy jungle and, in many places, this warning holds good now just as it did then. Hume describes how, when out Junglefowl shooting in 1853, he once ran into a party of four bears and was at once charged by an old female, whom he succeeded in killing, but at such close quarters that he and the bear both fell over together.

More than once, when Junglefowl shooting, I have had to shoot surly old boars who resented my intruding on to their feeding ground and, once having foolishly left my rifle behind when going for an evening's stroll I had to retire in haste, whilst an ill-tempered cow buffalo grunted and pawed the ground in the middle of a mustard patch I wanted to shoot through. On another occasion I had a still more narrow escape, walking straight on to a tigress engaged in finishing her meal off a wretched Mikir coolie whom she had killed. She was fortunately full and apparently did not quite understand what the object in front of her was and, eventually, was good enough to make off but, as I only had a shot gun in my left hand and was too near her to risk changing it into my right, it was with no small relief I saw her leap to one side and rush away through the grass. The next year, curiously enough, when again Junglefowl shooting in the same place, I once more saw her, this time at a safe distance, and was enabled to add her to my string of Junglefowl and Pheasant.

The crow of a Junglecock is quite a wild game sound, very like that of the game bantam; it is, however, always recognizable by its shrill yet full note and, above all, by its very abrupt termination. In the domestic bird the last note is the one usually prolonged and most dwelt upon, whereas in the wild bird the last note is the shortest. Even in those parts of its habitat where the domestic birds are for the most part so constantly crossed with wild birds that they are to all intents and purposes of the same breed, I think the full abrupt note of the really wild bird can be always recognized.

They do not crow much during the cold weather, though even in these months an odd bird or two may be heard throughout the day,

whilst nearly every bird within hearing will be heard calling every morning and evening. In the breeding season, however, they not only crow several times just before daybreak and after sunset, but they crow constantly during the day, only remaining quiet for the hottest hours between noon and three or four o'clock.

During the breeding season they occasionally crow when strutting about on the ground, breathing defiance to every other cock in the neighbourhood but, as a rule, they mount some convenient stump, or perch on a bamboo or tree branch, from which point of vantage they challenge other birds to mortal combat with many crowings and flappings of wings.

Even, however, when they announce their presence thus to any sportsman who may be near, they are so wily and so sharp of hearing that it takes a very careful stalk to enable one to get a shot. The slightest snap of a twig or rustle of a leaf and, even if he is in the middle of a crow, it collapses, and when you arrive the bird has gone. About the only time a Junglecock can be caught unawares is when he is fighting and then, so intense is his interest in the business on hand that I have known them caught by natives simply throwing a cloth over the two struggling birds.

They are quite as pugnacious in their wild state as any breed of gamecocks, often fighting to the death, indeed on some occasions until both birds are *hors de combat*. One such occasion came within my own knowledge when my coolies picked up a dead Junglecock on the forest path and, just beside it, another cock, blinded and so weak that it made no attempt to escape when caught, dying before it could be brought into camp. They will also fight with Pheasants and other birds and I was once fortunate enough to see the whole of a fight between a Junglecock and a Black-backed Kalij.

At the time this occurred I was seated behind a bamboo clump in a thicket of low bushes watching a Mikir attempting to call up Junglefowl. We had been there about ten minutes when his call—made to simulate a hen chuckling and scratching about for food—attracted a cock who replied by crowing for two or three minutes, after which, fluttering down from his bamboo perch, he strutted into the small open piece of ground immediately in front of us. At the same moment a fine cock Kalij also came into the open about five

paces away; without a second's hesitation the cock rushed at him and, taking him unawares, bowled him over. The Pheasant was, however, much the bigger bird of the two and apparently unhurt, so though somewhat confused by the rush tactics of his enemy, he at once took up the gauntlet. For a few seconds the two birds faced one another, beaks low down to the ground and tails raised, and then like lightning the Junglecock rose and jumped over the Pheasant, striking lustily as he passed and making the feathers fly.

No real damage was done by this foul assault, and the Pheasant wheeling once more faced his active little adversary. Again the two birds walked round like a couple of pugilists, watching intently every movement of the other, heads never more than a couple of feet apart, until one or the other made his effort, with varying success, to pass over the other bird striking as he leapt.

Similar proceedings went on for the next ten minutes, the Pheasant occasionally taking the offensive, though seldom with any effect. By sheer weight he now and then succeeded in bowling over his enemy, but slowness in taking advantage of his momentary success always enabled the Junglefowl to slip away and again attack. At the end of the time mentioned it was a weary and bleeding Pheasant which faced a still alert and fresh Junglefowl; for a few more minutes, however, he still stuck to his guns, but then turned and fled, only to be at once caught and knocked over again and again as he tried to escape; finally, as he again turned to bolt, the cock struck fair, and his spur went right into the nape of the neck, and before he could disentangle himself from his victim both birds were covered by the Mikir's blanket. When we got them out of the folds of this the Pheasant was dead, whilst the cock was almost unharmed beyond a broken spur and a torn comb. To the Mikir's indignation I insisted on the release of the winner of the fight, who at once scuttled off into the bamboos and, when at—what he considered—a safe distance, flew into a branch and crowed victoriously.

Although I have so frequently come across the birds when fighting, I have never come across a regular fighting ground such as that described by Hume. He writes:—

> "No one especially notices the extreme pugnacity of these birds in the wild state, or the fact that where they are numerous they select regular fighting grounds much like Ruffs.

"Going through the forests of the Siwaliks in the north-eastern portion of the Saharanpur district, I chanced one afternoon, late in March, on a tiny open grassy knoll, perhaps ten yards in diameter and a yard in height. It was covered with close turf, scratched in many places into holes and covered over with Jungle-fowl feathers to such an extent that I thought some Bonelli's Eagle, a great enemy of this species, must have caught and devoured one. Whilst I was looking round, one of my dogs brought me from somewhere in the Jungle round a freshly killed Jungle-cock, in splendid plumage, but with the base of the skull on one side pierced by what I at once concluded must have been the spur of another cock. I put up for the day at a Bunjaro Perow, some two miles distant, and on speaking to the men found that they knew the place well, and one of them said that he had repeatedly watched the cocks fighting there, and that he would take me to a tree close by whence I could see it for myself. Long before daylight he guided me to the tree, telling me to climb to the fourth fork, whence, quite concealed, I could look down on the mound. When I got up it was too dark to see anything, but a glimmer of dawn soon stole into the eastern sky, which I faced; soon after crowing began all round, then I made out the mound dimly, perhaps thirty yards from the base of the tree, and forty from my perch; then it got quite light, and in a few minutes later, a Jungle-cock ran out on to the top of the mound and crowed (for a wild bird) vociferously, clapping his wings, and strutting round and round, with his tail raised almost like a domestic fowl.

"And here I should notice that although, as has often been noticed, the wild cocks always droop their tails when running away or feeding—in fact almost whenever you see them—yet I believe from what I then and once subsequently saw, that, when challenging rivals, they probably always erect the tail, and I know (having twice so surprised them before they saw me when watching for Cheetul and Sambur from a machan, near water in the early morning) that when paying their addresses to their mates they do the same during the preliminary struts round them.

"I learned so much and no more; there was a rush, a yelp; the jungle-cock had vanished, and I found that one of my wretched dogs had got loose, tracked me, and was now careering wildly about the foot of the tree.

"Next day I tried again, but without success; I suppose the birds about had been too much scared by the dog, and I had to leave the place without seeing a fight there; but putting all the facts together, I have not the smallest doubt that this was a real fighting arena, and that, as the Bunjara averred, many of the innumerable cocks in the neighbourhood did systematically fight there."

In the Sunderbans, where, as Rainey and Hume both believed to

be the case, most, if not all, the birds are derived from tame stock, they are often caught by the cultivators, who use a tame cock as a decoy, spreading nooses round about him in which the wild birds who come to answer his challenge are caught. This method, which is described by Rainey and quoted by Hume, is the common way of catching Junglefowl over practically the whole of their habitat, but the hill tribes often catch them by nooses just set about and around some small patch which they bait with grain.

They are very hard birds to domesticate; if kept in confinement they soon pine away and die, and if allowed to run about with the farmyard birds they nearly always clear off the following breeding season, though they may continue to haunt the vicinity for some time, months even, after they first take their departure. At the same time Junglefowl are often very common round about villages, attracted, of course, by the cultivation and by the droppings of grain, etc. In such cases it is no uncommon thing for a cock to take up his abode in some tree or bamboo clump in the immediate outskirts of buildings, where he sleeps at night and daily visits the domestic hens as they wander about in the cultivation. The tame cocks seldom attempt to resent his appearance and, when they do, they generally get such a trouncing that the attempt is not made twice. It is curious that although in some villages the hens are so continually crossed with the wild cocks that to all intents and purposes the birds are nothing but wild birds pure and simple, yet the cocks, which are the result of this crossing, never have the same robustness and fighting ability as the actual wild ones. In appearance they are one and the same birds until one examines the spurs, and then it is seen that the spur of the wild bird is generally far longer, finer and cleaner than that of the village bird. One seldom meets with the short bulgy spur in a feral state, while the texture also seems to be much harder, closer and naturally, as a weapon, is therefore far more effective.

The strength and vigour with which the Junglecock can use his spur is really astonishing; in addition to the cases already mentioned, in one of which the neck vertebræ were severed and in the other the eye and brain pierced, I have more than once known them to drive the spur full into their opponent's brain behind the comb, and on

another occasion found a cock with his wing broken at the carpal joint. Sometimes so fierce is the blow given that the spur itself gets broken or torn away and, once that is done, the owner is no more of use in the ring, however great his pluck and determination. In spite of what Hume says to the contrary, the qualities of the Junglefowl for the table must be rated nearly as high as his pugilistic attributes. When shot round about villages he may sometimes be a foul feeder, though this is not my own experience, but normally his flesh is excellent, even old birds are comparatively tender and sweet, except for their legs, whilst birds of the year are much better eating than are Kalij Pheasants of the same age. Like all game birds they are all the better for hanging when the climate permits but, if it is impossible to keep them for two or three days, they should in the alternative be plucked, cooked and eaten as soon as possible after being killed. Like the domestic fowl the Junglefowl is practically omnivorous, but is by preference rather a vegetarian than an insect eater. All kind of seeds, grains, etc., are greedily devoured, as also many kinds of roots, buds and young shoots. Bamboo seeds are a very favourite food and, where there are stretches of bamboo which have seeded and the seeds are beginning to fall, these birds—and others—collect in almost incredible numbers into a very small area. I have known them eat, in addition to their ordinary seed and grain diet, worms and small lizards, insects of all kinds, tadpoles out of a little backwater in a hill stream and, once, I saw a hen rushing about with a small grass snake in her bill pursued by two other Junglefowl. Whether they would have finished the snake or not cannot be said, as my appearance on the scene dispersed the meeting. They are very fond of all kinds of wild figs and berries and also of the mowa flower when this ripens and falls to the ground.

As a rule Junglefowl feed almost entirely on the ground, scratching about, turning over leaves and fallen rubbish and hunting for their food just as the domestic bird does in the back yard, but I have more than once disturbed them feeding in Pepal and Banyan trees, scrambling about on the branches and picking the fruit as they go. They are extremely clumsy birds when thus employed, and easily lose their balance and fall over.

The young birds fly within a very few days of hatching and, when the hen is forced to take wing, follow her well and have no difficulty whatsoever in keeping pace with her. At this stage of their development their wings appear to be very large in proportion to their bodies whilst their flight is very quiet and soundless compared with the noisy flight of the adult bird.

GALLUS BANKIVA ROBINSONI.

THE BURMESE JUNGLEFOWL.

Gallus gallus robinsoni, *Rothschild, Nov. Zool.* xxxiii, p. 206 (1926) (Sumatra); *Delacour & Kinnear, Bull. B.O.C.* xlix, p. 48 (1928).

Phasianus bankiva, *Raffl., Trans., Soc. Linn.* xiii, p. 319 (Sumatra) (1822); *Grand Caille de la Chine, Sonn. Voy. Ind. Orient.* ii, p. 171 (1782) (China).

Hackled Partridge, *Lath., Gen. Syn.* ii, p. 766, pl. 66 (1783); *id. Gen. Hist*, viii, p. 307, pl. 129 (Cape ?).

Tetrao ferrugineus, *Gmelin, Syst. Nat.* i, pl. 2, p. 761 (1788) (China).

Perdix ferruginea, *Lath., Ind. Orn.* ii, p. 651 (1790) (Africa).

Coturnix spadicea, *Bonnat., Tabl. Encycl. Meth.* i, p. 218 (1791) (China).

Gallus bankiva, *Temm., Pig. et Gall.* ii, p. 87 (1813) (Java), iii, p. 654; *Steph.* in *Shaw's Gen. Zool.* xi, p. 198; *Horsf., Tr. Linn. Soc.* xiii, p. 185; *Griff.*, ed. *Cuv.* iii, p. 20; *J. E. Gray, Ill. Ind. Zool.* i, 43, fig. 3; *Robinson & Kloss, Ibis*, 1910, p. 672.

Gallus ferrugineus, *Jerdon, B. Ind.* iii, p. 536 (part); *Blyth, Ibis*, 1867, p. 154 (part); *Elliot, Mon. Phas.* ii, p. 184, pl. 32 (part): *Hume, N. and E. Ind. B.* p. 528 (part); *Kelham, Ibis*, 1882, p. 1: *Nichols, Ibis*, 1882, p. 65; *id. Ibis*, 1888, p. 255; *Oates*, ed. *Hume's Nests and Eggs* iii, p. 417 (part); *Blanf., Avi. Bri. Ind.* iv, p. 75 (part); *Sharpe, Hand-List B.* i, p. 39 (part); *Bonhote, P.Z.S.* 1901, p. 78; *Ingram, Nov. Zool.* xix, p. 271; *Barton, Journ. N.H.S. Siam*, p. 108; *Gairdner & Malcolm-Smith, ibid.* p. 151; *Macdonald, Journ. B.N.H.S.* xvii, p. 496 (1906); *Stuart Baker, ibid.* xvii, p. 764 (1907): *Harington, ibid.* xix, 309 (1909); *id. ibid.* p. 365 (1909); *id. ibid.* xx, p. 1010 (1911); *Cook, ibid.* xxi, p. 225 (1912); *Hopwood, ibid.* xxi, p. 1214 (1913).

Gallus gallus, *Ogilvie-Grant, Cat. B.B.M.* xxii, p. 344 (part); *id. Hand-L. Game-B.* ii, p. 48 (part); *Oates, Game-B. of India* i, p. 366 (part).

Gallus bankiva robinsoni, *Stuart Baker, Avifauna B.I.* 2nd ed. v, p. 298 (1928).

Vernacular Names.—*Taukyet* (Burmese).

Description. Adult Male.—Differs from the common Indian Junglefowl in having the ear lappets red instead of white. The

plumage above is generally a deeper red, the neck hackles being less of a golden-yellow or orange at their tips. It is also noticeable that the neck hackles are less attenuated and are broader at their tips, though this character is very variable and may, in some instances, be due to an admixture of domestic blood. Measurements and colours of soft parts do not differ from those of the Indian bird except for the ear lappets, as already stated.

Adult female similar to that of *Gallus b. murghi*.

Young male and chick in down cannot be distinguished from the same stages in the Common Indian Junglefowl until after the first autumn moult, when the deep red of the upper parts at once becomes noticeable. The white ear lappets are replaced by red or deep pink, even in very young birds, and will always suffice to show to which subspecies a specimen belongs.

Distribution.—The whole of Burmah and the Malay Peninsula, Siam, Cochin China, Sumatra and also Java, and many of the islands of the Malay Islands, as well as in the Great and Little Cocos. In the Cocos the birds are certainly descended from imported stock, and probably in the majority, if not all of the Malay Islands, their origin is the same.

Nidification.—The Burmese Junglefowl appears to breed principally in the cold weather, from November to March, but in the hills rather later than this, generally in March and April. Even, however, at some elevation it is often a very early breeder, for Harington told me that he found them breeding in January and February in the Chin Hills, obtaining hard-set eggs in the former month and young chicks in the latter. Mr. C. B. Moggridge found broods of young birds as early as the 10th and 14th of January. In Pegu, Oates found them breeding from the end of February or beginning of March on into June, whilst my collectors took eggs in the same district as late as July, and Mr. Barton records finding a bird sitting on six eggs at Raheng in Siam on March 11. In the Malay Peninsula they are said to lay during February, March and April, and I have received eggs laid in these months from the vicinity of Taiping.

There is nothing to distinguish either nest or eggs from those of the Indian bird. Oates says:—

> "As a rule she makes no nest, but merely scrapes out a hollow at the foot of a bamboo or other bush; at times there appear to be a good many leaves under the eggs. These vary in number from 6 to 9; but Captain Wardlaw-Ramsay once found 11 eggs in one nest; in colour they are pale buff."

Mr. C. S. Barton, to whom I have already referred, records finding a nest containing six eggs in an old stump. This is the only record I can find of the bird building off the ground, though it doubtless sometimes makes its nest in clumps of bamboos just as the Indian Junglefowl does.

The usual number of eggs is 5, 6 or 7; often they only lay 4, and on the other hand 8 or 9 may sometimes be found.

In size, shape and texture they differ in no way from those of the Indian bird

General Habits.—The Burmese Junglefowl seems to differ in character from the Indian Junglefowl more decidedly than it does in outward appearance and is, probably, even more closely allied to the domestic fowl than is the latter bird. It is on the whole less wild, less of a skulker and far more amenable to restraint and domestication, for several writers record successfully rearing and keeping these fowls together with their barn-door fowls.

As regards choice of country to live in, both Indian and Burmese forms seem to have similar likings. Oates writes:—

> "There is no description of jungle from which this common bird is absent; but if it has a predilection for any particular style of country, it is for the broken ground and ravines with dense vegetation. In these localities (and there are many such, especially at the foot of some of the Hill ranges) it is abundant to a degree. Considerable numbers are generally found together, the two sexes mixing freely together. In Burmah, I think, Junglefowl are more common near tiny villages in deep forest than elsewhere, for in the neighbourhood of these hamlets there is always a certain amount of paddy land, a good deal of low cover, and a running stream. They feed in the mornings and evenings, and during the middle of the day they remain very quiet, either in some tree or well-concealed under low bushes or grass."

Mr. C. B. Moggridge (in a letter to the late Col. Harington, which the latter kindly made over to me with all his own notes) confirms what Oates says, and also emphasises the Junglefowl's love of

cultivation. "Anyone who has done much Junglefowl shooting soon learns to tell at a glance where the birds will fly when put up, but if one does not know the ground one is apt to take the first open space one finds, if it is fairly clear all round for shooting, with disastrous results. The two best places I know are in Gargaw and Madaya, but the former is the better as there are places where both sides of the creek are cultivated for miles, not with paddy, but in gardens. Here the favourite haunts of the birds were in *lu*, a species of grain (*Milium paspalum*), nantsi (sessamer) and in gardens where a few zeethe bushes had grown up among the others. All round the villages in Madaya you would find just as many birds as in Gargaw, but between the villages is where the latter gains, the cultivation extending so much further. We always found the beating very easy where there was a creek to stand in or beat over. Junglefowl like staying near water, and seem to haunt trees and bushes on the banks of the creeks, not only because of the water itself, but also because they prefer a clear space in which to spread their wings as they fly down from their nests, rather than having to dive down in and out through the closer set trees and bushes. At one place in the district, Gargaw, Mr. P. E. Cleaver got ninety-seven birds to his own gun in one day."

Junglefowl are probably more numerous in suitable places throughout Burmah than they are anywhere in India, for the gentleman above quoted in other letters writes:—

> "Bell and I in 1904 in eighteen days shot 360 Junglefowl and in 1905 in thirty days got 435 birds. The number of days mentioned represents the total number of days we were out in camp, and on some of these days we did not shoot at all, being in jungles away from cultivation, etc. All our shooting was done as we were on the march from one camp to another, and no day was taken off work and devoted entirely to shooting. Under the same conditions as the above, and being quite by myself, I shot whilst moving from one camp to another between the 8th of January and end of February, 1910, 316 head of game, of which 127 were Junglefowl."

They also seem to collect in larger flocks in Burmah than they normally do in India. In the latter place I have sometimes seen a couple of hundred in the same stretch of cultivation, but they were all broken up into flocks of a dozen or less, and anything over this

number was quite exceptional. Davison and Hildebrand on one occasion counted thirty males and females seated on one enormous bent bamboo. This was in Pahpoon, in Tenasserim, where Davison found them extremely abundant. Again, near Bhamo, Major Whitehead once counted 40 birds together, though these were all cocks without a single hen.

These cock-parties are not unknown in India, where young unpaired cocks often seek each other's society and assemble in small flocks of half a dozen or so, but I have never myself come across so large a party as Major Whitehead's, nor have I any similar record from any other observer outside Burmah.

In regard to its food there is nothing special to remark, whilst as an article of diet itself it appears to be much the same as its Indian brothers and sisters.

The crow is said to be distinguishable from that of the Indian Junglefowl, and to be more like that of the domestic bird, i.e., with the last note more prolonged and the crow as a whole less short and jerky.

GALLUS SONNERATI.

THE GREY JUNGLEFOWL.

Coq et Poule sauvage des Indes.—*Sonn., Voy. Ind. Orient* ii, p. 148, pls. 94-95 (1782).

Wild Cock.—*Lath., Gen. Syn.* ii, p. 698 (1783).

Phasianus gallus.—*Scop.* (*nec Linn.*), *Del. Flor. et Faun. Insubr.* pl. ii, p. 93 (1786); *Lath., Ind. Orn.* ii, p. 625 (1790).

Sonnerat's Wild Cock.—*Lath., Gen. Hist.* viii, p. 181 (1823).

Gallus sonnerati.—*Temm., Pig. et Gall.* ii, p. 246; iii, p. 659 (1813); *Steph.* in *Shaw's Gen. Zool.* xi, p. 200, pl. xii; *Temm., Pl. Col.* v, pls. i and ii; *Griffith's* ed. *Cuv.* iii, p. 19; *Sykes, P.Z.S.* 1832, p. 151; *Jard., Nat. Lib. Orn.* p. 186, pls. xi and xii; *Blyth, Ann. Mag. N.H.* xx, p. 388; *id. Cat. Mus. As. Soc.* p. 243; *Burgess, P.Z.S.* 1855, p. 29; *Jerdon, B. Ind.* iii, p. 539; *Bulger, P.Z.S.* 1866, p. 571; *Blyth, Ibis*, 1867, pp. 154, 307; *Elwes, ibid.*, 1870, p. 528; *Elliot, Mon. Phas.*, p. 34; *Lloyd, Ibis*, 1873, p. 401; *Hume, Nests and Eggs*, p. 531; *Butler, Str. F.* iv, p. 5; *Fairb. ibid.* iv, p. 262; *Hume, ibid.* iv, p. 404; *Butler, ibid.* v, p. 222; *Fairb. ibid.* v, p. 409; *Marshall, B. Nest. Ind.* p. 59; *Gould, B. Asia*, vii, p. 56; *Hume & Marsh., Game B. Ind.* i, p. 231, pl.; *Davidson & Wend, Str. Feath.* vii, p. 86; *Butler, Cat. B. Sind.* p. 53; *McInroy, Str. Feath.* viii, p. 493; *Vidal, ibid.* ix, p. 76; *Butler, ibid.* ix, pp. 205-421; *Davidson, Str. Feath.* x, p. 316; *Davison*, x, p. 409; *Swinh. & Barnes, Ibis*, 1885, p. 131; *Taylor, Str. Feath.* x, p. 464; *Terry, ibid.* x, p. 479; *Oates*, ed. *Hume's Nests and Eggs* iii, p. 420; *id., Game-B. of Ind.* i, p. 364; *Blanf., Avi. Brit. Ind.* iv, p. 78; *Sharpe, Hand-L.* i, p. 35; *Ogilvie-Grant, Cat. B.B.M.* i, p. 350; *Barnes, B.N.H.S. Journ.* vi, p. 3; *Davidson, ibid.* xii, p. 63 (1898); *Betham, ibid.* p. 363 (1900); *Ferguson, ibid.* xvi, p. 3 (1904); *Finn., Avi. Mag.* Feb. 1910, p. 129; *Blaauw, Ardea* vi, pp. 56-61 (1917); *Ghigi, Mem. R. Acc. Sci. Bologna* (7), iii, pp. 1-16, pl. i (1916); *id., ibid* (8) iii, pp. 1-16 (1919) (on origin of domestic fowl). *Beebe, Mon. Pheas.* ii, p. 234, pl. xlii (1921); *Stuart Baker, J.B.N.H. Soc.* xxv, p. 21, pl. (1917); *Kinloch, J.B.N.H.S.* xxvii, p. 943 (1921) (Nelliampathy Hills); *H. R. Baker, ibid.* xxviii, p. 437 (1922) (Nilgiris); *Osmaston, ibid.* xxviii, p. 453 (1922) (Pachmarhi); *Stuart Baker, Avi. Fauna B.I.* 2nd ed. v, 298 (1928); *Betts, ibid.* xxxiii, p. 551 (1929) (Coorg).



Female Male.

THE GREY JUNGLEFOWL.

Gallus sonnerati.

Phasianus indicus, *Leach, Zool. Misc.* ii, p. 6, pl. 61 (1815).

Vernacular Names.—*Jungli-murgha* ♂, *Jungli-murgi* ♀ (Hindi); *Komri* (Mount Abu); *Pardah-Komri* (Gondhi, Chanda Dist.); *Ran-Kombada* ♂, *Ran-Kombadi* ♀ (Marati); *Kombadi* (Deccan); *Kattu-Kozli* or *Koli* (Tam.); *Adavikode* (Telegu); *Koli*, *Kad-Koli* (Canarese); *Gerra-Kur* (Marie Gond).

Description. Adult Male.—Feathers at the sides of the forehead dull rufous; head, neck and hackles of the extreme upper back black, with grey fringes to the bases and with numerous bars changing from golden-yellow on nape and shoulders to pure white on the back; on the longer feathers the black bars are glossed with purple-blue; feathers of the back, rump and lesser wing-coverts black fringed with grey and with broad white shaft streaks, the majority also with concealed longitudinal grey bars; longest and lateral rump-feathers highly glossed with purple and with chestnut instead of grey fringes, in addition to which they are marked with pale yellow or white spots; upper tail-coverts black glossed with violet, purple and blue, and edged with chestnut and buff.

Median wing-coverts and scapulars black, barred on the basal half with grey and with white shafts which expand at the tips for a length of about an inch into spatulate, flat plates of orange-yellow about 0·2 in. wide, the majority of which have fringes on the outer side of deep red; greater coverts and quills blackish brown, the innermost quills and coverts with white shafts and, sometimes, a small amount of whitish freckling near the tip; lower parts from the hackles to vent dark grey brown to black, with broad white shaft stripes and grey or grey-white edges; feathers of posterior flanks and a few of those on the abdomen with orange-rufous edges; feathers of vent and centre of abdomen dull rufescent-brown; under tail-coverts black with white edges.

Colours of Soft Parts.—"The legs and feet are yellow or reddish yellow and the claws black, but I have one specimen, probably a young bird, noted as having had the legs and feet greenish brown. The bill is in the adult, more or less of it, black, the upper mandible often yellowish at the base, and the lower mandible also pale horny, but in younger birds the upper mandible is horny or greenish brown, and the lower mandible yellow. The irides of the adult are yellow or

reddish orange, occasionally bright red, in younger birds yellowish brown" (*Hume*).

Finn says that the legs of males in full vigour are a salmon-red, and it appears that they are brighter and more red during the breeding season than at other times. The comb, bare face and wattles are crimson, brightest during the breeding season.

Measurements.—Wing 220 to 254 mm.; tail 330 to 375 mm.; tarsus about 70 to 75 mm.; culmen about 24 to 27 mm. Weight $1\frac{3}{4}$ to $2\frac{1}{2}$ lb.

"Length 28·0 to 32·0; expanse 27·0 to 31·0; wing 9·35 to 9·65; tail from vent 14·0 to 16·0; tarsus 2·85 to 3·0; bill from gape 1·28 to 1·3; weight 1 lb. 10 oz. to 2 lb. 8 oz.; length of spur 1·3 to 1·75 inch" (*Hume*).

The measurements of the birds which have passed through my hands somewhat exceed Hume's, two cocks having had a wing of full 10 inches (254 mm.) and one or two others nearly approaching it. I have also seen one bird with a tail of 18 inches.

Young Male.—Like the female, but much more rufous and more boldly barred and blotched.

Young male on moulting from first plumage and before acquiring hackles has the whole upper plumage black, the feathers grey-edged and with white shaft lines; the wings and tails are like the female, but much darker; the underparts are like the adult but without the rufous on the flank and belly-feathers; the median wing-coverts and the scapulars, where waxy-yellow and spatulate in the adult, are marked with rufous in the young bird, and a few of the feather shafts are already somewhat flattened and spatulate.

Colours of Soft Parts.—Legs dull waxy-yellow, or horny-yellow, never with any reddish tinge; irides brown or yellowish brown; bill horny, the culmen darker and the base of the upper and whole of the lower yellowish horny. The spurs are generally short and blunt, not exceeding 12 mm. in length.

The rudimentary comb and wattles are dull crimson-red, but the face is almost as bright a crimson as in the adult.

Post-Nuptial Plumage.—The adult cock has a semi-moult during the rains, June to August, losing both his long neck-hackles and the long central tail-feathers, the former being replaced by short

feathers of dull brown-black without the terminal sealing-wax spots of yellow.

Adult Female.—Upper part of the head dull pale brown, rufescent on the forehead and the feathers faintly white centred; neck golden-brown, the feathers white-shafted and with brown bands on each web which increase in size on the mantle; whole upper plumage, wing-coverts and secondaries finely vermiculated pale sandy-brown and dull black; tail dull rufous-black mottled with rufous on the central feathers at the edges; below white, each feather edged with dark brown and more or less speckled with brown inside this edging; flanks mottled sandy-brown and brown with broad white central streaks.

Colours of Soft Parts.—Irides red or yellowish red in fully adult birds, yellowish brown in the younger ones and brown in birds of the first year; legs and feet dull waxy-yellow or yellowish brown, according to Hume brownish fleshy in younger birds; the soles are paler and the toes, generally, darker than the tarsus; claw dark horny-brown or blackish; bill horny-brown, paler at the base of the upper mandible and yellowish white on the whole of the lower; rudimentary comb and bare facial skin dull crimson or brick red, less dull during the breeding season than at other times.

Measurements.—Wing 200 to 215 mm.; tail about 150 to 175 mm.

"Length 18·0 to 20·0; expanse 26·0 to 27·0; wing 7·8 to 8·3; tail from vent 6·0 to 7·0; tarsus 2·2 to 2·55; bill from gape 1·02 to 1·2; weight 1 lb. 9 oz. to 1 lb. 12 oz." (*Hume*).

Chick in Down.—Similar to that of the Red Junglefowl but with the lateral bands almost pure white instead of bright pale buff, and the sides and lower parts dull grey instead of rich buff and buff respectively.

Hume considers that the northern birds, Mount Abu, "run rather larger and considerably heavier than the Nilgiri ones." I can find nothing to confirm this, and have seen two birds from the south of Travancore bigger than any from anywhere else further north.

Distribution.—In 1898 Blanford thus defined the habitat of the Grey Junglefowl and, since that date, I have seen no record claiming any further extension.

"Throughout Southern and Western India in hilly and jungly

ground. This Junglefowl is found near the eastern coast as far north as the Godaveri, while in the Central Provinces its limit is some distance East of Sironcha, Chanda and Seoni. It is found throughout the Nerbudda Valley west of Jubbalpore and in parts of Central India and Rajputana, as far as the Aravalis and Mount Abu, but no further to the northward or westward. It is met with near Baroda but has not been observed in Kattywar. It is common throughout the Western Ghats and Satpuras and it is found, though not abundantly, on the tops of the Nilgiri and Palni Hills."

Southwards it is found almost, but not quite, down to the extreme south of Travancore.

Nidification.—The breeding season, properly speaking, extends over February, March, April and May over the greater part of this bird's habitat, though Davison, writing of the Western Nilgiris, records October, November and December as the principal breeding months. As a matter of fact eggs, fresh and hard-set, and young, just hatched or nearly fully-fledged, may be found in practically every month of the year. The months in which most will be found are those in which food is most abundant, a matter dependent upon the rains and other climatic influences. In Travancore they breed steadily from March to July, whilst Mr. T. F. Bourdillon took eggs as late as August 20. They make their nests—when they make any—and lay their eggs in much the same kind of country and jungle as do the Red Junglefowl and, like the latter birds, seem to specially approve of dense secondary growth and bamboo jungle. They breed freely in the sholas, or small woods, which nestle in the hollows in the Nilgiri Hills, whilst they also breed in just as great numbers in the vast woods of Travancore and Mysore. Often they lay their eggs in a small hollow, either natural or scratched out by themselves, in the shade of some bush or bamboo clump, the nest consisting merely of a slight collection of rubbish and fallen leaves. Sometimes the nest is formed of a mound of such material with a hollow in the centre for the eggs; more rarely it is comparatively well made of sticks, leaves, bamboo-spathes, etc., matted together in a solid mass, whilst in yet fewer cases it is perched up on a dead tree or stump, or a clump of bamboos.

The number of eggs laid is rather a vexed question, Miss Cockburn, who was always extraordinarily lucky in the number of

eggs laid by birds with which she came in contact, says that the number of eggs found in a nest is from seven to thirteen ; Jerdon says from seven to ten, and Davison says from six to ten. On the other hand, Mr. J. Davidson tells me that he has never found more than four eggs in a nest, and Barnes mentions the number as six to seven, occasionally more. Mr. J. Stewart, through whose hands have passed a very large number of Travancore clutches, and who has seen an immense number *in situ*, says in a letter to me, " I am sending you a clutch of seven eggs of the Grey Junglefowl, an unusual number, for they generally lay only four or five, and sometimes even less." There is a general tendency to over-estimate the number of eggs laid by game-birds and, from the testimony of modern collectors, I think it will be found that four or five eggs is the number most often laid, and that whilst a certain number of clutches of six or seven eggs may be found, more than this is quite abnormal.

The eggs are of course very small, but can be otherwise all matched by varieties of the domestic fowl's eggs. The most common type is fawn, or fawn-buff, but they vary from very pale cream to a rich warm buff, generally quite immaculate but, sometimes, covered with innumerable freckles of light brown and, occasionally, distinctly spotted and speckled with light brown, dark brown, or reddish brown. In the latter case the spots are generally sparsely and irregularly scattered over the whole surface of the egg, varying in size from that of a pin's head to spots as much as a couple of millimetres or more in diameter. These spotted and freckled eggs are, however, exceptional, though comparatively a good deal more often met with than they are in the Red Junglefowl.

As a rule the surface is very fine, smooth and glossy, but it varies from this to a surface which is densely pitted with tiny pores, like those found on a Guineafowl's egg. In shape they are typical fowl's eggs but, in a large series, a fairly wide divergence of shape may be met with, from a long, narrow oval almost the same at either end to a broad, squat oval with the smaller end distinctly pointed and compressed.

Sixty eggs average 46·3 × 36·5 mm.; maxima *51.0* × 36·1 and 49·0 × *38·0* mm.; minima *43·0* × 34·3 and 46·1 × *33·1* mm.

Oates gives the variation in breadth of the series in the British

Museum as being far greater than given above, but I have most carefully remeasured this series and find them all to come within these limits.

General Habits.—Since Davison wrote his splendid description of this bird's habits there has been practically nothing further of value recorded and, so exhaustive and interesting are these notes, that it is not likely that there will ever be much to add.

He writes:—

> "The Grey Junglefowl occurs but sparingly about the higher portions of the Nilgiris, but is common on the lower slopes, in the low country about the bases of the hills, and throughout most parts of the Wynaad. I have found it most abundant in the jungles between Metapolliem and Kullar, and between this place and Burliar, about half-way between Kullar and Coonoor, I counted 26 once (while riding up to Coonoor early one morning) feeding along the cart road here.
>
> "Unlike the Red Junglefowl, this species is not gregarious, and though occasionally one meets with small coveys, these always consist of only one or two adults, the rest being more or less immature. As a rule, they are met with singly or in pairs.
>
> "The crow of the male is very peculiar, and might be syllabled, *Kuck-kaya-kya-kuck*, ending with a low, double syllable like '*kyukun, kyukun*,' repeated slowly, and very softly, so that it cannot be heard except when one is very close to the bird. Only the males crow, and that normally only in the mornings and evenings, though occasionally they crow at intervals during the day when the weather is cloudy. The crow is very easily imitated, and with a little practice the wild birds may be readily induced to answer.
>
> "They do not, however, crow the whole year through, but only from October to May, when they are in full plumage.
>
> "When flushed by a dog in the jungle, they flutter up into some tree above with a peculiar cackle, a '*kuck-kuck-kuck*,' which, however, they only continue till they alight.
>
> "They come into the open in the mornings and evenings, retiring to cover during the heat of the day, unless the weather is cloudy, when they may be met with in the open throughout the day.
>
> "Though found in evergreen forests, they seem to prefer moderately thin and bamboo jungle.
>
> "Ordinarily, as already remarked, they are found scattered; but when a tract of bamboo comes into seed, or any other particular food is locally abundant, they collect there in vast numbers, dispersing again as the food is consumed. I remember on one occasion when the undergrowth of the *Sholas* about Pykarra (which consists almost

entirely of *Strobilanthes sp.*) seeded, the Junglefowl congregated there in the *greatest* numbers. I mean by hundreds, and were excessively numerous for more than a fortnight, when they gradually dispersed, owing, I believe, not so much to the seeds having all been eaten, as to what remained of them having sprouted and so become uneatable.

"In some ways they are not very shy; by taking an early stroll, even without a dog, along some quiet road by which cattle and grain pass, several can always be obtained, but when they have been at all disturbed and shot at, they become very wary, and even with a dog, before which they ordinarily perch at once, they are very difficult to secure. In such cases they run till they think they are out of shot, and then rise, and instead of perching, take a long flight, often of many hundred yards, and when they do alight, commence running again.

"When out feeding they do not usually wander far from cover, and on any indication of danger they dart back into this. They do not, however, go far in, generally only for a very short distance, before stopping to listen, when, if all seems quiet, they reappear in a short time within a few yards of the spot at which they entered. If, on the contrary, after listening, they think that there is still danger, they then retreat quietly and silently into the depths of the jungle; occasionally, after they have got some distance flying up and hiding themselves in some bushy tree.

"When, however, as sometimes, though rarely happens, they are surprised some distance out in the open, they do not run but rise at once and fly for the nearest cover, either perching in some leafy tree, or else dropping to the ground.

"They are very punctual in their appearance at particular feeding grounds, and when one or more are met with in any particular spot, they are certain, if not disturbed in the interim, to be found there again in the same place at about the same hour the next or any subsequent day on which they may be looked for. There was one particularly fine and remarkably shy and cunning old cock that frequented an open glade in the forest (above the Government Cinchona Plantations at Neddivuttum) in the *morning*, whereas in the *evening* he always came into the plantation and wandered about under the cinchona trees and along the plantation roads. He never, to my knowledge—and I must have seen him fifty times at least—came into the plantation in the morning, or into the glade in the evening. There was no doubt as to this being the same bird that frequented the two places (nearly a quarter of a mile distant), for he was the largest, handsomest, and to judge from his spurs, the oldest cock I ever saw. 'I loved that cock as a brother I did, and *at last* I circumvented and shot him.'

"The best time to shoot the Junglecock is from October to the end of May, as then his hackles are in the best condition.

"In June the moult begins, and the male gradually drops his hackles and long tail-feathers, the hackles being replaced by short feathers, as in the female; during the rains the male is a poor mean-looking object, not in the least like his handsome self in the cold weather, and, fully conscious of this fact, he religiously holds his tongue during this period.

"In September, a second moult takes place, the short feathers of the neck are again replaced by the hackles, the long tail-feathers reappear, and by October the moult is complete and our Southern Chanticleer as noisy as ever.

"The male usually carries its tail low, and when running it does so with the tail lowered still more, the neck outstretched, and the whole body in a crouching position as in the Pheasants.

"I do not know for certain whether the species is polygamous or monogamous, but from what I have observed I should think the latter; for although the male does not, I believe, assist in incubation, yet when the chicks are hatched, he is often to be found in company with his mate and little ones.

"These birds are, I believe, quite untameable, even when reared from the egg, and though in the latter case they may not be so wild as those captured in maturity, they never take kindly to domestic life, and avail themselves of the first opportunity for escaping. It is needless to say that they cannot easily be induced to breed in captivity. I have known the experiment tried time after time unsuccessfully.

"Numbers are trapped by the professional fowlers of Southern India and brought for sale, together with *Pavo cristatus* and *Perdicula asiatica*, to the stations on the Nilgiris, where cocks in good plumage may be purchased for about 8 annas each. Numbers are also brought to Madras from the Red Hills, where they are even cheaper. When caught, the eyes are closed by a thread passed through the upper and under eyelids and then knotted together; a short string is then tied to one leg, and the other end made fast to a long stick. A number of birds are placed side by side on this stick, which is then carried about on a man's head. The poor blind birds remain quiet, not attempting to flutter or escape.

"Except for his feathers or as a specimen, the Grey Junglecock is hardly worth shooting; the breast alone is really eatable, and even at the best the breast is very dry and hard.

"They roost on trees, continually in the early mornings; just at daylight, when out shooting Sambhur, I have disturbed them from the trees on which they had spent the night.

"Although armed with most formidable spurs, they are not, so far

as my experience goes, quarrelsome or pugnacious, In the wild state I have never seen them fighting, and I for many years enjoyed peculiar opportunities for observing them. In captivity half a dozen, with as many females, will live in the same compartment of an aviary in perfect peace.

"Another proof of their non-belligerent character is to be found in the fact that the native bird-catchers never peg males out to attract others, as they do in every part of the East with all birds that are naturally pugilistic. Scores of times I have listened to two cocks crowing at each other vigorously from closely adjoining patches of cover, but neither apparently ever thinking of, as an American would say, *going* for that other cock.

"They are, I think, altogether less plucky birds than the Red Junglefowl, and they are so extremely wary, where birds and animals of prey are concerned, and wander such short distances from the edges of cover, that I think very few of them fall victims to any enemy but man. There are plenty of Bonelli's Eagle and some Hawk-Eagles too in the Nilgiris, but I do not think that these ever succeed in capturing Grey, as they do elsewhere Red, Junglefowl: at any rate, I have never once seen the feathers of *sonnerati* strewed about, as I have those of *ferrugineus* in Burma.

"Their great timidity and watchfulness result in their yielding much less sport than the Red Junglefowl. You may get these latter in standing crops and in many other similar situations without any extraordinary precautions, but the Grey Junglefowl never goes more than a few yards inside the fields, and if a stick cracks. or a sound is heard anywhere within fifty yards, he vanishes into the jungle, whence it is impossible to flush him. Only when beating the narrow, well-defined belts of tree jungle that run down the ravines on the hill-sides in the Nilgiris, and which we there call '*sholas*,' is anything like real sport to be got out of them. Then indeed the gun at the tail end of the shola *may* get three or four good shots in succession, as they rise at the end of the cover and fly off with a strong well-sustained flight to the next nearest patch. Even thus, working hard and beating shola after shola, a man will be lucky to bag five or six brace in a day.

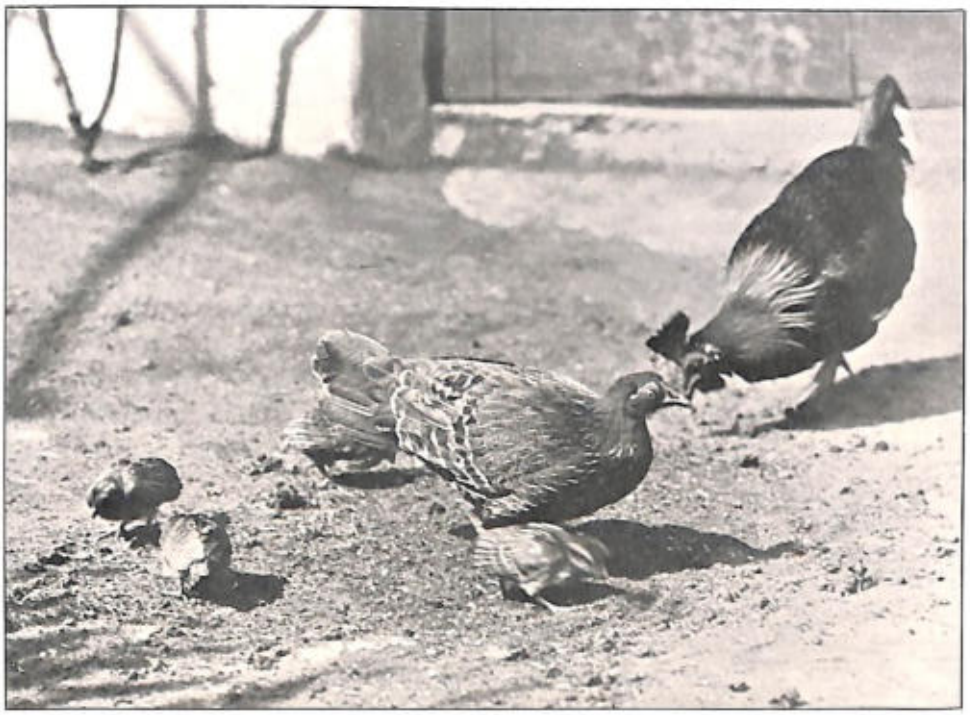
"The reason is, that all the well-defined sholas which can be thoroughly beaten are in the higher parts of the hills, where the birds are comparatively rare, while, when you get lower down, where the birds are plentiful, the jungles are so large that they cannot be effectively worked. If you merely want to *kill* the birds, you might get perhaps ten or a dozen in a short time poking along some of the roads, but they afford no sport thus, only a series of pot shots.

"I remember once watching an old cock that my dogs had driven up into a tree. For some time I peered round and round (the tree

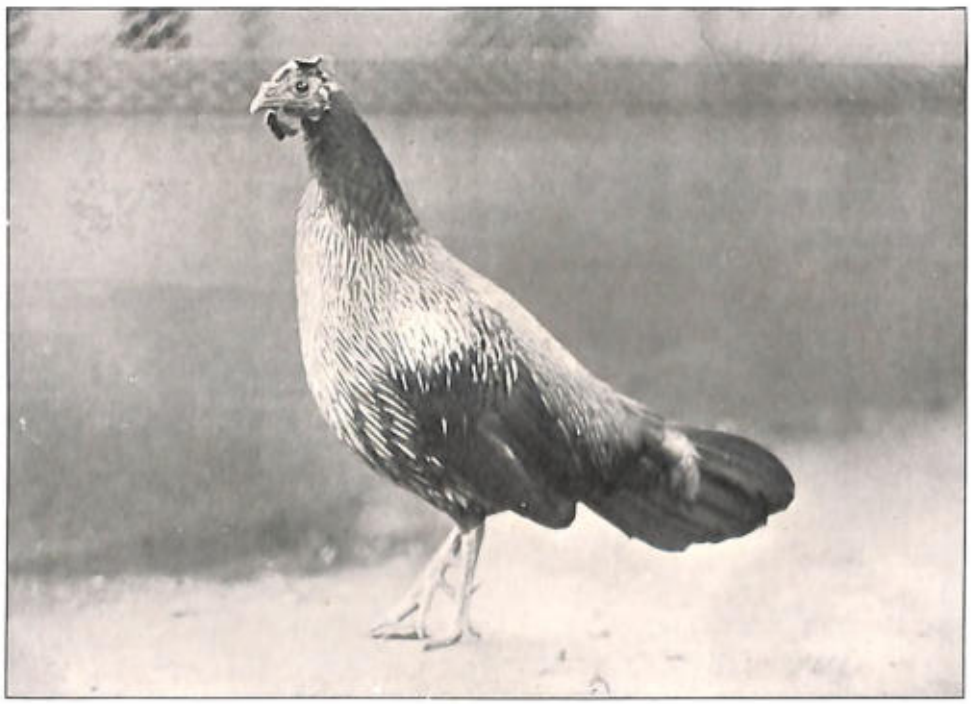
was a large and densely-foliaged one) without being able to discover his whereabouts, he all the while sitting silent and motionless. At last my eyes fell upon him; that instant he hopped silently on to another bough, and from that to another, and so on, with incredible rapidity, till, reaching the opposite side of the tree, he flew out silently, of course never giving me a chance at a shot.

"As for food, they seem to eat almost anything; grain, grass seed, grubs, small fruits and berries, and insects of different kinds. I have sometimes killed them with nothing but millet in their crops; at other times quantities of grass seeds, or again, after the grass has been recently burnt, the tender, juicy shoots of the new grass."

