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THEIR LIVES AND HOMES

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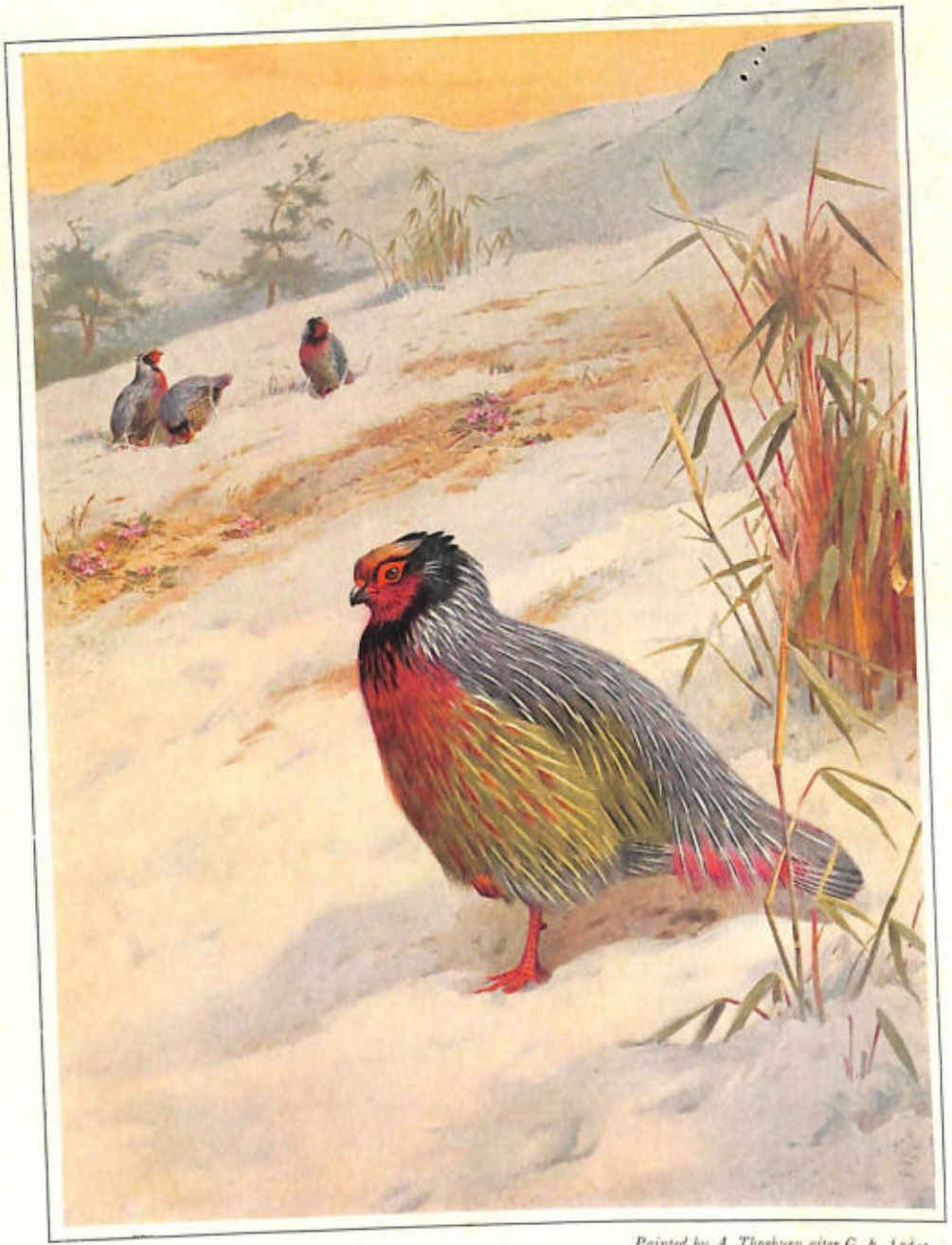
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PHEASANT JUNGLES
G. P. Putnam's Sons—in press



Painted by A. Thorburn after G. E. Lodge

PLATE 1

KUSER'S BLOOD PHEASANT

Ithagenes kuseri Beebe

(For detailed caption see page xiii)

PHEASANTS

THEIR LIVES AND HOMES

BY

WILLIAM BEEBE

Honorary Curator of Birds of the New York Zoological Park; Director of the Department of Tropical Research of the New York Zoological Society; Fellow of the American Ornithologists' Union, Academy of Sciences, Zoological Society, Etc.

Medallist of the National Academy of Sciences, Société d'Acclimatation de France, and John Burroughs Memorial Association



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IN TWO VOLUMES

VOLUME I

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1931

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TO

COLONEL AND MRS. ANTHONY R. KUSER

THESE VOLUMES ARE DEDICATED IN THE SPIRIT
OF SINCEREST FRIENDSHIP AND ESTEEM

PREFACE

THE study of the living pheasants in their natural environment in various parts of the Far East—this was the main object of the seventeen months' journey through Asia and the East Indies taken by the author of this work. The urgency of this journey sprang from the fact that the members of this most beautiful and remarkable group of birds are rapidly becoming extinct, so that the record of their habits and surroundings, which is important to the understanding of their structure and evolution, will soon be lost forever.

To no naturalist hitherto has the opportunity been given to study nearly all of these birds in life. This opportunity came to William Beebe through the generosity of Colonel Anthony R. Kuser of Bernardsville, New Jersey, a member of the Board of Managers of the New York Zoological Society, and one of the benefactors of the Zoological Park. Having been interested for many years in developing his large collection of domesticated pheasants, it was he who suggested that a monograph of the entire family of these birds be undertaken, and who offered to support both the exploration and subsequent publication in a most complete manner, so as to produce a work which, from the standpoint of truth, of beauty, and of thoroughness, should be worthy of the important place which the pheasants occupy in the science of ornithology.

The expedition was planned with the greatest care by the author and officers of the Society, and the author was given a leave of absence from his duties as Curator of Birds in the Zoological Park for a period of seventeen months for the express purpose of studying the pheasants in the field. Ceylon, India, Burma, China, Japan, the Malay States, Borneo, and Java were visited, and the pheasants of each country found and studied. Of the nineteen groups of these birds, every one was successfully hunted

with the camera, field-glasses, and gun. A talented artist, Mr. Bruce Horsfall, accompanied the expedition during part of the journey to paint the various scenes of pheasant environment. The trip, which extended over twenty countries, resulted in a rare abundance of material, both literary—concerning the life history of birds—and pictorial, photographs and sketches. During the summer which followed the expedition the time of the author was spent in studying the great type collections in the museums of London, of Tring, of Paris, and of Berlin.

Thus, nearly one hundred species are included, and their voice, courtships, battles, nests and eggs, and the general life history and relation to the surroundings, both human and animal, form the chief subject matter.

The birds are illustrated in coloured plates by six of the leading American and English artists. The haunts of the pheasants are shown reproduced from the author's photographs, ranging in scene from the slopes of the Himalayan snow peaks, sixteen thousand feet above the sea, to the tropical seashores of Java. The elaborate history of the Red Junglefowl, the ancestor of our domesticated poultry, is unique, and the story of the part that this fowl has played in human history is a phase of the subject which has not before been presented. For the naturalist-sportsman, stories and detailed directions for the shooting of the pheasants in their native lands have been collated, while legends and native superstitions round out the account of the relation of these birds to mankind. For the reader interested in keeping and breeding these beautiful birds, there is included a résumé of the best methods in use on large preserves and estates as well as in the many small aviaries that are now found both in England and in America.

Never, perhaps, in the history of the birds of the earth will it be possible to produce another work of quite such scope; for not a month passes but the rarer birds of all kinds are being pushed back farther into the jungle and into the mountains, where, before long, they will make their last stand. Hence, the volumes present a very strong sentimental appeal to all bird lovers.

This monographic work of William Beebe's, which represents eight years of preparation, is by far the most important scientific achievement as yet undertaken by the New York Zoological Society. That the author has fulfilled his part, in exploration, in subsequent scientific research, and in popular as well as detailed description, will be witnessed in every page of these volumes, which, we trust, may ever endure as a monument to the labours of the author and to the generosity of the benefactor.

HENRY FAIRFIELD OSBORN
President of the New York Zoological Society.

New York City.

On the appearance of the first volume of the Monograph, the National Academy of Sciences awarded to William Beebe the Daniel Giraud Elliot gold medal in recognition of the outstanding contribution to zoology for that year. This was particularly appropriate, as Dr. Elliot was the author of the first Monograph of the Pheasants, published forty-six years before, in 1872. The reverse side of this medal ornaments the outside covers of the present work.

In its first form, William Beebe's Monograph was published in an edition of six hundred copies, by H. F. Witherby of London, in four folio volumes at a cost price of two hundred and fifty dollars for each set. When the edition approached exhaustion, Colonel Kuser decided to bring out a new one, in two volumes.

The present volumes include all but the technical descriptions of the birds, and are, in effect, a summary of their known natural history. Much of it has been rewritten and brought up to date by the inclusion of the most recent discoveries, especially those of M. Jean Delacour in Cochin China.

For details of exact distribution, of intensive descriptions of plumages, and of the evolution and interrelationships of pheasants, the reader is referred to the earlier work, which can be found in almost all the large museums, libraries, and universities.

H. F. O.

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I. KUSER'S BLOOD PHEASANT *Ithagenes kuseri* Beebe . . . . . *Frontispiece*

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Painted by A. Thorburn, after G. E. Lodge.

In the late afternoon, a small flock was working its way down a mountain slope to some sheltered roosting place at a lower elevation. An unseasonable snowstorm, falling on the tumbled uplands of northern Yunnan, had half covered the Chinese primroses which were blossoming in dense clusters. The dead grass of last year and newly budding dwarf bamboos were visible, and in a hollow some weatherbeaten conifers had found a foothold near the upper limit of tree growth. When darkness fell, the Blood Pheasants, perched deep in the tangle of a rhododendron thicket, would be safe from foxes and martens.

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II. THE EASTERN HIMALAYAN HOME OF SIX PHEASANTS 14

Photograph by William Beebe.

The most wonderful scene in the world is the Himalayan snows from Darjeeling. Sitting at the edge of the moss-hung forest at about seven thousand feet, one sees, through a filigree of tree ferns, range after range extending through green and blue and purple distances up to the sharp edge of the snow line. The apex of all is Kinchinjunga, with beautifully draped Kabru far to the left. Six species of pheasants live in these glorified hills.

In the deeper valleys, where the chill of the snows never comes, are Red Junglefowl and Peafowl. In the upper forest, Black-backed Kaleege roost and nest. Still higher, near the snows, at nine or ten thousand feet, are the Satyr Tragopan and the Impeyan—most gorgeous of birds. The last of the sextet lives at fourteen or fifteen thousand feet—at the very edge of the snows. This is the Blood Pheasant.

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III. EGGS OF BLOOD PHEASANTS, TRAGOPANS, IMPEYANS, AND EARED-PHEASANTS 24

Drawn by H. Grönvold.

1. Two eggs of Geoffroy's Blood Pheasant (*Ithagenes geoffroyi*), Tachienlu, western China, collected by Mr. Pratt.
2. Egg of Kuser's Blood Pheasant (*Ithagenes kuseri*).
3. Two eggs of Satyr Tragopan (*Tragopan satyra*), laid in captivity.
4. Two eggs of Cabot's Tragopan (*Tragopan caboti*). The left-hand one collected in Kuatun, China, May 17, 1878, by J. D. D. la Touche; right-hand one laid in captivity in Yorkshire, England.
5. Egg of Western Tragopan (*Tragopan melanocephalus*), laid in captivity.
6. Egg of Blyth's Tragopan (*Tragopan blythi blythi*), laid in Assam in captivity, by a bird from the North Cachar Hills.
7. Two eggs of Temminck's Tragopan (*Tragopan temminckii*), from "China."
8. Egg of Brown Eared-Pheasant (*Crossoptilon mantchuricum*), laid in captivity in the Zoological Gardens, London.
9. Three eggs of Impeyan Pheasant (*Lophophorus impeyanus*), all from northern India; the centre one collected at Lookel, June 1, 1874.
10. Egg of White Eared-Pheasant (*Crossoptilon tibetanum*), collected by Mr. Pratt, near Tachienlu, May, 1890.
11. Egg of Blue Eared-Pheasant (*Crossoptilon auritum*), laid in captivity.

All from the British Museum Collection, except Nos. 2, 5, and 6, which are from that of Mr. Stuart-Baker.

IV. HIMALAYAN BLOOD PHEASANT *Ithagenes cruentus* (Hardwicke) 36

Painted by G. E. Lodge.

Blood Pheasants keep close to the edge of the melting snow, gradually ascending in the spring and summer. But in the high altitudes of the Sikhim mountains, late spring storms often cover every growing plant deep in snow. To obtain food, the Blood Pheasants are obliged at once to retreat far down the valleys to where the warmth has turned the snow to rain. Occasionally, the birds are able to remain stormbound and yet find food. This occurs when the insects, caught suddenly unawares, retreat in numbers to pass a few days benumbed with the cold in the seed cases of last year's lilies. Some of these are empty, others partly filled with seeds, and here earwigs, beetles, moths, and spiders find a temporary haven. And this haven at least one flock of Blood Pheasants discovered and ruthlessly rifled, spilling insects and seeds upon the snow and feeding to its heart's content.

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V. WINTER HOME OF THE HIMALAYAN BLOOD PHEASANT 42

Photograph by William Beebe.

In the Eastern Himalayas, the limit of perpetual snow is at sixteen thousand feet, and in winter the storms rush down from the crests and sweep everything before them to tree level. Even the hardy Blood Pheasants have to retreat and seek shelter and food several thousand feet lower down. Here the great pines and spruces defy the elements, rearing their sturdy gnarled trunks and spreading wide their scraggy branches. Between their trunks extend dense masses of stunted rhododendrons, and among these the Blood Pheasants spend the long winter days. From the pines come the voices of titmice and nuthatches and creepers, and now and then the shadow of a passing vulture cuts through the icy air. Only lonely Nepal shepherds ever visit these slopes. It matters not to the birds that farther down in the valley there are warmth and insect life. There, too, are safe roosting places. The Blood Pheasants will have none of these, but cling to the edge of the tree line, ever ready to work upward at the first hint of spring.

VI. PLUMAGES OF THE HIMALAYAN BLOOD PHEASANT *Ithagenes cruentus* (Hardwicke) 46

Drawn by H. Grönvold.

The Blood Pheasant acquires its adult plumage during the first year of its life. If a chick slips from its shell in May, it will be hardly distinguishable from its parents in October. Except for a lack of spurs, it is as well equipped for the dangers of life as its father.

The upper figure shows the chick in its down about a week old. The little wings are just visible, but the legs are the most prominent feature. The head and neck are gray and black, and the body is of a warm rufous.

Five weeks later, the down has been shed and the young bird is in full juvenile garb of dull mottled buff and black, with terminal spots of pale buff. The legs have increased but little, but the wings and tail show that the bird roosts high and can escape swiftly from any enemy. The figure shows a juvenile bird of six weeks.

The lower figure is a young cock of two months, well advanced in the adult plumage. Most of the juvenile brown has left his back and tail, and the green and scarlet feathers are rapidly covering the breast. The two outer juvenile feathers and the white-shafted outer primaries are still unshed.

VII. THE SATYR TRAGOPAN *Tragopan satyra* (Linnæus)

Painted by A. Thorburn.

The place is Sikhim in the Eastern Himalayas, looking toward Kabru and Kinchinjunga; the time is early May at ten

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thousand feet, when spring is at its height. The Satyr Tragopans have finished their courtship and paired, and in a few days will begin to nest. From some mossy perch the booming crescendo challenge of the cock rings out every morning. Around him the rhododendron trees are masses of colour: scarlet, salmon, cerise, pink, and rose, and beneath, the ground is lavendered with alpine primroses. Words can never describe the beauty of this magnificent bird in its Himalayan home.

VIII. HIMALAYAN HOME OF THE SATYR TRAGOPAN AND IMPEYAN PHEASANT. 56

Photograph by William Beebe.

We are two miles above the sea, in the coniferous forests of the Himalayas.

Between a jagged bit of rock and a sturdy deodar I crouched in early morning, every needle and leaf about me drenched with dew. Behind were six ranges of mountains, dropping away from the fathomless valley at my feet, and rising ever higher and higher to the distant Tibetan snows. The swish of a Lammegeier's wings was heard through the dense cloud mist, and the croak of a Himalayan Raven came faintly. Then a Satyr Tragopan called, and the cloud swept from the valley. The snows were still hidden, but the distant lower slope showed with their rhododendrons and magnolias. Through the day these Tragopans feed among the underbrush, and if they escape the eyes of eagle and leopard and avoid the snares of the shepherds, they will roost at night in some safe perch, high above the dangers of the earth.

Before me, as I lay behind my deodar, was a glade surrounded by small trees, having the appearance of recent ploughing or of thorough trampling by the hooves of a great herd of cattle. This was a feeding ground of cock Impeyan Pheasants, and within an hour, on this particular morning, fourteen full-plumaged birds appeared. Wielding their beaks like picks, they dug deep holes and overturned clumps of turf in their eager search for grubs and succulent tubers. Probably each had a mate somewhere in the surrounding forests brooding her eggs, but each morning these birds, too gaudy to dare approach their nests, came here for a social meal, then separated to feed alone during the remainder of the day.

IX. WESTERN TRAGOPAN *Tragopan melanocephalus* (Gray) 60

Painted by A. Thorburn.

In the mountain forests of the Western Himalayas lives this great bird, its black and crimson plumage covered with a shower of silvery stars. Its cry echoes through the gorges of Kashmir and the tumbled masses of mountainous Garhwal. A

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dozen are sometimes found together, and throughout the winter they keep within calling distance of one another. They are fond of the buds of trees, and thus can find sustenance even when the ground is covered deep with snow.

X. WATTLES OF COCK TRAGOPANS 64

Drawn by H. Grönvold.

These wonderful structures come to their full development at the breeding season. At this, as at all other times, they are usually quite invisible, being drawn up to an inconspicuous fold of skin beneath the chin, hidden by feathers. At the climax of courtship the great apron of skin becomes suddenly distended and its remarkable pigments and patterns are for a few seconds at a time displayed to their full expanse before the hen.

Figure 1. Wattle of Western Tragopan (*Tragopan melanocephalus*).
Figure 2. Wattle of Cabot's Tragopan (*Tragopan caboti*).
Figure 3. Wattle of Temminck's Tragopan (*Tragopan temminckí*).
Figure 4. Wattle of Blyth's Tragopan (*Tragopan blythi blythi*).
Figure 5. Wattle of Satyr Tragopan (*Tragopan satyra*).

XI. TEMMINCK'S TRAGOPAN *Tragopan temminckí* (J. E. Gray) 66

Painted by A. Thorburn.

Although the most widely distributed, yet this is the least known of its group. Its home is in the great heart of China, far from the beaten trails which all travellers follow, and among the oaks and rhododendrons of high altitudes. This Tragopan spends much of its time among their gnarly branches, feeds on their buds, and fashions its nest in the dense foliage. Few white men have seen it wild, but the Chinese frequently trap it. In the pattern of the curious throat wattle (Plate X, Fig. 3), the Mongolians have found a resemblance to one of their written characters; so to them the Tragopan is *T'so-che*, the bird of longevity.

XII. HIMALAYAN IMPEYAN PHEASANT *Lophophorus impeyanus* (Latham) 72

Painted by C. R. Knight.

From Afghanistan to Bhutan, along the whole range of the Himalayas, the Impeyan makes its home. Only the Blood Pheasant live at a greater altitude. From one to three miles

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above the sea, the Impeyan feeds and sleeps and nests. There is beauty to be found in both the cock and the hen, but the colouring of the hen is the umber of dead leaves and the smooth brown lichens, while the cock is a living mirror of iridescence. Yet life is possible to both amid the same surroundings; they face the same problems, make the same fight for existence in the face of dangers which threaten from the mountain slopes and from the clouds above them. And each year they rear their broods, which marks the success of their long battle against great odds. In this, they are but repeating the life of the generations before them; for the Impeyan chain is a long one. It reaches back unnumbered years to that mysterious time before the first men appeared, and the first links were formed long, long before human beings were present to watch and marvel at the progress of this slow but courageous evolution.

XIII. NEST AND EGGS OF THE IMPEYAN PHEASANT 84

Photograph by William Beebe.

At the base of an ancient, weather-beaten stub, half hidden in a mass of Himalayan ivy and maidenhair fern, a hen Impeyan had made her nest. She would never have been revealed had not a crested titmouse discovered and scolded her. In the cool air of these high Garhwalese forests, I watched the bird day after day. During her brief absence, I photographed the two great spotted eggs. The succeeding day I surprised a group of bandar-log—the great gray langur monkeys—and one of them had stolen the spotted eggs and was climbing up a slanting tree-trunk. The lives of the two young Impeyans were thus snuffed out; the spring courtship, the battles of the cock, the care on the part of the patient mother, all had been of no avail.

XIV. SCLATER'S IMPEYAN PHEASANT *Lophophorus sclateri* (Jerdon) 92

Painted by G. E. Lodge.

The least known of all the Impeyans is this curly-crested bird, clad in shimmering gold, green, and blue iridescence. Until now, only the wild tribes of Aborland have known where to find it, and the few skins in our museums have been secured by them. After a day of difficult exploration, I found three of the Impeyans deep in the wilderness of northern Yunnan. One I secured, and the other two boomed away over the bamboos, far off into the distant valley. Their haunts are so well guarded by savage tribes that it may be impossible to see them before the birds become extinct. So limited is the region they inhabit, so narrow are the upper ridges on which they make their home, there can be but few of them alive in the world.

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XV. YUNNAN HOME OF FOUR PHEASANTS . . 102

Photograph by William Beebe.

Climbing upward from a cool, dark ravine in northern Yunnan, I passed through zones of moss-hung oaks and rhododendrons to frosted, stunted willows and dwarf bamboos. Looking back down the forest-covered slopes, I saw three White Eared-pheasants step out into a glade. They watched me, and they watched a great black eagle which hung high overhead, and they stood poised so that they could dash to safety into the undergrowth. Finally, a mist drifted across the valley, a wisp of clouds as white as the birds themselves. Swiftly as it had formed, it dissolved again, and when it had passed, the pheasants had vanished.

Descending to the spot, I found their tracks at the foot of a gnarled-rooted trunk amid a tangle of dying jack-in-the-pulpit and forest débris. Within the limits of this photograph I found and studied Lady Amhersts along the mountain streams, Temminck's Tragopans, and, not far away, Kuser's Blood Pheasant.

XVI. BROWN EARED–PHEASANT *Crossoptilon mantchuricum* (Swinhoe) 110

Painted by G. E. Lodge.

On a cold day in early April, on a tundra-like expanse far beyond Pekin, I watched this flock of Eared-pheasants drift past. Around my umbrella tent, tiny voles appeared whenever the sun shone; buntings and wagtails dashed down for a few minutes, feeding; small, timid musk-deer walked slowly downward toward the stream at the valley bottom. The pheasants fed as they moved, gathering about some tuft of grass and uprooting it with their stout beaks to search the loam for grubs and tubers. They did not suspect my presence, they uttered no sound, and in a few minutes they had passed out of my sight forever.

XVII. WHITE EARED–PHEASANT *Crossoptilon tibetanum* (Hodgson) 116

Painted by G. E. Lodge.

Although clad dominantly in white, these pheasants do not live in the snow, but retreat before the early storms of winter downward into the valleys. Their home is in southeastern Tibet and central China, among the wildest mountains. Except in the breeding season, they are gregarious, living in flocks and often associating intimately with the tiny musk-deer. They keep in thick cover and are ever on the watch for the great eagles which swoop down upon them with-

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out warning. The Tibetans of this region are very superstitious and allow no animals and birds to be killed when they can prevent it. So the race of "Shaggas," as they are called, has a good chance for existence as long as the lamas wield this kindly influence.

XVIII. WHITE-CRESTED KALEEGE *Gennaeus albocristatus* (Vigors) 122

Painted by G. E. Lodge.

Over the great spruce forests of Kashmir and Garhwal chilly winds come roaring down from Tibetan snow-peaks. But among the ferns and moss-muffled bases of the trees the air is still, and fragrant with the odours of many forest flowers. Here the White-crested Kaleege live, here they scratch for grubs and tubers, court their mates, make their lowly homes, and at twilight roost upon high, swaying branches. Before dawn, a few will succumb to the sudden attack of marten or weasel; the others awaken in early morning, send forth their challenge, and begin anew their daily life.

XIX. SIKHIM—IN THE HAUNTS OF THE BLACK-BACKED KALEEGE 132

Photograph by William Beebe.

These kaleege are confined to a tiny bit of the earth's surface in Sikhim and Western Bhutan, but dangers are numerous, and they are on guard every moment of the day, watching for snakes, civets, or even little mild-mannered mountain bears, who know how delicious a meal these birds furnish. They live in the depths of the forests where the damp moss hangs from bark, twigs, and leaves, and the hoofs of deer and the toes of pheasants sink deep into the soft mould.

XX. BLACK-BREASTED KALEEGE *Gennaeus horsfieldi* (Gray) 140

Painted by G. E. Lodge.

Among the moss-hung forests and the bamboo thickets of northeastern Burma, I first heard the bubbling murmur and cackle of this pheasant. In pairs or in small flocks, they work slowly through the ferns and over fallen logs, their scarlet facial skin glowing like the ginger blossoms beneath their feet. A grouse-like whirr of their wings, or the sound of scratching among dry leaves, often indicated their presence, but they were always on the alert, watching and listening for danger with keen eyes and ears.

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XXI. LINEATED KALEEGE *Gennaeus lineatus* (Vigors) 146

Painted by G. E. Lodge.

A night spent in slumber on the branch of a tree; an early morning drink and search for food; a midday siesta; again a feeding period, and in the cool of early evening a leisurely stroll to water and thence to roost; such is the epitome of the daily life of the Lineated, as well as of most other pheasants.

They can be located often by the sound of their scratching among leaves, or the low, undertone clucks and chuckles as they search for grubs or succulent tubers.

XXII. CHINESE SILVER KALEEGE *Gennaeus nycthemerus* (Linnæus) 150

Painted by C. R. Knight.

This, the beautiful bird of "day and night," ranges across the whole of south China, from the Burmese border almost to the seacoasts of Fokien. It is found in open forest, on clear, rolling hills, and along swift rivers. While the Silver Kaleege is common in captivity, yet no white man has ever seen the nest and eggs of a wild bird. Enormous numbers were formerly killed for their plumage, and now the Chinese have developed a taste for their flesh and trap and shoot the bird extensively.

XXIII. EDWARD'S KALEEGE *Gennaeus edwardsi* (Oustalet) 154

Painted by G. E. Lodge.

Although known for a quarter of a century, little has been recorded of the habits of this very distinct and beautiful pheasant. Specimens have been obtained from the province of Khang-tri in Annam.

XXIV. SWINHOE'S KALEEGE *Gennaeus swinhoii* (Gould) 156

Painted by G. E. Lodge.

In the deep inland forests of the mountains of Formosa this splendid bird makes its home. None but the natives has observed or captured it, and there is no record of the nest and eggs being found, but the bird lays readily in captivity and is not rare in zoological gardens.

XXV. RIPPON'S HYBRID SILVER KALEEGE . . 160

Painted by G. E. Lodge.

This bird has been given a name (*Gennaeus ripponi*) but no two are alike, and there is no doubt but that it repre-

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sents individuals which have a very large percentage of the blood of the Silver Kaleege, with a relatively small amount of Black-breasted ancestry. I found a typical bird in a flock of eleven in northern Burma. They showed great variation, and could not be classified with any specific exactness, and only one approached the description of this hybrid.

XXVI. MALAYAN CRESTLESS FIREBACK *Acomus erythrophthalmus* (Raffles) 164

Painted by G. E. Lodge.

These birds are exceedingly pugnacious, and I have even seen hens fighting madly with each other. Both sexes are armed with spurs. They live along the small creeks which wind through the low jungle, and haunt the water holes of the buffalo. The sound of warning or challenge, uttered when two cocks threaten each other, is a deep, hoarse drawl, almost a snarl, sounding as much like a small cat as a pheasant.

XXVII. HAUNT OF THE CRESTED AND CRESTLESS FIREBACKS 170

Photograph by William Beebe.

In the tropical countries of Malaysia and the East Indies these pheasants live in dense jungle, where they have access to open clearings, or at least the trails made by wild animals. Here they strive to escape their enemies—snakes and civet cats—which lie in wait or creep silently through the undergrowth.

XXVIII. SIAMESE CRESTED FIREBACK *Lophura diardi* (Temminck) 174

Painted by G. E. Lodge.

Sportsmen in Siam who sit up on the lookout for tigers sometimes see this magnificent bird step out from the jungle and walk slowly past, its fiery golden back flashing even in moonlight. It lives in dense bamboo thickets, and comes into more open jungle, often near the banks of a river, to feed and drink. It is as easy to trap as it is difficult to observe, and the Siamese bring many to the Bangkok market.

XXIX. MALAYAN CRESTED FIREBACK *Lophura rufa* (Raffles) 176

Painted by G. E. Lodge.

A single glimpse of these birds after many hours of nerve-racking search is the usual reward. They are very

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shy and forever on the alert for the slightest rustle of twig or leaf, but their beauty is worth the longest stalk and the most wearisome wait. They are found in pairs or in small families, and when alarmed go off with a headlong rush through the underbrush in preference to attempting flight.

XXX. WHITE-TAILED WATTLED PHEASANT *Lobiophasis bulweri* (Sharpe) 184

Painted by G. E. Lodge.

Perched in a tiny half-cave in the rocky side of a deep gorge in central Borneo, I watched the flying lizards, gorgeous as butterflies, pass swiftly from tree to tree, while long-tailed paradise flycatchers swooped after flying insects, in and out of the shadows overhead. Without warning there stepped into view three chevrotain, the tiniest of jungle deer, and with them a quartet of White-tailed Pheasants, one a fully adult male with great spreading tail sweeping the ground. They walked slowly beneath me and, still unalarmed, passed from view in the direction of the river.

XXXI. RED JUNGLEFOWL *Gallus gallus* (Linnæus) . 196

Painted by G. E. Lodge.

To the human race, this is the most important wild bird living on the earth, for it represents the ancestor of all varieties of domestic fowl. It ranges from the border of Kashmir to Singapore, and is found in the wildest regions, as well as close to native villages, with the fowls of which the wild birds frequently cross. Its crow is bantam-like, and sounds strangely out of place when heard in deep jungle. These Junglefowl are usually monagamous, and the hens lay from five to eight eggs.

XXXII. BURMESE HOME OF THE RED JUNGLEFOWL 220

Photograph by William Beebe.

In northern Burma I found the wild Junglefowl coming out to feed along the trails which lead from village to village. They cluck like hens and scratch among the turf, and take dust baths exactly like our domestic fowl, and I often found it difficult to make myself shoot them, as the action seemed like unsportsmanlike slaughter in a barnyard. At the first hint of danger, however, they lower their tails and run headlong, like pheasants, into the nearest underbrush.

The nests are hidden away in the clumps of bamboo, a mere hollow being scratched out, or the eggs laid on the dry leaves.

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XXXIII. CEYLON JUNGLEFOWL *Gallus lafayetti* (Lesson) 242

Painted by G. E. Lodge.

In the dusk of early dawn the Ceylon Junglefowl begin to leave their roosts and make their way through the thorn thickets to open glades. Here they send forth their loud crow, *chuck-George-Joyce!* Here they battle with each other, armed with sharp spurs, and here they scratch vigorously for worms and grubs. Sometimes a dozen birds can be heard crowing in various directions, but after sunrise they cease, and with the coming of heat the birds seek shelter under the dense foliage.

XXXIV. JAVAN JUNGLEFOWL *Gallus varius* (Shaw and Nodder) 248

Painted by G. E. Lodge.

Early in the morning, before the sun appeared, picking my way quietly through a tangle of cactus on the low-lying Javan coast, with a shrike sitting in every tree, with bulbuls singing from every thicket, there would come across the valley a sharp, crisp, virile *chaw-au-auk!* the challenge of the Javan Junglefowl. With erect, iridescent comb and plumage glittering with dew, the splendid wild fowl was leading his family from their roosting place to the nearest pool of water for their sunrise drink.

INTRODUCTION

THE readers of such a work as this are attracted either because of the pleasure they find in the beauty and grace of pheasants; because of the interest of keeping them in captivity or on preserves; or because of the enthusiasm of a sportsman. With this in mind, I have arranged the text so as to afford equal facility to all these varied interests.

The natural history of the pheasants is the dominant theme: their wild life and the part they play in the scheme of nature in their Asiatic haunts. In the present volume, I have written a brief synoptic account of pheasants as a whole, reserving the details of their care in captivity for a chapter in the concluding volume.

In the preparation of any work of a monographic character, there comes to the writer, sooner or later, the feeling that his part in it is small indeed compared to the great company of others who have aided him. From the philosopher who passed away many decades ago, but whose written word is still an inspiration, to the naked Dyak who proudly comes bearing a trapped bird to Tuan —a gift, not for money, but as from one hunter to another— between these extremes there extends a long roll whose aid is given freely and for sheer love of the wilderness folk. In fact, nine men lost their lives in the course of this expedition.

The friendship and unselfishness of Colonel Anthony R. Kuser throughout the undertaking are not to be measured by praise or verbal gratitude. It is my hope that the work itself may be a token of appreciation. I am indebted to Dr. William T. Hornaday, Professor Henry Fairfield Osborn, Madison Grant, Esq., and to the members of the Executive Committee of the New

York Zoological Society for leave of absence and unfailing interest and help; and to Major Henry Jones of London, whose gift of a set of paintings of the genus *Phasianus* was as generous as it was valuable. Among the host of friends throughout Europe and the Far East, two names stand out, both heads of museums, who welcomed an American ornithologist and provided him with every available aid in their power. These are Dr. Arthur Willey of Colombo, Ceylon, and Dr. Nelson Annandale of the Indian Museum, Calcutta.

For seventeen months I travelled in Asia and the East Indies, studying the pheasants in their native haunts, and was fortunate enough to find and study every one of the nineteen genera of these birds which I recognize in this work.

In the eastern Himalayas, from the terai of Nepal, Sikhim, and Bhutan to the southern border of Tibet, I found the Black-backed Kaleege, the Impeyan, the Satyr Tragopan, and, high up near the snows, the Blood Pheasants. Here I travelled on horseback and afoot and worked with the aid of sturdy Tibetan men and women, of Bootias, and of Nepalese shepherds. Far to the west, among the spruces and deodars of Garhwal and Kashmir, I took horse and dandy and tonga and found wild hillmen of little-known tribes waiting to help in the search. Here again I met the royal Impeyan, and in addition the White-crested Kaleege, the Cheer, the Koklass, and the Western Tragopan. The Indian Peafowl and the Red Junglefowl rewarded days of labour in the terrible heat of the Plains, and the same Peafowl but another Junglefowl in Ceylon, where I voyaged in outrigger canoes and lumbering bullock carts, and hunted with gentle-faced Tamils and hideous Veddahs. In Burma appeared the Barred-backed and the Peacock Pheasants, Horsfield's Kaleege, the Lineated and the Silvers; and along the border of Tibet and Yunnan, the rare Sclater's Impeyan, Temminck's Tragopan, and a new species which I have called Kuser's Blood Pheasant. Here I saw the White Eared-Pheasant and the Lady Amherst along the mountain torrents, and here the men were as wild as the pheasants, and the Lolos and Kachins and mongrel Chinese rolled

down rocks on my trail by day, and shot poisoned arrows by night at my Ghurka sentries.

In the Malay States, in the humid, leech-ridden jungles of Selangor, Penang, and Johore I found the Ocellated and the Great Argus, the Green Peafowl, the Crested and the Crestless Firebacks; and, higher up among the mountains, the Bronze-tailed Peacock Pheasants. Here were no natives to help—the Malays being too slothful and the Sakais too timid and wild—and my memories of those heartbreaking but happy all-day tramps are solitary ones. From end to end of Java I searched for the one-wattled Junglefowl, to find it at last at very sea level. Then, wonderful weeks in a Dyak war canoe, through forests and over rapids, took me to the heart of Borneo, to the home of the White-tailed Pheasant and the dancing arena of the Gray Argus. Three separate expeditions were made into the interior of China; the first through Fokien by houseboat; then up the Yangtse; and the final one through the plague zone and by palanquin and horse out into the Gobi Desert region beyond Pekin and the Great Wall. These brought me unforgettable glimpses and unexpected knowledge of the true Ring-necked Pheasants, of the Chinese Silver, Cabot's Tragopan, the Reeves, and the Brown Eared-Pheasant. A Japanese reconnaissance revealed all the species of pheasants living on those islands, the Green Versicolor, and the Copper in its various subspecies.

I should never have undertaken to write such a work as this of any group of birds that I had not studied in their wild home. And now that I look back on the splendid pheasants in their varied surroundings, I think of them as friendly fellow living organisms on this earth, whose companionship has brought both joy and sorrow, but whose lives have always been a stimulus to hard, honest work: the toil of the explorer and the field naturalist, with extremes of exaltation and of physical pain which no dweller in cities can ever realize.

Handicapped as the pheasants are by long tails, decorated wings, ruffs, and most brilliantly coloured feathers, covering flesh beloved by every carnivore from marten to man, these

wonderful birds have found a place for themselves on mountain, plain, and island, and by exercise of the keenest of senses, have outwitted their foes and overcome physical characters which long ago would have doomed less virile groups of birds to extinction.

My survey of their haunts made me pessimistic in regard to their future. In India, there seemed a slight lessening among the natives of the religious regard for wild life which has been such a boon to the birds in this densely populated part of the world; in the Malay States and elsewhere, great rubber plantings threaten the whole fauna of some places; in Nepal and Yunnan, the plumage hunter is working havoc; in China, the changing diet from rice to meat and the demand in Europe for shiploads of frozen pheasants have swept whole districts clean of these birds. And everywhere unwise and unseasonable shooting and trapping by the natives have told heavily. For some of the pheasants there seems but short shrift.

The far-flung influence of war was for the pheasants a breathing space, but this may be the last pause in the slow, certain kismet which, from the ultimate increase and spread of mankind, must result finally in the total extinction of these splendid birds.

WILLIAM BEEBE.

PHEASANTS:
THEIR LIVES AND HOMES

PHEASANTS
THEIR LIVES AND HOMES

A BRIEF GENERAL ACCOUNT

TWENTY-FIVE centuries ago, long-tailed, ground-loving birds of brilliant plumage were abundant along the banks of the rivers flowing from the Caucasus Mountains into the Black Sea. Æschylus tells us this district was called Colchis and the principal river the Phasis. Both the Greeks and the Romans knew these birds, esteeming them for their flesh, and calling them Φασιανὸς ὄρνις or *Phasianus avis*—the bird of the Phasis. Even to-day we speak of them and their allies in the almost similar word—Pheasant. The root remains the same, whether as a Frenchman we say *Faisan*, as a German *Fasan*, or as an Italian *Fagiano*.

Pheasants were painted and embroidered on very old Chinese paper and silk tapestries perhaps a thousand years before the Greeks knew of them—pheasants of other kinds, such as the Golden and the Silver. But our knowledge of these early records is very vague.

Of even less definite report, though of far greater interest, are the giant pheasants which flapped their wings and crowed, nested, and laid their eggs in the strange old Miocene days, when mammals, from shrews to mastodons, were in their prime. This was when the sabre-toothed tigers and huge primitive dogs pursued tapirs and the tiniest of deer over what is now the pleasant southland of France, from the Garonne to the Pyrenees. Forever lost to us are the colours and patterns and habits of these pheasants of old, but from their bones we know that some of them were larger than any living to-day. These and a few

more recent fragments are all the evidence we have of the countless generations of birds which preceded the magnificent pheasants living at present on the earth.

It seems probable that the more immediate ancestors of the pheasants lived in Asia, perhaps near the Himalayas, but during the Miocene a wave of life flowed from Asia into Europe, and the fossils which have been found were doubtless members of this invasion. In the course of time, these pheasants died out in Europe, and all those which are now found there have been transported from Asia by man.

Pheasants are members of the great group of gallinaceous or fowl-like birds, a group which has been recognized with more or less precision since the time of Linnæus. The earlier naturalists knew them as Rasores, or scratching birds, from their universal habit of digging among leaves or into the ground with their claws and uncovering the seeds and grubs and worms upon which they feed. But this was too superficial a character to hold any group of birds together. Many unrelated birds, such as our white-throated sparrow, could qualify as members on this criterion.

Considering the group as a whole, the Galliformes, or fowl-like birds, are unquestionably low in the scale of avian evolution. In spite of their fine feathers and elaborately specialized plumage characters, neither anatomically nor mentally are they of high rank. They appear also to occupy a rather central place, near the focus of many lines of avian radiation. Of still more arrested development and showing a certain degree of relationship is the strange hoatzin, which leads dimly but certainly in the direction of the touracous and cuckoos. The hemipodes are another outlying group, evidently a terminal branch. The sand grouse still more certainly point the way from the Galliformes to the pigeons.

There has been little attempt, and that of a wholly artificial character, at classification of the Pheasants on any scale higher than genera, and the most thorough search I could make revealed no consistent differences in either bones or muscles, length or number or colour of feathers. Finally, I came upon a char-

acter, external and transient, but in rhythmical return and in consistency well worthy of consideration. I found that each year there was a regular sequence in the moulting of the tail feathers and that this held good throughout the life of the bird, the individuals of the species and the members of the genus. In addition, it agreed closely with the assumed relationships which had heretofore been taken for granted.

Thus I have distinguished the following groups, farther than which it is impossible to go in linear classification.

Subfamily PERDICINAE (Quail-like) [Tail moult centrifugal, from the central feathers outward.]	Blood Pheasants	*Ithagenes*
	Tragopans	*Tragopan*
Subfamily PHASIANINAE (Pheasant-like) [Tail moult centripetal, from the outer feathers inward.]	Eared-Pheasants	*Crossoptilon*
	Impeyans	*Lophophorus*
	Kaleege and Silvers	*Gennaeus*
	Crestless Firebacks	*Acomus*
	Crested Firebacks	*Lophura*
	White-tailed Pheasant	*Lobiophasis*
	Junglefowl	*Gallus*
	Koklass Pheasants	*Pucrasia*
	Cheer Pheasants	*Catreus*
	True Pheasants	*Phasianus*
	Long-tailed Pheasants	*Syrmaticus*
	Golden and Amherst	*Chrysolophus*
Subfamily ARGUSIANINAE (Argus-like) [Tail moults third from the central pair outward and inward.]	Bronze-tailed Peacock Pheasants	*Chalcurus*
	Peacock Pheasants	*Polyplectron*
	Ocellated Argus	*Rheinardius*
	Argus Pheasants	*Argusianus*
Subfamily PAVONINAE (Peafowl-like) [Tail moults sixth from the central pair outward.]	Peafowl	*Pavo*

There is a certain amount of variation in the moults of the Argusianinae and Pavoninae which tends to amalgamate these two groups, but for the present I shall keep them separate.

DISTRIBUTION

At the present day, the natural distribution of pheasants is confined to Asia and certain of the East India Islands. They are found from the coast of the Black Sea in the west to Japan in the east. A line extending eastward from the northerly shores of the Caspian, the Aral Sea, Lake Balkash, and northeastern Manchuria delimits their northern haunts. Throughout most of Persia, Afghanistan, Mongolia, and all except eastern Tibet, pheasants are unknown; while they are generally distributed throughout Korea, Japan, India, Ceylon, China, Manchuria, Burma, Siam, Indo-China, the Malay Peninsula, Sumatra, Borneo, Palawan, Java, Bali, Lombok, Sumbana, and Flores. This corresponds very closely with the primary faunal division of the Oriental Region, southward to Wallace's Line. On the north, however, the pheasants extend over the south Asiatic portion of the Palearctic Region.

In the Himalayas, the Blood Pheasant has been observed at an altitude of sixteen thousand feet, more than three miles above the level of the sea, while in Java I have seen Junglefowl feeding in tide pools at the very edge of the breakers. Unlike members of the Perdicinae, such as the common quail of the Old World, which migrates from Europe to Africa each autumn, pheasants are in no sense birds of passage. As a rule, they are not even great wanderers, exceptions being the Silver and Reeves, which occasionally disappear from an entire district for a year or more, temporarily changing their nesting as well as their feeding haunts. In the north, there is a well-marked seasonal migration due to the advance of the deep snows of winter. In the tropical zone of distribution, more or less regular seasonal movements occur and may be caused by either of two reasons, the first of which is the fruiting of certain trees providing a local abundance of food, to which the pheasants of the surrounding country flock in large numbers. An excellent example is the Ceylon Junglefowl, which shifts into the hills in great numbers when the nilloo berries ripen. A second stimulus to changing ground is the



MAP SHOWING THE DISTRIBUTION OF THE PHEASANTS

breeding season, when the birds leave their more open haunts and those near villages, and native fields, and betake themselves to the deepest part of the jungle to make their nests. In the tropical species a regular diurnal movement is very general, due to temperature, the birds feeding morning and evening more or less in the open, and retiring to the dense shelter of shady undergrowth to spend the heat of the day.

Summing up the general distribution, there seems little doubt but that the pheasants are essentially Northern in origin, and mountainous rather than low-living. Progression southward in every instance, both specifically as well as generically, is correlated with increasing specialization, and consequently we may assume that it also indicates a lengthening of the distance from the place of origin.

COMPARATIVE ABUNDANCE

Only in the case of Peafowl in India, in places where the birds are held sacred, and in the ricefield pheasants of isolated parts of China, can any member of the pheasants be said to be really abundant. Enemies are too numerous, and birds of such considerable size are too conspicuous to be able to maintain themselves in great numbers in any locality. Yet, in parts of the Himalayas far removed from mankind, I have sometimes seen five species and several dozen individuals in the course of a day's tramp. And the sound of a gun would often enable one to locate (vocally and, of course, temporarily) every cock pheasant within earshot.

The comparative sociability gave me, at certain seasons, fairly accurate data to estimate the pheasant population of circumscribed districts. The Argus seems the most unsociable of all his kindred. For month after month, the birds wander through the jungle or keep their dancing grounds in order, associating with none of their kind, perhaps never even seeing another Argus until the breeding season, and then only a solitary rival cock or two to vanquish in combat, or a hen attracted by the loud nocturnal calling. It would seem as if some of the Kaleege must fairly

breed in colonies, so fond are they of one another's company. I have seen them day after day feeding, wandering about, and roosting in large flocks. The regularity of movement of these flocks makes it an easy matter to form a comparatively accurate census of any single locality. After the breeding season, pheasants in a wild state are quite tolerant of one another, but even when in flocks there seems to be a pretty definite recognition of caste, might always being right. It is interesting to note that the more jungle-loving, tropical pheasants are essentially solitary. This is due, perhaps, to the multiplicity of terrestrial enemies and the difficulty which a flock of birds would have in escaping any sudden onslaught in the dense undergrowth.

VOICE

Pheasants have been generously endowed in the matter of voice, and, indeed, in their life economy the sense of hearing is second in importance only to that of sight. The gamut in feeling is great; that of latitude no less. The loud crow of chanticleer has gathered strength under the protection of mankind, and follows daylight around the earth wherever mankind has made a home. The nocturnal challenge of the Ocellated Argus has been heard by perhaps a scant half dozen white men, and only on a few isolated *bukits* of the Malayan range. Mingled with the roar of the avalanches which crash down from the Himalayan glaciers, we may hear the *seep! seep!* of the Blood Pheasant and the louder call of the Impeyan. In the warm wind blowing from the sea off the Javan coast comes the regular boom of breakers and the high, broken crow of the Green Junglefowl.

To the sportsman or field naturalist in search of creatures other than pheasants, the chief vocal memory of these birds must always be the shrill cackle of terror which so often accompanies sudden alarm and headlong flight. Using still-hunting and tent observation as my methods of study, I was able to enter more intimately into the life of these birds and listen to their more composed small-talk. The varied utterances of the barnyard fowl are well known, and, with the exception of

the more solitary inclined species of wild pheasants, I feel certain that all have an equally varied vocabulary. Whether watching these birds from my umbrella tent or an ambush among the branches, or observing those in pheasant aviaries, this correlation between natural social instincts and volubility invariably holds good. A pen full of Peacock Pheasants is usually silent; a flock of Silvers keeps up a running comment audible many yards away. So deeply implanted is this trait that these latter birds talk to themselves when quite alone. In a cage, I have seen a Kaleege contentedly murmuring to himself by the hour, and in some isolated patch of jungle, I have watched one of the same group scratching vigorously for his own delectation and unintermittently voicing his pleasure or impatience at the results.

In the life histories of the various species, I have entered into details which I shall not repeat here. Briefly, we may recognize several general divisions of utterances. First in importance is the crow of the cock, which may be both a challenge to rivals and a call to females within earshot. Then there is the alarm note, often uttered by both sexes—by a cock to his harem, or by a hen to her brood. With modifications, this may serve to express a considerable variety of emotions; when less vigorous, it may indicate suspicion, and when agonizingly increased, becomes the scream or cackle of terror. As the vocal antithesis of this we have in many of the social species the content note, which is given under many conditions, but only when the birds feel quite safe, whether feeding, wandering slowly about, or preparing to roost. The call note is very unlike any of the others, and is heard only among gregarious pheasants, and chiefly when a flock has been scattered and is collecting again. The call to safety of a hen to her brood is a very gentle form of the alarm note, repeated rapidly. Occasionally in captivity, and rarely in a wild state, I have heard the most pleasing of all their utterances. The evening song of the pheasant is an elaborate variation of the content song, uttered from the branch to which the bird has flown to roost for the night, but before it has settled down.

A Tragopan, a Golden, two Kaleege, and a Ring-necked Pheasant have thus sung to me, and these experiences are among the most memorable in my study of birds.

An entire chapter might be written on the crows and challenges of pheasants. Like most of the activities of these birds, the crowing takes place chiefly at daylight and dusk, especially in the tropics. In the mountains, desultory challenging may go on all day. The call of the Tragopan is more like the mournful wail of the Panda than the utterance of a bird. The broken crow of the wild Red Junglefowl differs not at all from that of a bantam, while the varied calls of the other three species are a vocal protest against their being considered in the line of descent of our domestic fowl. The isolated character of *Pucrasia* is enhanced by the individuality of their crow, which gives rise to their onomatopoetic name, Koklass.

Another reliable character emphasizing the close relationship of the Kaleege, Silvers, and Firebacks is their voice. It can neither be written nor adequately imitated by the human larynx. There comes to the ear a low guttural mumbling or rumbling, breaking suddenly into an abrupt, long-drawn-out, staccato, liquid gurgle. The four genera in this group, ranging from the White-crested Kaleege in Kashmir to the White-tailed Bornean bird, all have this peculiar mode of expression. It has so often come to my ears as the climax of many hours of concentrated watching that I can never hear it without profound emotion. Next to the cosmopolitan crowing of the domestic cock, the voice of the so-called English Pheasant is, perhaps, most widely known. Whether heard on the uplands of England, on the steppes of the Caucasus, among the ricefields of Japan, or in our own American fields, the sudden, broken, trisyllabic note can never be mistaken.

It is difficult to overestimate the importance which the voice of these birds plays in their lives. With many, it is so potent that its imitation, even clumsily achieved, offers the easiest method of enticing them within gunshot. To the Argus more than to any other, the call for a mate must be of vital importance, for not only does it call in the night, from the depths of a

tangled jungle, but, as we shall see, it is localized, bound to one spot, by the exigencies of its habits of life, so that without the constant, far-reaching announcement of its presence and needs, the race must become extinct in one generation. But the crowning mystery of these wonderful aërial vibrations, upon which the very existence of the race of Argus depends, is the avoidance of the enemies to whom the loud call must be as significant as it is to a rival cock or an expectant hen. Fraught with all the deepest meaning of animal life as it must be to the latter, we, with our human ears, can never call the crow of a pheasant a sweet sound. The law of compensation operates here as elsewhere, and the difference between a Peacock's plumage and its voice has become proverbial. A more raucous, penetrating sound would be hard to imagine, yet it is perfectly adapted to its function in the wild life of the bird.

The gregarious nature of pheasants has brought into play another method of communication, not vocal but mechanical. This is the wing drumming. In no pheasant is this æolian language so highly developed as in our ruffed grouse, where the alar reverberations almost usurp the voice in challenge and mating call. In several groups of pheasants are found brief, unskilful wing beating, or rather clapping, as in the Junglefowl, given usually just before or after crowing. The best-known instance is the domestic cock, who claps his wings smartly together over his back before uttering his rather perfunctory crow. In the True Pheasants, this clapping gives place to a whirring, and in the Kaleege and Silvers is found the highest development of this method of communication. At the breeding season, the cocks challenge and also summon the females by a series of loud, deep reverberations, produced by vibrating the wings with great rapidity throughout a narrow arc of a circle, the bird standing erect, the wings half raised and half extended.

But even after the period of nesting has begun, this wing whirring does not cease, and, in fact, is continued throughout the year. By means of it, the birds are able to express many emotions and even shades of feeling, to convey suspicion, warning,

A Tragopan, a Golden, two Kaleege, and a Ring-necked Pheasant have thus sung to me, and these experiences are among the most memorable in my study of birds.

An entire chapter might be written on the crows and challenges of pheasants. Like most of the activities of these birds, the crowing takes place chiefly at daylight and dusk, especially in the tropics. In the mountains, desultory challenging may go on all day. The call of the Tragopan is more like the mournful wail of the Panda than the utterance of a bird. The broken crow of the wild Red Junglefowl differs not at all from that of a bantam, while the varied calls of the other three species are a vocal protest against their being considered in the line of descent of our domestic fowl. The isolated character of *Pucrasia* is enhanced by the individuality of their crow, which gives rise to their onomatopoetic name, Koklass.

Another reliable character emphasizing the close relationship of the Kaleege, Silvers, and Firebacks is their voice. It can neither be written nor adequately imitated by the human larynx. There comes to the ear a low guttural mumbling or rumbling, breaking suddenly into an abrupt, long-drawn-out, staccato, liquid gurgle. The four genera in this group, ranging from the White-crested Kaleege in Kashmir to the White-tailed Bornean bird, all have this peculiar mode of expression. It has so often come to my ears as the climax of many hours of concentrated watching that I can never hear it without profound emotion. Next to the cosmopolitan crowing of the domestic cock, the voice of the so-called English Pheasant is, perhaps, most widely known. Whether heard on the uplands of England, on the steppes of the Caucasus, among the ricefields of Japan, or in our own American fields, the sudden, broken, trisyllabic note can never be mistaken.

It is difficult to overestimate the importance which the voice of these birds plays in their lives. With many, it is so potent that its imitation, even clumsily achieved, offers the easiest method of enticing them within gunshot. To the Argus more than to any other, the call for a mate must be of vital importance, for not only does it call in the night, from the depths of a

tangled jungle, but, as we shall see, it is localized, bound to one spot, by the exigencies of its habits of life, so that without the constant, far-reaching announcement of its presence and needs, the race must become extinct in one generation. But the crowning mystery of these wonderful aërial vibrations, upon which the very existence of the race of Argus depends, is the avoidance of the enemies to whom the loud call must be as significant as it is to a rival cock or an expectant hen. Fraught with all the deepest meaning of animal life as it must be to the latter, we, with our human ears, can never call the crow of a pheasant a sweet sound. The law of compensation operates here as elsewhere, and the difference between a Peacock's plumage and its voice has become proverbial. A more raucous, penetrating sound would be hard to imagine, yet it is perfectly adapted to its function in the wild life of the bird.

The gregarious nature of pheasants has brought into play another method of communication, not vocal but mechanical. This is the wing drumming. In no pheasant is this æolian language so highly developed as in our ruffed grouse, where the alar reverberations almost usurp the voice in challenge and mating call. In several groups of pheasants are found brief, unskilful wing beating, or rather clapping, as in the Junglefowl, given usually just before or after crowing. The best-known instance is the domestic cock, who claps his wings smartly together over his back before uttering his rather perfunctory crow. In the True Pheasants, this clapping gives place to a whirring, and in the Kaleege and Silvers is found the highest development of this method of communication. At the breeding season, the cocks challenge and also summon the females by a series of loud, deep reverberations, produced by vibrating the wings with great rapidity throughout a narrow arc of a circle, the bird standing erect, the wings half raised and half extended.

But even after the period of nesting has begun, this wing whirring does not cease, and, in fact, is continued throughout the year. By means of it, the birds are able to express many emotions and even shades of feeling, to convey suspicion, warning,

fear, to summon the family or call together the scattered covey. It is a sound that in volume suggests some large and dangerous creature, and it doubtless benefits the timorous author proportionately, intimidating invisible enemies as well as communicating warning or welcome to birds of their own species within earshot. On the other hand, when the sound is imitated by a bit of whirling palm leaf or a handkerchief in the hollow of a man's hand, it becomes a fatal siren, luring the pugnacious or amorous cock to destruction. Every hue, every pattern, every habit, every character in these birds is often a two-edged sword, cutting toward both life and death.

FLIGHT AND GAIT

The pheasant wing is much like that of the quail or grouse, short and rounded, built for the quick rapid beats which carry the bird with a rush out of immediate danger. The subsequent flight is of less importance. In thick jungle it usually ends in a tree close at hand. In the open, the chances are that the birds are flushed from a mountain or hillside, and when once clear of all obstruction, the bowed wings are set and the pheasant scales swiftly downward. When the alarm is thorough, the bird will occasionally continue the rapid beating and make its way on a more or less even line straight across the valley. Usually, the bird or the flock drops to the ground a few hundred yards away and continues its course on foot.

A Reeves Pheasant has been said to make a single flight of several miles on some of the large preserves—the longest record for any pheasant of which I know. I have seen a Peacock with full-grown train rise from tall grass and fly steadily for the third of a mile, never losing altitude and finally alighting near the summit of a dead tree, some seventy feet from the ground. Unless forced to do so, pheasants prefer to escape on foot, and some species I have never been able to flush, even with the aid of a dog.

While Cheer Pheasants are, perhaps, among the weakest fliers of their family, they can probably attain the greatest speed. No

other pheasants that I have observed seem to hold the wings closer to their bodies while shooting down a steep hillside. They launch out with a few rapid wing beats and then drop like meteors, at the last moment breaking their impetus with wide-spread wings, or turning like a flash to left or right with a mighty sweep of the tail feathers.

The gait of pheasants is usually slow and dignified. The neatness with which a Golden or Silver will pick its way over rough ground is delightful to watch. An Impeyan, with its short legs and thickset body, is probably the least attractive when in motion. But the need for constant alertness and the frequent stops in order to look and listen give to almost all pheasants a carriage which is the embodiment of grace and poise.

DAILY ROUND OF LIFE

FOOD

Looking back upon the many memories of pheasants busily feeding, and upon scores of stomach contents which I have carefully examined, one item of diet dominates all others. Wherever termites or white ants occur, there they will be sought diligently by pheasants. I have counted hundreds of these insects with additional quantities of eggs and pupæ in the crop of one bird, so the total consumption must be enormous. This applies, of course, to pheasants in more tropical regions where termites abound. In the north, as among the Himalayan ranges, the chosen food, wherever available, is berries, such as those of the juniper, and the leaves of shrubby plants. Pheasants, on the whole, however, are decidedly omnivorous, and few edible objects, whether vegetable or animal, come amiss to them. In the Himalayas, when certain flowers are in bloom, the birds eat quantities of the petals.

Every important order of insect is taken without hesitation and it is remarkable what spiny creatures are swallowed whole without apparent damage to the mucous membrane. Pheasants have unusually keen vision, and among the less injured types of insects I found a certain percentage of what are considered pro-

tectively coloured ones. Twice only were the wings of butterflies distinguishable, an orange and yellow *Ixias* of medium size in one case, and again a hind wing of the giant, black-spotted, jungle butterfly *Hestia*. There is no doubt whatever in my mind that both protective coloration and mimicry are very potent agencies in preserving members of this order from destruction, the first factor operating when the insect is at rest, and the second when the birds have learned their bitter lesson. Again and again, while safely cached and watching pheasants, I have seen conspicuously marked butterflies flap slowly about within easy reach, observed but undisturbed by the birds. Three times I saw half-hearted attempts made to seize butterflies; one, a short chase after a Kallima-like individual as it snapped past, and the other two efforts, equally unsuccessful, made upon more brilliant insects.

In Garhwal, about mid-May, small moths were exceedingly abundant among the underbrush, and I found several species of pheasants feeding largely upon them. I recall taking thirty-eight from the crop of one Kaleege.

Impeyans, Cheer, and Kaleege are great diggers. The first mentioned work systematically in flocks, and like a little company of sappers and miners, excavate deep holes in the turf of the high mountain meadows. As these hollows are extended, they coalesce, and soon a large area looks as if it had been deeply ploughed. While grubs and worms are all taken, the main object of search seems to be coarse tubers which are broken up and swallowed. Strange to say, all this work is done with the stout, curved beak, the upper mandible of which overhangs and is effectively used with a pick-like motion.

In the tropics, I found Firebacks and others scratching among the shallows and pebbles of jungle brooks, devouring the earwigs and small crayfishes. Still more remarkable in habit were the Green Junglefowl on the seashore in Java, feeding on shrimps and marine worms from the small coral pools left by the tide. In several instances, I obtained recognizably new species of insects from the crops of birds, and from pheasants such as the

Argus, numbers of strange seeds of trees or shrubs wholly unknown to botanists. So attractive are certain kinds of food, berries or small fruits, that their annual ripening is sufficient to attract birds from many miles, and from low plains to considerable elevations. At such times the birds eat ravenously and become fat and unwieldy, and larger numbers fall a prey to jungle cats and other animals than when they are in better condition.

Early morning and evening are the usual feeding times. In the mountains and in the more northern haunts, however, this habit is less rigorously observed, both because the midday heat is not oppressive and because a greater amount of calorific nourishment is necessary.

ROOSTS

I was able to watch a number of species of pheasants returning nightly to their roosts, and in many more cases I found undoubted roosting places. Intensive search of these localities would almost always reveal stray feathers which afforded certain identification, while the position and amount of sign yielded data as to the location of the roosting branch and the length of time the place had been in use. Wherever possible, pheasants of all species roost in trees, usually about midway to the summit and well out from the trunk, by preference selecting a tree devoid of branches for some distance from the ground. This situation appears to be the one best suited for the avoidance of nocturnal enemies. While still sheltered from passing owls by overhanging foliage, yet the distance from the trunk enables the birds to be forewarned of scansorial enemies by the shaking of the branch. A hen may sleep close to her nearly grown brood, but usually the birds roost separately, although as many as six or eight may occupy the same tree. A prevailing wind always determines the direction which the birds face. If undisturbed, the birds return to the identical spot night after night, while well-chosen roosts may be occupied for many months.

Red Junglefowl sometimes offer a startling exception to the

non-gregarious roosting habit. As many as thirty cocks and hens have been observed roosting close together on the slanting stem of one giant bamboo. To all intents and purposes, these were wild birds, yet I accredit this habit to the infusion of blood from some village fowl, breaking down the more feral, solitary, roosting instinct.

The going to roost is no hasty matter, but one to be gone about with circumspection. The birds gather slowly and by devious routes, and there is much hesitation and small-talk before the first upward leap or flight is essayed. When the final branch is reached, there ensues much half-hearted preening of feathers, the song is perhaps given, with long stares at the surrounding jungle, or upward at the dying light in the sky. Finally, the birds settle down, and sleep with the head tucked behind a wing. More than once, I have watched birds sleeping thus, their rounded forms silhouetted against the moon, and then crept quietly back to camp, leaving them at rest. And, again, I have seen a pine marten send down a pair of Kaleege, screaming with terror as they fluttered blindly out into the darkness. I think, however, that but few dangers come to these birds while roosting. Their bodies give forth no telltale scent, and the roost is chosen with utmost care. Peacocks differ from other pheasants in that they seem not to fear the onslaught of owls. Their invariable rule is to choose a very lofty dead tree, and to spend their night singly or as many as seven together, far above the surrounding jungle, insulated from terrestrial enemies by the unclimbable, smooth, hard bole of the weathered forest giant. Junglefowl inhabiting semi-arid regions make their way to the centre of some thorn bush for protection. The Cheer appear to be the least arboreal in their roosting habits, and I found them in widely separate places spending the night on steep hillsides, under the shelter of turf or of some out-jutting boulder. The most unusual roosting sites which I observed were in Nepal and Java. On a Nepalese hillside, three Impeyans used a niche on a gigantic boulder, well out of the way of roving foxes; in Java, a family of Green Junglefowl sought shelter every night deep



PLATE II

Photograph by William Beebe

THE EASTERN HIMALAYAN HOME OF SIX PHEASANTS

(For detailed caption see page xiii)

within a coralline cave on the summit of a ridge, perching on the jagged limestone far beneath the surface of the ground.

FRIENDS AND ENEMIES

No one will deny to pheasants the possession of enemies, and could we know more of the dangers which await them on every hand, and the tragedies which overcome scores of their number every day in the year, the list of foes would be a long one. At first thought, the count of their friends would seem to be confined to their mates and broods, to all Buddhists, and to gentle Christians like St. Francis. But without giving the word friendship a broader meaning than it often holds among mankind, pheasants may be said to have real friends among the wild kindred, even though we must admit that the bonds are those of fear and hunger.

One of the commonest sights in the Far East is the constant association of cattle egrets with water buffalo. The appearance of the great blue-black beasts is almost always synchronous with a flock of the white herons. To a less universal extent we find similar conditions among many of the pheasants. In northern Burma, when one is hidden in a blind of bush on a hillside, and there come to the ear the chuckling gurgles of a band of laughing thrushes, the chances are ten to one that, following closely in the rear, is a flock of pheasants. The relation here, as elsewhere, is reciprocal. The pheasants are on their usual afternoon trip down to water, feeding casually as they go. The babblers join them, and benefit by the multitude of flying insects which are disturbed by the scratching pheasants, and which are seized in midair or after they alight. Keeping as they do to the shrubs and low branches, the babblers have a much wider outlook than the terrestrial pheasants, and are able to detect danger at a greater distance. Scores of times, my most careful stalks or quite perfectly concealed shelters were rendered useless by the sharp eyes of the smaller birds. At a single alarm note, the entire flock set up such a shrieking, cachinnatory chorus that the pheasants departed at once, and every jungle creature

within earshot was put on guard. All pheasants recognize and act upon the sudden alarm note of a bird, no matter what the species. This is a language which the whole jungle understands. But this intimacy between smaller alert birds with vocabularies as extensive and powerful as they are significant, in some localities makes it almost impossible to approach or observe pheasants, which by themselves are not especially wary. The Tragopans, because of their semi-arboreal habits, need such aid less than pheasants of other groups. Besides the Kaleege and Silver Pheasants, the Koklass and Junglefowl benefit from the watchfulness of babblers, and I have seen Malayan Peacock Pheasants warned by attendant laughing thrushes. In Burma, the black-gorgeted and the black-throated thrushes are the species which are constantly associated with the Kaleege. These pheasants seem to be particularly fortunate in this matter of wild friendships, for they are often seen with the small musk deer, the two creatures keeping together for hours at a time. Eared-Pheasants in the North, and the White-tailed Pheasants in Borneo, have also found these deer good companions. In this instance it is unquestionably a case of sense reciprocation. Both contribute equally in the matter of acute hearing, but the pheasants supply by far the keener eyesight, while to the deer every scent is significant of safety or danger. Assailants, invisible to the birds, must often be foiled by the stamping signal of the tiny deer, which sends both in headlong flight.

At the present day, man is the pheasants' worst enemy, and through no sense of retribution, for these birds do no appreciable damage to crops in any part of the East. But this danger is a matter of the last few years, and although this must inevitably be the ultimate factor of extermination, it has had nothing to do with their evolution or past life. In my searches for the birds, month after month, I came now and then upon direct evidences of tragedy, and in monographs of the various species, I have given all the knowledge at my command on this subject. In the more northern parts of their range, the leopards, lynx, jungle cats, foxes, wild dogs, martens, and weasels take heavy

toll, the martens being, perhaps, the most dreaded. The larger owls, hawk eagles, and the golden eagles are the principal foes of the air. I have known one of the latter birds to strike down a cock Impeyan and a panda or cat-bear in quick succession. In the Himalayas the chief enemies of pheasant eggs are bears, monkeys, crows, and snakes. As if this were not enough, the elements contribute their share of danger, and an occasional downpour of great hailstones smashes every unprotected shell, and is sometimes severe enough to kill the sitting hen. In the tropics there is hardly a carnivore or bird of prey of any size which does not contribute to the tragedies of the pheasants. Civet cats, jungle hawks, and serpents doubtless stand at the head of the list of tropical enemies.

PROTECTIVE COLOURING

In the matter of the struggle for success in life, the pheasants are heavily handicapped. On the one hand, they are birds of large size, edible to all flesh-eating creatures, weak-winged, practically devoid of the sense of smell, and often spending their lives where dense underbrush allows an enemy to lie in wait unperceived. Their assets are mainly two, sight and hearing. These are developed to the highest degree of efficiency, and form an aërial zone of safety within which foes only of endless patience in waiting, of superb skill in stalking, or fitted for nocturnal hunting can hope to penetrate.

Pheasants are brave and remarkably pugnacious, but their use of beak and spur is confined chiefly to contests with rivals of their own species. The hens, with their broods, usually trust to flight and instant dispersal on the part of the young birds, although the Junglefowl is said, like the grouse, sometimes to simulate a broken wing. But with pheasants, discretion is the surest solution of safety, and, as I have said, their wing power is wholly adapted for quick, instantaneous reaction to attack. But it is probable that, even without flight, many species could maintain themselves because of the great development of running powers. The tropical forms almost never take to wing,

and I have seen them even make their way, leap by leap, up to some lofty perch without ever raising wing from body. Even the better fliers add immeasurably to the chances of escape by running swiftly after they have alighted in some distant thicket. The birds show considerable discretion in the use of their powers. When attacked by foxes or, unfortunately for them, by the dogs of sportsmen, they know better than to risk a cursorial match with these fleet-footed creatures, and fly at once into the nearest tree to wait until the animals leave. Under normal feral conditions, this is a perfect defence, but men and shotguns are too recent injections into their cosmos to have taught them that it means, in the case of dogs, certain death. When slower-footed foes attack, the more sombrely coloured birds squat, or else escape is made on foot at a pace which, in actual speed, as well as in sharp turns and doubles, makes pursuit useless. The longest of tails or trains seem to offer no hindrance at such a time.

These are the defences which the pheasants offer to enemies after they are threatened or attacked. To keep from being perceived by foes keen of ear and eye is an important part of their lives. When moving about, their slow, high-stepping gait is well adapted to silent progression, and I have seen a flock of large pheasants pass close to me without the least sound to indicate their movement. In this phase of defence, too, the birds have learned to gauge the chances, and they will often scratch loudly among the dead leaves of a forest, trusting to frequent listening to warn them of the approach of danger.

The avoidance of being seen by enemies is the most interesting phase of this whole subject, and, under the general heading of protective colouration, has been discussed and argued for years by both field and museum naturalists, artists and sportsmen. This discussion, much of it futile, some of it intensely significant, has accomplished one very excellent thing, besides stimulating general interest in the meaning of colour in nature. It has shown that the satisfactory solution of any problem, either by technical science or the life histories of wild creatures, must be backed by an explanation capable of logical and philosophical proof. Then,

and then only, will it be accepted as truth by all who are interested in the discussion. This will do away with sweeping generalizations, and it will necessitate the testing of each case separately.

A concrete example of the hopelessness of any compromise occurred recently to me. The question was whether the full-plumaged Peacock is protectively coloured or not. After living in the haunts of these birds and studying them daily for many weeks, I became completely convinced that they were not protectively coloured, and that their sole desire was to detect danger at the earliest possible moment and at once fly up into the tallest dead tree they could find, to command the widest outlook. In the course of one trip along a river, I observed more than six hundred Peafowl, and, without exception, this was their method of escape. When I related this to a friend who upheld a universal protective idea, his answer was, "Think of the six *thousand* birds concealed by their plumage which you did not see!" In certain limited areas where I came to know the wanderings and range of the very individuals, I knew I had not overlooked any Peafowl, but I could offer no conclusive proof of this satisfactory to him.

When I began my study of pheasants in the field, I made up my mind to eliminate all theory and *a priori* assumption and to try to form my judgments wholly on the merits of the phenomena which presented themselves. Before I had completed my studies of a single species I perceived an entirely new point of view, and one upon which I have been satisfied to base all my assertions of protective or non-protective colouring. In many of the localities where I studied pheasants at close range, the sight of a man was rare or unknown to the birds, and their reaction at his appearance was exactly the same as took place when any danger presented itself. The pheasants' realization of their own degree of protection seems to me an irrefutable solution of the question, regardless of the fact that it must be to them wholly instinctive. I have taken this up in detail under the various species, and shall present here only a brief summary.

I found a very marked difference in reaction to danger, not

only specifically, but sexually, and even according to the age and plumage development of one sex. The Impeyan is an excellent example. If, as very seldom happened, one came unexpectedly and at short range upon a flock, the birds all took to wing simultaneously. If the alarm came from a distance, even if this was considerable, the cocks flew at once, while the females crouched for a longer or shorter time, according to the degree of danger. This I came to look for in all species where the male was noticeably more brilliant in colouring than the female. The Golden, Amherst, Silver, Kaleege, and White-tailed Pheasants all exhibit it. I received additional emphasis as to this relative amount of fear from other than direct ocular evidence. In many parts of Burma where Kaleege were abundant, females appeared to be more numerous than males, and yet the drives which the natives occasionally made resulted in the capture, in snares or deadfalls, of four or five times as many cocks as hens. This was doubtless due to the squatting, slinking escape of the brown hens, lying close until the line of beaters had passed by.

But this was only the most obvious proof which the birds themselves furnished. Not only when I alarmed the Impeyans, but when, as I watched from my blind, some animal appeared in the distance and frightened them, I noticed time after time that the half-grown males were intermediate in their reactions. Where several were in the flock, they would squat at first but usually fly soon afterward, following the more brilliant adult cocks which had already disappeared far down the slope. The brown-tailed *Lobiophasis* cocks in Borneo bore out the same delicate gradations. Government surveyors and geologists in Calcutta, and several officers who were ardent entomologists when off duty, had noticed these facts but without attaching any special significance to them. No sportsman whom I questioned, who hunted with dogs, had observed anything of the kind, obviously because, the moment a dog appears, every pheasant, of whatever species or sex, instantly flies up into a tree. Still other facts emphasized the truth of the sex distinction. In the Brown Eared-Pheasants and the Cheer, the sexes are very

similar, and it is the common experience of hunters who know these birds that both cocks and hens squat or slink quietly away upon the approach of danger. Indeed, so complete is the dependence of Cheer upon their resemblance to the turf of their mountain meadows that, when once well alarmed, it is almost impossible to flush them without a dog. They will lie close until one's foot is almost upon them. Sportsmen write of knocking them over with a stick and even catching them in the hand, a feat which would be unthinkable in the case of the more brilliant pheasants.

Here we have a test of protection which seems to have no weak spot. There is no question of our considering it with anthropomorphic vision or influencing the birds in any way. Natural selection, or trial and error, or whatever one may wish to call it, has etched into the instinctive actions of the birds, hereditary reactions to danger nicely adjusted and synchronized with the sombreness or brilliancy of the plumage. It seems to me we have here at least taken one step in the right direction of accurately gauging the relative value to the birds of the general sum of their colouring.

In a tropical jungle even brilliantly coloured birds have a better chance of being undetected than in northern forests, but the one secret of this is immobility. I have watched Firebacks at close range, and have been impressed with the way their manner of feeding contributed toward this end. They seized the morsels of food with sudden jerks of the head and neck, each peck being followed by a much longer period of immobility. Or if two or three pecks were made at one time, the bird would then straighten up and stand like a statue for a minute or more. Thus, the percentage of motion to that of immobility is very small, and the consequent chances of observation by any enemy coming into view are greatly reduced. Again, intensive watching showed a decided difference in the actions of fully adult, and partly grown birds of both sexes, the latter physically distinguishable only by their shorter spurs, but mentally by a very apparent laxness and abstraction. They were on guard only part of the

time and apparently still depended on their parents or companions for warning.

Indian Peahens trust to their comparatively sombre plumage and are far less wary than cocks, more especially toward four-footed enemies than to man, but I have seen a cock, in very tall grass, stand for a while with head and neck rigid while he watched me in the distance. The resemblance to the crooked sticks which projected here and there was perfect, but he permitted no closer approach. All truly wild Peacocks in jungle or on river banks flew at once and did not stop until they reached some lofty bare perch, where their grass-green bodies and sky-blue necks became a monochrome black silhouetted against the bright clouds.

The great Argus Pheasant, while ever ready to slip away in the opposite direction whenever its keen ears told it of some approaching danger, on occasion behaves in a manner which is the very antithesis of the Peacock. When a troop of gibbons has dashed past overhead and several of their number swung noisily down among the branches close to the ground in frantic pursuit of one another, I have seen an Argus crouch flat, body, neck, and head pressed close to the ground, its mottled plumage and crinkled tail feathers merging perfectly with the light and shadows of the forest floor. The Bornean Wattled Pheasant, with its great semicircular fan of blazing white tail feathers, never attempts to squat, and only a closet naturalist, or one who wilfully blinds himself to the evidence not only of his own but of the bird's judgment, could ever call such a bird protective in any sense.

HOME LIFE

As with all birds which live in the Northern Hemisphere, pheasants nest in the spring of the year. In the Himalayas, April, May, and June are the usual months. As we go toward the tropics, the less distinct demarcation of the seasons leads to a spreading out of the nesting period, and in the Malay States and Borneo, this extends over more than half the year. The Javan Junglefowl nests from June to November, and the Argus

from February to August. In captivity, the cock Argus sometimes calls from April to September. A species with an extensive range shows corresponding variation from north to south. Peacock Pheasants in the north breed from March to May, while farther south this extends to June. The Red Junglefowl makes its nest from February to May in the terai, March to June in Burma, and February to late August in the Malay States.

In brilliancy of colouring and elaborateness of feather ornaments, pheasants are equalled by only one other group, the humming birds. Whether or not we believe in the theory of sexual selection, there is no disputing the fact that in almost every case the brilliancy is confined to the male, and the ornamental crests, ruffs, wings, trains, and tails serve only the one function of being displayed for a brief period before one or several females. To add to the complexity of the problem, I know of not a single instance of a female showing what may be termed pleasure or even interest in the display! And yet I believe that sexual selection is a very real phenomenon, a very important one in the life of these and other birds.

The detailed discussion of this subject in the monographs of several of the species must suffice, except for a brief résumé. The method of display of the cocks is of considerable interest. This courtship display may be divided into lateral and frontal, and in this category the genera appear as follows:

LATERAL

Crossoptilon
Gennaeus
Acomus
Lophura
Lobiophasis
Gallus
Chrysolophus
Pucrasia
Catreus
Phasianus
Syrmaticus

FRONTAL

Lophophorus
Chalcurus
Polyplectron
Rheinardius
Argusianus
Pavo

In the first division, we find all the related groups with compressed, curved tails, together with those whose tails are long,

slender, and straight. In the second line, we find the familiar association of the subfamilies Argusianinae and Pavoninae and the isolated group of Impeyans. This classification is of use in giving us a hint of the more specialized genera. There is no doubt that the frontal display is the latest to be acquired, the most specialized, for in practising it the cocks invariably begin with the lateral, showing off first one side, then the other, as they approach the hen, and only finally assuming the wonderful frontal posture as a crowning climax.

The Eared-Pheasants are the only ones in which the sexes are identical in colour, although even they are distinguished by the presence of spurs in the male. In the Cheer, the cock and hen are somewhat alike, both being rather generalized in colour. But in all other pheasants there is a decided brilliancy in the male. Immediately after the breeding season there is a complete moult, and all the plumage is renewed, contour, flight and tail feathers, ruffs, ear plumes, crests, and trains. Throughout the winter months, or in the tropics during the dry season, these ornaments are kept more or less concealed, the ruffs and trains are closed tight, the crests shut down, the fiery backs and wonderfully painted wings and tails seldom giving forth a flash of their hidden glories. As spring approaches, the cocks begin to send forth their challenge, either the penetrating crow, or in some cases instrumentally with whirring wings. Shortly after this period courtship begins, one of the most marvellous phases in the life of birds. The object of the cock is to bring to the attention of his prospective mate every brilliant hue and pattern upon his plumage, to make himself appear as large and as blazing an object as possible, to swell out wattles, to rattle the dry quills of feathers, to utter sounds never heard at other times, to shake the dry leaves all about, to vibrate his plumage so that intricate optical effects are obtained. When no attention rewards his efforts he will find some choice morsel of food to bribe the female's wandering glance.

The pheasant's chief concern throughout the year is to find food and avoid danger. Yet the accomplishment of these prime

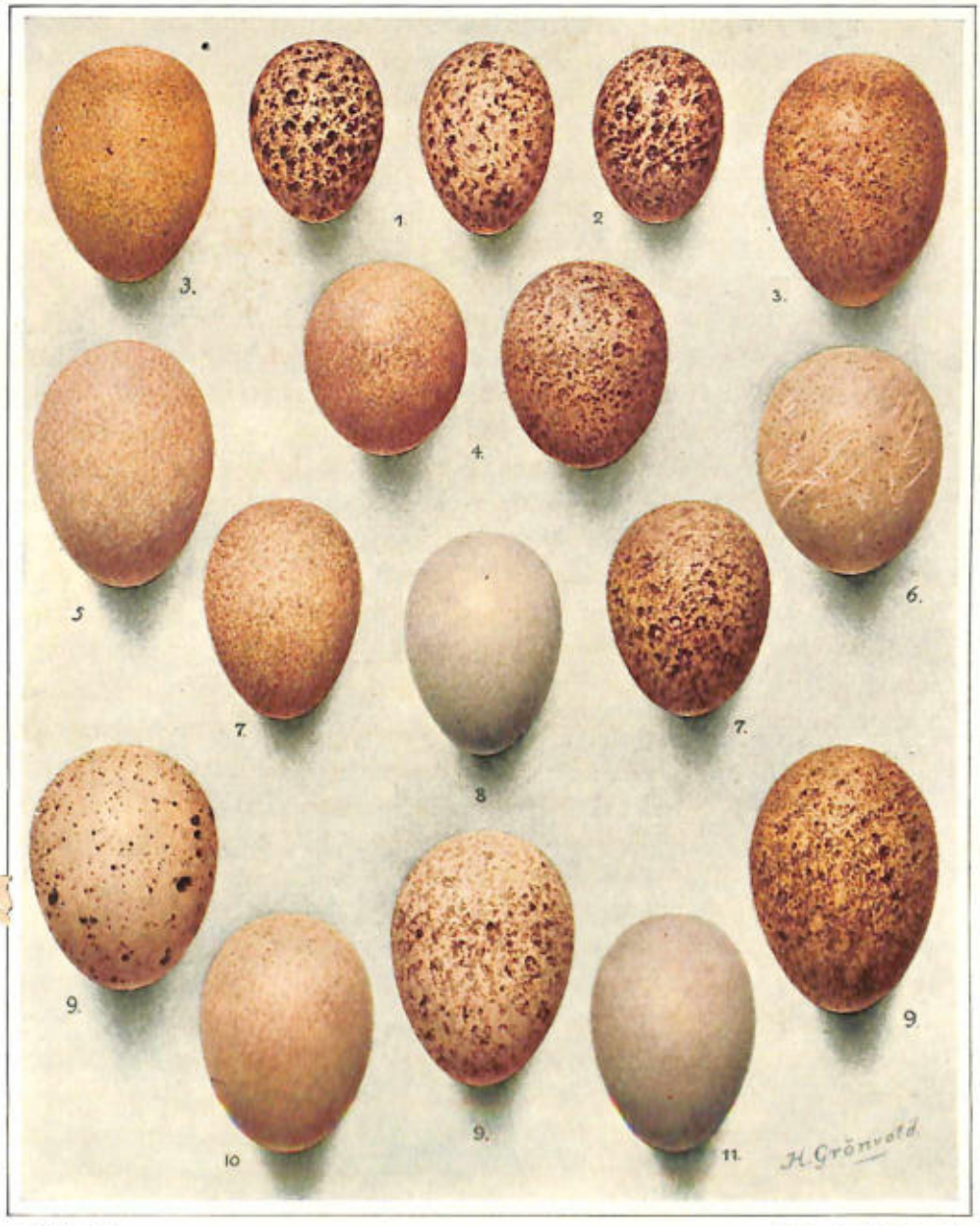


PLATE III

Painted by H. Grönvold

EGGS OF BLOOD PHEASANTS, TRAGOPANS, IMPEYANS, AND EARED-PHEASANTS

(For detailed caption see page xiv)

necessities is jeopardized and handicapped to the breaking point in order that he may have the wherewithal to display himself for a fortnight or so. How much easier the life of a wild Peacock would be if he could dispense with his train and iridescence; how much more of peace and safety an Impeyan might know if he could carry the hue of sandstone instead of opal.

It is staggering to the student of evolution to attempt to explain the origin and development of such a structure as the orange and black ruff of the Golden Pheasant. It does not appear until the second spring, when an examination of it in detail shows it to be a marvel of intricate specialization. Yet, even when full grown, it is as imperfect to the eye as a closed fan. Each stick of the fan is meaningless in its carving and painting, and only when it is opened the real beauty flashes into view. Throughout the year the ruff of the Golden Pheasant is folded into a maze of black-marked orange feathers. Only when shot forth full-spread before the eyes of the female do the velvet bars fall into place, reinforced by others, hidden until now, and the whole becomes a sun of wonderful concentric beauty. Thus, in order that for a week or two it may be unfolded a few score of times, perhaps for the average duration of a second, it has been carried for months, ensheathed in apparent imperfection.

Now as to the all-important result. The thought of the little brown hens picking and choosing among their suitors is charming. From an æsthetic point of view, even we could accomplish this. Of any three Golden cocks, one is certain to be more ardent, to spread his ruff a little farther, to flatten himself a trifle more completely, to hold his statuesque pose a fraction of a second longer. He is the one to whom we should award the contest, and indeed it is probably he who will succeed in winning a mate. But not from the viewpoint we have taken. However much I should like to do so, I cannot credit pheasants with appreciation of the beauties with which they are so generously endowed.

One would like to think of the Golden hens as playing off one cock against another in conscious mental comparison: of

appraising this ruff with that patch of gold; this crest of pure spun yellow glass with those stiffened plumes of crimson. To our eyes such comparison is reasonable; the beauty of colour, of agility, of grace of the cock pheasants—all these appeal powerfully to our æsthetic sense. But long-continued observation forbids such an interpretation. That the colours and the wonderful pinwheeling of the orange-and-black ruff about the glowing eye, the infinite patience striving continually to bring all the pigments and patterns of the body, of both sides at once, constantly to the attention of the female; that all these are of paramount importance in the courtship we cannot doubt for a moment, but that their effect is similar to the effect upon our minds is another matter.

Stand close to a dozen Golden Pheasants thus courting, with the hot sun beating down, and idly watch them for many minutes. The circling, dizzy movements and play of blazing colours will soon have its effect, and one presently ceases to watch definite birds, or definite actions; the whole scene resolving itself into a soothing kaleidoscopic display, one's eyes and mind being content to register only the general polychrome effect. One finds one's self daydreaming, the eyes focussing on no particular object. It seems to me that the most reasonable explanation of the wonderful performance is of a mental effect upon the hens, not æsthetic, not directly critical or attentional, but a slow, indirect influence upon the nerves, the arousing of a soothing, pleasing emotion which stimulates the wonderful sequence of instincts which will result in nest-making, egg-laying, the weeks of patient brooding and the subsequent care of the young through day and night, in fair weather and in storm.

This explanation implies no deprecation of the importance of sexual selection. The male who vanquishes his rivals, or who by strength and persistency most frequently and effectively displays, will win the hen, regardless of whether the actual process be by æsthetic appreciation or by some subconscious hypnotic-like influence. Yet, when we remember how impossible of definite explanation the term æsthetic apprecia-

tion is in ourselves—how no two people in the world have the same appreciation of art, music, or nature, and how widely apart are the ideals of beauty of the various races of mankind—we may perhaps say that my explanation has rather worked round in a circle, and that it is, after all, a very primitive form of æsthetic feeling.

We are all familiar with the pitifully degenerate courtship of the barnyard cock, a momentary, awkward trailing of a parti-coloured wing. This is the lateral display in its simplest form, culminating in the complex performance of the Amherst and the White-tailed Pheasants. The essential effort is to depress the side of the body toward the hen, flatten the back, and elevate the opposite side so that as much as possible of the colour on both sides is brought into view. The tail is twisted to one side and spread, the crest is raised, or the wattles displayed. Then, if the hen is looking, the bird freezes into some statuesque pose for as long a time as he thinks worth while. In the frontal display, the cock faces the hen, and in order to exhibit his entire upper plumage bends far forward, his breast almost touching the ground, bill pointing downward. If the wings are the chief ornamental feature, as in the Argus, these are spread into a great sweep of feathers, which meet in front and shut out even his head and neck from view; if it is the train of the Peacock which is the *chef d'œuvre*, it is spread widely, and the wings and tail subordinated, either as a supporting framework or as furnishing castanet quill music. In the Peacock Pheasants, the tail completes the lateral two thirds of wing ornament, rounding them into a symmetrical whole.

The combats between rival males occur at the breeding season. In some groups, such as the Ocellated and Argus Pheasants, spurs are absent, while the Blood Pheasants and all the Peacock Pheasants have two or more pairs. Number is no criterion of pugilistic tendency, however, for the most confirmed fighters are the Junglefowls and Firebacks, armed with a single pair of long, curved spurs, sharp as needles. In the Crestless Firebacks, even the hens are armed. These birds not infrequently kill one

another. Red Junglefowl appear to have fighting arenas, open spaces in the forest to which combatants resort for the purpose of settling their rivalry. This is interesting as showing an approximation to the assembling places of the prairie hens in the western part of our own country.

No detail or portion of body or plumage is exempt from contributing to the supreme annual fête of courtship. Wattles, combs, fleshy horns and great aprons all enlarge and become colourful. The hues of beaks, legs, toes, and even the iris of the eye increase in brilliancy, and mentally the birds are at their height, reckless of danger, and yet with all senses so attuned that they anticipate and evade it. Ready to fight to the death if need be, to neglect food, drink, siesta, to carry to a successful issue, however unconsciously, the third great duty of their lives, the perpetuation of their race.

There is scarcely a genus of pheasants about whose domestic habits as regards monogamy and polygamy I have not had to change my opinion. I have finally come to the belief that all are sometimes one, sometimes the other. The normal condition is the mating each year of a cock and a single hen, and all the groups will show this relation frequently, while in a few it is the rule. On the other hand, where hens are abundant, a harem of two, three, or four will often be found associated with one cock. These hens will frequently nest close together, and the cock remain in attendance on all. In birds of more solitary habit, the hens will wander away and go through the nesting and rearing season altogether alone, the cocks gathering in loose social flocks.

If we exclude the group of Tragopans, which, after all, finds a place in this work only by courtesy, pheasants are remarkably homogeneous in the matter of nesting. Tragopans are decidedly arboreal, and, although seldom making their own nest, they alter and add to the tree nests of ravens and other birds, and therein deposit their eggs. Even when they choose some spot on the ground, they give it a substantial shape or lining of twigs and leaves.

All other birds within our scope are essentially ground nesters. The spot chosen is usually in forest or jungle, near some partly open area, and close to the base of a tree, a tuft of grass, or under the shelter of a boulder or dense shrub or bamboo. A slight hollow is sometimes scraped clean and rounded out, or the depression may be caused merely by the pressure of the bird's body, and the eggs laid on the natural débris of leaves and moss which happens to be there. Perhaps as part compensation for their conspicuous size, terrestrial habits, and abundance of enemies, pheasants deposit numerous eggs. The actual extremes range from two to eighteen or twenty, with the average seven or eight. The Tragopans are of interest in that the number seems quite certainly determined by the location of the nest. When placed in a tree or in an elevated nesting box in an aviary, two is the usual clutch. In a ground nest, four or six may be deposited, but even here the tendency to division into couples is well marked, both by colour, size, and a longer interval between the depositions.

The members of the subfamily Argusianinae, comprising the Peacock Pheasants and the Argus, are set off from all the other true pheasants by laying only two eggs, although in captivity, in the case of the former birds, as many as seven clutches may be induced by systematically removing the eggs. These are probably the wariest of pheasants, and, indeed, they must need all the cunning of the feathered world to hold their own with such a lessened chance of numerous offspring. The Cheer and the True Pheasants lead in the matter of number of eggs, and, correspondingly, their life in the open, often where trees affording safe perches are few and small, must greatly increase the risks of death.

As regards colour of egg, pheasants fall into the following classification:

EGGS PLAIN

Kaleege and Silvers (*Gennaeus*)
Crestless Firebacks (*Acomus*)
Crested Firebacks (*Lophura*)
White-tailed Pheasants (*Lobiophasis*)
Red Junglefowl (*Gallus gallus*)
Javan Junglefowl (*Gallus varius*)
True Pheasants (*Phasianus*)
Long-tailed Pheasants (*Syrmaticus*)
Golden and Amherst (*Chrysolophus*)
Green Peafowl (*Pavo muticus*)

EGGS MARKED	EGGS SOMETIMES PLAIN, SOMETIMES MARKED
Blood Pheasants (*Ithagenes*)	Eared-Pheasants (*Crossoptilon*)
Tragopans (*Tragopan*)	Gray Junglefowl (*Gallus sonnerati*)
Ceylon Junglefowl (*Gallus lafayetti*)	Cheer Pheasant (*Catreus*)
Koklass Pheasants (*Pucrasia*)	Indian Peafowl (*Pavo cristatus*)
Argus Pheasants (*Argusianus*)	

The uselessness of the egg markings for purposes of classification will be evident at a glance, although in some groups of birds it is a valuable minor character of relationship. Here, however, we find the Junglefowl and Peafowl both split up, and the Peacock Pheasants separated from the Argus. Study of the shell structure has been equally unsuccessful, the chief point of interest being the decided isolatedness of the Peafowl, a fact evident in many other ways. Pheasants are conspicuous examples of birds which lay white or whitish eggs in comparatively open nests. Yet, when we come actually to examine the nests of wild pheasants, we find that seldom is one open to the sky. Almost always they are shielded by arching grass or the foliage of some shrub, or at least shut in on two sides by the rough bark of a fallen tree. Then, too, we realize that the protective coloration of pheasant hens is remarkably perfect and effective, and that they are among the closest of sitters, so that the chances are well in favour of a passing marauder missing the low-crouched, motionless form. And, again, very few unmarked pheasant eggs are pure white. They are creamy white or buff, or even olive-brown or greenish, which among the varied hues of moss and forest débris, and the flickering spots of sunlight sifting down through the foliage, are not unduly conspicuous.

In size, the eggs of pheasants vary from small eggs of the Japanese Green Pheasant (*Phasianus versicolor*), only an inch and a half in length (30 x 38 mm.), to those of the Green Peafowl (*Pavo muticus*), more than twice as long (54 x 86 mm.). Two distinct factors seem to enter into the period of incubation: actual bodily size of the pheasants, and the need of the young to fly as soon after hatching as possible. The two extremes are separated by a difference of about ten days. The Junglefowl, Golden, Amherst, and Peacock Pheasants hatch in three weeks;

the Silvers, Firebacks, Reeves, Common Pheasants, and Argus average twenty-three to twenty-five days; Tragopans require twenty-seven, Impeyans twenty-eight, Eared-Pheasants twenty-eight to thirty, while Peafowl chicks remain a full month within the shell. This succession accurately represents a gradual increase in size from the slender Golden and Peacock Pheasants, the females of which weigh but fourteen ounces, to the Peahens of six to eight pounds. Correlated with this is the fact that while the flight feathers of Junglefowl, Goldens, and many other pheasants are but slightly developed at birth, young Tragopans, Impeyans, and Peafowl can fly and perch almost from the very first.

The death rate among the young of pheasants is very great, in spite of their inconspicuous colouring and their marvellous ability to hide in the scantiest shelter. Two seems to be the average number reared to maturity—at least, that is the average I have observed among many species of wild pheasants. The feeding and care of the young call for no special comment, as they do not differ materially from the domestic habits of fowls or of any gallinaceous birds. The part which the cock plays in incubation and the care of the brood is as variable as the condition of monogamy and polygamy. When his plumage is very brilliant, he apparently never goes near the nest, although he may rejoin the hen when she goes off for food, or afterward, when the young birds begin to perch. In more decidedly polygamous species, the female and her brood have still less attention, and she often assumes all the labour of rearing the young.

The tail of the Peacock Pheasants is used in a curious manner as a protection for the young. When frightened, or when steadily on the march from place to place without feeding, the two young birds keep at the very heels of their mother, well under the overarching tail, and thus protected from any sudden attack. When they are reared under a domestic hen, this inherited habit is often the cause of their death, for while there is no sheltering tail overhead, they keep so constantly close behind the hen that she not infrequently either steps upon them or kicks them while

scratching. The young Peacock Pheasants are specialized in still another way. For the first week or so, their natural mother is accustomed to feeding them from her beak, and from the failure to do this on the part of the equally solicitous but awkward hen, they sometimes starve to death while actually standing in the food pan. The young of all pheasants remain with one or both parents throughout their first autumn and winter. The succeeding spring, they gradually drift apart. Those which do not breed the first spring and still retain the immature dress frequently gather in loose flocks composed of several broods, which feed and roost throughout the second year in more or less close association. The second winter, such birds as the Impeyans unite—adults, second-year birds, and young of the year—and remain together during the cold weather. In the spring, all breeding cocks must separate or fight, and a parent will kill his full-grown offspring as willingly as a strange rival if they do not leave his domain.

And so to-day we find the magnificent races of wild pheasants among the frozen steppes of the Gobi Desert, in the flaming rhododendron forests and the sombre deodars of the Himalayas; on the burning plains of India, and in the steaming jungles of Borneo. They feed, they drink, they roost, pay court, fight, love, make their homes, feed and shelter their young, always and ever striving to avoid the scores of hungry maws all about them. They wage the battle of daily life or death to the best of their ability, just as their ancestors have done in the past—throughout the decades, the centuries, the millenniums of which we can never know anything. And now, before the hand of man has brought havoc to their last hiding place, let us rejoice that we have been able to enter, even thus imperfectly, into the intimacy of their lives on the earth to-day.

RELATION TO MAN

Among the nineteen genera of birds which I include in this work, there are distributed eighty species, some of which are clearly divisible into subspecific forms, bringing the total up

to about one hundred and eight. Here we have one half of one per cent. of all living birds, and yet it may safely be asserted that, for a number of very different reasons, this small fraction has been, and is, of as much importance to mankind as all the other forms of bird life together. First, from a utilitarian point of view, it is not only one genus, *Gallus*, which leads all birds in value to man, but a single species, the Red Junglefowl (*Gallus gallus*). As the ancestor of all varieties of domestic poultry, this bird is of inestimable importance to mankind. Whether inmates of the kraals of the most degraded savages, or housed in the elaborate concrete buildings of poultry fanciers of civilization, fowls are widespread over the whole world. Their eggs and flesh are among the most valuable and dependable sources of food which nature has provided. Probably the Eskimo is the only branch of the human family which has been unable to profit from this domestic creature.

I shall only touch upon this interesting subject. The Red Junglefowl is a bird of the greatest significance, standing sharply apart from its fellows by reason of its latent physical and mental possibilities. It is to be compared only with the wild rock dove, the mallard, and the gray lag goose. From the Red Junglefowl cock, weighing about two pounds and clad chiefly in red and black, closely resembling the black and red game, has been evolved all of our poultry, from the tiniest of bantams weighing about twenty ounces to the great Brahmas which tip the scales at almost ten pounds. The plumage has been reversed, lengthened, shortened, done away with altogether in certain regions; the colours and patterns altered almost at will, and the proportions of all the limbs reduced or exaggerated. The tail coverts of a wild cock are less than a foot in length; those of the long-tailed Japanese breed may be more than twenty feet long. The mental powers have been affected; pugnacity made dominant, or, on the other hand, the fear of man practically eradicated. From a wild Junglehen which lays at the utmost forty or fifty eggs in the course of her life, we have domestic birds which are veritable egg machines, a single hen producing as many as three

thousand eggs. Yet all these are in no sense species, for if the breeding is neglected and the birds are allowed to cross, the succeeding generations soon revert to the appearance of their feral ancestors.

The relation of wild pheasants to mankind is a very one-sided affair. The birds do very little damage to the crops, and even when they make a regular practice of appearing amidst the grain morning and evening, it is the insect life which is the principal attraction. We realize that this must be so when we see the hundreds and thousands of Ring-necked Pheasants living in and about the Chinese grainfields, working no havoc, but probably doing much to keep down the insect pests. Now that the Chinese are, with other occidental innovations, taking to a meat diet, the pheasants are immune in none of their haunts save where Buddhist and Hindus hold sway. Everywhere, they are trapped, snared, pierced with poisoned arrows from blowpipe or crossbow, or shot with repeating shotguns. In British-governed colonies, they are protected by well-regulated game laws, and the brooding hen and the young chicks are immune.

For many years, pheasants have paid heavy toll to the millinery trade. Wilson, who years ago gave us good accounts of the habits of the birds, admits the slaughter of more than forty-five thousand Impeyans alone, and I have seen huge bales of Silver Pheasant feathers seized in the Rangoon custom house. Nepal and China still export large quantities unhindered, but the market has been so cut down by exclusion laws in Europe and the United States, and the kinds of feathers admitted so definitely defined, that the trade in pheasants' plumage must soon die out.

Taken as a whole, pheasants are more adapted to captivity than any other group of birds. Long after the last wild bird has vanished, several species will persist in captivity. Besides the utility of the Red Junglefowl and the æsthetic value of the Peacock, the Caucasian and the Ring-necked Pheasants are playing an important part in providing sport, and incidentally food, for large numbers of people.

They are reared in exceedingly large numbers on preserves in many countries, and have been introduced into most temperate regions and important islands. In frequent cases, as in many parts of the United States, they are actually replacing lost or nearly extinct native game birds, and hence have become important factors in preserving the balance of life on the earth.

THE BLOOD PHEASANTS

Ithagenes

In general appearance and in actual relationship, these are the least pheasant-like of the birds included in this work and should more properly be called partridges. But they will serve to introduce the great group of true pheasants. They form a small but well-marked group of six species, living high up in the mountains of central Asia.

HIMALAYAN BLOOD PHEASANT

Ithagenes cruentus (Hardwicke)

BRIEF DESCRIPTION.—Male: Bluish gray above, with white shaft-streaks; wing coverts greenish; a buff cap; greenish below with crimson throat, under tail coverts and breast spots, the latter reduced or absent in birds from southern Sikhim. Female: Reddish brown, finely mottled with black; forehead, face, and throat cinnamon; crown and nape blue-gray.

RANGE.—The mountains of Nepal and Sikhim.

THE HIMALAYAN BLOOD PHEASANT IN ITS WILD HOME

Crouching in the shadow of a great frost-split boulder, I waited motionless. Behind me, the wall of a jagged cliff rose straight toward the heavens—a giant wall that seemed to set me utterly apart from the world that lay beyond. Within a morning's march of me was the little world made up of my camp and my men, and far away, across wastes of land and water, was the great world of civilization, where countless human beings were creating and solving the small complexities of their daily life. But I was alone. I had come into a new land, and the gates behind me were closed.

Far overhead, against the intense blue of the sky, an Himalayan skylark hung on fluttering wings, sending its jubilant notes



PLATE IV

Painted by G. E. Lodge

HIMALAYAN BLOOD PHEASANT

Ithagenes cruentus (Hardwicke)

(For detailed caption see page xiv)

down to the sloping snowfields beneath. It was only a dark mote above me, but its melody came through the thin icy air startlingly beautiful and clear. It was springtime, and the small songster felt called upon to tell the joyous fact to the eastern Himalayas, although there was no need for it to carol such an obvious thing, for spring was everywhere for all to see.

The arctic meadow that swept downward toward the deep gorges of the Changthap was dotted, between snow patches, with the warm pink of new-blown primroses. These delicate little flowers bloom and live out their short lives under the frown of eternal winter. Rising high above them, clear cut as diamond against sapphire, were the wonderful peaks of snow—Kinchinjunga the indescribable, and the scarcely less glorious Kabru, silent, mysterious—so isolated that they seemed wholly detached from the earth beneath. Even beside me, winter was fighting for a stronghold; in the purple shadows of the cliff were small, scattered islands of white, pitted with falling drops from overhanging icicles. It was so still that sometimes I could hear the faint tinkle of these drops breaking through the thin ice crust of the snow. But it was a stillness made up of countless sounds—so many of which had no meaning to me. I heard only the song of the lark, and the murmur of a hundred rivulets, trickling along the first stages of their long voyage to the sea.

I waited, watching, careful of every movement, and the afternoon light deepened around me. Then above me, like the rush of a sudden tempest, came the loud beating of wings. A great lammergeier swept over the edge of the cliff out past me into space. It circled again, its red eye gazing fixedly down at me, as if to discern whether death had made me worthy of closer attention.

I watched, always, for the other living things of this meadow —a meadow, though miles above the sea. I could see the faint outline of a vinous-throated pipit, sitting close on its nest. Snow was above and beneath it, but an overhanging bank of turf shielded the small dwelling place. Sometimes a tiny, dark form would creep out into the coarse grass—one of those strange

little voles which choose these black regions for their tunnelled homes. Above them, flies and gnats were dancing in the thin air, and on a bit of stunted bamboo a tortoise-shell butterfly flattened its bright wings in a little oasis of yellow light.

Without warning, the sun dropped behind a distant ridge. It was as if someone had turned out some enormous lamp. Luminous clouds appeared in the air that before had been so clear, and the first whisper of the cold night wind echoed softly in the crags. The insects vanished, and one by one the icicles and rivulets were silenced at the touch of the coming twilight. From a high ravine came the plaintive call of a white-capped redstart, and a gray fox barked from somewhere afar off. Then, in the rich afterglow reflected from the mountains of snow, seven birds appeared over the crest of the ridge. They came slowly, one after the other, and I knew them at once for the Blood Pheasants I had come so far to find.

Through my glasses every feather was distinct, every movement clear as the birds straggled down the slope. Now and then, several of them would loiter and pick at the abundant red berries. But they did this carelessly, almost perfunctorily, being quite evidently not hungry.

A small moth, his wings half benumbed, tried to fly before them. He was a delicacy, and as such, was promptly pursued and captured. Three of the pheasants were adult male birds, and the four others were clad in the warm brown hue of the hens. As they picked their way from one tussock to the next, now over the coarse, tangled grass, now through a half-frozen patch of snow, their tails were held high, and the crimson beneath shone brightly. A hen pecked viciously at the bird beside her, and was answered by a low resentful double note. It was the only sound made by the little covey.

As the Blood Pheasants drifted down the slope, they ceased their loitering and advanced more steadily, stopping only now and then to watch and listen. They drifted farther and farther away from me, until they seemed but little windswept fragments of the meadow itself. I watched them eagerly, cautiously—

watched them until they vanished among the uppermost ranks of the dwarf rhododendrons.

I stood up, stiffened with cold and my long waiting. In the west, I saw the last pink tinge die out upon the clouds which now hit the snows. As I turned toward camp, a single snowflake melted on my face, and I realized anew how grimly winter fights for supremacy far up on the world's roof. I realized, too, that I was tired; but it was a weariness fully rewarded. I had seen the Pheasants of the Snows—the pheasant which spends its life farther from the centre of the earth than any other.

GENERAL ACCOUNT

In the autumn, about October, the Blood Pheasants which have bred in the same neighbourhood unite in a rather compact flock of several families, including both old and young, numbering from fifteen to as many as forty birds. Occasionally, a single family of six or eight will compose the winter covey. These remain together throughout the winter, roosting and feeding in close companionship. The sexes are equal in numbers, or with a slight preponderance of cocks.

For birds of so gregarious a nature, Blood Pheasants are remarkably silent, and seem to convey warning or suspicion of danger to one another more by posture than by voice. For instance, when a covey is busily foraging and one of the birds draws itself up to full height and gazes intently at some object, the entire flock at once ceases feeding and remains immovable until the suspicion passes. Like most inhabitants of high or arctic altitudes, they are not wary, and unless they have been persecuted, they will prefer to watch curiously any unusual object rather than run off. In this, they differ most markedly from species living at lower altitudes.

When, however, danger actually threatens so that they have to flee, all the members of the flock give voice to a series of sudden, sharp notes—*seep! seep! seep!* After the scattered members of the flock have recovered from their alarm, they utter the covey call, which is only the alarm note drawn out—*see-e-e-e-lpe!* snap-

ping off short at the end. I once heard a call uttered by a male when with the flock, something like *silpe-silpe-silpe-silpe!* which is the nearest approach to what some authors have called a cackle.

The usual gait of the Blood Pheasants is a rather slow, fowl-like walk. They do not impress one with the dignity of the more stately, mincing Kaleege pheasants; their carriage is less alert, more matter-of-fact. The tail is usually carried low, partridge fashion, except when walking over rough ground, when it is raised but not spread.

When suddenly alarmed, a covey will rise in all directions and, quail-like, the flight is scaling, direct, and brief. If opportunity offers, on alighting, the birds prefer to run uphill, but the first object is to reach and enter shelter, usually scrub rhododendrons, where they are safe from pursuit. If the underbrush is more open and one follows them up, they will be found separated, listening and watching intently, but so unsuspicious as to take a second glance at the approaching danger before running off again. If trees are near and the alarm comes from a sudden rush on the part of a dog, the covey will take to the lower branches. If the alarm is less abrupt, they scurry off on foot, necks outstretched, heads and tails held rather high.

Soon after the autumn coveys have been formed, the advance of the snowfall forces them downward. They seem to show no partiality for either northern or southern exposures, but are found on both exposed and protected slopes, lower down, of course, on the former. While they spend much of their daily life at this season in the open, it is almost always in the vicinity of low, dense undergrowth. In the eastern Himalayas, the silver fir and rhododendron forests share much the same zones. At eleven thousand feet, the firs predominate, while two or three thousand feet higher, the taller trees gradually yield to a dense growth of rhododendron scrub. In certain parts of Nepal these birds are reported to prefer clumps of mountain bamboo.

The winter home of the Blood Pheasant is among the open coniferous forests of fir and juniper nearer the lower levels. Here it is kept company by the hardy Himalayan nutcrackers and coal

tits, while hosts of Northern sparrows and finches feed with it amid the weeds and scrub.

In the spring of the year, a slow, irregular ascent takes place, and the summer haunts of the Blood Pheasants are hardly lower than the upper zone of small pines, while they range upward to the tundra-like alpine meadowland itself.

DAILY ROUND OF LIFE

The food varies both seasonally and with the locality. Birds shot in forests of fir during heavy snowfall have been found almost unpalatable, owing to the turpentine flavour imparted by a diet of newly sprouted fir and juniper sprouts. In late September, their flesh is reported as good eating, their diet consisting at this time of small fruits, leaves, seeds, and the spore cases of moss. I can add tender bamboo shoots, the scarlet berries of a creeping vine, and the pips of the Sikhim white rose to the vegetable food list of this Pheasant.

Once in Nepal, close to the Sikhim line, I found a family of five Blood Pheasants feeding in a most interesting way. The region was devoid of all but grassy vegetation, with a few scattered clumps of low barberry bushes. A heavy snowfall, unseasonable, as it was mid-April, had covered the ground and hidden all the seeds and leaves of the low-growing plants. What I had not noticed during previous days was now made conspicuous by the background of snow—the abundance of clumps of tall stems, each topped with the seed case of a last year's lily. These three-parted, brown, and brittle cups showed where in past months had bloomed scores of red and yellow blossoms. I was able to watch the feeding Pheasants for only a few minutes before a raven discovered me and croaked his disapproval, sending the covey scuttling off along the hillside and over the nearest ridge. At the same time, a flock of pipits and finches flew up and away.

The snow was soft, and I read in its surface the confirmation of what I had observed. The Pheasants had appeared to be leaping up at the seed cases, or pressing against and bending down the stems. I carefully examined many which had been

thus disturbed and found that there was good reason for these actions.

The fierce gales and winds of the past winter had tipped and swayed the lily-seed goblets, and the flat, reddish seeds had been scattered over moss and snow, skimming along on the circular wings for many yards around. But with all this upsetting, only about half of the seeds had been shaken out. I have spoken in a previous paragraph of the insect life which was noticeable even after a heavy fall of snow, and I found that one secret of its presence was the half-emptied seed cases, which, on these high, treeless barrens, formed safe and snug retreats. Into one case, a rove beetle had crawled; into another, a small moth, although, owing to the number of seeds still remaining, the tip of the insect's wings protruded from the top. Here two tiny flies were resting, hardly able to use their legs, much less their wings, in the chill of the morning. There is no doubt but that these insects remain in their retreats in a state of semi-frozen hibernation until the return of more seasonable weather.

When the snow and ice covered thickly all other food, the Blood Pheasants found here a bountiful feast—of both seeds and insects —in the lily cases. The maze of tracks revealed the patience and activity of the birds in levelling the stems, while in a wider circle around the scene of action the dainty footprints of skylarks, pipits, and finches were everywhere interlaced, showing that they had learned how to secure a portion of the stray seeds which were thrown upon the white surface from the efforts of the Pheasants.

When I found that this habit of the Pheasants was common to the several flocks which I had the opportunity of observing, I realized how it was possible for these birds to remain at such high, barren altitudes when all other sources of nourishment were sealed by frost and snow. I investigated the seed cases of a half dozen lily clumps four hundred yards apart and found large numbers of numbed but living earwigs, beetles, flies, moths, spiders, and mosquitoes on which the pheasants had been feeding.

Unlike the pheasants which live at lower elevations, the

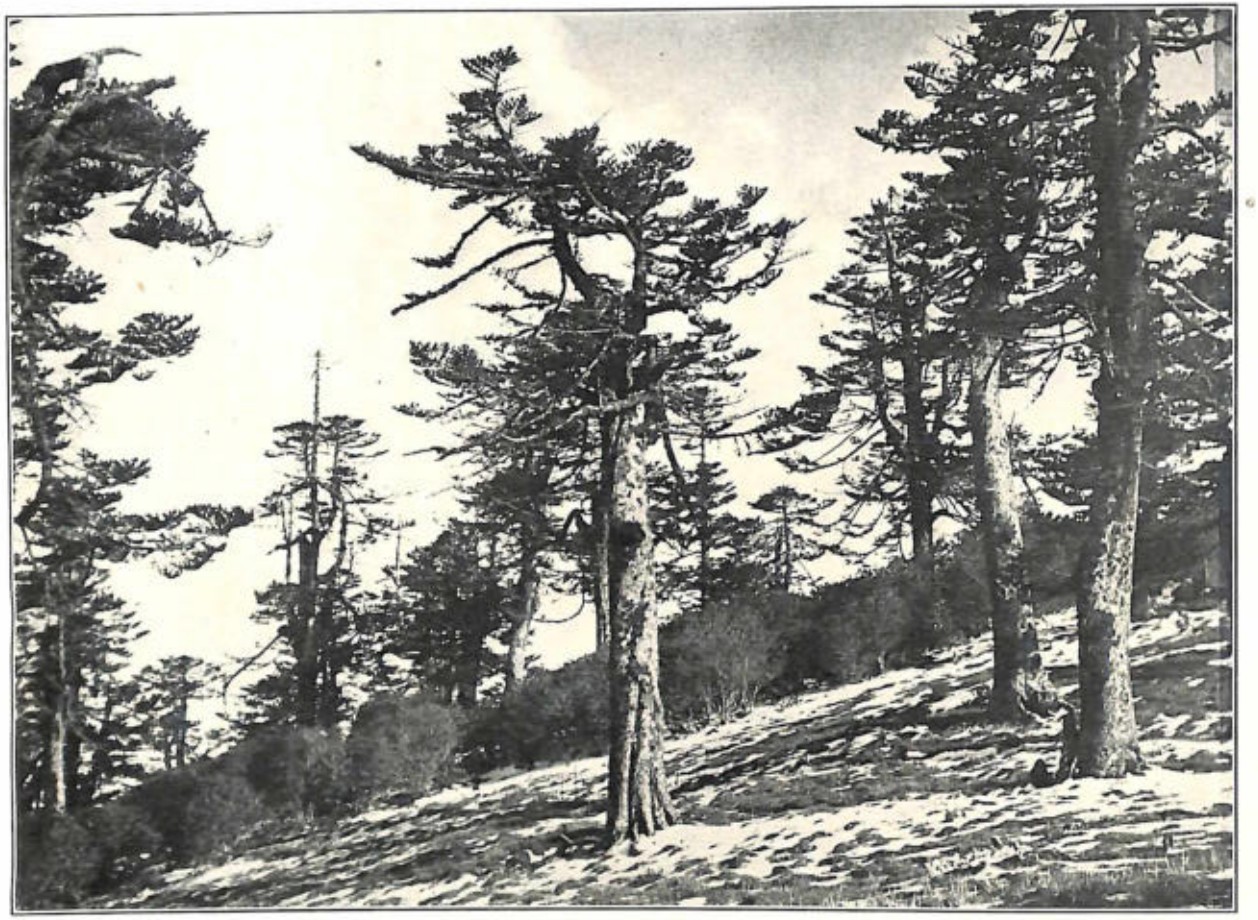


PLATE V

Photograph by William Beebe

WINTER HOME OF THE HIMALAYAN BLOOD PHEASANT

(For detailed caption see page xv)

members of this genus have no definite time of feeding. One may find them at high noon searching for berries and insects among the moss and coarse grass. There is not the intense midday heat or the array of enemies to limit their foraging to early morning and late afternoon. Blood Pheasants, unlike the Impeyans, scratch lustily, sending the creeping vines and moss flying, in their quest for animal food. But, also unlike these more brilliant birds, they do not have scratching places. One cannot track the birds by their foraging signs, as is so easy a matter with the Impeyans and Cheer.