Mr. Alfred Ezra has been extremely successful in keeping these fine birds in a state of semi-captivity. At his estate in Chobham he has had a large area of field and wood wired in, where the birds roam about in freedom. Excellent cover is plentiful and the birds would have no difficulty in concealing themselves did they so desire, yet they have become very tame and allow close observation. Their crow, which to me sounds exactly like the yapping of a puppy, may be heard all through the day, though they are most noisy in the mornings or evenings.



THE CEYLON JUNGLEFOWL.



GREY JUNGLEFOWL IN ECLIPSE PLUMAGE.
Male.

GALLUS LAFAYETTI.

THE CEYLON JUNGLEFOWL.

Gallus lafayetti, *Less., Traite d'Orn.* p. 491 (1831); *Des Murs. Icon. Orn.* pl. 18; *Elliot, Mon. Phas.* ii, p. 33 (1873); *Hume, Nests and Eggs*, p. 530 (1875); *Hume & Marshall, Game B. Ind.* i, p. 241, pl.; *Hume, Str. Feath.* vii, p. 429; *Legge, B. Ceyl.* iii, p. 736, pl.; *Oates* ed. *Hume's Nests and Eggs* iii, p. 422; *Ogilvie-Grant, Cat. B.B.M.* xxii, p. 349 (1803); *id. Hand-L. Game B.* ii, p. 53 (1897); *A. L. Butler, Journ. B.N.H.S.* x, p. 311 (1896); *Lewis, Ibis*, 1898, pp. 339, 550 ♀ *Blanf., Avi. Brit. Ind.* iv., p. 77; *Sharp, Hand-L.* i, p. 39; *Beebe, Mon. Pheas.* ii, p. 213, pl. 41 (1921); *Stuart Baker, Journ. B.N.H.S.* xxv, p. 30, 1917; *id. Avifauna B.I.* 2nd ed. v, p. 300, 1928.

Gallus stanleyi, *Gray, Ill., In. Orn.* iii, pl. 43 (1833); *Blyth, Cat. B.A.S.B.* p. 243 (1849); *Jerdon, B. of I.* iii, p. 540 (1860).

Gallus lineatus, *Blyth, J.A.S.B.* xvi, p. 387 (1847).

Vernacular Names.—*Weli-kukula* ♂, *Weli-kikili* ♀ (Cing.); *Kada Kili* (Tam.).

Description. Adult Male.—Crown dull orange-rufous; feathers at the base of the naked throat in a patch about an inch long rich violet-purple; hackles on neck and upper back orange-yellow shading into this from the rufous of the head and again into fiery orange-red on the back; the yellow feathers have black central streaks and the red feathers rich maroon ones, the black and the maroon marks grading into one another just as the rest of the colours do; lower back and rump still darker, almost copper, red, the centres to the feathers here being deep violet-blue, whilst the central and least lanceolate feathers have also a broad terminal patch of this colour; a few of the longest upper tail-coverts all black glossed with blue except for a narrow edge of fiery red; tail black glossed, with Prussian blue or blue-green, never apparently glossed with copper as in *G. bankiva*; lesser wing-coverts like the hackles of the neck, gradually merging into the median coverts which are like the back; greater coverts black on the visible portions, deep rufous-red or mottled rufous and black on the

concealed portions; breast and flanks like the back, the non-lanceolate feathers next the abdomen rufous-chestnut with broad black terminal bands; vent and centre of abdomen dull brown-black with paler tips; thighs black, most of the feathers with narrow chestnut fringes; under tail-coverts glossy blue-black.

Colour of Soft Parts.—"Iris light golden-yellow; face, throat and wattles livid or purplish red; comb bright red with a large interior yellow patch, brightest in front and blending into the surrounding colour; bill brownish red, the lower mandible and tip of the upper pale; legs and feet wax-yellow, washed anteriorly with brownish more especially on the toes" (*Legge*).

Measurements.—Wing 216 to 241 mm.; tail 230 to 406 mm.; tarsus about 80 to 88 mm.; culmen about 20 to 23 mm. Weight $1\frac{3}{4}$ to $2\frac{1}{2}$ lbs.

"Length of examples with fine tails (which vary in length) 26·0 to 28·0 inches; wing 9·2 to 9·5; tail 13·0 to 15·0; tarsus 3·2 to 3·4; middle toe 1·7 to 1·8; claw (straight) 0·5 to 0·6; bill to gape 1·2. Length of comb from forehead to extremity 3·2 to 3·3 inches; spur 0·7 to 1·2" (*Legge*).

Young males when they first acquire adult plumage appear to have the centre of the belly and vent more rufous, the black bases to the feathers hardly showing.

Younger males still first acquire a certain number of semi-lanceolate feathers intermediate in coloration between the adult and the first plumage; the upper parts from the back to the tip of the tail are dark rufous, vermiculated with black, some of the back feathers showing small violet-blue patches; below, the breast is a deep rufous-chestnut, slightly barred and vermiculated with black on the upper breast, more profusely so on the lower breast where it changes into the dull, dirty grey-black abdomen, lower flanks and vent; the under tail-coverts are mixed rufous and black.

"**Young Males in First Plumage.**—In the bird of the year the iris is light yellowish, the bill much the same as in the chick; the comb and spurs but very little more developed and the wattles are absent. The head and upper part of the hind-neck are yellowish rufous, the feathers with darker centres, deepening into chestnut-red on the inter-scapular region, sides of neck, and breast; in the lower part of

the hind-neck the feathers are somewhat elongated, with glossy blackish centres, and there are signs of the dark fore-neck patch; the metallic purple of the adult rump is present in small patches on the feathers; the ground colour and tail, which is short, is ferruginous, mottled with blackish, with a greenish black wash on some of the tail-feathers; wings blackish brown, the secondaries and their coverts handsomely mottled with rufous and buff; chin and gorge whitish, the feathers very short, lower parts rufescent, tipped with rufous" (*Legge*).

Adult Female.—Forehead dull rufous-red, crown dull brown, the feathers finely tipped black; nape, sides of the neck and sparse feathers of the throat dull rufous; mantle, of which the feathers are far less lanceolate than in the Red Junglefowl, blackish brown with pale shaft streaks and golden-buff edges; remainder of upper plumage pale buff, rufous-buff or rufous-brown vermiculated all over with black in fine wavy bars; on the tail the vermiculations are bolder, becoming irregular longitudinal barrings and blotches of black glossed with green; median and smaller coverts like the back but with subterminal bars of black and often white shafted; the greater coverts and edge of wing are boldly barred with black and pale yellow-buff; primaries pale brown, mottled on the outer webs with black and buff; outer secondaries brown, boldly barred with black and buff on the outer webs; inner secondaries vermiculated brown and buff along the centre, boldly barred with black and buff on both webs and with chestnut vermiculations showing here and there.

Below the almost semi-nude throat and fore-neck a few feathers with broad glossy black edges take the place of the black patch in the male; upper breast, sides of the lower breast and flanks vermiculated black and rufous-brown, remainder of breast, belly and thigh-coverts white, each feather with a narrow black edging and one or two broad black bands near the visible base; vent dull pale buff, under tail-coverts black and rufous-brown, much marked with white in some individuals.

In some females which appear to be very young birds the rufous-brown of the upper breast extends lower down, the brown of the flanks extends on to the breast, only the centre of this latter being black and white, a few red vermiculated feathers appearing amongst

the others. In these birds it is also noticeable that there are no white shaft streaks to the upper plumage, while the general tone is more rufous and less earth-brown. The throat is, of course, comparatively well feathered with downy grey plumes.

Colours of Soft Parts.—"Iris yellowish olive; bill, upper mandible dark brown, lower yellowish; tarsi and feet brownish in front, yellowish posteriorly" (*Legge*).

Measurements.—"Length about 13·75 inches; wing 6·8 to 7·0; tail, 3·5; tarsus, 2·3 to 2·5; middle toe and claw, 2·0 to 2·1; bill to gape, 1·1" (*Legge*).

Wings of the females in the British Museum series and of a few others I have measured vary between 165·1 mm. and 183·8 mm.

Distribution.—Confined to the Island of Ceylon, in which Legge describes its distribution as follows:—

> "More or less scattered through the dry jungly districts of the low country, and diffused throughout the hills of the Southern and Central Provinces. It is rather rare in the jungles of the maritime portions of the Western Province and South-Western district, and is not common even in the forests of the interior. . . . On the eastern slopes of the Morawah Korale, where a drier climate prevails, it finds a more congenial home, and along the Wellaway River and from that eastward it is numerous. In the maritime portions of the south-east it abounds. . . . In the hills it is resident and breeds commonly up to 6,000 feet."

It is perhaps to some extent locally migratory, ranging higher or lower on the hills according to season, but beyond this appears to be resident wherever found.

Nidification.—It is almost impossible to say that the Ceylon Jungle-fowl has any real breeding season, for throughout its range it would appear to be breeding during practically the whole year.

Legge records that in the north of the Island it breeds principally during the early part of the year but that in the Hambantola district he found young birds in July, others in the neighbourhood of Kadugannawa in December and, others, again in the Horton Plains in April, whilst he took eggs in Kukal Korale in August. Again, writing to Hume, he notes having seen young birds with their parents in the south of the Island as early as February.

Mr. W. E. Wait, of the Ceylon Civil Service, informs me that

"the birds breed more or less throughout the year, for I have eggs taken in the months of February, April, June and August," whilst I have seen others taken in some of the months already mentioned, and also in January, May and November.

As a rule, the Ceylon Junglefowl makes its nest of a pile of leaves and fallen rubbish in some natural hollow in forest. In his "Birds of Ceylon," Legge writes:—

> "The nest is almost always placed on the ground near a tree, under a bush, or beneath the shelter of a fallen log; a hollow is scratched and a few dry leaves placed in it for the eggs to repose upon. I once found a nest in damp soil between the large projecting flange-like roots of the Doon-tree, containing two eggs partially incubated.
>
> "In 1873 Mr. Parker found a nest on the top of a young tree about 30 feet high. He writes me that it had the appearance of a Crow's or Hawk's nest, of which the Junglehen had taken possession. She flew off and three eggs were found to be in the nest."

This curious habit of making its nest at some considerable height from the ground seems to be rather a characteristic of this Junglefowl. Many years ago I was told that such was the case by Mr. W. A. T. Kellow, as well as by Mr. W. Jenkins, who collected for me in Ceylon, whilst recently Mr. W. E. Wait again refers to this trait. He says:—

> "In one respect I differ from Legge's account of the nesting of the Ceylon Junglefowl, or perhaps I should say supplement what he says, for I would add that this bird's nest is quite as often built off the ground as on it. The most peculiar situation I have come across was in an oven-shaped hollow about 8 feet from the ground in a fairly large tree which stood at the edge of a cart track running through the jungle. A big branch had been torn off at its junction with the stem of the tree and the socket had rotted out. In the hollow thus formed four eggs had been laid on a soft layer of touch-wood which had crumbled to dust. On another occasion I came across a nest in a bush overhanging a dry water-course. It was a mere depression in a matted platform of dead leaves which had been swept down the water-course in some flood, and had been caught up by the overhanging branches.
>
> "A favourite site is a stump of a tree which has been felled and left standing after the tree has been taken away. In these cases there is a scanty bed of dead leaves which have fallen from the surrounding trees and collected in the hollow which generally forms on the upper surface of the stump in a very short time."

Other naturalists who refer to this habit of building on the stumps of old trees are Layard, Parker and Hart, and it seems to be one well known both to the natives of Ceylon as well as to European observers.

The Ceylon Junglefowl lays but very few eggs, and we may dismiss Layard's statement that they lay from six to twelve eggs without further consideration, whilst the nests which Beebe saw with large clutches of eggs must have been specially prepared for him. The normal clutch would seem to be two, sometimes three being laid and very rarely four.

Legge says :—

> "I have generally found that the eggs do not exceed 2 in number, but sometimes 3, and occasionally 4 are laid."

Wait also writes me that his own experience agrees with that of Legge, and that whilst he has but one clutch each of four and three eggs, he has taken many of two, the majority of which have shown signs of incubation, slight or advanced.

The eggs when seen in a series at once strike one as differing from all other Junglefowls' eggs, in that the *majority* are more or less spotted and speckled, whilst some are quite heavily marked in this way.

I have now seen a considerable number of the eggs of the Ceylon Junglefowl; nine in the British Museum series, a fine series collected by Wait, a few collected by Jenkins, Kellow and others and, finally, some in the Ceylon Museum.

In colour they are a pale stone, pale yellow-buff or cream, in one or two slightly darker, though in none that I have seen do they ever approach the rich buff tint often seen in the eggs of the other species of Junglefowl. A few eggs are practically unmarked, but three out of four differ from those of the Red and Grey Junglefowl in being distinctly and profusely spotted with light brown or light purple-brown. In some eggs the markings consist entirely of the finest freckles, scattered over the whole surface of the egg in such numbers that at a short distance and casually examined the egg looks almost uni-coloured; in the majority of eggs, however, the tiny specks are accompanied by small blotches and larger freckles, giving them a distinctly spotted appearance, whilst in others the shell is boldly blotched and marked with light brown, a few of the larger blotches measuring as much as 3 to 4 mm. in diameter.

One egg in Wait's collection has a pinkish stone-coloured ground with numerous very fine freckles of dark red-brown and a few small but bold spots and blotches of dark brown.

The eggs in a clutch are not as a rule very evenly coloured, one being generally more spotted than the others, whilst sometimes the contrast between the different eggs in the same clutch is very striking.

The texture of the eggs is similar to that of the domestic fowl's egg and varies to about the same extent. In some it is quite smooth and highly glossed; in others, just as hard and glossy, the whole surface appears to be minutely pitted with tiny pores, in nearly every such case the pores containing the dark colouring pigment which gives the freckled appearance.

In shape they are remarkably constant, being broad, short ovals, the smaller end differing but little from the larger. I have two eggs which are exceptionally long and narrow and have seen one other which had the smaller end somewhat compressed.

Forty eggs average 46·3 × 34·5 mm.; maxima *49·5* × *39·8* mm. minima *42·1* × 35·0 and 43·1 × *32·0* mm.

The cock is apparently polygamous, though there is no very decided proof one way or the other. At all events, no one has yet discovered him taking an interest in his chicks, a trait which has been observed in the Grey Junglecock.

The affection between the hen and her chicks and *vice versa* has, however, been more than once commented on, and Legge notes how he once shot a hen whose half-grown chicks ran backwards and forwards about her where she fell until he had come up quite close to them. The young would seem to remain with the hen until the succeeding breeding season, although the cock birds again mingle with the hens as soon as their duties of rearing their young are completed.

General Habits.—On the whole the Ceylon Junglefowl appears to be a bird of the drier parts of the Island, being excessively common in the maritime portion of the south-east coast in the dense *Euphorbia* jungles which are there found in long stretches. It is probably resident wherever found, though it possibly only wanders into the highest hills during certain seasons of the year. Legge observes:—

> "It is resident and breeds commonly up to about 5,000 feet. On the Nuwara-Eliya Plateau and up on the Horton Plains it is very

abundant during the north-east monsoon, coming up from lower down on the hills, and probably to some extent from the low country, to feed on the berries of the nilloo. It is probable that many remain throughout the year in these uplands; but, as I have only visited the Horton Plains during the cool season, I am unable to say if it is found in that locality to any extent during the wet season."

The Ceylon Junglefowl seems to be found in all sorts of jungle, from the magnificent tree forest which covers the sides of the hills and mountains to the low *Euphorbia* and other scrub jungle found on the sea coast and elsewhere. It is equally common in bamboo-covered country and may also be found in bush, semi-cultivation, or in the dense secondary growth surrounding villages and old cultivation.

They are extremely quarrelsome, pugnacious birds; quite as fond of fighting as the Red Junglefowl, and far more prone to this diversion than the grey birds. Layard says:—

"The cocks fight most desperately in defence of their seraglios, the combat frequently terminating in the death of one of the engaged parties."

Their pugilistic tendencies often bring them to grief in other ways, however, for the natives are aware of them and, *vide* Legge, make use of them to decoy the birds within shot.

"The sound of the flapping of the wings, which is of course the invitation to battle, has the effect of always drawing two birds together, and the knowledge of this fact has given rise to the device of imitating the noise, by doing which the sportsman can bring the cock up to him, and if he be properly concealed can easily shoot him. The natives make this sound by clapping against their thighs with the palm of the hand hollowed, but Europeans can best do it by making a pad with the handkerchief and beating it against the palm of the other hand. By this means the exact sound can be made, and I myself once procured a very fine specimen in the Ostenburgh Woods by adopting this plan."

I have never heard anyone speak of making a regular business of shooting the Junglefowl in Ceylon, as sportsmen do with the Grey Junglefowl in the Nilgiris and with the Red Junglefowl in many districts.

Legge remarks that:—

"This handsome bird, although so very abundant in many parts, is by no means easy to shoot. It dwells entirely in cover, and though it is so fond of frequenting the vicinity of paths and tracks through

forest, its sense of hearing is so acute that it removes to a safe distance at the sound of approaching footsteps, and though it will continue to utter its challenge cry of 'George Joyce,' it gradually makes its way off behind some protecting hillocks or rise in the ground which shuts out the road or path from its view. The north-eastern forests are well suited to its habits, the ground being covered with dry leaves, which do not decay so soon as in the humid jungles of the south; and among these, harbouring a multitude of seeds, insects, and grubs, it scratches exactly after the manner of its domestic race. This scratching may often be heard on a still morning at some distance away, and if the bird be behind a mound or little eminence it can be approached if the sportsman is cautious and makes no noise."

Wait, who has been so good as to send me some very interesting notes on Ceylon game birds, says that he thinks the words "Chuck joy joyce" describes the cry of the Ceylon Junglefowl even better than does the usually accepted syllables "George Joyce." He adds:—

"The cocks often crow in the morning before coming down from the branches on which they roost, as I have several times found when stalking a crowing bird. I have generally found them on a branch some 8 to 12 feet from the ground, never very high up, although Legge says that they roost on good-sized branches at a considerable height from the ground.

"Both cocks and hens feed along the grassy strips by jungle roads and paths in the mornings and evenings, especially if the ground is damp after rain. They do not, however, stay out very late, and by about 9.0 a.m. they have all entered into the jungle again, and the cocks have stopped crowing. Sometimes, however, if the weather is cloudy or wet and cool they will stay out feeding all day long, even when it is actually raining. I remember once bicycling over a main road through a forest in the North-Western Province on such a day, and within a distance of a mile or less I saw over a dozen birds, mostly cocks.

"Hens with chicks keep more closely to cover than do the cocks, leading their little broods about in the undergrowth, uttering a little squeaky metallic cluck as they go, apparently a call note to the little ones. The broods remain together until the chicks are almost full-grown, but I have never seen cocks accompanying hens with chickens. The cocks are polygamous, and I have frequently seen one feeding with two or three full-grown hens, but he sheers off as soon as family duties commence."

It is a very common idea amongst the natives of Ceylon that when the Junglefowl eat the seed of the "nilloo," a species of

Strobilanthes which grows from 5,000 feet upwards, they become either blind or drunk, in which condition they are rendered so devoid of all sense or are so incapable that they are often caught. It is rather difficult to say whether there are grounds for this belief or not. Bligh wrote to Legge in connection therewith :—

> "About that season of the year if village fowls be brought to the hills they rarely escape a serious eye disease, which rapidly spreads throughout a given district, and in many cases they become totally blind in two or three weeks. This is the disease which the Junglefowl evidently catch. A dog of mine caught a Junglecock with one eye lost, and evidently from this cause."

A collector working for me in Ceylon also once wrote to me that he had caught a cock sitting crouched under a bush, which made no attempt to fly as he approached and which, when released, tumbled about for a bit on the ground, then huddling itself up in some grass and allowing itself to be again caught. Nothing was observed to be wrong with this bird physically, though its actions gave it the appearance of being hopelessly intoxicated.

Mr. W. A. T. Kellow also once wrote to me and said that his collector informed him that it was no rare thing for them to catch Junglefowl in this—as they termed it—intoxicated condition. It may, however, be that Bligh's explanation is the correct interpretation of these curious cases of apparent intoxication. That there is something which occurs at the time the *Strobilanthes* seeds which renders the Junglefowl practically helpless, is vouched for by Legge himself, who asserts :—

> "Certain it is that at this period the Junglefowl in the Horton Plains and about Nuvara-Eliya do become affected, and are apparently so intoxicated that they may be knocked down with a stick."

The crow of the Ceylon Junglecock has been described, as I have noted above, as a call of "George Joyce" rapidly repeated. This call, according to Mr. Holdsworth, is uttered by the cock as he runs up and down some stout branch, raising and lowering his head at each call. Never having seen the bird in its wild state, I cannot say whether this is correct or not, but when in captivity it undoubtedly "crows" much as a domestic cock does, stretching himself on tiptoes higher and higher as he proceeds, and often flapping his wings both before and after crowing. I have often seen the Red Junglefowl

crow, and certainly this is the attitude always adopted by that bird, and it is most amusing to see a fine Junglecock caught in the middle of a crow; his triumphant attitude of challenge to the whole world crumples up so instantaneously as he leaps to the ground and skulks off with head and tail down and body as close to the ground as he can get it.

The Ceylon Junglefowl is not easy to bring up in captivity and, as a rule, does not long survive close confinement. At the same time a good many birds have been successfully reared and domesticated, though I know of no instance in which birds allowed their freedom have not eventually cleared off altogether.

Genus SYRMATICUS.

Syrmaticus Wagler, Isis, 1832, p. 1229.
Type by monotype, *Phasianus reevesi* Gray.

This genus is divided from the true Pheasants of the genus *Phasianus* in having the rump-feathers compact and rounded instead of long, lanceolate and hairy in character. The bare space round the eye in the males is never developed into wattles as it is in those birds. The characters are slight, but are now universally accepted, even by the "lumpers," as sufficient, so I also accept them for the sake of uniformity.

In the birds of these two genera there is no crest; the tail of sixteen or eighteen feathers is very long, strongly graduated and is not compressed; the wings are rounded, the first primary being intermediate in length between the seventh and tenth; the face is bare in the male, feathered in the female; the tarsi are long and stout, the male having long spurs often showing as blunt knobs in the females; the sexes are not alike.

Four species are generally placed in this genus which are all Eastern Asiatic forms, one only coming into the Indian fauna.

SYRMATICUS HUMIÆ.

Key to Subspecies.

A. Rump steel-blue and white in equal portions — *S. h. humiæ*, p. 175.
B. Rump black and white, the latter predominating. . . . . — *S. h. burmannicus*, p. 183.



Female Male

Mrs. HUME'S PHEASANT.

Syrmaticus humiæ humiæ.

SYRMATICUS HUMIÆ HUMIÆ.

MRS. HUME'S PHEASANT.

Callophasis humiæ, *Hume, Str. Feath.* ix, p. 461 (1881); *id. ibid.* xi, p. 302 (1888).

Phasianus humiæ, *Godwin-Aus., P.Z.S.* (1881), p. 715, pl. 51; *Ogilvie-Grant, Cat. Birds B.M.* xxii, p. 335 (1893) (part); *Blanford, Fauna B.I.* iv, pp. 80, 486 (1898) (part); *Finn, Journ. A. S. Beng.* (2), lxvi, p. 523 (1897) (part); *Finn & Turner, ibid.* lxix, p. 144 (1900); *Venning, Jour. B.N.H.S.* xxi, p. 632 (1912); *J. P. Cook, ibid.* xxii, p. 270 (1913); *Mackenzie & Hopwood, ibid.* xxv, p. 91 (1907); *Stuart Baker, ibid.* xxv, p. 348 (1918); *Higgins, ibid.* xxviii, p. 289 (1921).

Callophasis humiæ, *Ogilvie-Grant, Monograph Game-B.* ii, p. 42 (1897) (part); *Sharpe, Hand-L.* i, p. 38 (1899); *Finn, Ibis*, 1898, p. 311 (part); *Oates, Man. Game-B.* i, p. 304 (1898); *Finn, Indian Sporting-B.* p. 201 (1915); *Blandy, Journ. B.N.H.S.* xxvi, p. 289 (1918).

Syrmaticus humiæ humiæ, *Beebe, Mon. Pheas.* iii, p. 176, pl. 65 (1922); *Stuart Baker, Avifauna B.I.* 2nd ed. v, p. 303 (1928).

Vernacular Names. — *Yit* (Burmese); *Wuri* (Kachi); *Loe-nin-koi, Nuining, Nongin* (Manipuri).

Description. **Adult Male.**—Crown brown tinged with olive, darker all round the bare orbital skin and faintly glossed with green; chin and upper throat black; upper breast and upper back velvet-black with broad edges of deep steel-blue; lower back and rump steel-blue, paler than the back and each feather edged with white and with a broad white bar bordered with black; upper tail-coverts grey, faintly vermiculated with white and with an obsolete broken black bar across the centre; tail vermiculated grey, with black bars more or less mottled with chestnut on the central pair of feathers; four outer pairs with a broad subterminal bar of chestnut and the two, or three, outermost pairs mottled with white at the tips; lesser and median wing-coverts like the back, the former with a broad band of white, narrowly edged with steel-blue and with bases of glossy blue-black,

the latter with a black band glossed with steel-blue; greater coverts deep chestnut, edged white and sub-edged white near the quills; primaries brown edged chestnut; secondaries chestnut, the innermost tipped white and subtipped black; lower breast like the back, changing to deep bright chestnut on the abdomen and flanks; thighs and centre of the abdomen mottled brown and chestnut; under tail-coverts black with a faint blue-green gloss.

Colours of Soft Parts.—Iris brown to orange; orbital skin deep crimson; bill greenish horny, tipped paler and darker on base and culmen; legs and feet delicate drab.

Measurements.—Wing 206 to 224 mm.; tail 401 to 535 mm.; tarsus 58 to 66 mm.; culmen 25·5 to 29 mm.; spur 8·3 to 17·7 mm. Weight 2 lb. 6 oz.

Female.—Head above reddish brown, the crown streaked with black; sides of the head and lores dull fulvous, spotted posteriorly with black; neck sandy-brown, obsoletely barred with blackish above, boldly barred on the sides; upper back and scapulars sandy-brown with bold velvety-black edges and bars and with white arrow-shaped marks in the centre of the feathers; lower back, rump and upper tail-coverts mottled sandy-brown and black with indefinite black centres to the feathers, more pronounced on the rump, where, as well as on the coverts, there are also a few white marks; central tail-feathers the same as the coverts with faint mottled bars of dark brown; outer tail-feathers chestnut with broad black bars and white tips; breast sandy or greyish brown with a few black spots; lower breast, flanks and thigh-coverts sandy-rufous, barred with very pale grey; lower thigh-coverts darker brown; vent and centre of the abdomen duller than the flanks; shorter under tail-coverts mottled brown, white and sandy; longest coverts chestnut with black bars and broad white tips; visible plumage of the wings mottled grey, brown and sandy-rufous with bold markings of black; median and greater coverts edged whitish, forming narrow wing-bars; primaries brown, mottled with rufous and with pale bars on the outer webs.

Colours of Soft Parts.—Small bare space round the eye red.

Measurements.—Wing 198 mm.

Distribution.—Manipur, Patkoi Naga Hills, Lushai Hills and North Burmah west of the Irrawaddy, south to Haka in the Chin Hills.

Latterly they have been repeatedly shot on the Chin Hills so far south as Falam and Fort White, whilst Venning reports them as not uncommon still further south at Haka, where he saw flocks of as many as ten birds together. Again, east and north-west of Manipur on the hills bordering the Chindwin and Oyu Rivers, it has been seen and shot, whilst it certainly extends as far north-east as the Patkoi Hills, for I have seen its feathers on the baskets of the Nagas from this district. At present there is nothing to show what is the boundary between *humiæ* and *burmannicus*, and this may prove to be either the Chindwin or the Irrawaddy, as, so far, no birds of this genus have been found in the hinterland of these two rivers. Probably, however, considering the distribution of *humiæ* in the N.E. Naga and Patkoi Hills, the latter river will be found to be the western limits of *P. h. burmannicus*.

Nidification.—So far as I know, the only collectors who have hitherto succeeded in finding the nest and eggs of this most beautiful bird are Messrs. Wickham, Hopwood and Mackenzie, to whom I am indebted for specimens of the eggs and many valuable notes, and Captain Blandy, whose notes appeared in the 'Bombay Journal.'

Messrs. Hopwood and Mackenzie, when touring in the North Chin Hills, had a clutch of eight eggs brought in to them at the end of April, 1914, by the Chins, said to be those of Mrs. Hume's Pheasant; unfortunately they were on the verge of hatching, so that it was only possible to save four eggs out of the clutch. The eggs were, however, not such as had been expected, so that it was with the greatest delight the same two collectors had the good luck, within a few days of receiving the first, to take a second nest and see the parent bird themselves. This nest, which was found on May 1, contained only seven eggs.

In the following year, near the same spot and on the same date, Mr. Mackenzie obtained another nest with ten eggs, whilst on April 20 and May 1 two other clutches were brought to him by Chins, containing respectively six and seven eggs. In neither of these two instances were the parent birds trapped, though the Chins produced some feathers to support their story; the eggs are, however, exactly similar to those taken personally by Mackenzie and there does not seem to be any reason to doubt their authenticity.

All the eggs were taken from a ridge above and to the west of Haingyan, near Hankin, at an elevation of some 7,000 feet.

Mackenzie (in *loc. cit.*) gives a brief note on the breeding of the Pheasant, but unfortunately tells us nothing about the nest or where it is placed. He writes :—

> "Eggs, with a bird skin. The eggs were of the ordinary *Phasianus* type: three clutches were obtained, all from about 6,500 feet. The bird seems to breed near the top of the main ridge."

Later on in 1921 eggs of this Pheasant were taken by Captain Blandy at Tiddim near Fort White, in the Chin Hills. The eggs, he says, "were found at the foot of a tree of a dwarf oak-covered spur and the nest was hidden in a small bush (about 1 foot high) of undergrowth. The nest was a simple excavation of the ground lined with oak leaves."

The eggs are certainly not in the least like what I should have expected, being far more like small, fragile eggs of the Junglefowl than those of the true Pheasants. At the same time, even if Mackenzie had not, as he informs me in a letter, on the one occasion seen the bird leave the nest, it would have been difficult to attribute them to any other bird than Mrs. Hume's Pheasant. The Junglefowl does not breed at 7,000 feet in this part of Burmah, and the eggs are *much* too small for any of the forms of Silver or Kalij Pheasants which are to be found in the Chin Hills and, moreover, though superficially just like Junglefowls' eggs, those I have seen are more finely grained, with a closer texture, slightly glossed, and with very much thinner shells in proportion to their size.

Eggs very similar to those in my collection—which I owe to the generosity of the above-named gentleman—are four eggs laid by *P. elegans* in the Zoological Society's Gardens in Regent's Park, and which are now in the Natural History Museum. Both *Phasianus scintillans* and *P. elliotti* also lay cream or stone-coloured eggs, so that there is really nothing extraordinary in Mrs. Hume's bird doing the same.

In shape they are broad ovals, but little compressed towards the smaller end, and do not appear to vary much, but one egg in Mr. Mackenzie's series is a comparatively long oval, measuring 1·99 × 1·31 inches (50·5 × 33·2 mm.).

Forty eggs (mostly Mackenzie's measurements) average 48·7 × 35·3 mm.; maxima *51·5* × 36·3 and 49·5 × *37·5* mm.; minima *46·0* × 33·7 and 48·5 × *33·2* mm.

These Pheasants would appear to be early breeders, for both of Hopwood's clutches obtained in the end of April, were so hard set that they must have been laid in March and, though it is hardly safe to generalize on such scanty material, March 15 to May 15 is probably the limit of their breeding season. Captain Blandy's clutch was taken about March 26.

General Habits.—This beautiful Pheasant, according to reports made to Hume by his Kamhow collectors, is found :—

> "In dense hill forests at elevations of from 2,500 feet (the height of the lower end of the Manipur Plain, or, as it is miscalled, valley) to fully 5,000 feet. They prefer the neighbourhood of streams, and are neither rare nor shy."

This description of their habitat is probably not correct. For fifteen years I lived in the North Cachar Hills next to Manipur, and yearly visited the Jhiri Valley, working it and the adjoining hills most exhaustively up to 5,000 and 6,000 feet, yet never saw nor heard of this bird being found there. All my Manipuri collectors, also, assured me that the bird was not found until one got into the much higher country running from the Naga Hills, round the far north and east of the Manipur Plain at elevations from 4,000 feet or more up to 9,000 or 10,000. The lowest point at which Godwin-Austen got it was on the Shiroifura peaks at between 7,000 and 9,000 feet; in the eastern Chin Hills it is found between 4,000 and 7,000 feet, and at Haka at about 4,000 feet and upwards, whilst in the extreme north of the Chin Hills it is found from 6,000 to 9,000 feet.

It may, of course, wander down sometimes as low as 2,500 feet in the coldest part of the cold weather, though I think such occasions must be of the rarest.

Again, it does not appear to be a denizen of the dense, tropical and more or less evergreen forests of the hills of the lower elevations, but to haunt the more open oak, pine and other forests and grass-lands which are to be found from 4,000 feet upwards. Mr. C. P. Cook found it frequenting heavy patches of grass and dwarf date palm in more or less open grass-land mixed with forest, where he found that

they had been feeding on acorns. Again, near Fort White one of my correspondents informs me that he always obtained these Pheasants

> "in forest growing on very rocky, broken hillsides, where the undergrowth was light, except for open patches of bracken and grass, and the trees, for the most part, stunted and growing well apart from one another. If not in this kind of forest, they were to be found in the open grass-land, feeding in the more open land, and lying up during the hotter hours in the denser patches."

Finn, who was the first writer to draw attention to the difference between Mrs. Hume's Barred-Back Pheasant and the eastern Burmese form, quotes at some length an interesting letter from a Mr. Turner :—

> "I had left my camp, which was pitched some six miles from Fort White, on the evening of 6th March, to go after some Hill Partridges, which one of my men had seen just below my camp; not seeing any signs of them, I walked on for about a mile, and was returning along the road (the Fort White-Kalemyo Road) when, glancing down the *khud*, I saw something grey disappearing in the long grass just below me. I immediately started to go after it, when I saw what appeared to me to be a light blue streak just disappearing. I immediately fired, but it was with faint hope I walked up to the spot, as not only did I think the bird had disappeared before I shot, but I had just at the moment of shooting, slipped. I was therefore very much delighted when I saw the blue streak tumbling down the *khud* below me. I immediately went after and secured him; as I was descending the original grey bird, which was evidently the female, got up and flew a short distance. I walked her up, and my dog again put her up; unfortunately, owing to the thick jungle, I was unable to get a shot. Walking on, however, I again put up another, whether a cock or hen I could not say, as it was already dark. I fired, but the bird flew away, and although I believe it dropped, I could not find it. These birds, when I saw them, were feeding amongst the dead leaves which littered the ground.
>
> "The next morning I tried the upper side of the road, and put several (four at least) of the same birds out of the long grass on a steep hillside. I only managed to get one long shot, which was not successful. I again tried the next morning, and was successful in bagging another; my dog put it up on our right, and flying very low through the bushes, it crossed just in front of me. Unfortunately, the bird was not well skinned, and I had to throw it away.
>
> "The specimen that I have retained is a full-grown cock; the other one was a young cock without the long tail; the plumage was otherwise identical with that of the other bird. The hill on which I obtained these specimens was between 4,000 and 5,000 feet high,

being one of the spurs of the Chin Hills running down into the Kale Valley, and the birds were close to the Fort Kalemyo—Fort White Road, just about at milestone 20. The latitude is approximately 23° and the longitude approximately 96°."

Mr. Cook, in a letter to me, writes:—

"*P. humiæ* I often saw and shot. The birds were generally in somewhat open jungle, where the trees are principally oaks and similar species, and where one finds an undergrowth and open spaces of long grass, or long grass and bracken mixed. Near Minkin I found them in steep grass slopes, and here they were by no means uncommon, and associated in small flocks or family parties. On one occasion I flushed no less than eight or ten birds from an ant-hill overgrown with grass and crowned with a clump of dwarf dates, upon the fruit of which I think the Pheasants were feeding. On another occasion I saw a couple of hens with a cock at Pine Tree Camp in similar jungle and at about the same elevation (7,000 feet).

"As far as my experience goes, they do not fly very far when first flushed, and as a rule they fly low down, seldom, if ever, rising above the tops of the trees; nor does their flight strike one as being at all fast, and indeed, compared with the English Pheasant, it seems very much slower. They are not hard birds to flush, especially the first time, but as I have nearly always had a dog out with me when after these birds, I cannot speak with much authority on this point. When alighting after the first flight, they often run considerable distances, but at others one may put a bird up time after time from almost the exact spot at which he drops.

"They are such beautiful birds that their very beauty has sometimes saved their lives when I have really wanted them very badly; their skins as specimens and their flesh for the pot. To see half a dozen cock birds rise almost at one's feet and then scatter in all directions, the wonderful blue and white feathers of their rumps showing up like flags against the rest of the brilliant plumage, is a most extraordinary sight, and I have found the blaze of colour so gorgeous and attractive that I have sometimes been arrested in the very act of raising my gun to fire, and have instead stood to watch them and enjoy the sight.

"I think wherever I have found this bird there have been outcrops of rock here and there in the grass they frequent. In some cases these outcrops are scattered and few, but in some cases very thick and plentiful, so that the patches of grass form little roads in between them.

"The only sound I have heard them make, and which I can with certainty attribute to them, is a low grunting call, exactly the same as that made by *Phasianus burmannicus*, a bird I knew well in the south-east of these Hills."

Captain Mundy says that he "used to see them running away through the grass, and they are at once recognized by the clucking sound they make as they run away, which is their alarm cry." The discovery of this beautiful Pheasant by Hume in 1879 was always considered by him to be one of the, if not the, most important and interesting of his numerous discoveries. His attention in the first place was drawn to some feathers in the head-dress of a Manipuri official sent to assist him in getting about in Manipur, which he at once saw belonged to a Pheasant unknown to him. These, he was told, were feathers from a bird called Loe-nin-Koe, which occurred in the extreme south of the Manipur territory and in the Eastern Lushai country. It was weeks, however, before he succeeded in going with a small force of Manipuris into the Kamhow district, and even then it was only with the greatest difficulty that some Kamhow refugees were induced by a mixture of threats and promises to secure for him two specimens, one of which was alive.

Of the living specimen, Hume wrote :—

> "The live bird, though a full-grown cock, became perfectly tame in a few days, and a great favourite in the camp. It would eat bread, boiled rice, winged white ants, moths, taking them gingerly out of our hands."

Unfortunately, this bird was eventually killed in a fire, so never reached its destination, the London Zoological Gardens.

SYRMATICUS HUMIÆ BURMANNICUS (Oates).

THE BURMESE BARRED-BACK PHEASANT.

Calophasis burmannicus, *Oates*, *Ibis*, 1898, p. 124; *Sharpe*, *Hand-List*, *B.* iv, p. 38 (1899); *Finn*, *Ibis*, 1898, p. 311 (part); *Harington*, *Jour. B.N.H.S.* xx, p. 1010 (1911); *Oates*, *Mon. Game-B.* i, p. 308 (1898); *Finn*, *In. Sporting B.* p. 301 (1915).

Phasianus humiæ, *W. L. Sclater* (nec *Hume*), *Ibis*, 1891, p. 152 (part); *Oates*, *Jour. B.N.H.S.* x, p. 112 (1895); *Ogilvie-Grant*, *Cat. B.B.M.* xxii, p. 335 (1893) (part); *id. Mon. Game-B.* ii, p. 42 (1897) (part); *Drummond*, *ibid.* xxiii, p. 562; *Blanford*, *Faun. B.I.* iv, pp. 80, 486 (1898) (part); *Finn*, *Jour. A.S.B.* (2), lxvi p. 523 (1897) (part); *id. ibid.* (2), lxix, p. 144 (1900); *Cook*, *Jour. B.N.H.S.* xxi, p. 632 (1912); *id. ibid.* xxii, p. 270 (1913).

Phasianus humiæ burmannicus, *Stuart Baker*, *Jour. B.N.H.S.* xxv, p. 356 (1918), *Drummond*, *ibid.* xxix, p. 562 (1923) (S. Shan States).

Syrmaticus humiæ burmannicus, *Rothschild*, *Nov. Zool.* xxxiii, p. 208 (1926); *Beebe*, *Mon. Pheas.* iii, p. 183, pl. 66 (1922); *Gairdner*, *Jour. Nat. His. Soc. Siam* iii, p. 229 (1919) (Siam); *Stuart Baker*, *ibid.* iv, p. 47 (1920) (Siam); *Stuart Baker*, *Fauna B.I. Birds*, 2nd ed. v, p. 304 (1928).

Vernacular Names.—*Yit* (Burmese), *Wuri* (Cachin).

Description. Adult Male.—Similar to *P. humiæ humiæ*, but with the steel-blue of the upper parts confined to the extreme upper back and much more sharply defined from the copper-coloured mantle; the rump is black and white instead of blue and white and, even when there is a certain amount of blue gloss, as is sometimes the case, this is of a deeper tint than it is in Mrs. Hume's Pheasant; the white fringes are also broader and more dominant than they are in that bird.

The colour of the tail bars, given by Oates as one of the distinguishing features, is not of much use. Generally there is more chestnut on those of *P. h. burmannicus* but this is not invariably so and, in some birds, there is no more than in the type of *humiæ*. Again, Oates's definition of the differences in the colour of

the bases to the feathers of the lower white wing-bar does not hold good. He says that in *humiæ* the concealed bases to these feathers are black, whereas in *burmannicus* they are "chestnut with a firm black bar." This is practically correct so far as the types of the two subspecies are concerned, though the bases of the innermost feathers are well marked with chestnut in the wing of *humiæ*, but in other specimens this difference is not maintained.

In *P. h. burmannicus* the central black wing-bar is often mixed with maroon or copper-colour, but this is not always so, indeed, in one specimen in the British Museum series this black wing-bar is broader than in any specimen of *humiæ* and is equally free from all admixture of maroon.

Measurements and Colours of Soft Parts.—The same as in *P. h. humiæ*. In the series of sixteen males in the British Museum and at Tring the wing varies between 8·5 inches (215 mm.), and 9·3 inches (236·6 mm.), with an average of 8·85 inches (224·9 mm.) ; the tails run up to 26·5 inches (673·1 mm.), and average about 22 inches (558·8 mm.), tarsus, spur and bill measure within the extremes given for *P. h. humiæ*.

Adult Female.—Similar to that of Mrs. Hume's Pheasant.

Measurements.—Wing 215 to 236 mm.

Distribution.—Yunnan, Northern Shan States and the greater part of the Southern Shan States. To the west it appears nowhere to cross the Irrawaddy, which river probably forms the dividing line between this and Mrs. Hume's Pheasant. To the east we do not yet know for certain how far it extends but, up to 1919, there was no record of its having been seen or obtained east of the Salwin River. In that year, however, Gairdner shot a male on Doi Sulep, a mountain 4,350 feet high, 100 miles east of that river. I have records of its having been obtained at Myitkyna, Sadon, north-east of Nilamka, Mogok, Maymyo, Kalaw, Taungyi, Fort Stedman, and Loimai. South of this again, north of the Bree country, a Pheasant has been seen which will assuredly prove to be of this species and, almost equally certainly of the present subspecies, though no specimen has been actually secured.

Nidification.—There is at present absolutely nothing on record about the breeding of this beautiful Pheasant but, with the care and

industry with which our field ornithologists are now working Burmah, the finding of the nests and eggs cannot be long delayed.

General Habits.—Like its cousin, Mrs. Hume's Pheasant, the Burmese Barred-Back Pheasant frequents the mountainous regions of eastern Burmah between 4,000 and 9,000 feet, keeping more to the open than to the very heavy forests, though in the former there are always pockets and ravines which have the trees and undergrowth very dense and tangled. It is also found on grass-covered hillsides well away from any large tree forest, where they keep together in small flocks, probably composed of the cock and hen and the last hatched brood.

Mr. J. P. Cook writes in the *Bombay Journal* about this Pheasant:—

> "I saw this beautiful bird, or it may have been *P. burmannicus* 1331a" (this it proved to be) "several times, and generally in the open jungle on rocky grass-hills. On one occasion I put up five birds singly at intervals of about a minute or two. At one time I thought I had found a nest, as a hen bird rose at my feet, but I hunted everywhere without success. These Pheasants do not seem to be quite so gregarious as *G. lineatus*, nor so partial to the proximity of water. I should like to have shot one or two, but when I saw them I always had my little 410 with me only, which would not have been sufficient to have brought them down. On one occasion I put up a Pheasant out of some wild raspberry bushes amongst long grass, the fruit of which it was feeding on."

Captain Drummond adds considerably to our knowledge of the habits of this Pheasant. He writes, in *loc. cit.*:—

> "I have seen and shot this Pheasant on the hills round Loimwe, S. Shan States, at about 4,500 to 5,600 feet elevation.
>
> "Found in jungles composed of largish trees and thick undergrowth. Appears to like wild raspberry bushes, tall grass and other rank vegetation. Sometimes found in thick scrub jungle with no large trees.
>
> "I have never seen it in the open.
>
> "Generally found in small parties of from 3 to 5, though single cock birds are met with. It is easily flushed with dogs and usually takes to trees on such occasions. If however the sportsman is near the dogs, and consequently seen as soon as it rises, it makes straight off, generally down hill.
>
> "Single birds appear to fly down hill invariably; when a covey is flushed, however, they fly in every direction, some up hill.

"The flight is low, keeping through the trees, I have never seen them rise clear above them.

"They emit a low chuckling sound, not unlike the 'Coo' of a pigeon. If this sound is heard before the birds are disturbed it is exceedingly hard to locate. I have heard them make this sound when perching in trees, after being put up by a dog.

"I have noticed that towards the end of the rains, when they first appear here, they are found at the tops of the hills, whereas, later on, when the weather gets colder and drier, they prefer the lower slopes. I have found them exceeding difficult to shoot owing to the thick nature of the jungle they inhabit.

"In April all the grass in the jungles for many miles round about Loimwe is burnt by the local hill tribes, consequently all game has perforce to depart, and does not reappear till the end of the rains when the jungle has grown again. Hence I know nothing of their nidification or habits for about seven months in the year.

"In the cold season many of these birds are trapped in nooses by a hill tribe known as Kaws or E-Kaws. Most of the specimens I am sending were procured in this way. Latterly several birds have been brought in alive, and up to date I have bought three cock birds and one hen bird which I am keeping in a roomy cage or hut. I hope they will get tame in course of time and possibly breed later on.

"The food of the birds I have skinned consists chiefly of small chestnuts (which abound in these jungles), also a red berry (the seed of a small plant) and occasionally a small snail or two."

Genus PHASIANUS.

Phasianus Linn., Syst. Nat., 10th ed. i, p. 158 (1758).

Type, *Phasianus colchicus* Linn.

The differences between *Phasianus* and *Syrmaticus* have already been given.

As restricted, only one species has occurred within our limits and that species only very rarely.

PHASIANUS ELEGANS (Elliot).

STONE'S PHEASANT.

Phasianus elegans, *Elliot, Ann. & Mag. N.H.* (4), vi, p. 312 (1870); *Sclater, P.Z.S.* 1870, p. 670; *Elliot, Monog. Phas.* ii, pl. 8 (1872); *Ogilvie-Grant, Cat. Birds B.M.* xxii, p. 329 (1893); *id. Hand-L. Game-B.* ii, p. 31 (1897); *Blanford, Faun. Brit. Ind., Birds* iv, p. 81 (1898); *Oates, Mon. Game-B.* i, p. 299 (1898); *Styan, Ibis*, 1899, p. 298; *Davies, Ibis*, 1901, p. 408; *Buturlin, Ibis*, 1904, p. 411; *id. Ibis*, 1908, pp. 574, 576, 585, 592; *Harington, Jour. B.N.H. Soc.* xix, p. 309 (1909); *Sclater, Ibis*, 1912, p. 554; *Ingram, Novit. Zool.* xix, p. 271 (1912); *Bailey, Geogr. Journal* xxxix, p. 346 (1912); *id. Jour. B.N.H. Soc.* xxii, p. 367 (1913); *Bangs & Phillips, Bull. Mus. Comp. Zool.* lviii, No. 6, p. 269 (1914); *Stuart Baker, Jour. B.N.H.S.* xxv, p. 358 (1918); *id. Fauna B.I., Birds*, 2nd ed. v, p. 305 (1928).

Phasianus sladeni *Elliot*, Anderson MSS. *P.Z.S.* 1870, pp. 404, 408; *Anderson, P.Z.S.* 1871, p. 214; *Swinhoe, P.Z.S.* 1871, p. 378; *David & Oustalet, Ois. Chine*, p. 411 (1877); *Anderson, B.W. Yunnan Exp.* p. 671, pl. 2 (1878).

? Phasianus süchschanensis, *Bianchi, Bull. Acad. St. Petersb.* v, ser. T. xxiv, n. 1-2, p. 83 (1906); *Buturlin, Ibis*, 1908, p. 574.

Phasianus colchicus elegans, *Rothsch., Nov. Zool.* xxxiii, p. 207 (1926) (Yunnan); *id. ibid.* xxx, pp. 35 and 249 (1923) (Yunnan); *Beebe, Mon. Pheas.* iii, p. 108 (1822).

Vernacular Names.—? *Wucru* (Kachin); *Tso-ka* (Tibetan).

Description. Adult Male.—Crown from forehead to nape and hind neck bronze-green, the ear-tufts darker and more blue; chin and throat deep green; neck in front and on the sides deep purple-blue with purple-copper reflections in some lights, this colour passing round the base of the neck as a collar behind; upper back golden-chestnut, changing into deep chestnut on the back and scapulars; the feathers next the neck are centred with black and their tips are notched with the same; the feathers of the back and the scapulars

have black centres mottled and sub-outlined with buff, with notches similar to these on the upper back, but the black obsolete; lower back, rump and tail-coverts pale green-grey with subterminal bars of lustrous emerald-green, each feather with the concealed base black with buff concentric bands; tail-feathers rufous brown with broad black bars, narrowly edged above and below with golden-buff; the central pair have wide margins of pink-grey, across which the black bands are continued as dull crimson-purple marks; on each succeeding pair the pink edges are reduced in size, being absent on the outermost pair and, sometimes, on one or two of the next pairs also; wing-coverts pale green-grey with emerald-green reflections and with the innermost greater coverts splashed with maroon, broadly on the outer and narrowly on the inner webs; quills brown, the primaries barred with buff on the outer webs and with broken bars on the inner; secondaries broadly edged with olive-brown and irregularly marked with buff on both webs; breast deep glossy green, each feather narrowly margined with velvety black and those on the lower breast notched, though less conspicuously so than on the back; flanks and sides of the breast golden-copper, becoming almost purple-copper next the green of the breast, each feather with a bold edging of velvet-black, which runs down the end of the shaft towards the greenish base; vent, thighs and centre of abdomen dull brown; under tail-coverts chestnut with black marks.

Colours of the Soft Parts.—"Legs and feet of the male lead-colour, inclining to flesh-colour; naked skin round the eye scarlet" (*Elliot*).

Measurements.—Wing 210 to 229 mm.; tail 391 to 487 mm.; tarsus 63 to 68 mm.; culmen about 28 to 32 mm.

Adult Female.—Crown and neck dark brown or black with narrow bars of buff, sometimes with a distinct tinge of chestnut; back and scapulars chestnut with white sub-edging and very fine edges of black, with a bold bar of the same between the chestnut and the white; remainder of upper plumage pale grey-brown with narrow buff edges and black centres with here and there a tinge of chestnut showing very irregularly; central tail-feathers pale olive-brown with narrow paler cross-bars broadly margined on either side with black; remaining tail-feathers dull chestnut with similar bars; on all the tail-feathers

the markings are irregular and somewhat mottled, giving a mottled appearance to the whole; chin and throat are pale buffish, obsoletely barred with dark brown; fore-neck and upper breast washed with a pinky reddish tinge, with bolder bars and black centres; lower breast, flanks and abdomen dull greyish buff with numerous faint vermiculations of grey-brown and with visible centres of deep chestnut-brown; under tail-coverts the same marked with chestnut.

Three females from Chang Youn, in China, are more richly coloured above than any of the more western birds but, at the same time, have practically no dark markings on the lower breast and abdomen; the flanks and thigh-coverts are, however, fully as boldly marked as the other birds.

Colours of Soft Parts.—Not recorded.

Distribution.—Western Szechuan, Eastern Tibet, at least as far west as Batang, Yunnan, the Northern Shan States, Kachin Hills and Southern Shan States.

As regards Tibet, Bailey says:—

> "I shot a specimen of this on the Fei-Yueh-Ling Pass, south-east of Ta-chien-lu. It was plentiful at Ta-chien-lu itself, and a few were seen in suitable places up to Batang and again in Yangtse Valley, two days south of Batang and near the Kia-la."

Harington obtained a male at Ta-shio-tang, Tawnio State, Trans-Salwin; Major J. Whitehead got another male at Namsang-yang between Talawgyi and Lawchen, whilst a third was obtained by Captain Bard in the same district, close to Myitkina.

It is apparently found as far south in S. Shan States as 21°.

Nidification.—I can find nothing on record concerning the breeding of this Pheasant in a state of nature.

I have two eggs in my collection which I owe to the generosity of Mr. Charles M. Inglis. They were laid by the hen of a pair kept by him in an aviary in Tirhoot and are two from a clutch of seven.

In appearance they are typical Pheasants' eggs, exactly like many laid by *P. torquatus* and *R. colchicus*, in English woods and spinneys, and not like the *Gennaeus* type of egg laid by *Syrmaticus humiæ*.

In colour they are a clear, deep fawn-brown, whilst in shape they are typical Pheasants' eggs, though not of the extreme peg-top shape.

The surface is very smooth and fine-grained and has a slight gloss. They are rather fragile eggs for their size, considerably thinner in the shell than the eggs of the Silver Pheasants.

The two eggs measure respectively 1·75 inches (44·4 mm.) by 1·35 inches (34·3 mm.) and 1·75 inches (44·4 mm.) by 1·34 inches (34·0 mm.).

General Habits.—Elliot records of the two specimens of this bird first brought home to England and deposited in the Gardens of the Zoological Society that they were very wild and endeavoured to hide from anyone who approached their cage. He also says that:—

> "The voice of *P. elegans* is harsh and guttural, very different from that of any of its relatives."

On the other hand Harington says that its call is exactly like that of the English Pheasants.

Captain Davies agrees with the latter; he writes:—

> "Stone's Pheasants are common in Western Yunnan. They are not usually found much below 4,000 feet, and are most plentiful near the tops of the ranges at an altitude of from 6,000 to 8,000 feet, in long grass and fern, or in fir woods. I have usually met with them singly or two together, but on one occasion I saw a covey of ten. The crow of this bird is hardly distinguishable from that of the English Pheasant, and the noise the cock makes when flushed is also the same. I have not often seen it in the Tibetan part of the country (W. Szechuan) though I shot one a few marches South-West of Li-tang at 10,500 feet."

Harington never succeeded in getting a second specimen though he often heard them crowing. Those he came across were all on the almost bare hillsides covered merely with dry weeds and grass about 4 feet high, but with no trees or bushes. In flight it is said to closely resemble the common English Pheasant, though it does not rise so high or "rocket" as our sophisticated birds do when they try to escape out of range of the guns. Like nearly all Pheasants and game birds, they prefer to swoop down the hillsides rather than fly up.

Genus CATREUS.

Catreus, Cabanis, Ersch. u. Grubers Encl. i, liii, p. 281 (1851).
Type by monotypy, *Phasianus wallichii* Hardw.

The genus *Catreus* contains a single species of Pheasant very closely allied to *Phasianus* but differing from that genus in having a long, full crest. The tail is long, not compressed and composed of eighteen feathers, the central pair very long and about five times the length of the outermost; the wing is rounded, the first primary shorter than the tenth and the fifth longest; the tarsi are strong and are furnished with spurs, occasionally showing as knobs in the female. The sexes differ slightly.

The only species known is confined to the Himalayas.



Female.

Male.

THE CHEER PHEASANT.

Catreus wallichii.

CATREUS WALLICHII.

THE CHEER PHEASANT.

Phasianus wallichii, *Hardw., Trans. Lin. Soc.* xv, p. 166 (1827) (Almorah); *Hutton, J.A.S.B.* xvii, pt. 2, p. 695 (1848); *Blyth, Cat. Mus. A.S.* p. 245 (1849) (N.W. Himalayas); *Irby, Ibis*, 1861, p. 235 (Kumaon); *Jerdon, B. of I.* iii, p. 527 (1863); *Tytler, Ibis*, 1861, p. 235 (Simla); *Beavan, ibid.*, 1868, p. 380 (Simla); *Stoliczka, J.A.S.B.* xxxvii, pt. 2, p. 68 (1868) (Satlej Valley); *Hume, Nests and Eggs*, p. 524 (1873); *Marsh., B. Nest. in I.* p. 59 (1879); *Hume & Marsh., Game-B.* i, p. 169 (1878); *Scully, Str. Feath.* viii, pp. 345, 366 (1879) (Nepal); *Marsh., Ibis*, 1884, p. 423 (Chamba); *Oates's ed. Hume's Nests and Eggs* iii, p. 412 (1890).

Lophophorus wallichii, *Less., Man. d'Orn.* ii, p. 179 (1825); *Vigne, P.Z.S.* 1841, p. 6 (Chamba).

Phasianus stacei, *Gould, Cent. Birds*, p. 68 (1832) (Himalayas).

Catreus wallichii, *Adams, P.Z.S.*, 1858, p. 499; *Mitchell, ibid.* 1858, p. 545; *Gould, B. of Asia* vii, p. 18 (1865); *Ogilvie-Grant, Cat. B.M.* xxii, p. 317 (1893); *id., Mon. Game-B.* ii, p. 1 (1897); *Blanf., Fauna B.I. Birds* iv, p. 82 (1898); *Sharpe, Hand-L.* i, p. 37 (1899); *Oates, Cat. Eggs B.M.* i, p. 56 (1901); *Venour, Jour. B.N.H.S.* xvii, p. 812 (1907) (Dunga Gali, N.W.F. Province); *Ward, ibid.* p. 944 (1907) (Jhelum Valley); *Magrath, ibid.* xix. p. 159 (1909) (Murree); *Finn, Avi. Mag.* i, p. 129 (1910); *Beebe, Mon. Pheas.* iii, p. 50, pl. 69 (1922); *Stuart Baker, Jour. B.N.H.S.* xxvi, p. 1. pl. (1918); *Jones, ibid.* p. 619 (1919); *Hingston, ibid.* xxvii, p. 570 (1920) (Dharmsala); *Osmaston, ibid.* xxviii, p. 157 (1921) (Garhwal); *Whistler, ibid.* xxxi, p. 482 (1926) (Kulu); *Searight, ibid.* p. 818 (1926) (Garhwal); *Ali, ibid.* xxxii, p. 52, pl. (1927); *Osmaston, ibid.* p. 144 (1927) (Kashmir); *Ellison, ibid.* xxxiii, p. 122 (1928) (Chitral); *Whistler, Ibis*, 1926 (Kangra); *Meinertz., ibid.* 1928, p. 501; *Stuart Baker, Fauna B.I. Birds* v, p. 307 (1928).

Vernacular Names.—*Kahir, Chihir* (Nepal); *Cheer* (Kumaon, Garhwal and further west); *Bunchil, Boinchil, Herril* (Hills, N. of Mussoori); *Chummun, Chaman* (Chamba, Kulu, etc.); *Reear* (Karnar, Drawa, Pir Panjal and Kaji Nag); *Rehar* (Darg, N.W.F.).

Description. Adult Male.—Top of the head and feathers of the crest blackish brown, edged paler and with rather conspicuous grey

tips ; back of the head and upper nape the same but with the grey edges almost concealing the dark centres ; line of feathers below the bare orbital space and ear-coverts hair-brown, almost black next the bill ; chin, throat and sides of the neck greyish white, very faintly centred with brown streaks, obsolete in some specimens ; lower nape and hind-neck the same barred with black; scapulars and lesser wing-coverts barred ashy grey and black, each feather with a narrow grey fringe and with the subterminal black bar glossed with green ; upper tail-coverts and tail pale buffy grey to almost pure grey at the tip, barred with wide mottled bars of black and dark cinereous grey ; outer tail-feathers with the dark grey on the inner webs replaced to a great extent with deep chestnut.

Primaries brown, the outermost edged and barred with pale buff on the outer webs and both mottled and barred with the same colour on the inner webs ; secondaries the same, becoming more and more mottled in character towards the innermost, which have one broad subterminal bar of black, a second bar less definite in shape and the rest of the feather irregularly mottled with black and buff ; greater and median wing-coverts like the lesser, but with more of a buffy ochre tinge, in some cases becoming here and there almost rufous.

Below greyish white, more or less tinged with rufous-buff posteriorly and each feather on the flanks barred with black ; these bars concealed on the fore-neck and upper breast and very conspicuous on the lower breast and flanks ; the feathers of the breast also have faint brown shaft stripes ; centre of abdomen blackish, more or less mottled with rufous-buff ; vent and under tail-coverts rufous ; thigh-coverts dirty rufous-buff.

Colours of Soft Parts.—Orbital skin crimson-scarlet or crimson, sometimes dotted with little pink, or pinkish white pimples ; iris golden-hazel or reddish hazel, sometimes, according to Hume, an orange-brown ; bill pale yellowish horny, more rarely pale brownish or bluish horny ; legs plumbeous or greyish brown, occasionally with a fleshy tint, especially on the hinder parts ; toes paler and more fleshy and soles paler still.

Measurements.—The series of males of which I have been able to take measurements, some forty in number, do not show a very great

range of variation. Including the twenty-two specimens in the British Museum they measure: Wing 235 to 269 mm.; tail 388 to 584 mm.; tarsus 74 to 78 mm.; spur about 12·5 mm.; culmen about 25 to 29 mm.; crest up to 91 mm.

"Weight, 2 lbs. 10 ozs. to 3 lbs. 7 ozs." (*Hume*).

In a letter to me, Colonel R. H. Rattray recorded the weight of one shot at Mussoorie as just on 4 lb.

Wilson (Mountaineer) mentions having obtained birds with tails of 28 inches (716 mm.), and this observer is invariably so correct that we must accept his statement, though such birds are no doubt quite exceptional. The crest runs up to 3·6 inches (91·4 mm.) and is usually about 3 inches (76·2 mm.).

Adult Female.—Head similar to that of the male but with buff or ochre-buff, instead of grey, edging and tips to the feathers; hind neck and nape greyish white with bold black centres; mantle pale chestnut—varying a good deal in depth of colour in different individuals—each feather with cream shaft-streaks, greyish edges and bold black bars; lower back and rump ashy brown, mottled with black and, to a much less extent, with buff; tail and upper tail-coverts with alternate bands of mottled rufous and black and bolder black and buff; the longer tail-coverts with more black and less buff; primaries brown, regularly barred with buff on the outer webs and with chestnut on the inner; secondaries mottled blackish brown and chestnut-buff with four broad bars of creamy buff, edged above and below with black; greater and median coverts mottled black and chestnut-buff with broad tips of creamy buff; chin, throat and fore-neck creamy white; breast black, the feathers with broad white edges and white central streaks; remainder of lower surface pale chestnut, each feather edged with creamy buff; flanks anteriorly like the breast, gradually changing posteriorly until they are almost the same as the belly; centre of abdomen buff; under tail-coverts pale rufous, mottled slightly with brown.

Colours of Soft Parts.—Similar to the same parts in the male, but the facial skin is a duller, dingier crimson, more a brick-red.

Measurements.—Wing 223 to 246 mm.; tail 317 to 468 mm. Weight: 2 lb. to 2 lb. 12 oz.

Distribution.—The west of Nepal, Kumaon, Garhwal, Tehri Garhwal, Simla States, Burrahir, Chamba and at least as far west as Dunrug Galli and the Hazara District of the North-West Frontier Province.

Ward says that it is not found in Kashmir proper, though it is found in Kishtwar and the Jhelum Valley. Colonel H. L. Haughton, then of the 36th Sikhs, obtained specimens at Karnar and Darwa (Kashmir), and also at Pir Panjal and Kaji Nag. Nor can they be very rare there, for on one day he informs me he managed to shoot eight birds.

It is possible that these Pheasants inhabit Nepal a good deal further to the east than Hume thought to be the case. Before the traffic in bird skins was practically stopped in Darjiling the Nepalese occasionally brought their skins into that place for sale and, less often, birds alive, which they said had been trapped in the Valley of Nepal on the higher hills to the north. I have myself seen such skins, and one of my eggs was obtained with the skin of the parent bird from Nepalese in Darjiling.

Scully, it must be remembered, found these birds very common in captivity in Khatmandu and believed that the bird was by no means uncommon to the north of the valley. No one yet has collected in Nepal off the beaten tracks and even Hodgson was never, evidently, in a position to collect in the real interior of the country, whilst residents since his time appear to have made no attempt to do so.

Nidification.—This beautiful Pheasant breeds throughout the above area at elevations between 5,000 and 9,000 feet, occasionally lower than the former and, equally occasionally, above the latter. The breeding season commences early in April and lasts throughout May and June. In the lower ranges most eggs will be taken in the end of April and early May, whilst in the higher altitudes none are likely to be taken before the end of May and, more, in the early half of June. The latest date I have recorded is July 3 for incubated eggs.

Owing to the fact that Europeans do all they can to prevent the eggs of this bird being taken and, wherever they are sufficiently numerous to make it worth while, do their best to preserve these Pheasants, there is very little on record about their nidification.

In addition to this, the fact that they nearly always breed in the

wildest and most precipitous hills makes their nests and eggs very hard to find, in consequence of which full clutches of Cheers' eggs are very rare in collections. The nests are very rough affairs, merely a collection of leaves and rubbish in some hollow, either natural, or scratched out by the birds themselves. It is placed in amongst bushes, bracken or grass at the foot of, or on the side of, some steep hill or cliff and, almost invariably, in very broken ground. Hume found three nests at the foot of almost vertical cliffs, "broken into ledges and steps and studded with down-trailing bushes, tufts of grass and, growing here and there out of some larger cleft or wider ledge, a few stunted trees." This description appears to be very typical of the normal breeding and nesting haunts of the Cheer, the few details I have been able to secure from sporting friends simply confirming what Hume has written. It is interesting to note that Hume took this Bird's nest at Nagthiba as long ago as 1861, and that in the year 1915 I received from a friend a pair of eggs taken from the same place.

The cock birds are monogamous, a fact which has been long known, for Wilson recorded that "both male and female keep with the young brood, and seem very solicitous for their welfare." In 1916 Mr. A. Wimbush, of the Forest Service, came on a very interesting instance of the cock Cheer's care for his family. He writes *in epistola*:—

> "This morning when out after Gural in the Jaunsar division of the Dehra Dun District at an elevation of about 8,000 feet, I came suddenly upon a pair of Cheer Pheasants with a brood of chicks about one or two days old.
>
> "The parent birds which appeared to have been sitting touching one another, as though each covering half the chicks, waited until I was some ten or twelve yards away, and then started a most lively demonstration.
>
> "The chicks ran in all directions, one coming straight towards me, and the two old birds with tails spread, wings arched and neck-feathers ruffled, ran backwards and forwards in front of me, clucking just like an old hen does if a dog interferes with her chicks.
>
> "The most interesting point was that the chief demonstrator was the cock bird. Without the least sign of fear he approached to within about eight yards of me, assuming the most threatening attitude.
>
> "This continued for a moment or two, until all the chicks had hidden in the grass, whereupon both old birds began to walk away, calling all the time to the chicks."

If the eggs are at all incubated, the hen bird sits very close and may be nearly trodden on before she will rise. In such cases, she gets off her nest with a good deal of fluster and noise, though usually she sneaks off very stealthily.

The number of eggs in a full clutch seems to be anything from eight to fourteen, most often ten or eleven. Hume found thirteen in one nest. Adams says they lay from nine to twelve, and Wilson says nine to fourteen, whilst Whymper found clutches containing from eight to eleven eggs in Garhwal.

In appearance the eggs are just like small hens' eggs varying in colour from a pale creamy white to a pale stone or brown, sometimes with a faint chocolate or creamy tint in it. They are never of the rich, warm *café-au-lait* so often found in the eggs of the Junglefowl or of the Kalij Pheasants, whilst, on the other hand, most eggs have the faintest tinge of olive-green in them, hardly discernible unless placed against other eggs.

Frequently the eggs are spotted and speckled with brown and, curiously, these spots seem to be nearly always at the small end. This is the case in twelve out of the eggs I have in my collection, in the majority of those in the British Museum and at Tring and, again, in those in Mr. S. L. Whymper's collection. As a rule these spots and specks are scanty and poorly coloured, but I have one egg which is quite thickly blotched with rich brown at the small end.

In shape they are the same as hens' eggs, occasionally rather drawn out, though never a peg-top shape like those of the true *Phasianus* group. The texture is hard, close and strong with a fair gloss.

Thirty eggs vary in length from 49·9 mm. to 57·1 mm., and in breadth from 36·5 mm. to 40·6 mm. The average is 53·3 mm. by 38·7 mm.

General Habits.—The Cheer may be found at any altitude between 4,000 feet in the cold weather and 10,000 feet or more in the summer but, as a rule, they keep between about 6,000 and 9,000 feet. They haunt the wildest of country and, though not found above the forest level, they are not birds of heavy forest but rather of the scanty forest with thick grass and undergrowth which grow on the more precipitous hills and cliff sides. According to various authors and writers, this Pheasant seems to go about in flocks of anything from half a dozen

to a dozen or more, probably consisting only of the family party of the last hatching. They do not keep very close together, often scattering over a considerable area, a habit of no little importance to the sportsman in pursuit of them, as he can pick them up one or two at a time instead of flushing the whole covey together.

No account of this Pheasant can be considered complete without 'Mountaineer's' most interesting notes, for no one since has written any account to compare with his. I therefore make no apology for quoting them in full, although so many have used them before me :—

> "Though far from being rare, fewer perhaps are met with than of any other kind unless it is particularly sought for, always excepting the Jewar. The reason of this may be that the general character of the ground where they resort is not so inviting in appearance to the sportsman as other places; besides, they are everywhere confined to particular localities, and are not, like the rest, scattered indiscriminately over almost every part of the regions they inhabit. Their haunts are on grassy hills with a scattered forest of oak and small patches of underwood, hills covered with the common pine near the sites of deserted villages, old cowsheds, and the long grass amongst precipices and broken ground.
>
> "They are seldom found on hills entirely destitute of trees or jungles, or in the opposite extreme of deep shady forest; in the lower ranges they keep near the top of the hills or about the middle, and are seldom found in the valleys or deep ravines. Further in the interior they are generally low down, often in the immediate vicinity of the villages, except in the breeding season, when each pair seeks a spot to perform the business of incubation; they congregate in flocks of from 5 or 6 to 10 or 15, and seldom more than two or three lots inhabit the same hill.
>
> "They wander a good deal about the particular hill they are located on, but not beyond certain boundaries, remaining about one spot for several days or weeks, and then shifting to another, but never entirely abandoning the place, and year after year they may, to a certainty, be found in some quarter of it.
>
> "During the day, unless dark and cloudy, they keep concealed in the grass and bushes, coming out morning and evening to feed. When come upon suddenly while out, they run off quickly in different directions, and conceal themselves in the nearest cover, and seldom, more than one or two get on the wing. They run very fast, and if the ground is open and no cover near, many will run two or three hundred yards in preference to getting up.
>
> "After concealing themselves they lie very close, and are flushed within a few yards. There is, perhaps, no bird of its size which is so

difficult to find after the flock have been disturbed and they have concealed themselves; where the grass is very long, even if marked down, without a good dog it is often impossible to flush them, and even with the assistance of the best dogs not one-half will be found a second time. A person may walk within a yard of one, and it will not move. I have knocked them over with a stick, and even taken them with the hand. In autumn the long grass, so prevalent about many of the places they resort to, enables them to hide almost anywhere; but this is burnt by the villages at the end of winter, and they then seek refuge in low jungle and brushwood, and with a dog are not so difficult to find.

"Both males and females often crow at daybreak and dusk, and in cloudy weather sometimes during the day. The crow is loud and singular, and, when there is nothing to interrupt, the sound may be heard for at least a mile. It is something like the words, *chir-a-pir, chir-a-pir, chir chir, chirwa, chirwa*, but a good deal varied; it is often begun before complete daylight, and in spring, when the birds are numerous, it invariably ushers in the day: in this respect it may rival the domestic cock. When pairing and scattered about, the crow is often kept up for nearly half an hour, first from one quarter, then another; and now and then all seem to join in a chorus. At other times it seldom lasts more than five or ten minutes.

"The Cheer Pheasant feeds chiefly on roots, for which it digs holes in the ground, grubs, insects, seeds and berries, and, if near cultivated fields, several kinds of grain form a portion of its diet; it does not eat grass or leaves like the rest of our Pheasants.

"It is easy to rear in confinement, and might, without difficulty, be naturalized in England, if it would stand the long frosts or snows of severe winters, which I imagine is very doubtful.

"This bird flies rather heavily, and seldom very far. Like most others, it generally utters a few loud screeches on getting up, and spreads out the beautifully barred feathers of its long tail, both when flying and running. It does not perch much on trees, but will occasionally fly up into one close by, when put up by dogs. It roosts on the ground generally, and when congregated together, the whole flock huddle up in one spot. At times, however, they will roost in trees and bushes."

Two points in this excellent account require comment. First as regards their flight; few sportsmen will agree with Wilson's description of it. All my correspondents give the Cheer credit for being a most difficult bird to shoot, not only on account of its great speed in flight but, also, because of its habit of hurling itself headlong down cliff sides with almost closed wings, giving the snappiest of snap-shots,

unless one is standing at the level at which it intends to alight. Close to this point it gradually moderates its pace, somewhat opening its wings, spreading its tail and in the words of Hume, "sweeps off in graceful curves right or left, shortly dropping suddenly, almost as if shot, into some patch of low cover."

The second point which attracts notice is the statement that these birds roost on the ground; doubtless they do so sometimes, but over most their habitat I am told they roost either on stunted trees, high bushes or on the summit of high rocks.

The description given by Mr. Wimbush of the demonstration made by a pair of pheasants in defence of their young shows that attitudes supposed to be awe-inspiring are indulged in by Cheer. Finn corroborates this and remarks:—

> "This species is not supposed to show off, but a vicious male in the Calcutta Zoo used to show off in the Common Pheasant's attitude aslant with spread tail when trying to attack, and as the show position so commonly seems to be the fighting one too, I expect the species does thus display when courting. This bird made a murmuring note when approached, like the Kalij Pheasant."

It is said to be an excellent bird for the table and one of my correspondents adds, "It is the only game bird I have shot in India which in any way reminds me of the English Pheasant and the flesh, especially, if kept for a short time in the cold weather is much more like that of true *Phasianus* than that of the Junglefowl or Kalij."

Genus CERIORNIS.

Ceriornis, Swainson, Class. Birds, vol. ii, p. 341, 1837.
Type by mon., *Ceriornis macrolophus* Lesson.

This name antedates the following by four years.
Pucrasia, Gray, List Gen. B. p. 79 (1841).
Type, *Satyra macrolopha* Less.

This genus differs from the true Pheasants (*Phasianus* and *Syrmaticus*) in having greatly lengthened upper tail-coverts, together with a proportionately shorter tail, the feathers of which are graduated so that the central, and longest, rectrices are about twice the length of the outermost pair. The head has a well-developed crest, in addition to which the feathers above the ear-coverts are elongated into two long lateral plumes, contrasting in colour with the occipital crest. There is no bare orbital space, the sides of the face being feathered.

The wings are rounded, the first primary being short, and the second about equal to the eighth.

The tarsus is stout and strong and, in the male, is armed with a spur, generally short and blunt.

Species and Subspecies.

The Koklas Pheasants belong to a genus which extends over an immense area of country, stretching from the Western Himalayas in India through Tibet and China into Manchuria.

Naturally, therefore, we find that it splits up into a considerable number of species and subspecies, though it is not always easy to decide what forms are deserving of the rank of species or what should be merely designated subspecies or geographical races of those species.

Adhering to my rule that the classification which is most convenient is also the most scientifically sound, I accept four forms, or groups of forms as sufficiently well-defined from one another to merit the title of species. In no case can any one of these four forms be mistaken for another and, in no case, is there a line between the two

in which they merge into one another in such a manner as to make it in the slightest degree difficult to say to which they belong.

The two points in the plumage of the various Koklas Pheasants which in combination make discrimination between them easy are: (1) The colour of the tail-feathers; and (2) the pattern of the feathers of the back. The first feature divides them into two well-defined groups, and the second breaks up each of these yet again into two further divisions.

Beebe, who uses only the pattern of the upper plumage as a distinguishing feature, places *P. meyeri* as a subspecies of *P. xanthospila*. This, however, it certainly is not, as the tail of the two forms are utterly different but, as the back plumage pattern, on the other hand, is equally different to that of *P. macrolopha*, it must stand as a species intermediate between these two. The fact that its tail is like one species and its back like another, does not alone reduce it to a form such as would constitute a subspecific link between the two, for this combination of features is quite definite and does not show, as far as we know at present, any sign of merging into the other forms.

As regards the subspecies into which they may be further divided, the differences are only a question of degree. These, however, are sufficiently pronounced within certain areas to enable us to give them a definite status as geographical races, yet on the confines of each area we find perfectly intermediate specimens, which we may allot to either of the adjacent subspecies as it best pleases us.

In 'Zoologica' Beebe thus describes the differences in the three species he accepts:—

> "In *macrolopha* the mantle feathers are cold ashy grey, with a wide black shaft stripe extending almost to the tip. . . . A white wedge has been driven some distance up the shaft, but . . . is not visible when the feathers are in place. In *xanthosphila* and its congeners . . . there are two lines of black instead of one.
>
> "In *darwini* two additional lateral white wedges have appeared, splitting the two longitudinal black lines into four."

If, however, *darwini* is to rank as a full species on account of the different pattern of the upper plumage, then, *ipso facto*, we must raise *meyeri* to the rank of species on the ground of the totally different tail coloration. We then have, as I have already shown, four species and five subspecies with the following key:—

Key to Subspecies.

MALES.

A. Basal portion of tail-feathers black, more or less marked with rufous.

a^1. Feathers of back with single black central streak.

a^2. Sides and flanks principally grey.

a^3. No red nuchal collar . . . . . *C. m. macrolophus*, p. 206.

b^3. A red collar on nape . . . . . „ *m. biddulphi*, p. 218.

b^2. Sides and flanks principally black with narrow grey edges . . . . . „ *m. nipalensis*, p. 221.

c^2. Sides and flanks principally chestnut with little black or light marking . „ *m. castaneus*, p. 223.

b^1. Feathers of back with two black streaks „ *meyeri*, 225.

B. Basal portion of outer tail-feathers grey, not rufous.

c^1. Feathers of back with two black streaks.

d^2. A yellow collar . . . . . „ *xanthospilus xanthospilus*.

e^2. A rufous collar . . . . . „ „ *ruficollis*.

d^1. Feathers of back with four black streaks { „ *darwini darwini*. / „ „ *joretanius*.

FEMALES.

A. Basal portion of outer tail-feathers black or black and rufous.

a^1. Outer pairs of tail-feathers with black markings more or less following contour of feather . . . . . „ *m. macrolophus*, p. 206.

b^1. All but outermost pair with black markings more in the nature of bars . . . „ *m. biddulphi*, p. 218.

c^1. All but outermost pair mostly chestnut on outer and blackish on inner web with whitish tips . . . . . „ *m. nipalensis*, p. 221.

d^1. Both webs of all the outer tail-feathers mostly chestnut with white tips . . „ *meyeri*, p. 225.

B. Basal portion of outer tail-feathers grey.

e^1. Black bars across tail complete . . . { „ *x. xanthospilus*. / „ *x. ruficollis*.

f^1. Basal bars across tail broken into spots { „ *d. darwini*. / „ *d. joretanius*.

Of the above, *C. m. macrolophus* and its various subspecies inhabit India from the extreme north-west and the borderland of Baluchistan and Afghanistan to Western Tibet; we then have *C. meyeri* in Central Tibet through the north of Burmah in Yunnan, next comes *C. x. xanthospilus* and its geographical races in Eastern Tibet and Western China, and finally in the extreme east *C. d. darwini* and *joretanius*.

If we accept Tibet as being within the geographical range with which we are dealing, the two last are the only ones which do not come within our cognizance.

CERIORNIS MACROLOPHUS MACROLOPHUS.

THE KOCLAS OR PUCRAS PHEASANT.

Satyra macrolopha, *Lesson, Dict. Sci. Nat.* lix, p. 196 (1828), *id. Traite d'Orn.*, p. 494 (1831), *Thien, Fortpflanzges Vög.*, p. 53, pl. 12, fig. 5 (1845-54) (egg).

Phasianus pucrasse, *Gray*, in *Griff.* ed. *Cuv.* iii, p. 26 (1829).

Phasianus pucrasia, *Gray*, in *Hardw. Ill. Ind. Zool.* p. 40 (1830-32); *Gould, Cent. Himal. Birds*, pls. 69 and 70 (1832).

Euplocamus pucrasia, *Jard. Nat. Lib. Orn.* iv, p. 216, pl. 21 (1834).

Tragopan pucrasia, *Temm., Pl. Col.* Text to No. 545 (pl. 15) (1834).

Phasianus macrolopha, *Blyth, Cat. Mus. As. Soc.* p. 245 (1849).

Pucrasia macrolopha, *Gray, Gen. B.* iii, p. 503 (1844); *Hutton, J.A.S.B.* xvii, pt. 2, p. 694 (1848); *Jardine, Contr. Orn.* 1850, p. 145 (eggs); *Gould, B. Asia*, pl. 26 (1854); *Adams, P.Z.S.*, 1858, p. 500 (Simla); *Jerdon, B. of India* iii, p. 524 (1863) (pt. N.W. Himalayan); *Tytler, Ibis*, 1868, p. 203 (Simla to Mussooree); *Pelzeln, Ibis*, 1868, p. 321; *Beavan, Ibis*, 1868, p. 321 (Koteghur); *Beavan, Ibis* (1868), p. 380; *Stoliczka, J.A.S.B.* xxxvii, pt. 2, p. 68 (1868); *Elliot, Mon. Phas.* i, p. 28 (1872); *Brooks, Ibis*, 1869, p. 60 (Naini Tal, Almorah); *Hume & Marshall, Game-B. I.* vol. i, p. 159, pl. 2 (1879), p. 431 (1880) (Himalayas, 3,000-4,000); *Marshall, Ibis*, 1884, p. 422 (Chamba); *Oates* in *Hume's Nests and Eggs*, 2nd ed. iii, p. 411 (1890) (part); *Ogilvie-Grant, Cat. Birds B.M.* xxii, p. 311 (1893); *id. Mon. Game-B.* i, p. 281, pl. 21 (1895) (Kumaun to Chamba); *Blanford, Faun. Brit. Ind. Birds*, iv, p. 84 (1898) (part); *Oates, Man. Game-B.* i. p. 313 (1898); *Oates, Cat. Eggs Brit. Mus.* i, p. 56 (1901); *Rattray, Jour. B.N.H.S.* xvi, p. 663 (1905) (Murree), pl. *Nests with Eggs*; *Ward, ibid.* xvi, p. 944 (1907); "*Pine Martin*," *ibid.* xix, p. 797 (1910); *Beebe, Mon. Pheas.* iii, p. 8, pl. 45 (1922); *Stuart Baker, Jour. B.N.H.S.* xxv, p. 524, pl. (1918); *Searight, Jour. B.N.H.S.* p. 818 (1926) (Tehri Garhwal); *Whistler, Ibis*, 1925, p. 201 (Ladak); *id. ibid.* 1926, p. 770.

Pucrasia macrolopha macrolopha, *Beebe, Zoologica* i, No. 15, p. 279 (1914) (Kumaun and Garhwal); *Whistler, J.B.N.H.S.* xxiv, p. 588 (1916); *Jones, ibid.* xxvi, p. 619 (1919) (Simla Hills); *Hingston, ibid.* xxvii, p. 570 (Dharmsala); *Whistler, ibid.* xxviii, p. 110 (1920) (Simla); *White, ibid.* xxx, p. 473 (1925) (Kashmir); *Whistler, ibid.* xxxi, p. 482 (1926) (Kulu); *Stuart Baker, Fauna B.I. Birds*, 2nd ed. v, p. 310 (1928).

Vernacular Names.—*Koklas, Kokla* (Simla to Almora); *Pokras* (Bhote Parganas of Kumaun and Garhwal); *Plaask* (Pahari).



Male. Female

THE KOKLAS OR POKRAS PHEASANT.

Ceriornis m. macrolophus.

Description. Adult Male.—True coronal crest chestnut-fawn; longer lateral tufts and whole head, chin, throat and hind-neck black glossed with deep green; sides of the neck with large patch of white; whole upper plumage from neck to upper tail-coverts silver-grey, a lanceolate streak down the centre of each feather velvety black; shafts on the lower back and rump paler; the longer upper tail-coverts more rufous, the longest being almost entirely of this colour, edged with grey and with broken longitudinal lines of black; central tail-feathers rufous, tipped grey and with black shafts, and a line of black on either web running from base to tip along close to the shaft, with a similar fainter line close to either edge; wing-coverts like the back but having the grey replaced by pale rufous-brown, shading again into grey; quills brown with broad edges of buff, the innermost secondaries mottled and blotched with velvety black; centre of fore-neck to vent deep, but bright chestnut, varying considerably in width and extent but, normally, covering the greater part of the abdomen; sides of the lower neck, breast and flanks grey, each feather with a central streak of black and those next the breast with the outer web chestnut; under tail-coverts chestnut with white spots at the tips; vent pale chestnut with blackish bases to the feathers; thigh-coverts and adjacent feathers dull buff with mottled black and chestnut webs; under aspect of tail black with white tips.

Colours of Soft Parts.—Irides dark brown; bill dark horny-brown or black, the tip always black; legs plumbeous horny or brown, sometimes tinged with greenish or purplish and at other times almost a fleshy brown or livid flesh-colour.

Measurements.—Wing 215 to 244 mm.; tail 221 to 277 mm.; tarsus about 63 to 69 mm.; culmen about 24 to 29 mm.; crest up to 100 mm.; ear-tufts up to 120 mm.; spur 10 to 19 mm.

Adult Female.—Crown chestnut or buff, with broad black crescentic bars, decreasing towards the end of the short crest, which is also paler than the rest of the crown; supercilia pale and broad, though ill-defined, and varying from pale buffish white to creamy buff; upper parts, including scapulars and wing-coverts pale brown with numerous fine broken bars of blackish, bold pale buff stripes and black centres; generally the upper back and shorter upper tail-coverts are most richly coloured, the black being bolder and more prominent and the

shaft stripes broader and often more rufous than elsewhere; the longest upper tail-coverts want the bolder markings and are finely vermiculated with dark brown and, to a less extent, with buff, in addition to which they have pale edges; central tail-feathers rufous-buff, pale tipped and with irregular bars of black with pale rufous centres; outermost tail-feathers chestnut with white tips, black sub-terminal bands and black mottling on either web; intermediate feathers the same, with comparatively less and less black on each succeeding pair; chin and throat creamy buff, with a line of black spots running down each side from the angle of the gonys; fore-neck and hind-neck buff, with broad black or dark brown edges, remainder of lower plumage pale buff to a creamy rufous, each feather with longitudinal markings of dark brown, narrowest on the breast and broadest on the posterior flanks; under tail-coverts chestnut with white spots; vent and centre of abdomen whitish with drops of dark brown on either web.

The depth of colouring and its prevailing tint, both above and below, vary very greatly in individuals from the same locality, some being very much more rufous than others.

Colours of Soft Parts.—The same as in the male.

Measurements.—Wing 180 to 218 mm.; tail 172 to 195 mm.

Hume gives the weight of the male as being from 2 lb. 2 oz. to 2 lb. 14 oz., and that of the female as 1 lb. 10 oz. to 2 lb.

Distribution.—Naini-Tal, Almorah, Garhwal and Tehri-Garhwal and the Simla States northwards into Lahul. According to Ward the true *macrolopha* is found in Jammu in the south of Kashmir, and it is not until one works further north-west that one comes across *C. m. biddulphi*, but Jammu birds appear to be intermediate, though perhaps nearer *C. m. macrolophus* than to *C. m. biddulphi*. Specimens from Murree are also nearer the former than the latter, and it appears that the Common Koklas Pheasant inhabits the extreme south of Kashmir, through Jammu, Naoshera and Punch as far as this town, its place being taken throughout Northern and Central Kashmir by Marshall's Koklas. Probably in the north-west the Jhelum River, above where it turns south, forms the southern boundary, whilst in the same way the Chenab, where it runs east and west, forms its southern boundary north of Jammu.

Nidification.—Throughout its range the Koklas Pheasant breeds principally between 6,000 and 9,000 feet, sometimes higher up to 12,000 feet, at which altitude Whymper found them breeding freely in Garhwal in the Niti and Nila Valleys and, occasionally, lower down, perhaps to some 4,500 feet. It may stray even lower than this in the cold weather but, in summer, more birds will be found breeding over 7,500 feet than below this range.

Rattray has a beautiful photograph of this Pheasant's nest which appeared in this Society's journal, taken by him near Murree, and in the article accompanying it he records it as breeding very commonly in the galis in the vicinity at between 7,000 and 9,000 feet. In letters to me he describes the nest as being nearly always placed in thick green undergrowth on the sides of hills in forest, either evergreen or fir. Sometimes in amongst bracken in the same forests and sometimes in amongst tangles of briars, raspberries or other canes but, wherever placed, generally well hidden from the view of the passer-by and, often, protected by a fallen tree or some densely foliaged low bush. Occasionally the nest is wedged in amongst the roots of a tree, either standing or fallen and, in such cases, may be in a hole or hollow almost out of sight.

Rattray also observes that of the nests he took round about Danga Gali every one was placed under thick bushes of a kind of rue with a strong aromatic smell.

The nest itself appears to be a trivial affair of a few leaves, sticks and dead weeds, more often than not merely the accumulation of fallen odds and ends with a receptacle scratched in the centre; less often a more pretentious affair, the materials having been collected together in a heap in the centre of which the eggs lie in a soft, well-lined depression.

The nest may often be found in forests of Paludna Pines, and in these is generally placed in some damp, mossy ravine, in which the rocks, bracken and bush undergrowth offer protection and concealment. It is seldom, if ever, found in the more open parts, where the undergrowth is scanty and the surface of the hillside unbroken.

Dodsworth found it breeding near Simla amongst deodars in exactly the same kind of position as that generally found in the Paludna pine country, so that undergrowth and possibly the near

vicinity of water would appear to be the two essentials in the selection of a nesting site.

The number of eggs laid have been variously reported as being from four to nine. Rattray gives the number as five to seven, a full clutch nearly always containing the latter number. Hume says five to nine; Wilson says that seven are laid. Whymper has found as many as seven, but says that generally five to six are laid. I have had clutches of four sent me, which have been much incubated, and have only heard of one clutch of as many as nine.

In general appearance the eggs are more like those of Grouse than those of our true Pheasants. The ground colour is a pale buff, usually rather dull and dirty in tint, sometimes richer and brighter and, sometimes, with a slight reddish tint. The markings consist of spots, specks and blotches of reddish brown; dark, light or medium in different clutches and, occasionally, with a chocolate or purplish tint. I have seen no eggs with secondary, or subsidiary, markings, though in some cases the spots may be of two tints, one richer and darker and one paler and more sepia than red-brown in colour. In each case, however, the spots are superficial and not subsurface.

Variation in the character of the eggs consists almost entirely in the number and size of the markings and, to a slight extent, in the depth of their colour. In the majority of eggs the markings are quite small, a few dots and small blotches but mainly specks and spots, scattered all over the surface of the egg, equally numerously at either end. In some eggs the larger markings are comparatively bigger and more numerous, giving the egg a bolder brighter look, whilst in a few eggs the smaller specks and stipplings are absent or practically so and, as in these eggs the bolder markings are often of some size, they have quite a handsome appearance.

I have one clutch taken in Garhwal by Whymper, in which the markings consist of scanty but rather bold blotches of purple-brown, the surface of each spot looking as if mildewed; in these eggs some of the blotches, which consist of very regular round spots, run up to as much as 4 mm. in diameter.

The surface of the shell is hard and close, but there is little or no gloss. In shape the normal egg is ordinary "hen's egg" shape, sometimes a little compressed and pointed at the smaller end.

Hume gives the dimensions of fifty eggs as averaging 2·08 inches (52·8 mm.) by 1·47 inches (37·3 mm.), which is rather larger than the average measurements of those I have had pass through my hands. Sixty of these average 51·3 × 37·5 mm.; maxima *57·0* × 38·1 and 51·9 × *40·0* mm.; minima *49·0* × 37·0 and 51·1 × *34·5* mm.

The series I have seen all come within these extremes, with the exception of two eggs which measured 40·0 mm. in breadth, and the eggs of this Pheasant are, on the whole, even more remarkably constant in shape and size than they are in coloration.

The breeding season over the greater part of its range above 7,000 feet commences in the beginning of May and continues until well on into June. On the other hand, at its lowest level, a few birds may be found laying at the end of April.

The hen-bird is a very close sitter once incubation has commenced but, unless almost trodden on, sneaks away before being discovered, as stealthily and silently as a cat. If suddenly disturbed, she goes away with the fluster and noise common to all Pheasants under similar circumstances.

It is almost certain that these Pheasants are monogamous, and the cockbird may generally be found in the close vicinity of where the hen is sitting and, once the chicks are hatched, he shares with her the labour of looking after and protecting them.

Hume believed that the Koklas pairs for life and the observations of modern sportsmen to some extent confirm this. I have repeatedly been told that year after year, if not too much disturbed, the same pair of Pheasants will haunt and breed in some particular small patch of jungle in the same ravine. "Pine Martin," in a very readable article on this bird and the Kalij Pheasant, which appeared in the 'Bombay Natural History Journal,' vol. xix, does not agree with this. He writes:—

> "In the shooting season the old cocks are almost always found by themselves. . . . In shooting, if your dog puts up an old cock, do not trouble to look for any more birds near him."

Incubation takes twenty or twenty-one days, and the young are able to fly well within a very few days after they emerge from the shell.

General Habits.—The Koklas is normally a bird of high elevation, being found up to 14,000 feet and probably most common between 7,000 and 10,000 feet: Wilson says it is found down as low as 4,000 feet, whilst Hume records it as venturing even lower than this, viz., to 3,000 feet, though to these low hills it only wanders in the cold weather and, even then, but very rarely. To sportsmen who want to make a bag, it would be little use attempting anything under 5,000 feet, whilst it would be wiser to work at least 2,000 feet above this.

This Pheasant appears to be specially partial to forests of Cypress, Paludna and other pines, though it may also be found in oak, rhododendron and evergreen forests. They prefer broken ground and are often to be found on very precipitous hillsides, so steep indeed as to make it hard work following them; on the other hand, they may sometimes be found in smooth and open country, such as a plateau of a hilltop or the cup lying between two or more. Wherever they may be, however, there must be lots of cover in which to hide and plenty of undergrowth in addition to the trees themselves. Wilson, or "Mountaineer," undoubtedly the keenest observer-sportsman of the middle of the last century, wrote of this bird:—

> "In the lower regions its favourite haunts are in wooded ravines, but it is found in nearly all hillsides which are covered with trees and bushes, from the summit of the ridges to about half-way down. Farther in the interior it is found scattered in all parts, from near the foot of the hills to the top, or as far as the forest reaches, seeming most partial to the deep sloping forest composed of oak, chesnut and Morinda pine, with box, yew and other trees intermingled, and a thick undergrowth of ringall."

As a sporting bird the Koklas ranks very high and, even now, few will be found to dispute Hume's dictum that of all the Hill Pheasants "the Koklas is the best eating and affords the best sport." One cannot get bags of 20 and 30 couple as one can of the Junglefowl and the Kalij Pheasants, but there can be no denying the fact that in sporting appearance the latter birds cannot compete with the Koklas, handsome though they may be in their own way.

The following account of a Koklas shoot, written by a friend who desires to remain anonymous, gives a good description of the bird, its haunts and the sport it gives under favourable circumstances. He writes:—

"R., an old hand at the game, who has worked Murree and its Galis, both ornithologically and zoologically for many years with great success, had put me up to all the ropes about the Koklas before I paid my visit to the Hills, so that A. and I came up to this giddy whirlpool of Indian Society determined to have at least a couple of days' shoot before we went down again to perspire in the Plains. Our first day's shoot was not a success, as we only had three shots and got but one bird, so I will not descant on it here. The second time out, however, we were much more successful—shot between us a dozen birds, which I think may be considered a good bag nowadays anywhere close to the better known galis.

"It was getting late in February, but the cocks had not started crowing so regularly and so often in the morning as is their wont later on in the season, but our 'Shikari,' Jowala, had marked down for us at least half a dozen places in which he had seen or heard cocks crowing and half a dozen more in which he *thought* there were birds.

"Starting as soon as we could see our way from the rest-bungalow, we were soon at the first spot where he hoped to pick up a bird, and where indeed the previous evening we had ourselves heard the ringing 'pok-pok-pokras' crow of an old cock as he retired to rest.

"We had three good dogs with us, half-bred cockers, two of which had been lent to us by a man who had shot over them in the country we proposed to shoot and, as soon as we arrived in good positions, we sent the dogs in. The ravine was a deep and very broken one, covered with rather thinly scattered oak and other trees, but with lots of bracken and other undergrowth, and with banks rising rather steeply to some two or three hundred feet on either side. Starting at the lowest end of the ravine A. took one side and I the other, working along about 50 yards apart, and some 20 yards up the hillside from the bottom of the ravine. We were very soon on to some birds, and could hear them scuttling through the dry undergrowth in front of one of the cockers before, with a whirr of wings, first one and then two other birds got up, rocketed up into the air, and, turning, flew down towards us at a tremendous pace. A. had his bird down with a ripping shot, but I'm sorry to say I tinkered my first bird badly, though I somewhat retrieved the first shot with my second as I managed to swing round and get the other bird just as she disappeared from sight. As I fired at this, a fourth bird got up but, frightened by our shots, went uphill and settled again within 100 yards, for though we could not see her, we heard her go down.