As regards the roosting places, Blood Pheasants, in their winter haunts, appear to fly up into the branches of firs, sometimes the entire covey roosting close together. At least, that is the consensus of opinion of sportsmen who have had the opportunity to observe them at this season. In the early spring, they are satisfied with low rhododendron trees or even scrub. When the birds settle for the night in a dense thicket of this character they are indeed safe, for few creatures could penetrate it, and certainly not without a loud crackling of twigs and leaves.

I have found evidences, in sign and in a stray feather or two, of such a roosting place being occupied for at least several consecutive nights. Tracks of dholes or wild dogs were outside the thicket, but none on the scanty snow beneath the evergreen rhododendron leaves.

In regard to the tunnelling of Blood Pheasants into snow for nocturnal shelter, we have only Hooker's authority, his exact words being as follows: "During winter it appears to burrow under or in holes amongst the snow; for I have snared it in January in regions thickly covered with snow, at an altitude of twelve thousand feet." On this vaguely circumstantial evidence, scores of writers of natural history volumes have incorporated the burrowing habit, often as one of the principal habits of this species. While snow burrowing is known among grouse, yet the ice, with which the cold night fogs often seal the surface of the snow in the haunts of the Blood Pheasant, would make such a custom one of extreme risk. Instead of a regular habit,

such a voluntary imbedding in snow is probably of the rarest occurrence, if, indeed, it is not always brought about by the subsequent snowing-in of a covey roosting on the ground, as we have occasionally observed in the case of the bobwhite.

An English sportsman tells me that, more than once, he has found indubitable proof that these birds occasionally roost on the ground in the shelter of a bit of crag or boulder, and, in this instance, they face outward from the centre, in the regulation quail-like covey formation.

We have little first-hand information in regard to the competitors and enemies of Blood Pheasants. There are few consanguineous intruders in their domains, although the monal is sometimes to be found in the same vicinity, but with very different feeding habits. The snowcocks excel even the Blood Pheasants in their altitudinal distribution, and seldom approach the scrub and forests.

I shot a large beech marten and have known another to be seen in close vicinity to Blood Pheasants, and gray foxes are one of the commonest of carnivores in the upper rhododendron zone. Dholes or wild dogs doubtless take toll when larger game is not to be found, and the Himalayan leopards must look with favour upon these green-feathered morsels. Among birds, the golden and Bonelli's eagles are probably most to be dreaded, although the former is the only one I have actually seen hunting in Blood Pheasant country. Of all the four-footed hunters, the slinking, lichen-hued reynard of the rocky alpine meadows must be the worst enemy to such birds as these, whose senses and activity are far from being equal to those of the true pheasants. The rough, rolling, boulder-strewn character of their haunts, and the deadening character of the thick, matted turf, all favour the approach of such an animal as a fox, who with a sudden leap must seldom fail in his attack.

In regard to the significance of the colours of the Blood Pheasant, there is no doubt but that the colours of both sexes are at times protective. What I consider absolute proof of this came to me one day when I was watching a flock of the birds as they

scratched and picked along a bit of open rocky slope. I had them all well within the range of my stereos, and suddenly, without warning, every bird squatted and, turning its head sideways, stared unblinkingly into the sky over my head. I twisted partly over in my hiding place of stunted bamboo grass, but only after a long search did I discover the speck in the heavens, which my glasses resolved into an eagle. Another glance at the Pheasants showed that all had remained motionless, and they did not move for at least three minutes, when they suddenly resumed their feeding, as if nothing had happened. The rocks, in this instance, were coated with pale pink primroses and brown lichens, so it was the females which matched more nearly the latter general tint. There is no chance for the crimson spots and patches on the under plumage—chin, breast, and tail—of the male to function in any way whatever when the bird is squatting—all are hidden from view. And we can hardly conceive that their existence is protective when they are lacking in the males of some of the other species of this genus, all of which inhabit similar open mountain slopes.

The unconscious trust in the protection of a squatting position is, without doubt, indicative of a protective value, such as we see in sand grouse, and many other desert birds, quail and the young of skimmers and terns. But, as in the Blood Pheasants, to be thus protective, the pattern of plumage need not exactly match the surroundings. The legitimate extent and application of protective coloration may be summed up in the female. Clad in plumage of mottled reddish brown, she is yet conspicuous when making the slightest movement even among the brown-lichened rocks; she is inconspicuous when squatting, motionless, even among greenish grass or pink primroses.

HOME LIFE

The following information was given me and independently confirmed by several Lepchas and Tibetans who were excellent observers and hunters.

The Blood Pheasant is monogamous, and the pair of birds and

their young keep together throughout the winter following the breeding season. In courting, the male spreads its tail and wings, drooping the latter, raises the crest, swells out the breast feathers, and struts before the female, turning round and round. The males fight fiercely with each other.

The nest is a hollow in dead leaves and moss, usually near a boulder or stump in rhododendron forest at twelve to thirteen thousand feet. From five to ten speckled eggs are laid, in April or May. The eggs are very good eating.

KUSER'S BLOOD PHEASANT

Ithagenes kuseri Beebe

BRIEF DESCRIPTION.—Male: Differs from *cruentus* in the much greater extent and purity of the crimson and black colours. The forehead, throat, and entire breast are almost pure crimson, while the whole side of the head and neck and a broad band between the crimson of the throat and breast are black. Female: In general, much darker brown than in *cruentus*, with the breast finely lined with brown and buff.

RANGE.—Higher mountains near the junction of Tibet, Yunnan, and Burma.

GENERAL ACCOUNT

One day, in December, 1910, in northwestern Yunnan, I noticed a Chinaman passing along the trail driving a number of forlorn horses with some heavy merchandise. Under the thongs which fastened one of these loads was tucked a bedraggled mass of feathers. A glint of scarlet caught my eye, and I stopped the man and examined the plumage. I saw at once that it was the remains of a Blood Pheasant, and consisted of a large patch of breast feathers, almost wholly scarlet and black, and two detached wings with the typically long, loose, bright green coverts of *geoffroyi*. I secured the plumage and learned that the man had obtained it from a native farther to the north. He could not say certainly whether all the plumage came from a single individual, and although I realized its great interest, it was impossible to put any exact interpretation upon it at the time.



PLATE VI

Painted by H. Grönvold

PLUMAGES OF THE HIMALAYAN BLOOD PHEASANT

Ithagenes cruentus (Hardwicke)

(For detailed caption see page xv)

A year and a half later, while studying the pheasants in the museum of the *Jardin des Plantes* in Paris, I came across two mounted specimens which cleared up the matter and showed that the Blood Pheasant from the extreme northwest finger of Yunnan is a very well-marked form, by far the most beautiful and brilliantly coloured of its genus. Lacking any data as to intermediate specimens, I afforded it full specific rank.

Confirmation of this decision and an extension of the range of Kuser's Blood Pheasant was made known by Captain F. W. Bailey, who found the species far to the westward of my locality in the Mishmi Hills, between eight and twelve thousand feet elevation. Altogether, ten additional specimens have been secured, seven males and three females. All of these sustain the validity of the characters upon which I based the species. Three eggs have also been obtained, quite similar to those of *geoffroyi*. They were found at twelve thousand feet in early May, laid on bare ground under a clump of bamboo, with snow close by.

I have taken great pleasure in naming this beautiful Blood Pheasant in honour of Colonel Anthony R. Kuser, whose interest and generosity have made possible these researches.

Captain Bailey has gathered a number of notes on the habits of this species, published both by himself and by Mr. Baker, from which I excerpt the following: "These birds are most extraordinarily common in certain parts of the country we visited, keeping close to the snowline, and apparently moving up and down between eight thousand and fourteen thousand feet as the snow increased or receded. They are often found in deep snow. Once, when I was snowed up for several days, these birds came round my tent. They go about in flocks of from ten to twenty, and they fly very unwillingly, and when forced to take wing, settle again almost immediately and take to their legs. They are never found in the open, but always in fairly deep forest."

The Mishmis trap them by building a light fence made of twigs about eighteen inches in height, usually along a contour of the hill in the forest. In this, gates are kept open just wide enough to admit a bird, and in these openings a noose is placed,

made of fine roots and fixed to a bent, springy bamboo. The birds, when feeding, wander down to the fence and do not hop or fly over, but follow it until they reach one of the gates, and the first bird to pass is usually caught.

While Kuser's Blood Pheasant is usually found in bamboo jungle close to the snowline, in early morning and late evenings they come out into the open. When there was no snow they were very conspicuous. They would make no attempt to move until fired at, and even then would often settle almost within gunshot. While usually in flocks of about a dozen, they would sometimes be seen in parties of as many as forty. They fed on seeds and vegetable matter mixed with insects.

Four other species of Blood Pheasants are known: The Tibetan Blood Pheasant *Ithagenes tibetanus* Baker, known of from a single skin taken in southern Tibet; the Northern Blood Pheasant *Ithagenes sinensis* David, divided into three subspecies, which ranges the mountains of Kansu, Shensi, and northern Szechuan; Wilson's Blood Pheasant, *Ithagenes wilsoni* Thayer and Bangs, which inhabits south-central Szechuan; and Geoffroy's Blood Pheasant *Ithagenes geoffroyi* Verreaux. This inhabits the mountains of southeastern Tibet and Szechuan.

TRAGOPAN PHEASANTS

Tragopan

Five distinct species of Tragopans inhabit the mountains of Asia, from Kashmir on the west, to the uplands of central China. These beautiful birds are, strictly speaking, rather partridges than pheasants, but are close enough to the border line to warrant inclusion in this work.

SATYR TRAGOPAN

Tragopan satyra (Linnæus)

BRIEF DESCRIPTION.—Male: most of the head and terminal half of tail black; mantle and under parts orange-carmine; rest of upper plumage olive-brown; above and below (except on upper mantle) thickly spotted with white. Female: Above blackish mottled with buff, pale rufous and sandy; below lighter, a central whitish area on the feathers predominating over the buff and blackish mottling; tail irregularly barred with rufous and black.

RANGE.—The higher, wooded slopes of the central and eastern Himalayas.

THE SATYR TRAGOPAN IN ITS HAUNTS

The dawn of a new day had broken in the eastern Himalayas, gilding first the pinnacle of Everest, for so through all the long centuries had the greatest source of light paid homage to the highest point of earth. Instantly, all the lesser snow peaks were aflame, reflecting the glow downward to where I was still deep in shadow. The trail at this hour was saturated with the dews of night; below me, like a sea of tumbled snow and ice, lay the clouds—solid, compact, opaque—filling every valley and gorge. So quietly floated this vapour that one's knees were dimmed by its chill blueness, while the face was still in the clear transparent air above.

I tramped softly over the mossy trail, the distant sleepy croak of a raven coming to my ears or the chirp of some just-awakened

titmouse from the bushes at the trail side. A rhododendron branch, heavy with its gummy, unopened buds, swept across my clothing, drenching me with dewdrops. I was on a high ridge, and the slope on each side dropped almost sheer into the blue-gray mystery of the cloud. The scores of square miles which I overlooked consisted of an archipelago of mountain tops, clad in dark green, rising from the sea of cloud and crowned with the gleaming snows. In all this land the only visible life was the slowly soaring form of a griffon vulture, showing dark against the fog, pale against the forest. With outstretched head, the bird rose higher and higher, at last catching the direct gleam of the sun and changing to molten bronze, a glorious majestic form, the first life of day to greet the sun—"thus may splendour come to the low caste."

That subtle hesitancy which is a characteristic of early dawn was now about to cease. A rustle of bamboo leaves and a downpour of drops presaged the morning breeze, and the surface of the cloud slowly heaved and billowed. A sudden turn in the trail brought me downward toward a dense growth of ringal bamboo, whence the way led over a narrow saddle, the sides dropping steeply on either hand. Hardly had I stepped into the cloud level when I was startled by a sudden, deep whirr of wings at my very feet—the loud, reverberating roll of strongly beating pinions. A second of silence, and there burst from out of the fog, fifty feet away, a splendid bird, glowing, as it veered sideways, with richest carmine and besprinkled with a myriad white stars as of shining dewdrops. I gazed in rapt admiration at the great cock Tragopan, as on set wings it scaled swiftly away in a long, graceful curve, which at last immersed it again in the billowy waves of blue-gray vapour.

For days I had been studying this wary bird, but never had I been so struck with its glorious beauty as when, like the flying fishes in the far distant ocean, it had so unexpectedly burst for a moment through the surface of cloud into the clear upper air.

A few minutes after the Tragopan had vanished, the forces of the mountains began to make themselves felt. A rushing



PLATE VII

Painted by A. Thorburn

SATYR TRAGOPAN

Tragopan satyra (Linnæus)

(For detailed caption see page xv)

wind came down from the face of the snows, and by some physical alchemy, the cloud siphoned across the low saddle of the ridge. In seething cascades of vapour it poured from one valley into the other—cold, steamy, drenching, like the exhaust from some hidden titanic engine. I could hardly breathe, and was relieved to climb out of the river of steam again into the sunshine of the heights.

A white-browed bush-robin began its simple, sweet phrases, and the buzz of a wild bee announced the beginning of a new day's toil for the lesser mountain folk. Then a long-drawn-out wail, a voice apparently of lost hope, came from far down in the cloud-ridden valley. It was the mating call of some wandering furry cat-bear, or else the challenge of a Satyr Tragopan—indistinguishable at this distance to our coarse hearing.

GENERAL ACCOUNT

Compared with Blood Pheasants, Tragopans are most solitary birds, although they wander about considerably, yet it is unlikely that they have any wide individual range. In the spring one may flush a Tragopan cock and see it scale across a deep, wide valley to the opposite forest slope, but, if undisturbed for a few days, a bird—and very probably the same one—may be found in the same patch of forest. Once only was I able to verify this, when on two occasions, some three days apart, a bird, marked by a gap in the tail feathers where one or two had been lost, was flushed by a native dog and flew a long way, from one ridge to the next. The birds found on any one range undoubtedly spend their lives there, unless driven away by persecution.

I have never observed the Tragopans on any ridge or slope where the adjacent valleys were dry, and when one hears or sees them far up the mountain side, a tumbling little rivulet is almost certain to be found in the nearest gully.

The only way to study these birds, or to catch more than a glimpse of them, is by hours of patient watching in their haunts. One may stalk Blood Pheasants or Kaleege Pheasants with some hope of success. but Tragopans, owing to their wariness and the

nature of their favourite slopes, can only be waylaid in ambush; unless, of course, one is shooting, when with dogs one can beat them out of the thick cover. But a Tragopan fluttering upward through columns of bamboos, or fleeing for safety to a branch ahead of a hunting dog, presents little of interest except to the eye along the gun barrel.

In Sikhim and eastern Nepal, where in spring I have studied Satyr Tragopans, I found that narrow side gorges, etched out of the slopes by tiny uncharted streamlets, were the best places for finding the birds. Here, in the early spring, when the melted snows swelled the rivulet to a rushing torrent, the carpet of crackling bamboo and rhododendron leaves was swept away, leaving the clean, outjutting rocks and an overarched tangle of broken bamboo stems. In early May, when the torrent again subsided, one could make one's way silently down the dripping mossy boulders, from far up the mountain slope to the very bottom of the valley. A single step into the jungle on either hand would have sent forth a crackle of leaves, arousing and alarming every living creature in the gorge.

The Tragopans of this region—of at least six widely separated ravines south of the Kong La Pass—roosted low down in the valleys. I could never discover the birds when they went to roost or left their perches. Once, however, in early morning, I heard a cock utter his mating call from his roost. I flushed him at once after he called, and from sign knew he had spent the night there. The tree was a magnolia of moderate size, and, climbing to a branch directly overhead, I found the moss pressed tight where his toes and breast had been. This was twelve feet from the ground and only a few yards from a spring which gushed up from the heart of a ledge of mossy rocks.

Although the birds invariably roosted far down the valley, they fed both morning and evening well up the slopes. These slopes which the Tragopans love to frequent at this time of year are altogether delightful to the lover of the wild beauties of this Himalayan wilderness. All one's senses are charmed—sight, scent, and hearing. We leave our camp under the lee of the

mountain ridge and make our way to the nearest ravine. The sun gives a welcome warmth, and the last of the night's cloud mantle drifts past in torn shreds and whiffs of vapour. Before we turn down into the ravine, a last look around shows range after range of splendid mountains, the nearest green and sombre, the others becoming more vague and purple as they pass into distance, until, like a lodestone, the eye is drawn up to the crown of mighty snow peaks, glowing pink and white. Here and there on the slope before us gleam the white stars of magnolia blossoms, and to our left a slash of scarlet and another of pale salmon show where forests of rhododendrons are in full blossom. We step down, and, in rubber-shod footgear, silently clamber from ledge to boulder, each moss-clad and lichen-painted. For a while, we hear no sound save the tinkle of drops in the plash of some diminutive waterfall. Then comes a subdued murmur, chirps and twitters, and, peering over a great mass of rock, we see a rhododendron tree loaded with blossoms of an intense cerise all a-quiver with the forms of a hundred little birds. There are scores of flower-peckers clad in delicate hues of gray, vinous, and orange-buff, and still smaller flycatching warblers in liveries of yellow and olive-green. A perfect medley of metallic notes arises, and far off to the left another tree in bloom is traceable by ear from a similar dainty tumult.

Every now and then the breeze coming down the ravine is heavy with the strong, sweet perfume of the daphne or paper lilac, and the pink flowerlets are floating on every quiet pool. Where an earthen bank shows clear of bamboo stems, it is starred with blossoms—primroses, violets, strawberries, and forget-me-nots. Everywhere the ravine is sweet with perfume and glowing with colour.

Down and down we clamber, the bamboos in some places growing close to the narrow torrent bed in serried ranks of mottled green and brown. Under a projecting bank of earth, a pair of orange-gorgeted flycatchers are working on their half-finished nest, and show no fear of us as we stand within arm's reach. Not a note of annoyance do they utter, but only watch us with

dark, liquid, reproachful eyes until we disappear around the next turn. Here we find a deep, boulder-framed half cavern and crouch down within its cool shadow.

We hear some small creature making its way through the bamboo close at hand, and now and then a sudden crackle of leaves shows that it is a bird scratching among the litter. Several minutes after it passes we look out and see a Tragopan hen twenty feet above, drinking from a pool. A sudden *quak! quak!* from down the ravine draws our startled glance to a cock Tragopan just disappearing over the feathery bamboo tops and, when we again look upward, the hen has vanished and our Tragopan study is over for that morning. Such is a glimpse of the haunts of these glorious birds.

As in the case of other birds inhabiting these lofty regions, Tragopans work gradually downward at the approach of the cold and snow of winter. Even at this season, however, there seems to be little or no gregariousness on the part of the birds, although, from the reports of English sportsmen and natives, one or two young birds and the mother keep together for the greater part of the winter. At this season of the year, the birds are silent, unless the hen still communicates with her nearly grown young by means of the same low, clucking call which is used when they are chicks. Only when in dire fright or distress, as when suddenly flushed by a dog, do the birds—both cocks and hens—give utterance to a series of loud, raucous notes: *quak! quak! quak! quak!* This is language whose meaning is clearly understood by all feathered creatures within hearing, and after the echoes of the alarm have died away, they will often be taken up by the croaks of a pair of inquisitive ravens or the calls of nutcrackers. Every bird for miles around knows that something is wrong, and will be uneasy and on its guard for a time.

When the birds perceive approaching danger some distance off, they utter no sound whatever, but silently slip away. Even when surprised, they sometimes fly off silently, with beak open in fear, but only the sound of their wings to mark their aërial path.

The call note of the Satyr Tragopan is very distinct from its cry of alarm. I have heard it a number of times given by wild birds, and in captivity it is a very characteristic utterance. It differs in the two sexes. The male utters it as a herald of his nuptial display—a high, rather quavering *baa! baa! baa! baa!* Where this is heard the hen is usually near by, and unless something occurs to alarm the birds, a display is almost sure to follow. The hen utters a call comparable to this when separated from her nearly grown young, the call in this instance being given singly and in a slightly higher, shriller tone.

The challenge of the adult cock Satyr is a most remarkable sound, to which I have already alluded. It has wonderful carrying power, and I have heard a bird call from the same point about every ten minutes for a full hour as I climbed away from it, coming fainter but as distinctly at a half mile distance and elevation as at first. When heard fifty yards away, its deep, half-booming, half-bleating character is very evident, a weird, full-throated cry, which seems peculiarly suited to the heart of this rugged wilderness. At this distance, one can fit no written words to it, but farther away, when more softened, it may be indicated *wah! waah! oo-ah! oo-aaaaah!* the last tone sometimes drawn out into a heartrending crescendo wail. These syllables usually run together so as to sound like a single utterance, and indeed they are the result of one exhalation. The panda, or cat-bear, another inhabitant of these Himalayas, utters, as I have said, a sound not unlike the Satyr Tragopan, but when heard close at hand, the nasal, feline character of tone of this brightly coloured, raccoon-like animal is apparent. The Lepchas call it Wah from this cry.

Tragopan cocks in captivity utter this call during only a few days of the breeding season, but this is doubtless because the combative phase of courtship is soon at an end—anticipated, perhaps, by the absence of rivals and close association with the hen. In wild birds, the challenging is kept up for at least two weeks and probably longer. At this time the cocks select some favourite perch or beat and call from it day after day, especially

in early morning. In regions where the birds have been persecuted they may be made to boom by a sudden loud shout, the discharge of a gun, or by a rock rolled down some steep bit of jungle slope. I have heard these birds burst into cry after such a stimulus, late in the morning. However, they usually call but once under such conditions.

Native hunters are adepts at answering the birds and thus luring them within gunshot, and I have myself been able on several occasions to get the birds to answer five or six times. But, as the Tragopan approaches, it becomes more wary, and always something seemed to give it warning of my perfidy. This answer and advance proves that the call is a challenge to rival cocks, and not a summons to the hen, as the latter never utters the booming note. Pheasants, when in the forest or jungle, seem seldom to look for danger from above, and one may watch them from a low branch for minutes at a time, when it would be impossible to remain concealed on the ground; their sharp eyes ferreting out the cleverest blind. So, in the case of Tragopan calling, as with other pheasants, I have always had the best luck when concealed in a low tree. On one such occasion, my Tibetan called a Tragopan until it appeared from the neighbouring rhododendron scrub, and walked swiftly out and around the very tree in which we were perched. Its feathers were pressed close to the body, its head held high, and all the usual heavy, rather hen-like appearance was gone. It was altogether a game cock, imbued for that time with that strange, instinctive hatred for its fellows which has come down through all the ages and which annually brings about temporary civil warfare among so many creatures—doves as well as lions. Now and then, it gave a quick impatient flirt to its wings, showing how keenly on edge was every nerve and muscle. Then it stopped and, inhaling deeply, partly raised its beak and with an effort sent its deep call booming out across the valley. My man dared not answer, and for a full minute the bird waited and listened, then passed quickly on into the forest. I was fortunate to have had such a glimpse of a calling pheasant and not to have alarmed it. Only



Photograph by William Beebe

PLATE VIII

HIMALAYAN HOME OF THE SATYR TRAGOPAN AND IMPEYAN PHEASANT

(For detailed caption see page xvi)

one who has tried to watch a wild Tragopan will know how tense and breathless I sat while the bird remained in sight.

It seems as if the full booming call was developed only at the breeding season, as one never hears it except during April and May. I have twice known a young cock in captivity to essay the challenge, but to fail pitifully, a short wheezy *wap!* being the best it could do.

Tragopans are omnivorous feeders, but leaves and buds seem to form the principal articles of their diet. Hume states that they feed on insects, the young green shoots of bamboo, and on onion-like bulbs; Hodgson adds wild fruits, the seeds of rhododendrons, and aromatic leaves such as daphne and bastard cinnamon. The crops of three birds which I examined were well filled; two held many torn leaves and flowers of the sweet-scented paper laurel, and one of these had also eaten a number of insects—several small earwigs, black ants, and a good-sized cockchafer, as well as a few spiders and a small white centipede. The third bird, curiously enough, had packed its crop with the bruised scarlet petals of rhododendron blossoms, mixed with a few laurel leaves.

Satyr Tragopans, like the majority of forest and low-country pheasants, confine much of their activities to the early morning and late afternoons, but on dull, cloudy days the birds may be found feeding at more irregular intervals. They feed on the open edge of the forest or scratch deep amid its undergrowth. And, too, they not uncommonly feed in low trees and bushes, where they obtain petals, buds, and berries. With powerful glasses, I have watched a cock Tragopan in full sunshine one hundred yards away, climbing about the bare branches of a magnolia, picking here and there at the long moss.

The Tragopans seemed to feed on the upper slopes for only about two hours in the early morning, when they apparently descended again, as none could be found the rest of the morning except in the lower valley.

Occasionally, a bird would make its way upward five hundred feet or more to the crest of the ridge; and here I found they

were scratching and feeding along an old sheep trail. When I have examined the work of a bird scratching in the jungle, I have found single, fairly deep holes here and there, perhaps a yard or more apart, as if the Tragopan had concentrated its efforts in some likely spot instead of scratching vaguely and superficially over a wide area as the Kaleege Pheasants are wont to do.

The feral enemies of the Satyr Tragopan assuredly are of less account than its present danger from mankind, but from the natural wariness of the bird, we must infer that they are bad enough. And here we must mention the remarkably arboreal character of this and other Tragopans, as probably indicating unusual dangers to be feared on the ground. Eagles, leopards, foxes, and especially the jungle cat and the larger species of civets, are probably most to be dreaded. A leopard has been shot which had just dropped a still-warm, dead Tragopan. The locality was fir forest with occasional clumps of thick rhododendron bushes.

When approached by a man, the bird will almost invariably run swiftly away, head low, threading rapidly the bamboo stems, but when suddenly surprised or when rushed by a dog, the bird flies at once, rising with a loud whirr. In the latter case, the birds will often fly straight upward into a tree, where they crane their necks down at the dog, uttering subdued alarm notes, and influenced apparently as much by curiosity as by fear. Even where they have been but little hunted, they leave their perch at once on the appearance of man—sahib or native. Without hesitation, a Tragopan will interpret and act on the notes of warning or alarm uttered by ravens or laughing thrushes, and although the pheasant may have had no direct hint of danger, it slips instantly away when it hears the angry croak or the cachinnations of the other birds.

RELATION TO MAN

The Nepalese shepherds have learned that these birds ascend and descend the slopes of the valleys to feed, and they take

advantage of this by erecting a low, wattled fence which extends across the usual route taken by the birds. In this are left several openings, and here nooses are strung or scattered about on the ground, and the poor bird has slight chance of evading this entanglement. Occasionally, these natives will have a drive, when by forming a line and slowly advancing, they can force several birds toward and through the openings, the birds, when not frightened, choosing to escape by running rather than by flight. I once purchased from a Nepalese a bundle of about two hundred yak-hair nooses. He told the interpreter that there were four monal in his valley; two he had already caught and eaten, and the others he would soon have.

In this method of snaring Tragopans, four or five times as many cocks are caught as hens. I think this is due to the fact that the hens rely much more on their mottled colouring and will sometimes not move until almost stepped on, and thus many are liable to be passed by the line of beaters, while the more nervous, suspicious cocks flush more readily and run on to avoid discovery.

In shooting this bird, sportsmen count on a sudden surprise in early morning, when the Tragopans are out feeding, or else by a systematic beating with dogs; although, if the bird once realizes the full danger and retreats into the depth of some dense bamboo jungle, there is no hope of getting at it. I have seen such growth which no man or dog could penetrate, the stems sometimes almost touching each other at their base, so that one's shoe would slip down and become locked between them a foot or more from the ground, making progress impossible.

WESTERN TRAGOPAN

Tragopan melanocephalus (Gray)

BRIEF DESCRIPTION.—Male: Head and lower crest black; nape and side neck deep red; upper breast bright orange; upper parts black mottled with pale buff; lower parts chiefly *black;* above and below (except on head, nape, breast, primaries, and tail feathers), conspicuously spotted with white.

Female: Above, dark ashy gray, vermiculated and spotted with black,

with narrow white shaft stripes on crown and back; mantle, rufous buff; below, cold, grizzled, pale, ashy gray, each feather with a conspicuous white shaft stripe bordered with black.

RANGE.—Northwestern Himalayas, from Garhwal to Kashmir and Ladakh.

THE WESTERN TRAGOPAN IN ITS HAUNTS

Lying at full length on a mossy shelf projecting from a long mountain slope, I could see through a windbreak in the forest of oaks and birches, the glistening, uneven edge of snow which lay between Garhwal and Tibet. Behind me the steeply rising slope shut off all view; only beneath and to the right was there a free field of vision. I had lain under my green cloth blind for two hours and had seen much of interesting wild life. As the afternoon drew on, the dark line of shadow crept slowly from the valley far below, up, up the mountain side to my right. The slope was steep and rocky, and the vegetation which clung to its face dwarfed and scanty. Idly scanning the cliffs with my glasses, I saw a distant spot detach itself from the shadows of the rugged cliff and move slowly along. A quick turn of the focussing screw brought a splendid serow into the field,—that strange goat-antelope of the Himalayas. Steadied on a bit of rock, the glasses showed even the elongated pupils in his glassy yellow eyes. He walked where a man would have perished at a step; nay, more, he nibbled now and then from some succulent tuft of herbage, and once, balanced on what seemed a hand's-breadth of crag, he stretched his neck and scratched his ear with a hind hoof! Then he performed a miracle. Without hint or crouch, he dropped, stiff-legged, for what seemed at least twenty feet sheer down the face of the cliff, landing lightly on the narrowest of ledges, where he fed for a few minutes. It was the sort of thing a bird might have done, but I never realized that any four-footed creature could so juggle with gravitation and live. Then he dropped again, this time not more than twice his height, perhaps eight feet, and passed around an angle of rock out of sight.

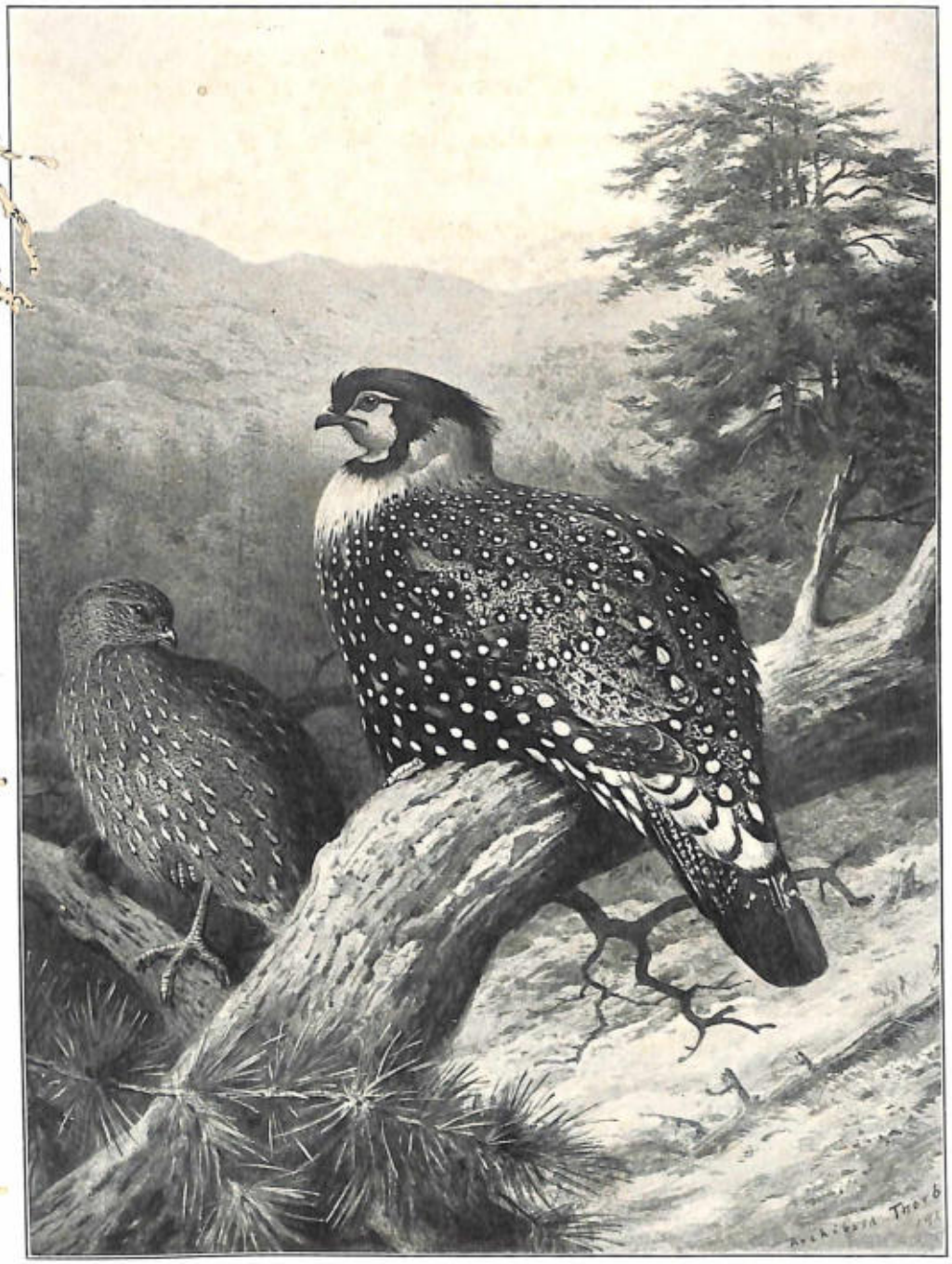


PLATE IX

Painted by A. Thorburn

WESTERN TRAGOPAN

Tragopan melanocephalus (Gray)

(For detailed caption see page xvi)

A pair of swifts, which apparently had a nest in a lightning-scarred hollow trunk near by, were joined by a third, about this time, whereupon a terrific battle ensued, the combatants falling almost at my elbow in their fury. And thus, one after another, came the actors on this splendid stage, while the unsuspected audience of one attended with breathless attention and interest but forbore to applaud.

Over the little patch of forest grass in front, shadows now and then passed, revealing lammergeiers or vultures, and once a nutcracker came and preened his plumage for five minutes in a tree down the slope, close to the level of my eyes.

Then a whirr of wings came from behind, and a wonderful cock Tragopan, the Western bird, flew straight overhead into the nutcrackers' oak. For a moment after alighting, he stood motionless, his keen eyes scanning every detail within view. Fortunately, I had been watching the nutcracker, so the imperceptible shift of the glasses to the left was unobserved by the newcomer, who was facing directly away from me. My heart thumped wildly against the mossy rocks, and in my excitement it seemed as if my pulse must be audible even to the bird.

For at least ten minutes I watched this glorious creature, so close that not a feather or a spot was lost. When satisfied all was well, he began to preen plumage, wings, and tail, balancing sometimes in most awkward positions on the branch, but constantly coming back to "attention" for a fraction of a second, before again burying his head within his feathers. A final ruffling and thorough shake of the whole body settled his plumage to his satisfaction. It also loosened a large body feather, which fell out and eddied slowly to the ground.

Then the Tragopan began to search the crevices of the bark and the strands of moss near by, now and then tearing off an entire skein and dropping it again. All this time he kept up a contented conversation with himself through closed bill—a low, murmuring, running chuckle, brimming with good nature. I

have never heard anything like it from a captive bird, and considering it as a vocal utterance of a certain mental state, I can compare it best to the *song* of the domestic hen—that drowsy *waaa-waaaaaaak! waaaak! waaaak!* which she utters when leisurely searching for food. It seemed the epitome of wild Tragopan contentment: another day had passed, food had been found, dangers avoided, a safe roost attained. The bird settled at last on a higher branch, not far from the trunk, where he was partly concealed from my view, and here, as the shadows deepened, he squatted down. I did not wish to disturb him, so tried the experiment of first attracting his attention by slow movements. These made him crouch only the flatter, and I crawled off backward on all fours, enfolded by my green observation tent cloth, with glasses swung round my neck. My last view of the bird silhouetted against the distant yellow sky, was of a head and neck drawn out to their longest, while keen eyes lost not a movement. Some dead branch crashed to the ground in the forest far below, and the bird's head turned in that direction. I slipped away behind the nearest trunks and left the Tragopan to the solitude of its lofty oaken perch, watching the day slowly die and the valley fill with the thick gloom of night—the cold, breathless summer night of the Garhwalese Himalayas.

GENERAL ACCOUNT

The Tragopans, of all the groups of pheasants, are most arboreal, and hence parallel the curassows and guans of the Neotropical region. No concrete proof of these birds nesting in trees has been forthcoming until I was fortunate enough to stumble upon very positive evidence. This was in western Native Garhwal where I had set up my observation tent on a sloping hillside of pine, and here, in the course of a few days of watching, I saw a hen Tragopan take possession of the deserted nest of a crow or raven. It was forty feet up in a silver spruce and, before my very eyes, the pheasant lined it with green oak leaves and sappy twigs.

BLYTH'S TRAGOPAN

Tragopan blythi blythi (Jerdon)

BRIEF DESCRIPTION.—Male: Neck and chest, most of the head and bend of wing orange-red; upper parts, sides, and flanks black mottled with buff, and each feather with a subterminal white spot flanked by two large dark red patches; flights and tail mottled, without white spots; breast and belly smoky gray. Female: Above, dark grizzled olive-brown, each feather with two lateral black ocelli; chin and throat white; below much paler than the upper surface, a central white ocellus on the feathers of the mid-belly.

RANGE.—Northeastern Assam.

GENERAL ACCOUNT

This was the only species of the five splendid birds of this group which I was unable to observe in a wild state. The eastern Himalayas proper and the Burmese-Yunnanese region contain so many interesting types of pheasants that I neglected to visit Assam, thereby missing the chance of studying the one tragopan which is confined to that region. Its habits, as recorded by E. C. Stuart Baker, seem to differ but little from those of the other members of its genus.

The Tibetan Tragopan, *Tragopan blythi molesworthi* Baker, has been described from a single skin taken in southern Tibet.

TEMMINCK'S TRAGOPAN

Tragopan temminckii (J. E. Gray)

BRIEF DESCRIPTION.—Male: Forepart of head, band around neck and throat, black; long crest, nape, and breast orange-red, above and below dark Indian red, each feather on the upper parts with a black-rimmed, pearl-gray spot, which on the lower plumage is expanded into a large gray patch, with red edge. Female: above mottled dark and buff, set off by light central areas and round black patches on most of the feathers; crown streaked; chin and throat buffy; feathers of lower parts with large, oval, white, central ocelli, set in a border of yellowish buff.

RANGE.—Central China, including southern Shensi, western Hupeh, almost all of Szechuan, and northern Yunnan and Burma.

Little is known concerning the wild life of this beautiful bird. I saw two or three live cock Tragopans when I was hunting in

Yunnan. Two of the birds I watched for a full minute at some distance, one perched upon a low, dead limb, the other preening its feathers close by on the ground. I tried to stalk them, but when I had crept carefully some distance up a narrow gully, only one was to be seen. The vegetation was sparse, and I could see for ten or fifteen yards in all directions, so the bird must have gone clear away during my approach. From my vantage point behind a boulder at the rim of the gully, I watched the perching bird and saw it stand up full height and leisurely stretch each wing and leg, pushing the toes straight out through the extended outer wing feathers in the familiar manner of our barnyard fowls. It gave two quick, noiseless flaps, and with a vigorous shake, ruffled up and then settled its plumage. At last, the bird leaped to the ground, and after watching it peck among the dead leaves for a time, I shot it.

We are all familiar with the fleshy appendages with which the cocks of pheasants and fowls are decorated, but, in the case of the Tragopans, the wattle and horns on the head are comparable more directly with the excrescences on the head of the turkey cock. For, while the comb and wattles of the domestic rooster remain much the same throughout the year, the Tragopan's ornaments not only gain in size and colour as the breeding season approaches, but actually swell and dilate at the moment of supreme display. Thus they play as active and direct a part in the courtship as the voluntary spreading of the golden pheasant's ruff or the peacock's train.

The two little horns, which ordinarily are concealed beneath the feathers of the head, are at the moment of display raised, elongated, and slightly distended, appearing well above the head plumage. The wattle, which usually hangs limp and shrivelled, partly concealed within the concavity of the throat, at the supreme moment of courtship is distended with great rapidity, so that it forms a brilliant, particoloured apron or shield over the front of the bird. The Chinese are able to make a solitary cock bird display quite frequently by placing a mirror in front of the cage.



PLATE X

Painted by H. Grönvold

WATTLES OF COCK TRAGOPANS

(For detailed caption see page xvii)

A few weeks before the breeding season, the cock Tragopan, with the brightening of its fleshy hues, begins to pay more attention to the hen. In the wild state we must remember that the male, in all probability, has spent the winter and early spring in solitude, and only later, as we have shown in the case of the Satyr Tragopan, does he take up a conspicuous place and send out his challenge and love notes. In captivity, if confined at a distance from the hen, the two will call to each other at intervals during the day. When together in the same enclosure, I have never heard the female utter any unusual note at this season.

As the breeding season approaches, and the loud challenge cries have remained unanswered, the cock commences actual display. The courtship actions have been divided into several categories, but these have no value as indications of complete, separate performances, but rather represent gradual approaches, varying in intensity to the final elaborate *ensemble*. The principal preliminary overtures may be described as follows:

1. A slow, stately walk about the female, the wing toward her lowered and partly spread, the shoulder on the farther side raised, the body being thus flattened, with much of the upper plumage in view.

2. A sudden rush with partly spread wings, with or without the erecting of the horns, or the wattle, or both.

3. In the *tout ensemble* of the climax, the bird suddenly ceases its stately gait, the plumage of most of the lower parts is fluffed out; the half-spread, drooping wings move slowly, with wrist edges well out from the body and tips pressed inward and downward; the head and neck vibrating spasmodically until the horns and wattle flash out to their utmost. This last trick gives to the Tragopan an indescribable appearance: from beautiful it becomes gaudy; from an excited, half-crouching bird, it changes to a grotesque, painted creature, and before one knows whether to admire or merely marvel, the moment has passed, the horns and wattle contract, the feathers settle, and after a moment the Tragopan walks off, or it may at once begin to pick up food.

Any movement on the part of the hen at once attracts its attention, and soon the stately walk and slanting display are renewed.

CABOT'S TRAGOPAN

Tragopan caboti Gould

BRIEF DESCRIPTION.—Male: Head and neck black, except for a pale orange-red crest and a darker patch of the same colour on side of neck; feathers of upper parts with a large terminal buff spot, flanked with red and black; under parts plain buff. Female: General tone dark russet-brown above; brownish gray below. Considering the ground colour as black, the feathers are mottled and irregularly barred with pale rufous and buff, with a triangular or linear subterminal white spot, very conspicuous on lower plumage; wing and tail feathers black, banded with pale rufous mottling.

RANGE.—Southeast China.

My own experience with the Cabot Tragopan in China is soon told. One day in mid-March I was climbing a steep hill in west central Fokien. I had had good luck with other pheasants, but hitherto tragopans, for me, did not exist in eastern China. The going was difficult, through dense undergrowth dripping with moisture, and although it was not raining, the heavy clouds were driving past, sweeping the very mountain side and shutting out all distant view. Azalea-like blossoms made great splashes of cerise in the underbrush. The muddy ground was slippery, and an occasional bare slope almost impossible to surmount. Finally, I found myself on the summit of a ridge, on the farther side of which began the forest, the tops of the nearest trees down the slope being on a level with my eye. I rested here, panting in the saturated atmosphere and shivering in the dank, chilly mist. Babblers and hill-tits whirred, wet-winged, from bush to bush, or gazed curiously at me. My vision was limited by the fog to a radius of thirty feet, and for a half-hour I contented myself by noting the birds which entered this area.

I was wholly unprepared, however, for the sudden emergence of a pair of tragopans—a hen in full flight, with a cock bird in close pursuit. For the space of perhaps five seconds they zigzagged in and out, threading the low brush, and then vanished



PLATE XI

Painted by A. Thorburn

TEMMINCK'S TRAGOPAN

Tragopan temminckii (J. E. Gray)

(For detailed caption see page xvii)

into the forest silently as they had come. The first bird was unquestionably a hen, the second was certainly not in full plumage, but as certainly a cock Cabot Tragopan. My gun leaned by my side untouched, and for several minutes I gazed stupidly at the place where the birds had disappeared, and then at their trail; the vision had come so unexpectedly, had passed so quickly, it seemed a blur of the imagination. All further search during my brief stay proved fruitless, and I had to content myself with a specimen shot and brought to me by a Chinaman.

IMPEYAN PHEASANTS

Lophophorus

These are the most brilliantly iridescent birds in the world. Three species are known, ranging throughout the Himalayas and eastward to the highlands of central China.

HIMALAYAN IMPEYAN PHEASANT

Lophophorus impeyanus (Latham)

BRIEF DESCRIPTION.—Male: Head, throat, and long racket-shaped crest feathers metallic green; nape and side neck reddish copper; mantle shining golden green; wings chiefly purplish blue; lower back pure white; under parts dull black; tail rufous chestnut. Female: Upper parts dull brown with a buff shaft stripe on crest and longitudinal buff stripes and mottlings on other feathers, becoming regularly concentric brown and buff bars on lower back; lower parts paler, with conspicuous whitish shaft stripes; throat and half-collar white; tail dark brown barred with rufous.

RANGE.—The Himalayas, from Afghanistan to Bhutan.

THE IMPEYAN PHEASANT IN ITS HAUNTS

The sight of a wild Impeyan Pheasant amid the lofty forests of its Himalayan home is vouchsafed to but few lovers of birds. Once seen, it is never forgotten. Many times had I read over that graphic paragraph: "There are few sights more striking, where birds are concerned, than that of a grand old cock shooting out horizontally from the hill-side just below one, glittering and flashing in the golden sunlight, a gigantic rainbow-tinted gem, and then dropping stone-like, with closed wings, into the abyss below." Or again, in different words but to the same effect: "Looking at a stuffed cock bird in a shop window, or even alive in captivity, is very different from seeing him in his native mountains as he sails away over the blue depths of some

wild, rocky gorge, where his loud whistling cry is echoed and re-echoed among the neighbouring crags and precipices. Then is the time to see his splendid plumage to its best advantage, as the sun glints on the brilliant metallic hues of his neck and the dark purplish blue of his out-stretched wings—colours so strangely contrasting with the snow-white patch on his back and the deep orange of his fan-shaped tail, which he always outspreads when in flight."

I had the good fortune to find Impeyans in both the eastern and the western Himalayas; in the former region, in early spring, the birds were just entering upon the season of courtship; in the west, a month or two later, they were already sitting upon their eggs.

My first view of an Impeyan or Monal Pheasant formed a perfect antithesis to the vivid picture given above, but it was significant of an ever-present motif in the life of these and all birds, and served as a foil to enhance my later more cheerful studies of this pheasant.

On a windy, bleak morning in April, I toiled slowly up the steep slope of a rugged mountain in eastern Nepal. Scattered around me were splendid black silver firs, gnarled and twisted into the most fantastic shapes, and as I looked back, their knotty elbows ever arranged themselves in picturesque frames about the wonderful snows of Everest and Kinchinjunga. Earlier in the morning, every needle had been frosted with the frozen mists of the night clouds, but these soon evaporated under the fitful glimpses of the sun, which now and then shone out. All day the great bunches of moss on trunks and branches oozed drops of icy water, which fell softly to the ground.

Now and then a dark cloud would surge up and over me and send down a shower of hail and sleet or a flurry of snow, the flakes finding me crouched and shivering, clinging close to the shelter of some century-beaten trunk. It was a day of extremes, measured both by space and time; from the shelter of a huge, out-jutting mass of mossy cliff, I could see summer far below me, and upon the lofty snow slopes, eternal winter; within a few

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minutes, the icy blasts would give place to the full warm glow of spring.

The dark cloud passed, and the sunshine flooded me with its full strength. I saw the mosses under my hand full fruited, at my feet blue patches of forget-me-nots, while the buds of the nearest fir branch were bursting their winter scales. A flock of small birds worked down the mountain slope, one after another, searching rhododendron and conifer for food; a half-dozen Sikhim cole and brown tits, the latter ever harping on their simple *see-e-e-e*. With them were two rufous pied woodpeckers, hammering, and calling loud attention to themselves.

An alpine meadow glade sloped steeply before me among the hills, carpeted with coarse grass and stunted bamboo, the latter forming curious masses of balled foliage strung on low stems. From this harsh arctic turf came sundry low squeaks and rustlings; the life sounds of little furry voles. At the lower end of this uptilted meadow, two compact flocks of black-throated thrushes vibrated between their feeding ground among the grass and watch stations on the tall firs. From a dead tree farther down the slope a white-collared thrush called loudly.

I started again on my laborious upward climb, but scarcely had I ascended a hundred feet when the cold, clammy hand of the blue mist was laid again upon me, the birds swirled away, the sun was blotted from view, and I shivered in the bitter dampness. I rested, panting from my exertions in the rarefied air. A black, shapeless shadow lay among the stunted bamboo above me, and when I reached it I found a cock Impeyan Pheasant, lying breast upward, dead, among the firs and rhododendron slopes which had been his home. The dreariness of the surroundings seemed enhanced; the great mountains seemed cruel; the cold winds more biting than before.

I examined the bird and found several talon marks where some great bird of prey had struck, and then, for unknown reasons, relinquished its victim. I slung the bird over my shoulder —a cuirass of burnished metallic hues. The next surprise waited

for the scene to be shifted over a ridge, five minutes later, when the sun had broken through again, and far below me a spotted dove was cooing out its soul for very joy of life. Between two titanic halves of a split rock came a sudden rustle of great wings, and swiftly there flapped away on labouring pinions a golden eagle, and vanished beyond the sky lacery of fir needles. I went directly to the spot from which he had risen, and there found another tragedy, a cat-bear, whose fur of richest foxy-red was blowing thistle-like over the moss. The great bird of prey had made two kills in quick succession. Of one I robbed him, but the other I left as I found it. In the bewildering turns of the wheel of life, one's sympathy knows not where to abide. Should I be sorry for the splendid cock pheasant cut down in the full springtime, or for the harmless little cat-bear, upon which death swooped so suddenly while it was innocently grubbing for roots? Or why not be glad for the appeased hunger of the helpless eaglets in their distant eyrie? Thus passed my first day in the home of the splendid Impeyan Pheasant.

GENERAL HABITS

Like almost all the feathered inhabitants of these high regions, the Impeyan is decidedly migratory, in a purely altitudinal sense. In a word, the cold and snow force him downward; warmth and summer send him upward again *au ciel.*

They are hardy birds, however, and no false alarm of winter frightens them. The early snows may fall, and right thickly, without causing the Impeyans to shift their autumn feeding grounds, but when a constant depth interferes with their grubbing among the dead leaves, they wander slowly downward. At the lower elevations they enter the zones of the oaks, chestnuts, and magnolias, and in such surroundings spend most of the winter months. Occasionally, a sheltered southerly slope will keep comparatively free of snow throughout the cold season, and in such locations Impeyans may sometimes be found at a considerably higher elevation than their usual winter haunts.

Or again, a number of birds may delay their descent for a month or more by taking advantage of the comparatively bare ground in the dark coverts of dense rhododendron scrub.

Unusually severe winters drive the birds to seek food in the vicinity of the lofty Nepalese and other native hamlets, where the birds may occasionally be seen digging in the deserted fields. Impeyans probably suffer but little from snow and cold, for they are hardy and seem able to withstand very low, protracted falls of temperature provided they have an abundance of food. In their native haunts, instead of a journey of hundreds of miles, as in the case of latitudinal migrants, a single leap into the air and a long, scaling flight often will carry them a full mile downward, where the snow has turned to warm rain, and in place of the frozen, dead turf, are fresh sprouting vegetation and abundant insect life.

Impeyan Pheasants seem to a large extent gregarious, but the ties between the members of a flock are extremely lax. In the autumn and winter, considerable numbers will be found in close association, but the sociability seems dependent more upon available food than any innate covey instinct. This is shown by the irregular distribution of the birds on any favourite slope. If the food, such as grubs and certain edible tubers, is rather scarce and local, one may find from a dozen to thirty birds all within the limits of a few rods, busily feeding, while with an abundant and more generally distributed food supply, the birds will spend the colder months singly, at considerable distance from their fellows. This being the case, it will readily be seen that the same lot of birds working gradually down some great mountain slope, may seem extremely gregarious at a certain elevation, and not at all elsewhere. Another fact, aside from any actual covey instinct, which makes for the gathering of Impeyans into loose flocks in the winter-time, is the constriction of the actual livable areas as the upper regions are rendered uninhabitable by arctic conditions.

It is certainly true, however, that there is a distinct segregation of the sexes. In the autumn, the females, with their simi-



PLATE XII

Painted by C. R. Knight

HIMALAYAN IMPEYAN PHEASANT

Lophophorus impeyanus (Latham)

(For detailed caption see page xvii)

larly coloured young of both sexes, wander downward earlier, and ultimately reach a lower elevation than the full-plumaged cocks. "On the lower part or exposed side of the hill, scores of females and young birds may be met with, without a single old male; while higher up, or on the sheltered side, none but males may be found."[22] This more or less complete isolation of cocks and hens holds good until spring. Continued persecution for many years, on the part of the natives, of the plumage-cocks for their feathers, has helped to bring about a slight, or, in some places, well-marked distinction in the sex of Impeyans observed near villages. While this was recorded over sixty years ago, it is more true now than ever, and when Impeyans are driven down by heavy snowfalls, it is seldom that any but females or young birds are ever to be seen in the fields within sight of the habitations of man.

No matter how loose are the ties between individual Impeyans, any hint of danger affects all simultaneously. "In winter, when one or two birds have been flushed, all within hearing soon get alarmed; if they are collected together, they get up in rapid succession; if distantly scattered, bird after bird slowly gets up, the shrill call of each as it rises alarming others still farther off, till all in the immediate neighbourhood have risen. In the chestnut forests, where they often collect in large flocks, and where there is little underwood, and the trees, thinly dispersed and entirely stripped of their leaves, allow of an extensive view through the woods, Wilson writes that he has "often stood still till twenty or thirty have got up and alighted in the surrounding trees."

In the spring, before the flights of early migrants begin to swing northward through the passes toward Tibet and Siberia, the Impeyans begin leisurely to ascend. They have only a foot of ground to cover for every mile of the other feathered migrants, but their goal is the same—the cool zone where they were born and where their parents' parents nested before them. As a rule, the Impeyans carry on their migrations on the southern slopes, but in many of the hanging valleys, birds from two wholly

separate ridges intermingle in winter. As courtship does not take place at the lower elevations, there is probably little physical intermingling, however, and, judging from all analogous cases, the birds from each separate slope or ridge return unerringly to their natal forest or heath, the young—or what are left of them—to some adjacent area.

As spring advances, all the Impeyans become wilder, and every hint of flock spirit vanishes. At this season, when one bird is flushed or alarmed by man or beast, the alarm does not spread, as earlier in the season, but each bird shows a tendency to delay its retreat until individually menaced. The first flight is almost invariably to a tree, especially if the assailant is a dog, but when again disturbed the bird puts a good distance between himself and the danger, settling this time upon the ground.

The Impeyan has certainly proved an unusually successful competitor in the life struggle which, century upon century, has been waged among the great heights and depths of the Himalayas. Formerly, the birds were unquestionably abundant in many parts of these great mountains. Especially was this the case in winter, when the spreading downward of snow and frost concentrated the numbers of Impeyans at lower elevations. But now, from end to end of the Himalayas, from the Simla or Kashmir sportsman to the hunter who makes his way northward from Darjeeling, one hears to-day only expressions of regret at the decimated numbers of these wonderful birds; birds which have wholly refuted all early hopes of semi-domestication.

The Impeyan is as inferior to the tragopan in its vocal utterances as in the dermal elaboration of its courtship display. The common call note is a shrill, loud whistle, with but little cheeriness. The only love call at the height of the courtship season which I have heard is this small call, louder and less lacking in the mournful, plaintive quality which characterizes it at other times. This brighter tone is due, however, solely to the greater vim put into the sound; the call in the main is the same. I have never heard the call note uttered by males when feeding in a loose flock in early spring, nor even when separating to roost for

the night, but it is the common family signal used by the female and her young. The call of the latter, both males and females, even when in full first winter plumage, is appreciably shriller and higher than that of their mother, and when parent and offspring are calling alternately, it is always possible to distinguish between them. I have verified this more than once in the case of captive birds. The call note may be described as a high, reverberating whistle, bringing to mind the beat of a dove's wings in flight.