"Picking up our two birds we went on up the ravine, but though the dog feathered constantly we came on no other bird until we had

gone some distance, when we picked up the scent of the fourth bird, which, on alighting, had evidently scurried off uphill on foot as fast as she could. The dogs were after her, however, hot foot, and just as they reached the crest of the hill, up flew the bird and hurtled down over our heads, but out of shot. We had not, however, done with the ravine, for as we got nearly up to the higher end the dogs showed there was more business afoot and, after a few minutes' work amongst the rocks, which here were large and numerous, drove out another two birds, one of which found its way within a straight shot from my gun, and the other of which escaped A. in between the tree-tops out of sight of where he was standing.

"Leaving the ravine, we proceeded to our next beat, this time a hillside covered with the same forest as that we had left, but with the ground much more precipitous and very rocky. According to our guide, the birds were probably about half-way up the hill, so we made our plans accordingly. With dogs the *probability* was that the birds would rise quickly and fly straight down, without dogs the *certainty* would have been that the birds would have run uphill until they had topped the crest. We, therefore, worked round the lower part of the hill, A. taking the bottom and I keeping about 100 feet above him, whilst Jowala and one of the dogs started in about the same distance above me. We had nearly finished the hill, and I had given up all hope of any bird, when without any notice from the dogs who had worked well up the hill after *something* for nearly 200 yards back, five birds got up together, and came spinning down past us, giving us beautiful shots within easy range. In my eagerness, however, I stepped forward too quickly on a rolling stone, and sitting down with a most emphatic bump emptied both barrels into the air without a feather falling in response thereto. A., more fortunate, kept both head and feet, and bowled over a nice right and left, but missed one of two other birds which got up almost immediately a little further on. Just beyond the brow of this hill we put up yet another bird, evidently one of the same flock, but failed to get a shot on account of the trees.

"The next beat in which Koklas had been marked down for us was some distance away from the hill just shot over, but there were one or two likely places *en route* and beating through these, we picked up a brace of Hill Partridge and A. also bagged a cock out of some oak bushes from which the spaniels flushed him. This, by the way, was the only Woodcock we saw all day on this occasion, though they are not uncommon, and indeed breed in the galis.

"Our third beat was a very long ravine running round the side of a hill, the steep hillside rising high above it on one side, whilst on the lower there was only a high bank, perhaps 30 or 40 feet higher than the centre of the ravine. A toss of a coin gave A. the choice of

places, and he selected the side of the ravine next the hillside whilst I took the lower. Immediately the dogs were let go, they showed that birds had been on the ground and, feathering briskly, they worked up the hill after them.

"They had moved on again, however, and nothing resulted for the time being, but about 200 yards further on it was evident that one of the dogs was close on to them, and presently up they got. First a pair, which proved to be an old cock and hen, flustered up directly in front of A., and were neatly disposed of and, within a few seconds another three birds got up one after another, from amongst which A. and I each managed to bowl over one and miss another. A good long tramp followed this with nothing to show except a Pigeon which I got as it flew overhead. It was fast getting hot, for even at 7,000 feet and over it can get very hot tramping a difficult hillside, so we called a halt and had lunch and a pipe, whilst we rested for an hour or so. Shortly after resuming we got into a very pretty bit of country; the ravine through which we were working widened out into an open hollow nearly 100 yards across in which the scattered oak trees grew amongst dense bracken in a way which reminded us very much of an oak copse on some of the Welsh hills. Evidently we were both taken up too much with the picturesque side of nature, for when two birds got up within easy shot of me, I managed to miss both, whilst two shots fired by A. in an attempt to wipe my eye were no more effective.

"From this ravine Jowala took us to a wide natural hollow between three peaks, which shut it in on three sides, the fourth side just rising gently for a few yards, and then dipping down again into a valley far below. The centre and fourth side of the hollow were practically free of all cover except a few scattered bushes, and Jowala informed us that any birds which might be within working distance would certainly fly straight down to the hollow and then out by the open fourth side into the valley below. There was no special choice of stands, so A. took up one side of the gap and I the other, both making use of a thick bush to screen us from the hillside. Putting in the dogs we worked one of the small peaks without any result, though a Barking-Deer was put up which fled uphill, barking loudly as he went. Calling the dogs back, we then sent them into the cover on the second peak, and in this soon had some Pheasants put up, but these birds evidently thought it too hot to face the open, and merely flew into the nearest trees, so that it was not until Jowala, guided by the yapping of the spaniels, came to their assistance, that the birds left. First came an old cock with wings almost closed as he got way on and came down towards us at express speed; so fast was he that A. was behind him with his first barrel, and only winged him with his second. Down he came with a thud on the

ground and feathers flying in all directions, but as soon as he touched the ground he was up and off like greased lightning into the nearest cover. We had no time, however, for the moment to spare retrieving him, for A.'s shots had started the rest of the covey, and down they came too. On starting they beat their wings with great rapidity, continuing to rise in the air, but as soon as they had got to what they considered the right height and had got fairly going, they half spread their wings out and swept down upon us at a pace that deceived me, although I had just seen A. miss. The consequence was I was behind with both barrels, and had the mortification of seeing five birds sail over the edge into the valley below with never a feather rumpled.

"The third peak yet remained to be worked, and from this the dogs turned out three birds, who took to trees just as the last lot had done, and, like them, when turned out by Jowala, came straight down for the opening into the valley below.

"Determined to give them enough law this time, I pitched forward a good three yards ahead of the leading bird, and had the pleasure of seeing him turn turtle in the air, and before he touched Mother Earth had his wife falling with him. A. also managed to get another bird, and we then sent the dogs after the runner, which they failed to recover. Doubtless he had treed, and they were thus beaten. We could hear them following up his trail right far down into the *khud* below, but it was miles round had we tried to get there ourselves, so reluctantly we had to give him up.

"We noticed, as we had been told would be the case, that the birds always tried to run uphill, but when once flushed, they rose fairly straight up into the air, making a tremendous commotion with their wings until high enough to clear the denser vegetation. Once up as high as this, they turned and came downhill towards us, and over the dogs, either sailing down with half-spread wings or, especially when it was nearly level, alternately sailing and rapidly beating their wings. When they pitched over a steep place, they nearly closed their wings and the pace they came at was very great and this, combined with the fact that often one only got the quickest of snap-shots at them, made the shooting very difficult, much harder we both thought, than taking rocketing pheasants out of a home covert.

"Most of the birds when put up by the dogs made a noise which reminded us of the Common Pheasant's crow under similar circumstances, but it was not so loud and might be described as a harsh chuckling protest at being disturbed. The crow, which is indulged in morning and evening, is a fine ringing call, quite characteristic of a true game bird."

It is said that the Koklas will crow in response to a clap of thunder or any other sudden loud noise, such as the fall of a rock or tree, or the firing of a gun.

At one time round about Naini Tal the Koklas was a comparatively common bird, and Whymper tells me that he has shot as many as eight birds before breakfast on "Cheena." They have, however, been much shot at there as elsewhere, and are certainly much less common now in all the easily got at places than they were twenty-five years ago.

In epistola Whymper says :—

> "The open places in the forests (oak and rhododendron principally) were their favourite haunts in the mornings and evenings, and they were to be found day after day at the same time in the same place, a trait which, of course, leads to their easy destruction.
>
> "The Koklas when young, is, I think, the best of all the Indian Pheasants for the table, and is certainly the best for sport, rising very rapidly and flying with immense velocity.
>
> "A very curious thing in connection with these Pheasants is that I have twice known of their being found fast asleep (almost as if drugged) on paths. I once myself caught in this manner a full-grown young cock, and an old sportsman in Naini Tal told me that he also was aware of similar instances.
>
> "I once had the pleasure of seeing a hen Koklas knocked over in full flight by a *Spizætus nepalensis*, the Crested Eagle; I ran up and caught her, and after a short while let her go, when she ran off as if nothing had happened."

Jones says that it is still fairly plentiful round about Simla between 7,500 and 8,500 feet, where there is more or less open deodar forest with plenty of grass but not much lush undergrowth.

The Koklas feeds on all kinds of grain, grass seeds, acorns, berries and buds and, also, upon insects, worms, etc., though it is probably more of a vegetarian than insectivorous feeder on the whole. Wilson says that it feeds principally on leaves and buds, and that owing to its disinclination to a restricted diet of grain, is harder to rear in captivity than either the Cheer or Monal. A bird examined by Whistler had fed almost entirely on coarse grass mixed with a little maidenhair fern and moss.

CERIORNIS MACROLOPHUS BIDDULPHI.

THE KASHMIR KOKLAS.

Pucrasia macrolopha, *Adams* (nec *Less.*) *P.Z.S.* 1859, p. 186 (Cashmere); *Oates* in *Hume's N. and E.* 2nd ed. iii, p. 141 (1890) (part, Cashmere); *Blanf., Faun. Brit. Ind.* iv, p. 84 (1898) (part, Cashmere); *Magrath, Jour. B.N.H.S.* xviii, p. 298 (1908) (Thandiani).

Pucrasia biddulphi, *Marshall, Ibis,* 1879, p. 461; *id. Jour. f. Orn.* 1879, p. 424; *id. Str. Feath.* viii, p. 445 (1879); *Oates, Man. Game-B.* i, p. 318 (1898).

Pucrasia macrolopha biddulphi, *Ogilvie-Grant, Cat. Birds B.M.* xxii, p. 313 (1893) (Cashmere and Gilgit); *id. Man. Game-B.* i, p. 284 (1895); *Beebe, Zoologica* i, No. 15, pp. 278-279 (1914); *Ward, Jour. Bomb. Nat. Hist. Soc.* xvii, p. 944 (1907) (Cashmere and Jammu); *Beebe, Mon. Pheas.* iii, p. 24, pl. 46 (1922); *Osmaston, Jour. B.N.H.S.* xxxii, p. 144 (1917) (N. Kashmir); *Stuart Baker, Jour. B.N.H.S.* xxv, p. 535 (1918); *id. Fauna B.I.* 2nd ed. v, p. 312 (1926).

Vernacular Names.—*Plas* (Kashmir); *Kukrola* (Chamba).

Description. Adult Male.—Differs from true *C. m. macrolophus* in being slightly darker above and in having the chestnut on the fore-neck extended to the hind-neck; below the chestnut is much darker and more mixed with black, whilst the feathers of the upper breast often have very narrow margins of black, which give this part of the plumage a still darker appearance.

Colours of the Soft Parts.—As in *C. m. macrolophus.*

Measurements.—I have been able to examine only a small series of this form of Koklas, but the average dimensions work out to much the same as in the Common Koklas.

Wing 233 to 249 mm.

Adult Female.—As a rule, the females of the Common Koklas have the outer tail-feathers much mixed rufous and black, but the general trend of the marking is to follow the contour of the feather, so that it is longitudinal in character. In the Kashmir bird the black generally forms bars except on the outermost pair. The bars are

comparatively well-defined on the terminal half of the feathers, and there is also a well-marked, broad subterminal band.

Colours of the Soft Parts.—As in *C. m. macrolophus.*

Measurements.—About the same as in *C. m. macrolophus.*

Distribution.—Northern Kashmir from Ladak to the extreme west, the Indus probably forming its western boundary, where this river runs due north and south. Where, however, the Indus runs east and west it does not form the northern boundary, for the birds from Gilgit, the Gangri Range north of Leh and northern Ladak are all quite typical *C. m. biddulphi.*

Where this form meets *C. m. castaneus* is an undecided question, and sportsmen shooting on the north-west frontier have still to settle it, so that they should remember that any skins, of males especially, are very badly wanted from practically anywhere in the North-West Frontier Provinces.

Nidification.—This Pheasant breeds in Ladak at elevations between 7,000 and 10,000 feet, its nest and eggs having been taken there by Colonel A. E. Ward and his collectors on several occasions. Nests have also been taken by different collectors north of Srinagar, whilst Davidson remarked that he found it plentiful above Gund, though he apparently failed to obtain the nest.

Like the common Koklas, the Kashmir bird nests in forests, often of pine or fir, laying its eggs upon a collection of leaves and rubbish under the protection of a thick bush, tree or bank; sometimes under a boulder or projecting rock. The nest itself may be either a mere heap of wind-blown leaves and grass, gathered together in some partially sheltered corner, or a mass of similar material scraped together by the bird itself.

The number of eggs laid appears to vary from four to nine, five or six being the more often found.

I have but two clutches of eggs of this form of Koklas. These in appearance cannot, of course, be distinguished from many of those of its more southern cousin. Twenty eggs average 50·8 × 37·5 mm.; maxima *52·4* × 37·0 and 50·6 × *38·6* mm.; minima *49·8* × *36·2* mm. The breeding season commences in the end of May and lasts through June into the middle of July.

General Habits.—The Kashmir Koklas inhabits much the same kind of country as does the Common Koklas, but would not seem ever to descend below about 5,000 feet, and not often as low as this. It is curious, therefore, that its general plumage should be darker than that of the latter bird and evidently, in this subspecies, elevation and humidity are not the dominant factors in producing depths of colouring, a course of reasoning which is emphasized when we find that the Chitral bird, of still more arid clime, is darker and redder yet.

It is possible, however, that in this particular case the depth of colouring may be in some measure protective, the darker bird being less conspicuous when lying hid in the deeply-shaded gorges and ravines which it frequents. It keeps much to pine and fir forests, but is also to be met with in forests of oak, rhododendron and other kinds of trees but, wherever it is found, the country is nearly always precipitous and rocky and, where the hills are more or less rounded, the birds betake themselves to the steeper places in between them and eschew their smoother summits and easier gradients.

Like other members of the genus, this Koklas keeps very close to the same quarters, and may be found morning after morning and evening after evening haunting the same open glade in its search for food, which consists as usual of a mixed vegetarian and insect diet.

In flight, voice and general habits there is nothing to distinguish this bird from the preceding one.

CERIORNIS MACROLOPHUS NIPALENSIS.

THE NEPAL KOKLAS.

Pucrasia macrolopha, *Jerdon* (nec *Less.*); *Jerdon, B. of India* iii, p. 524 (1863) (part, Nepal).

Pucrasia nipalensis, *Gould, P.Z.S.* 1854, p. 100 (Nepal, Bootan); *Gould, B. of Asia* vii, pl. 28 (1854); *Hume, Str. Feath.* vii, p. 428 (1878); *Hume & Marshall, Game-B.* i, p. 165, pl. (1878); *Marshall, Ibis,* 1879, p. 463 (Bootan); *Scully, Str. Feath.* viii, p. 343 (1879) (W. Nepal); *Hume, ibid.* p. 449 (1879); *Oates, Hume's Nests and Eggs* iii, p. 411 (1890) (part); *Blanf., Faun. Brit. Ind.* ii, p. 84 (1898) (part); *Ogilvie-Grant, Cat. Birds B.M.* xxii, p. 314 (1893) (Nepal); *id. Man. Game-B.* i, p. 284 (1895) (W. Nepal); *Oates, Man. Game-B.* i, p. 320 (1998) (Nepal).

Pucrasia duvauceli, *Bonap. Comp. Rend.* xliii, p. 879 (1856); *Elliot, Mon. Phas.* i, pl. 28 (1872); *id., Ibis,* 1878, p. 125; *Hume, Str. Feath.* v, p. 138 (1877); *id. ibid.* vii, p. 124 (1878).

Pucrasia macrolopha nipalensis, *Beebe, Zoologica* i, No. 15, p. 278 (1914); *Stuart Baker, Jour. B.N.H.S.* xxv, p. 537 (1918.); *Beebe, Mon. Pheas.* iii, p. 28, pl. (1922); *Stuart Baker, Fauna, B.I. Birds,* 2nd ed. v, p. 312 (1928).

Vernacular Name.—*Pocrass* (Nepal).

Description. Adult Male.—Differs from *C. m. biddulphi*, and to an even greater extent from *C. m. macrolophus* in being everywhere much darker both above and below; the black centres to the feathers occupy practically the whole of both webs, leaving only a narrow edging of pale buff or whitish. The chestnut colouring on the fore-neck extends right round the neck and on to the shoulders, the feathers here, of course, having black centres as in true *C. m. macrolophus*. On the breast and abdomen the black runs even on to the centre of these parts, though varying much in extent in different individuals.

Colours of Soft Parts.—As in *C. m. macrolophus*.

Measurements.—The Nepal Koklas is a decidedly smaller bird than either the Common or Kashmir form. Wing 208 to 228 mm.; tarsus about 66 mm.; culmen, 23 to 26 mm.; crest, 68 to 91 mm.

Nearly every specimen I have been able to examine has the tail broken or incomplete, so that their measurements are valueless.

Adult Female.—Similar to the other races of this species but, as a rule, all except the outermost pair of tail-feathers are chestnut on the outer web, blackish on the inner with white tips, with a well-marked subterminal black band. The female Nepal Koklas also often has a more decided tint of rufous on the hind-neck and outer scapulars than is shown in the other races.

Colours of Soft Parts.—As in the Common Koklas.

Measurements.—Wing about 205 to 213 mm. Crest in the few I have been able to examine, very short and thin, generally under 1·5 inches (38·1 mm.).

Distribution.—Beyond the fact that this Pheasant is found in parts of Western Nepal, we really know nothing about its distribution. The only specimens known are those got by Scully and Hodgson for Hume from natives, so that their exact localities are still unrecorded. Hume and Captain Marshall both speak of Bhutan as being included in their range but there is nothing to show on what grounds these statements are made, whilst there has been nothing since ascertained to confirm them. At the same time it is possible, indeed, extremely probable, that it will be found to range from West and East Nepal and through Sikkim and Bhutan until it meets *C. m. meyeri* or some hitherto undescribed form linking it with that bird.

Nidification.—Not known.

General Habits.—Of this Pheasant, Scully writes :—

> "In the beginning of 1877, Mr. Hume urged me to procure specimens of the Nepal Koklas, in order that the question of its identity with, or distinction from, *macrolopha* might be definitely settled. This proved no easy task, as the bird, though not uncommon in the western portion of the Nepal Himalayas, does not occur in any part of the hills so far east as the Valley of Nepal. However, after waiting for some six or seven months, I received the seven birds whose measurements are recorded further on, from Jumla in Western Nepal. Three other specimens were subsequently seen in confinement in the valley, and these also had been brought from Jumla.
>
> "Unfortunately, I can give no details about the habits of this Pheasant from personal observations; it is said to be plentiful about Jumla, where it is found not far from the snows. In confinement the birds become very tame, and seem to prefer green leaves and shoots, etc., to grain for food."

CERIORNIS MACROLOPHUS CASTANEUS.

THE CHESTNUT-MANTLED KOKLAS.

Pucrasia castanea, *Gould*, *P.Z.S.* 1854, p. 99 (Kafiristan); *id. B. of Asia.* vii, pl. 27 (1854); *Hume*, *Str. Feath.* v, p. 138 (1877); *Elliot*, *Ibis*, 1878, p. 125; *Ogilvie-Grant*, *Cat. Birds B.M.* xxii, p. 314 (1893) (N. Afghanistan and Kafiristan); *id. Man. Game-B.* i, p. 285 (1895); *Oates*, *Game B.I.* p. 312 (1898).

Pucrasia duvauceli, *Marshall* (nec *Bonap.*), *Ibis*, 1879, p. 463 (N. Afghanistan).

Pucrasia macrolopha var. **castanea**, *Fulton*, *Jour. B.N.H.S.* xvi, p. 61 (1904) (Chitral).

Pucrasia macrolopha, *Perreau*, *Jour. Bom. Nat. Hist. Soc.* xix, p. 919 (1910) (Chitral).

Pucrasia macrolopha castanea, *Stuart Baker*, *J.B.N.H.S.* xxv, p. 539 (1918); *Beebe*, *Mon. Pheas.* iii, p. 26, pl. xlvi (1922); *Stuart Baker*, *Fauna B.I. Birds*, 2nd ed. v, p. 313 (1928).

Vernacular Names.—None recorded.

Description. Adult Male.—Differs from *C. m. macrolophus* in having the chestnut on the fore-neck extending to the hind-neck and mantle; the rump is more weakly marked with black and the chestnut of the throat runs further up into the chin. Practically the whole of the breast and abdomen are chestnut, darker than in true *macrolopha* and marked with black, especially on the flanks. The white markings on the breast and flanks of *C. m. macrolophus* are in this form confined to a few narrow margins on some of the feathers at the sides of the breast.

Colours of Soft Parts.—Not recorded.

Measurements.—Wing about 240 mm.; tail about 178 mm.; tarsus 43 mm.; spur about 10 mm.; culmen about 25 mm.; crest up to 104 mm.

The female of this Pheasant is still unknown.

Distribution.—The ranges of mountains of Afghanistan, Kafiristan and Chitral, where they border on the North-West Provinces.

The limits of the habitat of this subspecies and where it meets *C. m. biddulphi* are at present unknown. At Gilgit, as already noted, *C. m. biddulphi* is the subspecies obtained, though the birds here do, to some slight extent, approach the Chitral bird.

Fulton and Perreau both record the bird as common in Chitral and, doubtless, it will be found to be so throughout these hills in suitable localities from north of the Kabul River in Kafiristan to Wakkan, or even further north and east.

Nidification.—Unknown.

General Habits.—There is so far nothing on record except Fulton's interesting remarks in this Journal. He writes :—

> "This fine Pheasant is common on some of the heavily timbered mountain-sides of Lower Chitral, *viz.*, Pattison, Asreth, and the valley behind Drosh Fort.
>
> "It is generally found above 7,000 feet, but ranges lower in winter. Specimens are very difficult to obtain owing to the dense nature of the ground they keep to. There are probably large numbers of them in Dir and Kafiristan. At the head of the Pattison Valley their harsh cry can be continually heard in spring. It is also to be heard in the Asreth Valley. It is the call of the male that has led to the belief that the Junglefowl (*Gallus ferrugineus*) is to be found in the country. I made a special point of trying, if possible, to find the 'Junglefowl,' and have no doubt that none exist. All the camps at which the cry of the Junglefowl is said to have been heard, are far above the limit of elevations to which they are known to extend. It can be easily understood that the cry kok-kok-kok-kokras, or the plain kokras has been mistaken for that of the Junglefowl when heard at any distance. When, however, the call is once heard near at hand, it cannot be possibly confounded with that of *Gallus ferrugineus*."

CERIORNIS MEYERI.

MEYER'S KOKLAS.

Pucrasia meyeri, *Madarasz*, *Ibis*, 1866, p. 145; *Ogilvie-Grant*, *Cat. B.M.* xxii, p. 314 (1893); *id. Hand-Book Game-B.* i, p. 285 (1895); *Stuart Baker*, *Jour. Bom. Nat. Hist. Soc.* xxv, p. 540 (1918).

Pucrasia xanthospila meyeri, *Beebe*, *Zoologica* i, No. 15, p. 182 (1914).

Vernacular Names.—None recorded.

Description. Adult Male.—Has the upper plumage similar to that of *C. xanthospila*, having the same single central streak of black on each feather, whilst the tail is similar to that of *C. m. macrolophus*. It is said by Madarasz to differ from the former bird in having the centre of the breast and abdomen a more vivid chestnut; the central tail-feathers fulvous with black striations, the lateral tail-feathers rufescent with white tips and black subterminal bands.

Colours of Soft Parts and Measurements.—As in *C. m. macrolophus*; with more material it will probably be found that in measurements *C. meyeri* will come between *C. macrolophus* and *C. xanthospilus*, the latter being a decidedly smaller bird than the former.

Adult Female.—" Differs from the female of *xanthospila* in having the middle tail-feathers fulvous vermiculated with black, and the outer tail-feathers rufous, black towards the apex and tipped with white " (*Ogilvie-Grant*).

From the female of *C. m. macrolophus*, with which the female *C. meyeri* may be more reasonably compared, it differs in having both webs of all the outer tail-coverts chestnut-rufous, with white tips and broad, well-defined subterminal black bands.

Colours of Soft Parts.—As in *C. m. macrolophus*.

Measurements.—Wing 215·9 mm.; tail in moult, 175·2 mm.; tarsus 62·2 mm.; bill at front about 22·8 mm. and from gape about 25·4 mm.; crest 36·8 mm.

Distribution.—"Yerkalo, Upper Mekong to Central Thibet" (*Ogilvie-Grant*).

The actual distribution of this Pheasant is really not known. Certain specimens were obtained at Yerkalo and *somewhere* in Central Thibet, whilst it has been also obtained on the upper Mekong River in Yunnan; how far it extends north and east of this is quite unknown. It is very likely to be found within our area.

Nidification and General Habits.—Nothing recorded.

Genus CHRYSOLOPHUS.

Chrysolophus Gray, Ill. Ind. Zool. ii, pl. 41, fig. 2 (1833).
Type, *Phasianus pictus* Linn.

The genus *Chrysolophus* contains only two species, one the well-known Golden Pheasant, the other the Amherst Pheasant, which just enters our limits in the extreme east.

The distinguishing feature of the male is the curious cape-like arrangement of feathers arising from the nape and hanging over the neck and extreme upper back. There is also a true crest of hairy feathers.

The tail is composed of eighteen feathers and is of very great length, the central pair being four times as long as the outermost. The wing quills are graduated, the fifth being the longest and the first the shortest, being shorter than the tenth. The tarsi are long and stout and armed with a spur in the male.

CHRYSOLOPHUS AMHERSTIÆ.

THE AMHERST PHEASANT.

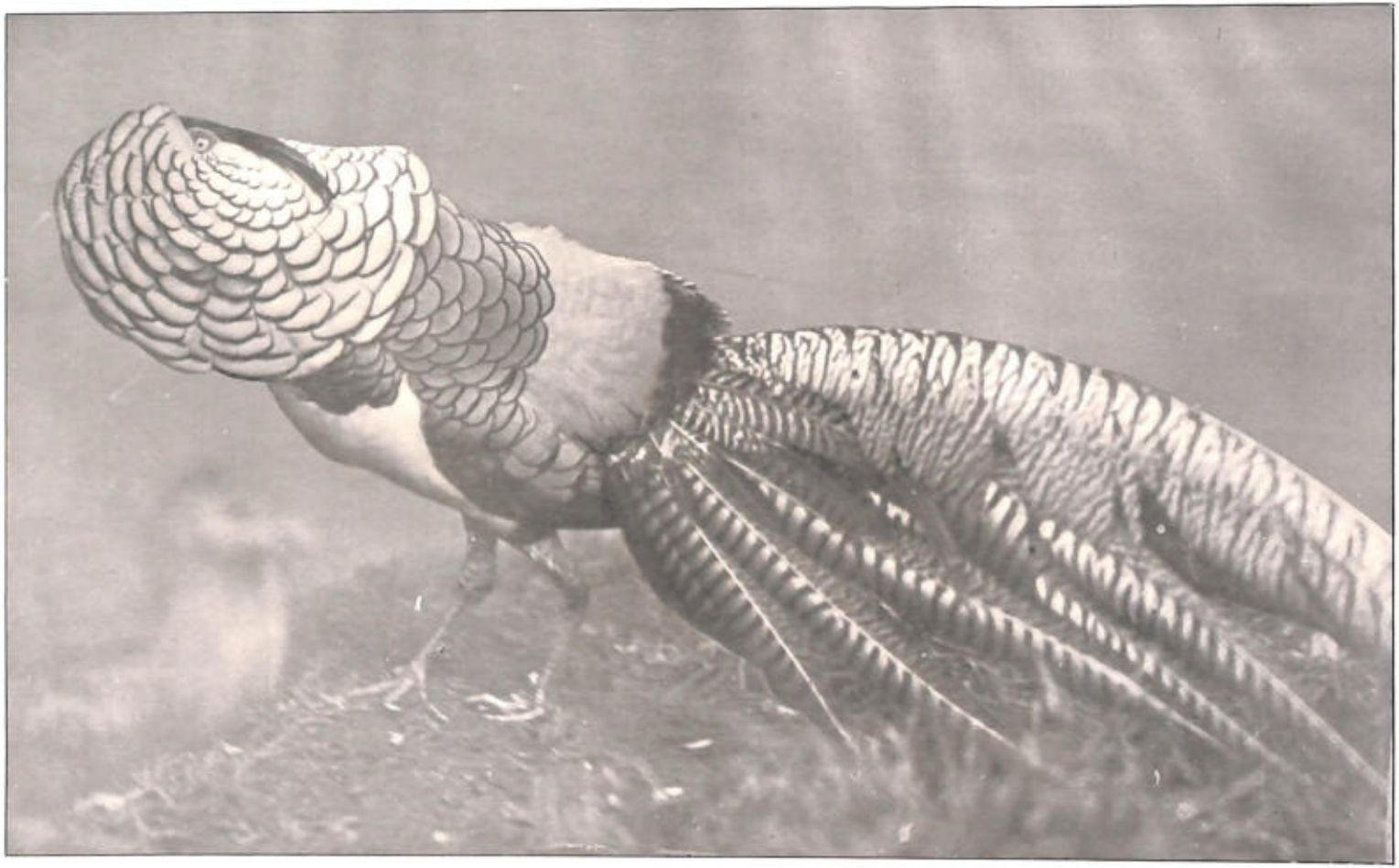
Phasianus amherstiæ, *Leadbeater, Trans. Linn. Soc.* xvi, p. 129, pl. 15 (1828); *Blyth, Cat. Mus. As. Soc.* p. 246 (1849).

Thaumalea amherstiæ, *Wagler, Isis*, 1832, p. 1228; *Gray, Genera Birds*, iii, p. 497, pl. 125 (1845); *Sclater, List Phas.* p. 5, pl. 3 (1863); *Swinh., P.Z.S.* 1863, p. 307; *Gould, B. Asia* vii, pl. 20 (1866); *Sclater, P.Z.S.* 1870, pp. 128 and 670 (Yun-ling Mts.); *id. Ibis*, 1870, p. 297 (Tachienlu); *Swinhoe, P.Z.S.* 1870, p. 111; *Elliot, Mon. Phas.* ii, p. xx, pl. 14 (1872); *Sclater, Ibis*, 1874, p. 169; *David. & Oustalet, Ois. Chine*, p. 415, pl. 103 (1877) (W. Sze-chuen, Yunnan, Queichow, E. Tibet); *Anders., W. Yunnan*, p. 671 (1878) (Yunnan Frontier); *Seebohm, Ibis*, 1891, p. 380 (W. Sze-chuen); *Bailey, Journ. Bom. Nat. Hist. Soc.* xxii, p. 367 (1913) (Tachienlu).

Chrysolophus amherstiæ, *Gray, List. Gallinæ Brit. Mus.* p. 30 (1867); *Swinh., P.Z.S.* 1871, p. 398; *Ogilvie-Grant, Cat. Birds, B.M.* xxii, p. 342 (1893); *id. Hand-L. Game-B.* ii, p. 46 (1896); *Seth-Smith, Avicult. Mag.* iv, p. 142 (1898); *Oates, Man. Game-B.* ii, p. 497 (1898) (Myitkyna); *Ogilvie-Grant, Ibis*, 1900, p. 606 (Chen-Chi); *Davies, Ibis*, 1901, p. 408 (W. Yunnan and Kweichow); *Oates, Cat. Eggs B.M.* i, p. 59, pl. 6, fig. 6 (1901); *Finn, Avicult. Mag.* (new ser.), iii, p. 102 (1905); *Comber, Journ. Bom. Nat. Hist. Soc.* xvi, pp. 512, 530 and 753 (Sadon, 9,000 ft.); *Harington, ibid.* xix, p. 309 (1909); *Stuart Baker, ibid.* xxv, p. 543 (1918); *Beebe, Mon. Pheas.* iv, p. 26, pl. 127 (1922); *La Touche, Ibis*, 1924, p. 300 (S. E. Yunnan); *Stuart Baker, Fauna B.I. Birds*, 2nd ed. v, p. 314 (1928).

Vernacular Names.—*Ja* (Tibetan); *Sen-chi* (Chinese); ? *Woo-chree* (Burmese, Shan States).

Description. Adult Male.—Occipital crest of hair-like feathers blood-crimson; feathers from the back of the head and behind the ear-coverts falling in a broad cape over the back, scapulars and shoulders of the wing, pure white with edges of velvety black glossed with steel-blue, the longest having a second bar of the same about 19 mm. from the tip; remainder of head, neck, throat, upper breast



DISPLAY OF AMHERST PHEASANT.

and mantle brilliant peacock-green, the feathers of the breast and mantle sub-bordered with black and with tiny scintillating edges of emerald-green; lower back and rump brilliant golden-buff, each feather with a hidden black base and with a broad band of metallic dark blue-green, which shows up here and there; upper tail-coverts black and white, the central and some of the lateral ones with flame-coloured tips; the longest tail-coverts fall in pairs on either side of the true tail feathers, making them look as if tasselled with orange-gold; central tail-feathers white with bars of metallic blue-black and with irregular broken bars of dead black, more or less at right angles to those on the white interspaces; outer tail-feathers mottled black and white on the inner webs, white on the outer webs with regular bars of blue-black and with broken black edges; the white next the edge changes to a dull buff-brown.

Wings: primaries brown, the outer edges white over all but the last inch or so; outer secondaries brown, only the outermost edged with white; inner secondaries, coverts and whole remaining visible portion of wing deep steel-blue, each feather edged with velvet-black.

Below, lower breast, abdomen and flanks white; anterior flanks, thigh-coverts and vent white with black bars and mottlings; under tail-coverts deep blue-green with black edges.

A very bright-coloured male from Moupin has the feathers of the throat, chin, fore-neck and upper breast centred with white, conspicuous on the throat and fore-neck, concealed on the upper breast. One or two other specimens have these same white centres, though in a much smaller degree, whilst in none are they visible unless the feathers are lifted so as to expose their basal portions.

Colours of Soft Parts.—"Iris clear yellow" (*Pere David*). Orbital skin blue, varying in brightness and depth of colour according to season; bill yellowish horny, darker at base and round nostrils; legs and feet plumbeous or bluish horny, toes and claws darker. Iris bright straw-yellow.

Measurements.—"Total length about 69 inches; wing 8·2; tail 30; tarsus 3·1 inches" (*Ogilvie Grant*).

The series in the British Museum have wings running from 8·1 to 9·2 inches (205 to 233 mm.); tails from 34 to 45 inches (863 to 1,143 mm.); bill at front about 1·05 inches (26 mm.); tarsus from

3 inches (76·2 mm.) to 3·4 inches (86·3 mm.); spur a mere knob, never as much as half an inch (13 mm.); the crest is generally about 2 inches (50·8 mm.), in the longest only measuring 2·4 inches (61 mm.).

Adult Female.—Forehead and feathers over the eye rufous, more or less tipped black; feathers of crown, nape and sides of neck barred black and rufous-buff with a sheen of steel-blue, strongest on the hind neck; whole upper plumage barred buff and dark brown, the buff bars to the feathers of the mantle more rufous, with the edges mottled with black and buff; the black mottling extends to the lower bars on the rump, lower back and upper tail-coverts; primaries and outer secondaries brownish black, barred with rufous-buff; inner secondaries like the wing-coverts.

Chin and throat albescent and generally immaculate or nearly so; sides of throat, neck and breast chestnut-buff, paling to creamy buff on the flanks, narrowly edged with black and with broad semi-concealed bars of black; centre of breast and abdomen paler creamy, unmarked; under tail-coverts barred dull rufous-buff and black.

Colours of Soft Parts.—"Iris yellow" (*Wingate*).

Orbital skin dull blue; bill yellowish or greenish horny, darker at base and on culmen; legs plumbeous horny; iris yellow or brownish yellow.

Measurements.—Wing, 7·2 to 8 inches (183 to 203 mm.); tail 12·2 to 14·4 inches (309 to 373 mm.); bill at front about 1 inch (25·4 mm.); tarsus, 2·6 to 2·9 inches (66 to 73·6 mm.).

Young male in his first plumage resembles the female but acquires, apparently at its first moult, a black and white barred throat and neck and a much more boldly marked breast and flanks; the forehead and crown become glossed with green and the white feathers of the cape show as pale grey feathers with black tips and white subtips; short central tail-feathers some 8 to 12 inches in length, similar to those of the adult but duller, are also acquired during the first autumn.

A chick with the wing-quills well developed and evidently capable of strong flight, has the head fulvous, a dark line of chestnut running from the base of the bill, widening at the crown and still more, again, on the nape to cover the whole hind-neck; sides of head pale, dull

chestnut-buff with two tiny bars of black behind the ear-coverts; chin, throat and fore-neck dull, very pale buff; upper parts, wings and tail barred and freckled chestnut, buff and black; below dull pale buff with wide, but indistinct bars of blackish.

Distribution.—Mountains of Western China, Eastern and South-Eastern Tibet, Yunnan, Northern Shan States and the Kachin Hills in Upper Burmah. It will probably be found, at suitable elevations and in suitable country, so far west as the Irrawaddy River.

The first record of this fine Pheasant being found in Burmah was that of Oates in the Appendix to his Manual of Indian Game-Birds, where he notes on a specimen shot by one of the officers on the Burmo-Chinese Boundary Delimitation Commission. The exact locality is not given, but the bird was said to have been shot either in the Bhamo or Myitkyina District.

In 1904 Lieutenant Van Someren shot an exceptionally fine male near Sadon in the Myitkyina District, whilst yet another was obtained in the cold weather of 1910-11 by Captain Burd of the 93rd Punjabis, somewhere on the borders of the same district.

Nidification.—So far as I know there is nothing at present on record about the nidification of this bird in a wild state, the only details I have in regard to their nests being some given by native collectors, together with two clutches of eggs taken in Sze-chuen. These notes declare the eggs to have been taken from off the ground in heavy forests where they had been laid on a few fallen leaves under the protection of a bush. The two clutches were of four and seven eggs respectively but, judging from the number of eggs laid by these birds in captivity—a very unsafe guide—they probably lay ten or twelve eggs in a sitting.

The two clutches of eggs referred to are both a buff-stone colour, slightly paler in the four clutch than in the other, whilst the former again has one egg much paler and also more of a creamy tint than the rest. The eggs in the larger clutch are rather long ovals in shape, distinctly compressed towards the smaller end; those in the smaller clutch are more regular ovals, shorter in comparison and with the smaller end but little more compressed than the larger. The texture is that of an ordinary fowl's egg.

In length the eleven eggs vary between 46·2 × 34·5 mm., and 53·0 × 36·9 mm.

The breeding season appears to commence very early, for one of these clutches is dated about April 6, 1890, and it continues through May and well into June. They would not seem to breed below 7,000 feet, if as low as that.

General Habits.—There is but little on record about these birds but, where they occur, they appear to be not uncommon from 7,000 feet upwards, at least as high as 10,000 feet and, less frequently, up to 12,000 feet, or even higher, wherever there is sufficient cover. Major F. M. Bailey found them plentiful on the Fei-yueh-ling, a few days south of Ta-chien-lu, between 7,000 and 9,000 feet. He describes the cocks as noisy birds and unwilling to fly. Lieutenant Van Someren, writing to Mr. Comber, says that he found them only at heights of 8,000 feet or over, and that they were common birds on the Chinese side of the Chino-Burmese frontier.

In China, the habits of this beautiful Pheasant are described at some length by Pere David, who writes:—

> "Lady Amherst's Pheasant lives, the whole year round, in the highest jungle-covered hills of Western Szechuen, Yunnan, Keoucheou, and the highest hills of Eastern Tibet. It especially frequents the clumps of wild bamboos which grow at an altitude of 2,000 to 3,000 metres, and the shoots of these are its favourite food; indeed it is from this its Chinese name of *Seng-ky* (Shoot-fowl) is derived. . . . In the wild state it shows a very jealous disposition, and will not allow the Golden Pheasant to approach the locality in which it resides; and so one never meets these two brilliantly coloured Pheasants on the same hill or in the same valley."

Captain Davies adds a little more information to that given by previous writers, and says:—

> "In Yunnan this species is about as common as the last mentioned (*P. elegans*), and is found at fairly high elevations, usually in forests. It is difficult to make individuals fly, and when they rise they do so without crowing, and with very little noise of the wings. They appear to be 'soft' birds, very easily killed. The note is a peculiar rasping sound. Specimens were obtained in Western Yunnan at 7,000 feet and in Kweichow 7,700 feet."

They are easy birds to keep and breed in captivity, crossing freely, as might be expected, with the Golden Pheasant, the resulting hybrids

often being of great beauty. According to Seth-Smith these hybrids are perfectly fertile.

Although very pugnacious, they are soft birds with lax fluffy plumage, taking but little shot to bring them down, though they are such skulkers and so loth to fly that it is difficult to get a shot without dogs. They are said by Bailey to be very noisy birds but he does not describe the call. They feed on all sorts of seeds, berries, roots and insects and, as recorded by Pere David, they prefer bamboo-shoots to anything else.

Genus LOPHURA.

Lophura Fleming, Philos. Zool. ii, p. 230 (1822).
Type, *Phasianus ignitus* Raff.

The genus *Lophura* contains three species of Pheasants which are rather closely allied to those of the genus *Gennæus*, the tail, however, is differently shaped, though compressed as in that group, while the naked portion of the face is produced above the forehead and again below the cheeks into two fleshy pendant wattles.

The wing is similar to that of the Kalij Pheasants, the first primary equal to the ninth or tenth, the fifth and sixth subequal and longest. In both *Gennæus* and *Lophura* the tail is composed of sixteen feathers, but in the former the central tail-feathers are longest, whereas in the latter the third pair are a little longer than the two central pairs.

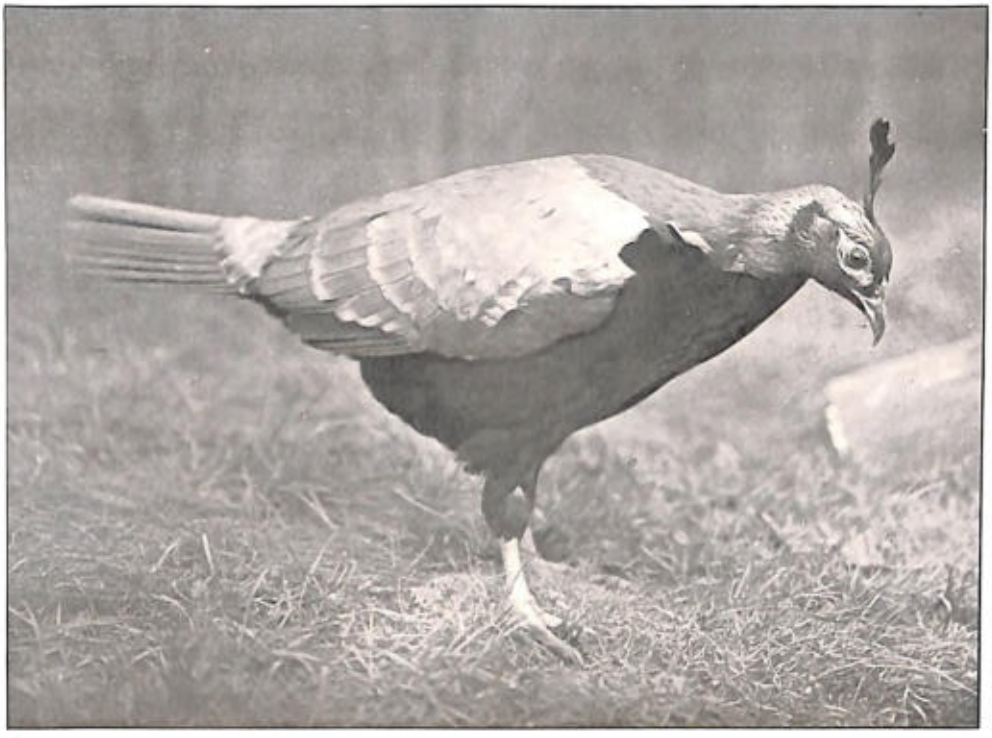
The crest is composed of feathers with shafts bare at their bases and heavily plumed at the tips. In *G. rufa* four-fifths of the shafts are bare, but in *G. diardi* merely the bases. The feet and tarsi are stout and armed in the male with a well-developed spur.

There are three species in the genus as now restricted, two of which are found within the limits of the present work, the third, *Lophura ignita*, being obtained in the forests of Borneo.

Key to Species.

A. Mantle deep purplish blue.
  a. Upper breast black, glossed blue; central feathers white ... ... *L. rufa*, ♂, p. 235.
  b. Upper breast dark grey, vermiculated with white; central tail-feathers black... ... ... *L. diardi* ♂, p. 241.

B. Mantle chestnut.
  c. Wing-coverts chestnut, vermiculated with black; outer tail-feathers black ... ... *L. rufa*, ♀, p. 235.
  d. Wing-coverts black, with buff broken bars; outer tail-feathers dark chestnut ... ... *L. diardi*, ♀, p. 241.



THE IMPEYAN PHEASANT.
Male.



VIEILLOT'S FIRE-BACK PHEASANT.
Male.

LOPHURA RUFA RUFA.

THE FIRE-BACK.

Phasianus ignitus, *Raffles* (nec. *Shaw & Nodder*), *Trans. Linn. Soc.* xiii, p. 320 (1822) (Sumatra); *Daniell, P.Z.S.* 1882, p. 24; *Elliot, Ibis*, 1878, p. 412.

Phasianus rufus, *Raffles, Trans. Linn. Soc.* xiii, p. 321 (1822) (Sumatra); *Gray* in *Griffiths* ed. *Cuv.* iii, p. 28 (1829).

Phasianus castaneus, *Gray* in *Griffiths* ed. *Cuv.* iii, p. 28 (1829) (Penang).

Gallus macartneyi, *Schinz* (nec. *Temm.*), *Nat. abild. Vog.* p. 28, pl. 93 (1833) (Sumatra).

Euplocamus ignitus, *Gray, Ill. Ind. Zool.* ii, pl. 39 (1834); *Blyth, Cat. Mus. As. Soc.* p. 243 (1849) (Sumatra); *Blyth & Wald., Cat. Mamm. and Birds, Burma*, p. 149 (1875) (Tennasserim River); *Elliot, Ibis*, 1878, p. 124.

Euplocamus vieillotti, *Gray, List Gen.* 2nd ed., p. 77 (1841); *Gould, B. of Asia* vii, pl. 15 (1852) (Malacca); *Hume, Str. Feath.* ii, p. 481 (1874) (Tennasserim); *id. ibid.* iii, p. 324 (1875) (Tennasserim); *Sclater, P.Z.S.* (1875) p. 380; *Hume, Str. Feath.* v, p. 119 (1877) (Tennasserim); *Hume & Marsh., Game-B. In.* i, p. 213 (1878); *Hume & Dav., Str. Feath.* p. 438 (Pakjan); *Elliot, Ibis*, 1878, p. 413; *Kelham, Ibis*, 1881, p. 532 (Perak); *Oates, B. of Burma* ii, p. 320 (1883) (L. Tennasserim).

Euplocamus rufus, *Hume, Str. Feath.* v, p. 121 (1877).

Euplocamus sumatranus, *Dubois, Bull. Acad. Belg.* (2), xlviii, p. 825 (1879) (Sumatra).

Lophura rufa, *Ogilvie-Grant, Cat. B.M.* xxii, p. 268 (1893); *id. Man. Game-B.* i, p. 244 (1895); *Blanf., Fauna B.I.* iv, p. 87; *Oates, Man. Game-B.* i, p. 379 (1898); *Sharpe, Hand-L. B.* i, p. 34 (1899); *Oates, Cat. Eggs B.M.* i, p. 52 (1901); *Beebe, Mon. Pheas.* ii, p. 122, pl. 27 (1921); *Stuart Baker, Jour. Bom. Nat. Hist. Soc.* xxvi, p. 10 (1919); *id. Fauna B.I. Birds*, 2nd ed. v, p. 316 (1928).

Lophura sumatrana, *Buttikofer, Notes Ley. Mus.* xvii, p. 177 (1895).

Lophura vieillotti, *id. ibid.* xvii, p. 181 (1895).

Vernacular Names.—*Knock-wah* (Siamese); *Mooah-Mooah* (Malay).

Description. Adult Male.—Plumage above, including thick bushy crest, lesser wing-coverts and upper tail-coverts, a deep rich metallic purple-violet; lower back a fiery golden-red, passing into a rich copper-chestnut on the rump, the concealed bases of these feathers coloured like the upper back; two pairs of central tail-feathers white, inner webs of third pair white, outer webs of these and whole of remaining tail-feathers black, more or less glossed with violet. Wing-quills brown, darkest and almost black on the innermost secondaries; greater coverts black, glossed, more especially at the edges and tips, with a more decided green tint than that on the back; median coverts the same glossy green on the visible portions; below like the mantle; the sides of the lower breast and flanks with conspicuous white shaft-stripes, faintly tinged with chestnut in some specimens; centre of abdomen black; vent and thigh-coverts dingy blackish-brown; under tail-coverts black glossed with the same colour as that on the wing-coverts.

Many birds, apparently fully adult, have a curious sprinkling of the finest specks of white arranged as a narrow irregular line on each feather of the metallic plumage of the back and similar terminal lines, but of reddish instead of white, on the wing-quills. Birds from Sumatra, it should be noted, have the lines on the flanks chestnut instead of white, but with the material available it is impossible to say whether this is constant and would suffice to give this form subspecific rank.

Colours of Soft Parts.—Irides bright pale red; facial skin pale smalt-blue or bright smalt-blue; bill white or pale fleshy horn; tarsus in front and toes bright vermilion-red, back of tarsus paler, soles and claws reddish white; spur fleshy pink or pale vermilion; skin of throat showing through the scanty feathering fleshy pink (*Davison*).

Measurements.—Wing 10·0 inches (254·0 mm.) to 11·7 inches (297·1 mm.), average of thirty birds 11·3 inches (286·1 mm.); tail, 9·0 inches (228·6 mm.) to 12·8 inches (325·1 mm.), average, 11·3 inches (286·1 mm.); tarsus, 4·25 inches (107·9 mm.) to 4·8 inches (121·9 mm.), average 4·55 inches (115·5 mm.); spur, 1·25 inches (31·7 mm.) to 1·7 inches (43·2 mm.); crests 1·5 inches (38·1 mm.) to 1·7 inches (43·2 m.m.).

"Weight, 4·25 lb. to 5 lb." (*Hume*).

Hume gives the length of the bill from gape as 1·6 to 1·8 inches (40·6 to 45·7 mm.).

A young male apparently moulting into adult plumage has the upper tail-coverts blackish brown, mottled with chestnut at the tips; the white central tail-feathers have their bases and broad shaft-stripe brown; the whole of the under surface is black with hardly a vestige of gloss, whilst the gloss on the upper parts is scanty and dull.

A young male in first plumage is dull earthy brown above, much freckled with rufous, the head is darker and the incipient crest is tipped with chestnut; below the chin and throat are dull albescent; neck dark brown; breast and flanks dark brown, each feather broadly edged with white; centre of abdomen and vent dull white; under tail-coverts brown; thigh-coverts like the flanks.

Adult Female.—Head, neck and upper back bright chestnut-rufous; lower back and remainder of upper plumage a more buff-rufous; profusely covered with narrow irregular bars of black; the colours of the upper and lower back grade into one another, the feathers of the former showing more or less black stippling on the terminal halves; tail and upper tail-coverts a still richer deeper chestnut than the head, the outer tail-feathers immaculate, the inner and upper tail-coverts narrowly barred with black.

Wings like the back, but rather more chestnut in general tone; chin and throat rufescent white, changing into pale chestnut on the fore-neck; breast and lower neck bright chestnut, the feathers with broad white edges to the basal halves; remainder of lower plumage black with broad white edges to each feather, the black more or less mixed with chestnut on the flanks; centre of abdomen and vent mottled white; under tail-coverts black and chestnut; thigh-coverts black and chestnut with white fringes.

Individuals vary a great deal in the extent to which the chestnut of the upper breast encroaches on the lower breast and flanks; in some the whole of the lower plumage has the black more or less mixed with chestnut, whilst in one or two specimens, on the other hand, the chestnut is almost entirely confined to the neck and extreme upper breast.

Colours of the Soft Parts.—Iris bright pale red; facial skin smalt-blue; bill, cere, gape and base of both upper and lower mandibles

dark horny brown; rest of bill horny white, greenish white or pale yellowish; legs bright red or vermilion in front and on the toes, paler behind and on soles which are a pinkish white, claws horny white (*Davison*).

Measurements.—Wing 8·8 inches (223·5 mm.) to 10·4 inches (264·1 mm.), average of thirty-four birds, 9·9 inches (251·2 mm.); tail 6·5 inches (165·1 mm.) to 9·3 inches (236·2 mm.), average, 8·3 inches (210·8 mm.); tarsus, 3·4 inches (86·3 mm.) to 4·1 inches (104·1 mm.); crest about 1·5 inches (38·1 mm.); bill at front about 1·3 inches (33·8 mm.) and from gape about 1·6 inches (40·6 mm.).

Hume gives the wing of the female as running up to 10·75 inches (273 mm.).

"Weight, 3 to 3·5 lbs." (*Hume*).

The young female is duller above and the chestnut of the head is little, if any, brighter than the rest of the plumage; the mottlings are generally stronger and more plentiful and the scapulars have a few broad bars of black. Below the chestnut is but slight in extent and is confined to the fore-neck.

Distribution.—South-Western Siam, the Malay Peninsula and Sumatra. The female in the British Museum collection marked "Borneo" is of course not from that island.

This fine Pheasant only enters our limits in the south of Tenasserim about as far north as the latitude of Tenasserim Town, but is apparently very common further south.

Nidification.—There is, so far as I can find, absolutely nothing on record about the nidification of this Pheasant in a wild state and very little in caged state, although it is a common enough bird in captivity. Hume's collection contains a single egg laid by a bird under the latter conditions in July, whilst the only eggs laid by wild birds that I know of are two in my own collection from the Waterstradt collection, said to have been taken in Malacca on April 4.

The egg obtained by Hume measures 2·25 × 1·68 inches (57·1 × 39·6 mm.), the two in my own collection measure 51·0 × 39·3 mm. and 52·7 × 39·5 mm. In shape and texture they are similar to rather thin-shelled domestic fowls' eggs and, in colour, they are a pale stone or buff. Hume calls his egg a delicate *café-au-lait*, but I

should prefer to call this also a very pale dull buff. The surface in all these eggs is smooth but with little gloss, while my two eggs are stained here and there from the rubbish upon which they were laid.

The only notes obtainable about the wild-laid eggs were as follows:—

> "Brought in by native collectors with the skin of the adult bird; said to have been placed in a nest composed of dead leaves, grass and bamboo spates under some thick, low bushes in dense evergreen forest."—Malacca, April 4, 1899.

Beyond the fact that of the eggs known one was laid in July and two in April, it is impossible to say when the breeding season commences or ends.

General Habits.—The Fire-Back appears to be a bird of the dense low-country evergreen forest, not being found in the higher hills anywhere within its habitat. Over most of its range it is a comparatively common bird, many being trapped and kept in confinement by the natives. Easy to tame and easy to feed, it thrives even when kept in a comparatively small enclosure, though it has not yet been induced to breed.

Like the Kalij Pheasant, this bird is a haunter of thick jungle, generally evergreen with dense undergrowth, less often, bamboo or secondary growth in abandoned cultivation.

It is nearly half a century since the much-quoted account of this bird's habits was written by Davison, yet since then practically not one scrap of information has been added to our knowledge or, at all events, recorded anywhere. Siam and the Malay Peninsula are now exceptionally well off for good scientific and field naturalists, so it is to be hoped that before long they will supply the deficiency.

Davison writes:—

> "These birds frequent the thick evergreen forests in small parties of five or six; usually there is only one male in the party, the rest being females, but on one or two occasions I have seen two males together; sometimes the males are found quite alone. I have never heard the males crow, nor do I think that they ever do so; when alarmed, both males and females have a peculiar sharp note, exceedingly like that of the large Black-Backed Squirrel (*Sciurus bicolor*). The males also continually make a whirring sound with their wings, which can be very well imitated by twirling rapidly

between the hands a small stick, in a cleft of which a piece of stiff cloth has been transversely placed. I have often discovered the whereabouts of a flock by hearing this noise. They never come into the open, but confine themselves to the forests, feeding on berries, tender leaves, and insects and grubs of all kinds, and they are very fond of scratching about after the manner of domestic poultry, and dusting themselves. When disturbed, they run rapidly away, not in different directions, but all keeping much together; they rise at once before a dog, getting up with a great flutter, but when once well on the wing fly with a strong and rapid flight; they seldom alight again under a couple of hundred yards, and usually on the ground, when they immediately start running.

"I noticed on one occasion a very curious thing. I had stalked an Argus, and while waiting to obtain a good shot, I heard the peculiar note, a sort of chukun, chukun, followed by the whirring noise made by the male Fire-Back, and immediately after saw a fine male Fire-Back run into the open space, and begin to chase the Argus round and round its clearing. The Argus seemed loath to quit its own domain, and yet not willing to fight, but at last, being hard pressed, it ran into the jungle. The Fire-Back did not attempt to follow, but took up a position in the middle of the clearing, and recommenced the whirring noise with his wings, evidently as a challenge, whereupon the Argus slowly returned, but the moment it got within the cleared space, the Fire-Back charged it, and drove it back into the jungle, and then, as before, took up his position in the middle of the space and repeated the challenge. The Argus immediately returned, but only to be again driven back, and this continued at least a dozen times, and how much longer it would have continued I cannot say, but a movement on my part attracting the birds' attention, they caught sight of me, and instantly before I could fire, disappeared into the jungle. The Argus never made the slightest attempt to attack the Fire-Back, but retreated at once on the slightest movement of the latter towards it, nor did I see the Fire-Back strike the Argus with either bill, wings, or spurs."

LOPHURA DIARDI.

THE SIAM FIRE-BACK.

Euplocamus diardi, *Bonap., Comp. Rend.* xi, iii, p. 415 (1856), ex. *Temm. M.S.*

Diardigallus prælatus, *Bonap., Comp. Rend.* xi, iii, p. 415 (1856); *Schl. Hand-L. d. Dierk*, i, p. 379, *Atlas Aves*, pl. **5**, fig. 55 (1857); *Gould, B. of A.* vii. p. 21 (1860).

Diardigallus fasciolatus, *Blyth, J.A.S.B.* xxvii, p. 280 (1858).

Euplocamus prælatus, *Sclater, List Phas.* p. 6, pl. 6 (1863) (Siam, Shan States); *Schomb., Ibis*, 1864, p. 259 (E. Lao Country); *Sclater & Wolf, Zool. Sketches* (2) pl. 35 (1867); *Elliot, Mon. Phas.* ii, p. 24 (1872).

Lophura diardi, *Ogilvie-Grant, Cat. B.M.* xxii, p. 290 (1863); *id. Hand-L. Game-B.* i, p. 247 (1895); *Gyldenstolpe, Kungl. Svensk, Hand-L.* 50, No. 8, p. 67 (1913); *id. Jour. N.H. Soc. Siam* i, No. 4, p. 235 (North Siam); *Kloss, Ibis*, 1918, p. 80; *Stuart Baker, Jour. Bom. Nat. Hist. Soc.* xxvi, p. 15 (1918); *Gyldenstolpe, Ibis*, 1920, p. 737 (Siam); *Beebe, Mon. Pheas.* ii, p. 117, pls. 35 and 36 (1921); *Stuart Baker, Fauna B.I., Birds*, 2nd ed. v, p. 318 (1928).

Diardigallus diardi, *Rob. & Kloss, Ibis*, 1919, p. 409 (S. Annam and Cochin China); *De la Cour & Jabouille, Ibis*, 1925, p. 219 (C. Annam).

Vernacular Names.—*Kai-pha* (Siamese); *Kai-fan* (Laos).

Description. Adult Male.—Crown from forehead to nape, sides of the head behind and over the ears, chin, throat and crest black; the crest glossed with purple-blue; the feathers of the chin, throat and fore-neck, especially the latter, are very scanty, the fleshy red skin showing through; back and upper breast very finely vermiculated grey and black, the general effect being a rather dark grey; lower back like the back, but each feather with a broad terminal bar of gold, this bar of colour concealing the grey bases; rump and upper tail-coverts, with the exception of a few of the longest, rich metallic blue-black, each feather fringed with deep copper-crimson; longest

tail-coverts black with a copper sheen and edges of metallic green; tail black completely glossed with greenish blue, more distinctly blue on the outer than the inner webs; below black, glossed with deep blue but with the brownish bases of the feathers showing through; wings like the back, the scapulars with a broad subterminal band of black followed by a narrow line of pure white; lesser and median coverts with similar markings but much less pronounced.

Colours of the Soft Parts.—Iris red, brown, red-brown or hazel; bill pale greenish horny; facial skin bright scarlet-red; legs and feet rich deep scarlet or crimson-red, toes and spurs dark horny brown, the latter tipped paler and, sometimes, wholly of a pale horny white colour.

"Iris burnt sienna, light red to vermilion; bill pepper-brown; legs vermilion" (*E. G. Herbert*).

"Iris hazel, facial skin blood-red, throat skin deep pink; bill pale grey horny, tarsi cerise, spurs horny" (*Rob. and Kloss*).

Measurements.—Wing, 230 to 256 mm., average eight birds, 250 mm.; tail, 346 to 386 mm.; tarsus about 100 mm.; crest 70 to 90 mm.; bill from gape about 32 mm. and from front to tip about the same.

Adult Female.—Crown, nape and sides of the head a dingy pale earth-brown, shading into pale rufous-white on chin, throat and fore-neck; back and sides of neck, back and scapulars chestnut-red, with faint dusky margins to each feather and a certain amount of black stippling in tiny irregular bars; lower back, rump and upper tail-coverts vermiculated or mottled with pale rufous-buff and black; the bars broader and better defined on the back than elsewhere; two central pairs of tail-feathers the same with broad bars of black boldly mottled with buff on their terminal halves, outer feathers a rich chestnut red; visible portions of the wing like the tail but with the buff bars and mottlings even more boldly defined; primaries a lighter brown with narrow mottled bars of pale buff.

Below chestnut, the breast and fore-neck like the mantle; the lower breast, abdomen and flanks with bold edgings of white to each feather; centre of the abdomen dull brown and white; under tail-coverts unmarked chestnut, the bases mottled with brown.

Colours of Soft Parts.—Iris red or brown; bare skin of face dull

scarlet brick-colour, pale dull scarlet or dull scarlet; bill horny brown, tip and gonys paler; legs and feet a very rich deep red, scarlet-red or crimson-red; soles paler and claws pale horny or horny white.

> "Iris raw umber, burnt sienna, Venetian red or Naples yellow; bill above black, the lower mandible yellowish horny; sometimes the upper mandible is more brown than black; feet and legs vermilion, but paler and duller than in the male" (*E. G. Herbert*).

Measurements.—Wing, 220 to 238 mm., average of eight birds 228 mm.; tail 220 to 260 mm.; tarsus 75 to 85 mm.; crest very short and of ordinary feathers, not distinguishable from the rest unless erected; bill from gape about 30 mm.; the same as from the feathers of the forehead to the tip.

The young male is like the adult female, but is duller and more mottled with blackish above; the breast is more brown, less chestnut, and has not got the well-defined white edgings to the feathers of the lower breast and flanks. The tail-feathers are more barred with black and not quite so rich a chestnut.

Colours of the Soft Parts.—Iris brown or dull blue-brown; facial skin dull fleshy red; bill pale yellowish horny; feet and legs dull fleshy pink.

In the autumn at the first moult the young male appears to put on the complete plumage of the male, retaining a few feathers here and there of the female, which are, presumably, dropped during the ensuing winter and replaced with adult feathers.

There is a young male in the British Museum collection in this stage with a wing of 210 mm. and no crest.

"**Plumage of Immature Bird.**—Head and neck dull brown, slightly barred with fulvous and black on the occiput; sides of neck with small fulvescent patches; chin and throat whitish. Mantle, foreneck and sides of upper breast ferruginous, barred and vermiculated with black; scapulars mingled black, ferruginous and buff; lower breast ferruginous, the feathers edged with white; abdomen greyish white, thighs and flank-coverts mingled fulvous, grey and white; lower tail-coverts pale chestnut barred with black. Wings black, barred with black spotted buff bands; the outer webs of some of the primaries and secondaries strongly suffused with fulvous; back, rump

and upper tail-coverts black barred with buffy; middle pair of tail-feathers black barred with pale buff; next pair black, barred proximally with buffy, distally with pale chestnut; remaining feathers pale chestnut barred with black on the inner webs, the barring least on the outer feathers" (*Kloss*).

Distribution.—Siam, Annam and Cambodia, whilst it has also been reported from the southern Shan Hills and the eastern Lao Country. It possibly occurs also in the eastern parts of Karennee, from whence I have had it doubtfully reported.

Nidification.—Nothing recorded. Eggs laid in captivity are said to be indistinguishable from those of *Lophura rufa*. This bird has bred in the Zoological Society's gardens in London with Silver Pheasants during a period when hybrids were attracting much attention. To satisfy this very useless curiosity, a good deal of experimental work was done by people who forgot that environment alone could create *stable* subspecies such as now exist.

General Habits.—There is absolutely nothing on record as to this bird's habits. It appears to haunt heavy forest at low elevations, where there is a great deal of undergrowth and where the climate is so damp that most of it is evergreen.

Sir H. Schomburgh's interesting notes on some captive birds which appeared in the 'Ibis' (1864) gives us some insight into its habits.

He writes:—

> "The Kai-pha I speak about was quite tame, and ran about in the verandah of my residence. . . . Although the Kai-pha, in splendour of plumage cannot be compared either with the Gold or Silver Pheasant, still there is something graceful in its figure and stately in its walk. . . . I allowed him to leave his coop and to walk about in the house, where he picked up insects, apparently more congenial to him than the everyday food of paddy (rice in the husk). When he saw a spider or ant crawl up the walls in the room, he would fly up several feet to catch it. He was very partial to plantains and bananas, indeed to almost any kind of fruit; this predilection he may have acquired in his state of domestication. Both in his coop and when walking about in the verandah, he emitted frequently a faint sound; but when disturbed or alarmed, the sound was harsh; and when flying up, it was with a whirring noise similar

to that of our Partridges, but stronger. The female, though so different in plumage, has the same manners as the male."

They are very commonly trapped by the Siamese and kept as caged birds, being frequently brought into Bangkok and sold there for this purpose. Mr. E. G. Herbert kept some of these birds, and the interesting notes he sent to me show that the young males in the first autumn moult acquire practically the complete plumage of the adult male. He was successful in hatching out some eggs under hens, some of the young birds reaching maturity. Mr. Herbert's observations on their manners and habits confirm those of Sir H. Schomburgh's.

The traps used to catch the wild birds appear to be of two kinds. In one nooses are set round about a decoy in jungle haunted by these Pheasants and, in the other, nooses are set in openings in low brushwood fences in similar places; the birds wander down the fences and, then in walking through them, got caught. In fact, the trap is the same as that already described as being in use amongst so many of the eastern wilder tribes.

As might be expected, they are said to be good eating, though one of my correspondents refers to them as "very dry."

Genus GENNÆUS.

Gennæus Wagler, 'Isis,' 1832, p. 1228.
Type, *Phasianus nycthemerus* Linn.

This genus contains the Pheasants known as Kalij and Silver Pheasants and are the most closely allied of all our Indian Pheasants to the Junglefowl. They are heavily built, powerful birds with comparatively short rounded wings; tail of sixteen feathers, compressed and of great or moderate length, with the central tail-feathers longest; their legs are stout and fairly long, armed in the male with powerful spurs, one on each leg and only abnormally two; there is a well-developed crest and a vividly-coloured bare space round the eye.

It is possible that the whole of these Pheasants should be treated as races of one species, *nycthemerus* of Linnaeus. We have, however, certain main definite forms which are constant over great areas, and for the present therefore I retain the same number of species as I admitted in my Catalogue of Birds. At the same time our material for comparison, especially in regard to the Silver Pheasants of Burma and further east, is very meagre and our field notes not very satisfactory, so that it is quite possible that when these faults are remedied we may have either to admit more races or, on the other hand, relegate to the scrap-heap of synonyms some of those now admitted.

Key to Species.

A. Lower plumage black or black and white.
  a. Crest white or very pale brown. . . . *G. hamiltonii*, ♂, p. 248.
  b. Crest black.
    a^1. Upper plumage black, feathers with pale edges and rump barred white; breast largely whitish . . . . . *G. leucomelanos*, ♂, p. 257.
    b^1. Upper plumage wholly black; breast whitish . . . . . *G. melanotus*, ♂, p. 261.
    c^1. Upper plumage black, rump boldly barred with white; breast black . . *G. horsfieldii*, ♂, p. 268.

d^1. Upper plumage grey, formed by narrow vermiculations and bars of black and white . . . . . *G. lineatus*, ♂, p. 287.

e^1. Upper plumage almost white, with sparse narrow bars of black. . . . *G. nycthemerus*, ♂, p. 301.

B. Lower plumage some shade of brown mottled or squamated and with pale shafts but not with white or buff streaks.

c. Rather paler below . . . . . *G. hamiltonii*, ♀, p. 248.

d. Rather darker below.

f^1. Central tail-feathers well mottled.

a^2 Feathers of upper plumage with pale contrasting edges . . . . . *G. leucomelanos*, ♀, p. 257.

b^2. Feathers of upper plumage with pale edges, barely showing . . . . . *G. melanotus*, ♀, p. 261.

g^1. Central tail-feathers not much mottled *G. horsfieldii*, ♀, p. 268.

C. Lower plumage with white or buff streaks, not squamated. . . . . *G. lineatus*, ♀, p. 287.

D. Lower plumage with white or buffy white centres, or buff with bold bars or edges of dark brown. . . . . *G. nycthemerus*, ♀, p. 301.

GENNÆUS HAMILTONII.

THE WHITE-CRESTED KALIJ.

Phasianus hamilto n *Gray* in *Griffith*, ed. *Cuvier* iii, p. 27 (1829); *id*, *Ill. Ind. Zool.* i, p. 41 (1829, Simla).

Phasianus albocristatus, *Vigors*, *P.Z.S.* p. 9 (1830); *Gould*, *Cen. Birds of Him.* pls. 66-67 (1832).

Euplocomus albocristatus, *Hutton*, *J.A.S.B.* xvii, pt. 2, p. 693 (1848); *Blyth*, *Cat. Mus. Asiat. Soc.* p. 244 (1849).

Euplocamus albocristatus, *Adams*, *P.Z.S.* p. 499 (1858); *Elliot*, *Mon. Phas.* ii, pl. (1872); *Hume & Inglis*, *St. Feath.* v, p. 42 (1877); *Hume*, *ibid.* vii, p. 429 (1878); *Hume & Marsh.*, *Game-B.* p. 177, pl. (1878).

Euplocamus albicristatus, *Oates*, ed. *Hume's Nests and Eggs*, iii, p. 413 (1890).

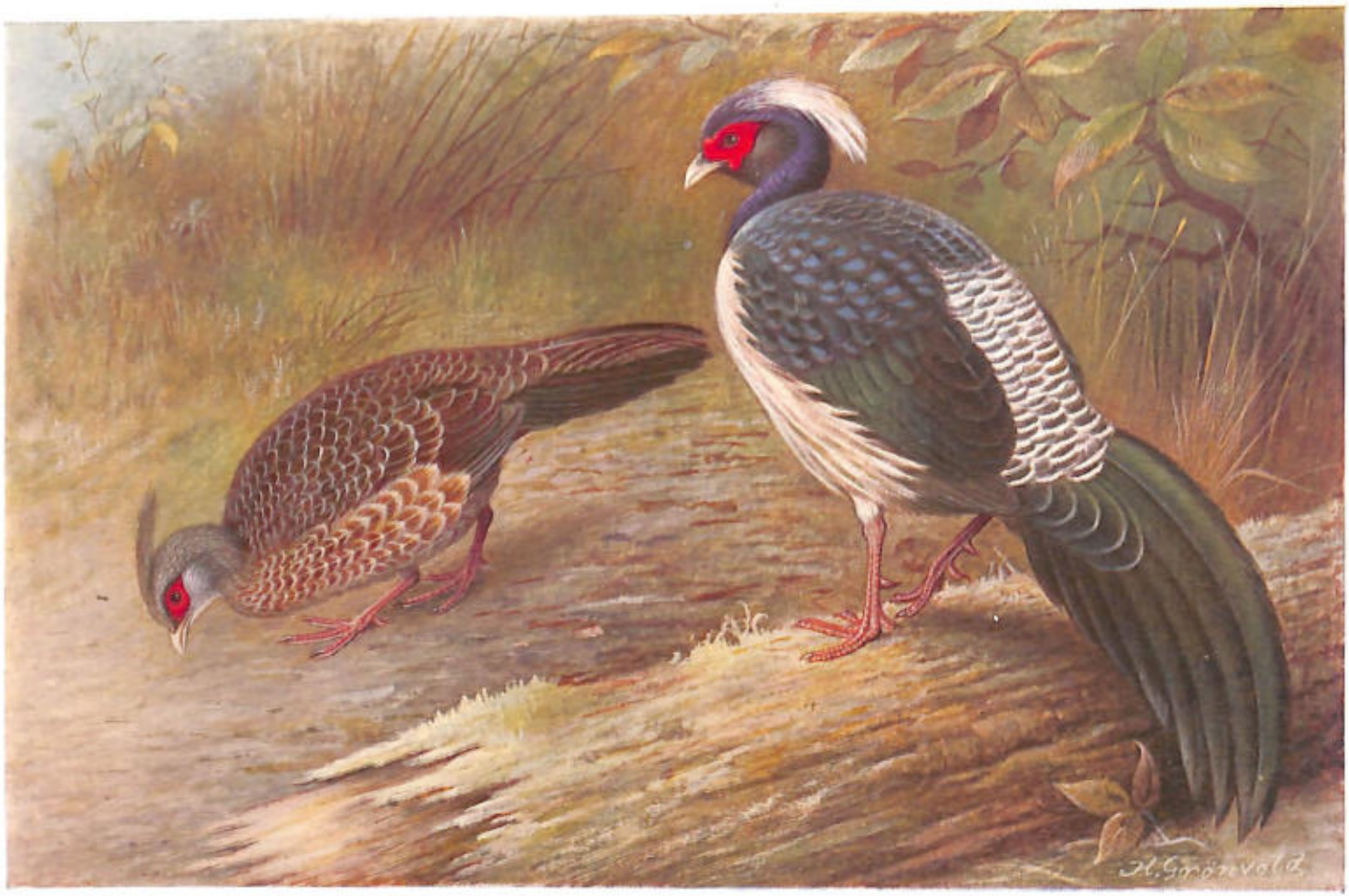
Gallophasis albocristatus, *Mitch. P.Z.S.* (1858) p. 544, pls. 148, figs. 1, and 149, fig. 3; *Jerd.*, *B. of In.* iii, p. 532 (1863); *Hume*, *Nests and Eggs*, *In. B.* p. 526 (1873); *Marsh.*, *Birds' Nests Ind.* p. 58 (1877).

Gennæus albocristatus, *Ogilvie-Grant*, *Cat. Birds B.M.* xxii, p. 298 (1893); *id. Hand-L. Game-B.* i, p. 258 (1895); *Stuart Baker*, *J.B.N.H.S.* xxiii, p. 666 (1915); *id. ibid.* xxv, p. 164 (1917); *Whistler*, *ibid.* p. 775 (1919, Simla); *id. ibid.* xxvii, p. 110 (1920, Simla); *Osmaston*, *ibid.* xxviii, p. 158 (1921, Garhwal); *Beebe*, *Mon. Pheas.* ii, p. 10, pl. i (1921); *Field*, *J.B.N.H.S.* xxx, p. 917 (1925, Mussoorie).

Gennæus albicristatus, *Oates*, *Game-B.* i, p. 324 (1898); *Blanf.*, *Fauna B.I. Birds* iv, p. 89 (1898); *Oates*, *Cat. Eggs B.M.* i, p. 54 (1901); *Rattray*, *J.B.N.H.S.* xvi, p. 663 (1905); *Ghigi*, *Mem. Acad. Bologna* (6) v, p. 145 (1908); *Magrath*, *J.B.N.H.S.* xviii, p. 298 (1908); "*Pine Marten*," *ibid.* xix, p. 796 (1910); *Whistler*, *ibid.* xxvi, p. 185 (1918, Ambala); *Jones*, *ibid.* p. 616 (1919, Simla Hills); *Ellison*, *ibid.* xxxiii, p. 122 (1928, Ghail).

Gennæus hamiltonii, *Stuart Baker*, *Cat. B. of In.*, 1923; *Whistler*, *J.B.N.H.S.* xxxi, p. 482 (1926 Kulu); *id. Ibis*, 1926, p. 770 (Kangra); *Searight*, *J.B.N.H.S.* xxxi, p. 818 (1926, Garhwal); *Jones*, *ibid.* p. 1006 (1927, Ambala); *Osmaston*, *ibid.* xxxii, p. 145 (1927, Kashmir); *Stuart Baker*, *Fauna B.I.* v, p. 320 (1928).

Vernacular Names.—*Kalij*, *Kukera*, *Mirghi Kalij*, *Kulesur* ♂, *Kalesi* ♀ (Hin. in various parts of the N.W. Himalayas); *Kolsa* (Western Punjab and Chamba).



Female. Male.

THE WHITE-CRESTED KALIJ.

Gennaeus hamiltonii.

Description. Adult Male.—Long hairy crest white or dirty pale brown; remainder of head black, glossed with purplish blue; upper back black glossed blue, the feathers edged whitish or pale brown and with white shafts; lower back, rump and upper tail-coverts black, glossed steel-blue broadly edged white and sometimes subedged brownish; tail-feathers glossy black above, below browner with pale tips; lesser and median wing-coverts like the back; greater coverts with a greener gloss and dark shafts; quills dark brown glossed on the visible parts with green; chin, throat and fore-neck dark brown with pale shafts, gradually changing to grey with a pale steel-blue sheen on the lower fore-neck, thence into white, more or less tinged with brown on the lanceolate feathers of the breast and flanks; abdomen, vent and under tail-coverts dull brown, more or less edged paler.

Colours of Soft Parts.—Iris brown or orange-brown; bill greenish white, dusky at the tip; orbital skin vermilion to crimson with slight black feathering; legs and feet livid white to pale olive-brown or slaty brown.

Measurements.—Wing 216 to 249 mm.; tail 228 to 327 mm.; tarsus about 75 to 80 mm.; culmen about 23 to 26 mm. Weight 2 lb. to 2 lb. 6 oz.

Female.—Head reddish brown with pale shafts; whole upper plumage reddish brown, each feather distinctly pale-shafted and with pale edges; quills brown, the inner secondaries with rather pale shafts; back and wings finely vermiculated with black; central tail-feathers reddish brown, vermiculated brown on both webs and with a few buff or white markings on the edge of the outer webs; remaining tail-feathers dark brown, glossed with green and often with pale tips; lower plumage like the upper but paler and with broader pale margins to the feathers; chin and throat paler still; centre of abdomen and vent pale dull brown.

Measurements.—Wing 203 to 215 mm. Weight 1 lb. 4 oz. to 2 lb. 4 oz.

Chick in First Plumage.—Crown chocolate-brown; sides of head and crown more rufous; ear-coverts dark brown; upper plumage brown minutely freckled with black, each feather edged paler, a white spot at the tip and a broad subterminal bar of black edged rufous;

lower plumage dull pale brown, the feathers with whitish shafts and pale edges.

Distribution.—Along the Himalayas from the River Indus on the west to Nepal in the east, possibly entering the extreme west of Nepal as far as the Gogra. Hodgson obtained a skin from west of Jamla, presumably in Nepal, though with no definite locality, whilst Hume thought it must have come from still further west, probably from the Kuman or Garhwal Hills, where it is very common.

It has been said to extend west into Buneer and Swat, but it is very doubtful if this report is correct, for the country is certainly not suited to the habits of these birds.

Nidification.—The White-Crested Kalij breeds, according to locality, from the end of March and early April to the end of June. From 2,000 feet to 4,000 feet or so most nests will be found during April, but at 6,000 feet not many will be taken until well on into May, and in the highest parts of their breeding ranges their eggs may be found as late as the end of June. They certainly breed up to 9,000 feet and over and, probably, up to some 11,000 feet in parts of Kashmir. Magrath records it as a resident bird at Thandiani at an elevation of 9,000 feet, Dodsworth found it breeding at over this height in the Simla Hills and Native States, whilst Wilson took its eggs at 9,500 feet in the Bhagiruttee Valley. Hume found it, on the other hand, breeding as low down as 1,200 feet in the Dhoon and, doubtless, it may be found at even lower elevations than this.

The nest is much the same as that of all others of the genus, i.e., generally nothing more than a collection of leaves, grass and forest rubbish in some hollow under the shelter of a bush, tree or bamboo clump. In many instances this heap of rubbish is merely such as has fallen and drifted into its present situation but, sometimes apparently, the bird does go to some trouble in scratching together the material on which to deposit its eggs.

Mr. Frederick Wilson, so well known under the *nom de plume* of "Mountaineer," in an interesting letter to Hume writes about the breeding of this Pheasant in Garhwal as follows:—

> "The Kalij Pheasant (*murghi* or *kookera* of the Paharis) is found from the foot of the hills, or rather from the Sewalik Range to the Snows, and consequently breeds at all elevations up to 9,000 feet and

in a few localities even higher; I lately found the nest above the village of Sookee in the Bhagiruttee Valley, which must have been at 9,500 feet. In the Dhoon, at the foot of the hills in the lower Valleys the Kalij begins to lay in April. In the higher ranges it lays in May, and some birds not till the beginning or middle of June. The nest, if it can be called such, is generally in a coppice where there is plenty of underwood, and under an overhanging stone, or thick low bush, or tuft of grass. It is merely a hole scraped in the ground. The eggs are 9 to 14 in number, very like those of some domestic fowls, a yellowish or buffy white. Both parent birds are generally found with the young brood. Occasionally very late broods would lead one to infer, either that the Kalij sometimes has two broods in the year, or that when a nest is destroyed, they commence the business of incubation over again."

Other observers' remarks agree well with Wilson's description of their breeding but Major Cook once found its nest on a low bough of a tree in a hollow on the upper side of which the eggs were placed.

The only two things which seem to be an absolute necessity in this Pheasant's estimation for a nesting site is ample cover and water within a reasonable distance. Thin forest with thick undergrowth, evergreen forest with plenty of ferns, brambles and bracken, ravines and water-courses with rocky sides well covered with weeds, etc., all seem to form equally suitable places for the nest and, in addition to these, it may be sometimes found in bamboo jungle, especially if there is a certain amount of grass or scrub mixed with it. According to Hume, the White-Crested Kalij occasionally makes quite a respectable nest. He remarks:—

"The Common Kalij hardly forms a regular nest. It gets together a pad, sometimes rather massive, sometimes very slight, of fine grass and coarse moss roots, mingled with a little grass or a few sprigs of moss, and in a slight depression; in this it lays its eggs. One which I measured *in situ* in May, 1871, in the Valley of the Sutlej, just below Kotegurh, was circular, 11·5 in diameter and 4 inches in thickness outside, with a central depression 6 inches wide and nearly 2 inches in depth in the centre."

The number of eggs generally laid is six to nine, but they sometimes lay as many as fourteen and, also sometimes as few as four, as the late Mr. P. Dodsworth took this number of eggs very hard set. Eight or nine eggs is probably the number most often to be found in a complete clutch.

In general appearance they are exactly like the eggs of the domestic fowl, but are, perhaps, on the whole more glossy, and are frequently somewhat pointed. The surface is very smooth with a fine, close grain, but some eggs are pitted with innumerable little pores, though these are not normally nearly so numerous or so conspicuous as those almost invariably found in the eggs of the Peacock Pheasant.

The colour may be anything from a white merely tinted with cream or buff to a buff of a rich red tone like that of the darkest eggs laid by a Brahma Fowl, though even redder than these. The majority of eggs laid are a warm cream or reddish buff, whilst eggs almost white are quite exceptional.

One hundred eggs measured by myself average 49·5 × 37·0 mm.; maxima *53·1* × 39·1 and 50·8 × *40·0* mm.; minima *44·1* × 36·3 and 48·2 × *34·3* mm. Hume gives the breadth of one egg as 31·7 mm.

Whether the White-Crested Kalij is polygamous or not seems still to be a moot point and it is quite possible that though it is, generally speaking, monogamous, it sometimes indulges in mormonistic habits. Hume is strongly of opinion that it is a libel upon this bird to accuse him of having more than one wife and says that he has many hundreds of times flushed young broods in company with both parents, whilst from the month of May to that of October he has rarely put up an adult of one sex without finding the pair to it close by.

"Onithognomen," however, who wrote regularly for the 'Field' in the early sixties, and was a sportsman and observer of wide experience and considerable ability, recorded :—

> "The Kalij is polygamous (as indeed all Gallinaceous birds are), and its habits with respect to breeding are exactly the same as those of the Junglefowl. The cock bird pays tolerably impartial attention to his seraglio of 3 to 5 hens, and the latter, when so disposed, retire from time to time to some secluded, sheltered spot to lay, returning to their party when this little duty has been performed. When 6, 8 or 10 eggs have been laid in one spot, the hen yields to the impulse of incubation, and withdraws from Society to hatch her brood."

It must be remembered that in "Onithognomen's" day it was an accepted idea that all game birds were polygamous and the barn-door

fowl was cited as the pattern followed by the rest in their domestic habits. Of recent years, however, it has been satisfactorily proved that in many instances the cock birds of many species are in fact faithful husbands and good parents, so it is not safe to generalize. The credit for polygamy has doubtless arisen from the fact that the cock bird is so often seen with a number of birds in hens' plumage, though this may be due merely to the young cocks not having yet acquired their male feathers and colours.

The young grow their wing quills with extraordinary quickness and within a few days are able to fly as well and as fast as the adult bird.

The hen bird is a very close sitter and, according to Hume, may often be captured by hand or seized by a dog before she will leave her nest.

General Habits.—The White-Crested Kalij is resident wherever found, though it may move locally higher up the hills in summer and lower down in winter. Even this movement must, however, be but very slight, as it has been found breeding at practically every height at which it has been seen. Typically it is, like the rest of the genus, a bird of heavy forests and thick growths rather than the deciduous forest and more open country of the higher hills. At the same time it is less exclusively found in dense evergreens than are its nearest relations and, sometimes at least, it wanders on to hillsides covered partially with broken patches of tree and bush scrub, especially if the intervening portions are well furnished with bracken. Of course this does not mean to infer they do not feed regularly, morning and evening, in the open and indeed, when the weather is cool and showery, especially at the higher elevations, these Pheasants may be found in open places throughout the day.

It is not nearly so socially inclined a bird as the Junglefowl and is seldom met with except in pairs or small family flocks of half a dozen to a dozen; on the other hand it may sometimes be seen in the company of Junglefowl, whilst sometimes two or three old cocks will be found together after the breeding season is over.

During the breeding season they are said to be very pugnacious. "Mountaineer" writes:—

"The Kalij is very pugnacious, and the males have frequent battles. On one occasion I had shot a male, which lay fluttering on the ground in its death struggles when another rushed out of the jungle and attacked it with the greatest fury, though I was standing reloading the gun close by. The male often makes a peculiar drumming noise with its wings, not unlike the sound produced by shaking in the air a thick piece of cloth. It is only heard in the pairing season; but whether to attract the attention of the females or in defiance of his fellows I cannot say, as I have never seen the bird in the act, though often led to the spot where they were by the sound."

The sound is undoubtedly one resorted to as a challenge to fight, and in some parts of its habitat it is imitated as a decoy to entice the male birds into snares and traps.

Nowhere do these birds exist in sufficient numbers nowadays to make their pursuit worth while unless other game can be bagged at the same time. When this is the case they are well worth working hard for, as they are strong fast fliers when fairly on the wing, take a lot of bringing down and, when killed, are excellent for the table.

Hume remarks that:—

"Generally in the hills you may pick up three or four birds in a day, by beating all likely patches of cover near fields, but it is rare with this species to make a good bag. There are, however, places where you may come across the Kalij almost as thick as Pheasants in a Norfolk cover. Such places there used to be close to Bhim and Naukuchia Tal, small lakes not far from Naini Tal, but at a much lower level, and at the former of these I once, early in November, killed eleven and a half brace in less than three hours."

Wilson writes of this Kalij as a very tame and confiding sort of bird; he says:—

"It appears to be more unsuspicious of man than the rest of our Pheasants; it comes much nearer his habitations."

And again:—

"They are never very shy, and where not unceasingly annoyed by sportsmen or shikaris, are as tame as any sportsman could wish."

Since the days when Wilson wrote the Kalij has evidently learnt a lot, for now one requires plenty of patience and the expenditure of much hard work before he can be brought to bag, especially without

good dogs. Wandering along roads and forest paths in the early morning or late afternoon, one may sometimes obtain quite a decent bag of these birds, for wherever the road passes through forest, Kalij Pheasants are quite sure to frequent it daily. If the road is wide and runs straight for considerable distances, it is not much use attempting to shoot along it and the only chance is to creep as quietly as possible just inside the edge of the forest and *hope* to spot your game before he sees or hears you. On the other hand, if the road twists and turns so as to enable you to get fairly clear to any bird hunting for grain in the droppings, etc., on it, one can get quite a number of shots in a couple of hours' stroll. This is not, however, a very satisfactory way of shooting, for if you want your bird, it is almost imperative to shoot him as he runs into safety, for not one bird in five will give a decent shot on the wing unless he is startled into unwilling flight by your almost treading on him.

If, however, you know his haunts and have good dogs to work them with, it is possible to have a much more sporting day's shoot. It must be remembered, however, that Indian forests are not like English ones; there are no nicely cut drives or open spaces, so that ten to one when the bird is put up by your dogs he gets up and keeps up right out of sight. A more or less open ravine may sometimes furnish a vantage ground for the sportsman, giving him room to work uphill and see to some extent what is going on above him on either side. It is best always to work uphill, as all Kalij Pheasants, like Junglefowl, always run away uphill, though once they are flushed they turn and fly downhill. On the wing and fairly started, they fly at a great pace and it is no easy matter to get your first bird as they come towards you and then swing round and bowl over your second before he passes out of shot.

When shooting with dogs, Pheasants often fly into trees and hide and, once seated in what they consider safety, it is generally possible to creep up and get a fair shot as they leave their perch.

The White-Crested Kalij feed greedily on all kinds of grain and seed, as well as on the tender young shoots of many green crops. Cultivation of almost any sort, therefore, forms a great attraction to them, which is probably why they are more numerous round and about villages than in more remote forests. At the same time, even

the crops of villages will not tempt them unless there is plenty of heavy forest within the immediate vicinity into which they can scuttle for refuge. In addition to vegetable food they will eat almost any kind of insect, worms, larvæ and even small reptiles.

The cocks have a rather loud crow or call, described by Wilson as "a loud whistling chuckle or chirrup," and both sexes chuckle and cluck in a soft undertone as they wander about in the undergrowth scratching for food.

GENNÆUS LEUCOMELANOS.

THE NEPAL KALIJ.

Phasianus leucomelanos, *Lath., Ind. Orn.* ii, p. 633 (1790).

Euplocomus leucomelas, *Hodg.* in *Gray's Zool. Misc.* p. 85 (1844).

Gallophasis leucomelanos, *Gray, Gen. B.* iii, p. 498 (1845); *Hutton, J.A.S.B.* xvii, pt. 2, p. 694 (1848).

Euplocamus leucomelanus, *Hume, Str. Feath.* ii, pp. 428-9 (1876); *Hume & Marsh., Game-B. Ind.* i, p. 285, pl. (1878).

Gallophasis leucomelanus, *Scully, Str. Feath.* viii, p. 345 (1879).

Gennæus leucomelanus, *Ogilvie-Grant, Cat. Birds B.M.* xxii, p. 380 (1893); *id. Hand-L. Game-B.I.* p. 262 (1895): *Oates, Man. Game-B.I.* p. 329 (1898); *Blanford, Fauna Brit. In.* iv, p. 90 (1898); *Stuart Baker, J.B.N.H.S.* xxiii, p. 667 (1915); *Beebe, Mon. Pheas.* ii, p. 20, pl. 22 (1921); *Field, J.B.N.H.S*, xxx, p. 917 (1925) (Mussoorie).

Gennæus leucomelanos, *Ghigi, Mem. Acad. Bologna* (6) v, p. 145 (1908); *Stuart Baker, J.B.N.H.S.* xxi, p. 172 (1917); *id. Fauna B.I.* v, 322 (1928).

Vernacular Names.—*Kalich, Kalij* (Perbuttia), *Rechabo* (Bhutia, Nepal).

Description.—Similar to *G. hamiltonii* but with the crest glossy blue-black; the feathers of the lower back, rump and upper tail-coverts the same colour with narrow white edges and vermiculated brown sub-edges; the wing-coverts have more white than those of the preceding bird; chin and fore-neck more dark and glossy and the underparts on the whole more albescent.

Colours of soft parts as in the preceding species.

Measurements.—Wing 204 to 233 mm.; tail 249 to 305 mm.; tarsus about 75 to 80 mm. Weight 1 lb. 12 oz. to 2 lb. 8 oz.

Female differs from the White-Crested Kalij in being more red and richly coloured; the feathers of the underparts have dark centres not seen in that species.

Chick in Down.—Head chestnut, paler on the forehead and behind the eye; a dark streak from the eye down the neck; centre of back chocolate-brown with broad lateral bands of pale buff; sides dull chestnut; chin and throat pale yellowish white, remainder of lower parts pale yellowish grey.

Distribution.—Nepal at practically all heights between 2,000 and 9,000 feet. In the extreme west of Nepal across the Gogra it is doubtful whether this species may not be replaced by the White-Crested Kalij and, again, in the extreme east of Nepal it is possible that the Black-Backed Kalij may be found.

Scully writes that the Nepal Kalij extends as far east as the Arun River and this is probably correct; certainly birds which I procured at Jalpaiguri and which had come from the vicinity of Dhamkhata were all *melanonotus*. Dhamkhata is a village on the Tamra, a small stream running into the Arun River on the east, and the birds were collected for me by Nepalese who traded in Pankabari and Jalpaiguri. It is interesting to note, also, that these birds showed no signs of grading into *leucomelanos*. It is true that one or two showed white lines on the edges of the rump feathers, but I find that this is a feature which crops up here and there throughout the whole range of *melanonotus*.

Nidification.—So far as I can ascertain there is nothing authentic on record about the breeding of this Pheasant. Scully says nothing about their nesting habits. Hume says:—

> "The habits and nidification of this species are, of course, very similar to those of the other Kalij Pheasants."

This, however, in so far as it relates to the nidification is merely guess-work on Hume's part, though undoubtedly correct. Ogilvie-Grant says of the nest and eggs "very similar to those of *G. albocristatus*," a statement very possibly founded on Hume's.

There are no eggs of this species in the British Museum, nor did Hume ever obtain any and I think the first eggs ever taken were two brought to a Mr. Ferry by Nepalese from the hills immediately above Bettiah. These were given by him to Dr. H. N. Coltart, who in turn made them over to me. Later I obtained a second clutch

of five eggs from the same place together with the skin of the female.

In appearance the eggs cannot possibly be distinguished from those of the other Kalij Pheasants; the surface, texture and shape are all quite normal. In size they vary in length between 53·1 mm. and 46·2 mm., and in breadth between 34·2 mm. and 31·1 mm., the average of eight eggs being 50·4 mm. by 33·6 mm. The two clutches were taken on May 23, 1908, and June 25, 1907, respectively.

Habits.—The Nepal Kalij Pheasant is a bird of comparatively high elevation, for though in the cold weather it wanders down to some 2,000 feet and even to the foot hills still lower than this, it is most common between 4,000 and 6,000 feet, seldom breeding below the former level, whilst it is common up to 9,000 feet and perhaps even higher.

Hodgson has left little on record about this Pheasant and was, in fact, somewhat doubtful as to its status. He remarks:—

> "This is by far the commonest Pheasant in Nepal. Its range is the central region; it is never found in the Terai, seldom in the Cachar (the most elevated portions of Nepal). Where *Gallus ferrugineus* ends there the Kalij begins and extends, though in diminishing numbers, to the region of the Monal and the Tragopan."

The notes of Scully in 'Stray Feathers,' written in 1880, are still practically the only other record we have of this bird's habits, and are quoted as follows:—

> "*G. leucomelanus* is common, wherever thick forest is found, from Hetoura in the Dun to the Valley of Nepal; in all the wooded hills surrounding the latter up to an elevation of nearly 9,000 feet; and in every forest about Noakote. It is usually seen in pairs or in parties of from 3 to 10, often feeding on the ground near cultivated patches at the border of forest. The birds seem very fond of perching on trees, and it is usually in this position that one comes across them in forcing one's way through forest which has a dense undergrowth. On such occasions the Kalij first gives notice of its whereabouts by whirring down with great velocity from its perch and then running rapidly out of sight to the shelter of some thicket. In the winter the birds roost on trees at the foot of the hills, and the plan for making a bag is to post oneself about sunset under some trees which they are known to frequent and to await their coming. The birds are then soon heard threading their way through the

jungle to their favourite trees, and at once fly out and perch. When once settled for the night in this way they are not easily alarmed, and I have shot 4 or 5 in quick succession before the rest of the party would clear out to quieter quarters.

"Occasionally too one can get a shot at the Kalij as they cross a hill path through the forest on their way to or from some streams.