The hen Impeyan makes use of the call when anxious about her nest, or when separated from the chicks, and although I could never distinguish the slightest difference between the alarm note which was uttered while I was considered a dangerous intruder with the young somewhere near by, and the ultimate call notes, in which the young joined, as the family came gradually together again, there must have been some deep and important distinction clearly obvious to the young birds.

An Impeyan is feeding busily, flicking the dirt and leaves with strong picks of his great beak, when some sound near by, not made by wind, reaches his sharp ears. He stiffens, stands upright and listens intently. The sound is repeated, but so muffled and subdued that he cannot tell from which direction it comes. But his deepest suspicions are not aroused, and he voices his nervousness in a deep *cluk! cluk!* much like the suspicion or alarm note of the American robin. This utterance is very unlike the other notes of the Impeyan, and is called forth under exactly such circumstances as I have narrated. I have heard it from both wild and captive birds.

When, however, a cock Impeyan is suddenly alarmed, so that he leaps into the air and whirrs away, he pours forth from wide-open beak a rapid succession of shrill, screeching, whistling notes which can be heard at a surprisingly great distance. These can be considered only as multiplied, intensified, terror-induced modifications of the common call note: *weeeeep! weeeeep! weeeeep! weeeeep!*

I was once hidden among the lower branches of an oak with

my glasses fixed upon a distant cheer pheasant when I heard the sudden outburst of notes of fear. So full of potent agony were they, that I remember I started and thrilled with sudden sympathy. When one spends weeks and months of constant watching and concentrated interest, striving to fit together the glimpses of pheasants or some fortunate hour of observation into its proper place in their life histories, one comes unconsciously to view one's surroundings somewhat through the eyes of these splendid birds. When I found that the very best way to watch them was from a perch in a tree, or as I spent hour after hour of cramped agony in my tiny observation tent, I felt that the mortification of the flesh was compensated by the pheasant's-eye view of life I obtained while in such situations. In the first instance, I saw what the roosting pheasant sees; in the second, I was compelled to exercise some of the patience which the tireless mother bird exhibits when she gives up a full month of life to warm her eggs into dynamic vitality. And thus, when the sudden cry, drawn from the bird unconsciously, through sheer terror, came to me, I too shuddered and breathed the quicker. My pulses did not lessen as I saw the bird itself coming full tilt toward me diagonally across a narrow gorge. Head on it came, wings bowed and vibrating, but with now and then a downward flirt of one wing as it ducked beneath a branch or swerved around a trunk. From the first glimpse of it far off through the spruces to the moment it alighted below me seemed but a fraction of a second. Its alarm notes had died out long before it reached me, but the instant it alighted it began a breathless, half-articulate call note, and for two or three minutes it remained motionless, half crouched, with bill partly open, uttering at intervals its loud, plaintive call. Then it walked slowly away, and I saw no more of it, nor did I ever learn the cause of its fright. This secondary utterance of the call notes seems to have no distinct purpose. I was told that the same thing occurs when a cock bird is thus suddenly alarmed in winter, when it can have no family or young to summon or warn. It would seem to be a mere reflex of the sudden nervous strain, and the

bird is probably as unconscious of calling at such a time as is a person of his exclamations at a sudden fright.

The mother note of the Impeyan is low and subdued, a crooning, nasal, untranslatable sound, while the chicks have a whistling chirp that merges, with but little change except of depth and volume, into the call of the adult Impeyans.

The early morning calling is rather inexplicable. I have known of four birds, old and young, roosting at a certain place, night after night, and yet, early in the morning, all would regularly go through a period of repeated calling. The calling was less noticeable and of shorter duration when the dawn was lowering and cloudy than when the sun came over the mountains bright and clear. It seems probable that it can only be a mere concomitant of the nervous excitement of awaking and preparing for another day. When the birds begin to feed, the call notes cease at once, and during the day they are seldom given, unless the birds are forcibly separated by attack, or, as we have seen, unexpectedly alarmed.

The Impeyan appears at his best when standing still, although even then the stoutness and thickness of his legs and feet give him a far from graceful figure. But however much we admire his marvellous colouring, of his gait we can say little in praise. It seems to get him over the ground, and throughout his short life he doubtless covers many, many miles of stiff hill climbing, but to our eyes his waddling, plodding steps seem to savour of effort—something decidedly wrong in the general proportions of bodily weight or balance and the lower limbs. But we may be certain that there is good cause for this, and I have sometimes wondered whether the gait of this bird, awkward as it appears on level ground, as in an aviary, was not some direct adaptation for hillside clambering. The wide-apart position of the legs would certainly be an advantage in climbing over coarse, uneven turf, and in such locations there would be little use for the swift, direct speed of other pheasants.

The food of Impeyan Pheasants is rather specialized, and yet varies considerably during the course of the year. Many writers

have given the impression that it feeds to a large extent on some special form of large grub, and also on a particular edible tuber, but none enter further into details than this, and it is very improbable that there is any species of larval beetle or other insect which is so abundant and widespread throughout the Himalayas as to form a very dominant item in the diet of this pheasant. However, terrestrial insects and tubers do certainly form its chief food, but in every locality in which I have studied Impeyans, these differ widely. Whenever snow does not cover the ground, or the forest débris is unfrozen, Impeyans spend much of the day in digging among the moss and fallen leaves. It is in this work that their excessively heavy, overlapping upper mandible serves them well, and from the constant use of this organ it seems very reasonable that the connection between fossorial effort and its ponderous size is very close; it may, in fact, be considered a fossorial adaptation. The importance of this is more evident when we consider that the Impeyan very seldom makes use of its stout feet and claws for the purpose of scratching—the habit which is so nearly universal among gallinaceous birds.

In the high forests of Garhwal and Kashmir I have watched the Impeyans at their communal feeding places and found every movement full of interest. At about ten thousand 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 until daylight, but the succeeding night was clear, and before early dawn, lighted only by the faint greenish glow from the great mass of 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 sprin-

klings 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. I had mounted my powerful stereo glasses with an elastic band on a small branch, and like a Gatling gun I could, with the slightest touch, swing it so as to cover the entire glade. A gentle push and the Impeyan came into the field, his metallic hues deadened by moisture and the early dawn, but the clear brown eyes flashing here and there as he plucked the heads of tiny flowers from among the grass and swallowed them.

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. Not once during this observation did I see a bird use its feet in scratching. 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 the head and giving a swift glance around 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-over 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, 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 most interesting phase of the whole performance was the absence of females and the fact that the Impeyans came apparently from different directions. Although I could not see the birds until they actually stepped out of the trees into the glade, I heard several times the loud beating of wings, as if they had flown from some distant point. Certain it was that the Impeyans were nesting at this time, and I am equally certain that on the adjacent slopes were but two nests of these birds. We can only conjecture the cause of the segregation of the males at this season—a segregation which in other birds would result from combative reasons, but in these marvellous feathered rainbows was inspired solely by gastronomic desire. I was spying upon a veritable *café du Lophophore pour les hommes seulement.* I never succeeded in finding a corresponding gathering of females; never more than two or, at most, three, and these were feeding in quite thick woods.

After the Impeyan cocks had been feeding for a half-hour, there arose a sudden excitement; several disappeared among the surrounding deodars, and all stopped feeding and stood listening and watching for several minutes. Then feeding began again, but in a desultory way, and one by one the birds left the glade until only two were left. I stretched my cramped limbs and in so doing slightly shook a branch, when both birds gave a single

glance in my direction and launched out over the valley, uttering their screams of terror as they went. Thus ended my never-to-be-forgotten séance with the Impeyans at breakfast in their native mountains.

As regards the specific nature of the Impeyan's food, we find but little in literature. One author states that, in autumn, the Impeyan feeds 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. West of native Garhwal, Impeyans have been observed feeding on edible mushrooms and round truffles, as large as the egg of a goose, which are known as *marewah*. Other records include wild strawberries and currants, the roots of ferns, and acorns. The few birds which I have examined were mostly shot in the early morning before they had had a chance to fill their crops. One had eaten several good-sized fragments of an elongated, very hard tuber; indeed, the edges of the upper mandible must perform an important function in cutting and splitting vegetable tissues of such firm consistency. Close to a digging ground of Impeyan Pheasants I once found a number of the hard elytra of a large species of beetle, indicating that the birds had devoured the bodies of these insects.

In winter, when the snow lies upon the ground, or when the Impeyans are low down among the oak forests, or, again, when their summer haunts lie within the fir zone, the birds roost at night up among the branches. Some dense clump of old trees may form a favourite perch, to which a number of birds will repair night after night. When such a place is known, it is not difficult to hide and observe their approach, and more than once, just at dusk, I have stolen up beneath a chestnut and discovered the big round forms upon the branches overhead. All that I could see distinctly were cocks, but they were roosting alone, each bird by itself, the social spirit being too lax to exact closer

intimacy. Young birds perch, presumably, with their mother, as they are closely associated throughout the early stages of life, and may remain together until autumn or even early spring.

One observer told me of seven birds, all in female plumage, which in the autumn roosted regularly in a clump of rhododendrons, in three groups, of two, two, and three respectively, doubtless three hens and the young birds of the year.

When, however, the Impeyans make their summer home, as many do at shrub line or even among the alpine meadows, many of their more usual habits become modified in accordance with their surroundings. The only note I can find on their sleeping habits in such places is that they will "often roost on the ground in some steep, rocky spot." Although I have searched very carefully, I have never found Impeyans roosting thus, but there is no reason why they should not do so, as both blood pheasant and snow cocks have a similar habit. Whenever I have studied Impeyans in open rocky country, both in Nepal and Garhwal, I have found that they invariably choose the protected—south or southeast—side of some steep cliff or outjutting mass of rugged boulders, and there roost in the niches well up on the precipitous face.

One such location I shall never forget. From the foot of the rock, a meadow of coarse grass and dead lily stalks stretched steeply downward to a jumping-off place, where a fault in the geological formation had cut a deep gash in the ground. Beyond this, the first valley stretched blue and mistily far down and across to the opposite mountain covered with dark and dense forest. Beyond lay three more mountain chains, their rolling curves intersecting, becoming more purple and ethereal as they stretched on into the distance. From the face of the cliff behind grew straggling graceful tufts of alpine grass, diminutive rhododendrons, as gnarled and rugged as the uppermost pinelets on Fuji. By climbing a few yards upward from crevice to crevice, a narrow shelf of rock was reached, not more than a foot wide, but winding for twenty feet along the cliff. It took but a glance to show that several birds had for some time made this their

roosting place, and a number of feathers of a female or immature cock left no doubt as to the species.

But I wanted more proof, and so I began my afternoon watch on the flat top of a distant boulder—a huge, jagged affair as big as a dâk bungalow, wonderfully lichened and mossed, and eaten by frost and rain into a marvel of frescoing and deeper etching. My battery of binoculars was soon mounted and I settled myself for a long vigil. A pair of lammergeiers came down to investigate, but sheered off after a keen scrutiny of their supposed prey. My only other visitor was a little creeper which hitched up and over the rock and mounted one of my hunting-boots before he realized that I was some fearful creature, not a part of the boulder, and dropped from view in voiceless terror over the rim of the precipice near by. My attention wandered from my main object, and when I again looked through my glasses, I saw an Impeyan—a cock not yet in full plumage—squatted on the shelf. Soon, two other apparently full-plumaged cocks flew up from the meadow, reaching the shelf with a single, direct, almost vertical flight from the ground. These birds moved scarcely a feather after they reached the shelf, squatting at once but with eyes wide open, and, until dusk obscured their forms, they showed no signs of sleep nor yet of movement. I slipped down from my perch and went back to camp. On the following night none came to the roost—at least until darkness put a stop to my watching—and on the succeeding evening the two cocks were alone. This was my last opportunity, and I was unable to learn whether the young bird would be seen again or not. I was especially sorry for this, as the next day a Nepalese shepherd passed me with a dead immature cock Impeyan which he had snared two valleys away. At this meeting, he was suspicious of me, and I could not persuade him to sell me the bird. It seems hardly likely that this bird would have wandered a full five miles from its roosting place, so I have no doubt the birds were really two individuals.

The chief point of interest to me in this roost was the fact of the sound sense showed in choosing such a location. Beech

martens and gray foxes were abundant, and wild dogs were about, while doubtless other terrestrial carnivores of which we knew nothing were in the vicinity—all potentially impeyanivorous. But here, sheltered from all the worst storms, these birds had found a truly impregnable sleeping place. The darkness of night made all safe from soaring eagles, and the scant ten or fifteen feet of vertical rock between the ledge and the turf was a barrier which no four-footed foe might scale. But here again, most careful search failed to reveal the roosting place of any female Impeyans. Nesting was just about to commence.

Although Impeyans seem to tolerate one another's presence more or less throughout the year, I have never seen or heard of their associating closely with any other species of bird. They have often been found feeding in company with some of the Himalayan ungulates, and in certain places, especially in the western Himalayas, they prove a source of annoyance to sportsmen who are after tahr or goral. If the keen eyes of an old cock Impeyan once spy out the stalking hunter, the loud whistle of alarm is almost certain to arouse the suspicions of every tahr within earshot, and to make them restless and uneasy and almost impossible to approach. From the very first of my pheasant researches I had in mind many possible interrelations of interest —both friendly and inimical—which might exist between these birds and their neighbours, and in a number of species I found abundant reward in this particular respect for my many hours of observation, but with the Impeyans I failed to find any reciprocal associations such as that between certain kaleege pheasants and small mammals.

As to the enemies of Impeyans we have more exact information. From the time when first womankind looked on the marvellous plumage of this bird and pronounced it superlatively necessary for the adornment of her apparel, man has outclassed all other enemies in the life of this pheasant. But just here we are concerned only with the natural foes of the species: creatures that have preyed upon it or from which it has escaped through all the centuries during which man, far from thinking of personal or-



PLATE XIII

Photograph by William Beebe

NEST AND EGGS OF THE IMPEYAN PHEASANT

(For detailed caption see page xviii)

nament, was only too thankful to be able to preserve his own life from the wild beasts about him. So, ignoring for the moment the very recent arrival of the featherless biped—whose presence is so puny a phenomenon among the grandeurs of the Himalayas, and yet whose tiny shiny weapon spells ultimate death and extermination for all these splendid creatures of the wilderness—let us picture the foes which, if they do not silence the downy chick striving to hide among the jungle, or if, indeed, they have not already crushed the life still within the egg, will surely cut short the proud magnificence of the overbold cock in his prime, or, certain as fate itself, take instant advantage of the first carelessness or weakness of old age.

My first experience with the Impeyan, as I have related, showed the golden eagle as one of these foes, and now that my study of the pheasant is completed, I return to eagles as perhaps the worst foes of this species. The love of the open shown by Impeyans, both old and young, gives these great wolves of the air many a chance, and too often the quivering balance of fate swings to their side. The Impeyans, both cocks and hens, are birds which, like the peafowl, choose to depend on their own eyesight for detection of danger, and when it is once perceived, they seek safety by instant action and not by trusting to escape observation. I have never known, either in my own experience, or through that of hunters, of an adult Impeyan squatting for safety. The young will do this until strong on the wing. One glance dictates the course of action: a four-footed assailant sends the bird straight up into a tree; from a winged foe it bursts like a bomb from the ground and hurtles with incredible speed into the nearest cover. Whenever possible, the aid of gravity is invoked, and the bird shoots down into the valley at as sharp an angle as the ground will permit.

Besides the golden eagle, there are two others, Bonelli's and the spotted hawk-eagle, which unquestionably attack and kill Impeyans, while it is certain that the goshawk accounts for many a pheasant, both old and young.

As regards protective colouring in this species, the female,

of course, is under all conditions less conspicuous than her consort. And it is most significant that she is not nearly as ready to take to wing as he, being on the whole much less wary, more willing to take a second glance at danger before flying; the chances of life have allowed her a wider margin of safety. The theory of counter shading received a sad blow from the colouring of the cock Impeyan, he being jet-black beneath, although living much in the open, and his white dorsal patch would seem for the express benefit of birds of prey, showing them just where to take the most effective grip—the broad back and thighs behind the beating wings. No, most decidedly, we cannot explain the Impeyan's armour by protection, and he seconds us in this opinion; he takes no chances by skulking or crouching. When the sun was hidden from view, I have found the cock bird as inconspicuous at a distance as the hen, but when the first gleam broke forth, it seemed like a searchlight falling upon his wondrous metallic plumage; every movement made of his body a living heliograph more potent than any scent or vocal utterance could possibly be to attract the attention of all, whether friend or foe. In the steamy, hot, dark jungles, I many times admired the alert carriage and watchfulness of the pheasants dwelling there, but for no other bird did I ever feel the enthusiasm which the bravery, unconscious though it was, of the Impeyan aroused; apparently conscious of danger, clad in the most advertising of tints, and yet taking his chances in the open.

Lynx, leopards, foxes, wild dogs, beech martens, weasels, all doubtless look upon the Impeyan, awake or asleep, as their lawful prey, but the recently slain body of the adult Impeyan of which I have written is the only tragedy of its kind within my personal experience.

From Sikhim to Kashmir, the nesting season of the Impeyan is in May and June. All the birds have now returned from lower levels, and at these high altitudes the spring of the year is at its full. The courtship takes place late in April or early in May, and, as in all the pheasants, consists in a display of the cock

before the female, of such character that his brilliant hues and striking patterns are exhibited to the utmost advantage. Twice at a distance I observed Impeyans thus displaying, but in both cases my woodcraft was not equal to that of the birds, and before I could reach a position for careful watching, they nad taken alarm and disappeared. On the second occasion, I consumed almost an hour in creeping a hundred yards, and was certain that neither by sight nor sound had I revealed my approach, but solace my pride as I might, the fact remained that the birds had left. From observations on captive birds I am inclined to think that the courtship is a rather more rapid affair than with many other pheasants. A cock will walk up to a hen, show off for a few seconds, and walk away again unconcernedly, in strong contrast to the ardour of a golden pheasant, who seems to take little time from his circlings and posing even to feed.

The performance of one bird which I observed many times never varied, the invariable sequence being as follows. The cock approached the hen with long groping steps, describing wide circles about her, always with the inner wing lowered to such an extent that the feet and legs were completely hidden. The neck was extended and arched, swan-like, the crest thus standing quite erect, the beak pointing down. As he got nearer and more excited he pecked now and then at the ground, elaborately but meaninglessly. Gradually a more and more frontal position was assumed, and the tail began to be the most prominent feature, being raised to a vertical position and spread to its widest extent. At last the cock faced head on, with head and beak to the ground, wings spread, lifted forward and drooped, tail wide and erect, the bird bowing rhythmically forward and back. Finally the bird suddenly collapsed, stood up, settled his feathers, looked about for a moment as if he had awakened from sleep, and began feeding.

The display is essentially frontal; that is, while under the excitement of the season of courtship the bird may spread its wings or tail, or ruffle up its plumage as it approaches the hen, and

especially on the side toward the demure disturber of his peace of mind, yet it is not until he is directly facing the hen that the real display takes place.

Summing up the courtship evolutions of the Impeyan, there seem to be several objects to be attained, although it must always be remembered that the action is wholly instinctive. The under parts and larger wing feathers are dull coloured and must be concealed from view; all the upper parts must be displayed to their utmost, but the copper and bronze-green of the neck and mantle are the *pièce de résistance* and hold the centre of display, the brilliant head and waving crest and white dorsal patch must be in evidence, and, finally, the rich monochrome of the tail feathers, forming the most admirable background in the world, must needs be raised and spread out to their utmost. All this is achieved by the bird inverting itself as much as may be; bending far downward until its breast almost touches the ground, with the head and neck still erect, the back reared upward, and the tail spread to the fullest extent. The position is not unlike that of the peacock, and like that bird, but unlike the peacock pheasant, the wings are never brought forward, but kept at the sides of the body, and often only partially opened. The feathers of the back and wings are only slightly raised, but the mantle and neck plumage fluff out into a radiating halo of most marvellous beauty, encircling the head and vibrating crest. For this he wears his flaming armour throughout the year, inviting constant attack and death. One cannot help getting thoroughly out of patience with the hens, who gaze at the efforts of their gorgeous suitors with less enthusiasm than they manifest in searching for the next grub! We humans stand transfixed by the beauty, longing for more real insight into the minds of these little mountain folk; striving for some clue as to how it all came about and exactly what it all means. How willingly would I seize upon the least hint of conscious appreciation; how ready I stand waiting to exaggerate anything which I could interpret as akin to our human æsthetic sense; but the most ardent lover of feathered creatures, if he is perfectly frank with himself, must

acknowledge that birds seem almost to lack this faculty. I have seen an Impeyan which by accident had lost his tail, raise and spread the unlovely coverts with as great éclat as though his splendid orange fan were perfect. I believe if his plumage were dyed the most ugly colour in the world, the ardour of his courtship would abate not one whit. There seems considerable reason to believe that such a transformation would affect the hen, but hardly through any shock to so-called æsthetic sensibilities!

The inconspicuous mottled cloak which Nature has wrapped about the female Impeyan is essential for the month of incubation—that critical four weeks of her annual life which must be lived in one spot. Think what a fearful handicap such a period must be: the bird, active and vigorous, able to watch for danger on tiptoe or from a tree, to flee from it on foot or wing, suddenly becoming a static creature, voluntarily assuming the rôle of a plant or stone, and even though she save her life at the very last gasp, her eggs—as helpless as pebbles—lie ready for the maw of any passing foe. If within the short period of my stay in the Himalayas, with the dulled senses of a human being, I was able to discover three nests, how much more fatal must be the daily wanderings and nocturnal pryings of the keen-nosed creatures of the forest!

In connection with two nests which I found placed quite close together, it is interesting that in another locality where these birds were numerous, several nests were found within a circle of a hundred yards, as if the females, even at this season, were more or less gregarious.

These two nests, and a third found later, were all alike in that there was no nest in the usual sense of the word. The eggs were deposited in a depression that might have been made by the mere weight of the bird. The dead leaves and flower stalks which lined this were only those which the accident of fate had already deposited there, but in each were a half dozen or more soft breast feathers of the hen Impeyan. One nest was close to the foot of a decayed stub, another fairly touching an overhanging boulder, and the third near a living oak tree. Two

were at an elevation of eight, the third nearer nine thousand feet.

The two eggs which I found were evidently a set, as the broken one showed signs of about a week's incubation. Natives tell of sets of a dozen eggs, and one record states that nine were found, but it may have been that these were eggs of the koklass. Eight is the largest perfectly authenticated number, and the usual quota is unquestionably four or five. Sets of two are by no means rare.

The eggs of the Impeyan Pheasant resemble those of our American wild turkey so closely that some specimens are almost indistinguishable. Comparison of the females of the two species and their eggs is of interest, considering the various characters of the turkey as 1.

	Body Measurements	*Body Weight*	*Size of Egg*	*Number of Eggs*	*Period of Incubation*
Female turkey . .	1	1	1	1	1
Female Impeyan . .	$\frac{2}{3}$	$\frac{1}{2}$	1	$\frac{1}{3}$	1

The eggs of the Impeyan have a firm and compact shell, with but slight gloss, and in shape are broad, rather blunt ovals. The ground colour is creamy or buffy white, the entire surface thickly freckled with dark reddish brown. These markings show considerable variation; rarely almost absent; more frequently in the form of minute pore-like specks, or still more commonly with a large number of spots about one twentieth of an inch in diameter. Sometimes the markings are more dense in the centre, in other specimens at one or the other end. The eggs average 45.5 by 65 mm., or about $1\frac{3}{4}$ by $2\frac{3}{4}$ inches.

As to the more intimate wild home life of the Impeyan, we can only piece together the fragments of observation which are all we have. In captivity, we know that occasionally the cock will assist materially with the care of the young birds. I know, however, of no instance of his approaching the nest or eggs during incubation. Doubtless, in a wild state, swift destruction would follow in the wake of his conspicuous figure did he haunt the vicinity of his sitting mate. Probably, in most cases, he does

rejoin his family when their safety from the dangers of nest and early chickhood is assured. In summer and early fall, the parents and young live and roost together, remaining more in the shade of the forests than on the open hillsides.

The vicissitudes of chickhood are shown by the average number of two young birds seen with the mother in the autumn and winter, often only a single one remaining out of the average of five or six which must have been hatched a few months before.

However numerous their enemies, it is difficult to believe that the lammergeier is to be included among them. It has been stated that the bearded vulture destroys the adult birds, but this vulture would hardly be found within the forest itself, and we have no first-hand observation of its attacking pheasants, either old or young.

We know that the Impeyan cocks are seen again and again with their partly grown broods, but it is only in captivity that we can hope to gain such insight into their admirable family qualities as is recorded of a pair of birds which reared their young year after year in an enclosure some thirty yards square. The young birds began to perch when three or four weeks old, and it was a charming sight to see them settling down for the night, perched between the parents, both of which extended one wing over the nearest chick, for the cock bird took his full share of night duty. One has only to close one's eyes and think of the forests of mighty deodars and firs, the air of the cool Kashmir summer night, heavy with spicy resinous odours, to feel a mighty affection for similar little families perched asleep among the branches—all too few left alive to-day.

Here we have a rather complex yearly cycle of life: the two sexes in loose flocks ascending in spring to their breeding haunts; pairing and a brief association; the segregation of the males in flocks during incubation, and in the summer a reuniting of the families, the attraction this time being apparently pure family affection—a fact which, if true, goes far to compensate for the dashing of our belief in their æsthetic appreciation. Then, finally, in the autumn, the bond loosens, and the male again

drifts apart from his mate and young, who soon begin to wander down the mountain slopes to their winter haunts in the valleys.

SCLATER'S IMPEYAN PHEASANT

Lophophorus sclateri Jerdon

BRIEF DESCRIPTION.—Male: Upper plumage iridescent; lower black; head with short, recurved green feathers; neck copper; mantle and inner wing coverts green changing to purple; outer coverts coppery or green; back, rump, and tail coverts white; tail dark chestnut, with a broad, white, terminal band, black mottled with white at base. Female: Lores, chin, and throat white; head, face, and neck black with V-shaped buff marks; mantle and back dark amber, with pale rufous shaft stripe and mottling. Wings more rufous; tail black, banded and tipped with white; lower back, rump, and upper tail-coverts pale gray with fine, irregular dark bands. Lower parts olive, finely vermiculated with pale buff.

RANGE.—Mishmi and Abor Hills eastward into the mountains of northern Burma and Yunnan.

GENERAL ACCOUNT

Almost nothing is known of the Himalayas east of Bhutan and north of Assam. They are inhabited by fierce tribes who allow no strangers to enter, or at least to leave their domain. It is from this mysterious hinterland that the hill tribes, the Mishmis, the Abors, and others, come down, when they venture to appear for purposes of trading. Every year, a fair is held at Sadiya, at the extreme head of the Assam Valley, and this is attended by many of these savage people. Among other things, they occasionally bring with them skins or even live birds, and it is in this way that the few specimens of Sclater's Impeyan have been secured. As far as I know, I am the first white man who has seen or shot this species in its native haunts. Thus may we account for the absence of a single fact in literature regarding its wild life or even more than a general vague idea of what region it inhabits.

Wholly unexpectedly, I met with Sclater's Impeyan in northwestern Yunnan, close to the Burmese border, when studying the pheasants of that region in the winter of 1910, and am there-

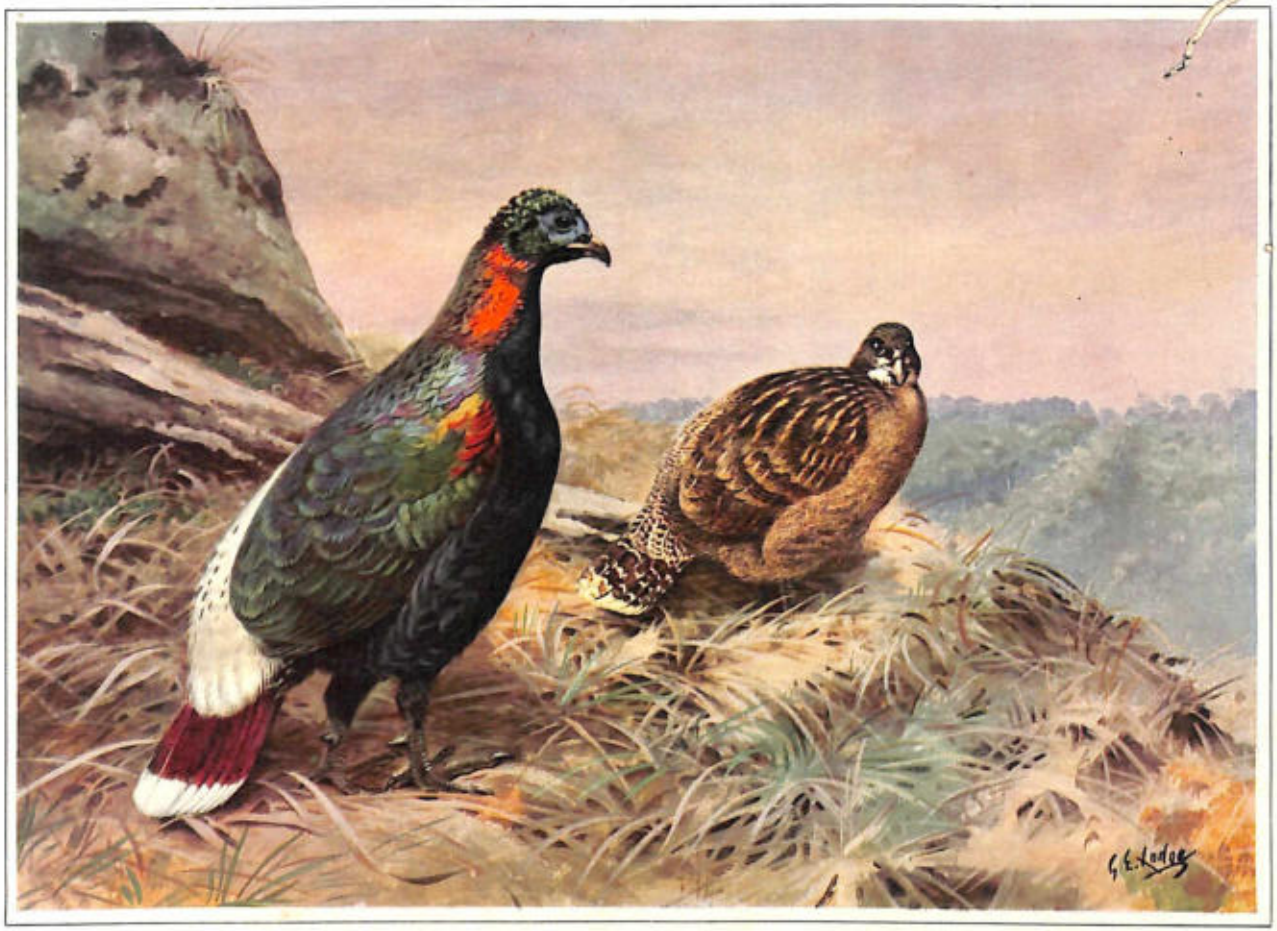


PLATE XIV

Painted by G. E. Lodge

SCLATER'S IMPEYAN PHEASANT

Lophophorus sclateri (Jerdon)

(For detailed caption see page xviii)

fore fortunate enough to be able to relate something at first hand of the bird in its home. This is so meagre, however, that I shall give the experience just as I find it in my journal, with all extraneous details which in any way may help to picture the environment of this rare pheasant.

One very characteristic feature of the high mountain slopes along the extreme northern Yunnan-Burma frontier is the lasting character of the scars made by the native millet farms of the past decades. In place of the splendid oaks and chestnuts, there springs up a terrible stubby growth of bamboo, to penetrate which is a punishment leaving lasting wounds and complete fatigue. Yet one must force a way through many such zones to find the pheasants which here make their home, and here I found this wonderful bird at an elevation of about sixty-five hundred feet.

One of the greatest triumphs of my pheasant search came at the end of a cold, bracing day in early winter. I was camped upon the bare summit of a rounded knoll, and all through the night there was heard the sound of the rushing waters which tumbled over the great boulders of the deep ravines on either side. Except for this, the nights were, as a rule, silent; the most startling sound being the frantic squeal of an unfortunate pig, pursued or caught by some beast of prey.

Waking in the early dusk, one heard only the soothing, distant roar of the streams, and now and then the footstep of the Ghurka sentry. Hardly had the jungle of the opposite slopes appeared through the cloud-drenched dawn, when the notes of a whistling thrush rose clear and sweet. A splendid, sturdy bird, making its home among the moss-hung oaks, more than a mile above the sea—its song was worthy of owner and place. Its blue-black coat was still wet with dew as its throat poured forth a series of penetrating flute-like tones. They rose above the roar of the torrent, and for a half hour jungle and mountain were silent, listening to this superb matin. Then, as suddenly as it began, the song ceased, and not a note was heard until at dawn the following morning.

Close upon the brightening of the dawn came another sound, not of the wilderness and yet with a wildness hardly human—the pitiful wail of some insane Kachin child, which had awakened from its bitter sleep to its still more bitter daily life. It strove to put its poor deformed mind upon the task of gathering a few of the myriad sticks lying everywhere in the jungle, to carry them to the hut of some native—perhaps its parents who have discarded it—or of a strange Chinese, in exchange for a mouthful of rice. What heart could fail to be moved by the terrified sobbing of these poor creatures which haunted the forests about every village, where even the normal natives lived day and night in dread of the tiger-formed, evil "nats." Apart from nature as they were, one could not enter these regions without encountering these hopeless waifs, haunting jungle and trail.

The light now came quickly, and with it a multitude of birds' voices, and from the distant jungle the jubilant rollicking chorus of the jolly hoolock gibbons. Every creature here is a sun worshipper, for shade means the chill of death, and sun the bracing warmth which one can enjoy best only upon these high roofs of the world.

The sun had topped the great jagged barrier which led straight down from the heart of the unknown north, and on our sturdy little mountain ponies we crossed a foaming stream and began a stiff zigzag climb, the trail full of deep ruts and rolling stones. Now and then we came to a ledge over which the horses scrambled on knees and hocks. At the last open field we dismounted and turned the ponies over to the Sikh. At an angle of forty-five degrees, we slid, scrambled, and scraped our way through the soft ground to the bottom of the ravine, where the cold shade of early twilight still reigned.

Here we separated, and I made my way slowly up stream, creeping over the great rounded boulders or wading through the rush of icy water. Every turn revealed new beauties. An enormous overhanging mass of quartz loomed up, draped with swaying vines, and, beyond, a little sandy bay was fretted with

the tracks of pheasants, cats, and deer. In the spots of sunlight among the higher branches crimson butterflies flitted about, and white-fronted redstarts dashed ahead from stone to stone.

Stopping at a favourable opening, a half mile up stream, I began my laborious climb upward, first through a steep ascent of soft mould densely shaded by wild bananas. The undergrowth seemed scant, and as I brushed aside the first thicket of soft-leaved plants, I anticipated an easy first stage. But the gray down on the myriad green stems proved scourging whips of nettle which lashed face and hands at every step. There was no alternative, so I clambered painfully on, seizing hold of every cold, smooth-enamelled banana trunk as a haven from the merciless needles.

A small side ravine spread out into a broad, fern-filled bog, and the nettles were left behind. Then came more bananas and small evergreen trees with little or no undergrowth. Here was the feeding ground of the pheasants and deer. There was hardly a square yard of mould which did not bear the marks of the tiny hoofs of the barking deer or the strong claws of the birds. Now and then, I picked up a feather of some silver pheasant clinging to a bramble on the steep slope. The earth was crumbling, and again and again I fell headlong. Once I grasped a banana and brought it over upon me—a light, air-filled stem bearing streamers of old, crackling leaves, and a rosette of long, wavy, green ones. As I struggled, face and ears half covered with earth, my hand touched something which seemed to move. I turned my head and became suddenly sick with horror as I saw a king cobra crawling slowly out of the fallen débris, fortunately making its way to the other end of the prostrate banana stem. Its body was dull and brown, and trailing along, crackling like the dead palm leaves, were remnants of half-shed skin. My touch upon the sinuous body had seemingly not disturbed it.

If it had changed its course and turned toward me I could not have escaped from its path, half pinned down as I was by the

mass of leaves and the stem. I watched the tapering point of the tail slowly disappear, and weak-kneed and trembling, crept slowly off in the opposite direction.

Fortunately, serpents of all kinds are rare, and this most fatal and irritable species is nocturnal. I had disturbed it among the roots of the palm by my awkward fall. During the past week it was not at all unusual to find king cobras in the deadfalls of the natives.

I had hardly crept five yards from the place of my ugly adventure when two feathers caught my eye, and straightway 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 farther I found another. Later, while worming my way through a barking deer's tunnel at the roots of a perfect tangle of bamboo, I heard subdued chuckles and the rustling of leaves ahead. A few feet brought me to a deeply worn but steep sambur trail, along which I crept on hands and knees, without making a sound.

The rustling of leaves and of earthen pellets spraying 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 upward, 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 briers.

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. Never have I been "closer to Nature" than on this stalk. My trail was more like that of a snail or worm than of any vertebrate. Glints of light filtered through the green ahead, and I saw that a low, perpendicular bank of earth barred my way on each side. 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. A minute after I had reached my last position, one of the birds shook itself with all its might, sending down a shower of dirt into my eyes, while a feather or two floated off above me, down the hillside.

An inch nearer, another leaf cleared away, and I saw that there was but one bird, the appearance of the others being caused by several large mottled caladium leaves, waving about just behind the pheasant.

It was a splendid male, digging vigorously and almost continuously with its beak, working gradually around 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 quick as I could lift my arm and pull my gun up 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—a pair of hens, or young males—and in the fraction of a second were out of sight.

On the succeeding days, although I made inquiries everywhere, I could find no native who had ever seen or could give a name to this bird. The three which I blundered upon were doubtless strays from farther north, from somewhere in that mysterious land where no white man may go at present and live. Had I a yellow skin, slanting eyes, long hair, and a knowledge of the twanging words which came to my ears each night from my servants' camp fire, I might have followed these birds northward. As it is, strange people guard their haunts, neither Chinese nor Tibetans nor Kachins, but a mingling of the blood of all three, jealous of their useless land, living their bestial lives in filth and cold and squalor amid the howling winds of these heartbreaking steeps.

At any rate, we must extend the range of this bird, and connect the Mishmi Hills with the mountains of the Salween. The male which I secured was feeding on short, crooked bits of succulent rootlets, and with these it had swallowed a surprising amount of earth and other débris.

CHINESE IMPEYAN PHEASANT

Lophophorus lhuysii Verreaux and Saint-Hilaire

BRIEF DESCRIPTION.—Male: Except for very large white patch from the upper back to the tail, the upper parts are highly iridescent; head green, occipital crest purple; mantle red-gold; wings and tail chiefly bronze-green. Under parts black, slightly margined or glossed with iridescence. Female: White dorsal patch as in male; rest of upper plumage dark brown, rather sparingly mottled and irregularly barred with rufous buff; flights and tail feathers with more regular rufous bars; face and throat whitish; under parts very dark brown, with less mottling than above, the feathers with conspicuous white, irregularly shaped shaft streaks.

RANGE.—Central China, in Szechuan and Kokonor.

GENERAL ACCOUNT

Our knowledge of this bird is most meagre. The few scattered notes in regard to its life history show that it differs in no radical way from the Himalayan Impeyan. It is found during the day in small parties, sometimes males and females in separate companies, often frequenting the open rocky tundras or barren mountain meadows at twelve to sixteen thousand feet elevation, well above the zone of forests. At night, the birds descend to perch either in the dense, scrubby, stunted rhododendrons or still farther downward among the sheltering branches of the pines. The food consists of vegetable substances, and especially of succulent roots and tubers, for which, in true Impeyan fashion, it digs with its broad, strong beak.

The names which the Chinese have bestowed upon it show how strong an impression the bird has made upon them; but, unfortunately, it is not only their imagination which is affected, for we read that the bird is everywhere uncommon and soon will

disappear entirely. This is owing to the zeal with which the natives pursue it, capturing it by setting great numbers of wire snares, as they have learned that its flesh is very delicate. The cry is described as consisting of three or four separate, loud, piercing notes, uttered in early morning.

EARED-PHEASANT

Crossoptilon

Three species, brown, blue, and white, live on the bleak uplands of central Asia, from Lhasa to Pekin, and are closely related to no other group of pheasants. An unusual character is that the sexes are coloured alike.

BROWN EARED-PHEASANT

Crossoptilon mantchuricum Swinhoe

BRIEF DESCRIPTION.—Male: Crown feathers short, curly, and black; elongated upturned ear tufts white; neck black shading into brown on mantle; lower back and rump dirty white; breast blackish brown, remaining under parts lighter; tail dirty white at base, the tips brownish, glossed with purplish blue; a pair of short, stout spurs. Female: Similar, but without spurs.

RANGE.—Extreme northeastern China.

THE BIRD IN ITS HAUNTS

It is difficult to imagine a greater contrast than the haunts of the white-tailed pheasant of Borneo and the home of the Brown Eared-pheasant of northeastern China. The one is found in the thick, steaming, tropical jungle, with the flash and song of brilliant birds and the never-ceasing hum of insects. Trailing vines and hanging lianas of the forest drape every vista; the scorching rays of the midday sun scarcely penetrate the denser foliage, where fragrant orchids and rich tinted leaves brighten the sombreness of the shadowy glades.

To turn to the antithesis, we pushed inland from the shore of the Yellow Sea, where we found a vast country, flat as a board. At once we missed the ricefields which, in all our pheasant searching, from Ceylon to Japan, had been so universal a sight whenever all other traces of native occupation were left behind. Here

the fields were ploughed and already, at the end of March, planted to millet, barley, and Indian corn. Before we could reach the haunts of the wild creatures, we must traverse many miles of native-ridden country. The only trees in view were sparse, spindling saplings in rows, pitifully trimmed for fuel to the last possible twiglet compatible with life. 'Dobe houses brought Mexico vividly to mind, and houses, trees, burros, land, even the water, were all monochrome—dirt, mud, or dust colour, and when the cold wind blew, the very air as well partook of this hue.

Although we realized that hordes of human beings were somewhere concealed within the horizontal circle, seldom did we see more than one or two Chinese at a time. Now and then a wheelbarrow with a small tattered sail meandered slowly along the distant levels. No roads were visible anywhere. The rare travellers, like ourselves, seemed to pick their away along the narrow boundaries of the fields. No fences, no high weeds or dead grass; only ploughed barrenness everywhere, with here and there a faint emerald mist in the furrows, half promising better things for the spring. Rarely was seen a great-wheeled cart, dragged laboriously over the furrowed fields by two animals tandem—a bullock, a burro, a mule, or a tiny, shaggy Mongolian pony, as the case might be. Once, on the opposite side of a wide, muddy stream we saw a brace of pheasants, one a ring-neck and the other a Brown Eared-pheasant, dangling at the tail of such a cart. We knew that the latter was not found in this vicinity, so the bird must have been trapped elsewhere and brought here for sale. No shouts or gesticulations on the part either of ourselves or the interpreter were of any avail in arousing the huddled blue-garbed driver, and even when at last he condescended to glance in our direction, the waving and jangling of a string of "cash" had no effect whatever. He sank again into his formless, hunched position, and resumed what thoughts we shall never know—whatever thoughts any one of these countless millions of Mongolians may have.

From the thick, muddy lagoons and sluggish creeks ducks rose now and then—mallards, black, pintails, shovellers, and two

kinds of teal. In the fields, plover were occasionally seen, single magpies appeared, while spur-winged plover and lapwings flew before us in small flocks, or drifted with plaintive cries from one feeding place to another. Rooks and crows were the most noticeable birds, and toward sunset I observed several hundred massing one by one, or arriving in small bands, in the centre of a field. Before we lost sight of them, all rosè at once and flew eastward, doubtless to some roost, although how they could find any perching place above the ground in this treeless, shrubless land was inconceivable. White-necked crows were in fewer numbers, flocking by themselves, although, throughout the day, they were constantly seen associating with their less conspicuous relations.

I was constantly impressed with the protection against the bitter winter cold which the creatures of this Northern land showed. As our caravan proceeded slowly, we passed ponies with long, shaggy coats; then a looped string of great Bactrian camels, supercilious and dignified, with dense fur trailing from their bellies and sides. The little burros were swathed in long, matted hair up to the very eyes, while, strangest sight of all, were the occasional giant black pigs with thick hair streaming almost to the ground, as unexpected a sight at first to our eyes as would have been a mammoth.

Leaving the outer region, we hastened onward, and one day entered a wholly different country. Instead of the cool air and bright sunshine of the preceding days there was a downpour of rain, cold and miserable. Only the long strings of camels seemed unaffected, and even their dignity was rather upset by the constant slipping and sliding of the great splay feet.

This day we travelled in palanquins, and a more miserable jaunt had not yet been recorded in our many thousand miles of adventuring. The country was cut up by flat river bottoms, covered with stones and small boulders of all colours, mostly flint and quartz. In the distance we could distinguish the barren mountains of Shansi, while, near at hand, the steep muddy banks which cut up the country in all directions gave a wild,

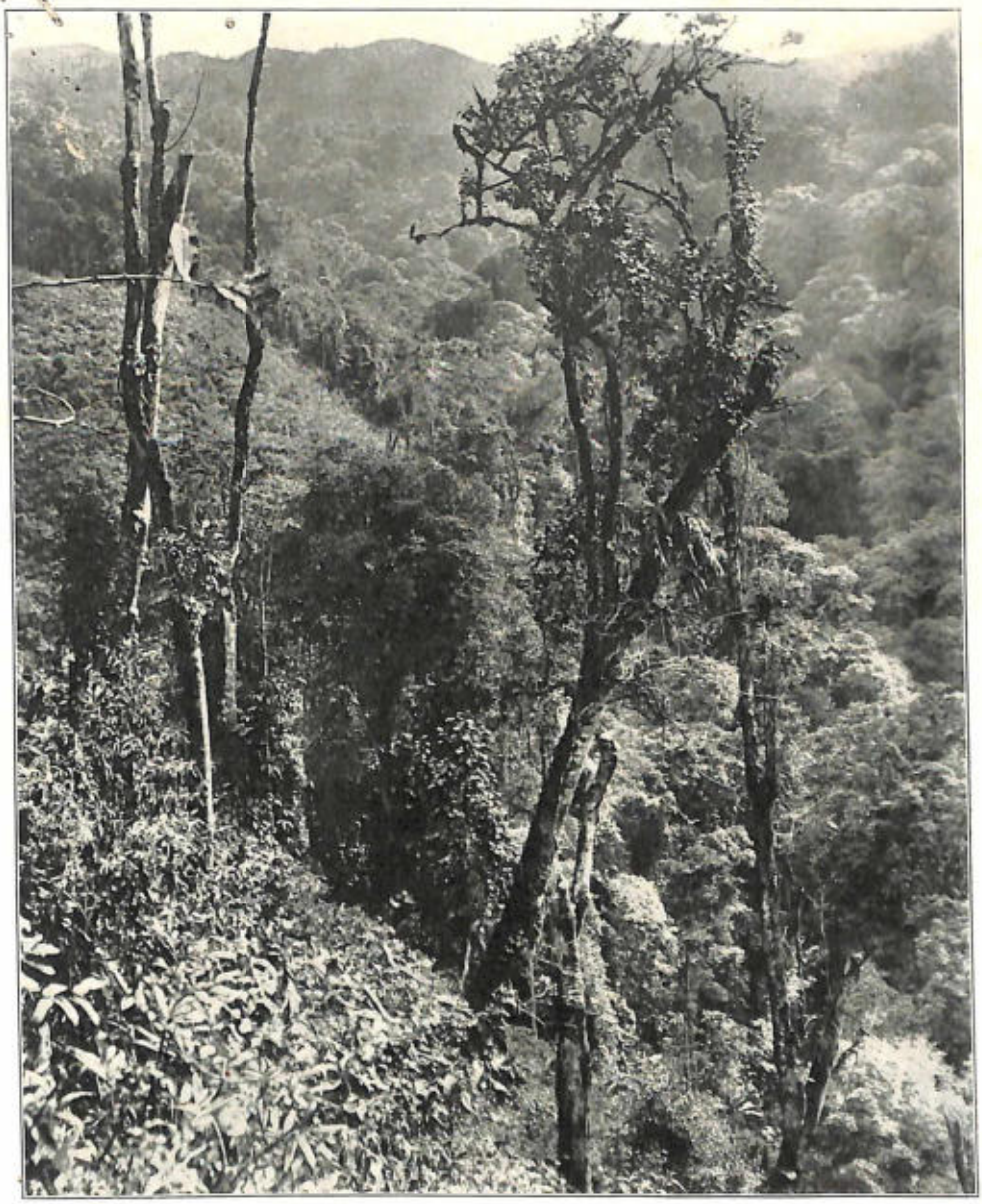


PLATE XV

Photograph by William Beebe

YUNNAN HOME OF FOUR PHEASANTS

(For detailed caption see page xix)

rugged, most inhospitable appearance. Our bearers soon began to leave bloody trails in the tracks of their flimsy straw sandals, for the vast areas of stones made cruel walking. Rarely, here and there, we saw a few spears of short brown grass, the only hint of any summer vegetation. Most strange always seemed the total lack of the remains of tall dead weeds, so common a sight in Northern lands. In the afternoon, the rain turned to snow, and although this melted at once on the rough, rocky country over which we had passed, yet before sunset we had a glimpse of the distant mountains, shining ivory-white in the clear air. That night, our camp was most miserable, cold, and dreary, and we went to rest in our sleeping bags to the wolfish howl of Mongolian dogs, thinking of the terrible ravages of the plague throughout this region, of the hopeless disease which was only now dying out.

The next day brought us actually within the zone of life of the greatly desired Eared-pheasants, and after we began to ascend the outlying mountain slopes and passed little straggling villages built of stone, we began to feel the exhilaration of even these comparatively low elevations after the dreary monotony of the terrible endless plains. It was still a land of rocks and boulders, but here and there bright flowers of early spring gleamed in the calm, frosty air. The lower mountains were monochrome save for a constantly increasing touch of green in the stems of the willows. The steep hillsides on the farther sides of the mountains were clothed with a beautiful golden russet mat of dead grass.

In days to come, we left the boulder-strewn country behind and lived in a wilderness of scrub oak, pine, and birch trees—all scraggly and dwarfed from the constant fight for life with the Northern storms. One day's detailed observation will give a good idea of the haunts and neighbours of the Brown Eared-pheasant.

In a great sheltered valley, or rather in a deep niche cut out of one side, I watched one day in early April for what might come. Beyond the farther ridge and far down in the second valley was

the camp. Before me was nothing but wilderness, stretching away unbroken to the farthest edge of the great land, with none but nomadic Northern tribes of robbers to disturb the wild creatures, while behind was China with her teeming millions of half-starved human beings. I crouched, wrapped in a blanket within my cosy umbrella tent, with all the ventilation holes closed up, getting what warmth I could from the sunshine diluted through a zone of fleecy clouds. After setting up my little stand in many places, I had had, so far, only the briefest glimpses of wild creatures, twice Eared-pheasants and several times small mammals. To-day I watched some little voles or shrew-like animals scampering about from one grass tunnel to another within a few feet of where I was ensconced. They were veritable little weather vanes as regards the sunshine. When a dense cloud drifted across the face of the sun, all vanished as inexplicably as if dissolved in air; when the warm rays began to make shadows behind each rock, the tiny black forms began to flicker here and there, timidly at first, then more and more boldly. When the sunshine was really strong, as it became after the morning mist was completely dissipated, they became positively courageous, and one little chap clambered upon a stone at my very side, not four feet away, and made his toilet under my inspection. Every part of his tiny furry form was scratched and combed with the diminutive feet and claws, the little fellow sometimes fairly rolling over, doubled up into a round ball like a Japanese netsuke, as he worked with both fore feet at once. Finally, he seemed satisfied and scampered off. When about to enter his tunnel, he hesitated a moment, glanced upward, and uttering a single faint squeak, dived headlong from view. Instantaneously, all the others vanished, and none appeared. I tried my best to discover the cause of this sudden terror, but could not, and shall never know what sight or sound drove my small friends to cover. I doubt if they have the keenness of eyesight to detect a bird of prey while yet high in the air, at any such distance as birds are able to discern their enemy.

Some twenty minutes later, my roaming eye fell upon a beau-

tiful little form standing a few feet outside the line of dwarf birches above, and slightly down the valley from my niche. Three more musk deer soon followed and stood for a full minute staring at my low mound of canvas. But they soon seemed to accept it as a rather unusual boulder and began nosing among the grass stems and working gradually down hill.

I was intensely interested in the small deer, and watched their every movement until they passed from view. Nothing else appeared except now and then a magpie or a black-and-white wagtail which flew over. One of the latter alighted for a moment on a stone halfway down the hill and sang a few notes before drifting on toward the north. An hour later, a flock of black-and-white-headed buntings dashed down around me, probably on migration, and for ten minutes fed on the ground, searching for seeds among the sparse grass stems, or singing in unison, four or five twittering sweetly at one time almost within reach of my hand. They were jolly, plump birds, and every day several such flocks would pass on their way, doubtless to breeding haunts far to the north in Siberia.

It was while the buntings were still about my tent, and just as my attention was drawn to a titmouse twittering among the nearest birches, that I saw the advance guard of a flock of Eared-pheasants. Buntings, titmouse, musk deer, all were forgotten, and I was filled with the old thrill of supreme joy at having accomplished the object which had brought me so far. They were even less suspicious than the musk deer, and hardly gave me a glance as they passed slowly within ten or twenty yards. Six came close together at first, then a group of ten, then three more, and I was keenly interested to observe that with these latter was a musk deer, keeping near but not actually among them. The other associations which I had recorded were at once brought to mind—the musk deer, laughing thrushes, and the kaleege pheasants of Burma; the chevrotain and the white-tails of Borneo. The three groups of pheasants soon merged into a general flock, and the nineteen birds moved slowly past, giving me every possible opportunity for observation.

Except when now and then I caught sight of the stout spurs on the sturdy legs, I could see no distinction between males and females.

As in so many other cases of plainly coloured pheasants, I was impressed with the remarkable protective colouring of the birds when they were perfectly motionless and the complete absence of that phenomenon when they moved so much as a leg, or gave even the slightest turn to the head or neck. As they passed away down the hillside this impression increased, and it was really most striking to see how completely the quiescent bird merged with its surroundings. The slope was dotted with boulders of all shapes, and the motionless pheasant became merely another such inanimate object, its colours of drab, brown, and dingy white being those of the weathered, lichened rocks and dead grass.

When the flock passed through longish grass stubble, they stood higher, took slower steps, and watched more carefully, the leaders taking hardly a mouthful of food, but concentrating their attention on the surrounding cover, very evidently on the lookout for some possible enemy hidden there. In the more open places, this watchfulness was somewhat relaxed, although there was never a moment when several of the heads were not raised high, looking keenly for danger. In this particular I noticed that some were much more cautious than others. I at once leaped to the conclusion that these were the males, but a careful search with the glasses showed that this was not the case—there were as many watchful, nervous hens as cocks; so, from my observation on other pheasants, I should say that the more hungry, less alert birds were the young of the year, not yet keyed up to adult discretion by total independence.

The mode of feeding was interesting. Several birds would gather about a tuft of grass, and, with heads held on one side, would begin to work with strong, quick picks of the beak. The soil would fly, and now and then a bird would reach forward and seize something edible. Two or three times the efforts of the pheasants brought the grass tumbling down upon them,

and then there was always a rush to get at the exposed roots, where an abundance of titbits seemed always to be present. Once a group of four birds were left far behind in their eagerness to deplete a particularly rich larder, and when they had finished they set out full speed and ran with great rapidity after their fellows. The single musk deer had meanwhile left his feathered companions and taken a more direct downward route, following closely in the trail of his four companions who had preceded him.

The birds were silent on this occasion, and uttered not a note while within sight. They were working obliquely downward, probably aiming eventually at the trickle of snow water at the bottom of the valley. I made no effort to go after them when they disappeared beyond a rise of ground, as I know that the first of the nineteen pairs of eyes to sight me would be the signal for the vanishing of the entire flock.

I waited an hour or two longer, but only one other episode of interest occurred, and that after I had crawled out of the tent and was stretching my cruelly cramped limbs. Swiftly and low over the maze of bare birch twigs came a tumultuous flock of slender-billed choughs, pursued by a white falcon of medium size. The bird of prey was in deadly earnest and made dash after dash at the frightened black birds, but for at least half a dozen swoops the choughs were too quick for him, eluding the sudden onrush by a single spasmodic swerve sideways, and then avoiding a second attack by rising above the falcon, forcing it to circle several times in order to gain altitude sufficient for another onslaught.

I retraced my way toward camp and found the southern slopes smoking in the last rays of the sun's warmth. When the sun sank and the chill shadow of night fell, this stopped at once, but while it lasted, the mist was so dense that it seemed as if there were actually some subterranean combustion. I watched a rook grubbing in the centre of a yard or two of smoking soil, and this small area gave forth so dense a mist that the bird appeared dimly, like a mere faint shadow of itself.

GENERAL ACCOUNT

Brown Eared-pheasants are resident throughout the entire year in the bleak, rolling uplands of Shansi, where I found them, rambling about in flocks of ten to thirty birds during the winter, both in the groves and open slopes, and roosting in the woods. In spring they separate into pairs, those which seem to be old mated pairs going off quietly, hinting that there is apparently a tacit acceptance of the old tie continuing even during the winter flocking. I once watched a flock of five birds and observed a very evident division into two pairs, each couple keeping and working together. I never saw any attempt at fighting, but a sportsman who had shot a number while they were thus sparring said that these were invariably young birds. So it is probable that when the flocks break up in the spring, the young birds go off seeking mates, and it is among these that most of the fighting occurs. Those who have witnessed such encounters say that they are rather tame affairs, and indeed, judging by the stoutness and shortness of the spurs, serious, bloody battles such as are waged by firebacks are out of the question in the case of these Northern pheasants.