"Great numbers of the Nepal Kalij are snared and brought into Khatmandu for sale; the birds bear confinement in the valley very well, and I reared several chicks to maturity."

GENNÆUS MELANOTUS.

THE BLACK-BACKED KALIJ PHEASANT.

? Phasianus muthura, *Gray*, in *Griffiths'* ed. *Cuv.* iii, p. 27 (1829).

? Gallophasis muthura, *Gray*, *Gen. Birds* iii, p. 498 (1845).

Euplocamus melanotus (Blyth), *Hutton*, *J.A.S.B.* xvii, pt. 2, p. 694 (1848) (Darjeeling); *Blyth*, *Cat. Mus. As. Soc.* p. 244 (1849).

Gallophasis melanonotus, *Mitchell*, *P.Z.S.* (1858) p. 544, pl. 149, fig. 2; *Jerdon*, *B. of Ind.* iii, p. 534 (1863); *Hume*, *Nests and Eggs*, *Ind. B.*, p. 527 (1873); *Marshall*, *B. Nests*, *Ind.* p. 59 (1877).

Euplocamus melanonotus, *Hume & Inglis*, *Str. Feathers* v, p. 42 (1877); *Hume*, *ibid.* vii, p. 422 (1878).

Euplocamus melanonotus, *Hume & Marsh.*, *Game-B. Ind.* i, p. 191 (1878); *Oates*, ed. *Hume*, *Nests and Eggs* iii, p. 415 (1890).

Gennæus muthura, *Ogilvie-Grant*, *Cat Birds B.M.* xxii, p. 301 (1893); *Ghigi*, *Mem. Acad. Bologna* (6) v, p. 145 (1908).

Gennæus melanonotus, *Ogilvie-Grant*, *Hand-L. Game-B.* i, p. 263 (1895); *Oates*, *Man. Game-B. Ind.* i, p. 331 (1898); *Blanford*, *Fauna B.I. Birds* iv, p. 91 (1898); *Oates*, *Cat. Eggs B.M.* i, p. 54 (1901).

Gennæus melanotus, *Stuart Baker*, *J.B.N.H.S.* xxiii, p. 668 (1915); *id. ibid.* xxv, p. 175 (1917); *Inglis*, *ibid.* xxvii p. 153 (1920) (Jalpaiguri); *Beebe*, *Mon. Pheas.* ii, pls. xxiii, xxiv, 1921; *Stuart Baker*, *Fauna B.I. Birds* v, p. 323, 1928.

Gennæus leucomelanus melanotus, *Stevens*, *J.B.N.H.S.* xxx, p. 887 (1925) (Sikkim),

Vernacular Name.—*Kar-Rhyak* (Lepcha).

Description. Adult Male.—Whole upper plumage black, glossed with deep violet-blue, green in some lights and purple in others, each feather edged with velvety unglossed black; all the feathers have white shafts, conspicuous on the scapulars and upper back but concealed elsewhere; wing-quills brown, the inner secondaries glossed with blue-green or green; chin and throat blackish brown, paling towards the breast; the long lanceolate feathers of the breast white with brown bases, the white decreasing in extent towards the abdomen

and flanks; centre of abdomen and vent brown; under tail-coverts and thighs blackish brown.

Some males have narrow white edges to some of the scapulars and interscapulars; the extent of white on the lower plumage also varies much.

Colours of Soft Parts.—Iris hazel-brown to orange-brown; facial skin bright red to crimson; bill yellowish or greenish horny, blacker at the base, paler at the tip; legs and feet horny, slaty or greenish brown, soles paler.

Measurements.—Wing 216 to 241 mm.; tail 238 to 312 mm.; tarsus 78 to 83 mm.; culmen 28 to 32 mm.; crest up to 76 mm. Weight 2 lb. 6 oz. to 2 lb. 12 oz.

Female.—Only differs from the *female* of *G. leucomelanus* in having the nape a less bright chestnut than the crest and upper back; it has the tail-feathers more chestnut than in *G. albocristatus* and is perhaps rather darker than that bird.

Measurements.—Wing 195 to 223 mm. Weight 1 lb. 14 oz. to 2 lb. 4 oz.

Distribution.—From the extreme west of Sikkim and over the greater part of Western Bhutan. Its exact boundaries both east and west have not hitherto been defined. To the west the Arun River in Nepal is *probably* its western boundary, for, as already recorded, some birds sent me from a small eastern tributary of this stream were all of this species. At the same time exact data of native-collected specimens are always to be regarded with caution. In this instance they are probably correct, as they were alleged to have been trapped within a short distance of the village to which the Nepalese belonged. The birds found in the hills north of Jalpaiguri are all typical *melanotus*, but north of Goalpara one gets into the range of *horsfieldi*, though birds of this district often show traces of white on the breast, as is, however, the case throughout the whole of the range of typical *horsfieldi*. These are the birds named *mearsi* by Oates, the type of which was killed at Monywa, Chin Hills.

Nidification.—The Black-Backed Kalij breeds from late in March up to the end of June, though eggs may also be taken a good deal earlier than this, as well as later. In the lower elevations at which these

Pheasants breed, say from 1,500 to 3,000 feet, March and April are the two months in which most eggs are laid; from 3,000 to 4,500 feet, April 25 to end of May or early June are the favourite breeding months, whilst in the highest ranges they breed from May to the end of June or even July, whilst I have had hard-set eggs sent me which were taken in August below Darjeeling.

The nest is generally a very poor affair, nothing more than a collection of dead leaves and grass gathered together by chance—less often by the birds themselves—lying in some natural hollow under the protection of a bush or tree. They are also sometimes found in bamboo jungle and in these cases the birds seem to scratch a hollow in the ground which they fill with bamboo spates and leaves, then working a hollow in the centre of these for the reception of their eggs. I have never seen a nest of this species myself, but my correspondents agree that the nests are almost invariably very well concealed; favourite positions for them are either in ravines, in dense evergreen forest, or in the almost impenetrable secondary growth, which in a couple of years covers deserted cultivation. When bamboo jungle is selected, it is nearly always very closely growing and the eggs are deposited well in amongst the roots of the clumps, so that they are not easily spotted.

They also sometimes make their nests in among tea-bushes in tea gardens, after these have come into full flush and the undergrowth has sprung up again so as to afford sufficient cover. I imagine, however, that few of these clutches of eggs ever hatch out, for nowadays tea is so highly cultivated that the weeds are constantly hoed out, when the eggs are discovered and eaten by the coolies. At the same time there is yet plenty of land in the Terai all round about the tea estates which is too broken up to be worth cultivating for tea; here the Kalij still flourishes and breeds without much molestation, for the small native boy does not emulate his white brother in his bird's-nesting proclivities. Thus Hume's fear that within a few years of his writing his Game-Birds, the Black-Backed Kalij would become very rare, has fortunately not been fulfilled.

The eggs in a full clutch vary from six to ten, seven or eight being the numbers most often found. They differ in no way from those of other Kalij Pheasants, that is to say, they are very similar to the

eggs of the common domestic fowl. In colour they range, as do these, from practically pure white, as recorded by Tickell and seen, also, by myself, to a warm, rich *café-au-lait* or buff, whilst they cover the same differences in shape, being normally a broad oval, but slightly compressed at the smaller end. The texture is that of a fowl's egg, usually quite smooth and slightly glossy ; sometimes pitted, sometimes having the tiny white specks occasionally found in most game-birds' eggs.

The eggs I have seen, including Hume's series in the British Museum, vary in length between 1·76 inches (44·0 mm.) and 2·05 inches (52·0 mm.), and in breadth between 1·36 inches (34·5 mm.) and 1·54 inches (39·1 mm.), the average of 58 eggs being 1·92 inches (48·7 mm.) × 1·47 inches (37·3 mm.).

Habits.—The Black-backed Kalij is a bird of somewhat lower elevations than either of the two preceding birds but, at the same time, is not normally found at so low an elevation as that haunted by the Black-breasted Kalij. It is most numerous at 2,000 feet to 5,000 feet, but is common enough round about Darjeeling and in the interior of Sikkim up to 6,000 feet and, perhaps, even higher than this in the hot weather. At 7,000 feet, however, it is only a casual wanderer, though it has been met with up to 8,000 feet. Beavan, on the other hand, found it at Pankabari at the foot of the hills (where it has been known to breed), whilst the natives say that in the winter it wanders into the broken land in the tea gardens, though the planters themselves say it is but rarely they come across one when out shooting.

Higher up amongst the tea gardens in the Darjeeling Terai it is still extremely abundant in many places bordering the non-cultivated areas. Here there are wide extents of land planted with tea, broken up and surrounded by ravines, steep hillsides and rugged pockets, either retaining their original virgin forest or with this replaced by a matted growth of secondary jungle even thicker than the other. These patches are a very favourite resort of the Kalij, not only on account of the protection given by their dense cover, but on account of their bordering the tea lands, which furnish good feeding grounds, and the crops of the native cultivators, of which they take due toll.

But if these places afford refuges to the birds from the encroach-

ments of civilization, they also form, in a way, traps which lead to their destruction, for they are comparatively easy to beat, and are thus often worked by sportsmen in pursuit of them.

When the ravines and hillsides are beaten, the birds on flying out always follow two rules: firstly, they invariably make for the heaviest forest near by; secondly, when there is a choice between two or more similar forests, they choose the one which will enable them to fly downwards.

Although I have never heard of big bags being obtained in this way, a couple of guns in a morning's beat will sometimes pick up three or four brace in addition to other odds and ends that the beaters flush.

Like all the Kalij Pheasants, it is a tremendous runner and, when worked with beaters only, will seldom rise until it reaches the very edge of the forest or bushes, when it gets up with a rush and a flurry of wings, soon attaining a considerable speed. If flying downhill, it alternately sails and flies with rapid beat of wings until it sails out of sight, drops to the gun, or descends headlong into the sanctuary of the further forest. With dogs it gets up quicker and often perches when, if the dog distracts its attention, it will often allow the gunner to walk right up to the tree before it quits by the opposite side.

In the mornings and evenings it comes into the open to feed, both in cultivation and along the edges of roads and forest paths; in these and similar places it often allows a running shot as it scurries away on being disturbed, though it is exceptional for it to take to flight under such circumstances unless rushed by a dog.

Stevens writes of this Pheasant:—

> "Obtained as far West as the Mai Khola, East Nepal. Its ideal habitat is the densely overgrown, steep gullies of the hill-slopes on the outer Ranges, where they manage to maintain a precarious existence, for their numbers undoubtedly diminish wherever their haunts are brought into cultivation, and when they are not assured of protection from molestation during the breeding season. Pine Martens account for much of the destruction of eggs and young birds, and this Kalij suffers, in common with other ground game, from the depredations of these animals. They are partial to dense cover in close proximity to running water, moving out in the mornings and evenings, when feeding, to more open cover and apparently do not frequent forested land to any appreciable extent.

At Gopaldhara I found it to be by no means shy and fairly numerous. A cock-bird I flushed out of the tea with my dog took refuge in a tree, paying little attention to me as it gave vent to its annoyance in loudly scolding the dog."

Writing half a century ago, Gammie speaks of the Black-backed Kalij as not a shy bird but, nowadays, it appears to be just as wild and as clever in avoiding the sportsman as any of its near relations. Gammie writes :—

"Usually it is a silent bird, but when suddenly alarmed, it utters a sharply repeated 'koorchi koorchi koorchi' as it rises on the wing. When, however, the males are in the fighting humour—which they usually are about breeding time—they call, as they advance towards each other, 'koor koor' 'waak waak'; the former being the threatening and the latter the attacking note. They also at times answer each other's call in the jungles.

"In fine weather the male often makes a sharp drumming noise by beating his wings against his sides, somewhat after the style of the wing flapping of the domestic cock preparatory to crowing from some elevated place; but instead of the cock's few leisurely flaps, the Kalij strikes oftener and smarter producing a sound more like drumming than flapping. From the same spot he repeats the noise twice or thrice at short intervals, but gives no voice along with it. It seems as though he was in such a joyful mood that he must give expression to his delight somehow, but inherited experience had effectually taught him that any attempt at crowing in the jungle was likely to attract the attention of wild beasts, and that he must stick to his drumming and leave the crowing part to the domestic cock, who can safely indulge in that amusement.

"The natives look on the drumming of the Kalij as a sure sign of approaching rain. It is heard at all seasons of the year, but most frequently before the setting in of the rainy season; at other times generally just before a fall of rain.

"The food of the Kalij is varied in the extreme. It eats almost everything in the shape of seed, fruit and insects, but is particularly fond of the larvæ of beetles out of cow-dung and decayed wood, and several of the jungle yams which bear tubers along their vines at the axils of the leaves. When the vine tubers are exhausted, it will scratch away the soil to get those underground."

Gammie considers the flesh poor eating but most sportsmen in India are pleased enough to get it for the table, especially in out-of-the-way spots where variety in food is not easily obtainable. Old

cocks are, of course, tough, but young birds in the autumn are excellent eating. Like all Indian Pheasants, they should be eaten as soon as possible after being killed, unless the weather is cold enough to allow of their being kept some days.

They are quite easy to keep in captivity once they have got over the first few days, during which they must be carefully watched to prevent them dashing themselves against the sides of their cage, and so killing or maiming themselves.

GENNÆUS HORSFIELDII HORSFIELDII.

THE BLACK-BREASTED KALIJ PHEASANT.

Gallophasis horsfieldii, *Gray, Gen. B.* iii, p. 498, pl. 126 (1845).

Euplocomus horsfieldii, *Blyth, Cat. Mus. As. Soc.* p. 244 (1849); *Hume, Str. Feath.* vii, p. 429 (1878); *Hume & Inglis, Str. Feath.* v, p. 42 (1877); *Hume & Marsh., Game-B. Ind.* i, p. 198, pl. (1878); *Fasson, Str. Feath.* ix, pp. 203-5 (1880); *Hume, Str. Feath.* xi, p. 303 (1888); *Oates*, ed. *Hume's Nests and Eggs* iii, p. 416 (1890).

Euplocamus cuvieri, *Hume & Marsh., Game-B. Ind.* i, pl. only (1878).

Gennæus prendergasti, *Oates, J.B.N.H.S.* xvii, p. 11 (1906); *Ghigi, Mem. Acad. Bologna* (6) v, p. 145 (1908); *Harington, J.B.N.H.S.* xx, p. 327 (1910).

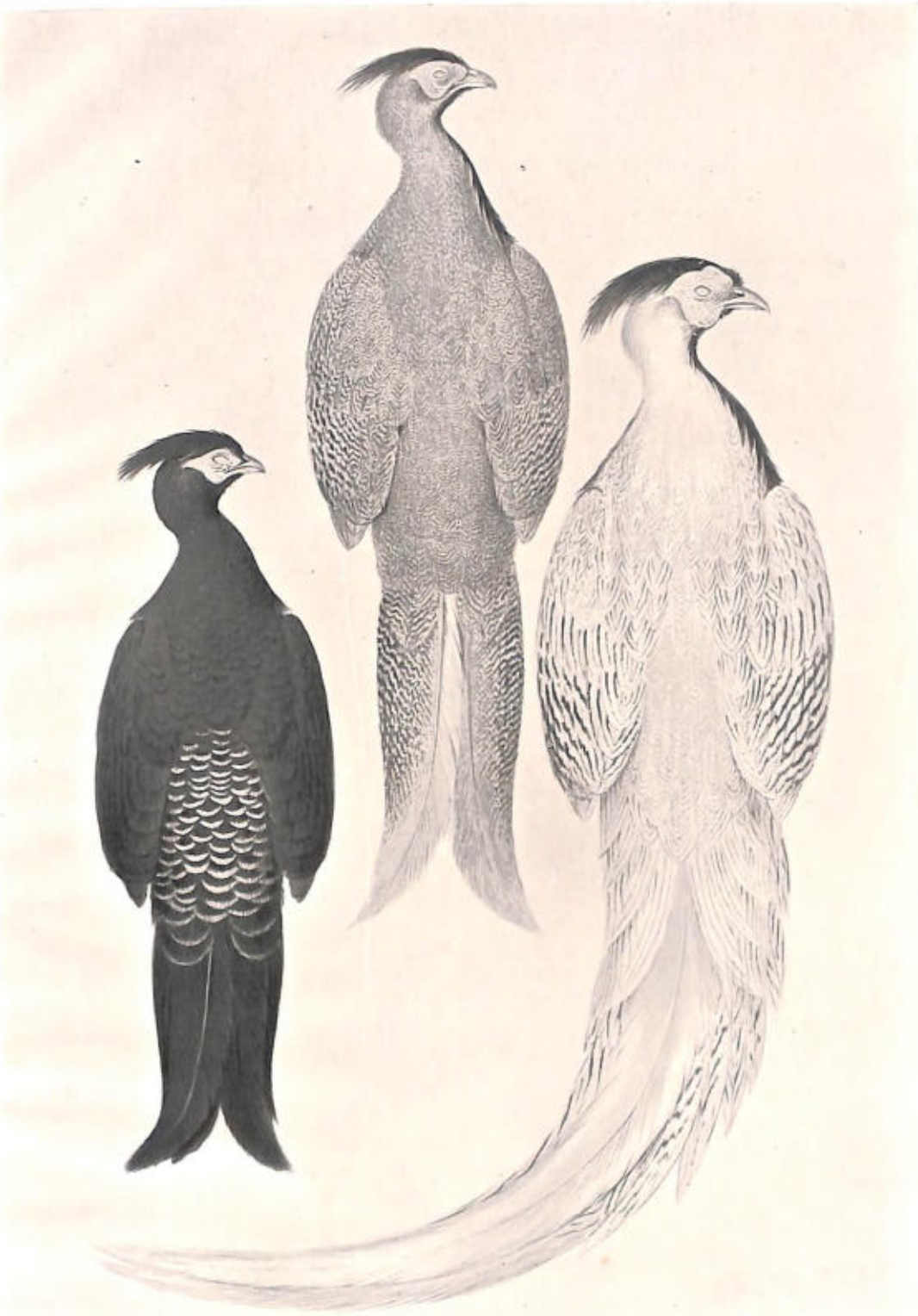
Gennæus mearsi, *Oates, Ann. Mag. N.H.* (8) v, p. 164 (1910); *Inglis, J.B.N.H.S.* xxv, p. 505 (1918, Goalpara).

Gennæus horsfieldi, *Ogilvie-Grant, Cat. Birds B.M.* xxxii, p. 302 (1893); *id, Hand-L. Game-B.I.* p. 269 (1895); *Blanford, Fauna B.I. Birds* iv, p. 92 (1898); *Oates, Man. Game, B. Ind.* i, p. 334 (1898); *Stuart Baker, J.B.N.H.S.* xii, p. 487 (1899); *Inglis, ibid.* p. 676 (1899); *Oates, Ibis*, 1903, p. 102; *id. Cat. Eggs, B.M.* i, p. 55 (1901); *Stuart Baker, J.B.N.H.S.* xvii, p. 971 (1907); *Ghigi, Mem. Acad. Bologna* (6) v, p. 144 (1908); *Harington, J.B.N.H.S.* xix, p. 309 (1909); *Watson, ibid.* xxiii, p. 582 (1915); *Stuart Baker, ibid.* p. 669 1915); *Stevens, ibid.* p. 723 (1915); *Beebe, Mon. Pheas.* ii, p. 43, pl. xxv, 1921; *Higgins, J.B.N.H.S.* xxviii, p. 289 (1921, Manipur).

Gennæus horsfieldii horsfieldii, *Hopwood & Mack., J.B.N.H.S.* xxv, p. 91 (1917, N. Chin Hills); *Stuart Baker, ibid.* p. 181 (1917); *Inglis, ibid.* xxvi, p. 848 (1919, Myitkyina); *McCulloch, ibid.* xxxi, p. 730 (1926, Khasia Hills); *Higgins, ibid.* p. 819 (1926, Assam); *Stuart Baker, Fauna B.I. Birds* v, p. 324, pl. 4, 1918.

Vernacular Names.—*Mathura* (Chittagong, Tipperah, Goalpara); *Modura* (Sylhet and Cachar Plains); *Deorik, Dirrik, Durug* (Garo Hills); *Dorik* (Upper Assam); *Deodip* (Cachari); *Vohtep* (Kuki); *Inruitip* (Naga); *Yit* (Burmese); *Waba* (Manipur).

Description. Adult Male.—Whole plumage except the rump, lower back and upper tail-coverts black; above, the plumage is glossed with



G. h. horsfieldii. *G. l. lineatus.* *G. n. nyethemerus.*

purple-blue, in some specimens more blue, in others more purple; below, in fresh moult the gloss is more purple but soon wears away so that most birds are dull black; the primaries are unglossed blackish brown; lower back, rump and upper tail-coverts black with broad terminal bars of white.

Some individuals have traces of white edging to a few feathers on the back and wing-coverts and fewer still have a few white streaks on the sides of the breast.

Colours of Soft Parts.—Iris dark brown to red-brown; bare skin of face crimson; bill light greenish or yellowish horny, the culmen and base darker; legs some shade of plumbeous or brown, very rarely with a red or pink tinge and this never strong.

Measurements.—Wing 211 to 241 mm.; tail 210 to 245 mm.; tarsus about 76 to 84 mm.; culmen 28 to 32 mm.; crest about 76 mm. and up to 90 mm. Weight 2¼ to 2¾ lb.

Female.—Above reddish brown finely powdered with dark brown, the feathers, except those of the head, edged and shafted paler; the central pairs of tail-feathers chestnut-brown, more or less vermiculated with dark brown; other feathers blackish brown, those next the central ones marked with chestnut-brown; upper tail-coverts and rump a little paler than the back; wing-coverts rather more broadly pale edged; quills reddish brown, the innermost secondaries finely vermiculated with dark brown and sometimes tipped and edged paler; chin and throat white, grading into brown on the fore-neck and remainder of the under-plumage which has white shafts to the feathers; centre of abdomen and vent dingy brown; under tail-coverts blackish brown with narrow pale edges.

Measurements.—Wing 203 to 228 mm.; tail 190 to 228 mm.

Young males are like the females, but generally darker with white or pale buff edgings more in contrast with the rest of the feather.

Cocks take two or even three moults before acquiring the full plumage.

Chick in Down.—Head chestnut with black coronal streak; a dark chestnut streak from the eye, below which the buff is paler; median body-stripe rich chestnut-brown; sides and underparts of body ashy or ashy-buff with an ill-defined chestnut band on the breast.

Distribution.—The Black-breasted Kalij is found over a larger area than any other of the Kalij Pheasants. It extends from the east of Bhutan throughout the whole of the northern districts of Assam and to the Garo Hills on the south of the Brahmapootra; throughout the southern districts of that Province, wandering as far east as the western bank of Irrawaddy. To the south it is found throughout Cachar and Sylhet, south into Arrakan below latitude 20°, and as far east as the Northern Arrakan Yomas and some way down the course of the Yaw River towards Pakokku. It is also the common Pheasant of Manipur, the North-West Chin Hills, in the lower portions wandering down the Chindwin as far as its junction with the Yu River, and down the Irrawaddy at least as far as Katha, or indeed (*vide* Watson in *loc. cit.*) as far as Mojok in the Ruby Mines district.

A specimen in the British Museum is labelled "Manbhum," but I do not think for a moment it was really collected in any district south of the Ganges.

The elimination of *cuvieri* as a recognizable species or subspecies has been rendered necessary, in part owing to the fact that it has latterly been proved that wherever this form is found either *horsfieldi* or *williamsi* is also found, whilst at the same time, the former has been obtained further south and further east than any of the few existing specimens of *cuvieri* have yet been taken. The other reason which has decided me in no longer recognizing *cuvieri* as a true form is that there are several specimens similar in every way to this, so-called subspecies, but which show by their irregular markings that they are merely hybrids or indefinite intermediate forms. Finally, with further material added to that to which I could refer in 1914, I am convinced that it is quite impossible to lay down any definite area in which *only cuvieri* can be found.

Nidification.—The Black-breasted Kalij breeds throughout its area from the level of the plains up to about 2,000 feet; above this height it is much less common, though a few nests may here and there be taken up to some 3,000 feet, a few odd birds breeding up to 4,000 feet and even higher. Thus I once took a nest containing eight eggs near Hangrum, in the North Cachar Hills at about 5,000 feet. Two or three times it has bred below Shillong in the Khasia Hills at about the same height and, again, below Kohima in the

Naga Hills at much the same elevation. In the Chin Hills, Manipur and Arrakan their eggs have been taken or the young seen at some 3,000 feet or more, but all these nests are merely those of stragglers which have been forced for some reason to breed in places well above their normal breeding grounds.

Most birds breed in April and May and, owing to its not breeding over so great a range of elevation, the season is not so prolonged as is that of some of its nearest relations. At the same time I have seen nests and eggs in every month of the year from February to October, whilst it is quite possible that some pairs have two broods in the year. In North Cachar nests were extremely common between March 15 and May 15, and then for a time they were difficult to obtain, but in July and early August many birds again started laying. The earliest nest I have known was one taken by myself at Dimagi in North Lakkimpur on February 24 in a small patch of scrub jungle close beside a huge bheel over which we were duck shooting. Startled by the shot fired at some duck, the two birds, which were probably drinking at the edge of the water, got up with their usual flurry and fluster, and I knocked over the hen, which fell into the adjacent jungle. Going into this to fetch her out, one of the boatmen stumbled on to her nest which contained five fresh eggs.

The nest is nearly always placed in forest, the kind of cover most often chosen being the damp evergreen forest met with everywhere along the foot-hills and broken ground bordering the higher ranges of the Himalayas. Inside these mighty forests, composed of an endless variety of trees, mostly tall and mostly covered with a luxuriant motley of parasites of all kinds, but also with a plentiful undergrowth of canes, brambles and other plants, the Black-breasted Kalij has its favourite haunts. Occasionally in their inner depths one may come across tiny open glades in the general dense undergrowth. Here the vivid green moss seems even more green than elsewhere, forming a springy carpet; ferns grow here and there over its surface and the sun only comes to it in dappled, quivering patches through the branches high overhead. Such spots are much beloved by the Kalij Pheasant and many a time have I come across its nest in the bushes immediately surrounding them. Comparatively open spots of this description attract numerous insects and, I am afraid, it is these

rather than their special natural beauty which induce the Pheasants to commence their domestic duties within easy reach of them. The nest itself is more often than not placed under same tangle of bushes, briars or canes at the foot of one of the bigger trees, well concealed from inquisitive friends and enemies, and in some position less moist than its surroundings. Ravines with mossy, fern-covered sides are often selected and, in such places, a rock or boulder may form its principal shelter. As a work of art the nest is a failure; a pile of leaves and rubbish scratched into a heap with a rough depression in the middle for the eggs is the limit attained, whilst Mother Nature herself and not the birds is responsible for all the collecting that has been done. The great buttresses of the cotton tree (*Bombax malabarica*), which project on all sides from the main trunk, form recesses into which the winds from every quarter blow their quota of fallen leaves and other oddments. They thus become splendid places in which birds may lay their eggs and many a nest have I seen, both of this Pheasant and of other game-birds, in these cosy corners.

Cane brakes, when these are not growing actually in water or marshy land, may often form the home for a brood of chicks, whilst occasionally the nests may be found in bamboo jungle. Such sites are, however, exceptional in Assam or Bengal and not common in Burmah. Mixed jungle of bush and bamboo, especially when growing on a river bank, is more often resorted to, whilst the secondary growth which covers deserted *jhums*, or native clearings seems to be even better liked.

Wherever the nest may be, two things seem to be essential, the very close vicinity of water and open ground not too distant for feeding. The open ground may be anything from a mere forest road to extensive cultivation, or a natural open expanse; in the same way the water may be the River Brahmapootra itself, a lake or swamp, or it may be the mere lazy trickle of some tiny stream which wends its way from rock to rock down a hill ravine in the hot weather.

The number of eggs laid is perhaps most often seven to nine but, very often, only five or six are laid and sometimes only four; on the other hand this Pheasant sometimes lays as many as ten, though this is probably the maximum.

In colour the eggs vary almost as much as do those of the many varieties of barn-door fowl. I have in my collection one clutch absolutely pure white and another a most beautiful deep pink *café-au-lait*, a richer, deeper colour than I have ever seen in a domestic fowl's eggs. Between these two extremes every variation may be found, but the colour of nine eggs out of ten is a pale buff or cream, some slightly darker, some slightly paler.

Typically the surface is quite smooth and in some eggs there is even a slight gloss; the texture is close and hard but, though the shell is stout and strong, it is *not* coarse but rather fine. Occasionally one comes across a clutch coarse and pitted on the surface, similar to those described by Hume but these are the exception and not the rule. In the same way I should not say that the "usual hen's egg shape" of those described by Hume represented the average Black-breasted Pheasant's egg, though it would do for many of them. On an average their eggs are rather longer in proportion than Junglefowls' eggs, have a nearer approach to direct reduction of size at the smaller end and are, on the whole, more elegantly shaped eggs than those of that bird.

The white speckling found in some instances on most unicoloured game-birds' eggs are also to be found in these, though this type is rarer and is not so often met with as it is in the Polyplectrons' and some other Pheasants' eggs. Two hundred eggs average 47·3 × 36·3 mm.; maxima 54·0 × 35·1 and 53·0 × 39·9 mm.; minima 43·1 × 34·7 and 45·0 × 33·1 mm. Pigmy eggs are very common.

Incubation seems to take twenty to twenty-two days in the case of all Kalij Pheasants and Junglefowl, generally twenty days in the warmer, moister parts of their habitat, and up to twenty-two at higher, cooler elevations.

I do not think the Black-breasted Kalij is polygamous, for I have more than once come across both parents looking after a brood of young and, moreover, the male is generally to be found somewhere near the nest when the hen bird is sitting. Certainly one or more fully plumaged cocks may sometimes be found in company with several other birds in hen plumage but these are, I believe, merely their wives and their young ones, the latter, of course, all in female

plumage or in plumage which at a little distance looks like that of the female.

A very interesting little note by Mr. H. W. A. Watson in a recent number of the 'Bombay Natural History Journal' confirms this idea that the cocks are monogamous. He writes:—

> "I came across a cock Kalij Pheasant (*G. horsfieldi*) looking after a flock of young a few days old. I saw no sign of the hen, though I watched the cock for several minutes. Probably she was absent looking for food. The cock was very aggressive, and ran round demonstrating, often coming within 10 feet of me. The chicks were hiding in the leaves, one within a few inches of my feet."

According to Cripps, the hen is an extraordinarily close sitter; on one occasion he caught a female on her nest of four fresh eggs, and on a second occasion a hen bird sat tight on her nest whilst men were felling jungle all round her, refusing to move until the axe was laid to the tree at the root of which her nest was.

This has not been my experience, though I have seen some hundreds of nests. The hen bird nearly always sneaks quietly off before one can catch a glimpse of her; it is only when caught suddenly on the nest and unable to move without attracting attention that she will flatten herself out, almost close her eyes and try to escape notice. Even then, directly she discovers she has been seen and, before one is within grabbing distance of her, she bolts off and, on one such occasion, I saw her scatter some of her eggs in all directions as she flew headlong from her nest of dead leaves and grass.

Habits.—The Black-breasted Kalij Pheasant is a bird normally of the humid, hot climate between the plains and some 1,500 feet elevation; in fact, just the sort of climate we should expect a black bird of this description to live in. Of course, it wanders more or less out into the plains for some fifty miles or so and, again, may be found as high as 6,000 feet up in the Himalayas both north and south of the Brahmapootra. But, though the plains birds may be and indeed often are permanent residents therein, those of the higher hills are only stragglers. I doubt if any birds permanently remain much above 3,000 feet and, only then, where there are hot, sweltering valleys with dense moist forest in the immediate vicinity.

In the Khasia Hills we used occasionally to find them breeding about Dumpep and the forests below the Shillong-Cherrapoongi road, somewhere about 4,000 feet elevation. The birds reared here were exceptionally small and poor, so that I thought at first that the Khasia Hills were inhabited by a small race of *Gennæus horsfieldii*. When, however, I tried to get a series together to prove or disprove this theory, it was impossible to get any but a rare straggler away from the foot-hills where they were extremely plentiful below 1,000 feet.

Above in describing their favourite nesting haunts I have also described the kind of place in which the birds are most often to be found throughout the year. At times, especially when the bamboo jungles are seeding, they haunt this kind of cover in company with many other seed-eating birds. They also are very fond of small patches of bushes, scrub and dense secondary growth in the vicinity of villages, though they seldom are to be found in these unless there is heavy forest within easy reach.

During the early mornings and evenings they frequent forest roads and jungle paths, the edges of cultivation and the open banks of rivers and streams. Here they wander about singly, in pairs or in small flocks and family parties, often in company with Junglefowl, with whom they consort on quite amiable terms at any other but the breeding season.

As soon as the sun is an hour or two above the horizon they gradually make their way into the forest, but continue to peck and scratch about for food until nearly midday, when they fly up into some tree to roost, generally selecting a broad limb within a few feet of the ground. They remain here until the shadows begin to lengthen, when again descending, they leisurely feed their way out once more into the open, where they stay until sunset, immediately after which they retire for the night and are all settled on their perches before it is dark.

They are very quiet birds as they move about in the forest, and are much less energetic and quick in their movements than are Junglefowl. When they scratch and turn over the leaves in their search for grubs and fallen fruit, they do so in a very slow methodical way, and one never sees the wild scattering of leaves and the

misplaced fluster so often indulged in by Junglefowl of both sexes. So too, they do not get stampeded by non-existent foes and rush off shrieking and cackling, only to find after a few minutes that there was no need to move at all. They go their way quietly and sedately, uttering as they move about a low kurr-kurr-kurrchi-kurr as if to let the other members of their family know where they are, for the flocks scatter a good deal when in heavy cover, until they come to the edge of the cultivation where they intend to feed. Here there is usually a halt, as each individual satisfies himself or herself there is no danger, after which out they come and commence the serious morning and evening business of getting full. Once out in the open they seem to keep closer together than in the forest, evidently relying to some extent on each other for the necessary warning in case of alarm.

They are shy birds, yet neither so shy nor so wary as Junglefowl, and, when the two are together, it is almost invariably the Junglefowl who first takes alarm and sneaks off into safety. Their manner too of leaving is very different. A cock Junglefowl disturbed takes but a second to make up his mind, a rapid glance in the direction of the intruder, down go head and tail, and with hasty but stealthy steps he is off out of sight. The Pheasant is not nearly so prompt in his actions and, if one disturbs a party of these birds and keeps absolutely still, quite an amusing little comedy may be seen before they make up their minds that discretion is the better part of valour. When standing in the deep shade of a tree I have seen from a distance of some forty or fifty yards a party of Kalij Pheasants take minutes to decide if I was dangerous or not. The snapping of an unlucky twig, stepped on as I crept along just inside the jungle, had attracted their attention, but the light was bad and the food on which they were engaged—termites—plentiful and engrossing. At the snap of the twig every bird stopped and looked at me, for the first instant motionless and then with much screwing and twisting their necks in an endeavour to get a better view. After a few seconds a fat white ant tumbling down in front of one bird was more than she could resist and a hasty snatch and gulp put it safely away. No harm coming to her from this, she was very shortly busily re-engaged in chasing and gobbling up the termites as they crept from their

holes or fell down again after their flight. Her example was enough for the others and, within five minutes they were all happily engaged as unsuspecting as if no danger was anywhere near them.

It was so amusing to watch them that I cautiously stepped back into still darker shadow without frightening them. A patch of ground, on which hill-rice had been grown and cut, was covered with a stubble some four to six inches high, amongst which the Pheasants, eight in number, scurried to and fro, darting at ant after ant. Occasionally also they would flutter up a few feet in the air as if in ungainly emulation of the Kingcrows, Jays, and other birds which constantly swept backwards and forwards in graceful pursuit of those insects which had winged their way higher up.

Ten minutes of this, however, satisfied my curiosity and, as I was in camp and had to shoot for the pot, I then stepped out, bowled over the cock as he ran helter skelter for the bushes, and his wife, as she winged her way over his fallen body.

The Kalij nowhere collects in such numbers as to afford a day's sport like the Junglefowl does, yet there are many places where, with a few beaters, one may get quite enough shots to make a very interesting morning or evening's walk and, probably with dogs—personally I have never shot with trained ones—the result might be even better.

So far as I remember six brace of Kalij Pheasant is the biggest bag I have ever made of these birds, and this was made over practically the same ground as that which is described in the article on Junglefowl shooting in the chapter on that bird. As a rule, when shooting along these mustard fields bordering the Kopili River, one got two or three Junglefowl to one Pheasant, but this time the reverse was the case.

My companions, on the occasion of which I write, consisted of a Mikir tracker, a second Mikir with my rifle, with an odd man to work as a beater, jungle cutter, luncheon carrier, etc. This was quite enough for all the beating we should require, for the strips were mostly narrow bits along the banks, shut in on one side by very heavy evergreen forest and, on the other, by the shingly banks of the stream. Starting just after daybreak, our first "jhum," or open bit of cultivation, was occupied only by some Junglefowl, who were the first to

detect our meeting and gave no chance of a shot but, as we passed through the next bit of forest, a hasty but lucky shot right and left brought down two fat Bronze-backed Imperial Pigeon, whilst some quarter of a mile further on we came to a second mustard field. In this we could see some birds feeding about half-way down, though we could not make out exactly what they were in the tall mustard. Leaving my men under cover, I went forward inside the jungle about twenty yards, and when I judged I had gone far enough, notified them with a low whistle to come on. Sneaking along just inside the fringe of forest I kept about the same distance, or a little more, ahead of the men and, when frightened by the latter, the Pheasants got up, had an easy right and left, adding two more birds to the bag. My next shot was at a hen Junglefowl, as she scurried through the mustard into shelter, just giving me a momentary glance as she left the former. Picking her up, we then went on through a patch of semi-burnt cane and grass, missing an old cock Junglefowl as he got up with a cackle and tremendous flurry on the far side of some charred canes.

Two more long snapshots at running birds are tinkered, and then I have a bit of luck, for we step out of the jungle into a mustard field, right into a family party of Kalij, who are scratching round for food just outside the forest. Quite overcome by the suddenness of our appearance, the birds, six in number, at once take to flight, scattering in all directions, but two drop to my shots, whilst two others who have gone towards the stream are turned back by the sight of some men fishing and, wheeling round to their original cover, give me splendid high overhead shots, both coming down tremendous thumps in response thereto. One of these, however, is a runner and, for some time, evades my men in their efforts to catch her, until at last a luckily flung stick bowls her over as she dodges from one bush to another.

So we wander on, now through a bit of virgin forest, now through a mustard field, then through a piece of burnt grass, the black surface showing the pugs of a tiger who has passed by some two or three hours earlier. Taking my rifle we follow them to the stream where the tiger has had his drink, and then trace them back to the forest in which we soon lose all signs of him.

Changing my rifle once more for the smooth bore and leaving

stripes to rest in comfort, we turn and work down the opposite side of the stream towards camp. The first birds we put up are some Junglefowl who have been drinking before retiring into the forest for their midday siesta; as they fly past us I knock the tail-feathers out of the cock bird leading them, with a real bad shot, and bring down a second with a straighter one. The tailless cock and the others have gone down in the jungle just ahead of us, so spreading out, we walk them out toward the next *jhum* every now and then hearing them as they hurry forward, rustling over the fallen leaves. Before we get to the edge of the jungle, they have cleared off without giving another chance, but a single cock Kalij which has tarried a little longer than the other birds gets up just as we too emerge from the trees, and is promptly bowled over and gathered. The mustard here is so high, up to our waists, that we may find some birds lying up in it, and accordingly we work through it in line, myself keeping on the inside, next the forest and a few yards ahead of the men. Within a few minutes two birds run through the mustard and gain the jungle in front of me without giving a chance, after this a barking deer jumps up and comes bounding past me about forty yards off, barking as he starts, and barking again as he gains cover and stands inside defying me. He is still barking as we pass where he stands and I can hear the stamp of his fore-feet before panic again seizes him and he dashes away further into the depth of the forest. Nothing more shows up until I have reached the end of the mustard and stand on the yard or two of bare ground which separates it from the nearest trees. As the men come nearer, two or three Junglefowl flit across it, and then there is a tremendous commotion as nearly a dozen birds, Junglefowl and Pheasants mixed together rise into the air. A hasty shot at one of the former, not only knocks it over, but also accounts for an unlucky hen Pheasant which has come into the line of fire, and a second shot brings to bag another hen Pheasant which falls, a cloud of flying feathers, with a bang right on to the man with my luncheon basket. After he has righted himself and collected my scattered provisions, we proceed on our way and, by noon, when we stop to have a rest and lunch, I have managed to bag twelve Pheasants, six Junglefowl, three Imperial Pigeon and a couple of very evil-smelling White-eyed Pochard, which, however, are not disdained by the coolies.

Kalij Pheasant are not nearly such noisy birds as are Junglefowl,

but call—one can hardly call it crowing—pretty regularly during the breeding season. This call or crow seems to be uttered only during the mornings and evenings and never in the middle of the day, as is that of the Junglecock. A cock Kalij only calls on his roosting perch before he gets down from it in the morning and, again, after he has returned to it in the evening before settling down for the night. Nor does he use his crow as a challenge to other cocks; when he wants a fight, or pretends that he wants a fight, he proclaims the fact by loud flappings of his wings and by quickly repeated beatings together of the two above his back, or by beating them on his ribs. In the former case the sound made is very loud and sharp, only lasting a second or two but, when a male bird drums against his side, the noise is much lower and softer, being continued for some seconds or even minutes.

At the same time the Kalij is not in the same class as the Junglefowl as a fighter in any way; he is far slower and less decisive in his movements and has not the same real delight in a scrap as has that bird. I have often heard Kalij cocks defying one another to mortal combat when seated at a few yards apart, but the finale has nearly always been disappointing. If one bird really makes up his mind to fight, the other has as a rule already made up his mind that he does not want to. Sometimes they will actually meet, and after much mutual abuse and wary walking round, both birds simultaneously decide that there is really nothing to fight about, so retire to their own domains, or commence feeding.

Now and then in the height of the breeding season the fights develop into really fierce battles, which are continued until one or the other of the combatants owns himself beaten and sneaks away, often in a very tattered and featherless condition about head and neck.

I have already described a fight which I witnessed between a cock Junglefowl and a Kalij Pheasant but, in this case, the former was the aggressor and the latter would have retired after a very few rounds had he been able to escape.

A similar fight, though on this occasion the *casus belli* was the possession of an ant-hill from which termites were issuing, was witnessed by Mr. R. A. Clark in Cachar. In this instance also the fight ended in the running of the Kalij. After a description of this fight, Mr. Clark writes:—

"On another occasion I came across a pair of male Kalij fighting amongst a lot of fern; they were so taken up with their own affairs that they did not notice my having approached to within fifteen yards; I let them go on for ten minutes, and then went up and caught both; they were quite exhausted, the feathers from the head and neck had all been knocked off, and the latter were bleeding in both birds."

Like the rest of the family in India, these Pheasants prefer to use their legs to their wings to avoid pursuit, and will always run rather than fly so long as there is any cover to conceal them, or no obnoxious dog to put them up. Unless they are actually forced to the very edge of a jungle by beaters or one comes on them in the open so suddenly that they lose their heads, it is most difficult to make them rise and, when shooting, more especially when shooting for the pot, it is frequently necessary to shoot them as they run, perhaps no easier a feat than when they are on the wing, for they make use of every scrap of cover, only giving the snappiest of snapshots as they dodge from one bush to another.

On the wing they are fair fliers once they get away, though they appear to be going much slower than is really the case. On the flat they simply fly from one forest to another but, when shooting in hills the sportsmen will find they nearly always run *up* hill and fly *down* hill, consequently after the first mad rush into the air they sail down at a tremendous pace, so that one must keep well forward to obtain clean shots. They do not stand, comparatively, as much knocking about as do Junglefowl, though they are bigger and heavier birds; they have not so much heart, whilst their feathers seem to be less impervious to shot than those of that bird.

They are very omnivorous in their diet and will eat practically anything from bamboo seeds to small snakes and lizards. Their favourite articles of food are the same as those of all other game-birds with whose habits I am intimately acquainted, i.e., white ants, fruit of the various *fici* and bamboo seed. To this must be added, in the case of the Kalij, forest yams and the roots of small ginger-like plants very common over a great portion of their habitat.

Birds which have been feeding on this extremely acrid, pungent root are almost uneatable, otherwise they are normally very good eating, though naturally old birds are tough unless cooked whilst

still warm or hung for several days. Probably the best way of eating these birds is in the old gipsy manner, rolling them up in a mass of clay, feathers and all, chucking them into a heap of red-hot ashes until the clay is baked hard, after which the clay may be broken, when the feathers come away with it and the dish is ready.

Like the Junglefowl, the Kalij Pheasant is difficult to domesticate, but by no means impossible and, given a big enough aviary and lots of brushwood or other cover under which to hide, they soon become more or less tame. It would probably be impossible to tame them sufficiently to run loose with domestic fowls, for though chicks may be hatched from eggs put under hens and reared without much trouble, they always clear off directly the breeding season approaches.

Cripps says that they are quite impossible to tame and that he has seen many in Sylhet as wild to the last as the day they were caught. It must be remembered, however, that the Sylhetees and other people of the Assam Valley who trap these birds in great numbers keep them in tiny cages, making no attempt to domesticate or tame them. As a matter of fact these people actually sew the poor birds' eyelids together as soon as they are caught, in order to prevent them knocking themselves to pieces in the cages. When thus blinded, the birds crouch in one corner and refuse to move and, even if released from the cage, make no attempt to escape. I have sometimes bought some of these birds in order to release them from this cruelty, though I must say that they seem to suffer less from the eyelids being fastened than from the self-inflicted injuries once the eyelids are freed of the stitches. The Hill tribes catch these Pheasants in many ways. The small brushwood fence with well-noosed little gaps at intervals has often been described as that used for other birds; another plan is to noose the sides of a path on which grain has been thrown, whilst yet another means employed with success is to peg down a decoy bird, surround it on all sides with nooses and then secure any bird which comes either to fight with or to examine the decoy. I should mention that I have never known a decoy bird either drum, crow, or in any other way *challenge* his wild rivals to a fight; at the same time his fluttering attempts to regain his freedom accompanied by indignant squawks and squeaks as the string checks his efforts seem equally effective in attracting notice.

GENNÆUS HORSFIELDII WILLIAMSI.

WILLIAMS' KALIJ PHEASANT.

Gennæus williamsi, *Oates, Man. Game-B.* i, p. 342 (1898); *id. Ibis*, 1903, p. 104: *id. J.B.N.H.S.* xvi, p. 86 (1907); *Ghigi, Mem. Acad. Bologna* (6) v, p. 142 (1908).

Gennæus turneri, *Finn, Jour. Asiat. Soc. Beng.* xix, pt. 2, p. 146 (1901).

Gennæus macdonaldi, *Oates, J.B.N.H.S.* xvii, pt. 10 (1906); *Ghigi, Mem. Acad. Bologna* (6) v, p. 142 (1908).

Gennæus ommaneyi, *Oates?* Type in B.M.

Gennæus horsfieldii williamsi, *Stuart Baker, J.B.N.H.S.* xxv, p. 195 (1917); *Hopw. & Mack., ibid.* p. 91 (1917) (North Chin Hills); *Wickham, ibid.* p. 751 (1918) (Tiddim, Chin Hills); *Stuart Baker, Fauna B.I. Birds* v, p. 326 (1928).

Vernacular Names.—*Yit* (Burmese); *Rak* (Arrakan).

Description. Adult Male.—Crest black; head, neck, back and whole visible portions of wing grey, this effect in colour being formed by numerous tiny bars of white, or buffy white, and black; lower back, rump and upper tail-coverts black with numerous bars of white and broad white fringes to the feathers, making these parts contrast with the back and to appear much whiter and more boldly barred; tail like the back but more boldly marked with white; inner webs of primaries brown, obsoletely mottled with darker brown; lower plumage like *G. h. horsfieldii*.

The general tone varies greatly. Individuals merging into *horsfieldii* on the north-eastern border of their habitat are very dark, the black predominating over the white; on the other hand, individuals on the southern and western boundaries are pale, grading into *G. l. oatesi* and *G. n. rufipes* respectively.

Colours of Soft Parts.—Iris brown; facial skin deep crimson-red; bill pale horny, the tip almost white; legs and feet various shades of dark or light plumbeous brown, ashy brown or fleshy livid, never red.

Measurements.—Wing 218 to 254 mm.; tail 218 to 304 mm.; tarsus about 74 to 77 mm.; spur up to 26 mm.; culmen 28 to 32 mm.

Female is distinguished by its tail from *G. h. horsfieldii*; the central tail-feathers are paler and more chestnut; the lateral feathers are black or nearly black with numerous narrow, broken bars of white. On the whole, the females of this race are paler and more chestnut than those of the preceding.

Wing 195 to 231 mm.