While any very deep fall of snow would, of course, force the birds downward to lower levels, yet they are able to scratch, or rather pick, deep holes to reach the ground, and I believe that the annual altitudinal migration is less than would be expected. Even in summer, they are not found on the summits of the ranges, and I believe that throughout the year they can hold their own on the median levels. Where not persecuted, they are not rare, and in a region which is uninhabited and seldom or never shot over, one may expect to find one or two flocks of considerable size within a day's search. This, of course, was more especially possible in my own case, where my only object was actual search for the pheasants. I have gone carefully over many miles of ideal Eared-pheasant country for two days at a time and seen nothing but several ring-necks, and, on the other hand, travelling in a straight line, in the course of a single day, I have

counted as many as thirty-three birds divided into three flocks. This last is unusual, and wherever the birds are trapped or shot, they soon become thinned out or exterminated, for they are attached to the limited region which they call home, and being naturally rather stupid and unwary it is not a difficult matter to kill an entire flock.

The sociability and gregariousness of Eared-pheasants are perhaps more pronounced than in any other species of this family. It is all the more conspicuous a trait from the comparative lack of masculine pugnaciousness, the chief cause of flock and family dissensions among gallinaceous birds. When several birds are kept in captivity in a runway, they are almost always seen close together. No one bird, either male or female, seems to take the lead, but there is seldom a moment when the trio or quartet of birds are more than a few feet apart. As we have seen, this characteristic is true of wild birds. They impress one as rather stupid birds on the whole, but extremely fond of one another's society in this land of desolate vistas and wild hunters.

The flock which I have described in some detail was an exception in its silence; like most intensely gregarious creatures, Eared-pheasants are rather voluble; they are continually conversing in undertones, and in fact have as large an intonation vocabulary as our domestic fowls. I was once so hidden that I could not catch a glimpse of six of these pheasants after they had passed my observation tent. They were on a steep slope immediately beneath and hidden by a large projecting boulder, but I could hear every note and could detect contentment, peevishness, anger, and alarm as readily as if I had been able to see the cause for each utterance.

The mating call, which corresponds to the crow of other pheasants, is uttered by males even after they have paired off, in this case, I presume, the call being more of a challenge, or a warning to possible rivals that the locality and mate are preempted. I have also heard it from members of a flock in early spring, on the ground, on a rounded boulder, and from the branches of a low, straggling oak tree. During the utterance

the tail is moderately elevated, with the two central plumes raised well above the others, while the neck is stretched out, the bill pointing almost or quite straight upward. The call may be written *Trip-c-r-r-r-r-r-ah!* sometimes, as I have written it, cut off abruptly as a short, sharp, rolling phrase, or again drawn out to considerable length. One man described it as sounding like a cross between the note of a guinea-fowl and a peacock. When thus lengthened, it is probably the full elaboration of the call, or perhaps the utterance of an adult male. It begins low and softly and increases rapidly in volume and loudness, continuing sometimes for a full sixty seconds, apparently without the bird drawing breath, although of this I cannot be sure. At any rate, no break is detectable. In captive birds, the longest duration which I have timed is fifteen seconds, and this only once. The cry is high and raucous, rather unpleasant to the ear. On the giving of this call by a bird in a flock, the others usually cease their feeding and listen, doubtless merely indicating the beginning of those instincts which later will cause the females to be attracted to the sound, and the unmated males to be aroused to accept the challenge. It is seldom or never heard in the middle of the day, but in spring is given during early morning and at dusk. Sportsmen who know this country at all seasons say they have never heard it in the summer, autumn, or winter.

The content note is much like that of the common fowl, and this rather inarticulate sound when increased to a *wak! wak!* indicates suspicion or apprehension of danger. Unlike most pheasants, however, when alarmed or terrified to such an extent that the birds take suddenly to wing, I have never heard a note uttered, a most striking contrast to the frenzied squawks and screams to which most of the members of this family involuntarily give utterance at such a moment of extremity.

I believe without question that, except under the provocation of such an extremity of danger, Eared-pheasants never take to wing, except possibly to reach the branches of their roost. I shall have occasion to describe the flight more in detail when

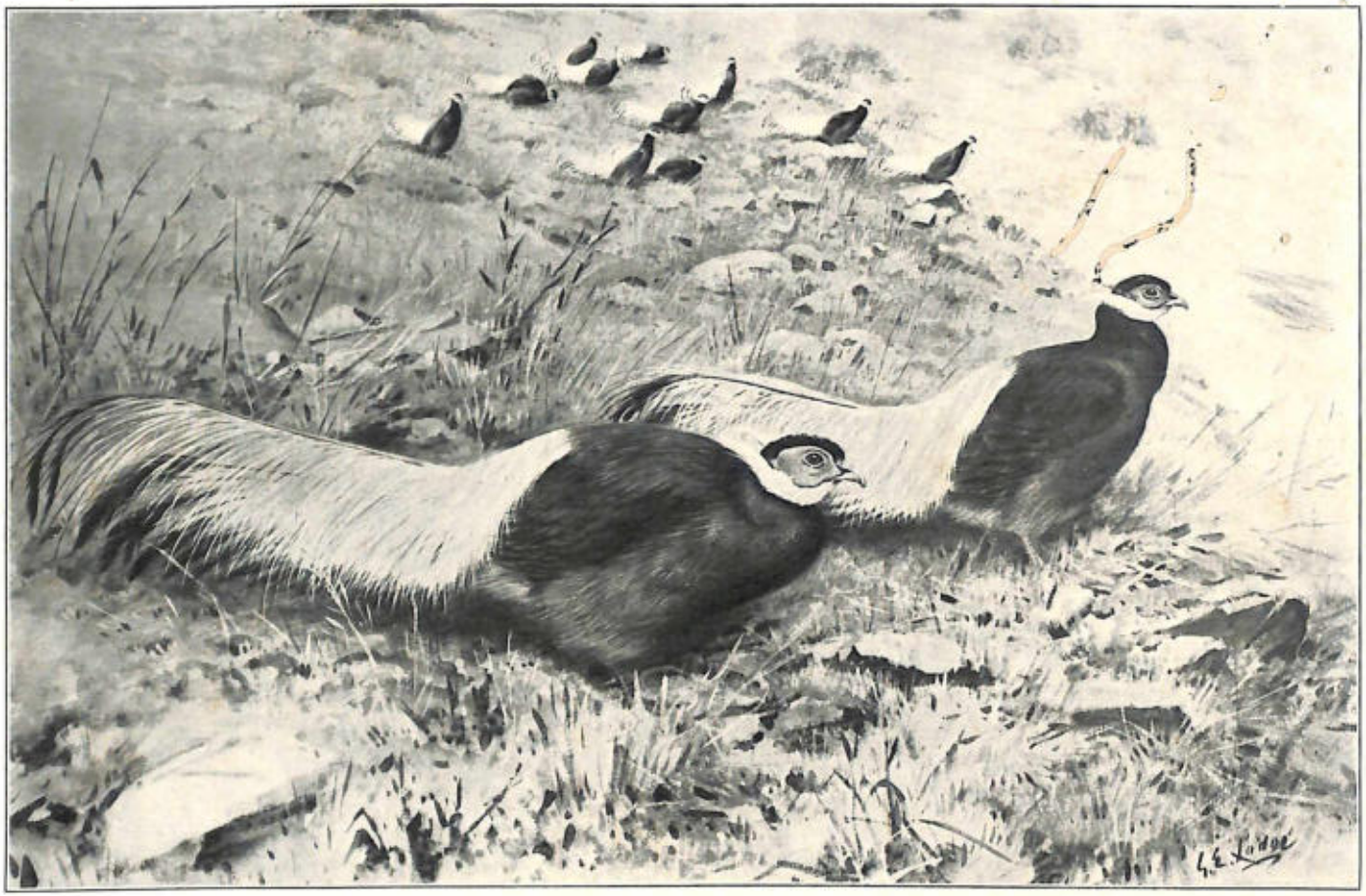


PLATE XVI

Painted by G. E. Lodge

BROWN EARED-PHEASANT

Crossoptilon mantchuricum (Swinhoe)

(For detailed caption see page xix)

touching upon methods of escape. The usual gait is slow and dignified, and when several birds are slowly making their way through grass or around out-jutting boulders, with their long, flowing tail-feathers held high, their movements are exceedingly graceful and pleasing. The curved, drooping tips of the longer feathers do away with all the alertness which characterizes the sharp-pointed tail of the ring-necked pheasant. The Eared-pheasants give the impression of self-confident, gentle creatures, masters of themselves, and with the problems of food and enemies well in hand. It may seem curious to read so much into a bird from the mere fact of its gait and general carriage; but if one will compare a captive *Crossoptilon* with a true *Phasianus*, the striking difference will at once be apparent.

In seeking its food, the Brown Eared-pheasant is essentially a digger or grubber, using for this purpose its large, strong, curved upper mandible. Its food, as a rule, consists of tubers, fine rootlets, and insects. The second item is surprising to be recorded as a regular item of diet, but I found that in some of these rocky places the rootlets of the grasses seemed, at least in early spring, much more succulent than usual and certainly more than the old dried stems and leaves themselves. Whenever the birds are found in the vicinity of native hamlets or villages, they enjoy feeding on stray millet, barley, and other grains. This is unusual, however, as the Eared-pheasants, with all their gentleness and unwary nature, are intolerant of the presence of mankind and leave such places almost universally to the ring-necked birds, which can live their lives within a short distance of a village, feed to repletion month after month on the sprouts or grain of man's culture, and yet remain as wild and wary as the proverbial hawk. The Eared-pheasants are exceedingly omnivorous, and few succulent leaves, sprouts, buds, seeds, or grains come amiss. I have found the crop of a bird crammed with acorns, many of which were still in their woody cups, while in the stomach proper, the tremendous muscular constrictions, aided by the small round pebbles and sharp sand, had comminuted earlier swallowed acorns to a mealy pulp.

The Eared-pheasants, like the Impeyans, probably never use the feet for scratching, the heavy body and short legs doubtless making the quick shifting of the centre of gravity not an easy matter.

Water is an essential—apparently a daily requirement—and, unlike birds like the cheer, which are able to get along for extended periods without actually drinking from streams, these Chinese pheasants make a daily afternoon pilgrimage downward from the slopes to the pure, clear streams which intersect all the larger valleys and side ravines of such mountainous regions as Shansi. I have watched through high-power glasses a flock of about a dozen birds travel slowly down the opposite slope of the valley and, reaching the stream, spread out in a long line and drink deeply of the icy water. Then they turned, and more steadily, with fewer desultory stops and side wanderings, retraced their steps upward toward the scrub, finally disappearing into the low forest of pines or birches, bound for some roosting place which would place them as much as possible out of the reach of their terrestrial enemies.

I was never able to make certain that I had found a roost of these birds, but circumstantial evidence of plenty of sign, and clear indications that a number of large, heavy-bodied birds spent their nights in a small group of pines, and especially the fact that they reached the higher branches by leaps to successive branches, left little room for doubt that these pheasants were the occupiers of the roost. The pines were not more than fifteen feet high, and until a grove of birches had shot up to windward, they had evidently received the full force of the winters' gales, and most of the branches were splayed out to the southeast, and on these the birds perched at night, protected from view by the dense foliage and by the height from enemies on the ground.

As I have said, the ring-necked pheasants inhabit the same region as those of which I am writing, but I never observed them in close proximity to one another, and as the former are seen singly or in small families and keep to the lower levels, there is little chance of any keen competition. As to the enemies of the

Eared-pheasants, we may mention at least three mammals which probably take toll. These, in the order of their deadliness, are foxes, leopards, and wolves. The foxes, of which I had glimpses of two and saw abundant signs of others, should, logically, easily exterminate such large heavy-bodied birds, and why they do not I could never hazard a guess. The Eared-pheasants, passing through high, dense grass and scrub, surely offer most tempting lures for a fox or other creature lying in wait. And yet here are foxes far from rare, and here are the pheasants in fairly abundant numbers, and the solution of the problem is yet to be found. Leopards are almost as abundant as the foxes, although I saw only their tracks during my stay. The wolves are far rarer than either, but if a gang of these creatures started systematically to run down a pheasant it would seem not a difficult matter. However it is, the pheasants thrive in spite of their four-footed enemies; whether the foxes are content with the voles and hares, and the leopards and wolves with the roe and musk deer and the wild boars, I shall never know.

I saw no tragedy and only once observed the birds even threatened with danger. This was when an eagle appeared, soaring high over the opposite slope and apparently intent on some intended prey immediately beneath it. It showed three conspicuous white marks on each wing, one of which was a circular speculum in the centre of the wing, from which came the Chinese name meaning "Eagle of the Three Eyes." The Eared-pheasants in the distance, which I was watching through my glass, saw the bird of prey long before I did and simultaneously squatted flat, showing their trust in their brown, dead-grass coloration. As the eagle worked slowly away, they gained confidence and, still with bent legs and lowered heads and tails, they crept into the nearest scrub and did not emerge until the dreaded one had disappeared. I was surprised, as I had not thought that such large, sturdy birds going in flocks would show such spontaneous fear. But those fierce Northern wolves of the air—the gyrfalcons, and these great sea eagles—are very evidently foes to be guarded against—enemies of the most dangerous character.

There is no doubt that the senses of sight and hearing are of equal importance to these pheasants—each becoming of preponderating value, according to whether the birds are in the open or among the low, dense, scrubby undergrowth. Then the association with the musk deer is another asset—the addition of the sense of smell, which in birds is insignificant and defective in comparison with the two senses mentioned above.

The mode of escape of the Brown Eared-pheasant is most characteristic. I did not have the opportunity of seeing the birds attempt to evade the attack of a four-footed enemy, and the crouching at sight of the bird of prey would, of course, be used only in the case of similar aërial dangers. When I came suddenly upon a flock of these birds, the result was always the same and, I take it, is that which occurs in the case of an attacking quadruped. The birds would usually be scattered irregularly over the rocky or grassy slope on the instant of my coming into view, but while there was never any alarm note uttered, every eye would seem to spy me at the same moment, and every bird would turn like a flash and, with a most surprising burst of speed, run *uphill*. Even when I came upon them from above, they merely ran along the slope for a short distance and then turned upward. At the rate they go, threading the dense thickets and dodging around the boulders, a fox or any such animal would find it no easy matter to catch one. We all know how swiftly a common pheasant can cover the ground, head and tail raised, legs moving so rapidly that they fairly make a blur of motion, and yet an Eared-pheasant could readily outrun the other species.

If I stood still for a while, the birds would reach the summit with unabated speed, and then, as I found by running swiftly after them, they would continue their cursorial flight down the opposite side, their brown forms and tossing tail plumes appearing for an instant here and there among the irregularities of the slope. But if I at once dashed in pursuit, and, although left far behind, yet showed them that I apparently intended to run them down, the sight which met my eyes when I pantingly reached the summit was wholly different. Every bird took off

from the highest point, sprang into the air, and began a long, scaling flight into the valley far below, or, if this was of a narrow gorge-like formation, they aimed for the opposite slope. This flight was almost motionless as a rule, but now and then a bird which had not had sufficient initial impetus would begin to flap, and at once I realized what really poor fliers are these Eared-pheasants. Their wing beats were laborious and irregular, they swung from side to side like an airplane without sufficient headway, and in no case was their flight prolonged beyond two hundred yards or thereabouts, while very often the birds came down within twenty or thirty yards, either taking a fresh start like a flying fish, or diving headlong into the undergrowth. The rounded wings are spread to their fullest extent, while the tail, on the contrary, is quite closed, except when the bird is about to alight. Every movement told of extreme exertion and unusual effort, and however much we may admire the carriage and gait of this pheasant on the ground, there is little to be said in praise of it when on the wing. I doubt if an Eared-pheasant is capable of flying uphill or even on a level. In spite of the heavy body, there is no hint of awkwardness when the bird is running at full speed. Each step seems a springing leap which carries the bird along at a steady, ostrich-like gait, entirely unlike the awkward half amble with which these pheasants in captivity will often run toward their food.

When we come to know the relative amount of trust which birds put in their protective colouring; when we compare the exact methods of escape, one with another, all these instinctive habits will be of greater value in judging of the dangers and correlating the effect upon their form and plumage of the various factors in their environment than all the theorizing which we can bring to bear upon the subject.

The Brown Eared-pheasant is monogamous, and, in early spring, the flocks, as I have said, break up into pairs of mated birds. I have already spoken of the casual fighting among the males, and in captivity I have noticed that, in sidling up to their keeper, preparing to attack him, as certain irritable individuals

sometimes will, they go through a lateral display which very probably also characterizes their courtship. The nearer wing is lowered, the opposite raised, while the tail is spread wider than I have seen it at any other time, and is very clearly the principal object of display or intimidation, as the case may be.

The nest is invariably placed in the shelter of the pine or birch woods, and is truly pheasant-like, a mere hollow in the ground or among dead leaves. Several natives independently gave me five to eight as the number of eggs, and I am inclined to accept this as correct.

BLUE EARED-PHEASANT

Crossoptilon auritum (Pallas)

BRIEF DESCRIPTION.—Male: General colour slaty blue; crown feathers short, curly, and black; ear coverts white and much elongated; an indistinct, white occipital band; chin and throat white; tail of twenty-four feathers, the outer pairs with the basal three quarters white and the ends black glossed with purple. Stout, short spurs. Female: Similar to the male, except of somewhat smaller size and without spurs.

RANGE.—The mountains of Kokonor, Kansu, eastern Tibet and northwestern Szechuan, western China.

I was not fortunate enough to be able to study the Blue Eared-pheasant in its wild haunts, and a summary of existing knowledge of the habits of the bird indicates a general life history almost identical with that of the brown eared-pheasant.

WHITE EARED-PHEASANT

Crossoptilon tibetanum (Hodgson)

BRIEF DESCRIPTION.—Male: Crown with short, curly, black feathers; elongated ear tufts, and entire body plumage, above and below, pure white, becoming grayish on wing and tail coverts; flight feathers usually brownish. Twenty feathers in tail, dark glossed with greenish and with purple at the tip. Short, conical spurs. Female: Similar to the male, except slightly smaller in size and without spurs.

RANGE.—The mountains of northwestern Yunnan, western Szechuan, and southeastern Tibet.



PLATE XVII

Painted by G. E. Lodge

WHITE EARED-PHEASANT

Crossoptilon tibetanum (Hodgson)

(For detailed caption see page xix)

THE BIRD IN ITS HAUNTS

One day, late in the year, in the heart of the wilderness of northern Yunnan, we crossed a rushing torrent at the bottom of a great mountain gorge. Not once, but several times, we braved the boiling waters. The trail was exceedingly rough and steep, and covered with loose, round stones, or with wet slippery soil, but our horses carried us well. I had a Chinese guide and a native of some unknown tribe to carry the guns.

The lower part of the trail led through old, half-open, cleared fields, long abandoned by the Chinese, and bamboo and deciduous forests varied with dogwood and an occasional cherry in unseasonable bloom. Half-wild grainfields appeared here and there even high up on the mountains, and it is remarkable how hardy these seemed, apparently little affected by the early frosts. They marked the old sites of huts, which with their owners had long since vanished from the earth.

Then we would dip down into a cool, damp ravine. At about seven thousand feet elevation, we entered a beautiful forest, similar in character to that of Jorepokri near Darjeeling, of rhododendrons and oaks, covered—twig, branch, and trunk—with long waving streamers and a thick coat of moss, yellow-green and of a hundred other tints. Ferns flourished in profusion—real cold-weather ferns, although just before we entered this zone we had passed tree-ferns at their maximum—great fifteen- and twenty-foot beauties. Berries were in abundance—many poisonous, such as those wonderful, bluish purple globes, glowing in the sunbeams which filtered through the moss. These brilliant fruits were strung beneath curving stems, which rose above the thick, cool moss, while everywhere below, over the ground, ran a maze of ruby berries, like those of our partridge vine.

Now and then, tall chestnuts appeared, also clad in the dense moss. Begonias still held aloft their ghosts of seed cups, and low, broad, prostrate leaves spread their variegated surfaces to catch what warmth they might.

Higher and higher we climbed, until the air held a tang even

in the full sunlight. A clump of frosted, crumpled-leaved willows hugged the open reaches of the ravine streams; ferns—green near the ground—showed their brown frond tips curled again, but this time irregularly, in the burning agony of the first deadly frost. The few jack-in-the-pulpit blooms which still stood bravely a thousand feet below were here replaced by great cob-like ears of golden orange kernels which lay prone against the bare earth of rain-washed banks, a blatant invitation to all passing pheasants. It was curious to see how many of these plants, growing inconspicuously amid the ferns and begonias on the sides of the ravines, when their fruit had ripened and hung limp on the wasted stems, invariably drooped down over the edge of the earthen bank, against which they shone as a brilliant splash of colour.

The familiar shape of grape leaves caught our eye, and we found the vines in abundance creeping over the ground.

Then came the change to ten-foot bamboos, growing as closely together as the stems would stand. A dip into a steep narrow ravine would again bring into view mossy trees and ferns. Willows bordered the damp places, and on the higher bits of level ground low plants, with beautiful wine-red leaves, abounded, and masses of tall everlasting, true to their name if picked at once, otherwise dissolving into filmy seed heads. Banks of small-leaved strawberries covered the ground in some places.

The last few zigzags of the trail ushered in the forests of rhododendrons, replacing the oaks and chestnuts and receiving their legacy of moss drapery. The slopes above and around us now showed the rounded, close-foliaged tops of these trees, each rosette of leaves encircling the furry, close-wrapped buds of next year.

When we reached the summit of the pass, we found a half mile of level winding trail, leading between rounded, low hills, all covered with scrub bamboo and willow. The bamboo was stiff, large of stem, and small of leaf, and rising not more than two feet above the ground. Here, even in the sunshine of midday, the rushing winds brought a bitter blast of cold. Dwarf plants, each with a pea-like blossom of brightest blue, snuggled

close to the ground, and here and there rounded boulders bunched themselves amid the low bamboo stalks. The rocks were of rose and whitest quartz, painted with spreading plots of emerald-blue lichen, and a wonderful pattern etched by the stinging blasts of winter. In the centre of the pass meandered a bog, unfathomable, which in some strange fashion drew moisture from lofty peaks many miles away, and in turn fed the rushing waters which foamed through every ravine. The ranks of reeds which filled the bog were linked one to another by a glistening sheen of ice —a nightly forecast of the bitter storms soon to fill all the gorge with snow.

Scattered through the bamboo fields were the dead lily stems so familiar to us in the Himalayan sky fields, although these were empty—both of seeds and of earwig tenants. Clinging to the low stems, or flittering from one stunted willow bush to another, were cheery little tits—those marvels in feathers, which laugh at height or temperature. These were exquisite little atoms—finger lengths of fluff with chestnut caps and waistcoats.

High overhead soared, and at times screamed, a great eagle black as night, with widespread stretch of straight-edged wings, completing the picture with his calm grandeur—the virile aërial creature which mocked our panting efforts to look down upon the world.

When we passed the last of the frozen bog, the view expanded into a magnificent panorama of tumbled mountains. Behind was the far-stretching gorge, an opening vista of distant lowlands and warm plains, but before—the wilderness of northern China held its mean level little beneath our own, while its peaks towered thousands of feet above us.

Everywhere, the rounded heads of the rhododendrons dominated all other growths, with lofty dead and gnarled veterans whose knotty, stubby branches showed at what terrible cost had been gained their supremacy of years long past.

This bleak zone housed other brave creatures, which had begun their wandering downward, driven from the unsheltered

ridges and eastern slopes by the heavy snows which covered the peaks above us. Once, and once only, was a glimpse permitted to us of the wonderful White Eared-pheasants. As we rested for tiffin, three birds came into an open space where a slip of rock had swept down a swathe of trees some distance below. The instant they appeared, they saw us, and simultaneously discovered the eagle, which by this time had become a mere speck in the blue. We were disregarded—each head was turned sideways—every circle of the bird of prey was followed with those avian eyes which all but shame our telescopes. The white ghosts of birds showed clearly against the dark green rhododendrons. They showed no fear, not even a movement which indicated uneasiness. Only every fibre was alert, concentrated on the threatened danger. Two steps would carry them into the very heart of the impenetrable thicket, where they would be safe from pursuit; hence, I suppose, their nonchalance and disdain of instant flight.

I was impressed with the difference of action of this White Crossoptilon as compared with that of the brown eared-pheasant in the presence of a bird of prey. The latter crouched at once, merging their sombre forms with the surrounding rocks and grass. These birds stood erect, ready for instant movement, but without a hint of attempt at concealment. Did they know by the instinct of long lives of experience of the futility of attempting to conceal their immaculate figures in any but the densest, darkest tangle of the rhododendron underworld? It would seem so.

A mist sifted low across the valley below us, thickened into cloud, and drove swiftly on an eddy of wind up to our very feet, reflecting the sun as through a sea of foam. Swiftly as it had formed, it dissolved again, and the valleys, the opposite slopes, the dark rhododendrons, the pale green ranks of bamboo all came out crisp and clear, but the White Pheasants had vanished into the dark, mysterious ravine, where they were as safe from pursuit as if on another planet.

The vision was one which I shall never forget, a glimpse so

evanescent, so ethereal, that I could hardly believe the whole had not been a figment of the imagination.

The eagle, too, had vanished, and now there came from the cold peaks long streams of cloud mist, which sifted down each valley, coalesced, thickened, and soon we were enveloped in a dense fog which shut out everything from view. Not a glimpse of tree or mountain or sky was permitted; of the sinking of the sun we knew only by the gradual darkening of the impenetrable cloud, and when at last we crawled, shivering, into our sleeping bags, every bit of cloth, every article in the tent, was saturated with the condensing moisture. Somewhere far off, perched among the rough, knobby branches, were three birds of purest white, their soft plumage matted with the moisture, their heads drawn back in soundest sleep.

KALEEGE PHEASANTS

Gennaeus

A well-marked group of chiefly black-and-white pheasants, living at moderate elevations along the southern Himalayas, and throughout Burma and southern China. I recognize ten species. In Burma, three forms interbreed and give rise to an amazing array of hybrids, three dozen of which have erroneously been honoured by specific names.

WHITE-CRESTED KALEEGE

Gennaeus albocristatus (Vigors)

BRIEF DESCRIPTION.—Male: Long, hairy crest white; upper parts and throat glossy steel-blue; mantle and upper tail coverts narrowly, lower back and rump broadly, margined with white; fore neck and breast dirty white, shading on the remaining under parts into whitish brown lanceolate feathers. Female: Hairy crest brownish gray; plumage in general reddish brown, brighter on the rump and under parts, the upper parts finely mottled with black and edged with gray; wing coverts and under parts edged with white; under parts with white shafts. In general, paler than the other Himalayan Kaleege.

RANGE.—Lower and middle ranges of the western Himalayas.

THE BIRD IN ITS HAUNTS

Down from the Tibetan snow peaks, a chilly wind came roaring through the spruces. In its wake swirled a dense cloud of pearly gray, dimming the foliage, obliterating the distant slopes. Then, peal after peal of thunder reverberated through the mountains. Between two rough-barked deodars, I was crouched in my green umbrella tent, on the watch for kaleege or koklass pheasants. As the wind howled past, the tree trunks creaked and groaned, dead twigs hurtled down upon the canvas, and I

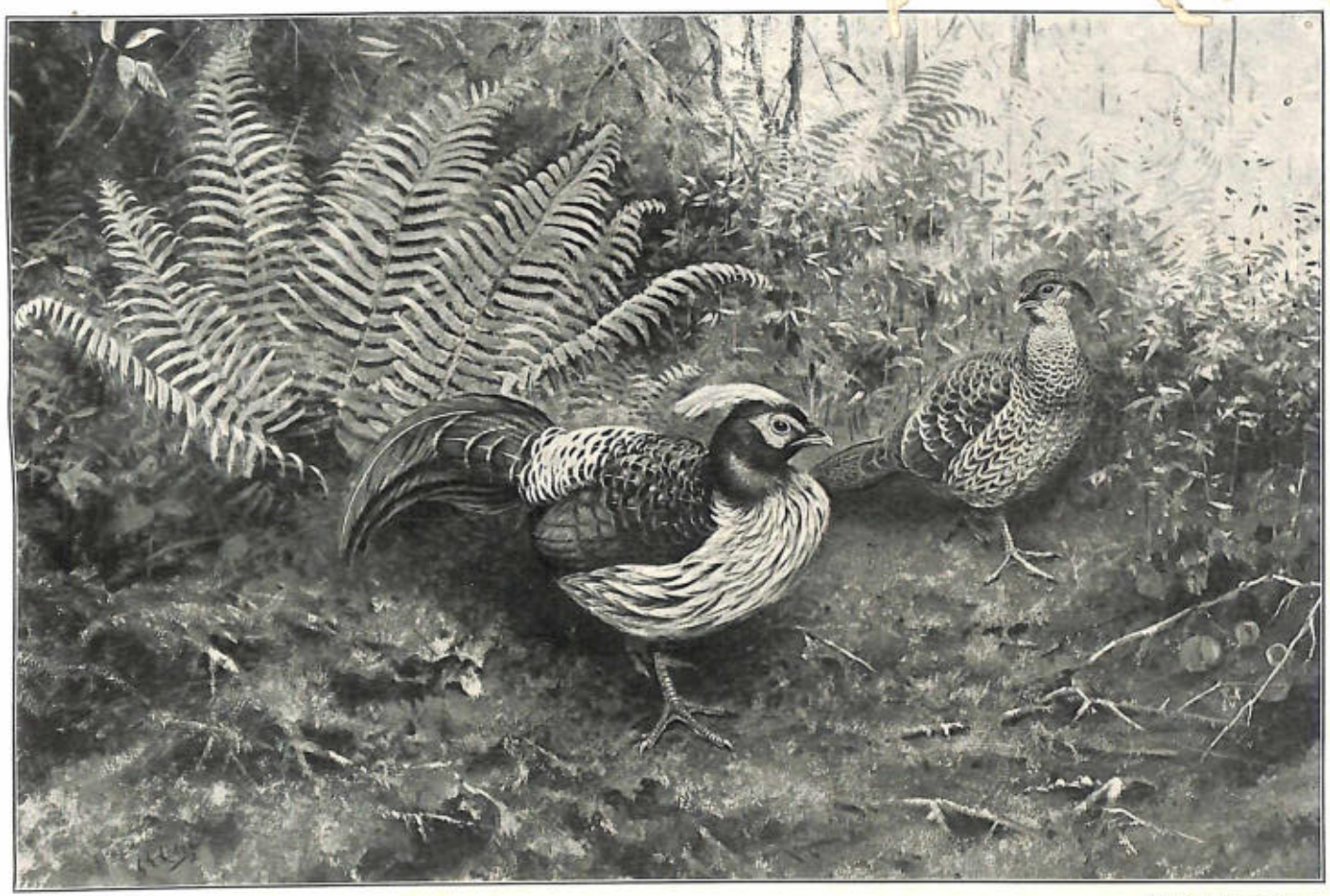


PLATE XVIII

Painted by G. E. Lodge

WHITE-CRESTED KALEEGE

Gennaeus albocristatus (Vigors)

(For detailed caption see page xx)

hung tightly on to the pole to keep the tent from blowing bodily away. As the last echo of thunder died out, the loud call of a koklass pheasant came from far off among the deodars, and below me a kaleege called. Then the storm passed quickly. The gray haze across the western valley, etched with long, sloping lines of rain, showed how narrowly I had escaped a drenching. A glow of light touched a rocky peak to the north, and with terrific speed the sunlight swept toward me, down to the tumbling stream and up again, bursting upon me with a glow of warmth which effaced every trace of chill from the air.

Not as yet knowing the habits of the pheasants, I had sought to cover as wide a field as possible during my first day or two of watching. I had pitched my observation tent upon a low saddle which dropped away rather steeply on each side and rounded upward across the valleys, with their long, dark slopes of spruce and oak. The hillsides were partly bare and grassy, partly covered with low, shrubby growth. The shrubs were bright with panicles of bell-shaped blossoms, and the setting of green grass held here and there golden patches of buttercups, picked out with the white lacework of saxifrage.

At this season, the pheasants were still courting; the titmice were still in the midst of housekeeping, but other young birds had already left their nests. Two such families, utterly unlike each other, showed themselves near my tent. Up the trunk of a spruce crept two bits of feathered bark, Himalayan tree-creepers, one quickly and searching every cranny, the other slowly, rather uncertainly. Not a sound did the young creeper utter, but from time to time fluttered his wings in that never-to-be-mistaken pleading for food of a young bird.

The second nursery scene was enacted upon a lofty bough of a dead spruce. A series of complaining feline mews attracted my attention, and there perched a great, full-feathered baby nutcracker, flapping its wings and endeavouring to look starving and dependent. One of the parents approached, and the mewing increased to a perfect medley of cries, screams, and croaks—all merging at last into a contented mumbling gurgle

as the food was crammed down its throat. Here we had the greatest contrasts of creation: the defenceless, weak creatures of the wild, who trust to silence, dull feathering, and cautious mouse-like creeping up of tree trunks to preserve them from their enemies, and the blatant, care-free ones who, from their combative ability, know that they may mob a hawk with impunity, and hence may cry aloud their every emotion, perch in full sight of the world, and yet live.

A sudden sharp cry and much craning of neck on the part of one of the parent nutcrackers led my eye downward, and cutting a new loophole in the tent, I was surprised to see a big bear nosing unconcernedly among the buttercups and turf halfway down the slope. This was the second time I had encountered bears in my search for pheasants. As he dug deeper and the earth tickled his nostrils, he uttered sundry snorts and coughs, but appeared to find edible somethings which compensated him for the discomfort. He moved slowly on and upward until he was not more than forty feet from the tent, and I reached behind me and worked my three-barrelled gun into a more convenient position.

The use he made of his senses was interesting. Although fully half of my tent was in view and far from matching the dark green of the deodar needles, yet the bear saw nothing unusual, even when staring straight at me. Ever and always his mobile snout curved upward from his teeth, and his nostrils quivered, but even those wonderful organs told him nothing of my whereabouts, the breeze blowing down the valley, carrying every scent before it. His sleek coat glistened in the sunlight, bowing out in smooth, rolling curves as with each motion the great muscles rippled under the skin. Now and then, he seemed to scent some particularly delicate morsel, and in his eagerness to root it out he moved slowly about the hollow, almost encircling it, with his muzzle buried deep within it. A flat hind foot would be lifted and held trembling as he lunged and lunged with bare teeth to scrape the tuber or succulent root.

The sun had dropped low toward the jagged ridge top when a

White-crested Kaleege appeared—the first I had ever seen in its native wilds. I knew it even when, fifty yards away, it stepped for only a moment into view. A breath of air caught the long, filmy crest and splayed it out—glistening white at this distance against the dark of the plumage. The bird vanished, then reappeared higher up. Suddenly, a second black bird beat swiftly along the slope toward me, dodging through the rose and raspberry bushes, and sailing gracefully to the ground. Just before it alighted, the white crest and black feathers flashed out—a second cock kaleege. The moment it stopped, it straightened up, and with strong, vigorous beats it sent forth its challenge, a deep, reverberating wing-drum—*woof-woof-woof-woof! woof! woof!*

All this took place just below and within a few yards of the bear. The bird looked at the great black form intently, but showed no symptoms of terror, and a moment later the bear discovered the pheasant, stretched out his nose, sniffed, and went on with his grubbing. The bird went behind a bush, and immediately there came forth a great scratching and scuffling among the dead leaves. I marvelled at the recklessness of this usually wary bird, but the noise was explained when a single small blabber appeared, still scratching up the débris, or picking the leaves up one by one and hurling them over its back, after the manner of ant-thrushes in the South American jungles. This one small bird made a far greater disturbance than the pheasant and bear together. When the kaleege again came out it walked slowly past the bear, making a slight détour, but within twenty feet, and when a few yards uphill, leaped upward at a panicle of blossoms and caught some insect. So accurately do the wilderness folk gauge one another's possibilities of harmfulness!

But, at this point, the pheasant saw my tent, and though there was no sudden alarm, yet a long, searching scrutiny left a suspicion which dominated all other feelings, and with tail and head raised, with graceful, dignified steps, it made its way ten yards or more along the slope of the hill before it ventured to pass the tent. On the summit, the bird hesitated a moment, standing

silhouetted against the distant peaks and the sky, a beautiful symbol of alert eyesight and poised body.

In the never-ceasing warfare of the Himalayan jungles, this individual was a success; it had pitted its weak form, but keen eyes and ears, against the powerful muscles and delicate power of scent of the beasts of prey. As this thought came to mind, a fox barked in the distance. The bear gave a last snort, left his field of manna, and ambled slowly over the ridge beyond me. He had not descended twenty feet before he stopped, as if blocked by some insurmountable, material wall. For one instant, his nose was stretched out toward me, distorted with the agony of supreme endeavour, and then, whirling in his tracks, he fled over rocks and turf, tearing through shrubs and bushes headlong, recklessly, from the dread hidden danger. I wished him luck in his strange life—a creature who by teeth and relationship should be meat-eating and animal-slaying, but who prefers berries and roots and a fat, easy life, seldom or never molesting the hunter unless wounded or in defence of cubs. How did the pheasant know this? How too did the pheasant read danger in the first retrograde movement of the bear?—for no warning scent had come to its all-but dead nostrils, and only the vaguest of suspicions through eyesight. Yet at the sudden turn of the bear the kaleege leaped into the air with a single subdued note, and, after a few rapid wing beats, sailed in a beautiful, long, descending curve far down into the valley, almost to the stream for which it had been headed. The quenching of the bird's thirst was hastened, and that of the bear delayed by my presence on the ridge top.

In the shadow of the hill, I began my long walk back to camp, passing through the favourite feeding grounds of the White-crested Kaleege. The slight breeze had died down, and as I reached the zone where rain had fallen, the air became heavy with scent. In passing through the pleasant gloom of the conifer forest, each glade seemed to have its particular dominant perfume, governed by the predominating blossom of this lush season of the year. One was starred with myriad long-stemmed

strawberry blooms; in another, the pale blue faces of a multitude of violets showed faintly—more noticeable by the sweetness of their odour than by their colour. The dominant hue of the forest blossoms was white, and in another glade was a host of large anemones, many splashed with bluish on the under side of their petals. Elsewhere, thriving as well in the shade of the spruces as in the glades, were mysterious, fairy star blossoms, flowering apparently on the dead stems of last year—a strange resurrection—while the dewy, downy leaves sprouted independently on a new stem from the ground. These too all had their individual odour.

Most fragrant and evident to this dulled sense of ours were the spicy perfumes of the trees themselves. Who can describe these, or who, in the case of the spruce, needs to? It was the same bracing, keen-cut scent that greets one in the Canadian wilderness; that crosses the bow of one's sampan in the rivers of eastern China; that soothes one to sleep in the Rockies, or that is borne on the velvet breeze from a Florida "hummock." The silver fir sent down this Himalayan valley a strong, resinous odour, as penetrating as the points of its blue-green needles, while the fragrance of the spruce was fully as aromatic, but less pungent. One could call it almost sweet, were it not for the perfume of the real flowers. The deodar—tree of God—had a fainter fragrance, but none the less tangful and resinous.

And so, as the dusk of twilight approached, I made my way past the scratched-up turf of the glades, where, during the day, the pheasants had sought and found their food, who now, their thirst quenched, were seeking their safe roosting places high up among the branches of the spruce or fir. A few would succumb before the dawn to the sudden attack of marten or weasel, others would awaken in early morning, send forth their challenge and begin anew their daily life.

GENERAL ACCOUNT

The preference which the White-crested Kaleege shows for the vicinity of native villages, together with its comparatively un-

suspicious nature, has tended to make this quite the best known of western Himalayan pheasants. Several accounts have been written of it, those of Wilson and Baldwin being, perhaps, the best. I have added to the observations which I was able to make, those which could be obtained only by some one resident throughout the year in the haunts of this bird.

There are few types of localities within its range which are not at one time or another frequented by the White-crest. On the other hand, after finding the exact kind of forest which in one place is beloved by this bird the same species elsewhere may be found confined to an entirely different vegetation zone. As with other game birds in these mountainous regions, the annual migration is little more than one of altitude. In the autumn and winter, almost all the birds will be found low down on the outlying flanks of the Siwaliks, perhaps a thousand feet or less above sea level, or at the bottom of the lower valleys in the more central ranges of Garhwal. Here they frequent old grainfields near water, or camping places near more or less frequented roads. In the summer, they work upward to an elevation of nine or ten thousand feet. Only a few individuals, however, attain the latter height, but I have found them in abundance at seven and eight thousand feet.

Their feerlessness in approaching the habitations of man is in striking contrast to the habits of most of the pheasant family. Even though in any one region there may be comparatively few White-crested individuals, yet the frequency with which they show themselves at the edges of grainfields and along roads may give the impression of a very common bird, whereas, in an Impeyan country, while there may be many more individuals within as limited a zone, yet it is seldom that one is able to catch even a glimpse of more than a single bird.

Especially in the winter months, the kaleege is to be looked for in the rather open forest, along the borders of the more dense jungles, in overgrown thickets near long-deserted cultivated patches, ruined cowsheds, and even inhabited native hamlets. In fact, it is seldom or never that the bird is found in remote,

isolated forests. Where the White-crest is, there, or in the vicinity, one may almost certainly expect to find the presence of man, or at least some trace of his former occupancy.

I have found the low mountain bamboo or ringal to be a favoured cover during the day, and in the interior of Garhwal it frequents damp evergreen forest, and the proximity of streams at the bottom of shady ravines. Elsewhere, I have found it at six thousand feet in a semi-arid country, partly bare, partly covered with dense euphorbias, with daisies and edelweiss-like blossoms relieving the stretches of barren rock. Still higher, it was in dense undergrowth in coniferous forest varied with oak saplings, raspberries, and wild rose. And, finally, I have flushed the White-crested Kaleege from an almost pure culture zone of rhododendron forest. The typical forest floor where these kaleege love best to wander and feed is carpeted with a thick matting of dead leaves, through which sprout maidenhair ferns and many other species; coarse and feathery-fronded brakes; ill-smelling filmy white flowers; lilies-of-the-valley, giving forth the most delicate of perfumes; Solomon's seal, and a host of tiny deodar shoots.

On the whole, these pheasants cannot be said to be gregarious, but monogamous they certainly are—despite more than one accrediting of polygamy. I have never seen more than a pair together at the breeding season. At other times, single cocks are not uncommonly to be met with. When three, four, or more are seen associated, the majority will be found to be birds of the year. Even when ten or a dozen pheasants are flushed from a single bit of woods, the association is usually accidental, or due to a local abundance of food. At a high altitude, I once watched for several days a little open platform, jutting out from an evergreen forest, which was frequented by kaleege. On four consecutive days, there were four, eight, four, and sixteen birds, all busily feeding. The turf was dying from the attacks of innumerable grubs, and it was apparently these which attracted the birds. Of the sixteen seen at once, three were full-grown males, all the rest apparently birds of the year, with many scat-

tered brown juvenile feathers remaining in their plumage. These had not as yet paired off, the breeding season not having begun at this high altitude. A few hundred yards away, a single adult pair of pheasants were feeding by themselves for three out of the four days.

When feeding as these were doing, or when, passing slowly through forest, the pheasants are suddenly disturbed by catching sight of a man, they usually run swiftly off, and seldom fly unless come upon suddenly or rushed by dogs, and even in the latter case in dense undergrowth they often choose to lie close and risk discovery until the danger becomes acute. White-crests are never as shy as Tragopans or Impeyans, and where they are not constantly annoyed or shot at by natives or sportsmen, they are as tame as the most amateur hunter Sahib could desire. When walking up a ravine or up the slope of a hill, if pheasants are flushed by dogs somewhat above, they will often fly into the trees just over the sportsman's head, and be so occupied with watching the dogs that several may be shot, one after the other. In the case of the sixteen birds which I have mentioned as feeding together, at my first shot, all flew uphill some forty or fifty yards. This is quite an unusual habit, and it is seldom that they will thus put forth the necessary exertion of actually beating upward. When suddenly alarmed, they usually fly down the slope, or as often on a level along the hillside. The kaleege flaps rather heavily, and with rapid beats at the beginning of the flight, but soon acquires speed—greater, several sportsmen have estimated, than the burst of a rocketing English pheasant. Referring again to the sixteen pheasants, five minutes later, when flushed by my native boy, all flew downhill and alighted in trees some distance below me.

When surprised at a distance of twenty or thirty feet in dense undergrowth, they never attempt to fly, but invariably run quickly away, with neck outstretched and tail lowered. Wholly undisturbed, and walking along slowly, not feeding, the White-crested Kaleege cock has a splendid carriage, head, crest, and tail

raised, lifting the feet high and daintily, and occasionally uttering a murmuring sound.

The variety in the many written descriptions of the notes of this pheasant is probably as much due to the fact that they really have an extremely varied vocabulary as to the lack of attention which the average sportsman gives to vocal or other manifestations of a game bird when it gets up before his gun.

When flushed by a man and actuated by only a comparatively moderate degree of terror, I have always known the birds to utter a rather low whistled clucking, very unlike the noisy koklass, which scream or squawk on any provocation. When flushed by a dog and thoroughly alarmed, they begin to cluck the instant they are a-wing, and gradually gain in rapidity and loudness of utterance, the notes being sibilant—*se! se! se! se-se-se-se-se-se-SIP! SIP! SIP! SIP! SIP!* Another call of the bird is a sharp *twut! twut! twut!* sometimes very low, with a long pause after each note, then suddenly increasing loudly and excitedly. Generally speaking, when uttering this cry, which at times might be mistaken by any one unacquainted with it for that of some small bird, the kaleege is alarmed by a prowling marten, or a hawk hovering overhead, perhaps a dog, but still oftener it is heard when a pair of cocks are about to engage in mortal combat. The call of the younger birds is noticeably harsher, less sibilant than that of the adult pheasants. Aside from the sounds, uttered under stress of excitement or fear, the kaleege is rather a silent bird.

The present genus is characterized by a kind of instrumental music, closely akin to the drumming of the American ruffed grouse, but this whirring, produced by the rapid vibration of the wings, is chiefly of the nature of a challenge, so that I shall treat of it more in detail under the notes on courtship and fighting.

The food, as far as I could ascertain, is obtained only upon the ground. Unlike the Impeyan, the pheasants of this genus are essentially scratchers and, like the common fowl, dig vigorously first with one, then the other foot, sending the earth flying, and

in productive spots the kaleege dig hollows of considerable depth and extent. Their food has been found to consist of grubs, roots, insects, seeds, berries, leaves, acorns, soft roots, and the young shoots of shrubs.

As I have observed in writing of the koklass pheasant, the higher forests of Garhwal were, during the month of May, alive with small moths, and during the early morning and evening, the White-crested Kaleege spent much of their time in scratching among the leaves of the forest floor for these fuzzy but apparently highly appetizing insects. Even at midday, I have seen a female pheasant thus engaged, but without much success, while just before dusk I watched a pair of kaleege rushing here and there after each turn of a leaf, in pursuit of the moths as they rose in short, irregular flights. Twice, under such conditions, several white-throated laughing thrushes were close at hand, profiting by the efforts of the pheasants, snatching those insects which flew upward and beyond the reach of the kaleege. As in so many cases elsewhere, these thrushes were very frequently the companions of the pheasants when they were on the move, feeding slowly through open forest, and more than once they spoiled many an hour's careful stalking by spying me out when as yet the pheasants suspected nothing. It tested all one's power of self-control at such a time to keep from emptying one's gun barrels into the flock of jeering birds, as they flew close about one's hiding place, uttering without ceasing their creaky and intensely irritating *see-s-s-s-s-s-p!* each utterance rising to a most disagreeable, shrill, rasping climax.

Whenever I was able to study a single bird or a pair for any length of time, I was impressed with the extremely regular habits of diurnal round of life which they exhibited. I became acquainted with two male birds which lived within a few hundred yards of each other and yet never associated closely. But both fed all day up and down the opposite slopes of a narrow, forested, dry ravine, and in late afternoon, almost synchronously, worked slowly upward and, still a hundred yards apart, passed over the sharp ridge, down to drink at the stream which flowed at the



PLATE XIX

Photograph by William Beebe

SIKHIM—IN THE HAUNTS OF THE BLACK-BACKED KALEEGE

(For detailed caption see page xx)

bottom of this small adjoining valley. They then turned some distance back upon their trail up the slope again to roost an equal distance apart in some dense-foliaged conifers. By pitching my observation tent just between the points at which the two birds traversed the saddle of the ridge, I was able to watch and time each bird. They crossed on the way to drink and to roost regularly at 4 P.M., varying not ten minutes during seven days; and in the mornings of at least six days they recrossed to the daily feeding ground at 8:10 A.M., never varying more than seven minutes from this mean. On two very unusually warm days the birds delayed their time of passing into the roosting ravine by thirty-five minutes, the two cocks crossing at the very same minute. This short period of observation suggests how much could be learned of interest about these and other birds by a longer period of intensive study, the results of which would be of far greater value than any amount of casual, half-accurate notes.

I found these pheasants roosting in trees from twenty to thirty feet above the ground, and have no doubt that many spend the nights on much higher perches. In all cases, the birds were not near the main trunk, but a foot or more out on some horizontal bough, and in all instances but one, the bird was alone.

I have mentioned the laughing thrush as an effective, if wholly unintentional, benefactor of the White-crested Kaleege. As to enemies, one can certainly include the pine marten, wild cats, and several species of hawk eagles, *Hieraetus* and *Spizaetus*, and, perhaps worst of all, as far as the despoliation of the nests is concerned, the gray langur monkeys, which swing through the conifers like a rushing hurricane, leaping and hurling themselves from tree to tree as recklessly as if the tall, narrow spires of the firs made as easy travelling as the wide-branched deciduous forests of lower altitudes. I once found a few bloody tail feathers of a cock kaleege beside a log with no hint of the murderer—probably some owl—and twice I found remains of broken eggshells near nests with the clearly marked footprints of the langurs all about.

Man is, undoubtedly, the worst enemy the White-crested Kaleege has at present, and the bird is becoming scarce in many of its haunts which are accessible to the multitude of military and civilian sportsmen.

The method of escape of these birds in the face of attack by sportsmen is varied, and shows considerable intelligence. When a dog arouses an experienced cock bird, instead of losing its head and flying off at once, perhaps to within easy range of the gun, it will sometimes fly up into a tree, uttering its loud clucking all the while. From this point of vantage, it will look about in all directions to see if danger other than the dog menaces. Often, a single glance will reveal the sportsman, and the bird is off like a flash to safety in the opposite direction.

Again, where the bird is shot at a great deal, it often flies into a tree at the very first approach of the dog, and there remains, crouched motionless in some fork of a branch or in a dense bit of foliage, or pressed close to the trunk itself, so that it is impossible to find it. One may walk around and around, throw stones, halloo at the top of one's voice, and when at last the quick eyes of a native gun bearer detect it, the pheasant seems simultaneously to sense its discovery, and, like an arrow, it drops from its perch on the opposite side of the tree and is off down the valley, silently and on scaling wings, before a warning shout can be uttered or a gun raised.

In the reserved forests, the kaleege are included in the law which is meant to protect all pheasants during the breeding season, and are supposed to be shot by Europeans only from September 15th to the end of December. As I have said, the kaleege pheasants often enter the grainfields and feed on the corn, and in return they are snared in large numbers, by baiting with small heaps of grain placed in the fields in which they have previously been observed.

The White-crested Kaleege breeds throughout its range, from the terai at a thousand feet elevation, throughout the outer Siwaliks, and northward almost to the snows. The highest recorded nest was at a height of nine thousand five hundred feet

At the foot of the hills and lower valleys, the hen pheasant begins to deposit her eggs in April. Higher up, the breeding season does not commence until May, and this is delayed at still higher altitudes until the middle of June. April 4th and June 20th are the extreme dates at which fresh eggs appear to have been found.

The kaleege are monogamous, and each pair keeps by itself. The cocks are very pugnacious, and fight fiercely, especially in the early morning. One writer tells of shooting a male bird, which lay on the ground fluttering in its death struggles, when a second cock kaleege dashed out of the jungle near by and attacked the dying bird with the greatest fury, although the sportsman was standing close at hand.

The drumming with the wings, which I have already mentioned, is heard chiefly in the early part of the breeding season, and from observation there is no doubt that it is a warning or challenge to other males within hearing. It has been well compared to the rapid shaking in the air of a piece of stiff cloth. We have certain proof that it is merely a defiance, and not a call to attract the females, by observing the result of the native trapping in Burma with a decoy male of one of the allied pheasants of this genus. In this case, male after male replies to and rushes at the drumming bird, but no female is ever thus enticed within reach of the snares.

I have seen several of them drumming in a wild state, and all of the more commonly kept captive species, and the method never varies. The bird stands rather erect, with head and neck stretched out, and with a single motion raises and half opens its wings, and imparts to them so rapid a vibration that they seem but a gray haze against the body. There is never any question of their touching the body—the hazy arc is not of wide extent, somewhat less, in fact, than in the ruffed grouse—and its limits are very distinctly outlined. The sound is produced by the air rushing through the tensely strung flight feathers. The drumming sometimes has a remarkable ventriloquial quality, and is most difficult to locate. The sound is a deep, resonant *woof-*

woof-woof-woof! sometimes drawn out into a reverberating, drum-like roll, *woof-r-r-r-r-r-r-r-r-woof!*—a sound which is like an electric shock to the lover of the wilds where these birds live. I cannot believe that the same sudden leap of pulse and thrill of joy at the sound are as keen in the sportsman, to whom its chief import is the hope of a shot, as when it stands chiefly for the sheer joy of life in the wilderness and the excitement of close association with all these splendid wild creatures.

Even in the autumn or winter, when a cock bird is suspicious of danger and yet has neither seen nor heard anything definite—at that moment of inexplicable keenness, when some psychological sense of which we as yet know nothing makes the bird *feel* that all is not right, the bird will sometimes drum, almost or quite silently. The feathers are apparently held loosely, their edges pliant or separated, for while the wings vibrate as rapidly as ever, yet no sound comes forth. I have observed this several times, and in more than one species. The impulse in such a case is probably purely nervous and unconscious. The bird is tense, every sense on the alert, knowing that all is not right, yet with no hint of the character or direction of the danger, and as yet unwilling, and knowing not in what direction, to flee. Fear not yet predominating, impatience and suspicion produce an irritated, unsettled state of mind which impels it to resort to the challenge action, but, tempered with caution, the action alone is manifested, the sound is repressed. If I have read the bird's emotions aright—and such explanation seems well within the mental plane of the pheasant—it shows an interesting correlation of widely separated seasonal activities with a passing, transient emotion.

The nest itself, like that of most pheasants, is scarcely worthy of the name, although in some instances there seems a decided attempt to gather materials. This usually takes the form of a slight pad or mat of dead leaves, fine grass, and moss, and in a depression in the centre the eggs are laid. In one instance, where the bird had gathered a greater quantity of débris than usual,

the nest measured nearly a foot across. When the ground is covered with a thick carpet of dead leaves, no additional matter is gathered; or again, where a slight hollow, either natural or scratched in the ground by the birds, is utilized, a mere lining skin of grass or leaves is present.

The number of eggs ranges from eight to fourteen, with the more usual number about nine. The hen incubates for a period of about twenty-six days, and during this period her dependence upon her leaf-brown coloration is almost absolute. A dog may approach, and detect her, not by scent, but by blundering upon the sitting bird and may seize her before she will leave. Several writers and sportsmen testify to having approached with great care and actually placed their hands upon and caught the hen as she sat rigid—held to her home by her mother love, a performance, let us hope, which was followed by the setting free immediately of the too-trusting bird. The fact is of great interest, however, as emphasizing the unconscious faith which the bird places in its hues of brown and buff. The cock bird is never far away, and when the hen is threatened by a dog or other animal, the male will fly into a tree and cackle loudly.

At the end of the long period of incubation, the chicks emerge, escaping through the neatly severed top of the egg, and leave the nest almost at once. When the brood leaves the vicinity, the male at once attaches himself to his family, and during the period of growth of the chicks, the two parents are invariably found close together with them. Later, when the wings of the young birds allow them to fly up into the branches, the entire family roosts together in the same tree, and not until the birds of the year are full-sized do they drift apart from their parents and begin to forage for themselves. It is now that the young pheasants of several families seem to feel drawn toward one another, and although they usually roost singly, they may often be found feeding together or working through the undergrowth in company in the daytime.

Unusually late broods which have been observed are unques-

tionably due to the first nest having been destroyed by hail or monkeys or some other agency, and not to the fact that this pheasant ever rears two broods in one season.

The eggs are regular ovals, and quite pointed at one end; bearing in shape a closer resemblance to the eggs of the European partridge and peahen than to those of the common pheasant. The shells are glossy and the surface is generally very closely and finely pitted with minute pores, like those of the peafowl's eggs. There is considerable variation in colour, from pale creamy or buffy white to a warm, rich, reddish buff. They are wholly unmarked, and measure from 46 to 52 mm. in length, and from 31 to 39 in breadth.

NEPAL KALEEGE

Gennaeus leucomelanus (Latham)

BRIEF DESCRIPTION.—Male: Similar to the white-crested kaleege but with the crest somewhat shorter and bluish black instead of whitish, and the white fringe on the back and rump narrower. Female: Differs from most females of the white-crested kaleege in being generally darker, especially below, where the ground colour of the plumage is dark reddish brown.

RANGE.—Nepal.

GENERAL ACCOUNT

To the west of Nepal, I had watched and studied the white-crested kaleege in the oak forests of Garhwal; east of Nepal, many days were spent in the moss-hung jungles where the black-backed kaleege lived, but because my skin was fair, not yellow; because my eyes had not that slight Mongolian slant which marks the Ghurka or native Nepalese, I was never able to see in life the Nepal Kaleege. For this bird keeps well within the boundaries of this sturdy little kingdom, and no Caucasian is permitted to enter its maze of tumbled mountain ranges. The one exception is the solitary Englishman who acts as government agent at Khatmandu. But even he may not leave the vicinity of this particular valley. It is upon the specimens and facts obtained by these agents that we must base our meagre knowl-

edge of this kaleege, which, however, appears to differ in no particular, in its general mode of life, from its allies to the west and to the east.

By the courtesy of the late Maharaja of Nepal, I was able to obtain several recently killed pairs of these birds, which furnished data as to plumage and food.

BLACK-BACKED KALEEGE

Gennaeus melanonotus (Blyth)

BRIEF DESCRIPTION.—Male: Resembles the male of the Nepal Kaleege, but with no white terminal fringe to the feathers of the upper plumage; these feathers are also highly glossed, the wings with green, the black with steel-blue. Female: Resembles the female of the Nepal Kaleege, but is still darker, the dark red becoming more of a dark brown or black, and the light tips of the feathers thus appearing clearer white.

RANGE.—Native and British Sikhim and western Bhutan.

GENERAL ACCOUNT

The shadows of dense forest growth are the favourite haunts of the Black-backed Kaleege, and the increased melanism of its plumage, in both male and female, well reflects its preference for humid, mossy jungles. In ravines, on broad, steep slopes, or on flat valley terraces, it may be found, provided always there is dense cover. The foliage of tea bushes is said to suit the bird, so that this sort of change from the primeval forest does not seem to exterminate or drive it away at once, as is the case with almost all other pheasants.

It thrives as near sea level as the base of the hills will permit, and is found breeding in cool oaks at seven or even eight thousand feet elevation. There is but slight altitudinal migration, the birds at the higher elevations being forced downward by winter storms, but those living lower down appearing to be resident throughout the year.

The birds seldom leave the cover of their favourite forest undergrowth, except occasionally in the morning and evening,

when they come into the open or upon a road to feed. They are fearless, however, only as long as they are absolutely ignorant of one's presence. After that, they vanish with all the speed which feet and wings can provide.

When undisturbed, these pheasants are never found perching in the daytime, but feeding or resting on the ground. If approached, but not too suddenly alarmed, their mode of escape is invariably on foot, running swiftly through the underbrush, making hardly a sound, and crouching so low that it is only by the merest trembling of low plants and ferns that their course may be traced. When suddenly flushed on a hillside, they take to wing and scale downward, or on the level along the hillside forest, skilfully dodging the tree trunks, and alighting fifty yards or more away. By circling the spot of alighting they may often again be raised. When flushed under similar conditions by a dog or wild animal, they will usually fly up into a neighbouring tree and survey the source of danger before leaving the vicinity. In all general habits of life, this species closely resembles the white-crested kaleege.

BLACK-BREASTED KALEEGE

Gennaeus horsfieldi (Gray)

BRIEF DESCRIPTION.—Male: Entire plumage black, glossed with purplish or steel-blue; the feathers of the lower back, rump, and upper tail coverts margined with white; the lower plumage only slightly pointed. Female: Olive-brown; tip of crest rufous; chin and throat whitish; wings and ventral plumage tipped with paler brown; central tail feathers deep ferruginous; in general, more rufescent than the other Himalayan kaleege.

RANGE.—Eastern Bhutan, Assam, and Upper Burma.

GENERAL ACCOUNT

The Black-breasted Kaleege is the easternmost of the four which are strung in a line along the Himalayan terai and foothills. It has a wider range than any of the others, and is notable as being one of the three *Gennaeus* which meet in Burma, hybrid-

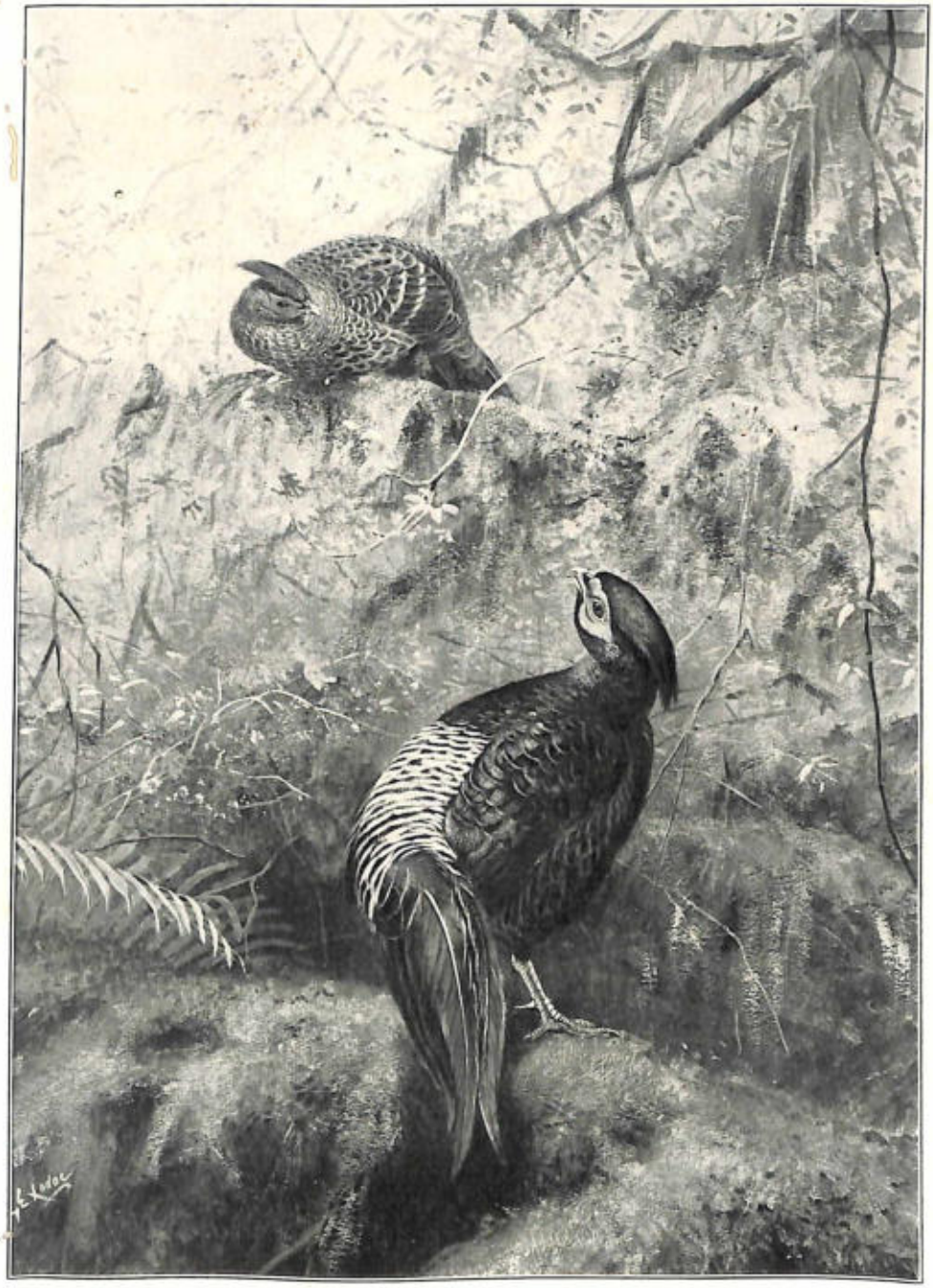


PLATE XX

Painted by G. E. Lodge

BLACK-BREASTED KALEEGE

Gennaeus horsfieldi (Gray)

(For detailed caption see page xx)

ize, and give rise to the numerous forms to which names have been given indiscriminately.

Curiously enough, it is the darkest of the allied Himalayan kaleege, while it touches and crosses with the Silver forms which are the whitest. Its haunts are at lower altitudes than the others, and much more humid in character. Its home range, like that of most of its genus, is restricted, the individuals having regular habits and following much the same route to water and feeding grounds every day.

In Upper Burma I found the Black-breasted Kaleege in bamboo jungle, near the bottoms of rather steep valleys, and along the trails which wound about the slopes, never at more than a thousand feet elevation.

Finding that the Black-backed Kaleege were abundant near Wau-hsaung I remained there some time studying them, and found their habits to differ in no way from those more in the centre of distribution, to the westward, in Assam. This region was only a day's march east of the Irrawaddy, across from Myitkyina, the terminal of the railroad in Upper Burma, and about seven hundred and fifty miles north of Rangoon.

Of the first trio of kaleege which I observed, I shot one. I had abundant opportunity to observe the two remaining pheasants, and noted that one was dark, and, like the one I secured, typical *horsfieldi*. The third was decidedly light, showing distinct white vermiculations on the upper parts and along the central tail feathers. When at last I secured it, I found that it corresponded most closely to what has been called *obscurus*. All were young males, just completing their moult into fully adult plumage.

These birds proved to be fairly numerous and not difficult to observe. But one factor made the work exciting—the water buffaloes. A half-dozen gigantic, black mothers roamed about the woods, each having in tow a callow, whitish calf. Huge as they were, these creatures made but little noise when walking slowly over the mud, and more than once I had hastily to take to trees. Later in the same day, when I shot my first kaleege,

I was crouched close to where a bird was scratching loudly. I had signalled to my companion to circle around ahead of me to force the pheasant into view. Hearing no response, I crept back to the lane, and saw him perched some ten feet from the ground, while an irate water buffalo parent tore up sod and snorted angrily below. On the other hand, the presence of so many of these creatures made it an easier matter stalking the pheasants, the birds being accustomed to their movement through the underbrush.

Several tall trees, covered with ripened fruit, stood near the river bank, and all day were filled with birds, a constant rain of berries and pits falling through the leaves. In a few days, I counted forty species of birds feeding on this fruit, and early one morning, when the fog from the mountains was too thick to see through, I heard, as I walked beneath, the unmistakable note of kaleege. Two birds—male and female—were perched twenty feet up in the tree. They flew as soon as the fog thinned, and I found by the sign that their occupation of the tree had been for roosting purposes.

The kaleege, for the most part, roosted at a moderate height in trees at some distance from the stream. Night after night, they would return to the same tree, but if frightened would resort to some other place. In two such instances, the birds, presumably the same pair in each case, again returned to the first roost after an interval of one or two nights.

The kaleege showed little fear of the native Shans, who worked about their homes in the village, or with huge axes and tiny bows went into the forest for wood. I have seen a pheasant quietly scratching within ten feet of a trail along which Shans were passing from time to time, and close to the sound of chopping.

Early morning was the best time to observe the birds. Just when the mists were beginning to clear away, but long before the sun reached the mountain tops, if one walked along the trail, the trees and bushes might have been those of a New England road. Vines clambered high over the trees, and one saw leaves which simulated wild grape, witch hazel, and alder.

A bulbul would open the chorus with a phrase of clear, sweet notes, and a gang of laughing thrushes usually followed with a united guffaw, jay-like. Before the full morning, songs of the smaller birds greeted the sun, doves' voices were supreme—coos high and low, from all directions. Then, softly, as from a distance, came a louder, muffled tone, and the sudden, unexpected break into a cackle which never failed to thrill me. After a space arose a mellow whirr—the sound of wings in rapid motion, and yet how unlike the sound of flight! The ear at once detected the difference—one, the wing beat set to music; the other, the more usual hum of utility. The latter marks the acme of evolution through untold generations of awkward flapping reptiles; the former reaches the ideal—an approach to our own ability to adapt earthly evolved structures to psychic enjoyments.

The wing beat of the kaleege during the period of courtship is beyond doubt a challenge—cocks will respond with foolhardy impetuosity to a poor imitation. But I have known it to be produced by a hen, and have seen the chicks run to her at the sound. I have seen it used, as I have narrated, by the survivors in an attempt to summon a fallen member of the flock. When it is produced in early morning by yearling birds at the end of the rains, I accredit it without hesitation to the same outburst of feeling which prompts the bulbul's song at this non-breeding season—a symbol of sheer exuberant spirits.

At this time of year (November) the kaleege were in pairs—feeding and roosting together—or in parties of three to five young birds, the sexes sometimes distinct, although occasionally, at a distance from Wau-Hsaung, I saw them mingling together.

There were one or two tigers in the vicinity of Wau-Hsaung, but the pheasants, I suppose, had little to fear from these large carnivora. But some species of small cat fed regularly on the chocolate squirrels with a narrow white ventral band, which were so abundant here. I found their tracks often near the haunts of the pheasants, and once I came across the remains of a kaleege strewn about a favourite drinking place of the cats. Twice I heard pheasants in what must have been sheer ex-

tremity—that cry of despair which, even when it emanates from a domestic fowl, serves to silence every bird within hearing. This cat, whatever the species, is doubtless the worst foe of the kaleege. When I saw how it was possible, by crawling flat upon the ooze, to creep close to a bird intent upon demolishing a termite nest, I realized how the dread feline—mottled and small—could creep easily within striking distance. And yet the birds were ever on the alert, the head, with its brilliant facial skin, shooting up and turning in every direction after each hasty peck.

Even more than the other kaleege, the Black-breasted is voluble, and seldom an hour passes when it can resist cackling or wing-beating. This habit, and the constant noisy scratching among dead leaves, make the locating of these birds a rather easy matter. Yet they are not as sociable as others of the genus, and six or eight is a very unusual number to find together. Usually a pair is seen alone, although, when following some easy route to water, several groups will sometimes drift together and not separate until roosting time.

The food taken varies greatly, not only in different localities, but from week to week on the same slopes. I have shot one of four birds which had spent the day feeding on berries, and which had its crop crammed with these alone, and the following day I secured another member of the flock, disturbing them at a banquet of termites, and finding the bird's crop distended with these long-suffering insects.

I have seen them scratching about the shallows of small, sluggish jungle streams, and in more than one bird have found the remains of small crayfish, usually only the cephalothorax and the abdomen, the birds apparently discarding the less nourishing limbs and other portions. The crayfish in the gizzard were always accompanied by a quantity of small quartz pebbles. In Burma a large fleshy fruit is often eaten, pecked into small pieces before being swallowed, while small black seeds and black ants are two other favourite items of diet in the order of their abundance. Bamboo shoots, earthworms, small centipedes, and moths are also eaten freely.

The breeding season in Upper Burma corresponds to that in other parts of the range—April and May, with delayed broods extending into June. The nest is a hollow in the ground, usually at the foot of a tree, the eggs sometimes laid on the moss of the forest floor or again on a layer of dead leaves. Four to six eggs are laid, but two or three seem to be the usual number of young reared to maturity. The eggs show considerable variation, from pale buffy white to a rich *café au lait*, and even a still warmer, redder tone. They are usually a rather broad oval, smooth and somewhat glossy, and show an average of 36 by 49 mm.

LINEATED KALEEGE

Gennaeus lineatus (Vigors)

BRIEF DESCRIPTION.—Male: Upper plumage vermiculated finely on exposed parts, more coarsely on basal areas, with black and white in equal amounts; long crest and under parts black, sides of breast and abdomen with white shaft stripes; central tail feathers creamy white on inner web and at tip. Female: Olive-brown above with pointed white shaft stripes on the neck and mantle, usually split basally into a V-shape, sometimes simple lines; secondaries mottled with buff on outer webs; chin and throat grayish white; under plumage chestnut; all the feathers with white shaft stripes, and dark cross-bars on the abdomen; middle tail feathers buff, mottled with black on outer web; others barred with black, white, and chestnut.

RANGE.—Valley of the Irrawaddy in Central and Lower Burma, eastward to the Shan States and northeast Siam, and south some distance into Tenasserim.

GENERAL ACCOUNT

Like most of the kaleege pheasants, the Lineated is not a bird of widely ranging habits. When it finds satisfactory haunts, with food, water, good roosting trees, and freedom from molestation, it will spend its entire time within a remarkably limited area, disappearing into the deeper, more isolated parts of the jungle only at the breeding season. Also, like its congeners, it prefers mountainous or at least hilly country to flat plains or grassy prairies, although it lives at moderate elevations and never

ascends to the heights that the silver pheasant or some of the Himalayan kaleege attain. Dry, well-drained terrains, coupled with a fairly cool climate, are ideal conditions for the Lineated Kaleege, open forest in the neighbourhood of water affording them all that any pheasant could desire.

These birds are not gregarious, even to the extent of the white-crested species, but, on the other hand, they are by no means solitary birds. At times other than the breeding season, isolated individuals, especially old cocks, may be found feeding and roosting alone, and hens may occasionally appear to be living by themselves. But the family ties and the lure of certain routes to water are two factors which serve to bind together, however loosely, the birds of related blood or of a limited neighbourhood. When concentrating on these birds, one may come across as many as fifteen in a day's search, but this is unusual. As in the case of most of the other kaleege, the family ties are strong, and the usual parties of three to seven are often composed of parents with the brood of the year.

A reliable index of the amount of sociability among most birds is the rare or more frequent use of the voice, and with this in mind, it is surprising that kaleege are not more gregarious than they are. They may truly be called voluble, and seem to enjoy exercising their vocal organs at all times of the day. I have heard them thus conversing or calling, both on their perches before descending and after retiring, on low branches when resting in the heat of the day, when feeding, and when on their way to water. The loud call, which is also the note of suspicion and even alarm, is the familiar, long-drawn-out, liquid gurgle, preceded by several guttural or mumbled sounds. When carefully stalking birds, and this loud, startling cry comes from the underbrush apparently at one's elbow, the effect is always that of an electric shock, and the one note is almost as difficult to vocalize as the other. Major Nisbett has sent me the following as approximating his idea of it: *Wurk-urk-uk-si—ie ! urk-urk-urk-si—ie !*

This is the utmost that our alphabet will achieve, and if one has

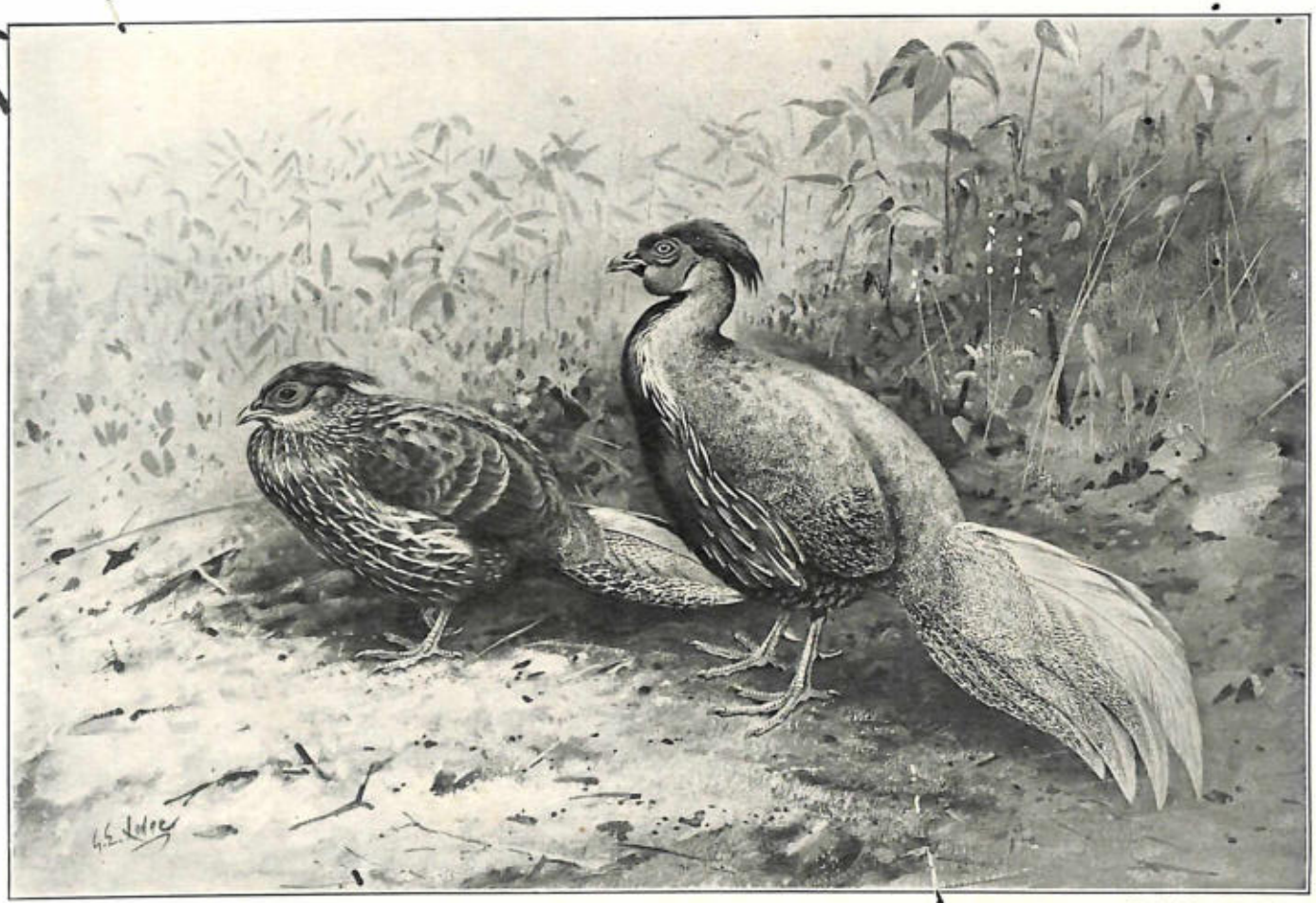


PLATE XXI

Painted by G. E. Lodge

LINEATED KALEEGE

Gennaeus lineatus (Vigors)

(For detailed caption see page xxi)

listened to a captive kaleege of any species, he will instantly appreciate the attempt.

When the pheasants are suddenly alarmed so that they take to wing, their outcry is a shrill squeaking, much like rubbing a wet cork on a bottle. This is more recognizable as the syllables *Whe-ech-cheech-che-ech!* The most interesting phase of their volubility is when they are feeding quietly together or preening their feathers. On several occasions when I had cached myself with such care that my presence was wholly unknown to the birds, I was able to listen to the intimate conversation of a family. Even my coarse hearing could discover the modulations and inflections, but to no human ear is given understanding or appreciation of the extent of the ideas or sensations thus conveyed. I remember one bird, busily scratching and feeding, which appeared to be talking wholly to itself. No other was within several yards. As it scratched the mould and leaves, it was silent; then, when it began to search for edible results of its energy, it murmured continuously in a low undertone, which rose and fell, gained in strength and timbre, actually broke into short isolated grunts, according to the excitement of the discovery and chase of the insects and other creatures upon which it was feeding.

While the Lineated is not a stronger flier than others of its family, it rises easily, and is able to continue for a sufficient distance to carry it well beyond ordinary danger. When flushed by the sudden rush of a dog, or an undetected approach of a beater, the bird will shoot across a valley with strong, rapid wing beats. Whenever possible, it directs its flight downhill and scales as much as the force of gravitation will permit. The tail is usually held low, and only when suspicious of danger does the bird draw itself up to full height on its very toes and search every direction.

DAILY ROUND OF LIFE

A night spent in slumber on the branch of a tree; an early morning drink and search for food; a midday siesta; again a feeding

period, and in the cool of early evening a leisurely stroll to water, and thence to roost—such is an epitome of the daily life of the Lineated, as well as of most other pheasants.

These birds are omnivorous, and they seem to thrive equally well on a wholly vegetable diet, or one which embraces only insect and other animal food. They are inveterate scratchers, and to listen for the loud rustling of leaves is one of the commonest modes of detecting their presence. When a family of pheasants is accustomed to haunt any definite portion of jungle, daily inspection of this area will reveal the considerable amount of energy expended in this search for food. If this investigation be carried on at midday, when the birds are resting quietly, there will be little chance of disturbing them or driving them elsewhere. They seem to have favourite spots in the open jungle floor, and day after day will enlarge the borders of this scratched-over area which is doubtless chosen because of the abundance of some particular food. Another habit, which I have both observed and had reported to me, is that of scratching around stumps or the trunks of fallen decayed trees, and often the bark itself will be detached in large flakes, probably by strenuous pecks of the bird's bill.

The loud call, while heard throughout the year, is more frequently uttered before and during the breeding season, and very probably plays a part in challenge and courtship. The wing music is of much greater importance, and is preëminent as a challenge. It is a very simple matter to lure cocks within sight, by even a rather crude imitation. The usual native custom is rapidly to twist a small stick, with a bit of stiff leaf or cloth inserted at the top. While, as I have already said, this wing-beating seems to express many emotions, that of arousing jealousy of a rival is the dominant one.

When about to give this instrumental challenge, the bird stands very erect, with tail somewhat depressed, and, instantly spreading wide its wings, rapidly whirrs them back and forth throughout a rather small arc. The wing-whirr of the kaleege—and this may be taken as true of all the species—is markedly ventriloquial.

When it seems low and subdued it yet has a penetrating quality which will carry it far through jungle and underbrush.

SILVER PHEASANT

Gennaeus nycthemerus (Linnæus)

BRIEF DESCRIPTION.—Male: Top of the head, long, hairy crest, and under parts black, glossed with purple; upper parts white, the feathers peppered, or on the wings lined, with four to six black converging lines; tail very long, centre feathers white, others with numerous oblique lines. Female: Crest blackish brown; throat brownish white; entire body plumage and central tail feathers olive-brown, finely mottled with dusky lines; outer tail feathers black, with irregular oblique white and olive lines.

RANGE.—South China, from central Yunnan east to Fokien.

THE BIRD IN ITS WILD HOME

It was the ides of March among the tumbled mountain ranges of Fokien. A week's rain had freshened the landscape and swelled each bud and lichen, and under the heat of the midday sun the myriad lives in egg and chrysalid were stirring restlessly. When I left the river bank in early morning the wind blew cold, but after a climb of a thousand feet the sun's warmth seemed that of midsummer. Although frost was almost unknown, yet the air was filled with springy odours, and, to the eye, Nature revealed herself as awakening after a long winter's sleep.

The hills, ravines, and mountains surrounded us, their steep, rounded outlines broken here and there by weathered cliffs of blackish rock. A soft coat of green covered the slopes, but nowhere were the dark spires of forest. Cultivation must be all but impossible here, but the hordes of yellow men of this and countless past generations had gleaned again and again, and left only sprouting pines and brushy bamboo. Grass was almost absent, its place taken everywhere by a low, coarse fern brake, covering densely every available inch from water's edge to mountain top.

I crouched and watched the south side of the open valley. Along the bottom flowed a quiet green stream; here and there

were stubbled rice fieldlets, most of them of only a few yards extent.

Two beautiful shrikes clung to a reed near by, and now and then flew into a clump of brush, searching for insect food like vireos. They were at last driven away by a flock of black mynas, which whirled down to the fields and began to feed.

Now, an interesting sequence of happenings delighted me. A flock of a dozen magpies was searching busily through the ferns on an overhanging bank. Occasionally, one flew down and grubbed out a hollow with its beak among the newly ploughed clods of a small rice terrace below. It dropped something into the hole and carefully covered it up before flying up again. After two or three magpies had repeated this, a hen Silver Pheasant walked slowly out into the field, followed by another hen and a cock, and all scratched vigorously where the magpies had been delving. Good-sized black objects were found and beaten vigorously before being swallowed.

For half an hour this went on, the magpies continuing to bring down objects and bury them, and the pheasants to dig them up and devour them. Neither species paid any attention to the other. While this was going on, a creamy white, weasel-like animal appeared, winding along below the bank. A bit of earth dislodged by a magpie fell almost on the creature, and it turned and dashed back to shelter.

In order to solve the problem of the magpies and pheasants, I crept nearer, but missed in a try for one of the latter. With the second barrel I secured a magpie which had just started to fly down to the field with one of its treasures in its beak. I ran to the fallen bird and found a partly crushed cockchafer, or June-bug, lying close to it. In the mouth of the bird was a leg of the beetle, and in its crop eight more of the insects. The magpies had been feasting to repletion on the newly emerged beetles, and then, for reasons best known to themselves, had chosen to work hard at burying all the others they could find. The pheasants had come into the field to scratch for food and, having uncovered several of the newly buried toothsome morsels in the



PLATE XXII

Painted by C. R. Knight

CHINESE SILVER PHEASANT

Gennaeus nycthemerus (Linnæus)

(For detailed caption see page xxi)

tracks of the magpies, had seemed to realize that these birds were in some way connected with this manna; and, for the last ten minutes, hardly had the magpie started back for the bank when one of the pheasants unearthed its cache.

GENERAL ACCOUNT

Like the golden pheasant, the Chinese Silver Pheasant is one of the best known of its group in captivity. The two are still further alike in their isolation in a wild state. While we may purchase a pair of Silvers for a very small sum and be quite certain of rearing numerous young birds to maturity, there is no authentic record of the finding of a nest of wild birds, and, in fact, only the most meagre notes even of distribution.

In spite of numerous repetitions of the fact, there seems to be no definite record of a Silver Pheasant in Chekiang. The Abbé David asserted, as long ago as 1877, that it was becoming very rare in its wild haunts, but gave no reason for the statement. In Fokien, several naturalists have found it in numbers, and back from the seacoast I observed it in several isolated parts of the country.

There is considerable shooting and trapping of the birds on the part of the natives, but no systematic collecting for their feathers such as I noted in Yunnan. One method reported by the Chinese is to build a rough shelter of boughs and to scatter around it quantities of grain. When the birds have become accustomed to come day after day for food, the hunter conceals himself in the shelter and shoots the pheasants as they come to the grain. The dead birds are not disturbed, and by remaining quietly concealed, it is said that as many as eight may be obtained in a single morning. I have described a similar disregard for the noise of gun-fire on the part of related species of Burmese pheasants. The Chinese hunters are also reported to shoot the birds by torchlight from their roosts. It is said that the civil mandarins wear a Silver Pheasant embroidered on the heart and back badges of their official dresses to indicate their rank. It is

certainly one of the favourite subjects for decorative painting and embroidery among the Chinese.

The insight which I could gain into their lives showed that their habits differed in no way from other kaleege. I never saw a bird at midday, but in early morning and late afternoon, their noisy scratching would reveal their whereabouts, and a careful stalk would sometimes give a chance for a shot or a glimpse of white-and-black plumage. I observed no regularity of movements, no accustomed trail toward water, and so was unable to head them off or intercept them. They seemed to wander about with but little definite direction in view, and I could locate no roosts.

The food of those I examined consisted chiefly of insects, such as grubs and wire-worms, together with a less quantity of various kinds of berries, and occasionally flower petals and leaves. La Touche tells of four eggs brought in by a Chinaman in Central Fokien said to belong to the Silver Pheasant. In captivity, the Chinese Silver Pheasant is one of the readiest breeders. Indeed, no fewer than seventy-two fertile eggs have been laid by three hens in a season. The eggs are broad ovals, rather glossy, and without pigment markings. They vary in ground colour from pale to warm reddish buff, usually *café au lait*, and the average of many eggs is 39 by 51 mm. From four to six eggs seem to form a complete set, and the period of incubation is twenty-five or twenty-six days. There are authentic records of cock birds in captivity which have lived twelve, eighteen, and even twenty-one years.

Birds both living and dead are brought for sale into the large Chinese cities, such as Foochow, Amoy, and Canton, but all have been trapped or shot, and I doubt if the pheasants are ever reared by the Chinese.

In Europe and the United States, however, it is one of the commonest of its family with dealers, and is one of the first to be obtained and bred by the amateur. While these birds are beautiful and hardy, their pugnacious habits make it inadvisable to confine them closely with other birds, and even if given the

freedom of coverts, they will usually drive off the other species of pheasants. When a pair is allowed to pair and nest, the cock is very faithful in attendance upon the female and in defence of the young, and this unquestionably points to the monogamous habits of the wild birds. The cock, of course, usually has nothing to do with incubation, although there is actually a record of one bird sitting on the eggs. Its mate had laid four eggs, but failed to hatch young. When a second batch was laid, the cock, in fully adult plumage, began to incubate, and so successfully that three young Silvers were hatched, and were reared by the combined efforts of both birds. This is very unusual, however. But the cock vigorously opposes any threatened danger, and will fearlessly launch himself at the head of anyone of whom he has suspicions, and has been known to follow a person indoors to continue his assault. The hens are equally brave, and will drive away cats and dogs when they are with a brood of young chicks.

As furnishing sport in private preserves, they are unsatisfactory, as they are difficult to flush, preferring to escape on foot, and even when they take to wing, they merely skim the underbrush, offering little chance for other than snap shots, and these dangerous to beaters and to fellow sportsmen. Birds shot under such circumstances have been described as very inferior in flesh, but two which I had cooked in the field left nothing to be desired. The chief objections to their artificial establishment as game birds are their tameness and their habit of coming close to houses and gardens.

The wing whirring and courtship are like those of the other kaleege pheasants, and the former habit is not confined to the breeding season but seems to function as a warning signal, and probably in other ways as well. The usual kaleege, broken, semi-liquid, semi-harsh, guttural cry is characteristic of this species.

When courting, there seems to be usually a quite definite utterance, combined with a wing whirr. The cock approaches the hen slowly and in an indirect, sidling manner. He then stops suddenly, faces her, stands erect, and utters a two-syllabled note, something like *ohr-chac!* short and sudden, the accent on the

first syllable. This is instantly followed by an equally short and sharp whirr, thus; *ohr-chac* (whirrrr!). Then the cock runs or walks swiftly around the hen, with tail and wings spread widely, showing them laterally or frontally, according to his position relative to her eyes.

When the wing whirr is given as a note of suspicion or upon some similar provocation, it is usually double, thus, whir! whirrrrrrrr!—a short, quick beat, followed by a long roll, during which the half-open wings vibrate back and forth in a maze of motion within a small arc at the sides of the body, the bird standing very erect.

HAINAN SILVER PHEASANT

Gennaeus whiteheadi Grant

BRIEF DESCRIPTION.—Male: Most nearly allied to *nycthemerus*. Nape and upper mantle pure white; remainder of upper plumage with two or usually a single arrow-shaped submarginal black band, increasing in width toward the tail; wing markings are strong black lines, few in number; central tail feathers usually white or with a few isolated black lines; these increase in width and number toward the outer pairs, which are predominately black. Female: Resembles more closely the female of *lineatus* than that of *nycthemerus*. Crown and nape mottled brown; neck and mantle black with wide white shaft streaks; under parts with the white dominant, the black reduced to a wide margin; lateral tail feathers chestnut.

RANGE.—The Island of Hainan.

GENERAL ACCOUNT

In the year 1899, John Whitehead, an English collector, visited Hainan, and discovered the present species of pheasant. Less than eight weeks after securing it, he died of fever.

EDWARD'S PHEASANT

Gennaeus edwardsi Oustalet

BRIEF DESCRIPTION.—Male: Cap white; body metallic purplish black, with pronounced terminal fringe on rump and tail coverts; wing coverts shining green with disintegrated fringe; wings and tail black; facial skin,

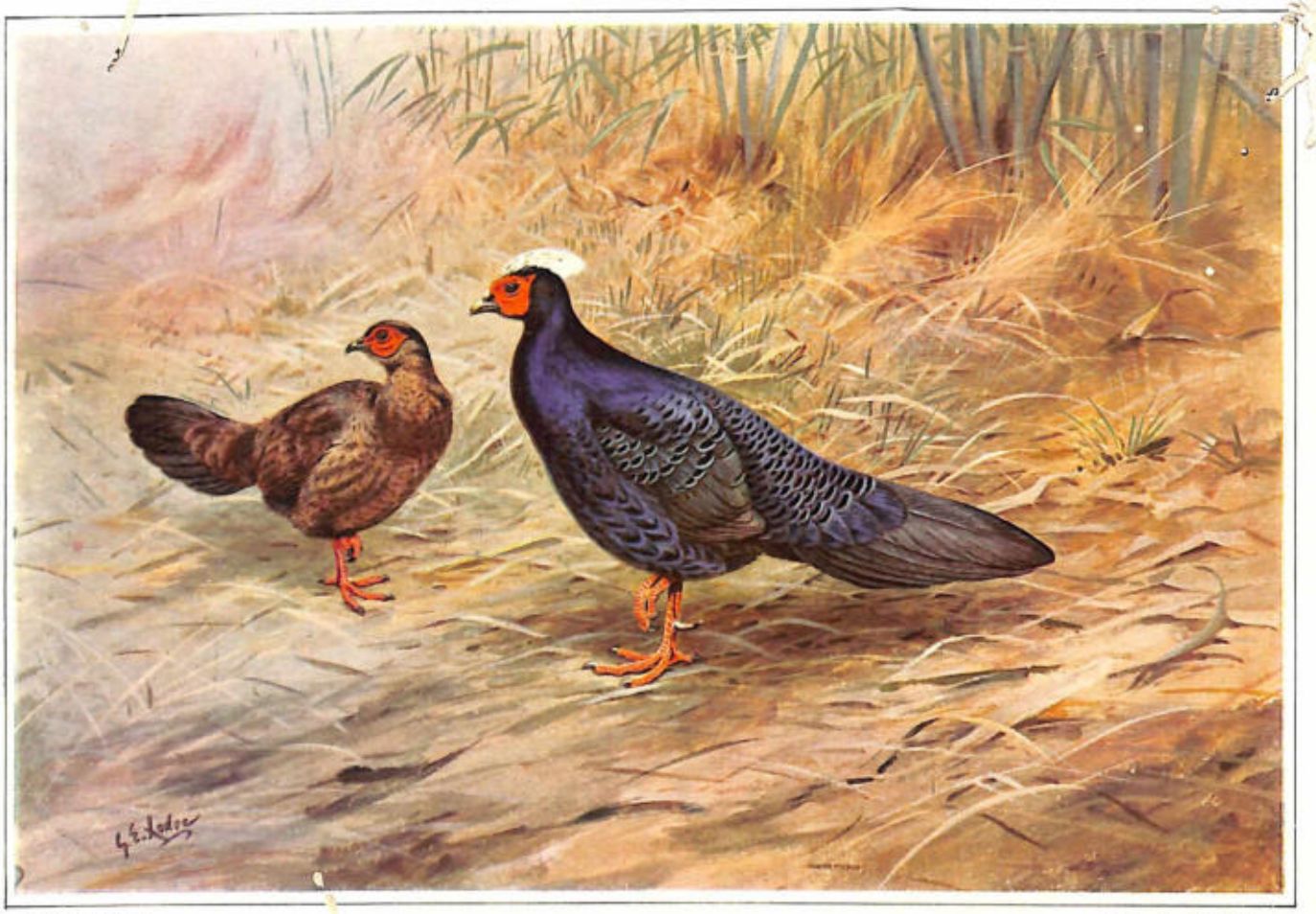


PLATE XXIII

Painted by G. E. Lodge

EDWARD'S PHEASANT

Gennaeus edwardsi (Oustalet)

(For detailed caption see page xxi)

legs, and feet scarlet. Female: Brownish gray, paler on the neck, and becoming more rufous on scapulars and wing coverts; tail blackish; face and legs scarlet.

RANGE.—Eastern slopes of the Annam Mountains.

GENERAL ACCOUNT

Although this very distinct species has been known since 1896, up to a year or two ago nothing had been recorded of its habits. Four specimens in the Museum in Paris have alone represented this species until M. Jean Delacour in 1923 went to Indo-China and obtained ten skins and twenty-two living birds, of which fifteen reached France in good health.

Edward's Pheasant inhabits the wooded slopes of the hills of Annam, from the northern boundary of Quang-Tri south to the Col des Nuages. It is not common and keeps to the bamboo thickets, so that it can be secured only by trapping. They have never been shot by a white sportsman, and only a single wild bird has ever been seen alive, flying across a road close to the sea at the Col des Nuages.

This bird differs from all other *Gennaeus* in passing through no immature plumage. Delacour reared seven of this species in France in April, 1925, five of which were cocks, and in October all were in full plumage. The incubation period is twenty-one instead of twenty-five days.

I cannot admit a new genus for this bird, for it differs from the Silver pheasant no more than that bird differs from the white-crested kaleege of the Himalayan terai.

IMPERIAL PHEASANT

Gennaeus imperialis (Delacour and Jabouille)

BRIEF DESCRIPTION.—Male: Closely related to Edward's Pheasant, but differs in its larger size, a more developed, broader, and more arched tail; a pure black crest; no metallic green marking on the wing, and a less bright blue general colour. Female: Differs from the Edward's hen in being much larger, having a pale brown neck and under parts; the back less glossy and lighter chestnut.

RANGE.—Donghoi, on the northern border of Quang-Tri, Annam.

A pair of live birds of this new species was brought to France in 1923 by M. Jean Delacour, and five young birds bred from them. Although so close in external appearance to Edward's Pheasant, yet the incubation period is much longer, twenty-five days, and the adult dress is not assumed for a year and a half after hatching. Nothing is known of its habits.

SWINHOE'S PHEASANT

Gennaeus swinhoii (Gould)

BRIEF DESCRIPTION.—Male: Facial skin scarlet; head, chin, and throat black; crest, mantle, and central tail feathers white; scapulars dark metallic crimson; most of the wing coverts with metallic green fringe; remainder of plumage glossed with purplish blue. Female: Crest short, black, tipped with reddish brown; upper plumage and wings black, thickly mottled with reddish brown; mantle, back, and wing coverts with a conspicuous arrow-shaped buffy mark; flight feathers black, banded with rufous and whitish buff; ventral plumage rufous-buff, obliquely barred with black; central tail feathers irregularly barred and mottled with black and white; other rectrices dark chestnut.

RANGE.—The mountain forests of Formosa.

GENERAL ACCOUNT

My account of Swinhoe's Pheasant is second-hand, as I had no opportunity of visiting Formosa and studying the bird in its native home. For many years Mr. Robert Swinhoe was the British Consul in Formosa, and it was due to his efforts that the first specimens of this pheasant were made known to science.

He writes, "I was informed by my hunters that a second species of pheasant, which was denominated by the Chinese colonists Wá-koë, was found in the interior mountains, that it was a true jungle bird, frequenting the wild hill ranges of the aborigines, and rarely descending to the lower hills that border on the Chinese territory, and that in the evening and early morning the male was in the habit of showing himself on an exposed branch or roof of a savage's hut, uttering his crowing, defiant note, while he strutted and threw up his tail like a rooster. I offered rewards and encouraged my men to do their utmost to procure



PLATE XXIV

SWINHOE'S PHEASANT

Gennaeus swinhoii (Gould)

Painted by G. E. Lodge

(For detailed caption see page xxi)

me specimens of this bird, and I was so far successful that I managed to obtain a pair; but in my trip to the interior it was in vain that I sought to get a view of it in its native haunts, and to make acquaintance with it in a state of nature."

KALEEGE PHEASANT HYBRIDS

GENERAL ACCOUNT

After finding and studying the Himalayan kaleege, I later visited Burma, and there in the south first met with *lineatus*. My next studies took me to Mandalay, eastward beyond Maymyo, and northward toward the Ruby Mines District and Bhamo. I then spent considerable time in the Myitkyina District far up the Irrawaddy, and among the Shan Mountains to the east and south, to beyond the Yunnan border. Here, thanks to the exact details given me by Major Nisbett, I was able to collect and observe the birds at the very localities where the types were taken.

From this latter very limited locality, six forms of *Gennaeus* had been recorded. Of these, I found no perfectly typical specimens, but pheasants which approximated four, besides a fifth which was not supposed to occur here. In addition, I collected birds which, if judged by the characters used in separating the already named forms, would supply at least four additional species.

At the locality from which *affinis* is recorded, the lower River Namli, I found only *horsfieldi*, which was dominant and almost typical, and a vermiculated bird associated with it which closely resembles the description of *obscurus*, but differed from it as much as do the most nearly related named species. The two forms were living in close association, the first flock containing three birds, all males, two of which were *horsfieldi*. In fact, this was about the numerical percentage of the latter in this vicinity. On two occasions I saw a distinctly lighter bird in company with *horsfieldi*, but I failed to secure it. My next stop was at Pungatong, some twenty miles farther east, at an elevation of about

four thousand feet. Here I located a flock of eleven kaleege, or what were probably two families of four and five, respectively, and two single cock birds. Each afternoon, these would unite and take the same route to water, down a gently sloping hillside covered with light forest, across the trail, and on down to the stream at the bottom of a rather steep ravine. I watched these birds carefully, day after day, until I could actually recognize the individuals, in spite of the fact that they were usually well looked after by a mob of laughing thrushes. Then I began shooting, and secured no fewer than eight birds out of the eleven. This comprised all of one family of two parents and two almost full-grown young males in first-year plumage, the adult male parent of the second family with a young female of the year, and both of the solitary cock birds—fully adult. The tale of the individuals was as follows, using Oates's nomenclature.

Family Number One:

1. ADULT MALE.—On the whole, this bird resembled *horsfieldi*, but it had the narrow rump fringe and lengthened tail of *batemani*, the intense blue, non-vermiculated rump of *mearsi*, and, in addition, the scarlet legs and feet of *nisbetti*. The central tail feathers were sparingly but strongly vermiculated with white for most of their length, the terminal fifth being clear black.
2. ADULT FEMALE.—This bird, which was constantly associated with the above cock (in fact, I secured both with one shot), was not distinguishable from females of *horsfieldi*, except for the somewhat longer tail. Well grown as were the two young birds, I saw this female more than once allow them to take food away from her, and from this and other actions, besides the constant association of the four birds before they joined the others for the afternoon's descent to water, there is not the slightest doubt that this was a single family of kaleege.
3. FIRST-YEAR MALE.—Typical *horsfieldi* as found in Manipur, with tail of normal length, but with the basal vermiculation

on the inner rectrices visible for a half inch beyond the upper tail coverts.

4. First-Year Male.—Between *obscurus* and *davisoni*, with characters of each form.

The two following birds I judged to be parent and offspring:

5. Adult Male.—Superficially close to *lineatus*, with somewhat coarser vermiculations, and with the outer webs of the outer tail feathers almost unmarked black, as in *andersoni*. The central tail feathers were vermiculated throughout, with no hint of a pure white area. There was no trace of a rump fringe.

6. First-Year Male.—This bird does not correspond to the description of the females of any form. The general colour above is olive-brown, very minutely vermiculated with black, except along the margins of the feathers, where, the black dying out, the pure olive-brown shows paler and clearer. The primaries are brownish black, densely mottled with grayish brown on the outer webs. The secondaries are similar, with the colour of the outer webs changing into that of the coverts and remainder of the upper plumage.

The chin and throat are white, tinged with brown along the margins. On the under parts the light colour persists as a well-defined buffy shaft stripe. The rest of the feather is clear olive-brown, with but little mottling except on the centre of the lower breast and abdomen, where the entire feather is irregularly blackened especially along the enlarged shaft stripe. The under tail coverts are the blackest of all the contour feathers, most of them showing brown only along the margin. The outer and median tail feathers are chestnut, obscurely but coarsely mottled with black. Toward the central pairs, the chestnut changes to a brown, and the darker colour becomes a coarse vermiculation, the lines irregular and lying obliquely to the shaft.

The facial skin was scarlet; the irides light hazel; legs and feet pale, neutral, leaden gray.

I have gone into this in detail to show what variation I found among the females of this group of pheasants.

7. ADULT MALE.—One of the solitary males was *horsfieldi* in length of tail and general markings, except that there was more vermiculation on the central tail feathers than I have seen in any bird from Assam, and the inner wing coverts were strongly margined.

8. ADULT MALE.—The second male I shot on sight, and at such close range that I nearly blew it to pieces. At first glance, it seemed to be a Silver Pheasant (*nycthemerus*), and stood out sharply from all its companions on both the occasions when I watched it working downhill. The second time I had my gun and secured it at once. It proved to be a very dark representative of what has been called *ripponi*, but differing in having greenish, instead of scarlet, legs and feet.

All this astounding variety of kaleege I found within two miles of the dâk bungalow at Pungatong, associating together, and, as I have said, with satisfactory evidence of being in families. Even if the birds were of no immediate relationship, the fact of their remarkable variation is none the less indicative of hybridism. This is typical of what I found to exist in other parts of Burma. The Arakan country and Annam I did not visit, and hence I cannot speak at first hand with regard to the birds which inhabit those regions.

RIPPONI-SHARPEI-NYCTHEMERUS HYBRIDS IN THE FIELD

My first meeting with any true silver kaleege pheasant was, as I have related, in Burma, some distance from the Yunnan frontier, when, from a flock of much darker birds, I shot one which belonged in the *nycthemerus-ripponi-rufipes* group, but which was not wholly typical of any good species or named hybrid. After crossing the Yunnan border, when the last outlying English fort had been left behind, I found traces of an even



PLATE XXV

Painted by G. E. Lodge

RIPPON'S HYBRID SILVER PHEASANT

(For detailed caption see page xxi)

whiter bird. These were in the form of stray feathers in the sprung deadfalls of the Kachin trappers. They belonged to birds which had been caught, but discovered and eaten by civet cats before the hillmen had had opportunity to go their rounds.

Later, I saw a flock of these birds and shot one, which was typical *ripponi*. On this occasion, I was part way down the slope of a wild gorge, on a late afternoon in December. The mountains rose high on all sides except to the northward, where the long slopes dovetailed one another, punctuated by two majestic peaks, and ending in the purple distance in the jagged ranges of the unexplored tri-corner of Tibet, Yunnan, and Burma. No huts were in sight, but from a side valley came faintly the weird, nameless mouthings of a tongueless Kachin cur.

The hillside jungle showed a dozen shades of green, with here and there a blur of delicate pink, marking the unseasonable blossoming of a wild cherry tree. One close overhead radiated a hundred sprays of coral bloom, all ahum with insects drawn by the nectar, while the branches themselves trembled with the perchings of many flycatchers, attracted in turn by the insects.

Now a hoarse chorus came from a dense flock of parrakeets, and soon afterward the tremulous wing whirr of a kaleege. This sent me down at once on my knees among the scanty dwarf bamboo and everlastings, alert for another hint of the birds which I was seeking. A crash of leaves and twigs drew my attention to the right along the slope, and I grasped my three-barrelled gun. A brace of tigers had taken toll of mules not far away, but this alarm ended in silence and mystery.

An hour passed with no sound of pheasants to reward my patience. Then a cloud blotted the sun, and a chill followed the warmth and stilled the humming insects. A wind rose, and even when the long slanting rays at last shone forth, the cold of night still filled the air. I crept slowly to a projecting spur, and found the wind blowing freshly on the other side. The moment it blew against my face I heard, a short distance away, the scratching which always meant pheasants of some kind. Twice a bird

whirred, and then, walking slowly downward, on the way to the water at the bottom of the gorge, there appeared a stately kaleege, clad in ebony and silvery white. This was a time when I wanted the bird more than any hint of its life history which observation in the failing light might give, so I raised my gun and fired. Two more birds burst forth from the feathery bamboo, and on widespread vibrating wings flew and finally scaled down the great gorge, until their white forms were swallowed up in the darkness far below. Only a few weeks before, I had watched the blackest of all the kaleege not far from the banks of the Irrawaddy, and here at my feet was the outpost of the silver clan which stretched on and on to the eastward until fairly stopped by the shores of the Pacific.

CRESTLESS FIREBACK PHEASANTS

Acomus

Two species, confined to the southern part of the Malay States, Sumatra, and Borneo. The sexes are somewhat alike, and both are armed with spurs.

MALAYAN CRESTLESS FIREBACK

Acomus erythrophthalmus (Raffles)

BRIEF DESCRIPTION.—Male: Head dark brown; lower back bronze-gold, changing posteriorly into bronze-red; tail buff; remaining plumage steel-blue, freckled on the back, sides, and wings with white; faces carlet. Female: Head dark brown; entire plumage, wings, and tail shining steel-blue; flight feathers and belly dull brownish black.

RANGE.—Southern part of the Malay Peninsula and Sumatra.

GENERAL ACCOUNT

A careful search through ornithological literature shows that our ignorance of the life and habits of this bird is complete. Not a single fact has been recorded, and as far as I know, only native Malays have heretofore had the good fortune to catch even a glimpse of them in their native jungles. I went to Johore expecting to find this species the commonest of all the pheasants of that region, always, of course, excepting the junglefowl. But I found that, while they shared with the latter the habit of frequenting the vicinity of native villages and the more open jungle where the half-domesticated buffaloes roamed, they were exceedingly shy, and I actually had as much difficulty in getting even the barest outline of their life history as in the case of the much rarer argus and bronze-tailed peacock pheasants.

My first glimpse of the Malayan Crestless Firebacks was

wholly unexpected, and came while I was completely absorbed in other forms of life.

For three hours or more, since early dawn, I had been creeping on all fours, or progressing in a still lowlier position, stalking and observing junglefowl. I had started inland from the bank of a small river in central Johore, and had become rather confused and uncertain as to the most direct route back. I knew, however, that a sight taken from any tall tree would set me right, so I chose a hidden resting place in a shady, partly dry spot, beneath a small forest of giant caladium-like growths, and became absorbed in a pair of tumble-bugs revolving their diminutive globe. They had gleaned from the sleeping place of a mouse-deer and had kneaded the clay and prepared their tunnel. Their methods differed in no way from their kindred all over the world. Exactly thus had I seen them push and tug on the sand of Egypt before the tombs of Sakkara; thus had they done before me in a Virginia pasture and a New England roadside. I found later that more than one pheasant had accepted these hard, horny morsels as food, breaking them in pieces, but swallowing hard elytra and thorax as well as soft body.

My reverie was suddenly interrupted by a wasp which hovered so close and so angrily that I left at once. A tropical wasp nearly two inches in length is as dangerous to health as a strong attack of fever. To my dismay, I discovered behind me a herd of water buffaloes coming slowly along one of their trails. I shifted quickly to a position between two small trees, either of which I could mount swiftly. A person who has once been charged by buffaloes puts dignity out of mind at once on their appearance. For ten or fifteen minutes they grazed near me, fortunately keeping up wind.

Then came a sight for which I was wholly unprepared. Trotting along the trail came a string of birds—a glance showed they were Crestless Firebacks, twenty-two in all, about an equal number of males and females. They passed not more than fifty feet from where I crouched, straight through the herd and on out of sight. This was well worth the siege of the buffaloes, which I



PLATE XXVI

Painted by G. E. Lodge

MALAYAN CRESTLESS FIREBACK

Acomus erythrophthalmus (Raffles)

(For detailed caption see page xxii)

raised by an elaborate circling, and, knowing they had come from the river, I followed on their back track, and in twenty minutes was at the camp, eating breakfast. Why so many birds should be together I could not tell, unless it is the habit for several families to unite after the young birds have reached full size.

I had one other glimpse of these birds in this locality. I had gone far beyond the buffalo ground into light jungle. Green, black-faced babblers were everywhere, hanging to the leaves and twigs in their strenuous search for insects. Long-billed sunbirds dashed about me, uttering sharp *tsips*, and a little squeaking on my part drove them to the highest pitch of excitement. Now and then two or three horn-bills passed high overhead, with their alternate flap and soar like pelicans. One of the most characteristic sounds of the Malayan jungles is the deep, soft, *whoof! whoof! whoof! whoof! whooooooooof! whoof! whoof! whoof! whooooof!* of their great pinions.

A number of gibbons had just finished their morning's chorus and were swinging about the trees ahead, making a tremendous racket, while at the same time they fed on some gourd-shaped fruit. Now and then, a head would swing up into view, eye me keenly, and hurl a few hoots at me. They kept my advance under most careful observation. A junglefowl scampered away with a fowl-like, broken cackle of fright.

A few yards ahead I heard now and then a muffled scratching of leaves. Fortune favoured me, and after many minutes of most painstaking stalking, I reached a good point of observation. For a long time, I could make out nothing but a confused dark mass tumbling about—first falling over one side, then the other. My low-power glasses at last showed me it was two Fireback hens waging a battle as fiercely as any game cocks.

Breathlessness was the only cause of stopping, and even when both seemed completely exhausted, they clung together, and from time to time gave wholly ineffectual pecks at each other. Their wings dragged, their feathers were ruffled, and they were altogether most disreputable-looking females. Finally, thinking they were so tired that I could catch them with my hands, I

walked toward them. But though their combative strength was spent, they had reserve enough to run quickly off when they saw me coming.

The comparative similarity in colour of the sexes of this species, and the presence of spurs in both, would indicate that courtship was a more or less reciprocal affair, and the fight of the hen birds which I witnessed would also support this conclusion. On the other hand, there are good reasons for supposing that this species is more or less polygamous, and if such is the case, any such theory would fail to explain the facts.

Further observation showed that these birds were more numerous along the smaller creeks which traversed the low country, and that they haunted the water holes of the buffaloes in early morning. They have apparently no regular place of fighting, but pitch into one another whenever and wherever the spirit moves them. Birds which become badly injured in these encounters or are otherwise disabled or weakened have short shrift. Leeches and ticks do their work even before the keen noses of carnivores find them out. One recently dead bird with a spur-thrust through its breast I found with a circle of gorged leeches lying about, and the ants were assembling in hundreds, eager to play their part in the drama of dissolution.

Even continued trapping will not drive these birds away, and a pot-hunter could destroy every member of a flock.

The note of suspicion or half-alarm of the Malayan Fireback is a sharp, explosive *kak!* followed by the throaty, frog-like gulp, characteristic of all the *Gennaeus*, uttered once or twice. Then the *kak!* again, and the subdued bubbling or gurgling sounds. The note of wild despair when attacked by some animal, or being removed from a trap by a native, is, in the old bird, a hoarse, long-drawn cry; in the young, a shrill whistling. The sound of warning or challenge when two cocks threaten one another is a deep, hoarse drawl, almost a snarl, which one would attribute rather to a carnivore than to a small pheasant.

The fowl-like appearance which the roof-like, compressed tail gives to this Fireback is well indicated by the Malayan name.

The natives never call it *kuang* (pheasant) but always *burong* (bird) or *ayam* (fowl).

Although this pheasant is not uncommon in some places, and, as we have seen, even frequents the vicinity of isolated huts or native hamlets, yet its nest has never been found, nor, as far as I know, have we any record of its eggs or young. I was unable to learn anything authentic concerning its nidification, although the natives were ever ready to furnish me with any information (doubtless made to order) which they thought would please me. To test the elasticity of such facts, I led a Malay headman to assure me one day that the *burong merah mata* laid but two eggs and in a tree! while on the following day, when I expressed disappointment that they deposited so few, he informed me in a burst of confidence that many of the hens laid five times that number! A female which I shot well to the southward was about to deposit an egg, while two others were well developed. The shell was plain buffy white in colour, with very minute pits.