Distribution.—Williams' Silver Pheasant has a very well defined range, being practically confined to the moderately high hills lying between the Manipur, Yaw, Oyu and Irrawaddy Rivers, the Arrakan Yomas and the hilly country east again of the main ridge as far south as Minbu on the Irrawaddy and further west as far as latitude 19.5, or about level with Thayetmyo. North it occurs as far as Homalin and Tammu, whence I have seen typical specimens. In Arrakan, south of Pakkoku, it appears to be rare and, over much of the low-lying dry zone, no Silver Pheasants are to be found. To the west it is found on all the higher ground on the east of the Manipur River, typical specimens having been obtained from below Fort White, Tiddim, Falam, etc.

On the rivers themselves and at levels below 1,000 feet true *horsfieldii* penetrates far into the areas, the higher parts of which are occupied by *williamsi*, with the consequence that, on the intervening line, we are constantly meeting with birds which cannot be ascribed to either subspecies and, again, other birds which appear to be the result of interbreeding between *horsfieldii* and *rufipes* or even *horsfieldii* and *nycthemerus*.

In the southern low-lying portion of the inter-Chind-Mu and Mu-Irrawaddy regions there appear to be no Pheasants except for a rare straggler of true *horsfieldii* which may now and then be met with in the forests bordering the rivers.

It is to be hoped that sportsmen will endeavour to correct and add to this distribution as well as to that of the other Silver Pheasants, for much still remains to be done in this respect and much more material with accurate data is very badly required.

Nidification.—So far there is nothing on record as regards the nidification of this subspecies, though its nests and eggs have been taken by Messrs. P. Wickham, J. M. D. Mackenzie and C. Hopwood, and also, I believe, Mr. P. MacDonald.

Nests with eggs have so far apparently only been taken in April and May but there is little doubt that, though these two months are those in which most eggs are laid, they will probably also be found in March and June and, possibly, other months as well.

Judging from what my correspondents write, the nests of these Pheasants appear to be the same as those of the rest of the family, a mere heap of leaves in bush jungle or forest or, sometimes, in bamboo jungle. The number of eggs laid is probably about six to eight, sometimes less, but seldom more, whilst they are similar in appearance to those of the Black-breasted Kalij but would appear to average smaller. Eggs I owe to Messrs. Hopwood, Wickham and Mackenzie range in length from 43·6 mm. to 47·7 mm. and in breadth from 33·6 mm. to 36·8 mm., whilst sixteen eggs average 45·5 × 35·8 mm. The few I have seen have all been of a pale buff or cream colour but, doubtless, they vary in depth of tint much as do all Kalij Pheasants' eggs.

Habits.—Williams' Kalij Pheasant seems to be a bird of moderate levels, never descending to the plains except as a casual wanderer, and seldom being found above 4,000 feet, though in some isolated peaks, such as Mount Victoria, it has wandered up to and has been shot at an elevation of 6,000 feet.

Captain Blandy says that he never obtained a typical specimen of this Silver Pheasant on the eastern slopes of the Chin Hills, all the specimens he shot being hybrids between *horsfieldi* and *williamsi*, no two specimens being alike. It would seem therefore that here we have a certain area in which there is no fixed type and that encroachments of birds from the adjoining areas maintain a never-ending succession of variations between the more stabilized forms.

GENNÆUS LINEATUS.

Key to Subspecies.

A. Vermiculations very fine and all across the feather . . . . . *G. l. lineatus*, ♂, p. 287.

B. Vermiculations more definite bars across the feather . . . . . *G. l. oatesi*, ♂, p. 295.

C. No vermiculations but definite black and white bars, inclining to follow the contour of the feather . . . . . *G. l. sharpei*. ♂, 299.

D. Central streaks white and numerous everywhere; lower plumage bright rufous *G. l. lineatus*, ♀, p. 287.

E. Central streaks on lower plumage buff and confined to breast and flanks . . . . *G. l. oatesi*, ♀, p. 295.

F. Central streaks white and broader; lower plumage darker and less rufous . . . . *G. l. sharpei*, ♀, 299.



FEATHERS FROM THE BREASTS OF FEMALES OF

1. *G. h. horsfieldii.*
2. *G. l. lineatus.*
3. *G. l. sharpei.*
4. *G. nyethemerus rufipes.*
5. *G. swinhoei.*
6. *G. n. nyethemerus*

GENNÆUS LINEATUS LINEATUS.

THE BURMESE SILVER PHEASANT.

Phasianus lineatus, *Vigors, P.Z.S.* 1831, p. 24; *id. Phil. Mag.* 1888, p. 147.

Gennæus lineatus, *Oates, Str. Feath.* v, p. 164 (1877); *Ogilvie-Grant, Cat. B.B.M.* xxii, p. 304 (1893); *id. Hand-List Game-B.* i, p. 272 (1895); *Blanf., Fauna B.I., Birds*, iv, p. 92 (1898); *id. Ibis*, 1903, p. 100; *Oates, Cat. Eggs B.M.* i, p. 55, pl. 6, fig. 5 (1901); *Ghigi, Mem Acad. Bologna* (6) v, p. 140 (1908); *Evans, B.N.H.S. Journal* xvi, p. 520 (1905); *Wall, ibid.* xxi, p. 460 (1912); *Hopwood, ibid.* p. 1215 (1912); *Beebe, Mon. Pheas.* ii, p. 53, pl. 26 (1921); *Stockley, J.B.N.H.S.* xxix, p. 172 (1923) (Kaw Kareet).

Phasianus fasciatus, *McClell., Calcutt. Journ. N.H.* ii, p. 146, pl. 3 (1842).

Euplocomus lineatus, *Blyth, Cat. Mus. As. Soc. B.* p. 244, part (1849).

Gallophasis lineatus, *Hume, Str. Feath.* ii, p. 482 (1874).

Euplocamus lineatus, *Hume, Nests and Eggs, In. B.* p. 525 (1873); *id. Str. Feath.* iii, p. 165 (1875); *Fielden, ibid.* p. 168 (1875); *Hume & Marsh., Game-B. Ind.* p. 205, pl. (1878); *Hume & Davis, Str. Feath.* vi, p. 436 (1878); *Anderson, Zool. W. Yunnan* ii, p. 669 (1878); *Bingham, Str. Feath.* ix, p. 195 (1880); *Oates, ibid.* x, p. 236 (1882); *id. B. of Burmah* ii, p. 316 (1883); *id.* 2nd Edit. *Hume's Nests and Eggs* iii, p. 416 (1890).

Lophophorus cuvieri, *Hume, Str. Feath.* iii, p. 166 (1875).

Nycthemerus lineatus, *Blyth & Walden, Cat. Mam. Birds of Burma*, p. 149 (1095).

Euplocamus cuvieri, *Oates, B of Burm.* ii, p. 318, part (1883).

Gennæus lineatus lineatus, *Gyldenstolpe, Swedish Exped. Siam*, p. 157 (1816); *id. K. Vet. Ak. Hand-L.* 56, No. 2, p. 156, 1916 (Siam); *Stuart Baker, J.B.N.H.S.* xxv, p. 325 (1918); *id. Jour. Nat. His. Siam*, 4, p. 37, 1920 (Siam); *Gyldenstolpe, Ibis*, 1920, p. 787 (S.W. Siam); *Stuart Baker, Fauna B.I., Birds*, v, p. 328, pl. 5, 1928.

Vernacular Names.—*Yit, Kayit* (Burmese); *Rak* (Arrakan); *Synklouk* (Talain); *Phugyk* (Karen).

Description. Adult Male.—Forehead, crown and crest black glossed with blue-green or purple-blue; whole of the upper plumage and exposed wings silver-grey in appearance, palest on the neck and longest tail-coverts, darkest on the wing-quills and greater coverts; the silver-grey tint is formed by innumerable very fine wavy lines of white and black; the primaries are brown with wavy lines of buff or pale brown on both webs, the lines gradually changing into black and white on the inner secondaries; outer tail-feathers black with fine longitudinal lines of white or pale buff; each succeeding pair has more white and less black until the central pair, or two pairs, are more or less immaculate white over their terminal two-thirds; below black, the neck, breast and flanks more or less glossed with bluish purple and the sides having white centres to the feathers; the flanks often vermiculated velvety black.

Colours of Soft Parts.—Iris yellow-brown to dark brown; facial bare skin crimson; bill greenish or yellowish horny, darker at the base and on the culmen; legs and feet greenish plumbeous, slate-grey or greenish brown.

Measurements.—Wing 218 to 261 mm.; tail 228 to 345 mm.; tarsus about 76 to 88 mm.; culmen about 28 to 30 mm.; crest up to 80 mm. Weight 2 lb. to 2 lb. 5 oz.

Female.—Whole upper plumage golden-buff vermiculated with tiny bars of black or deep brown; giving a general golden-brown appearance, sometimes tinged with rufous; crest rather darker than elsewhere; neck and upper back with V-shaped white marks bordered with black; primaries and outer secondaries dark brown on the inner webs; two pairs of central tail-feathers buff with narrow bars of black running diagonally across but often absent on the terminal half of the central pair on the inner webs; outer tail-feathers rich chestnut with broad irregular bars of white, bordered, and sometimes spotted, with black; the feathers next the central pair are mottled with buff near the tips, this mottling decreasing outwardly; chin and throat smoky buff changing to rich pale rufous on the breast and flanks, where there are lanceolate streaks of white edged with black and with more or less black and rufous mottlings next the shafts; abdomen and vent dull rufous-buff with a little white mottling; under tail-coverts dark rich rufous with white, black-edged streaks.

Colours of Soft Parts.—Iris amber to wood-brown; facial skin dull crimson; bill and legs as in the male.

Measurements.—Wing 203 to 234 mm.

Chick in Down.—Head above rufous, forehead and above eyes paler; a rich chestnut line from the eye over the ear-coverts; above rufous-brown, darkest along the back, paler on the sides; below dull buffy white with faint indications of a chestnut collar on the sides of the breast.

Distribution.—The fact that on all the boundaries of its habitat this form grades through its various subspecies into *nycthemerus* and *horsfieldi* makes it extremely difficult to define its range with any exactitude. On the west the Irrawaddy undoubtedly divides it from *oatesi*, but at the same time one meets with numerous specimens in the extreme south and east of the Arrakan Yomas which approach typical *lineatus* very closely, and this magnificent river does not form so sharply cut a defining boundary as similar great rivers do with many other species of birds. To the north it extends up to Thaungyi, i.e., about 20° but, west of the Sittang, where the northern parts are more mountainous it appears only to be found as far north as Thaungoo, Thadoung and Kolidoo. In the higher hills of the Bree country and again east of the Salwin in the southern Shan States it is replaced by *sharpei*. West it crosses the Salwin south of Dargwin and has been reported from Rahang on the Mewang River but, here on the higher hills at all events, a bird more closely allied to *sharpei* is the common form. South of Muleyit it again appears to wander east across the Klang River, and stretches as far south as 14° and quite possibly much farther south than this, as Gyldenstolpe records a Silver Pheasant as far south as 12°.

As regards Siam, its range is very indefinite, though Gyldenstolpe's notes are invaluable; he records :—

> "Silver Pheasants belonging to this species were rather common in the dense evergreen jungles which cover the hills, dividing Tennasserim and Siam. In the neighbourhood of Hat Sanuk (lat. N. 12°) especially, they were exceedingly abundant. . . . During my stay in north-western Siam I once caught a glimpse of a Silver Pheasant when I was climbing up one of the steep hills at Doi Par Satring (lat. N. 20°). . . . It looked much more white than *G. lineatus*, and was probably *G. nycthemerus ripponi*."

A large amount of material is still required before we can work out the limits of the various geographical races of the Silver Pheasant, and field naturalists should remember that very careful minutiæ are necessary with the data tickets of specimens to enable the museum naturalist to formulate an outline of their different ranges. Thus when birds are got near places on rivers, it is no use merely to mark "shot near so and so," but it is imperative that we should know whether it has been got north, east, south or west of the place mentioned, while the altitude also should be given. In many cases we may get two forms, or even three, within shooting distance of one spot, yet a river may divide two races, whilst the other two may be divided by elevation alone, as appears to be the case in this instance between typical *lineatus* and the two subspecies *oatesi* and *sharpei*.

Nidification.—The breeding season of the Burmese Silver Pheasant commences in early March and continues throughout April and May but, as is usual with this genus of Pheasant, nests and eggs may be found at odd times through a great part of the year. I have records from various sportsmen of eggs taken in February, March and April, again in July, whilst Captain Fielden obtained recently hatched young in August at Thayetmyo. Hume also records eggs having been found in the middle of May.

It seems to breed more often in bamboo jungles between 2,000 and 3,000 feet than in the heavier jungles and evergreen forests below the former height, or in the lighter deciduous and evergreen forests above the latter.

Its favourite breeding haunts are, perhaps, in the mixed bamboo and light deciduous forest which forms a feature of some of the Pegu Yomas, but the nest itself is nearly always placed in the bamboo patches and not in the forested parts. It is certainly found as high as 4,000 feet during the breeding seasons, and possibly a good deal higher but, on the other hand, descends practically to the plains.

The nest is the usual rough collection of leaves and bamboo spates, deposited in some natural hollow and more or less protected by a clump of bamboo, bush or tree. Not infrequently it is placed well under a clump of bamboos in amongst the roots, so that it is completely hidden from the passer-by but, at other times, it may be found almost in the open. The bird is a close sitter and will remain on her

nest until an intruder is very close; she then, however, sneaks away so quietly and stealthily that it is very easy to overlook her.

The number of eggs laid appears to vary between five and ten, whilst six or seven are the number most often found in a complete clutch. The statements of natives quoted by Hume, to the effect that these Pheasants sometimes lay fourteen or fifteen eggs appear to be without any foundation.

The eggs are typical *Gennæus* eggs, that is to say like small eggs of a domestic fowl. Hume thus describes them :—

> " All the eggs we have obtained are of the usual hen's egg shape; they are, of course, unspotted, and vary from a pale yellowish to a warm pinkish *café-au-lait* colour. The shell, though fine, is very full of pores, and these with some eggs being filled with whitish chalky substance, give them the effect of being stippled all over with white specks. None of the eggs that I have seen have had any very perceptible gloss and, as a rule, they seem to be, for game birds of this class, very dull eggs.
>
> " The eggs vary from 1·81 to 2·03 in length, and from 1·4 to 1·52 in width, but the average of nearly 30 eggs is 1·97 by 1·46."

The few eggs I have seen including some of those described by Hume which are now in the British Museum, agree well with the above description, though the eggs strike one as being singularly level in coloration. All are a pale stone-buff, varying very little in depth of colouring and I have seen none which would really come under Hume's description " warm *café-au-lait.*" A few have a tinge of this colour and one pretty clutch of six, given to me by Mr. Wickham, is quite a bright, though pale, pinkish buff.

The texture is fine and close with a faint surface gloss in fresh eggs, whilst the shell is very stout and compact. My series, a poor one compared with Hume's and others, gives a much smaller average size, 1·86 inches × 1·42 inches (47·3 × 36·1 mm.), than that recorded above.

Oates says that :—

> " The chickens, as soon as they are hatched, are very strong on their legs and run with great speed. I was fortunate enough to capture portions of four broods. It is astonishing in what a short time the little birds make themselves invisible. It is difficult to secure more than two birds out of one batch. It is a case of pouncing on them at once or losing them. The mother is a great

coward, running away at the slightest alarm, and thus contrasting very unfavourably with the Junglefowl which keeps running round and round the intruder with great anxiety until the young ones are in safety."

General Habits.—The prevailing coloration of this Pheasant gives an excellent clue to its haunts and to the general character of the country it inhabits. It is not to be found in the humid, evergreen forests beloved by the Black-breasted Kalij which finds concealment in their black depths as deep in shade as its own sombre plumage. Nor on the other hand must it be looked for in the high open grass-lands frequented by the whiter forms of the Chinese Silver Pheasants whose pure whiteness finds no great contrast in the sunlit grasses round them. As might be expected, the Burmese Silver Pheasant, with its dark silver upper plumage, will be found either in thin deciduous forest or in bamboo jungle. Here the glare of the tropical sunlight is filtered and broken by the intervening branches into thousands of specks or spots, bold bars and dashes of alternate light and shade, of gleaming white, grey, or black. In such places with every passing breath of air the whole medley quivers and melts into an ill-defined greyness much like that on the back of the bird itself.

Davison, writing of the true *lineatus* from the neighbourhood of Moulmein, says:—

"They come continually into the open to feed about rice-fields and clearings. They are shy, and usually run in preference to flying when disturbed, except when put up by a dog, when they immediately perch. Captain Bingham tells me that on bright moonlight nights they constantly come out into the clearings. Their food consists of grain, seeds of various kinds, young leaves and grass, grubs and insects."

"They seem to prefer bamboo, or moderately thin tree jungle to dense forest."

Oates' description does not agree well with the above in all respects, as he writes of it as a rather tame bird averse, however,

"to all cultivation, even to the extent of shunning the *yaks* or hill gardens of the Karens, though these may be some miles from the nearest *tay* or village."

He writes of this Pheasant's favourite haunts as follows:—

"It is rare or common just in proportion as the country is level or mountainous. In the plains or undulating country of Upper Pegu

> it will be met with in small numbers if the ravines and nallas are sufficiently precipitous to suit its tastes; but in these places, at best, only one or two will be shot in the long morning's work. It is not till we get to the foot of the hills that this Pheasant can be said to be common. Here the nallas, with their pools of water and rocky beds, are particularly favourable to it. As we mount higher it increases in numbers to such an extent it is no difficult matter to knock over half a dozen in a morning while marching, and that without leaving the path."

During the breeding season the cock Pheasant of this species indulges in the same form of challenge to other cocks as that already described in regard to previous species, viz., the drumming sound made by beating the wings against the sides of the body as the bird sits on some elevated position, such as an ant-heap or some log or stump.

Oates says that the sound of the bird's wings may be very fairly imitated by holding a pocket handkerchief by the two opposite corners and then jerking one's arms apart, and he adds that he has himself on two occasions shot cock birds running excitedly towards the sound thus made.

Davison also refers to this method of challenge, which he calls buzzing, and remarks that the Burmans trap a great number of these Silver Pheasants by the aid of a decoy bird which is induced to "buzz" and so call up other males around him, when they are caught in the nooses laid down for this purpose.

Like all Kalij Pheasants the Burmese Silver Pheasant is an inveterate skulker and, without a dog, it is almost impossible to make them take to wing as they scuttle away to safety on foot with great speed. With a dog they are easy to flush but, even then, when put up they, like the rest of their tribe, generally take to a tree or bamboo perch and then glide away from the opposite side when the would-be shooter approaches.

The easiest way to get them where they are at all numerous is to wander along the edges of cultivation, or along some jungle path in the early mornings and evenings and trust to luck coming across them and getting a snapshot as they run for the nearest cover.

Of course, sometimes the birds can be forced by beaters out of isolated patches of cover and, when such a proceeding is possible,

fair sport may be had as the birds fly well when once started. Like most Pheasants—indeed, like most game-birds—they prefer to fly downhill but always run uphill when disturbed.

Although Oates found it very hard to rear the young, others have been more successful, and I am informed that they become very tame and domesticated, though if allowed to run loose, they generally disappear when the breeding season approaches.

They feed on both grain and other vegetable food and on insects. White ants, or termites, and ordinary ants are a very favourable food, and they also consume grasshoppers, beetles, worms and other similar forms. Shoots of many plants, all grain, bamboo and grass seeds, the different *fici*, which are so plentiful in all Indian forests, yams, ginger and other ground-roots all contribute at various times to their support.

They are said to be good for the table, if rather dry, though tender enough if eaten when killed or if hung for two or three days.

The males have a short harsh crow which, however, cannot often be used, for most writers make no reference to it, whilst Oates says that the only sound he has heard them utter is a low chuckle frequently uttered, when the bird is alarmed when it is going to roost.

GENNÆUS LINEATUS OATESI (Ogilvie-Grant).

OATES' SILVER PHEASANT.

Gennæus oatesi, *Ogilvie-Grant, Cat. B.M.* xxii, p. 306 (1893); *id. Allen's Naturalist's Lib. Game-B.* i, p. 276 (1895); *Oates, Game-B. India* i, p. 348 (1898); *id. Ibis*, 1903, p. 103; *Ghigi, Mem. Acad. Bologna* (6), v, p. 141 (1908).

Gennæus lineatus oatesi, *Stuart Baker, B.N.H.S. Jour.* xxiii, p. 677 (1915); *id. J.B.N.H.S.* xxv, p. 333 (1918); *Beebe, Mon. Pheas.* ii, p. 93, pl. 32 (1921); *Stuart Baker, Fauna B.I., Birds* v, p. 329 (1928).

Vernacular Names.—*Yit* (Burmese); *Rak* (Arrakan).

Description. Adult Male.—Similar to *G. l. lineatus* but more boldly marked with better defined vermiculations; the larger and more conspicuous barring of the rump, as in the *horsfieldi* group, is visible but very inconspicuous, sometimes obsolete; the markings are in the shape of bars across the feather and not following its contour as in the *nycthemerus* group.

Colours of soft parts as in *G. l. lineatus*.

Measurements.—Wing 333 to 294 mm.; tail 275 to 300 mm.

Female differs from that of *horsfieldi* in having the whole tail chestnut-brown or chestnut-rufous barred irregularly both above and below with brown; the general tone of the plumage is redder and the streaks on the upper surface obsolete or ill-defined; the flanks and sides of the breast are marked with streaks as in the Burmese Silver Pheasant but these are buff not white.

Measurements.—Wing about 205 mm.; tail about 210 mm.

Distribution.—The Arrakan Yomas from about 20·5° lat. in the north to the extreme south of Arrakan. To the east its boundary is the Irrawaddy River, which divides it from the area inhabited by the true *lineatus*.

The dividing line between Oates' Silver Pheasant and the Black-

backed Kalij is not easy to define, for wherever there are dense evergreen forests with low-lying well-watered valleys the latter bird is found encroaching south into the Arrakan Yomas; next these haunts of *horsfieldi*, we find a number of birds with an extraordinarily varying plumage, scattered here and there over a very narrow and broken area. These birds I previously accepted as a subspecies under the name of *cuvieri*. Now, however, I find that it is impossible to allocate to this supposed subspecies any definite range in which there is a consistent type of plumage obtainable. It is also impossible, therefore, to permit it to rank as a geographical race or subspecies and it must be suppressed.

The reason is merely that in the north-west the transition between *oatesi* and *horsfieldi* is abrupt because the climate and geographical factors also vary abruptly; in consequence it has been impossible for a staple or permanent form to establish itself over any definite area intermediate between the two.

In the north-west of its range the change between *oatesi* and *williamsi* is very gradual, as are the geographical changes, but in the centre between the two there is some very dry country, too dry even for the grey forms of Silver Pheasant, so that we have a well defined area into which no Pheasant penetrates, except as a straggler, and on the outskirts of this dry area we have the two good subspecies, *williamsi* north and *oatesi* south.

Nidification.—There is at present nothing on record concerning the breeding habits of Oates' Silver Pheasant beyond the fact that Captain Fielden obtained young birds in August near Thayetmyo in Central East Arrakan.

The birds appear to breed principally in March, April and May, and the few eggs in my collection have been taken in these months between March 20 and May 10. The nests, so far as one knows at present, are always placed in bamboo forest or in the thick secondary growth which so quickly covers deserted cultivation patches in the same forest. It is quite possible that they have two broods in the year, though I do not think this is usual with birds of this genus.

Probably a full clutch of eggs is normally seven or eight as in the other Pheasants, but I have so far only records of three to five eggs, undoubtedly, with one exception, incomplete clutches.

The eggs are exactly the same in every respect as those of *G. lineatus lineatus*, and the average in size of ten eggs is 47·0 × 37·1 mm.

General Habits.—Captain Fielden writes regarding Oates' Silver Pheasant, though he did not differentiate between the various forms of *lineatus*:—

> "This bird is tolerably common in the hills west of Thayetmyo, but appears to be unknown to any but Burmese. It seems to require rock and very steep hillsides, covered by long grass for shelter, and flat alluvial soil, bare of grass and covered with brush-wood and young trees, for feeding ground; in fact, its feeding ground is exactly the same as that of the Black Woodpecker, and I have several times lost a bird of each species by being undecided which to fire at.
>
> "An old male is a most extraordinary looking bird. The tail only is seen moving through the long grass, and I invariably thought at first that it was some new porcupine or badger, or some animal. The note, too, adds to the deception. It reminded me a little of the cries of young ferrets.
>
> "They run with great rapidity, but rise readily before a dog, and would not be difficult shooting, but for the steepness of the hillsides upon which they are found, and the nature of the soil—gravel just stuck together with the material that forms the petrified wood so common there. This covered by grass or dried bamboo leaves makes the footing so slippery that any attempt to raise my gun hurriedly generally brought me to my knees.
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> "These birds feed a great deal on the young shoot of a kind of Orchis, which rather resembles a large Roselle flower, and its juicy leaves enable these pheasants to live for some time far away from water; but in the middle of the hot weather they are forced to retire from the Thayetmyo Hills by the long grass being burnt. They return at the beginning of the rains. They hatch in August."

To the above I can add but little, but most of my correspondents, who know these birds and their haunts, seem to consider them birds which *do* require to have water within reasonable reach for their morning and evening drink. Their flesh is said to be good, though dry, and perhaps inferior to that of the Junglefowl shot in the same jungles.

Mr. J. P. Cook, writing from the same place as Captain Fielden, but in 1912, more than thirty years later, says that this Pheasant is still very common there and that, in a comparatively short time, he shot some thirty specimens but could only preserve

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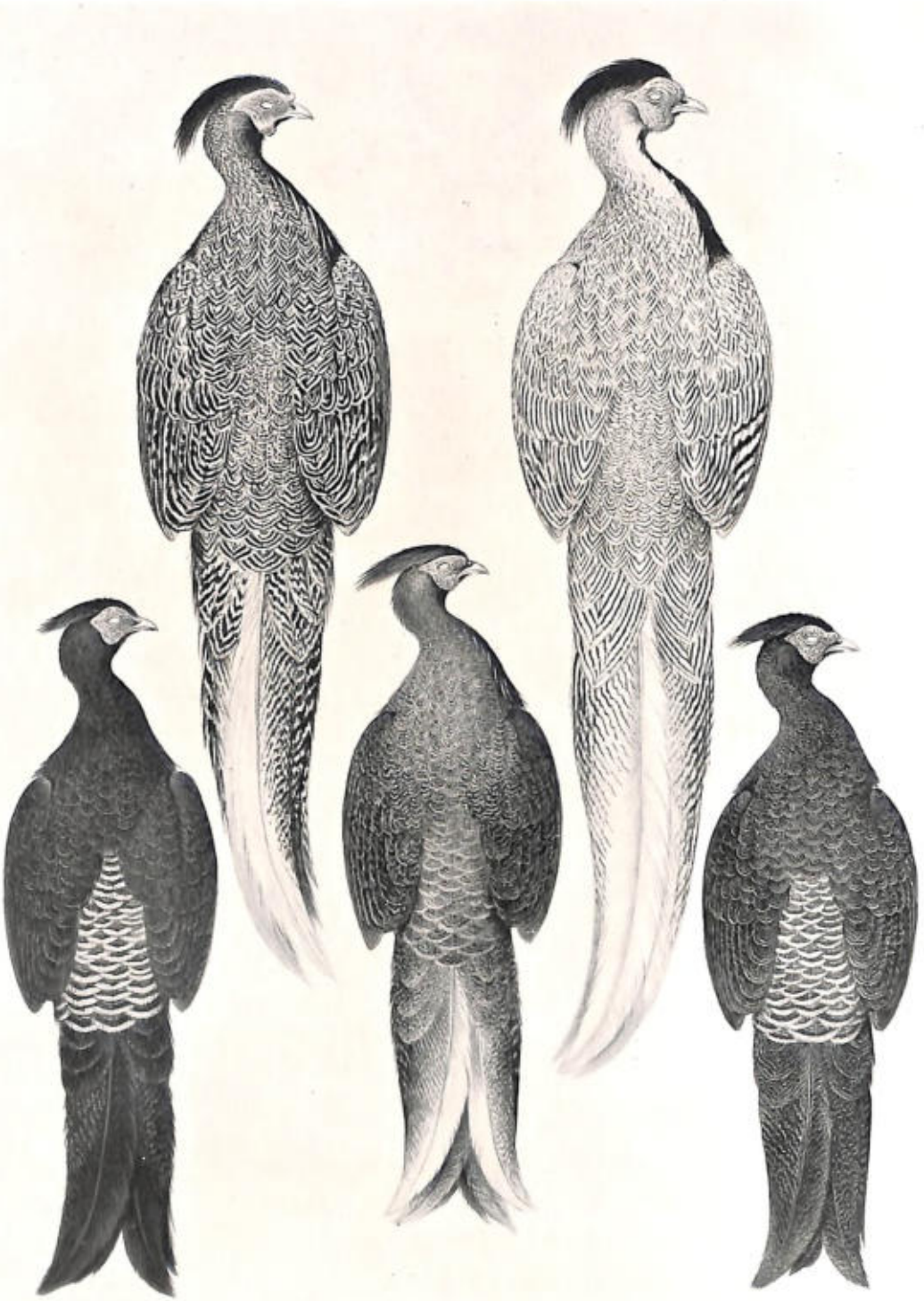
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Mr. J. P. Cook, writing from the same place as Captain Fielden, but in 1912, more than thirty years later, says that this Pheasant is still very common there and that, in a comparatively short time, he shot some thirty specimens but could only preserve

three, two males and one female. He found them frequenting either the same descriptions of cover as that described by Captain Fielden, or on bamboo covered slopes. They were most common between 1,000 and 2,000 feet and did not appear to be birds of high elevation, though they were, on the other hand, sometimes found on the plain at the foot of the hills.



G. euvièri. (hybrid) *G. l. sharpei.* *G. l. oatesi.* *G. n. rufipes* *G. h. williamsi.*

GENNÆUS LINEATUS SHARPEI (Oates).

GRANT'S SILVER PHEASANT.

Gennæus sharpei, *Oates, Man. Game-B.* i, p. 357 (1898); *Oates, Ibis,* 1903, p. 101; *Ghigi, Mem. Acad. Bologna* (6) v, p. 140 (1908); *C. S. Barton, Journal Nat. Hist. Soc. Siam* i, p. 108 (1914); *Stuart Baker, J.B.N.H.S.* xxiii, p. 678 (1915); *Gyldenstolpe, Swedish Exped. Siam,* p. 157 (1916); *Stuart Baker, J.B.N.H.S.* xxv, p. 336 (1918); *id. Fauna B.I., Birds* v, p. 330 (1928).

Vernacular Names.—*Yit* (Burmese).

Description. **Male Adult.**—Differs from the preceding bird in having the upper plumage marked with definite black and white bars rather than vermiculations, whilst these bars follow to some extent the contour of the feathers instead of being across them; from all the races placed under the name of *nycthemerus* it differs in having much more black and much less white.

Colours of Soft Parts.—Iris brown; facial skin deep crimson; bill pale bluish horny; legs and feet pinkish flesh colour to reddish horny.

Measurements.—Wing 249 to 251 mm.; tail 348 to 353 mm.; tarsus about 86 mm.; culmen about 35 mm. Weight 2·75 lb.

Female.—Similar to the female of *G. l. lineatus* but darker, less rufous below, with still broader streaks of white on the lower plumage.

Measurements.—Wing 213 to 243 mm.

Distribution.—The distribution of this fine subspecies is not yet known with any certainty, and much more material is required before one can say where it meets *lineatus* on the west and south, *rufipes* on the west and north and *ripponi* on the north. Where it meets other forms to the east is still quite unknown. Its range would appear to run from Dargwin north a little way into the south Shan States, east over the Sittang and Mewang rivers at least up to the Mennam

River; south to Raheng and Muleyit and possibly in the higher hills as far as the 15° latitude.

In the north, Gyldenstolpe saw a bird at Doi-Par-Sahen which he describes as being too white to be of this subspecies and as nearer *ripponi* in its very white appearance. To the south on the 14° latitude at both M. Rat Bouri and M. Petcha Bouri the true *lineatus* is said to be common. It will probably be found to run up towards the Mekong River, but as yet the Silver Pheasants of this part are not known, so that it is not possible to say where Grant's Pheasant will meet the forms known as *annamensis* and *beli* which are found in Annam and south-east Siam.

The furthest point to the south-east at which we *know* it to be found is the Korat Hills which lie roughly 15° latitude by about 101°—102·5° longitude. At this place Pheasants of this subspecies were obtained by Mr. E. G. Herbert's Dyak collectors, the males of which were fairly typical *sharpei*, though the females showed a near approach to true *nycthemerus*.

Nidification.—Nothing recorded.

General Habits.—Nothing recorded.

Apparently this bird is not uncommon between 2,500 and 4,500 feet on the hill ranges within the limits of its habitat as described above, though it is such a skulker that it is still very little known, even by the few Europeans who have worked this part of the country. Messrs. E. G. Herbert, Williamson and others have done their best to obtain specimens, as also have Kloss and Robinson, but with little result. It would appear to be a form of *lineatus* replacing this bird in the higher, more open hills, especially on those hills which have more or less wide expanses of grass-land covering their crests and sides.

They stand captivity well, and Mr. Herbert has been successful in keeping adult birds for some time.

GENNÆUS NYCTHEMERUS.

Phasianus nycthemerus, *Linn.*, *Syst. Nat.* 10th ed. p. 159 (1758).

Type-Locality.—China.

The typical form differs from either of those found within our limits in having the black bars reduced to a minimum, so that the general appearance above is much more white. It does not occur within the limits of this work.

GENNÆUS NYCTHEMERUS RIPPONI.

THE YUNNAN SILVER PHEASANT.

Gennæus ripponi, *Sharpe, Bull. B.O.C.* xiii, p. 29 (1902); *Ghigi, Mem. Acad. Bologna* (6), v, p. 139 (1908); *Harington, J.B.N.H.S.* xx, p. 377 (1910); *Stuart Baker, ibid.* xxiii, p. 684 (1915); *Beebe, Mon. Pheas.* ii, p. 91, pl. 31 (1921).

Gennæus jonesi, *Oates, Ibis*, 1903, p. 97; *Ghigi*, in *loc. cit.* (1908).

Gennæus nycthemerus ripponi, *Stuart Baker, J.B.N.H.S.* xxv, p. 341 (1918); *id. Fauna B.I., Birds* v, p. 331 (1928).

Vernacular Names.—*Yit* (Burmese); *Wuri* (Kachin).

Description. Adult Male.—Forehead, crown and crest black with a strong purple sheen; nape to tail-coverts white with from five to seven wavy lines of black on each web following the outline of the feather; the lines are narrower on the nape and obsolete on the ear-coverts and sides of the neck; visible portions of the wing like the back but only two to four black lines on each web of the feathers, broader than the lines on the back; two or three central pairs of tail-feathers white with a few irregular broken lines of black on the bases of the outer webs; outermost feathers white with two or three bold black lines on either web; intermediate feathers grading from one to another; below deep velvety black with a purple-blue gloss.

Colours of Soft Parts.—Iris brown or red-brown; bill greenish or yellowish horny, the culmen and base darker; bare facial skin bright crimson-red to almost vermilion-red; legs brilliant coral-red.

Measurements.—Wing 256 to 302 mm.; tail 458 to 635 mm.; tarsus 95 to 103 mm.; culmen about 29 to 31 mm.; crest 75 to 101 mm.; spur 25 to 33 mm.

Female.—Whole upper plumage golden-brown, the edges of each feather darker and the whole microscopically powdered with dark brown; terminal half of crest black; two central pairs of tail-feathers

pale ashy buff marked with fine broken bars of dark brown; lateral tail-feathers black with straggling broken lines of white; chin and upper throat pale ashy, changing to ashy brown on the lower throat and upper breast, the latter paler and much mottled with brown spots and bars; lower breast still paler and more boldly marked; remainder of lower plumage rather dingy white with bold broad bars of dark brown; centre of abdomen and vent duller with much finer bars of brown.

Measurements.—Wing about 200 to 240 mm.

Young birds in first plumage have the whole lower parts more uniform buffy brown with paler shaft-streaks.

Young males in second plumage appear to be exactly like adult females, but occasionally they moult direct into full adult plumage. A most interesting incident in the moulting of some cock birds in the possession of Mr. E. G. Herbert shows that many of the old feathers prior to being shed assumed a certain amount of black and white colouring, proving conclusively that in some cases so-called "dead feathers" are capable of absorbing pigment.

Distribution.—Inter-Salwin country from latitudes 21° to 25° certainly, possibly further north and probably further south. Where this bird meets the preceding subspecies, Grant's Silver Pheasant, is not definitely known but it may be on a line running east and west from Karenni to Doi-Par-Sahen. It is extremely common in parts of Yunnan at about 7,000 to 9,000 feet.

Nidification.—Nothing known.

General Habits.—So far nothing has been recorded of the habits of this very doubtful subspecies, which in all probability will not, however, be found to differ in any respect from those of true *nycthemerus*. Like that bird it is found on hills covered either with a sea of grass, with light deciduous forest, or in places where these are mixed with and broken up by ravines and pockets of more dense jungle, often more or less evergreen in character.

It appears to prefer wide stretches of grass-land bordered by forest in which it can conceal itself in case of necessity and, especially does it haunt such as are rough and rugged and a good deal broken up with outcrops of rock. It is not, so far as is known at present

found below 5,000 feet elevation and it ranges up to the highest altitudes of 9,000 feet or more; that is to say, this bird, a trifle darker in general tint than its Chinese relations, is also found at slightly lower elevations.

It would appear to be most common in Yunnan in the Trans-Salwin Hills at about 7,000 feet, where it is found in great numbers in the thin oak forests which are scattered about in small patches in the higher grass-lands, and where the only really dense vegetation is to be found in the wild tangles of growth on the borders of some of the streams and in the larger ravines.

Writing of such a country as this, a correspondent says *in epistola*:—

> "I'm afraid I cannot give you nearly as much information about this beautiful bird as you may expect. In spite of its being found generally in grass rather than in heavy trees or bush cover, it is not an easy bird to find, still less easy to bring to bag when once found. One imagines that such a magnificent bird must be extremely conspicuous wherever found, but such is by no means the case, and I have more than once stared at a motionless bird some seconds before I could make it out. The stunted and thinly foliaged oaks which are scattered about at some distance from each other give such a queer dappling of light and shade under the blazing Indian sun that the outline of even glaring white objects cannot be made out at once, and the broken black and white of the Pheasants' back assimilates well with the waving grass and the shivering broken shadows of the oak-leaves. Every breath of wind which stirs grass and leaves alters your view, and it is not until the bird rushes headlong away in the open or skulks, head and tail down, like some wild beast, into the nearest raspberry tangle that you grasp the fact that you have let a Pheasant get away.
>
> "Of course, once they are on the wing they can be seen and heard from a great distance but, even under these circumstances, I have been sometimes so struck with their beauty that I have failed to fire until too late. One of my first encounters with these birds was when working over the crest of a grass ridge with my sepoys, we suddenly put up a covey of full-grown birds, and I was so fully occupied in watching these streaks of silver loveliness that I omitted to fire at all, and the whole lot—I think there were 7 or 8—disappeared, unharmed down the hill into a ravine with tree and dense undergrowth.
>
> "Often we used to hear these Pheasants moving in front of us as our scouts worked through the grass on either side of our track the

main body of our men were following, but we very seldom put them up within sight. When we were working uphill they continued to run ahead of us until they had crossed the ridge or crest of the hill to our front, and then, when out of sight, they took to wing with much fluster and noise.

"We noticed they always ran uphill and flew down, and always seemed to make for the highest point in the vicinity before taking to flight.

"As on the occasion of which I just wrote we several times came on coveys of full-grown cock birds without a single hen anywhere near that we could see; it may have been that the hens had skulked away on foot, but I think not, for the sound of the running birds could be followed very clearly when the grass and fallen leaves were dry and rustly.

"They crowed much like the common English Pheasant, but a shorter, deeper sound. I never *saw* them crowing, but more than once put up cock birds from spots where I had heard a vigorous crowing and flapping of wings going on the moment before.

"They are not bad eating, but not nearly so tasty as our home birds, but then they had not the advantage of hanging, sauces, etc., except the one sauce, 'hunger.' The flesh was very white, rather dry and, of the old birds, horribly tough. One or two hens we shot and ate were much nicer than the cocks.

"We never found their nests, eggs or young, but it might not have been the right season for them."

GENNÆUS NYCTHEMERUS RUFIPES.

THE RUBY MINES SILVER PHEASANT.

Gennæus rufipes, *Oates, Man. Game-B.* i, p. 362 (1898); *id. Ibis*, 1903, p. 97; *Ghigi, Mem. Acad. Bologna* (6), v, p. 139 (1908).

Gennæus atlayi, *Oates, Ann. and Mag. Nat. His.* (8), v, p. 162 (1910).

Gennæus granti, *Oates, Ann. and Mag. Nat. His.* (8), v, p. 163 (1910).

Gennæus assimilis, *Oates, J.B.N.H.S.* xvi, p. 114 (1904); *id. Ann. and Mag. Nat. His.* (7), xiv, p. 286 (1904); *Ghigi, Mem. Acad. Bologna* (6), v, p. 141 (1908).

Gennæus affinis, *Oates, Ann. and Mag. Nat. His.* (7), xi, p. 231 (1903); *Ghigi, Mem. Acad. Bologna* (6), v, p. 143 (1908).

Gennæus nycthemerus rufipes, *Stuart Baker, J.B.N.H.S.* xxiii, p. 680 (1915); *Drummond, ibid.* xxix, p. 562 (1923) (Shan States); *Stuart Baker, ibid.* xxv, p. 344 (1918); *id. Fauna B.I., Birds* v, p. 333 (1928).

Kalij Pheasants, *Finn & Nisbett, J.B.N.H.S.* xiii, p. 521.

Vernacular Names.—*Yit* (Burmese); *Wuri* (Kachin).

Description. Adult Male.—Similar to the preceding race but darker, the black lines and bars broader and more numerous, especially on the tail; the sides of the neck are less white and are vermiculated with tiny narrow bars of black; the tail is on an average much shorter than in *G. n. ripponi*.

Colours of soft parts as in the Yunnan Silver Pheasant.

Measurements.—Wing 246 to 279 mm.; tail 406 to 528 mm.

Female.—General colour above rich olive-brown, crest darker; tail richly mottled and barred with deep chestnut and blackish brown, the outermost tail-feathers darkest; underparts rufous-brown to rich blackish brown, the feathers marked with bold concentric bars of fulvous, these bars following the contour of the feathers and not in straight streaks as in the Burmese Silver Pheasant.

Measurements.—Wing 228 to 256 mm.

Nisbett gives the average weight of the males as 3 lb. and that of the females as 2½ lb.

Distribution.—Roughly speaking, the range of this bird is bounded by the Irrawaddy and Salwin Rivers on the west and east respectively, on the north by latitude 27° and south by latitude 21°. It must, however, be remembered that *Gennæus horsfieldii horsfieldii* wanders down the Irrawaddy over the greater part of this area on the banks of the river and lowest hills, and that between the habitat of the two birds there is a no-man's land which is occupied not only by birds which are in a geographic (or climatic) transitional stage, but by a very great number of Pheasants which are real hybrids, the result of direct crossing between true *G. h. horsfieldii* and *G. n. rufipes*.

The article by Mr. Finn and Captain Nisbett in the 'Bombay Natural History Journal,' xiii, p. 521, is of the greatest interest, and it is remarkable that this combination of acute observers should have got so much nearer the truth in regard to the subspecies and species of *Gennæus* than did Oates with nearly ten times the material to work on. Captain Nisbett remarks:—

> "The lower in altitude and the nearer the Irrawaddy one finds them, the more they partake of the Black-Breasted Kalij in character; and the higher one gets towards the Chinese frontier, the more they partake of the appearance of the Silver Pheasant."

Mr. Finn adds to this:—

> "There can be go doubt that the very interesting series of forms of *Gennæus* forwarded by Capt. Nisbett and described above, are hybrids of various grades between the common Black, or Black-Breasted Kalij (*Gennæus horsfieldi*) and Crawford's or Anderson's Silver Pheasant with which I unite Mr. Oates' *G. rufipes* from the Ruby Mines."

Nidification.—Nothing recorded. I am told by my correspondents that March and April are the two principal breeding months for this Pheasant, though none of them have so far been successful in taking eggs or chicks.

It is probable that they will be found to breed in the two months mentioned and in May as well.

General Habits.—Captain Nisbett writes as follows:—

"These birds are found at an altitude between 3,000 and 5,000 feet. They are generally found in parties of 3 to 7, though the males often wander about by themselves. They generally keep in the nullahs near the water during the heat of the day, and in the early mornings and towards evenings feed along the hillsides and on high ground, being especially fond of long flattish spurs or knolls covered with open evergreen forest. They are intensely shy, and one rarely has an opportunity of seeing them, as they make off very quickly on hearing anyone coming, and then rarely take to flight, unless run down by dogs, when they fly up into the trees. They are confirmed runners, and it is often hard to make them take flight even with dogs. Their food consists entirely of jungle seeds, insects and acorns. My usual way of obtaining them was to walk very quickly along a jungle path until I heard the sound of their scratching up the dry leaves in search of food. I would then send a coolie, who always accompanied me, to take a circuit in the jungle and get round them and, on his advancing towards them, they nearly always came within shot. This sounds like poaching, but it is the only way of getting them; shooting them in a fair way is impossible. On my first acquaintance with them, it took me over a fortnight to get a single specimen, though I met them every day.

"The breeding season begins about April, when the cocks can be heard challenging one another in the early morning. When breeding, they appear to leave their usual haunts in the open jungle, and disappear altogether, probably in the thick undergrowth. Since the end of April I have hardly come across a bird, though I constantly met them before.

"I have not been successful in obtaining any eggs, though I have asked Kachins to try and get me some."

All that can be added at present to the above is that after April the birds probably go into the still higher hills to breed, which would account for Captain Nisbett never putting the birds up, as well as for the Kachins failing to obtain their eggs.

Genus LOPHOPHORUS.

Lophophorus, Temm., Pig. et Gall. ii, p. 355 (1813).
Type, *Lophophorus refulgens* Temm. = *Phasianus impejanus* Lath.

This genus contains three species of magnificent Pheasants which are distinguished by the metallic plumage of the males; the bill is long and greatly curved, the maxilla much overlapping the mandible; the tarsi and feet are very powerful and heavy, the former feathered above and with a short shiny spur; the face is more or less naked and highly coloured; the wings much rounded, the first primary the shortest, the fifth and sixth subequal and longest; the tail is shorter than the wing, rounded in varying degree and contains eighteen feathers.

The three species vary *inter se* so greatly that many systematists would place them in different genera, a procedure fortunately quite unnecessary, as there are so few species to be considered.

Key to the Species.

A. Most of the upper plumage metallic.
  a. Crest composed of feathers with naked shafts and spatulate ends; tail rufous tipped darker . . . . . *L. impejanus*, ♂, p. 310.
  b. Crest composed of short curly feathers; tail black at base, then chestnut with a broad white terminal band . . . . . *L. sclateri*, ♂, p. 323.
  c. Crest of long slightly lanceolate feathers; tail metallic green with some white spots *L. l'huysii*, ♂, p. 328.
B. Upper plumage a mixture of buff, brown and rufous-buff, never metallic.
  d. Lower back buff barred with black. . , *L. impejanus*, ♀, p. 310.
  e. Lower back and rump pale earthy-white with narrow bars of brown . . . . . *L. sclateri*, ♀, p. 323.
  f. Lower back white . . . . . *L. l'huysii*, ♀, p. 328.

Lophophorus l'huysii does not occur within our limits but is found in eastern Tibet and may some day be recorded therefrom.

LOPHOPHORUS IMPEJANUS.

THE IMPEYAN PHEASANT OR MONAL.

Impeyan Pheasant, *Lath.*, *Gen. Syn. Suppl.* i, p, 108, pl. 114 (1787) (Hindoostan).

Phasianus impejanus, *Lath.*, *Ind. Orn.* ii, p. 632 (1790) (India).

Phasianus curvirostris, *Shaw*, *Mus. Lever.* p. 101, pl. (1792) (India).