The birds spend the night well up in trees, and when a native discovers such a roosting place he is well-nigh certain of capturing the birds, as he will get scores of nooses in all the grassy runways leading to the tree, and the habit of returning night after night to the same place ensures their capture. They seem to feed at all times of the day, not only early in the morning and in the evening, as with most pheasants. In the game and buffalo trails they scratch like fowls, making a great noise and rustling of leaves. At such times, however, unlike the Himalayan pheasants, they seldom utter a sound, and every moment or two stand erect, motionless, and silent, watching, listening, for the dangers which threaten every inmate of the jungle. It is said that the females are more numerous than the males, but this I cannot confirm. The sexes have been approximately equal in the coveys or flocks which have come under my observation.

The food which I have examined in the crops of the birds consists of animal and vegetable matter in about equal proportions. Termites, as usual, are very frequently eaten, ticks and grubs less often. Small hard berries, with but a thin skin over the very

large stone, formed the food of two male birds; poor sustenance, one would think.

They seem to be stupid birds, and I have never seen one in captivity which showed any relaxation of the shyness or unreasoning wildness of a feral bird. Those which I sent to America were the only ones of their genus to reach that country. In Europe, they are better known, and some eighteen or twenty individuals have been received at the London Zoo. These, on an average, have lived about a year and eight months, although one bird remained in the collection for more than nine years.

BORNEAN CRESTLESS FIREBACK

Acomus pyronotus (Gray)

BRIEF DESCRIPTION.—Male: Head brown, upper neck gray; lower neck and mantle gray, breast black, all with white shafts; lower back golden, changing posteriorly into bronze-red, and on the tail coverts into purple. Posterior under plumage black; tail buff. Female: Head brown; entire plumage black, heavily glossed on dorsal surface with steel-blue.

RANGE.—Sarawak, Borneo.

GENERAL ACCOUNT

The low-lying jungle in Sarawak is the home of the Bornean Crestless Fireback. The ground for the most part is damp and soggy, and covered thickly with a carpet of large and small dead leaves in all stages of decay. In every depression water stands, and every leaf holds at its point a diamond pendant, which drops at longer or shorter intervals. Even with the most careful stalking and patient watching, it is most difficult to ferret out the life secrets of these wary Firebacks, but first let us see amid what scenes, what vegetation and animal life they make their home. The pheasant people of whom we are writing are altogether ground hunters, except at night, when they roost among the branches of some densely foliaged tree. So we will leave the detailed examination of the ground until later, and concern ourselves now with the mid and upper jungle.

Vines, saplings, and sprouting palms struggle fiercely for

light and air, and always the vine is the victor, climbing to health and strength on its opponent's trunk and branches. The trunks are decorated with beautiful scarlet and white lichens, and creeping vines clutch the bark in their upward course like enormous vegetable millipedes. Thorns and briers are everywhere; the terrible spiny palm with its rows upon rows of bristling *chevaux-de-frise*, and innocent-looking vines which, cat-like, sheathe their claws in thick down. The most insidious is a climbing rotan palm, which sends up its graceful fronds high in air among the trunks, then from the tips, yards away, drops a wire-like strand to the ground, covered throughout with the sharpest of tooth-like thorns. This is weighted with scores of small orange globes, the fruit, and when one runs against the stem, one must never pull and lose one's temper, but carefully disentangle the ingenious trap.

Face-high are myriads of young plants, all shooting up manfully, hoping ever for the death and fall of one of the giants high overhead, their only hope for continued life. No two trunks are alike. One has many deep impressions in which water lodges and affords a home for hosts of creatures—tree-toads lay their eggs therein, little water-striders circle about; each is a tiny ocean with its shallows and its depths, its everlasting game of life and death. Other trunks are clothed with leaves of creeping, clinging vines, some dark, lustrous, and covered with a thick mat of long hair, others shiny, wax-like.

Hardly a leaf in the whole jungle is perfect. Some are covered with a beautiful tracery of fungi; on other plants, a score of leaves may present similar patterns of holes or scallops, showing where some insect attacked them while yet in the enveloping bud.

The jungle growth brings death to our notice much more often than life. True, the new shoots are here, there, everywhere; but they grow quietly, and their drooping leaves are not conspicuous. But on every shrub, or vine, or tree hang dead or dying leaves. Thousands are barely attached, ready at the next breath of air to fall. The commonest sound in the jungle—either in a wind or in a dead calm—is the flick, flick of falling leaves, the sharper

crack and thud of fruit or twigs, and now and then the long-drawn-out crash of a tree itself.

Small need have the denizens of the jungle to adopt protective colouring, at least from our eyes. For every conceivable pattern —brilliant or dull—on scale, or fur, or feather, there are a score to match it or go one better among the living and dead vegetation. A kallima butterfly flits by, the very embodiment of a dead and withered leaf. Sometimes it alights in orthodox kallima fashion on the stem of a twig, again on a trunk, again on the surface of some great dead leaf. This one never alighted on a green leaf—at least, in the twenty-five times I watched it. Our eyes are not those of keen, hungry, flycatching reptiles, birds, or beasts, so who are we to say this wonderful colouring is not useful to the uttermost?

If we are near some berry or fruit tree, we will never be out of the sound of birds' voices. Usually, it is a flock of beautiful green fruit pigeons, which slap their wings noisily, and almost always a few of the brown-eared chat-thrushes or scale-birds. Their call note is sweet and tender as that of a bluebird; their note of alarm is the same, with an element of harshness predominating. Suddenly, every bird in the berry tree may scream out in dire fear, and with a swish and rush a hawk will fall from the blue sky to the topmost branches—successful or not, we cannot see.

At such a time, I have watched a pair of Crestless Firebacks feeding beneath a berry tree, upon the fallen fruit, together with the insects which have collected. At the sound of general alarm from the tree-tops, both birds squatted flat among the begonias, and with hardly a wink of the eyelids remained motionless until the upper jungle was again vocal with subdued chirps and calls. A scale-bird sang, and confidence was at once restored. Hardly had they begun anew their search for food when a good-sized branch crashed to the ground close at hand. It was a sudden, loud, startling sound to my ears, but beyond a quick glance the pheasants paid no attention to it; such a sound was to them a harmless jungle theme, holding no chord of tragedy.

While the pair of Firebacks kept close together, they ap-



PLATE XXVII

Photograph by William Beebe

HOME OF THE CRESTED AND CRESTLESS FIREBACKS

(For detailed caption see page xxii)

parently had no great affection for each other, and not only occasionally pecked peevishly at each other, but twice backed away and made half-hearted cuts with their spurs.

In the jungle, we are certain, sooner or later, to hear a loud *woof! woof!* and a great black hornbill rushes over. It alights a little distance away, and we hear the most amazing outcry of complaining creaks and rasping whines. It is, perhaps, Madame H. in her mud-guarded hollow tree, scolding her husband for a belated *déjeuner* of berries!

A few subdued crashes announce other actors, and a troop of gibbons swings up. Their method of progress is the very poetry of monkey travel, hand over hand, each swing furnishing momentum for the next. Then a sudden stop, and a long thin arm or leg reaches out and draws in some fruit or berry. A round dark face peers down, a mother slaps her whining baby clinging to her fur, and the troop is off, almost noiselessly, except when one lands with a crash after a leap of twenty feet from one tree to another.

Then a great zebra civet passes close to us with squirrel-like leaps and sudden rushes. As one sits quiet, birds fly or alight near by every minute or two. In an island as large as Borneo, which contains almost six hundred species of birds, the variety which is seen day after day is bewildering. One can never be sure what will be the next to appear. A certain species may alight close by, fly off, and never be seen again. Others may be observed frequently in many different places.

I have spent a week searching unceasingly for Crestless Firebacks and neither heard a note nor seen a feather. I have squatted in a most unlikely spot, with my back against the great buttressed base of a mighty tree, and had two females come into view almost at once and remain for ten minutes. Not only this, but on the following day, these same birds were in the place at the corresponding hour. Such perversity of fate or luck governs the observation of rare pheasants!

The natives trap these birds whenever possible, but only once have I seen their feathers in headdresses, and it was seldom that a

Dyak could recognize a picture of one, while the delineation of a crested fireback, argus, or white-tail wrought him to a high pitch of enthusiasm at once. Their nest, eggs, and young still remain a mystery. Unlike their Malayan brethren, I never found them near the Dyaks' communal homes, but merely by accident in the depth of the jungle.

CRESTED FIREBACK PHEASANTS

Lophura

Three species range from Siam to Sumatra and Borneo, the males with elaborate crests. Distant relationship with kaleege pheasants is shown through Swinhoe's Pheasant.

SIAMESE CRESTED FIREBACK

Lophura diardi (Temminck)

BRIEF DESCRIPTION.—Male: Head and throat black, long tufted crest steel-blue; neck, mantle, breast, and wings gray, finely vermiculated with black; wing coverts with a black, white-edged band near the tips; mid-back shining gold; lower back and rump bronze-red; under parts and tail black, with steel-blue gloss; face scarlet. Female: Head and neck brown; mantle, lateral tail feathers, and under parts chestnut, the lower breast and belly margined with white; scapulars, wings, central tail feathers, lower back and rump black, the two latter areas mottled, the others banded with whitish. Face scarlet.

RANGE.—Southern Shan States, Siam, Cambodia, and Cochin China.

GENERAL ACCOUNT

With its striking contrasts of colour—shining gold and bronze-red—set off by cold gray, together with the long, curved tail feathers and waving, plumed crest, the Siamese Fireback is one of the handsomest of pheasants. Many are trapped by the Siamese and brought down to the capital, Bangkok, whence they find their way to many of the Zoological Gardens and private aviaries of the world.

I was not able to observe it in its home, and can rely only on the meagre information which I obtained from residents, whose chief knowledge of the bird was that it was almost impossible to see

pheasant were double its weight, they had no chance against it. He goes on to say that "At length its pugnacious propensities became such a nuisance that my neighbour's servants seized it one day, and cut down its long, sharp spurs to mere stumps. The poor bird, however, though shorn of its strength, lost none of its spirit, and assailed its gallinaceous enemies as recklessly as ever. These soon found out that its weapons were gone, and plucking up courage, paid it off with interest for former injuries; in a week or two my *Diardigallus* had scarce a feather left on it."

MALAYAN CRESTED FIREBACK

Lophura rufa (Raffles)

BRIEF DESCRIPTION.—Male: General plumage black, glossed with purplish blue; lower back and rump fiery bronze-red; feathers of the sides and flanks with white or chestnut shaft stripes; middle pairs of tail feathers white. A tufted crest with long bare shafts. Facial skin and wattles blue; feet red. Female: Rich chestnut above, faintly mottled with black; throat white; breast chestnut edged with white; remaining under plumage dark brown, widely margined with white. Crest shorter than in male. Facial skin blue; feet red.

RANGE.—From southern Siam and Tenasserim southward; Malay Peninsula, and Sumatra.

GENERAL ACCOUNT

This is decidedly a low-country bird, and I doubt if it ever ascends to the higher altitudes of the Malayan or Sumatran mountains. In Siam, I know of records only from the extreme south, and it is improbable that it overlaps the range of *diardi*. Even in the low Malayan coastal country of the west and the central Pahang region drained by the tributaries of the river of the same name, where I have observed this species, its distribution is far from regular. Great stretches which seem eminently suited to its requirements are apparently uninhabited by it, where the natives have no knowledge of the bird. Then again, not far distant, every child will recognize its picture and shout "*Ayam pegar!*" and a few days of careful search will reveal traces of a family or flock. Nevertheless, in spite of its

comparative abundance in some areas, my search for the Malayan Crested Fireback proved one of the most trying of my experiences with wild pheasants. By the calendar, it was still the dry season; by the rain gauge, it was the height of the rainy period. In the open forest, where we expected to find this species, we neither saw nor heard it.

Years ago, Malays or Sakais made numerous clearings throughout many parts of the jungle, planted crops, and then deserted those clearings for others. Many of these were in the valleys, close to the bed of small streams. Such places are now covered with a tangle of thorny palms and enmeshed vines, and in these all-but-impenetrable thickets, the beautiful Crested Fireback elects to spend most of his time. All trace of the former savage cultivator of the soil has vanished—hut, tools, and pottery. But now and then, from the heart of some such tangle as I have described, a pair of house crows will fly up croaking hoarsely. Through all the years they or their descendants have clung to this bit of human handiwork, deep in the jungle and far from the haunts of living human beings. They form a parallel to the little Guiana house wrens which one finds still haunting old, long-deserted, and overgrown huts in the heart of the British Guiana forest.

One day's experience on a small unnamed tributary of the Pahang River, in the heart of that central Malayan State, is typical of many short trips which we made in search of this bird. The sun rises through the fogs which have drifted down from the mountains, and we find the air of early morning cool and invigorating. We follow a narrow game trail for a mile or more, and then turn aside into a creek bed. The moisture on the foliage soon drenches us, and we tramp through mud and water with as little noise as possible. In one likely spot, we wait for an hour, but see nothing of the birds. We have heard one call far ahead of us and so keep on in hope. The sun seems to have leaped overhead, and the whole jungle steams with heat. From now until we return, we pant for breath, as if exercising in a hothouse or Turkish bath. Whenever we stop to listen, a myriad



PLATE XXIX

Painted by G. E. Lodge

MALAYAN CRESTED FIREBACK

Lophura rufa (Raffles)

(For detailed caption see page xxii)

tiny gnats dance close before our eyes. Mosquitoes worry us on all sides—almost all Stegomyia, which we have roused from their resting places on the leaves. One cannot but think what a terrible scourge to the natives of all this region yellow fever would be. Nothing could confine its ravages.

At last we reach one of the old overgrown clearings, and begin to cut our way carefully, foot by foot, pressing the cables of serried, recurved teeth to one side. When we can go no farther, we stop exhausted. Two or three species of bulbuls are singing close by, and a pair of big racket-tailed drongos swoop back and forth overhead. It is impossible to sit quiet on account of the flies and mosquitoes. We clear a circle of leaves and sit back to back, flicking away the leeches which are ever humping over the ground toward us. An hour passes, and only the tracks in the mud near by and the begonias torn up by the powerful scratching of the birds hint of their earlier presence.

Once, from a great distance, we hear the clear trumpet of an elephant and, shortly afterward, a cloud effaces the sun and a wind rustles the palm fronds. This increases to a gale, and instead of panting with still, humid heat we are shivering in the coolness. The birds have vanished, two long-tailed monkeys dash wildly from tree to tree, passing far more swiftly than we could run.

Then comes the rain—sudden, windless, torrential. At first we seek shelter beneath the camera cloth, but it is of no more use than so much mosquito netting. Protecting the camera as best we may, we plod slowly back. Twenty yards from where we have been sitting, three Firebacks rush out from a clump of large-leaved plants and, with necks low, scatter in as many directions. This is our reward for the day's work.

I saw this species, however, a number of other times—once, a pair unalarmed, scratching near an old decayed log, and feeding greedily on the termites which they uncovered. On another occasion, the glimpse was again but momentary, a sudden rush through the underbrush, never flying, but always with keen wit trusting to their great speed.

BORNEAN CRESTED FIREBACK

Lophura ignita (Shaw)

BRIEF DESCRIPTION.—Male: Plumage in general black, glossed over most of the feathers with purplish blue. The back, rump, the entire belly and sides fiery bronze-red. Two inner pairs of tail feathers, and inner webs of the third pair rich buff. A long, bare-shafted, tufted crest. Facial skin blue, legs and feet reddish. Female: General colour above rich dark chestnut, faintly mottled with black; neck paler chestnut; chin and throat white; breast chestnut, edged laterally with white; remaining under parts dark brown, widely margined all around with white. Facial area blue; legs and feet reddish.

RANGE.—Borneo in general; introduced into the Island of Banka.

GENERAL ACCOUNT

I spent some time in and near a Dyak graveyard and concentrated my attention on the family of Crested Firebacks which there made their home. On the third day, I saw them together and missed one of the young males. The following day, I stumbled by accident upon a few remaining bones, including a leg and many feathers of this very bird, close to the bank of the river. It was impossible to tell the cause of death. A host of little workers struggling with the last remaining tough tendons on the leg bone, and two well-worn paths to a near-by nest, showed that at least the ants had profited by this windfall. Apart from this, tragedy did not visit the pheasants during the week or two during which I watched them.

They roosted together in a tree of medium size, heavily draped with hanging vines and surrounded by dense bamboo thickets. Once only was I able to see their forms dimly silhouetted against the sky. Three were perched close together, the others somewhat scattered. Early in the morning—how early I never learned—they left their roost and went toward the river; at least, I found them riverward on three separate occasions early in the forenoon. From the tracks, I learned that they had no regular route, but sometimes followed the gravelled rivulet, or again went through the marshy forest on either side. Concerning

their forenoon occupations, I could obtain no information, although I should say that they fed and scratched near or along the river bank.

During the heat of midday, twice they returned to the shelter of the bamboo undergrowth near their roost, once they remained quietly in the shade of a tree on the very bank of the river, and this while several Dyaks were working on a canoe in full sight, but some distance up-river on the opposite sandbank. On the other days, they evaded all my efforts to find them. I had chosen my lookout wisely, although it was the general jungle life which came to the river that I had hoped to see, and the pheasants came rather as a surprise. A thick snarl of grape-like vines had grown entangled among the branches of a stout tree, and with a little cutting and arranging I was able to lie outstretched well above the high bank, partly over it and partly over the water itself. The shadow from the thick mesh of bare stems had discouraged the growth of foliage beneath, so that my view downward through the interstices was almost clear. Below me was a narrow cleft in the bank where the jungle rivulet trickled into the waters of the river. Bulbuls and purple butterflies amused me for a time, and I had made some interesting notes on river birds, when an old wild sow with a half-grown young one came slowly along the edge of the water. Hardly had they appeared when the Dyaks on the other shore had occasion to hammer. At the sound, she erected her tousled ears and concentrated her whole being in obtaining information of the danger through her quivering nostrils. They told her nothing, and her little pale-winkered eyes evidently carried no image of the distant Dyaks to her brain. The sound was not repeated, but the memory of it remained vivid; implanted in that porcine brain, it conquered, and she turned with a low grunt and, with her offspring at her heels, trotted back out of sight. My pheasants were the next to appear, as I have said, wholly unexpectedly, and after pecking vaguely about for a time, they collected in a compact group in the dense shade of a river plant, and there, for half an hour, held low converse with each other, clucking or mumbling,

to my ears, indicating supreme contentment. When they moved off into the jungle again, I descended, as I was slowly baking in the sun, and the network of liana stems on which I lay was fairly hot to the touch.

I caught many another sight of the birds on succeeding days, but apart from the ever-vivid thrill which their appearance produced, I found them as uninteresting as domestic fowls. They seldom uttered a note; they picked and scratched and ate and preened and slept! It was the season of moult, and I could expect little more from them than I observed. Once only I heard the full vocal and wing challenge—a subdued *wooonk-k!* (whirrrr)—*wooonk-k!* (whirrrr). Indeed, I got more from them in the way of practice in stalking and knowledge of what I could do when in the presence of wild pheasants without being observed than I acquired valuable facts of their life history.

I was impressed again and again with their invisibility when perfectly quiet and the ease with which one could distinguish them even in the dimmest recesses of the forest when any part of their body was in motion. Thus I came to realize the tremendous importance of their method of movement—quick, sudden jerks of head and neck—a single motion, if possible—in snatching a beetle or other insect, and then a period—a much longer extent of time—of absolute immobility. This reduced the perceptive periods of danger, they themselves at the same time being least perceptible to possible watching enemies.

Watching the full-grown cock Fireback feed for ten or fifteen minutes at a time—as I did once—I was impressed with the fact that such a period is divided into two very unequal parts: first, the search for, snatching, and swallowing of the food; and, second, the looking out for danger. It seemed as if a few seconds less of the former would result in starvation; perhaps a single second deducted from the latter might bring destruction! Never for a moment was there any relaxation; any sensible period of transition from one to the other. It was complete concentration on an insect, discovering it, seizing it, and then at the very moment of swallowing, the head and neck would shoot up, and

the keen eyes were on the watch; twin scarlet searchlights of intelligence, with no need for the head to turn, as would be necessary in ourselves or in such a pursuer as a civet cat, but so set by nature on opposite sides of the head that they took in almost full measure of the surrounding circle of three hundred and sixty degrees of possible danger. When I gave up expecting battles and courtship displays and other intimate doings of the lives of my well-armed but moulting pheasants, I gave close attention to such little details as I have mentioned above, and soon saw that there was a perceptible difference in the behaviour of the old and the young males. The latter were apparently full grown in size, and as their moult was about over, they differed in general appearance hardly at all from their parents. Only the short spurs and a few remaining juvenile feathers stamped them for what they were. But a more intensive study showed many traits which set them apart, although no signs of affection or of actual dependence were ever noticed. These young pheasants were far from being as much on the alert as the old bird. They had many moments of abstraction, of idly doing nothing, and although they invariably ended by shooting up the head and neck to full attention, yet the few seconds which preceded this would have quickly spelled death if such a method were persisted in after they began to shift for themselves.

This observation led me to wonder if I could not distinguish between the females by some such mental field mark. So the next time I saw the birds, I devoted myself to solving this point. I succeeded at the expense of much bodily suffering. To be able to get near the birds, I crawled under one of the Dyak grave mattings, and bending it over in front of my face, I had an ideal point of vantage.

But I soon found that one may not lie quiescent for hours upon a Dyak's grave with impunity. I had disturbed a populous city of ants—innocuous as to bites or stings, or I should not have been able to lie still for a moment—but afflicted with an inordinate curiosity as to the meaning of this strange intruder. They certainly left no portion of my clothing unexplored, and it took

all the will power I possessed to restrain myself and disregard the scrambling host. Then I realized that certain nerves in my body were going to sleep under the unaccustomed pressure, and it was not until I rose and shook the dirt from my person that I learned the fact that every centre of drowsy sensation had been a hungry leech who had feasted to repletion while my attention was distracted by the pheasants. But with all the discomforts of my afternoon's vigil, I felt well repaid for succeeding in my desire, and the pleasure of having penetrated ever so slightly into the mental life of these splendid birds soon eclipsed all remembrance of my small but active tormentors. The first time the birds approached, I feared they would pass me some distance away, too far for careful watching, but luckily one of the young males pursued some flying insect in my direction, and then found a feast of plenty, and his vigorous efforts in scratching among the leaves attracted the attention of the remaining birds, and all were soon gathered in the same spot. I had an excellent chance of observing the two females, and within a minute's time I had fully made up my mind which was the older—the probable other parent. Even she, however, did not quite equal the adult male in constant alertness. I fancy that this was not individual, but sexual, a phenomenon which I afterward noticed more especially in the behaviour of the white-tailed pheasants (*Lobiophasis*) in the face of danger. The hen's very protective plumage seems to demand less constant watchfulness.

The young female—having the added cause for negligence of parent protection—was positively regardless of what might threaten. She gave herself wholly to the pleasure of eating, with only now and then a perfunctory glance around, with no motionless periods whatever, but scratching vigorously all the while. It is exceedingly interesting that while in the adults continual consciousness of danger should be so acute, it should, nevertheless, be manifested in so defective a manner in nearly grown birds, in which total independence has not as yet called out the need for the perfect exercising of this function.

I have mentioned several times the habit of scratching among

the leaves for insects, and that I saw birds again and again taking small insects or other little creatures from the leaves. When the birds are feeding on the move, to or from the river, they seem chiefly to look for such food, but when more or less settled down in one spot, I noticed them more often plucking at the leaves and young grasslike growths. The crops of a number of birds indicated that seeds and leaves were the main source of food supply, while it was only occasionally that insects actually predominated. The most common proportion was a goodly number of seeds of various kinds, a less amount of leaves and comminuted vegetable matter of a similar nature, with a scattering indication of small insects. These latter consisted almost entirely of ants and small beetles, either small iridescent flower beetles, or grubs and ground coleoptera. An acorn-like fruit was found in several cases, called by the natives *bompeli*.

WHITE-TAILED WATTLED PHEASANT

Lobiophasis

The most specialized of the tropical roof-tailed pheasants. A single species with thirty-two white tail feathers. Confined to the jungles of Borneo.

WHITE-TAILED WATTLED PHEASANT

Lobiophasis bulweri Sharpe

BRIEF DESCRIPTION.—Male: Neck all around and upper breast dark crimson; remaining plumage black, all the feathers narrowly margined with steel-blue. Upper tail coverts and tail pure white. Bare skin of head and wattles bright blue; legs and feet red. The immature male has the tail coverts and tail chestnut. Female: Brownish buff above, finely mottled with black; lower plumage rufous similarly mottled; tail clear chestnut.

RANGE.—Central Borneo.

GENERAL ACCOUNT

There is no doubt that the White-tailed Pheasant is almost as particular as the argus as to the character of its jungle home. Almost all the rivers and larger streams of Central Borneo show the former occupancy of natives by the wide reaches of second growth, and it is seldom that these pheasants are content to make their home here. They prefer the deeper, uncut dry jungle, but morning and evening they have no objection to crossing overgrown or even cleared areas in order to reach the water. As regular as big game, so these birds come twice each day to drink. The argus and the White-tail will, however, sometimes return and inhabit such overgrown country if it be wholly deserted by natives, while the crested fireback seems actually to

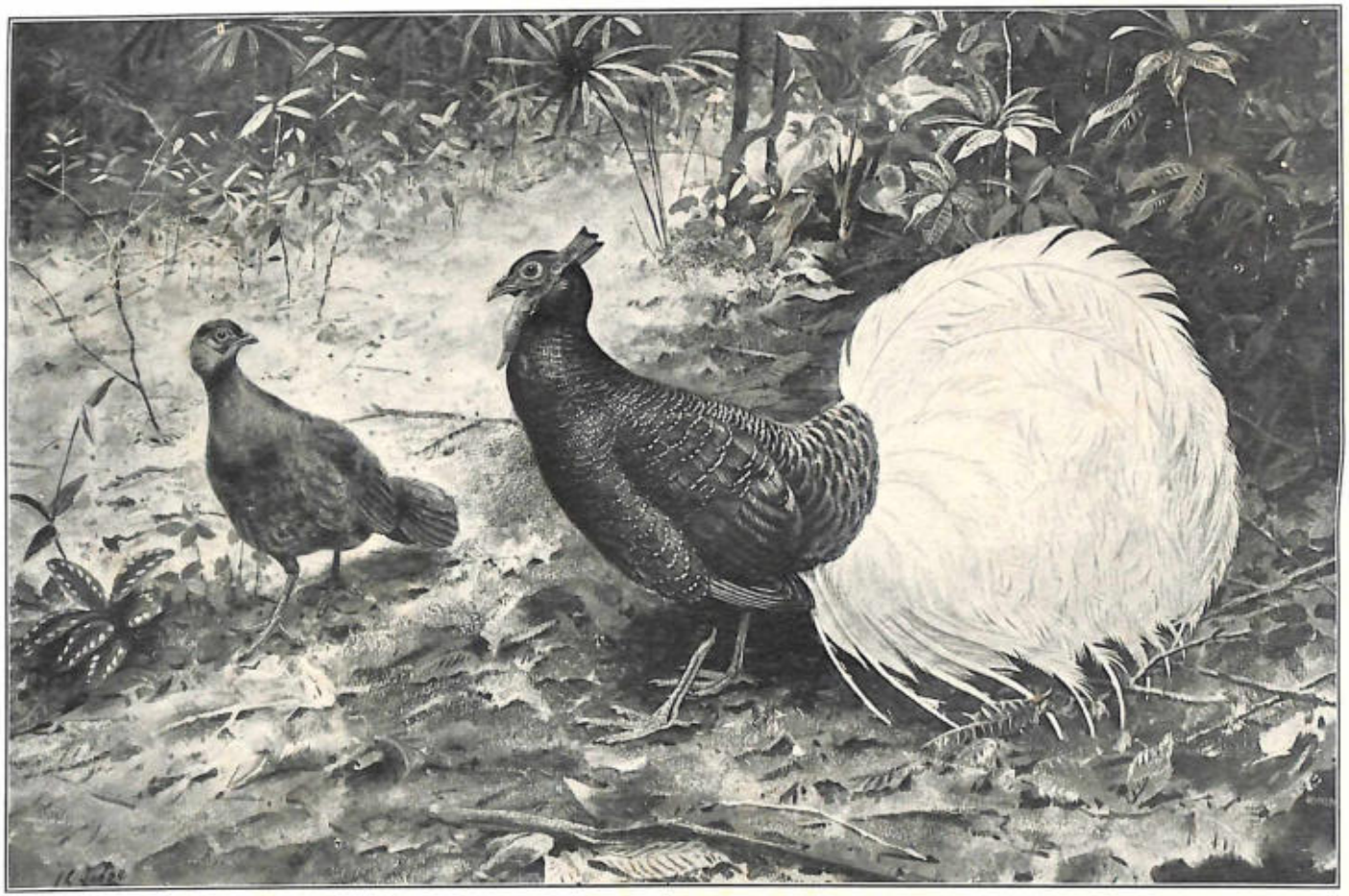


PLATE XXX

Painted by G. E. Lodge

WHITE-TAILED WATTLED PHEASANT

Lobiophasis bulweri (Sharpe)

(For detailed caption see page xxiii)

prefer such territory rather than to avoid it. Both the White-tail and the argus require rolling country, and I have never known of one of the former being found in the low, level, half-marshy regions which are the delight of the firebacks.

The first news of this little-known pheasant which I received on reaching Sarawak was that there was a live male in the possession of an American missionary at Sibu on the Rejang River. Although the few specimens in museums have been taken mostly in the extreme north of the colony—on the Baram and Lawas rivers—I decided on following up the rumour of this live bird. When I reached Sibu by one of the little fortnightly steamers, I found that the bird had recently died, and after an attempt had been made to skin it, had been thrown away. The memory of the man who had buried it was poor, and after a thorough digging up of numerous plots of ground by sundry Dyak and Chinese convicts, we gave up the search for the skeleton.

The bird had been caught by the Dyaks two days' journey by canoe up the river, so I went on to the last outstation, Fort Kapit, where I found myself just within the zone of White-tailed Pheasants. From here I pushed on in a seventy-foot canoe, and later in smaller craft up the Rejang, Balleh, and Mujong rivers, and found this species local but not rare, and distributed over much of central Sarawak, as frequently in the low-lying but rolling hilly country as near the foothills of the mountains. Its supposed rarity seems due to several causes: its extremely local distribution, the fear of the head-hunting Dyaks, and especially the unconquerable tendency of these natives instantly to kill and eat every animal, bird, snake, or other creature which shows enough flesh to make it worth while.

One can draw a close analogy between the White-tailed Pheasant and the Dyaks themselves. Both are governed by the presence of jungle. When it is cut down and the land impoverished by a crop, the Dyaks move on up-river to more primitive jungles. The White-tails prefer the open undergrowth of the older forests to the dense thorns of second growth, and so keep just ahead or inland of the devastating path of the Dyaks.

Both seem to cling closely to the rivers and creeks. Away from these aquatic highways, one may travel for many days and meet neither pheasants nor men.

My first meeting with the living White-tailed Pheasant gave me an idea of the keenness of observation of some of the Dyaks. In mid-July, I sent my Eurasian taxidermist and collector on up-river to interest a distant village of Sea-Dyaks in trapping *Blaiou* for me. I had collected several argus and fireback pheasants, together with a zebra civet and a moon rat, and was engrossed in preparing these specimens, when two little Dyak boys came to the camp carrying a wicker cage. I gave but a glance at the birds through the small interstices, and seeing what I took to be a pair of immature crested firebacks, I refused to purchase them, especially as they wanted an outrageous price. They carried the birds away, but while I was at tiffin they returned with a Dyak from the nearest village, who said the birds were "*Blaiou* wives." I laughed at this, but looked again at them, and a glance at the ventral surface showed that the savage was right and that they were undoubtedly immature male or female White-tailed Wattled Pheasants. The three pairs of wattles were plainly distinguishable, and the paleness of the head left no doubt. One of the birds, a young female, soon died, but the other lived, was perfectly tame, and for three weeks thrived on its paddy. Indeed, I was able to ship it from Singapore in good condition, and it lived on board ship until within sight of New York City.

From this time on, we had no trouble in collecting adult and first-year birds, but in several weeks' search observed no individual in the chestnut-tailed plumage of the second year. In July, the pheasants were all moulting heavily, and they showed no signs of a recent breeding season. Indeed, the age of the immature birds indicated that the nesting season, at least for these individuals, is about April in this part of Sarawak.

The White-tailed and argus pheasants living, as I have said, usually in the vicinity of the larger rivers and streams, may be found in the first, or at most the second, line of hills stretching

back from the banks of the upper reaches of the rivers. Their regular habit of leaving these dry, hilly jungles and making their way to the water to drink, morning and evening, unfortunately facilitates the trapping of these splendid birds. The Dyaks cut a line of dense underbrush and pile it along a ridge of hills parallel with the river bank, packing it closely, fence like, uphill and down, winding along for a half or even a whole mile. Every ten feet or thereabouts, a converging semicircle of bamboo sticks leads to an opening in this brush fence, and in this is spread a noose attached to a bent, living sapling. Each Dyak, in some of the villages, has from twenty to eighty of these traps, and goes his round every morning. If the birds are not promptly found and removed, they are invariably devoured by civet cats, although these creatures themselves are often caught, together with binturongs and porcupines.

Practically nothing is known about the nesting habits of this pheasant. Three Dyaks of as many different tribes assured me that it laid only two eggs, and on two separate occasions I saw what was very apparently a family of four—parents and two young, so that some measure of credence may be given to this number. The only egg of which I have knowledge is the one said to be of this species collected near Mount Dulit on the Baram River, Sarawak, in September, by A. H. Everett, and now in the British Museum. It is a regular broad oval in shape and of a pale pinkish cream colour, being thus hardly distinguishable from the egg of the Bornean crested fireback. It measures 51 x 40 mm.

It is but a truism to state that these pheasants are skulkers and runners rather than fliers. What ground bird whose home is amongst jungle undergrowth could be aught else? When approaching these birds with the greatest caution, I have very often been able to catch a momentary glimpse of them, the white tail of the male advertising him at once. When several of both sexes were together, it was the males which first fled, the brown immature males and females delaying to have a second look at me, and then usually disappearing in a different direction. If, when all had vanished, I squatted and remained motionless, in

ten or fifteen minutes I would hear what I judge is the covey call, a penetrating, rather metallic *kook! kook!* uttered by both sexes. This would invariably become subdued by distance, the birds evidently converging at some far-off spot. But if the first place of meeting with the birds was a favourite feeding ground, as evidenced by the abundant signs of scratching, one might be reasonably certain of seeing the birds at the same place on another day, but only in the morning or toward evening, however. Search as I might, I could never discover a single individual at other times of the day.

The natives, both Kayans and Dyaks, told me that the birds had regular roosting places, and that they set their snares about these trees. One young man—a "gray Dyak" as I called him, as he was one of those whose skin from head to foot was like gray powder, a common uncontagious disease among these people—undertook to lead me to one of these roosting places. After a toilsome tramp of several miles through the low jungle, we came to a series of steep hills, and near the summit of one of these elevations my guide suddenly stooped and picked up a tuft of feathers and part of the foot and leg of a White-tailed Pheasant. The bird had been caught in a snare which now dangled overhead from the tip of a sapling, and had been devoured by a zebra civet, so the Dyak said, indicating the species of the marauder by pointing to the bit of skin dangling at the back of his loincloth. A few paces farther, he pointed to the ground, where there was abundant sign, showing that some good-sized bird or birds had been accustomed to spend the night in the branches overhead. The tree was slender and very smooth barked, and it stood quite isolated, its branches free from contact with those of the surrounding growths—a well-chosen roost for protection against night attacks. I asked the Dyak later how he discovered and recognized such roosts, and his answer was that the finding was by accident, but that such sign on a steep hillside could be made only by *Blaiou* or *Ruoi*—the White-tailed or the argus—but that the latter never roosted in small trees, only in large ones.

The spurs of the male White-tailed Pheasants are moderately developed, so that a certain amount of pugnacity is implied. I saw no evidence of scarring on the face and wattles of the birds which came under my observation, and those which I had in captivity were gentle, although it is true that they had no opportunity to attack birds other than their own species. I suppose that as it was not the breeding season they were quieter than they might have been six months before.

It is probable that the breeding season of these pheasants is rather elastic, and, like most tropical birds, may in different localities extend over a good portion of the year. Certain it is that in July, in Sarawak, I obtained birds of five or six months of age, and during the same week saw a pair of adult males sparring with one another and assiduously courting a female. This was the most important observation which it was my good fortune to make concerning these pheasants in Borneo.

Instead of sunshine, or at least a thin haze of clouds during the day, balanced by a terrific downpour of driving rain throughout the night, the reverse one day took place, and after I had made an early start and was several miles from camp, a sudden deluge descended upon me, and in a few minutes, I was thoroughly drenched. I was encumbered with nothing but my stereo glasses, as I had planned a day of pure observation. Plodding on through the dripping undergrowth, I came to where a great tree had fallen—a tree whose life must have stretched back well beyond the time when white men first set foot in Borneo. It had been strongly buttressed in all directions, but a stroke of lightning had run down the trunk and splintered one of the great basal supporting walls of living wood, and thus unsupported, the mighty mass had given way. It had cut a wide swathe for itself, carrying down all the lesser growth in its protection, and here I remained for many hours watching the jungle life of a rainy day. None but small folk came near, however, until well after midday, when the sun at last broke through, although the saturated forest continued to rain down drops for many a minute after the whole sky above had cleared. The first intimation

I had that pheasants were about was a sharp, nervous *kak! kak!* which came from the other end of the mass of shattered foliage. By slow and painful manœuvring, I was able to peer out unseen and to detect a male White-tail stalking slowly along at full height, concentrating his attention upon a clump of maroon-leaved plants near by. Whatever it was which had excited his interest or suspicion, he was soon satisfied that all was well, and he began feeding unconcernedly, scratching in the mould, or now and then picking some insect from a leaf. For seven or eight minutes, I watched him, and at last dared to shift my glasses and rest them upon a ledge of bark, so that I was able to see even the contraction and dilation of his pupil as he remained motionless for a moment. The splash of falling drops, the twitter of small flycatchers, even the sudden, wholly unexpected and startling notes of a barbet did not distract his attention a moment. But always he was alert, always a momentary snatch at some morsel of food was followed by an instant of concentrated listening, a quick, comprehensive glance which took in all the adjacent shrubs which might shelter a foe.

A change at last came over him; without seeming alarmed, his attention became focussed more and more in a particular direction. Straining all my senses, I could neither hear nor see anything—but he knew of something which was as a fourth dimension to my dulled faculties of perception. Finally, the bird ceased all attempts at feeding and stood immovable, never taking his eye from the edge of the jungle. At that exact spot, after several minutes of further waiting, a pair of adult White-tails emerged rather precipitately, the female first, as if the male had been pursuing her. On the instant, both caught sight of the waiting bird, and both uttered a low startled *kak!* In a moment, however, the alarm passed and the female came diagonally across the clear space, taking ants or other insects from leaf or ground as she came. The male birds stood for some time apparently watching each other; then my pheasant began approaching the female with quick, short steps. A moment later, and the second male drew slowly nearer. I was breathless with

excitement. My mind ran over the few meagre padded lines which represented our knowledge of these wary birds, and here the good fortune of the unusual diurnal rainfall had given me this wonderful opportunity. The second male approached steadily and slowly, with no noticeable change in his demeanour, but my bird became more and more excited as he neared the female. His wings were slightly lifted from the sides of the body although the fluffing out of the plumage left no space beneath them. The head was well up and drawn back, the wattles seemed very much elongated, but a careful look through the stereos showed the wrinkles still evident, the apparent enlargement being due to the straightening of the occipital and gular pairs, so that they no longer hung flaccid and limp.

Now the bird came close to the little brown hen, who edged away but without showing alarm, and the moment for which I had been waiting came at last. Two complete turns my male made around the hen, circling her irregularly but completely, his attitude being a stiff strutting with his magnificent tail spread to the full. It was a lateral display, and yet I could detect no depressing of the plumage on the side toward the object of his emotion, nor yet an elevating of the feathers on the farther side. The bird simply progressed evenly, symmetrically, head pointing forward, but the tail feathers forming almost a semicircle of immaculate brightness. High over the back curved the inner, wide-vaned plumes, almost touching the upraised neck, while the remaining pairs arched around down to the very feet, in fact, again and again they were pushed forward, actually concealing the scarlet legs. The gait was peculiar, a few quick steps, then immobility and a statuesque pose, again the few steps and again the hesitancy.

At each rest the bird seemed to become actually larger, the feathers of the body fluffing out so evenly and slowly that one could not avoid the idea of solidity. Simultaneously, the skin of the face seemed to puff out, although this appearance may have been caused by a change in colour intensity. But there was no question as to the muscular extension of the wattles; they

visibly lengthened, rather spasmodically, reaching their greatest extent at the moment when the bird ceased its walk. I would place this extreme distention at about half the length again of the retracted organ. This fact observed, I centred my attention upon the tail, and when the bird slowly turned away from me I saw that the outer feathers were spread well apart as well as downward, so that from the rear view it appeared as if the bird were walking between the opposite sides of its tail. The normal carriage is with the opposite sides of the tail closely appressed at a very acute angle; at this time, the posterior view showed them spread widely at the base—tent-like. As the feathers pushed forward or were relaxed, an audible rustling was produced, and when the bird passed over dried leaves this sound increased; at times there were a dozen or more leaves literally *raked up* by the stiff, recurved outer quills of the tail feathers.

The supreme moment came when the hen stopped for a moment and her suitor halted squarely in front facing her. With what wattle or tail accompaniment this new, supreme phase would have been enacted I shall never know, for male number two now approached, and both at once rushed at each other with half-spread wings, and for a moment pecked viciously, but showed no inclination to use their spurs. Then the *zeitgeist* of the jungle, in its mysterious way, sent forth to these wild creatures the knowledge of danger, and with a single impulse all three fled, my friend in one direction and the others near where they had emerged. There was no apparent choice of companion or direction—the birds simply ran swiftly for the nearest shelter, heads outstretched, tails low and close shut, the male as different from his courtship attitude of a minute before as can be imagined.

Thus passed my only opportunity for observation of the intimate life of these splendid birds. This was sufficient, however, to confirm my suspicion that the worn and abraded condition of the tail feathers was not due wholly to congenital defects. Judging by the recklessness of passage over sodden leaves, twigs, and irregularities in the débris of the jungle floor, which I observed

during the courtship, it is only remarkable that anything remains intact but the abraded stumps of the outer tail feathers. I have discussed the interesting correlation between the inherited defective condition of the rectrices and this ontogenetic abuse of these long-suffering feathers elsewhere.

What I saw of the courtship of the White-tailed Pheasant leads me to think that the general method at the start is a lateral, asymmetrical display, but the finale is as certainly frontal. Whether the tail at such a moment is spread outward, so as to form a white background, must be left to conjecture. If so, the courtship as a whole is quite similar to that of the peacock pheasants. The short and indecisive combat which I witnessed was suggestive only in the fact that no attempt was made to use spurs, and this, taken in connection with the extreme variation and at most only moderate development of these organs, would indicate that the White-tails are much less given to fighting than the terribly armed fireback pheasants.

As to the food of the White-tailed Pheasant, from examination of the crops of recently killed birds, I found that they were equally insectivorous and frugivorous. Ants formed by far the dominant item in their diet, a small black species being the most abundant, while small crickets and other orthopters were also not uncommon. Termites were second in point of numbers, and twice I actually saw the birds feeding about the earthen tunnels of these so-called white ants. Minute round, black seeds, and a large species of some fruit of a nut-like consistence were also favourite articles of diet. The Dyaks called this *cacos*, and said it was not edible for man. These natives were also unanimous in saying that when a certain river fruit became ripe, these pheasants and many of the smaller mammals came to the river banks in much larger numbers than usual for the purpose of feeding on this dainty. I could discover neither the fruit nor the trees which bore it.

Until we know far more than we do at present concerning the causes of the colours of organisms, we can do little else than narrow down the various questions and theories by the process of

elimination. In the White-tailed Pheasant, for example, we have a bird which spends its life in the dense jungle, among thick underbrush, where the light is constantly dim and shaded. No one will dispute that the sombre colours of the female are protective among such surroundings, and even the more conspicuous second-year male, with his blue-edged body pattern and chestnut tail, would merge with almost any situation in these tropical forests. But for the fully adult bird we can find no such background. Shining white spots of such size are not scattered about upon the jungle débris, and whether stalking beside a brook in an open glade, or half hidden by climbing ferns, the White-tailed Pheasant in the glory of his full beauty is striking and conspicuous anywhere. Twice I had opportunity to see both females alarmed, and both times it was the white-tailed adult which fled first—swiftly, without a backward glance or hesitation—the duller individuals waiting a moment to see if the danger was imminent. Once a solitary female squatted for an instant, before my hand touched a twig and sent her too flying headlong, threading the fern stems as if they were no obstruction. This is the best proof we have, and I consider that many of our ultimate conclusions must rest upon just such evidence. The realization of danger is most acute in the bird whose plumage is inevitably conspicuous; the sense of trust to assimilation with the surroundings—wholly instinctive though it be—indicated with absolute certainty that many, many times such behaviour had enabled the little brown hen to escape observation. The red eye, feet, and legs and purplish wattles detract, if anything, from the general conspicuousness of the pheasant. There are myriads of red or pink or purple jungle shades—dead or insect-eaten leaves, lichens, fungus, moss, bark, begonia stems, and scores of other unnamed and unnameable. But as for the flaunting white tail, that splendid badge of reward for three years' successful striving against the thousand and one forest dangers, it mimics nothing, it flares out like a heliograph; the brave owner finds his food, his mate, and lives his life in spite of it, with only his keen eyes and ears and his swift scarlet feet as counterbalancing assets.

For how little all these count when pitted against the native savages. The rainy season has come to an end—the jungle pools are dried up, and every day the White-tail must make longer and longer pilgrimages to the low-lying marshy country. One day, he turns his steps toward the river itself, walking steadily over hill after hill, at last turning into a narrow valley. Halfway down, a pile of brush obstructs his path, and strive though he will, he can find no way past it. A few yards farther and an opening appears, just wide enough for him to step through. His scarlet toes press upon the loose bamboo sticks lying at the mouth, there is a sudden snap, the whole world revolves and high in the air the splendid bird dangles, swaying back and forth from the bent sapling. Perhaps death comes swiftly from a passing civet cat, perhaps the following morning the Dyak trapper goes his rounds. But no matter whether soon or late, the days, months, years of watchfulness, from the chick which crouched and watched the civet slink past to the white-tailed bird which yesterday outsaw and outran the swift-footed moon rat itself —all have been in vain. The Dyak squaw strips the shining plumage from the body, or sells it for a few beads to a passing Chinaman· the White-tailed Pheasant has run its race.

THE JUNGLEFOWL

Gallus

Four species of Junglefowl are known, one of which is the ancestor of all domestic poultry. They are found in eastern and southern India and on through Burma and Malaysia to Java. Three species are quite closely related, while the Javan bird is more distinctly isolated.

RED JUNGLEFOWL

Gallus gallus (Linnæus)

BRIEF DESCRIPTION.—Male: Crown, neck, and hackles golden brown to orange-red, passing into straw-yellow on the longer hackles. Mantle, smaller and greater coverts metallic green or purple. Scapulars, back, and median wing coverts dark maroon, shading into orange-red on rump. Exposed parts of secondaries cinnamon. Tertiaries and tail metallic green. Lower parts black. Face and throat thinly feathered; a serrated comb and two gular wattles. Female: Rusty red on head, shading into orange on neck and pale yellow on mantle with median black stripe. Upper parts reddish brown, finely mottled with black. Secondaries mottled with pale brown on outer webs. Fore neck chestnut. Rest of under parts pale light red. Face thinly feathered, comb very small.

RANGE.—Northeastern and Central India, south through Siam, Cochin-China, and the Malay Peninsula to Sumatra. Introduced in many other islands of the East Indies.

GENERAL ACCOUNT

Of all the pheasants, indeed, of all the birds in the world, the Red Junglefowl stands first in importance to mankind on the earth. From this species, and this alone, all the forms of domestic fowls have taken their origin, and hence from this relation to man of economic utility this bird assumes a position of great interest. With this point of view in our general account of the

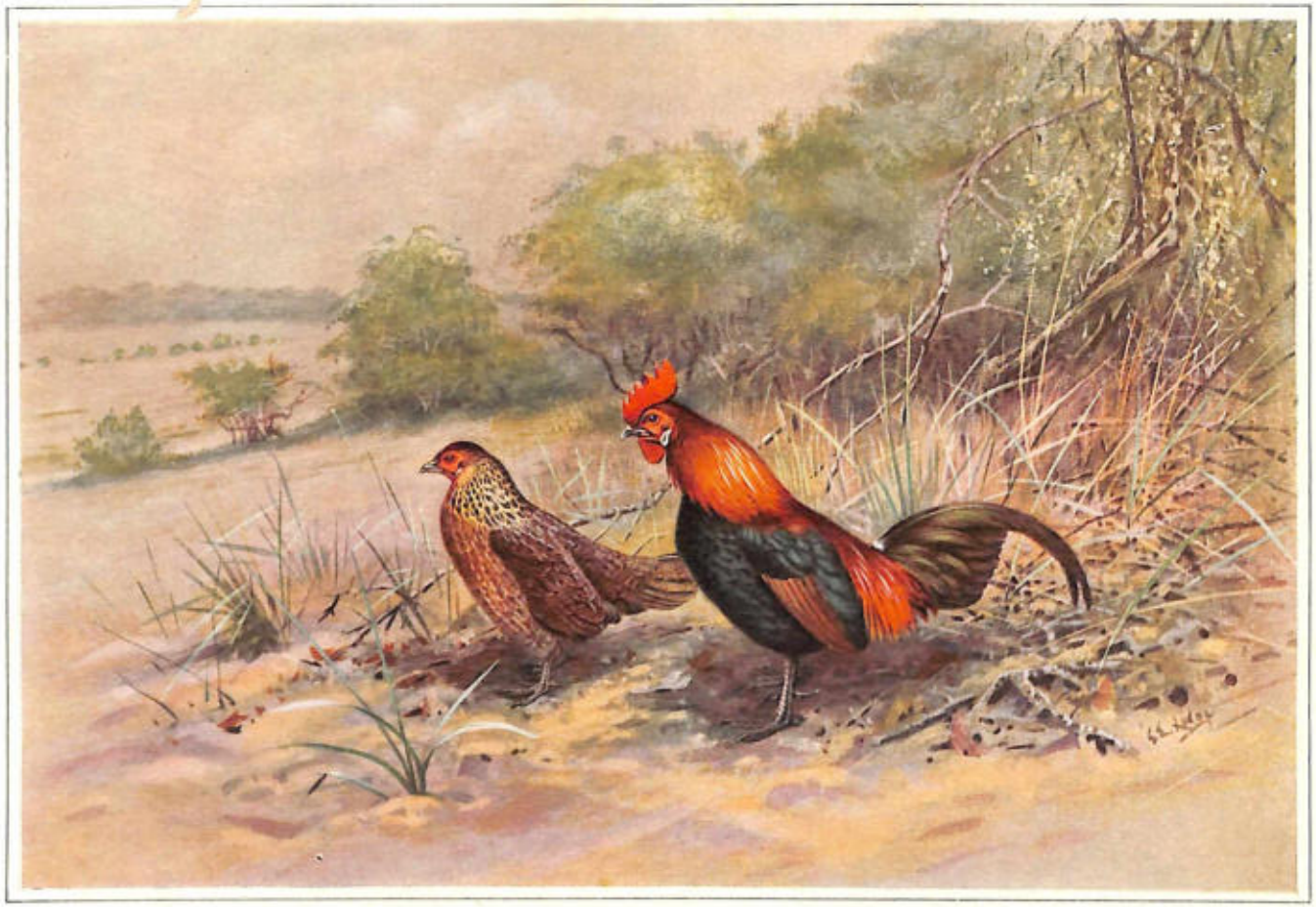


PLATE XXXI

Painted by G. E. Lodge

RED JUNGLEFOWL

Gallus gallus (Linnæus)

(For detailed caption see page xxiii)

species we are not directly concerned, but it is well to state the fact at once, so that the details of its life history may not be forgotten when we come to compare the wild and the domestic birds, and to attempt to trace the part which the cock and the hen have played in the history of mankind.

It is difficult to correlate the habits or to present them in a uniform, inclusive summary in the case of a bird such as this, which ranges from the borders of Kashmir to the southern limits of Johore. I met with the Red Junglefowl in many countries and watched it under many varying conditions, and in most cases I have found it necessary to do away with the convenient generalizations which are so easy to make in the case of pheasants of more restricted range, living under more homogeneous ecological conditions.

I believe the home range of the Junglefowl is of quite limited extent. I have been told by tea planters of a family of these birds which inhabited a certain bit of bamboo jungle month after month, apparently never leaving it except to make short excursions for water and food. And these sedentary habits are, I believe, more pronounced in this group of birds than in most of the more typical pheasants. During the breeding season, the birds which frequent some given area are seldom seen, retiring into the deeper, denser parts of the jungle. But there is no extensive wandering. Where wild birds get into the habit of feeding upon crops, or associating with domestic fowls, they correspondingly limit their home range even more, and when not molested, their comings and goings can be timed as accurately as in the case of the barnyard fowls themselves.

Taking three thousand feet as an average maximum height, we find the Junglefowl living at a comparatively low elevation. The great proportion is not exposed to any but slight changes in annual temperature, and hence has no cause to make even limited seasonal migrations. The birds which range up the valleys and southern slopes of the Himalayas, are found breeding at a maximum height of about five thousand feet, while occasional records show that exceptional individuals may wander

upward two thousand feet higher. These, of course, are affected by the approach of cold weather, and, as I observed in Garhwal, descend several thousand feet to warmer altitudes, reascending when the warm weather again returns. So we see that, with these local exceptions, no regular seasonal migration is to be found among Red Junglefowl.

While the name Junglefowl is quite correct, bamboofowl would be even more appropriate, as they are especially fond of this type of vegetation; and as I look back over my memories of these birds, any visualizing of them is invariably accompanied by a background of the tall, curving stems and the soft foliage of bamboo.

Rarely, I have found them in heavy tropical forest devoid of bamboo, and in the vicinity of the semi-arid plains they must needs be content with the shelter afforded by clumps of acacias and other similar plants.

Throughout India, the Junglefowl live of necessity more or less close to cultivated districts, and indeed, even in the less settled parts of Burma and the Malay States, I found them far more often in the vicinity of native villages than in the trackless depths of the jungle. This fact must be taken into consideration in speaking of their comparative abundance. On the whole, Red Junglefowl show a remarkably even distribution. In a country suited to them and within their general range, they are almost certain to be found. That is to say, there is not the inexplicable *inter habitat* hiatuses which characterize some of the true pheasants. Exceptions, of course, are to be found where they have been exterminated by human agency from some intermediate tract of country. Considered in general, they may certainly be said to be abundant, probably the most abundant of the so-called gamebirds in the East, although it is hardly fair to make this comparison, owing to the constant recruits to their ranks from half-wild native fowls.

Red Junglefowl are sociable birds, and, except during the breeding season, when association is either for fighting or for pairing, they are often found in good-sized flocks. They are

found very frequently in pairs, and it is seldom that I have seen or have heard of a solitary cock or hen.

As often as I heard the Red Junglefowl in various Eastern countries, it was always with a start at such familiar, barnyard sounds coming from the jungle, where sometimes I knew there were no human dwellings within a distance of many leagues. When in search of a specimen or a bird for the mess, more than one has escaped with its life by giving utterance to such domestic sounds that I unconsciously withheld my fire.

The crow of the Red Junglefowl, like the details of plumage and colour of wattles, shows quite marked variation, which is rather individual than characteristic of the birds of any one district. This is undoubtedly due to the infusion of a domestic strain in many apparently purely feral birds. I have several times had the opportunity of watching and hearing Junglefowl crow, in districts far from cultivated areas, the birds showing by their low-hung tails and lank, rakish carriage that they were in appearance, at least, truly wild.

On one such occasion, I had concealed myself at earliest dawn in a thicket, on either side of which ran a trickle of water. This was in the heart of the Pahang jungle, and my choice of this particular place was influenced not only by the fact that for several days I had heard a Junglefowl calling near by, but also because it was free from the hordes of leeches which infested the surrounding foliage, and which made stationary observation elsewhere an impossibility.

I became aware of the bird first by an excited cackle, which I feared was caused by the discovery of my presence. But through the leaves I saw that its attention was directed elsewhere. Its suspicion was soon allayed, and it came quietly on to the edge of the dark jungle rivulet, where, after a momentary delay, it leaned down, swiftly scooped up a beakful, and again froze into a statuesque attitude of keen scrutiny. Seven times the bird drank, then turned aside, wiped its beak upon a pebble, and instantly flew up to a bare branch about twelve feet from the ground, its wings beating rather noisily.

Three or four minutes passed. Then the bird flapped its wings three or four times, giving forth resounding smacks, and at once crowed, then listened intently. Again and again the challenge rang through the jungle, without, however, any further beating of wings. Once a distant crow was heard in answer, and this caused an excited reply of several utterances in quick succession, followed by an equally long period of waiting. After a half hour, the bird descended and vanished into the forest. Its cry as I wrote it down on the spot was *Err-er-erk—er! Err-er-erk—er!* The accent was all on the third note, while the fourth was sometimes very weak, and at a distance would have been inaudible. It seemed more like an involuntary intake, or recovery of breath, than an actual integral part of the call.

This bird was unquestionably challenging. Every motion, every attitude attested this, and on another occasion I observed the same thing.

But at another time in the terai I had the good fortune to watch and listen to a bird which was crowing and yet not challenging. I knew he had a mate near by with a nest, although I did not actually locate it until a day or two later. The Jungle cock was on a fallen log, and his whole demeanour was of assured peace. He was alert, but only as any wild bird is whose life is one long fight against danger. His crowing was intermittent, uttered at a lower pitch, and did not have the tang and abruptness of the challenge. It had a hint of the domestic drawl, and after each effort he sang to himself the low content song with which we are so familiar in the barnyard hen—*Waaaaaaaak—waak—Waaaaaaa!* The whole seemed to me a real song, to be compared with the tempered notes of a thrush who perches near his mate on her nest and gives this vent to joy in the success of his life.