Lophophorus refulgens, *Temm.*, *Pig. et Gall.* ii, p. 355 (1813) (Hindoostan); *id.* iii, p. 673 (1815) (India); *Stephen* in *Shaw's Gen. Zool.*, xi, p. 249, pl. 15 (1819) (Hindoostan); *Ogilvie-Grant*, *Cat. Birds B.M.* xxii, p. 278 (1893); *id. Hand-B. Game-Birds*, i, p. 231 (1895); *Blanford*, *Faun. Brit. Ind. Birds* iv. p. 96 (1898); *Rothschild*, *Ibis*, 1899, p. 441; *id. Bull. B.O.C.* viii, p. 42 (1899); *id.*, *ibid.*, x, p. 79 (1900); *Finn*, *Ann. Mag. Nat. Hist.* p. 130 (1900); *Fulton*, *J. Bomb. N.H. Soc.* xvi, p. 61 (1904) (Lower Chitral); *Walton*, *Ibis*, 1906, p. 247 (Chumbi Valley, S. Tibet); *Ward*, *J. Bomb. N.H. Soc.* xvii, p. 944 (1907) Cashmere); *Magrath*, *ibid.* xviii, p. 298 (1908) (Thandiani, Hazara Dist.); *Whitehead*, *Ibis*, 1909, p. 268 (Safed Koh, 9,000 feet); *Finn*, *Avicult. Mag.* (3) i, p. 130 (1909); *Magrath*, *J. Bomb. N.H. Soc.* xix, p. 156 (1909) (Murree); *Perreau*, *ibid.* xix, p. 920 (1910) (Chitral); *Whitehead*, *ibid.* xx, p. 968 (1911) (Safed Koh); *Bailey*, *ibid.* xxi, pp 178, 182 (1911) (Chumbi Valley); *Jones*, *ibid.* xxvi, p. 619 (1919) (Simla Hills); *Inglis*, *ibid.* xxvii, p. 153 (1920) (Jalpaiguri); *Hingston*, *ibid.* p. 570 (1921) (Dhuramsala); *Boyd*, *ibid.* p. 953 (1921).

Impeyanus refulgens, *Lesson*, *Traité d'Orn.* p. 488, pl. 85 (1831).

Lophophorus impeyanus, *Gould*, *Cent. B. Himal.* pls. 60, 61 (1832); *Vigne*, *P.Z.S.* 1841, p. 6 (Cashmere and Himalayah); *Hutton*, *J. As. Soc. Beng.* xvii, pt. 2, p. 695 (1848); *Blyth*, *Cat. Mus. Asiat. Soc.* p. 246 (1849); *Gould*, *B. Asia* vii, p. 53 (1850); *Adams*, *P.Z.S.* 1859. p. 185 (Cashmere); *Irby*, *Ibis*, 1861, p. 235 (Kumaon); *Jerdon*, *B. Ind.* iii, p. 51 (1863); *Tytler*, *Ibis*, 1868, pp. 191, 194, 203 (Simla to Mussorree); *Pelzeln*, *Ibis*, 1868, p. 320 (Koteghur); *Beavan*, *Ibis*, 1868, p. 379 (Simla and Sikkim); *Elliot*, *Mon. Phas.* i, pl. 18 (1872); *Pelzeln*, *Ibis*, 1873, p. 120; *Hume*, *Nests and Eggs*, *Ind. B.* p. 520 (1873); *Brooks*, *Str. Feath.* iii, pp. 227, 256 (1875) (Mussooree and Gangootri Hills); *Wilson*, *Str. Feath.* iv, p. 227 (1876) (Derallee); *Marshall*, *Birds' Nest. Ind.* p. 59 (1877); *Hume & Marshall*,



Female. Male.

THE IMPEYAN PHEASANT OR MONAL.

Lophophorus impejanus.

Game-B. Ind. i, p. 125, pl. (1878); *Scully, Str. Feath.* viii, pp. 342, 368 (1879) (Nepal); *Marshall, Str. Feath.* ix, p. 203 (1880) (Kurram, Afghanistan); *Wardlaw-Ramsay, Ibis*, 1880, p. 70 (Safed Koh); *Oates*, ed. *Hume's Nests and Eggs*, iii, p. 407 (1890); *Ogilvie-Grant, Cat. Birds B.M.* xxii, p. 280 (1893); *id. Hand.-B. Game-B.* ii, p. 237 (1893); *Oates, Man. Game-B Ind.* i, p. 262 (1898); *Blanf., Faun. Brit. Ind. Birds* iv, p. 97 (1898); *Davidson, Ibis*, 1898, p. 38 (Cashmere); *Rothschild, Ibis*, 1899, p. 441; *Rodon, J. Bomb. N.H. Soc.* xii, p. 573 (1899); *Oates, Cat. Eggs Brit. Mus.* i, p. 52 (1901); *Seth-Smith, Avicult. Mag.* vii, p. 160 (1909); *St. Quintin, Avicult. Mag.* (3) iii, p. 150 (1911); *Beebe, Pheasants*, vol. i, p. 112 (1918).

Lophophorus chambanus, *Marshall, Ibis*, 1884, p. 421, pl. 10 (Birnota Forest, Chamba); *Oates, Man. Game-B. Ind.* i, p. 267 (1898).

Lophophorus impeyanus mantoni, *Oustalet, Bull. Soc. Zool. France* xvii, p. 19 (1893); *Ogilvie-Grant, Hand-B. Game-B.* i, p. 236 (1893); *Rothschild, Ibis*, 1899, p. 441; *id. Bull. B.O.C.* viii, p. 42 (1899); *id.* x, p. 79 (1900).

Lophophorus impeyanus obscurus, *Oustalet, Bull. Soc. Zool. France*, xvii, p. 19 (1893); *Ogilvie-Grant, Hand-B. Game-B.* i, p. 236 (1893); *Rothschild, Ibis*, 1899, p. 441; *id. Bull. B.O.C.* viii, p. 42 (1899).

Lophophorus impejanus, *Rothschild, Bull. B.O.C.* xxxviii, pp. 49, 51 (1917); *Stuart Baker, J.B.N.H.S.* xxvi, p. 320 pl. fig. 1 (1919); *Inglis, ibid.* xxx, p. 478 (1925); *Stevens, ibid.* p. 887 (Sikkim); *White, ibid.* p. 472 (Kashmir); *Whistler, ibid.* p. 482 (Kulu); *Searight, ibid.* xxxi, p. 818 (1926) (Garhwal); *Whistler, ibid.* p. 771 (Kangra); *Osmaston, ibid.* xxxii, p. 144 (1927) (Kashmir); *Ellison, ibid.* xxxiii, p. 122, (1928) (Chail); *Ludlow, ibid.* (646) (Tibet); *id. ibid.* 1928, p. 216 (Tibet).

Vernacular Names.—*Lorst* ♂, *Ham* ♀, *Nil-mohr, Jungli-mohr* (Kashmere); *Nilgur* (Chamb); *Munal, Nil* ♂, *Karari* ♀ (Kulu), *Munal Ghar-munal, Ratea Kawan, Ratnal, Ratkap* (N.W. Himalayas); *Datiya* (Kumaon and Garhwal); *Dafia* (Nepal); *Fo-Dong* (Lepcha); *Cham-dong* (Bhotea, Sikkim); *Chadong* (Tibetan, Chambi Valley).

Description. Adult Male.—Head and long crest of spatulate feathers brilliant metallic green; a patch of deep metallic purple behind the ear-coverts; the lores and a streak behind the eye nearly bare; sides of neck and nape fiery copper-bronze changing gradually into bronze-green on the upper back; interscapulars, scapulars and wing-coverts next the back, innermost secondaries and rump purple, not quite so lustrous as the upper back and with the innermost secondaries tipped metallic blue-green; shoulder of wing and coverts furthest from the

back much the same colour as the head; primaries deep brown; outer secondaries brown slightly glossed with green on the edge of the outer webs; lower back white, sometimes pure, sometimes with fine black shaft stripes; rump and shorter tail-coverts purple more or less glossed with blue-green; longest tail-coverts metallic green like the wing; tail cinnamon, darker at the tip; under parts brownish black or dull black, varying considerably in depth and glossed with metallic green on the breast and flanks; under tail-coverts metallic green with dark bases.

The extent of metallic colouring on the lower parts varies greatly and in birds in plumage at all worn is practically non-existent, whilst in some freshly moulted birds it is well developed.

A few specimens have the feathers of the rump edged with copper; the extent of the white on the back varies considerably, and in the specimens first described was absent altogether.

Variations in tone, tint and depth of colouring are common and aberrant coloration by no means rare, as was shown by Lord Rothschild in his wonderful picture exhibited at the British Ornithologists' Club on May 9, 1917. The series of skins then shown with this picture included the most extraordinary aberrations, one bird having a black tail, another the breast and lower parts wholly metallic, a third with the interscapulum blue instead of purple and so on. Semi-albino and melanistic varieties are not rare, and specimens of these are to be found in the British Museum collection as well as in the Tring Museum.

Colours of the Soft Parts.—Irides hazel-brown or dark brown; orbital skin and cheeks bright, smalt blue to brilliant ultramarine-blue or, according to Hume, turquoise-blue; bill horny brown, the culmen, tip and commissure paler yellowish horny, in some specimens nearly the whole bill being of this colour; lower mandible pale yellowish horny or horny grey; legs yellowish or pale brownish green, sometimes darker brownish and rarely yellowish leaden colour; toes darker and claws dark horny brown.

Measurements.—Wing 289 to 320 mm.; tail 215 to 235 mm.; tarsus about 70 to 80 mm.; culmen about 50 to 54 mm.; crest 75 to 88 mm. "Weight about 5 lb." (*F. M. Bailey*).

Adult Female.—Feathers of head, with short crest of lanceolate

feathers, black with broad central stripes and narrow edges of rufous-buff; feathers of nape the same but with broader more spatulate striæ; back and mantle black, each feather with two buff streaks and narrow buff edges, a feather here and there showing white instead of buff markings, this giving a curiously mottled appearance; feathers of lower back buff with crescentic bars of black; tail-coverts the same but the black increasing in extent so as to finally occupy most of the surface; longest tail-coverts whitish at the tips; tail boldly barred black and rufous and tipped white; visible portion of the wing-coverts and inner secondaries like the back but the feathers more mottled and less regularly marked with black; primaries and outer secondaries dark brown, the former sometimes mottled with rufous-buff on the outer web, the latter more or less barred with the same; chin, throat and fore-neck white; remainder of lower parts brown, the feathers of the breast and flanks regularly marked with buff lines following the contour of the feathers; abdomen and lower breast the same but with the bars much more broken and irregular and sometimes obsolete, their place being taken by indefinite pale central streaks; shafts white; lower tail-coverts white barred with rufous and black in varying degree.

The range of tints on the lower surface is considerable, some birds appearing almost black on these parts, others quite a rufescent buff.

Colours of the Soft Parts.—Similar to those in the male but duller, the bill is paler, the dark portion being confined to the base and nostrils.

Measurements.—Wing 259 to 287 mm. "Weight 4 lb. 11 oz." (*F. M. Bailey*).

The young male is like the female but has the throat much mottled with black; the upper parts generally have more black and less rufous and therefore appear darker as a whole, whilst the under parts are much more boldly mottled and barred with black and rufous with broad white central marks breaking up the latter.

The Chick in its first plumage is like the female but has the plumage above marked with conspicuously broad central streaks of white; below the throat and fore-neck are dull fulvous white and the abdomen and flanks buff feebly barred and blotched with dark brown.

Chicks in down have the crown rufescent chestnut with a central line of black; nape brown, feebly mottled with paler; back chestnut-brown with broad lateral streaks of buff; wing and tail quills pale cinnamon-buff with blackish pencillings and broad pale central streaks to the inner secondaries; below dirty fulvous buff.

In the series in the British Museum, although many birds are in a moulting stage there is nothing to support Mr. Wilson's theory of a colour change in the plumage taking place without a moult from the pied brown and buff to a metallic green or purple, indeed every moulting bird confirms the belief that this change is one entirely caused by actual moult.

Distribution.—Afghanistan, Chitral and the western Himalayas, through Kashmir, Garhwal, Nepal, Sikkim, Native Sikkim, Bhutan, the Chambi Valley and South Tibet.

How far west this bird penetrates into Afghanistan is not yet known, but it does not seem to be found near Kabul, though it is very common in the Safed Koh Range and thence north-east through Kafirstan and Chitral to the east.

Inglis records ('B.N.H.S. Journal,' xxx, p. 478, 1925) that it is found east to the Delhi Valley in the Mishmi Hills.

Nidification.—The Moonal breeds during May and June; a few birds may begin to lay in the last week of April in the lower hills and, on the other hand, in the higher ranges eggs may be found as late as July. The earliest date I have recorded is May 1, 1910, whilst the latest is June 26, 1909, clutches of five and four eggs respectively, taken by Mr. S. L. Whymper in Tehri Garhwal. It should be noted, however, that Whitehead found young birds fairly strong on the wing "on June 27," so that the eggs must sometimes be laid early in April.

They breed as low down as 8,000 feet and rarely even lower than this as there is a very old record of a nest having been found below Simla at about 7,000 feet; most birds, however, breed above rather than under 10,000 feet and they may be found up to 14,000 and 15,000 feet during the breeding season.

They invariably lay their eggs in forest but it is not imperative that this should be of the densest. Mr. Whymper, who has taken many nests of this Pheasant in Garhwal, informs me that:—

"The majority of nests, if one may use such a term, are to be found in forest consisting of big trees but not with very thick undergrowth, indeed I have more than once taken them in places where the growth was so light one could walk in comfort except for the fact that the ground was much broken. The nest is a mere scratching in the earth, generally hollowed out by the bird itself, under the shelter of a big bush, the bole of some large forest tree or, perhaps, a rock. So far as I have seen there is no attempt made to form a nest in this hollow. Where the trees are deciduous and many leaves have fallen these naturally collect in any hollow and thus form a bed for the eggs, but in evergreen forest, such as forms the usual habitat of the Moonal, the hollow is often quite unlined except for a few casual leaves and a few odd feathers fallen from the bird itself. I have never taken more than five eggs in a clutch but have known birds to incubate on three or four only, and clutches of four to five eggs are about equally common.

The hen bird sits very close and when disturbed from the nest generally sneaks quietly away on foot. I have not noticed males in the vicinity of the nest and cannot say whether he takes any interest in the young when hatched."

"Mountaineer" (Mr. F. Wilson) gives a description of the breeding habits which agrees very closely with the above and expresses his doubt as to the occurrence of clutches of eggs of eight or nine as alleged by some sportsmen and others. Major Cock, not always very accurate in oological details, mentions clutches of three and four only. Beebe found a hen sitting on two eggs considerably advanced in incubation and says that sets of two eggs are by no means unknown. He also speaks of eight eggs in a set as perfectly authenticated, but does not quote his authority.

In captivity nearly all game-birds will lay a very much greater number of eggs than they do in a wild state. Thus I have known an Impeyan lay sixteen eggs, a Crossoptilon lay thirty-two, and so on; consequently the number of eggs laid by a bird in confinement is no criterion of the number of eggs we might expect in a state of nature. The only exception appears to be the Polyplectron which invariably lays only two when caged, though she may rarely lay four or five in her own forest home.

At the present day I know of no place where Monal are so numerous that, as described by Hume, "several nests may be found within a circle of a hundred yards as if the females were, even at this season (as they are at all others), more or less gregarious." In certain

parts of Garhwal, Kashmir and Chitral they are still common, but one would have to work hard and cover much ground to find more than two or three nests in a day.

The eggs, as noted by Hume, remind one much of Turkey's eggs, though normally they are more richly and more profusely marked.

In ground colour they vary from a very pale, dirty, buffy white to a rather warm *café-au-lait*, never at all a rich hue. The markings consist of specks, spots and freckles of reddish brown distributed thickly all over the surface of the egg, but often in a denser ring round the centre of it. Some eggs have a few blotches in addition to the spots and freckles, though these are seldom of any size, whilst in a few others the blotches are more numerous and bigger and the freckles more sparse, so that the eggs have a handsome boldly marked appearance. One clutch of four in the collection of Mr. Whymper is a very handsome one, the ground colour a pale bright buff whilst the blotches are particularly large and richly coloured, the freckles being practically absent.

The majority of eggs are rather long in shape and fairly compressed at the smaller end, a few are very long and narrow and here and there is one but little compressed. I have seen no egg which could be described as a broad oval.

The surface is fine and close, but there is very little or no gloss and the shell, for the size of the egg, is not very strong.

The average size of fifty-two eggs is 64·7 × 44·3 mm., whilst of those which have passed through my hands the longest and broadest measure respectively *69·8* × 44·8 mm., and 62·6 × *48·8* mm. The shortest and most narrow are *59·6* × 45·3 mm., and 61·0 × *39·6* mm. Beebe records the narrowest egg as 43 mm. only.

The period of incubation varies from twenty-six to twenty-nine days, but is generally twenty-seven.

Wilson ("Mountaineer") says that the cock bird takes no interest in the hen, eggs or young once the pairing season is over and the eggs laid, a want of marital and paternal affection which seems to be confirmed by modern observers. Before, however, the breeding season is in full swing the male becomes most assiduous in his attentions to his prospective bride, his courting displays having frequently been described. Major Rodon gives an excellent description

of the nuptial dance and his remarks thereon are worth careful attention:—

> "When shooting in the Himalayas this April I noticed early one morning, while sitting behind a tree, a pair of Moonal Pheasants feeding a short distance from me, on a flat terrace on the open hill-side. They were so close that I was able to see their every movement distinctly. After being busily engaged some time in their usual digging operations, the hen bird stopped work and uttered her call note several times, upon which the cock, who was at the time some little distance away, ran up to her with his wings raised high above the back, tail spread and neck and body feathers distended. He then moved quickly to and fro for a few seconds in front of the hen, who stood quietly looking on at his performance; he then abruptly closed his wings and tail, turned about and ran back to his feeding ground while the hen went on with her breakfast. As the early morning sun was shining on the birds, the sudden appearance of the cock in the above performance was most splendid to look upon, the beautiful metallic hues of the wings and throat, with the pure white of the back and the chestnut coloured tail, spread like a fan behind, shone out most gorgeously. I believe in all courting displays among birds of fine-coloured plumage, the hen takes a most passive part, and does not in any way call the performance up; but the male birds themselves of their own accord go through the ceremony of showing off their fine feathers in front of their lady loves. But in this case the lady, by her calls, appears to have directly invited or encouraged the display as the lover was digging out his breakfast until he heard the call sounded."

General Habits.—The Monal is essentially a bird of high elevations, ascending and descending the mountains practically with the snow line though throughout the winter months many birds, more especially the males, remain where the snow lies more or less thickly. They are not found, however, above forest or thick bush jungle, such as rhododendron, though for feeding purposes they may be met with in the mornings and evenings wandering about the grassy slopes considerably higher up than these limits. They live, however, in the forests and directly they are disturbed seek their cover.

Roughly speaking, in summer they are generally to be obtained between 10,000 and 14,000 feet, provided the country is suitable, but they wander up considerably higher than this, and have also been recorded from much lower. At one time they were really *very* common all round Mussooree and the adjoining hills at an elevation

of about 9,000 feet and, as already noted, were found breeding below Simla, down to a height of some 7,500 feet.

In winter they descend to 6,000 and even 5,000 feet and Perreau found them common at the latter height in Chitral. Hume also remarks that during particularly bad weather they are sometimes driven down as low as 4,500 feet at which elevation his people occasionally killed them.

With constant persecution the birds have of late years moved further and further away from civilization and although in some parts, from Kashmir and Garhwal to Sikkim, they are still common, they have left many of their old haunts and where in "Mountaineer's" day they were obtained in hundreds, the occurrence of odd specimens and pairs is all that can now be hoped for.

In a letter to me Mr. H. Stevens tells me that they are still very common in many parts of native Sikkim, but they are much more rare now all round Darjiling itself though they are still to be found, if one knows where to look for them, at no great distance from that charming hill station. Mr. S. L. Whymper found them common in many of the higher, well-wooded valleys of Garhwal, and they are equally so in some of the less frequented parts of Kashmir. In this State also, under the fostering care of Colonel Ward and the Maharajah, they undoubtedly have become more numerous of late years.

Mr. C. H. Donald in some notes kindly sent me from Simla writes thus of Monal at the present day:—

> "The Moonal is still found in the Chor, throughout the Jubal and Taroche States in suitable localities. In the Bushahr State—on the right bank of the Sutlej River—they are fairly numerous throughout the portion known as the Pundrabis Range, *i.e.*, from the Kulu-Bushahr border almost up to the Rogi on the Hindustan-Tibet Road, but get scarce towards Rogi on the left bank from Kilba to Baghi, they are most common in the centre of the State and are not often met with on the upper reaches of the Sutlej watershed. There are always a few in the environments of Narkandah and Baghi and they get more numerous as you get further East up to about 100 miles from Simla, after which they get more scarce again and appear to die out entirely in the rainless portion of Kanaur.
>
> "Between 8,000 and 12,000 feet altitude is where they are usually found, throughout the Kulu and Kangra Hills, including the Mandi and Suket States into Chamba and Kashmir.

> "Practically from Garhwal to Kashmir in the Punjab, the Moonal is still fairly common and in spite of the numbers that are annually trapped in the hawking-nets their numbers do not appear to have fallen to any appreciable extent. They may have left the environs of big stations but are numerous enough further afield."

I am afraid that there is no doubt that in the case of this bird the plumage trade has been to a very great extent the cause of its rapid decrease. Where the trade is properly organized and the female, young and eggs sufficiently protected, the plumage of the males may be exported in great numbers without any harm being done. Thus Wilson year after year exported the skins of 1,000 to 1,500 males without there being any decrease in the forests where he worked, but it must be remembered in these he never allowed the killing of hens and throughout the breeding season all interference with the birds was entirely tabooed. The modern dealer does not, however, work on these lines. He knows nothing and cares less about the natural history of the bird, the skins pass through many hands before they reach the dealer on the London market and the native, who in the first place supplies them, only collects with a view to immediate profit and without thought to the future; consequently he collects largely in the early part of the breeding season, kills as many females —often sitting—for food as he does males for their plumage, so harassing the birds that they cannot hatch off their eggs when laid. It is true that most birds which are *trapped* are trapped in the winter, but the nooses catch hens, cocks and immature birds alike and none are spared.

The traps used are similar to those which have already been described as used by various hill people for other game-birds, the favourite being the setting of nooses in openings in small artificial fences in ground the birds frequent for feeding.

During the winter they seem to be more or less gregarious, two or three hens with their respective forces combining to make one flock. Sometimes an adult cock may take up his quarters with them, but as a rule three or four old males consort together during the non-breeding season.

Wilson describes this Pheasant as being tame for a game-bird, and notes that where it is most common it is most confiding and, *vice versa*, where most rare there it is most wild and difficult of approach;

nor is this because where most common it is least hunted and interfered with, for such is far from being the case.

As a sole object for sport the Monal can in our day hardly suffice to satisfy sportsmen unless they are of that kind who are content with long days' tramps over the most beautiful country with but a moderate bag at the end of them, varied by days which are almost blank. To such the never-ending interest of the grand and wild scenery, the magnificent mountains and forests loved by these noble birds in itself suffices whilst, if in the course of one's climbs, two or three of them fall to the gun, well, so much the joy added to the day's outing. Even now, however, if the would-be sportsman will wander far enough away from civilization, cultivation and the beaten track, he may yet get bags of a dozen or even more birds in a single day's shoot. Where they are fairly common they do not appear to be hard to obtain and they have not the same notorious reputation for running instead of flying as is the case with so many of our Indian Game-Birds. They rise fairly well when disturbed and generally fly some distance before again alighting; sometimes, however, when flushed they take to the trees and in such cases allow the sportsman to get quite near enough for a shot as they again take to wing. As might be expected of so big a bird they rise with considerable fluster, in addition to which they utter at the same time loud shrill whistles, repeated whilst on the wing until they are in full flight.

Bailey found them very common in the Chambi Valley up to the tree limit, there somewhere about 14,000 feet elevation. He writes :—

> "They have a habit of whistling in the early morning, and at this time it is easy to walk through the thick forest towards the sound and shoot them sitting. I found that the following was the best way to get sporting shots; two guns would walk quietly along the road and two men would go quietly through the forest alone, these men whistled if they saw any Moonal and then put them up when they would sail downhill over our heads."

As regards their diet, there has been but little added to Wilson's notes as quoted by Hume to the following effect :—

> "In autumn the Moonal feeds chiefly on a grub or maggot which it finds under the decayed leaves; at other times on roots, leaves and young shoots of various shrubs and grasses, acorns, and other seeds

and berries. In winter it often feeds in the wheat and barley fields; but does not touch the grain; roots and maggots seem to be its sole inducement for digging amongst it. At all times and in all seasons it is very assiduous in the operation of digging and continues at it for hours together. In the higher forests, large open plots occur quite free from tree and underwood, and early in the morning, or toward evening, these may be seen dotted over with Moonals all busily engaged at their favourite occupation."

Beebe thus describes a view he obtained of these gorgeous Pheasants feeding in one of these open glades :—

"In the high forests of Garhwal and Kashmir I have watched these pheasants at their communal feeding places and found every movement full of interest. At about 10,000 feet, in the still quiet of midday, I once came across a level shelf of long grass shut in by low spruces and deodars. The little glade was some dozen yards across and part of it appeared to have been recently ploughed. Closer inspection showed abundant recent sign and some stray Impeyan feathers. The birds had evidently been working here for some time and I prepared a blind a little distance away in a tree, from which I could see almost all the glade. The following morning a heavy downpour held steadily till daylight, but the succeeding night was clear, and before early dawn, lighted only by the faint greenish glow from Halley's comet, I made my way from camp along the summit of the ridge to my station. Here I shivered and shook with cold for an hour or more until the first few sprinklings of morning songs had grown into a well-filled chorus, with an accompaniment of the two-phrased, reiterated song of a tiny green warbler. A Koklass called far down the valley, and ten minutes later my first Impeyan appeared, stepping quietly out from the low trees and going at once to the edge of the glade, where he appeared to be picking at the long blades of grass.

"For fifteen minutes nothing more happened, and then, for the space of an hour, Impeyans began to appear singly or in pairs and once three together. Three other times I had been grievously disappointed while in hiding, and now it seemed as if I was to succeed in my concealment. Fourteen birds, every one a cock in full adult plumage, were now in sight. Most of the birds went at once to the diggings and, stepping down into the hollows, began industriously to pick the earth away with strong, sweeping flicks of their great shovel mandibles. Some of the birds were in holes a foot deep, and when working, only their brilliant backs were in view. They seldom worked more than three or four seconds without raising their heads and giving a swift glance round and especially *upward* into the sky, and I imagine that the source of most of their troubles lies in soaring

eagles. There was no fighting but now and then an undignified scramble for some tuber or other edible morsel. One or two birds spent much of the time walking slowly about on the outskirts of the glade, but there was no systematic watch or sentinel duty, such as is well-known among some species of birds. They were remarkably silent, only now and then a subdued guttural chuckle or a protesting whistle as one was crowded. Instead of scattering promiscuously over the whole of the glade, they were concentrated along the edges of the dug-out area, this being due probably to a zone of more abundant food. When a large tuft of grass or bamboo was encountered the birds dug around it and under it until it was left supported by its bare roots, or in one case until it actually toppled over. The sight of more than a dozen Impeyans thus engaged was most remarkable, and when the sun rose upon them the colour effect was indescribable, fourteen heaving masses of blue, green, violet and purple, and now and then a flash of white, set among the green of the turf and the black of the newly disturbed loam. It was surprising how seldom one caught a glimpse of the white lower back. Only when some unusually violent effort made the bird extend a wing to keep its balance, did the white gleam forth."

The flesh of the Impeyan is fairly good eating though, naturally, old birds are tough and stringy and, if one is forced to turn so grand a bird into a meal, he should select a young one for the purpose.

LOPHOPHORUS SCLATERI.

SCLATER'S MONAL.

Lophophorus sclateri, *Jerdon, Ibis*, 1870, p. 147 (Mishmi Hills); *Sclater, P.Z.S.* 1870, p. 162, pl. 14; *Elliot, Mon. Phas.* i, pl. 20 (1872); *Hume, Str. Feath.* ii, p. 488 (1874) (E. Assam); *Hume & Marshall, Game-B. Ind.* i, p. 13, pl. (1878) (Sadiya); *Hume, Str. Feath.* ix, pp. 198, 203 (1880) (Mishmi); *Ogilvie-Grant, Hand-B. Game-B.* i, p. 240 (1895); *Oates, Man. Game-Birds Ind.* i, p. 269 (1898); *F. M. Bailey, Jour. B.N.H.S.* xxiv, p. 76 (1915); *Rothschild, Bull. B.O.C.* xxxvii, p. 50 (1917); *Beebe, Mon. Pheas.*, vol. i, p. 153 (1918); *Stuart Baker, J.B.N.H.S.* xxvi, p. 331 (1919); *Ward, ibid.* xxvii, p. 756 (1921) (Imaw); *Stuart Baker, Fauna B.I. Birds* v, p. 337 (1928).

Vernacular Names.—*Dong* (Tibetan, Po Ba dialect); *Pui-di* (Bhutia); *Tratta, Poa-padoi* (Mishmi).

Description. Adult Male.—A tuft of feathers below the nostril and a narrow line from the upper corner of the nostril to the crown black; crest of short curly metallic feathers blue-green; ear-coverts and narrow line behind the crest black with blue-green reflections; whole mantle deep purple blue-green, more purple on the shoulders; lower back, rump and upper tail-coverts white with a few black shaft-stripes and, in one specimen, metallic white spots at the tips; tail mottled black, rufous and white on the basal half, the central portion a rich rufous with a terminal white band; lesser and median wing-coverts bronze-green shot with copper; greater coverts and inner secondaries deep metallic blue-green; primaries and outer secondaries velvety blue-black; lower plumage velvety black.

Colours of Soft Parts.—"Iris dark brown; bill dirty white; legs pale greenish; bare orbital space blue" (*F. M. Bailey*). "Iris dark purplish blue; naked skin peacock-green" (*Forrest*).

Measurements.—Wing 292 to 325 mm.; tail 194 to 206 mm.; tarsus 78 to 82 mm.; culmen about 50 mm.; short blunt spur 12 to 18 mm. "Weight 6¼ lb." (*F. M. Bailey*). The weight of a fine

cock weighed by Mr. J. Needham and myself in Sadiya was just over 6½ lb.

Female.—Upper part of head and whole neck vandyke-brown with a buff V-shaped mark on each feather; lores white, mottled with fulvous and brown; sides of head paler than the crown; back, scapulars, adjoining wing-coverts and innermost secondaries rich chocolate-brown with buff central streaks widening into ill-defined rufescent bars; lower back, rump and tail-coverts dull earthy white, rufescent next the back, more white on the longest tail-coverts, irregularly barred with narrow wavy lines of brown, boldest and darkest on the longest tail-coverts; tail black, broadly tipped with white and with six or seven narrow bars of white, the central feathers mottled with rufous on their terminal halves and all with a more or less mottled edge of brown-buff; primaries and secondaries umber-brown, the latter mottled on the margins with buff and brown; remainder of visible wing black with numerous bars of rich chestnut-rufous and very fine buff shaft-streaks; chin and throat white; remainder of lower plumage dull brown densely covered with tiny wavy bars of dull ochre.

Colours of Soft Parts.—Iris brown; bill pale yellow or horny green; legs dull pale greenish lead colour.

Measurements.—Wing 279 mm.; tail 193 mm.; tarsus 71 mm.; culmen 48 mm.; short crest about 18 mm. "Weight 5 lbs." (*Bailey*).

Distribution.—So far as we know at present Sclater's Monal is a bird of very restricted habitat. It is found only in the hills north of the Assam Valley from the extreme eastern Dafla Hills to the east of the Abor and Mishmi Hills. How far north it extends we do not know, but it is undoubtedly found in Tibet north of the hills mentioned, as it was known to the Tibetans met with by some of the survey parties which were working north-east of the Dafla Hills after the Abor Expedition of 1901. On the other hand, it is not likely to extend very far north-east as at Batong to Ta-chien-lu, over which country several persons have worked, it was never met with and at the latter place the next bird, *L. l'huysii*, was recorded as common. On the other hand, Oates' prophecy that it would be found sooner or later in some of the northern Burmese hills has been

fulfilled, as Beebe met with it in north-western Yunnan close to the Burmese frontier, whilst Forrest obtained no less than eight specimens on the Salwin, between 11,000 and 12,000 feet.

General Habits.—There is at present nothing on record about these fine Pheasants beyond the fact that they are supposed to haunt the higher wooded hills of eastern Assam. During the five years I lived in Dibrugarh and Sadiya I made the closest inquiries after it as Colonel Chatterton and I hoped to combine the pleasure of shooting the Takin and *Lophophorus sclateri* in one trip. The natives assured us that this was quite possible and pointed out to us certain peaks and ranges about 9,000 feet high to which both bird and mammal resorted in winter, the nearest of which ranges were within twenty-four hours' work of the plains and our furthest military outpost. At this time, however, the frontier was in a very disturbed state and our trip fell through. Later on, after I had left the district, Colonel Chatterton was sent up with a military expedition and did actually come across both Takin and Sclater's Monal quite close to one another. The latter were in very dense forest at an elevation of about 10,000 feet, the undergrowth being very thick except where broken up by rocks. Where the birds were the trees were principally oak and rhododendron, but there were also stretches of the most magnificent pine trees and, here and there, open spaces on the steep mountain-sides covered with short, thick grass and bracken or moss and lichen-covered slabs of grey rock.

At the time Colonel Chatterton came across them several birds were together, apparently young and two or three old hens, but no cock bird. They were very shy and though they allowed a comparatively close approach they kept out of sight and shot, so that except for a few brief glimpses they escaped observation and none were brought to bag.

Unfortunately the expedition, a very small one, were in rather a tight corner and it was impossible to follow up the birds to any distance from camp, though the sentries on duty in the one special spot reported that the birds returned there with the greatest regularity morning and evening, and could be heard scratching about and feeding in the undergrowth like a flock of barn-door fowls.

The Abors say that they are birds of the highest elevations, being

found all the year through close to the snows or actually beyond the snow-line. Certainly the few birds brought in whilst I was in Assam all come from some distance within the hill ranges and it was only in the severest winters they came down to 7,000 or 8,000 feet. Normally, if what we were told was true, they very seldom come below 9,000 feet and in summer frequent the ranges at 12,000 to 15,000 feet.

The Mishmis say that they are "fool-birds" and very easy to trap, and that they are very good to eat.

Beebe, one of the few white men who have seen this Pheasant, describes his meeting with it in the following words :—

> "I had hardly crept five yards from the place of my ugly adventure when two feathers caught my eye and straight way I forgot my fears. They were from the plumage of no silver pheasant, but brilliant, iridescent, changeable green and purple. I was at a loss to know from what gallinaceous bird they had come. A little way further I found another. Later, while worming my way through a barking deer's tunnel at the root of a perfect tangle of bamboo, I heard the subdued chuckles and the rustling of leaves ahead. A few feet brought me to a deeply worn but steep sambhur trail, along which I made my way on hands and knees, without making a sound.
>
> "The rustling of leaves, and the spray of earthen pellets falling down, came more distinctly to my ears, and at last I rested for many minutes with my face buried in a clump of blue, sweet-scented pea-flowers.
>
> "Inch by inch I then edged myself upwards, digging with fingers and toes into every deepened hoof-rut. A shower of earth fell upon me and with joy I saw that a clump of soft-leaved mint-like plants lay before me. I did not have to increase my numerous wounds by a slow penetration of either nettles or briars.
>
> "The revelation came sooner than I expected. Noiselessly plucking away leaves and stems one by one to form a low tunnel I pushed slowly and cautiously ahead. . . . Then the forms of one or two birds appeared, and with a screen of leaves still intervening I watched what was probably the first wild Sclater's Impeyan ever seen by a white man.
>
> "An inch nearer, another leaf cleared away, and I saw there was but one bird.
>
> "It was a splendid male, digging vigorously and almost continuously with its beak, working round in a circle so that I saw in turn its breast, sides and back. I watched it for five minutes, when it turned, without apparent cause, but not from fright, and disappeared into the low marshy tangle behind.

"As quietly as I could lift my arm and pull up my gun from where it was dragging behind me, I fired at the still moving stems, and listened for some hint of the effect. Not a sound came forth.

"I clambered up to where the bird had stood, rushed into the underbrush and almost stepped upon the pheasant as it lay six feet from the opening. As I leaned down trembling with excitement, two living bombs burst from the ground a few feet away—pair of hens or young males—and in a fraction of a second were out of sight."

Unfortunately Beebe, in spite of his long description of many pages, does not say at what height he found these Pheasants, but as he mentions the fact that he continuously passed through wild bananas during his hunt for them it must have been at a comparatively low level, and his whole account of the country would show it to be of a nature consistent only with tropical humid forests under rather than over 5,000 feet.

Colonel F. M. Bailey met with this Pheasant on the upper Dibáng Valley. He writes:—

"Common in the upper Dibang Valley and on both sides of the Yong Yap-La. Cocks weighed 5 lbs. in May. It is very noisy in the evenings. These birds when chased by a dog refused to fly until nearly caught when they would fly into a tree and remain there while the dog barked below. Our dog actually caught one. They were mostly found in small flocks of two or three individuals. At Po Me Monal Pheasants are found, though no specimens were collected. It appears that both *L. sclateri* and another similar bird with a crest of long feathers are found together. This is probably *L. l'huysii* but possibly *L. refulgens* and is called *Tse* by the Pobas. Monal Pheasants were also seen on the Se La and other places near Tawang but no specimens collected."

LOPHOPHORUS L'HUYSII.

THE TIBETAN MONAL.

Lophophorus l'huysii, *Verreaux & St. Hilaire, Bull. Soc. Acclim.* (2) iii, p. 223, pl. (1866) (Moupin); *id. ibid.* iv, p. 706 (1867); *Sclater, P.Z.S.*, 1868, p. 1, pl. i; *id. Ibis*, 1870, p. 297 (Tatsienlu); *Grey, Handl. Birds* ii, p. 26 (1870); *Swinhoe, P.Z.S.* 1871, p. 399; *David, Nouv. Arch. Mus. de Paris* vii, p. 2, 1871; *Elliot, Mon. Phas.* i, pl. 10 (1872); *Gould, B. Asia* vii, p. 54 (1873); *Sclater, Ibis*, 1874, p. 169; *David & Oustalet, Ois. Chine*, p. 40, pl. 110 (1877) (Moupin and W. Szechuen); *Sclater, P.Z.S.* 1891, p. 212 (Szechuen); *Seebohm, Ibis*, 1891, p. 379; *Pratt*, "To the Snows of Tibet," p. 202 (1892); *Ogilvie-Grant, Cat. Birds B.M.* xxii, p. 281 (1893); *id. Handb. Game-B.* i, p. 238 (1895); *Rothschild, Bull. B.O.C.* xxxvii, pp. 49-51 (1917); *Beebe, Mon. Pheas.* i, p. 148 (1918); *Stuart Baker, J.B.N.H.S.* xxvi, p. 335 (1919).

Vernacular Names.—*Pae-mou-ky, Ho-han-ki, Hwa-than-chi* (Chinese); *Koo aloong* (Tibetan).

Description. Adult Male.—Forehead and a narrow line running down to each nostril and ending in a thick tuft at the angle of the lores velvety black; crown and sides of the head metallic green with crimson-bronze reflections in some lights; crest fiery purple-bronze with blue reflections on the shortest feathers; back, sides of the neck and extreme upper back rich glistening copper with bronze-green reflections on some of the outer feathers; remainder of upper back and scapulars with the innermost visible secondaries purple mixed with blue-green; lower back and uppermost feathers of the rump white, the latter with terminal central striæ of metallic blue; remainder of rump metallic green-blue with terminal white edges to a portion of both webs, forming long shaped spots or semi-bars; tail-coverts and visible portions of tail-feathers the same but unspotted; concealed portions of tail-feathers blackish with a few white spots on either web of all but the outermost pair; visible portion of the wing green-blue with purple reflections and the shoulder and lesser wing-

coverts next it shot with golden-bronze; primaries and concealed portions of secondaries dark brown; below black, many feathers especially on the upper breast, sides of the neck and upper flanks with iridescent green edges.

Colours of Soft Parts.—"Bill horn-colour; naked skin round the eye blue; legs and feet lead-colour" (*Ogilvie-Grant*).

Measurements.—The measurements of three specimens in the British Museum collection are as follows:—

Wing 328 to 334 mm.; tail 263 to 283 mm.; tarsus 82 to 91 mm.; bill at front about 55 mm., and from gape about 58 mm.; crest about 65 mm.

Adult Female.—Very similar to the female of *L. impejanus* from which, however, it can be easily distinguished by its having the whole of the lower back and rump white. The shorter upper tail-coverts are mottled brown and white, the longer brown barred with buff and a few faint white frecklings.

Colours of Soft Parts.—Similar to those in the male.

Measurements.—Wing 282 mm.; tail 245 mm.; tarsus 76·2 mm.; bill at front 52 mm., and from gape 55 mm.

Distribution.—The north-western ranges of Szechuen extending east and north into Tibet through Ta-chien-lu into the Koko-Nor. Although Pere David believed it to occur in Yunnan and Queichow, nothing has as yet been ascertained to corroborate this belief, reasonable though it appears to be.

Nidification.—Nothing recorded.

General Habits.—Pere David's excellent account of this grand Pheasant's habits is still the only one in existence. He writes:—

> "This magnificent Lophophorus inhabits the highest ranges of Moupin, the Eastern Kokonoor and the Western frontiers of Setchuan. It goes about in small parties in the open grasslands above the region of the forests, but returns to the trees to roost and sleep. Its constant food consists of vegetable substances and principally of succulent roots which he digs out very cleverly with his powerful and broad-edged bill; as he searches especially for those of a yellow Fritillaria called *Pae-mou*, the people of the country have given him the name of *Pae-mou-ky*. In this country they also call it *Ho-than-ky* (the fowl of burning charcoal) the male adult, splendid in his metallic plumage. It is a very foolish bird whose flight is very powerful.

His cry to which he gives vent in the very early morning and when it is about to rain, consists of three or four piercing and well-divided notes.

"From some information which I have received, *Lophophorus l'huysii* should also be found in Yunnan and Kowytcheon; it is certain, in any case, that one meets with it in a great portion of Eastern Tibet, but it is rare everywhere, and it will not be long before it disappears altogether. The Chinese constantly hunt this superb fowl and use every means to collect it as the flesh is very delicate. The specimens which I have sent to the Natural History Museum, South Kensington, were killed at an elevation of 4,500 metres."

Genus CROSSOPTILON.

Crossoptilon Hodgs., J.A.S.B. vii, p. 866 (1838).

Type, *Phasianus tibetanus* Hodgs. = *Crossoptilon crossoptilon* Hodgs.

The genus *Crossoptilon* contains the birds popularly known as Eared Pheasants from the fact that their ear-coverts are so prolonged that they stick out behind the head like two small horns or ears.

In this genus the tail-feathers number twenty to twenty-four, very broad at the base, less compressed than in *Gennæus* and with the webs very soft, broad and decomposed; the wings are rounded in typical Pheasant shape, the first primary short and the fifth and sixth equal and longest; the sides of the head are naked, covered with papillæ and bright red in colour; the legs are powerful and the tarsi are furnished with short blunt spurs in the male.

The sexes are similar in coloration.

At present only one species is known to occur within our limits, *Crossoptilon harmani*.

Rothschild shows that this form cannot be considered a race of *auritum* as the character and structure of the tail-feathers are different. He therefore places it as a subspecies of *crossoptilon* (*tibetanum auctorum*) but it does not seem to me that our present material suffices to prove this, so for the time being I give our bird specific rank.

(1930) CROSSOPTILON HARMANI.

ELWES'S HORNED PHEASANT.

Crossoptilon harmani, *Elwes, Ibis* 1881, p. 399, pl. 13 (Eastern Tibet); *Ogilvie-Grant, Cat. Birds B.M.* xxii, p. 296 (1893); *id. Hand-L. Game-Birds* i, p. 257 (1895); *Dresser, Manual Pal. Birds*, p. 673 (1903); *Stuart Baker, Bull. B.O.C.* xxxiii, p. 121 (1914); *Elwes, Ibis*, 1919, p. 82; *Bailey, Jour. Bomb. Nat. His. Soc.* xxiv, p. 77; *Stuart Baker, Fauna B.I., Birds*, 2nd ed. v, p. 389 (1928).

Vernacular Names.—*Cha-nga* (Tibet).

Description.—Crown of head from forehead to nape velvety black; chin, throat, extreme fore-neck, ear-coverts and across the nape white; above deep ashy grey, almost black on the neck; rump and upper tail-coverts much paler ashy grey; wing-quills brown, the remainder of the visible wing like the back, the inner secondaries slightly glossed with purple-blue; sides of the neck and breast deep glossy ashy grey changing to paler ashy grey on the flanks and lower breast and to white down the centre of the fore-neck and centre of the abdomen; the tail is metallic blue-black, glossed with green and blue, the middle tail-feathers changing to purplish grey at their bases.

Colours of Soft Parts.—Iris brown to orange-brown; bill light reddish horny, legs scarlet, naked skin of face scarlet.

Measurements.—Wing 292 to 331 mm.; tail 457 to 559 mm.; tarsus 87 to 93 mm.; culmen about 40 to 44 mm. The spur is short, about 15 to 20 mm.

Chick, about Fourteen Days Old.—Crown velvety black; upper plumage dull black changing to dark ashy-grey on the rump and upper tail-coverts; the wings are vermiculated with reddish bars and the coverts have broad reddish shaft-streaks; white on the head as in the adult, the ear-tufts showing distinctly; upper breast and flanks black, the feathers centred and edged fulvous; lower breast and abdomen dirty white, vent and under tail-coverts dull ashy grey tipped



ELWES' HORNED PHEASANT.
Crossoptilon harmani.

with white; tail-feathers blue-black glossed with blue, showing green in some lights.

"Iris brown; bill horn-coloured, paler below; legs reddish brown" (*Bailey*).

Distribution.—Abor and Mishmi Hills, north of Assam and south-east Tibet. Probably common on all the higher ranges of the watershed north of the Brahmapootra.

Nidification.—Nothing recorded. I have four eggs taken in the Abor Hills on May 26 which are those of a *Crossoptilon* and must be of this species. They are the usual grey green colour of all *Crossoptilon* eggs and have the normal soft smooth texture without any real gloss. They measure 58·5 × 41·6, 56·2 × 41·7, 58·4 × 41·6 and 56·7 × 42·0 mm. They were taken at an elevation of some 11,000 or 12,000 feet, laid on the ground in deep forest. Bailey's chick, described above, was about fourteen days old on July 16; he saw another well-grown young one on August 24, and broods of freshly-hatched young on July 18, so that presumably May and June are the months in which the eggs are laid.

General Habits.—For a long time the only known specimen of this bird was a very imperfect skin obtained by Elwes from a Lieutenant Harman, who had himself received it from one of his native surveyors. This he said he had procured 160 miles east of Lhasa at an elevation of about 6,000 feet, where it was found in flocks in winter. This was in 1881, and nothing more was ascertained about the Pheasant, its habits and habitat until 1913, when Colonel F. M. Bailey sent home a most valuable, though small, collection of bird skins, amongst which there was a beautiful series of Elwes's Eared Pheasants, containing fine examples of males, females and young.

In the Bombay 'Natural History Journal,' Colonel Bailey gives a very interesting account of the habits of this beautiful bird. He writes:—

> "This bird occurs in Po Me, where I found feathers and scratchings, though I was never fortunate enough to come on the birds themselves. It is common in the Lower Tsangpo Valley in Tibet. The farthest point west at which we saw it was the east side, Putrang La, where there were numbers in the rhododendron scrub at about

15,500 feet. The lowest elevation at which we found this Pheasant in the Tsangpo Valley was at about 9,300 feet at Gyala, but I saw traces of them in Po Me at about 8,500 feet. In the valley of the Tsangpo itself the highest point upstream at which we found these birds was the neighbourhood of Nang Dzong. They were plentiful in the valley of the Char, which is a branch of the Subansiri, but none were found west of the Pu La, which is the watershed between the Tsang Po and Subansiri in this region. There were many on the Takarla and the Le La. They were heard calling near Natrampa on the Lower Chayul Valley, but they do not appear to extend west of these places. They were said to be common at Tsari in winter, but we saw none. These birds move about in flocks of about 5 or 10 and frequent forest-covered hills and the higher elevations, dwarf rhododendron jungle, where they feed on the grassy clearings among the bushes. They are very noisy in the early mornings, and less so in the evening. Their call is like that of *C. tibetanum*. When alarmed, they usually fly into a tree; the flight is heavy and usually downhill. The beaters on seeing these birds would make a noise like the barking of dogs, on which the birds fly into a tree and are easily shot. They say that if they do not make this noise the birds fly a considerable distance. Broods of freshly hatched chicks were seen at Gyala, 10,000 feet on 18th July, while about the same time a specimen of a larger chick was shot. A well-grown young one was shot on the Putrang La on 14th August. These birds are trapped by Tibetans in the Lower Tsangpo Valley. Adult specimens in the flesh measured, males 31½", 33¾", 35¼", and females, 34" and 34⅛".''

In epistola to me Colonel Bailey adds a few notes which are of interest. He says that although the birds called principally in the mornings and, to a less extent as they were returning to roost at night, they could be heard also at odd intervals throughout the day except perhaps during the two or three hottest hours of the afternoon. They kept very closely to the forest and only wandered out into the open places in the mornings and evenings and, even then, never seemed to venture far, whilst they scurried back to the shelter of the bushes at the least alarm.

He seems to have found both male and female sharing in the care of the young, a fact which would prove that the Eared Pheasants are monogamous in their habits.

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