The difference in the apparent human phrasing of birds' songs when heard near by and at a distance is very apparent in the case of the Junglefowl. In Garhwal, I have more than once mistaken the *Kok! kok! koklass!* of the koklass pheasant for the Junglefowl, and *vice versa*, when the notes were softened and mel-

lowed by filtering through the mist of a long length of valley. Others also have noticed this resemblance.

More commonly heard than the *Err-er-erk!* is a less wild, less distinctive call, that which I take to be influenced by some domestic strain, although uttered by birds which, in habits, are as truly feral as any bird of the jungle. When heard near at hand, this sounds to our ear like *Cak-ka-charr!* or *Cock-ka-charr-ca!* This bears a fair comparison to the crow of some breeds of bantams, and an additional interesting fact is that the domestic birds whose crow most closely resembles that of the wild Junglefowl are those whose plumage is nearest the red and black of their feral ancestors. Even the crow of the wild birds quoted above is always, however, distinct, being shorter, more virile, and wholly lacking the final drawl which seems to hint of the degeneration of the domestic cock.

The cackling of the wild hen, as I have already said, is given in moments of excited suspicion. I do not know whether the direct stimulation of having deposited an egg also inspires this note or not. I have never heard it in a captive wild-caught bird, but several times I have known the first generation of captive-bred birds to give voice to it. I am inclined to believe that it is a call to the cock, giving notice that the nest duties of his mate are for the moment over. I have known a peahen to leave her nest with a half-running, half-flying rush, and to call loudly until her mate came, when they went off quietly feeding together.

The squawk of a wild bird when picked from a trap or a wounded one when caught in the hand is indistinguishable from the note of terror of the domestic fowl, but it is never continued for minute after minute as in the latter, but uttered once or twice, and then the bird awaits its fate in silence. The cackle of the wild hen is sharp and shrill, and the cackle of fear uttered as birds are suddenly flushed is as much pheasant-like as it resembles the corresponding utterance of a barnyard hen fluttering over a fence from a pursuing dog. The peeps of wild chicks differ in no way from those of the fluffy yellow offspring of our domestic hen.

In gait and carriage there is much difference between individual Junglefowl, the same influence being at work here as in the case of the voice. The birds which haunt the vicinity of villages have usually much more of what we are pleased to call a proud carriage than the real jungle individuals. The tail is held higher, and the movements are slower and more dignified, as we interpret them. But once the real fowl of the deep jungle is seen, it will not be forgotten.

I have seen many so-called Junglefowl in captivity, and they satisfied all the requirements of the casual observer, who would remark that such splendid carriage was well worthy of the ancestor of our common fowls, and similar sentiments. But the pair of birds which arrived at the London Zoo in 1912 were almost the first real wild Junglefowl I have ever seen in captivity. Dignity was absent; the carriage was that of an untamable leopard; low-hung tail, slightly bent legs; heads low, always intent, listening, watching; almost never motionless, but winding in and out of the shrubbery, striving to put every leaf possible between themselves and the observer! To my mind, they fulfilled every ancestral requirement much more satisfactorily than the usual Junglefowl type. It would take more than one generation to tame them. They were wild as the pheasants of the Himalayas. Dignity and high-bred carriage they doubtless had, but it was reserved for their kind; for the combats and the courtships of their own haunts, not struttings and steppings while mankind looked on. All this is not a sentimental point of view, but a very real distinction.

I have walked along a trail and suddenly come in sight of several Junglefowl, who looked at me, drew up to their full height, and hurriedly enough, but with raised tails, took to the jungle. And again, I have walked behind a soft-padding army elephant in northern Burma and caught a momentary glimpse of birds slinking swiftly from view with outstretched necks and trailing tails, or hurling themselves headlong into the underbrush. There is no dignity in such birds in the loose, undesirable meaning of the word as we use it, but there is caste, high caste, the feeling of

undefiled lineage, untainted by the degeneracy of a captive strain.

The flight of wild Junglefowl is direct and swift. When amid dense undergrowth they are able to rise almost vertically until clear of the vegetation and then fly strongly to a neighbouring tree. This is their procedure when escaping from a sudden rush of dogs, but they discriminate sharply if men disturb them, and without pause fly as rapidly as possible out of sight; if on a slope, invariably downhill. I once saw a cock fly across a valley some half mile in width, and as long as it remained in sight, the flight was as strong as a pheasant's, a number of quick wing beats being followed by a few seconds of scaling. Ordinarily, where the bird is in sight from its rise until it alights, especially if its course, as usual, be downward, the wing beats are rapid and continuous at first, while the latter half of the flight consists wholly of a motionless scaling with bowed wings.

This facility of flight seems all the more striking when we see it displayed by the village fowls of many parts of the East. When, in riding over the trails or government roads in the Malay States, one comes suddenly upon a group of fowls, instead of blundering ahead or with frightened squawks and frantic, awkward beating of wings flopping toward their native coops, they often rise swiftly, and with the greatest ease fly out over the steep slope, all together like a flock of doves, then circle around and come back to the road some distance behind. This reveals clearly the recent admixture of wild blood, and is correlated with a much lower egg-laying ability than exists among more carefully bred domestic strains.

DAILY ROUND OF LIFE

The food of Junglefowl, in keeping with their other rather generalized habits, is of an omnivorous character. They are, however, graminivorous on the whole, and in the crops of birds which I have shot at a considerable distance from cultivation, I have always found vegetable matter predominating. Small nuts and seeds of unknown plants are often taken in considerable quantities, besides which the young shoots of bamboo and other

grasses, leaves, petals and wild seeds of all kinds are eaten. As with all other pheasants, the larvæ and eggs of white ants or termites are enjoyed, and the birds will go to considerable trouble to scratch and peck away the hard earthen tunnels and mounds of these insects to expose the nurseries with their abundant tenants. A certain discrimination seems to be exerted in the choice of pebbles, which are swallowed, and the gizzard is often partly filled with bright and shining bits of stone. Seventeen sapphires have been taken from a single hen Junglefowl.

The greater number of birds which make their homes in the immediate vicinity of native villages and cultivated fields lose no opportunity to make the most of such advantages. Associating so freely with the domestic fowls, they are thus protected to a great extent from direct attack with guns and traps, the natives not wishing to sacrifice their own useful fowls. After the harvest has been gathered, Junglefowl, in early morning or late evening, may be seen gleaning in the grainfields, in loose flocks of ten to twenty birds. The damage they do, however, is not great, and their wariness makes it an easy matter to drive them from the fields.

Besides fattening on the millet and rice when these grains become ripe, Junglefowl share throughout the year the habits of domestic birds in haunting cow sheds, and the sign of animals which travel over the jungle roads and trails. The easiest way to catch at least a glimpse of these birds in any locality which they are known to inhabit is to walk quietly along the roads near the forests in the cool of early morning. Even where wild cocks and hens form close associations with domestic birds they usually keep to their feral habits in the matter of feeding. In the higher parts of their range in the Himalayas they may occasionally be seen at midday with the village fowls. But this is very unusual, and the early morning and the evening are the only times when throughout their range in general they are seen feeding. During the heat of the day, they retire to the deepest, coolest shade in the vicinity, and during this time can be dis-

covered or dislodged only by a dog, or by the accident of stumbling upon them. At such a time they are very disinclined to take to wing, and unless actually forced to fly, they invariably make their escape by swift running and dodging around and through the undergrowth.

Unlike a number of the true pheasants, Junglefowl are essentially gregarious in their roosting. In Tenasserim, this seems to be carried to the extreme, as the following note suggests: "On one occasion, near Pahpoon, I counted thirty males and females seated side by side on one enormous bent bamboo. I counted them very carefully through my binoculars. They were at the other side of the Younzaleen, I guessed about seventy yards off; I loaded a large duck gun with big shot, fired at the lot and—apparently did not touch one."*

When watching a small flock of bronze-tailed peacock pheasants in Pahang, I saw four Junglefowl go to roost across a deep, narrow mountain valley. Although within easy shot, they did not mind my presence, apparently considering that my only method of attack was to descend and ascend the extremely deep and steep slopes. They had chosen a stubby tree growing obliquely out of the cliff side and directly overhanging the great depth beneath. Far down below, the water could be heard, and high overhead the wind was raging, but the four birds crept silently along branch after branch, ascending slowly until they reached one which was protected by an overhanging mass of foliage and vines, and here, after a prolonged scrutiny of me, they settled down close together: a family, evidently, cock and hen and two nearly grown young birds. Twice I have known of cocks roosting singly, night after night, in the same place, but in both cases the hen was sitting on her eggs near by. I do not think the cocks often crow from their roosts before they descend in the morning. The several times that I have surprised birds as they sent forth their challenge, it has been uttered either from the ground, a fallen log, or a low perch other than their regular roost. When they begin their evening calling, they are usually

*Hume's "Gamebirds," I, p. 225.

upon the ground, and the crow is certainly not uttered after they have retired to their roost.

The roosting place most often chosen is near the top of a horizontally bent bamboo, a position liable to sway wildly in a wind, and, one would think, offering but a poor foothold at the best. It must, however, be as safe a place as could be selected, few creatures being able to climb the thick, smooth butts of the stems. When an ordinary tree is utilized, its position, either isolated in the jungle, or, as I have described, overhanging a deep chasm, aids in making the roosting place less liable to direct attack from creatures of the night. That most excellent observer, Mr. Osmaston, writes me that "usually several birds roost fairly close together in one or in adjacent trees." In countries other than Garhwal, all I have seen were grouped in one tree, sitting as close to one another on the same branch as they could crowd.

The only intimacies which I have observed in the life of these birds are with their domestic kindred of the villages. With this exception, I have observed only the casual company of babblers, who sometimes accompany the Junglefowl down a long slope on their way to water, and are ever ready to sound the alarm when their keen eyes and more elevated position have enabled them to detect one's presence.

Their enemies vary, of course, with the locality, but members of the mink family, the smaller cats (such as *Felis chaus*), hawks, and eagles are unquestionably the greatest dangers with which these birds have to contend. In all my watching, I never observed a tragedy, although more than once I saw individuals suddenly terrified by some menace concealed from my point of view. Mankind is probably the bird's greatest enemy at present, in spite of the fact that the great majority of the individuals which live in his vicinity are becoming tainted with domestic blood.

The senses of sight and hearing are those which protect the Junglefowl from its enemies, the former dominant, while the ears are yet so keenly attuned that the least crack of a twig will often send the bird in headlong flight. Never have I seen a wild bird

off its guard for a moment, and although I have lain prone and had a cock come within ten feet, yet it was only because I was perfectly hidden and motionless. On this and on other occasions, I have seen the bird under observation become suspicious, and even finally take alarm when I was absolutely certain that through none of its five senses had it received warning of my presence. There seemed to be an intuition, a mental sensing of concealed danger, an indefinite conviction which gradually increased in power and assumed control of the bird's emotions, in spite of the fact that it had as yet no knowledge of the location or character of the peril. In such case, it was as likely to make its escape by passing close to my concealed position as in the opposite direction.

On the general character of the country, the lay of the land and the type of vegetation, as well as the suddenness and degree of extremity of attack, the mode of escape depends. When surprised by dogs or suddenly come upon by a man, especially when a steep, open hillside or plain lies ahead, the birds rise at once and with strong wing beats swiftly skim down the slope. Where only a dog is concerned, they take to the nearest trees, crane their necks down at their disturber, and cackle querulously and noisily. When taking to wing, no utterance other than a sudden terrified cackle is given.

If conditions are right, they are as ready to escape on foot, running with head and tail low, with long, swift strides which take them almost instantly from view. They are adepts at dodging, and in an almost open field I have seen a cock dash into the shelter of a bush so quickly that the eye could hardly follow. Waiting a favourable opportunity, it would make a dash for another clump of foliage, and so on, until the shelter of the jungle was reached. I have seen nearly grown birds, which were not accompanied by their parents, squat, and once I think a solitary hen bird adopted the same tactics until she made certain that I was approaching, when she fled at full speed. I have never seen even an attempt at crouching in his tracks on the part of a cock.

Of considerable interest is the fact recorded by several reliable observers that the hen with chickens will act like a wounded bird, as in the case of the ruffed grouse and many other species. Osmaston writes me: "The hen simulates a wounded condition, whilst the young crouch motionless and are almost impossible to discover among the dead leaves." This act seems best interpreted on the whole as an involuntary convulsion of fear; since we can hardly credit the bird with even an instinctive mimetic intention; and certainly not with a conscious desire to reproduce the actions and postures of an injured and dying bird, which she herself has very probably never had the opportunity of witnessing. Natural selection, I think, can easily explain the development of this phenomenon, while at the same time I wish to give full credit to the bird for sheer bravery and extreme parental devotion. For while the action in itself may not be voluntary, yet when it has failed, and the bird realizes that the danger is becoming acute, she returns and actually buffets the assailant—this, it seems to me, rises to the level of voluntary initiative. The spasm has passed, and the bird, with all the strength and power in her body, strives to divert attack from her offspring.

I have never observed even a trace of this simulation of disability on the part of domestic hens, so this must be a very recent acquisition in the Junglefowl, whereas we all know of a hen's conscious bravery in the fac of attack by hawk or dog. In domesticity, this latter trait is evidently of value, while the other ruse, like the power of strong flight, is unnecessary, and hence has degenerated and been lost.

HOME LIFE

The breeding season of the Red Junglefowl in the northern sub-Himalayan part of their range extends from February, when the males begin their challenging, combats, and courtship, until the end of May, when the few hardy individuals which make their homes well up in the hills deposit their eggs. In central Burma, eggs have been taken from March to June. As we follow the birds southward throughout their range, there is, as usual among

birds in general, an increasing laxity in the precise limits of the nesting months, and in the Malay Peninsula, young birds have been recorded from February to late August.

In the first few pages of this monograph, I have mentioned the courtship of the wild Red Junglefowl. Even in the degenerate domesticated rooster, we still see hints of this feral chivalry, but, as with flight and many habits of life, this centuries-old inmate of our barnyards has let his manners become sadly slipshod. Too often his procedure is to sidle up to a hen and make only one or two half-hearted circlings, with wing awkwardly drooped, an atavistic effort to reveal beauties of plumage which are no longer his. Then, if the hen, obeying her innate impulse, shows but slight interest, his patience is at an end, and the courtship degenerates into a mere rough-and-tumble pursuit and capture by sheer force. We see much the same thing in the house sparrow.

One noteworthy thing about the courtship of the domestic cock is the rattling croak or harsh crooning sound he often makes when going through the display. The wild birds are absolutely silent when they are courting, uttering a cluck now and then between displays, but giving no hint of the rather coarse garrulity which characterizes their captive relation.

The little definite information we have of wild birds shows that Junglefowl differ in no way from pheasants in general in the reliance they place in persistent showing off to produce some effect on the hens. Hypnotic rather than sentimental though this probably is, yet it is an effect gained solely through emotional channels. The manœuvres themselves are not of the highest order, corresponding to the first stage—the lateral display—of such birds as peacock pheasants and tragopans.

The assertion has been often made, and with some truth, that some of the courtship attitudes are similar to those assumed in fighting, the intention of the assertion being to belittle any specialized effort on the part of the male to catch directly the eye of the hen. This statement is now quoted and repeated in the most sweeping manner by every dilettante writer on birds,

until it requires some refutation to bring it within logical bounds. The lateral display of the Junglefowl has nothing to do with the fighting position of these birds, which is essentially frontal. Even when two cocks are approaching each other and circling for an opening, the resemblance between the two motor phenomena is extremely remote.

The nodes of brilliant plumage in the wild Junglecock are on the back, wings, and tail. Hence, it is these areas which are of prime importance in courtship display. The dull under parts are concealed. The bird endeavours to manœuvre into a position almost in front of the hen, and then to render himself as asymmetrical as possible. The inner wing and tail are spread and lowered almost or quite to the ground. The back is slanted and the inner side depressed as much as possible. The hackles are raised and spread a little, hanging far down on the side toward the hen. When the extreme posture is assumed, the bird takes short, rapid steps in a half circle, bringing up on the opposite side. After a few seconds of quiet, he may retrace his steps and make a return circle, displaying the beauties of the opposite side, or, if the hen has advanced, he may walk quietly around behind her and display again from the same side. In any case, we are reminded strongly of the display of the golden pheasant. I have seen this courtship on the part of a wild bird, when it had no inkling of my presence, and although I have watched many domestic cocks going through the same performance, it has, even at its best, lacked the patience, the thoroughness, and the vigour of the courtship of the wild bird.

Junglefowl are notoriously pugnacious. This is attested by the great length of spurs and indirectly by the hackles, which appear to function especially as a protective ruff or a false shield. The beak-to-beak position of the fighting birds is well known to everyone, and at such a time the hackles are erected until they form a perfect halo about the head, hiding from view all the vulnerable parts of the body.

Hume has an interesting note about the combats and fighting arenas of wild Junglecocks. He says: "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 northeastern 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 Junglefowl 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 Junglecock, 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 Bunjara 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 a few minutes later a Junglecock 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 sambhur 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 learnt so much and no more; there was a rush, a yelp; the Junglecock 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.

"Only a week later I shot two cocks, who were tumbling head over heels, a confused mass, with wings and legs interlaced in an incredible manner, and on several other occasions, when watching and waiting, concealed and in silence, for larger game, I had witnessed desperate battles between cocks who happened to meet, attracted by each other's crows and flappings of wings, near my tree ambush."

I have never been fortunate enough to see two wild cocks fighting, but I have three separate times chanced upon what appeared to be fighting places. In all cases, these were in small glades in bamboo jungle, and in one instance a half-decomposed cock bird was lying in the centre. On two other occasions I have found where a Junglefowl had been plucked and doubtless eaten by an eagle or owl, and there was no doubt as to the distinction between the two situations. The widespread abundance of hackles and body feathers, the tracks, the sign, all indicated a much-frequented arena. My attention was attracted to two of the three places by the constant crowing in early morning, and this crowing did not die out little by little, with longer and longer intervals between the challenges, but suddenly, with suggestive abruptness, as might occur if a rival appeared on the scene. I believe that the combatants in these places are

chiefly young or unmated birds, and that hens are to be found somewhere in the vicinity, although my belief in this is based chiefly on my observations of other species of Junglefowl. The mated birds keep together and do not range far afield, and in their case combats are probably confined to encounters with trespassing strange males.

A fact of passing interest, which I shall touch upon in more detail elsewhere, is the isolation and accentuation by breeders of the mental character of combativeness. The mentality of the domestic game cock is as much a product of artificial selection as is the physical character of a crest in the Polish fowl and the physiological function of increased fertility.

In spite of many exceptions, I believe that the normal, or at least the much more common state of mated life among Red Junglefowl is that of monogamy. Birds living in open jungle, isolated from the fowls of natives, are almost invariably seen in pairs, except when families are flocked together, and several sportsmen who have hunted this bird emphasize this fact. In more than one instance where I have found a single cock associated with several hens, it has been in the immediate vicinity of villages, and I credit this apparent polygamy to the influence of native fowl blood. Among domestic birds, polygamy is, of course, the rule. Just as the power of flight and speed has degenerated in our barnyard fowls, so the normal pairing relation has been upset, and mating is indiscriminate and all but lacking in courtship.

The site chosen for the nest is again, to a certain extent, an index of the absolutely wild nature of each respective pair of Junglefowls, or reveals the demoralizing effect of crossing with native birds. Twice in widely separated countries I have discovered, with the aid of expert native hunters, far from human habitation, the nests of wild hens. They were hidden deep in thickets, and protected by a very dense growth of bamboo in one case, and brake in the other. There would have been no possibility of discovery except by the accidental flushing of the hen. In four instances of nests near villages, on the other hand,

none were thoroughly concealed, and in two cases it was impossible to decide whether or not the nests were those of extremely wild native hens or rather tame jungle birds.

The nest is, of course, on the ground, usually well toward the centre or denser portion of a thicket, usually of bamboo. It is variable as to character; sometimes merely a hollow scratched out of the earth, without any lining; again, the leaves which were already on the ground remain, and are matted down by the eggs and pressure of the bird's body. More rarely a considerable heap of grass and leaves is collected, forming a real nest, unlike the case of most of the pheasants. Another variation which has been described is where the bird, besides making a nesting hollow, also scrapes up the earth outside and around this nest, thus forming an appreciable rim, which protects the contents, keeping the lining firm and the eggs secure.

Hume speaks of finding a Junglefowl's nest almost every day during a month's shooting in May along the southern slopes of the Siwaliks, with the aid of dogs and men. Once six were found near the Bhing-ka-khol within a radius of two hundred yards.

The number of eggs is not very constant, but five to eight are the usual number. Eleven have been known to be deposited by a single hen at one laying, but the record of a nestful of fourteen probably represents the joint efforts of two birds.

In appearance, the eggs are, of course, like miniature hens' eggs. The shell is smooth and fine of texture, with considerable gloss. Near native villages the shells partake of the character of those of the domestic birds. Usually they are of a pale buff or yellowish café-au-lait colour, sometimes paler, whiter, or again darker. In length, they vary from 40 to 53 mm.; and in breadth from 32 to 39. The average Red Junglefowl egg measures 46 by 35 mm.

The period of incubation of Junglefowl is the same as in the domestic descendants, about twenty-one days, and the chicks are strong and very wild, able to leave the nest, to follow the parent, and to hide at her command almost as soon as their

down is dry. When the eggs of really wild birds are hatched under domestic hens, and the chicks are confined with other fowls, they will accept captivity in the end, and will remain and breed. But they always choose to roost in trees adjacent to or within the village, rather than spend the nights in coops, or on the rafters, or under the floor beams of the Burmese or Malayan houses. If, however, the chicks are permitted at once to run in the jungle, they will drift away from the hen, and through fear will one by one be lost. Nevertheless, I repeat that it is most interesting that the chicks, or even the adults of real wild Red Junglefowl, unlike the other closely related species of *Gallus*, are susceptible of what is practically domestication in one generation, unlike any other member of the pheasant family. In this it parallels the mallard duck, and to a less extent certain South American birds, such as the trumpeters, cariamas, and chachalacas. These latter, however, refuse to breed in captivity, but within the space of their own lifetime become perfectly tame, and accept man as protector and friend while enjoying full liberty at the very edge of their native jungle.

The call notes of the chicks and the warning and calls of the hens differ but little from the corresponding utterances of domestic birds. The cock, as far as I know, never goes near the nest, nor does he take any part in incubation, although he is frequently seen in association with the hen when she goes off to feed. When the brood is hatched, or at least when the chicks are a week or more old, the cock is found with them, scratching and helping to find food. This I have verified personally. When alarmed, however, he is the first to dash away, carrying out the rule of pheasants in general, that susceptibility to suspicion, fear, and flight is in direct relation to the abundance of colour or conspicuousness of plumage. When threatened with danger, the hen leaves her brood with a single cackle, sharp and incisive, which sends every chick to cover, where they remain motionless until they hear her reassuring notes. I once was fortunate enough to have a hen and her brood of four young pass close beneath the tree in which I was concealed on the watch for fire-

back pheasants. Some animal of which I could not catch a glimpse rushed suddenly through the ferns near by, and the hen rose and whirred swiftly into the jungle in the opposite direction. By my watch, over twelve minutes passed before the bird reappeared, although after the first rush there was no further hint of danger. Then she came silently, cautiously, picking her way back through the underbrush, strangely enough from the side whence the sound had come, having described a half circle in her flight and return. When a few feet away, she uttered several low, crooning notes, walking slowly, and before she disappeared, I made out the forms of several of the little chicks. Where they had been or when they answered her reassuring call, I could not tell. Their markings and colours were perfectly protective; when motionless they were bits of the jungle floor mosaic of various pigments, lights, and shadows, and with no telltale scents to betray them, were safe from all discovery during the absence of the mother.

In the crop of a two-weeks' chick, I found a bit of a scarlet earthworm, several small grubs, and a piece of grass blade. Beyond this, I have no data as to the food of the young birds. Judging from the scratching proclivities of both sexes, I believe that insects form an important part of their food. As I know that the cocks share in the defence and feeding of the brood, it is reasonable to suppose that he roosts with them from the time when they are first able to flutter up to a limb. Certainly, when they are half grown, he is found with them or on a neighbouring branch every night. The dangers to which the eggs and very young chicks are subject are those which ever threaten ground-nesting birds: snakes, lizards, small carnivores, and other predaceous mammals—the small, jungle-frequenting hawks and owls being the worst.

RELATION TO MAN

The details of the past and present relation which obtains between the Red Junglefowl through its descendants and mankind, could easily be elaborated into an entire volume of this

work. In economic importance, the domestic fowl takes rank with the cow, sheep, and pig. Many accounts have been written on this subject, one of the best being Darwin's chapter published nearly sixty years ago.

Sometime in the far distant past, exactly when, we shall probably never know, some primitive race of mankind captured living Junglefowl and tamed them. The birds learned that intimate association with man ensured comparative freedom from attack by beasts of the jungle and a more or less regular supply of food. Certainly, their lives are a great deal longer than among their wild kindred. There are records of domestic cocks twenty-four, twenty-five, and even thirty years old. So in numberless races and varieties we find the domestic fowl as the companion of man distributed over the whole world, with the exception of the high mountains and the polar regions, where it is infertile, and, therefore, cannot be bred. It everywhere betrays its Southern origin by its love for warm, sunny places, its dislike of cold, and the infertility in chilly regions above mentioned. The early history of mankind and the fowl, as far as we know it, I have detailed elsewhere.

After the first domestication, and throughout succeeding years, during generation after generation, these tamed fowls of the jungle made three separate appeals to man. First, he reared them and found their flesh and eggs goodly food, and little by little learned to breed birds which either were large in size, and thus produced an unusual amount of flesh, or by selection, increased feeding, and in other ways brought about an enormously increased egg productivity. In the second place, the natural pugnacity of these birds appealed to the primitive instincts of savage man, and many generations of him must have given much thought to the sport of cock-fighting to have brought into existence the specialized race of game cocks with its peculiar structure and abnormal pugnacity. Thirdly, when the plasticity of form and structure of Junglefowl bred in captivity became evident through the variation of successive generations, the æsthetic side of mankind seized upon this as a sort of living, or-

ganic potter's clay, and with this material, breeders and fanciers, from early in human history to the latest exhibitors at our modern poultry shows have exercised their ingenuity in the production of beautiful, bizarre, or monstrous races of domestic fowls. All this is of interest to us only as showing the possibilities inherent in a species of wild bird when it has become adapted to domestication. Emulation and competition have become so great that in England alone, twenty poultry shows are sometimes held within the space of a week, and prize fowls may fetch at auction from five hundred to seven hundred and fifty dollars.

The plasticity of domestic fowls is very remarkable, and has furnished the mutationists with considerable evidence. The unnatural conditions of their lives, however, doubtless account for much of this, and in Nature, among wild Junglefowl, there is unquestionably much less of this abnormal variation. Davenport says* that within a period of four years "in the egg, unhatched, I have obtained Siamese twins, anteriorly duplex individuals with shortened upper jaw . . . and chicks with thigh bones absent. There have been reared chicks with toes grown together by a web, without toenail, or with two toenails on one toe; with five toes, six toes, seven toes, or three toes; with one wing lacking or both absent; with two pairs of spurs; without oil gland or tail (though from tailed ancestry); with neck nearly devoid of feathers; with cerebral hernia and a great crest; with feather shaft curved; with barbs twisted and dichotomously branched, or lacking altogether. Of the comb alone I have a score of forms: single, double, triple, quintuple, and walnut, V-shaped, cup-shaped, comprising two horns, or four or six, absent posteriorly, absent anteriorly, and absent altogether."

In addition to the increase in egg production, of which we shall speak shortly, we find eggs varying much in colour, and of all sizes and shapes, from sausage-like to a complete horseshoe. Some of these abnormalities are very patently, wholly inimical to the life of the organism, but others have been developed and

*Chapter on Mutation in "Fifty Years of Darwinism," 1909, p. 171.

increased by selection until they have come to be characteristic of races and breeds known over all the world.

Game fowls are more like wild Red Junglefowl than any other domestic race, differing chiefly in being larger and in carrying the tail more erect. When these birds were bred for fighting only, the general proportions of the wild Junglefowl were not departed from, but in recent years, stimulated by the desire to excel in competitive poultry shows, breeders have wrought remarkable changes in this race, especially as to extreme length of neck and legs. Within a comparatively short time, birds had been evolved with the breast more than a foot from the ground. The sickle feathers of the tail have been shortened, and the entire plumage rendered firm and closely pressed to the body. These abnormal proportions, of course, unfit the birds for fighting. On the other hand, as in many other races, one strain of the original type of game bird has been reduced in size through selective breeding, and game bantams of exceedingly small size have been produced. In this race, as a whole, there is a curious tendency toward the assumption of female plumage by the cock, and such breeds are known as "henny" game.

Years ago Temminck gave the name *Gallus giganteus* to a fowl of great size from the Malay States. This is now well known as a race appropriately called Malays, which are much larger than the game, and with very long and heavy legs. In fact, so disproportionately long are these limbs that the bird often rests its entire tarsus upon the ground, looking like a cassowary, or, with the tail feathers trailing, actually like a kangaroo. The plumage is so scanty that, on the neck, breast, and legs the skin shows through in many places as patches of bright red, this colour being apparently the effect of its direct exposure to light and air. These birds are excellent for table use, having an abundance of fine-flavoured flesh, especially on the breast. In the aseel, the pugnacity of the cocks has been handed on, not only to the hens, but even to the chicks, who fight with one another at every opportunity.

The birds known as Cochin China fowls, including brahmas

and langshans, have been evolved along lines of great size and weight. Their name is a misnomer, as they originally came from Shanghai. The cocks sometimes reach sixteen or seventeen pounds. The plumage is soft and downy, and the feathering extends down to the toes, the wings and tail being so small as to be wholly functionless. In fact, the feathering on the legs and feet has been carried to such an extreme that the normal scalation has given place to almost wing-like masses of quills, six and even eight inches in length. Brahmas did not come from the vicinity of that river, but were produced in the United States, by crossing a variety of Malay fowl with Cochins. By crossing the latter with Dominiques, the Plymouth Rock was produced, a very prolific layer.

Spanish fowls have given off leghorns, Andalusians, Minorcas, and others. In the black Spanish, the originally small spot of white on the ear lappet has spread over the entire face, and the lappet itself increased in size until it is sometimes seven inches in length and four in width. These birds and their sub-races have been bred for egg production, and correlated with this, the incubating instinct has been lost. In the place of the nestful of four to eight eggs which their feral ancestor laid once, or at most twice, during the season, these domestic egg machines will lay well over two hundred eggs in a year. In Australia, four hundred and fifty hens laid more than 80,950 eggs, while in America, there is a record of a single yard of six hundred fowls which averaged, in the year, 196 large, perfect eggs for each bird!

The falsely named Hamburghs and the crested fowls are also non-incubating, abnormal producers of eggs. The combs of the former are double. In the latter, on the contrary, the great development of the crest has almost, and in some cases wholly, obliterated the comb. The wattles, too, are absent in some forms, their places being taken by tufts of feathers. Almost the only changes produced by man in the domesticated races of fowl are those of general proportion and colour. But, in the crested fowl, the cranium itself has undergone a remarkable

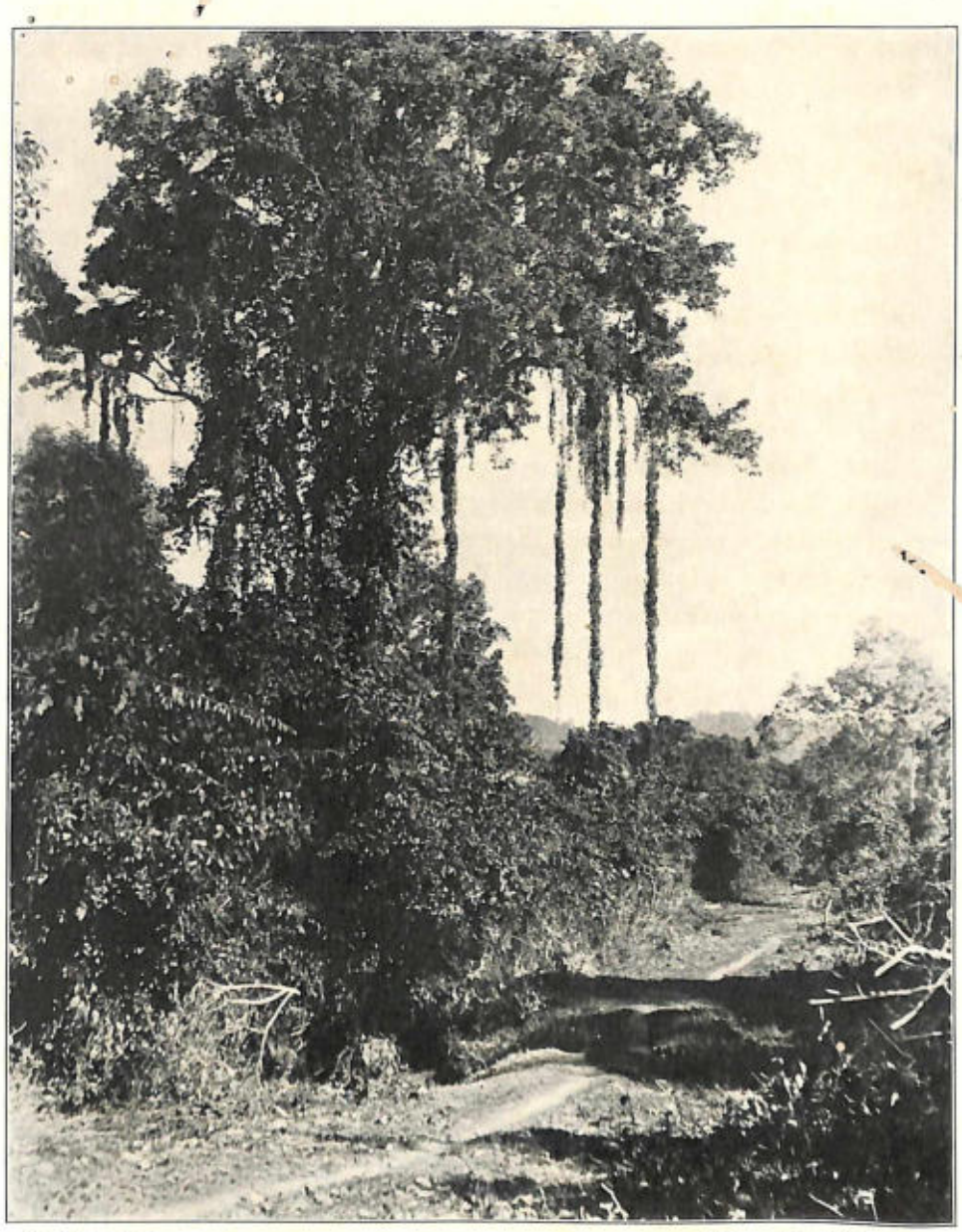


PLATE XXXII

Photograph by William Beebe

BURMESE HOME OF THE RED JUNGLEFOWL

(For detailed caption see page xxiii)

change, the front part of the skull forming a prominent rounded swelling, which contains a large part of the brain. Only occasionally is this remarkable structure wholly ossified. The Dorking fowl has an extra toe on each foot. This is probably a monstrosity and not a reversion to the real pentadactyl foot of the ancestors of birds.

Sebright bantams are in some ways the most artificial of all domestic breeds, for the cock has completely assumed the characters of the hen. The markings of the plumage, the short, pointed hackles, and the short, stiff, central tail feathers, show an extreme specialization and departure from the ancestral conditions. In the silky fowls, barbicels are almost absent from the feathers, giving the plumage a loose, silky, or hair-like texture. In the best-known breed of this race, the feathers are pure white, while the skin, the connective tissue separating the muscles, and the periosteum covering the bones, are a deep blue-black. When one has travelled in Malaysia and purchased these birds for the first time for the table, the sight of the black tissue on their flesh is most startling. They are, nevertheless, delicious eating. This character is not appreciated by the general purchaser at home, so these birds have little value for the market. In fact, even in crosses with other races, while the silky character of the feather is soon lost, the dark skin and other tissue are dominant and will do much to depreciate the selling value of the crosses.

Frizzled fowl, or "pineapple hens," as they are called in China, show the character of every feather, even the flight feathers and tail, turning outward from the body. One sees them everywhere in the East, especially in India, and, indeed, they are adapted only to a warm, dry climate, owing to the lack of protection which their plumage affords, the rain and cold easily reaching their skin. A radical, inheritable alteration of structure is found in the rumpless fowls, in which the coccygeal vertebræ are absent. This character is dominant, so that, by crossing, any race of rumpless fowls may be produced. Dumpies or creepers are fowls with legs so short that they can progress only with

difficulty. Bantam is a term applied to very diminutive fowls of any race, and even Cochins have been bred down to less than a pound weight. The Japanese have a bantam with enormous tail and comb, very prominent breast, and absurdly short legs.

While shape is an easy factor to alter in the breeding of fowls, segregation of colour, unlike the condition existing in doves, offers much greater difficulty. The Japanese bantam is an unusual exception to the possibility of this localization of colour —the bird in general being white, while the tail is black. Darwin accounts for this by what he calls analogous variation, finding its explanation in the patterns and colours, not only of the direct ancestor, but of other members of the genus and related groups. Thus, although the wild rock dove has not a white head, other species of doves have, and this character is easy to obtain by selective breeding. A white head is unknown among any species of wild Junglefowl or of pheasants, and a white-headed domestic race has never to my knowledge been obtained.

The long-tailed fowls of Japan are popularly known as Yokohama, or Shinowara, or Phœnix Fowls. Much has been written about this breed, and in this literature there is more of error than of truth. Authors have taken as their theses the supposed secret of production of the long tail feathers by constant stroking and gentle pulling, stimulating in this way the abnormal growth. When one visits the home of these birds in Japan, it is found that such methods exist only in the ingenuity of their Caucasian inventors. As a matter of fact, there is no secret connected with these birds, and their great length of feathers is as normal a product of development as the crests of other breeds. It has been proved that constant gentle pulling and stroking of the feathers has a certain effect in making the feather grow somewhat more rapidly, but this is only an unimportant indirect stimulation, not used by the Japanese. The finest specimens come from Shinowara, a small village three miles from Kochi, in the Province of Tosa on the Island of Shikoku. Professor Ijima, of Tokyo University, told me that tradition in regard to these fowls goes back many hundred years, but their origin is

wrapped in unsolved mystery. It is said that the breed was known in Korea before A. D. 1000. In former years, the Japanese breeders were encouraged by the Daimyo or Governor of the Province to produce birds with especially long feathers, as these were of importance in heraldry and also used as spear decorations by high officials. Recently, however, owing to lack of government support and popular interest, the industry is on the wane, as but few purchasers are to be found. At present, a good pair of birds with the cock's feathers six or eight feet long may be purchased for two hundred yen; one hundred dollars in our currency.

For the first two years, the birds are kept like ordinary fowls, but after this time, the cocks are confined in a narrow box-like cage, on a perch from which they cannot descend, nor can they turn around on it. From this time, there appears to be no moult of the tail coverts and central rectrices, and within from four to six years these feathers have attained an enormous length. Cocks are used for breeding only six or seven times, and are then valueless, as their long feathers drop out. This irregularity of moult is the explanation of the phenomenon.

The lower rump feathers sometimes reach a length of three or four feet, while fifteen or twenty of the upper tail coverts themselves attain a much greater development. The roots of these feathers become correspondingly thicker and stronger as the weight increases. The central sickle-shaped rectrices attain the greatest length, but the remainder of the tail itself is of normal length.

The box in which the bird is confined varies in height according to the length of the feathers. As these increase in length, they are carefully wrapped in mulberry paper, thus protecting them from dirt and from any danger of being abraded. The birds are fed with great care on nourishing food, and it is said that, under the best treatment, a growth of six inches a month has been obtained. The longest recorded feather measured twenty feet and two inches. The bird remains contentedly enough on its perch until taken out for exercise, which, when it

approaches relative perfection, is done only every other day. The fowls are very tame, and stalk solemnly about, an attendant holding up their enormous trains until they are replaced in their exhibition box. Once or twice a month the bird, together with its tail feathers, is carefully washed with warm water. I could not learn definitely of its diet, but unhusked rice, cabbage, and other vegetables are given, and all the water that the bird will drink. The birds are white and of various colours, but usually of the game type. The hens are very ordinary looking, and lay about twenty-five or thirty eggs each year. Inbreeding has made this race of fowls exceedingly delicate, and birds under a year old cannot be transported with safety. Second-year birds are the best for purchasing, as in older specimens the lengthened feathers render shipment most difficult. The fertility is very low, three fertile eggs out of twenty being considered an excellent average. But, within the last few years, crossing with black minorcas and white leghorns has been attempted, and the non-moult of the posterior dorsal feathers is found to be a dominant factor in the hybrids, while the evils of inbreeding are banished. One sees traces of long-tailed fowl blood even in the fowls of Kagoshima, where I saw many cocks walking about whose tail coverts were so long as to drag for several inches on the ground.

In the Malay States, most of the aborigines, even the small nomadic tribes, keep domestic fowls, which they breed and eat. They also occasionally have captive pheasants, but do not eat these, keeping them for barter with the Malays. Any wild Junglefowl, however, which they happen to shoot or snare they consider good food. The usual method of trapping of these natives is to place numerous nooses woven of hair or vegetable fibre on the ground and bait the place with grain.

Another way which I observed at Kuala Tembeling is by means of an *ayam denak*, or decoy bird, usually a hybrid cock or hen tethered near the traps or snares. This same method is used elsewhere in Assam, Siam, and the Sundarbans. An open space near the forest is usually selected, the decoy bird tied to a stake and surrounded with open nooses and scattered grain.

The challenge of the tame bird, which is trained to call often and loudly, attracts the wild cocks, who rush up to give battle, when they are almost certain to become entangled. Or if a hen approaches, she is attracted by the grain and also falls a victim.

Still another variation of the decoy trapping is practised in Sulu, where the domestic bird is tethered in the centre of a circle of spring nooses. Many wild birds are thus captured, but only cocks. Even where grain is added to the charm of the calling bird, the females remain aloof. In northern Burma, the bamboo fence traps, with their scores of deadfalls, account for many hundreds of Junglefowl in the course of a year. In other places, I have seen separate nooses set for these birds, each attached to a bent sapling and baited with grain. Besides using decoy birds the Malays imitate the crowing and the flapping of the wings of the Junglecocks, and they taught me so that several times I was able to inveigle the birds close to me by making them think that a challenging bird was concealed in my cover.

It is difficult to say whether Junglefowl in general are decreasing or are at least holding their own. If we consider only the isolated, really pure strains, they are unquestionably becoming fewer in numbers, but those which haunt the vicinity of villages and cultivated districts, although shot frequently and suffering from the many enemies, such as snakes and small carnivores, which make life a burden for the village fowl in India, yet are constantly gaining recruits from the ranks of the domestic birds.

In the reserved forests in the sub-Himalayan region, the birds seem to be fully holding their own, as there is little shooting there, and the native foresters have little time for snaring and trapping. In these government reserves, the birds are protected from all shooting from the first day of March to the middle of September. The most common time for Junglefowl drives, either on foot or from elephants, is from November 1st to the end of February.

JUNGLEFOWL AS GAME BIRDS

The ornithologist is indeed rash who ventures to tell in his own words the delight which the sportsman takes in his pursuit

of game. Let him, unhampered by scientific fetters, relate what pleasure the wild Red Junglefowl can give to the huntsman, whether he pits his own woodcraft and ability singly against these wary birds or fills his game bag more easily by the assistance of dogs or a line of native beaters.

"Sometimes when beating for Junglefowl you meet with odd surprises. It was in April, 1853, in the good old days of palki dâk, from Meerut to Mussooree. Three nights we used to make of it when ladies were of the party, and the close of the second night brought us to the Kheree dâk bungalow, in broken jungly ground just south of the Siwaliks. After breakfast, I went out to look for Junglefowl, luckily with a rifle (a heavy 2-oz. band spherical ball), in case of seeing cheetul. We beat a lot of low jungle grass and scattered bushes, and I had got a partridge and a Junglehen, when I turned into a very likely-looking nalla, about eighty feet deep, with sloping, well-grassed sides, and at the bottom a narrow, perpendicular-sided water channel about four feet deep and three feet wide, cut through the boulder clay. In this channel I walked, with one or two men along the slopes on either side, and one or two above, all a little behind me. Suddenly, there was a shout on my left, and instantly a tremendous grunting. As I seized my rifle from the shikari behind me, four black heads showed through the grass immediately above me. I could not get out of the wretched water course, which was nearly up to my armpits, and without one second's hesitation, one of the bears (the old female, as it proved) came down upon me like a thunderbolt. I got my first barrel off when she was about ten yards from me; the second let itself off as her chest struck the muzzle, and then I was knocked over, half-stunned and nearly crushed to death. I don't know exactly how it all happened, but I found myself on my face, hardly able to breathe; my head, arms, and body pinned down by the massive, motionless (lucky for me) *corpse* of lady Bruin. Seeing that the bear was quite dead, my shikari and a good pahari-bearer I had, soon pulled her off and released me, a mass of blood, a good deal cut and bruised, but not really hurt; my first bullet had gone

straight through her from stem to stern (2 oz. hardened bullet and six drams of powder), the other had gone right through the heart and come out behind the ribs on the left side.

"It will be well for griffs (as I then was) to bear in mind that, in the sub-Himalayan ranges, at any rate, where Junglefowl are common, there bears and tigers are not unlikely to be met with, and that they should never beat for Junglefowl in such situations on foot without a rifle in trustworthy hands behind them, and never allow themselves to be caught in such a trap as that in which I had stupidly placed myself.

"In the autumn, after the millet fields have ripened, they grow very fat on this grain, and the birds of the year are then *really* good eating, but, as a rule, the birds one shoots (be it confessed with shame, for it *ought* to be a close season) from March to June, tiger-shooting in the Terai, when, the day's sport over, one turns homeward towards the tents, are no whit better than ordinary village fowls."—(Hume).

"The best shooting I ever got at this species was at Jalpaiguri, where the nullahs, or beds of streams, in the neighbourhood, which are common in that country, and filled with jungle, gave cover to very many of these birds. When put up by beaters they fly out at a considerable pace, and require a good knock-down blow to bag them. They run, too, a great deal. In the Manbhoom district, the native shikaris used to get many of them by placing corn near some water in the half-dried-up beds of streams, and then shooting them when they came there both in the early morning and evening to eat and drink."—(Beavan).

"This bird must be sought in all jungly country which is partly cultivated; and where paddy fields extend in long strips into the forest, two sportsmen walking on each side just within the cover, with a line of beaters between them, can enjoy very pretty shooting. The fowls rise from the stubble and fly into the wood, passing overhead, and the sport resembles pheasant shooting in England, the flight and size of the birds being pretty similar. When the fields have been cleared of the fowls, the shooting may be continued with success in the woods, if they be pretty open

and the sportsman furnished with spaniels, the sight of which forces the birds to tree, from whence very pretty snapshots may be obtained, as they will often rest on a high branch till the sportsman has arrived underneath before taking wing again. Both cocks and hens make a desperate cackling and flutter when thus roused up by dogs, and I know of no shooting which requires greater nerve and steadiness. If there are no dogs, the birds will not tree, but run slyly and silently along, and are seen no more, unless you be mounted on an elephant, when it is easy enough to *pot* them, should you be so minded, as they skulk under the brushwood."—(Colonel Tickell).

"In some places, where the borders of the forest are much broken and irregular, and the villagers have cultivation here and there between patches of wood and bushes, I have seen capital bags made by a couple of guns, three or four beaters, and a few bustling spaniels. The plan is this: to beat out strips and patches separately, and make a corner here and there, placing the guns in the first instance between the patch of standing crop about to be beaten and the forest towards which the Junglefowl when flushed are certain to make. The birds, finding their retreat cut off, and pushed hard by men and dogs, are forced to take flight, and when well on the wing, offer as fine a shot as a sportsman could desire."—(Captain Baldwin).

"The Red Junglefowl is found in the Garo Hills, and in all the Assam plains districts. I shot the bird beyond Sadiya the other day. It is a permanent resident in Assam; it is found in bamboo and tree jungle, and is very often numerous near villages. In the low hills near Susung, in the Mymensing district of Bengal, I have had excellent sport with these birds. I had the hills thoroughly beaten by beaters, the guns being carefully posted across the line of flight of the birds. I have shot ten to twelve couple in an hour's shooting in this way. The best time for this sport is just at the season when the cold weather rice crop is ready for the sickle; say, during the month of December and early in January."—(Colonel Williamson).

"The best way of shooting these birds here in the Sundarbans

is by proceeding morning and evening along the edge of the forest, between it and the ricefields. The sportsman will thus flush two or three coveys of them, and secure a few brace. The largest bag that could be obtained by a single gun would hardly be more than three or four brace."—(Mr. Rainey).

"The Burmese Junglefowl is similar to those in Assam and over the greater part of India, but perhaps a little smaller. It is a game little fellow, and at times affords excellent sport. I used to take up my position on an elephant and have them beaten up towards me, and once or twice I found them as plentiful as pheasants in a preserve in England. Once on the wing, they are very swift and strong fliers, and require a good blow to knock them over."—(Pollok).

"In Perak I found Junglefowl breeding from March to July; and the young, when three or four weeks old, were capital eating—far better than the full-grown bird, which has but little more game flavour than the ordinary domestic fowl. At the first glimmer of daylight, and again towards evening, the Junglecocks may be heard in all directions, crowing loudly, and by very careful stalking may occasionally be got at; but I found far the most successful plan was, either early in the morning, or else about sunset, to sneak quietly along the edges of clearings and patches of cultivation, which at those times the Junglefowl frequent in search of food; and in this way, by dodging from bush to bush, I frequently rendered a good account of them. But it required the most careful stalking, as on the slightest alarm the birds ran into the thick jungle, where it was almost useless to follow them. Once or twice I shot them in thick cover by letting my dog hunt them up into the trees, which they did not leave till I was within range."—(Kelham).

From personal experience in the actual jungle in the Malay States and elsewhere, I can assure the sportsman that hunting the Junglefowl is far from being a simple matter of dogs or beaters. There may be many all around you, and yet if you are not willing to abase yourself to the very earth and stalk them with all the woodcraft which you possess, and then shoot the bird as

and the sportsman furnished with spaniels, the sight of which forces the birds to tree, from whence very pretty snapshots may be obtained, as they will often rest on a high branch till the sportsman has arrived underneath before taking wing again. Both cocks and hens make a desperate cackling and flutter when thus roused up by dogs, and I know of no shooting which requires greater nerve and steadiness. If there are no dogs, the birds will not tree, but run slyly and silently along, and are seen no more, unless you be mounted on an elephant, when it is easy enough to *pot* them, should you be so minded, as they skulk under the brushwood."—(Colonel Tickell).

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it stands or perches, you need not expect success. Of the Philippine Junglefowl we read, "They are difficult to shoot, as they are very wary, and I have hunted for hours with birds crowing all about me without getting a shot."

COCKFIGHTING

Cockfighting has been carried on through much of the historical period, and the literature of nations contains many interesting accounts of this sport. The mention of one must suffice for us.

The seriousness with which cockfighting is undertaken by the natives of India is shown by a most interesting and amusing treatise called *Murgh-Nama*, or "Extract on Cocking" as we might translate it. This was written by Nawab Yar Muhammad Khan of the Rampur State many years ago, and formed a part of the *Saydgah-i-Shawkati*, an Urdu work on sport. I give a few extracts from this, translated by my friend Lieutenant Colonel D. C. Phillott, for the Asiatic Society of Bengal, the translation being as close as the English language will permit.

"The cocker must know that there are in Hindustan four breeds of fowl. First, there is the *teni*, or common barn-door fowl, kept for domestic purposes; second, the *ghagas*, or cross between the game fowl and the *teni;* third, the *karnatak*, a breed in which the skin, bones, tongue, eyes, and blood are all black; this breed is useless for fighting; and fourth, the *asil* or Indian game fowl, which is kept for fighting only.

"The points of the Indian game cock are: beak white, shanks white, eyes white and bloodshot (if the white of the eye be slightly yellowish it does not signify), the comb of medium size, the jaw and cheeks large and hard and with little flesh, the bones of the neck small, the whole neck being like an iron bar, the pope's nose large, the tail feathers small, and the jaws and wings not fleshy. Its crow is not as long as that of the barn-door cock. The best breed is obtained from Haiderabad, Deccan.

"When the game cockerels are a year old, the cocker should keep them apart, feeding them on *bajra* or millet wetted in water. Should *bajra* not be obtainable, he must substitute wheat flour

mixed with butter. In either case, he must give them but little water to drink. When the cockerel is in high condition, he must foment it with butter (the hand is warmed before the fire, the palm and fingers dipped in butter and pressed on the joints), and begin feeding it on the yolks of two eggs to begin with. The following is the method of feeding on the yolks of eggs:

"Take the yolk of one egg, one *tola* (about 200 grains) of butter, one *masha* of Sambhar salt, and four *mashas* of peppercorns; mix together and half fry, and give to the cockerel, giving it water every third or fourth day. This will make it strong and lusty.

"Another receipt. Take the yolks of 200 eggs, of musk 2 *mashas*, of good ambergris 2 *mashas*, of saffron 2 *mashas*, of white-shifted sugars 5 *sers*, of almond kernels 2½ *sers*, of kernels of the Edible Pine 1½ *sers*, of pista kernels 2 *sers*, of walnut kernels 1 *ser*, of butter 6 *sers*, and of fine wheaten flour 5 *sers*. First fry the flour well in the butter, and then cast in the shifted sugar. Next add all the ingredients (with the exception of the saffron), having previously pounded them well. Then add to the mixture the saffron well rubbed down in '*kewra* water.' The first day give one *tola* as a dose, and on the top of that a feed of wheaten flour unmixed with butter, so that the grease may be removed from the cock's throat. Then put on the muzzle, either the leather muzzle or the string muzzle (so that it may neither pick up any grit nor drink) and let it loose to exercise itself. There are two times for exercise, first early in the morning till seven o'clock, when the cockerel should be fed, spouted (spouting is spraying the bird with water from the mouth, *à la* Chinese laundryman) with water, and confined under a square or a round coop. At four o'clock it must be released, spouted as before, and muzzled and freed for exercise till five o'clock. The cock should be studied, to see whether it has increased in strength or not. If the cock is lusty and strong, more *halwa* should be given to it and less flour. If it is not strong and has become fat, it should, at night, be dry-fomented with a pad. If fat has collected on the *langot* (stomach), it must be reduced by dry fomen-

tation, and the cock must be kept confined in a warm place away from cold air. In the morning, it should be fought for two *pani*—(*do pani;* a match is made for many *pani* or intervals for rest). The first day, the first *pani* is 20 minutes, the second 30, the third 40, the fourth 50, and the fifth 60. On the second day (or any *pani* after the fifth) every *pani* is 60 minutes. On the first day, the match may commence at any time between two and four o'clock, usually the second hour. On the second day the match must commence at two o'clock. An antagonist failing to come to the scratch when time is called, or, to turn up at the correct time loses a *pani*. Say A and B make a match for five *pani*. A sees his cock getting the worst of the encounter; he claims a *pani*. The fight is stopped for twenty minutes while both pitters spout their cocks, etc. A, however, has now only four *pani* to his credit, while B has still five. The cocker who first loses his five *pani* is counted the loser, and has to pay. Though the duration of each *pani* is fixed by scale no limit is fixed for each round in fighting. Written rules are not drawn up; the cock is pitted with a *dalba*—[*dalba* is a weak barn-door cock or an inferior quail to bully]—to see whether it has improved in condition or not. If it has improved, then keep it at this weight and condition. If it has disimproved, fight it again, fat, thin, and medium, and observe in which condition it fights best and keep it in that condition. Every week increase the number of rounds with the *dalba* by one, till the number of eleven *pani* is reached, which is called by cockers *lam*.

"An ointment for dressing is compounded—[I have omitted the tedious details of weights and measures. W. B.]—of zeodary, cassia bark, rennet, pomegranate rind, white cumin seeds, Indian madder, gall oak, betel-leaf juice, and a 'sufficiency of double-distilled wine.' Grind these all up, beat in the wine and betel-leaf juice and anoint the cock's face.

"Just before the battle give a cock the following: syrup of sweet pomegranates, preserved apples and quinces, barberries, cucumber seeds, endine chicory, and *bel* fruit. Grind, add the pomegranate syrup; roll into pills, cover with gold and silver

leaf, and give to the cock; after one *ghari* [about half an hour] go to the cockpit and fight your cock. If you find a lack of fire in the cock, give it half a fresh *jalebi* [a sweetmeat made of milk, flour, and sugar], peppercorns, and the egg of a red fowl, mixed with the juice of garlic and the juice of green ginger. Next, tying up the spurs with cloth, and then spouting the bird, make it fight. It then rests with the cocker to make or mar the bird.

"In the author's opinion the best birds have thick, powerful beaks, white, as described above; the eyes white, like lustrous pearls; large jaws and head; a small comb; the *tutan* bone is conspicuous; the neck short and the neckbones small, fine, and the ridges small, fleshless, and strong as an iron rod; and the back broad like the stone of a hand-mill; the feathers spotted, and beautiful, like the eye of a peacock's feather. The bird should be handsome, and shapely, and active, and quick as a cobra in movement; and in fighting it should be *hama-gir* [attacking any part of an adversary's body with the beak], and retiring after a blow, so as to avoid its adversary's counter; and should it receive a blow, it should so retaliate as to lay its adversary at its feet in the throes of death, fluttering as though its throat had been cut.

"To make the young cockerel strong and fit for battle. When the cockerel is four months old, the cocker should separate it from the mother and make it familiar with him, and give it daily two almonds mixed with *ata* [coarse wheaten flour], and feed it on *pila*, or *salan* [*salan*, anything eaten with bread or with rice, and specially vegetables cooked with meat, such as curry, etc. Game fowls are fed from the hand, and are not allowed to pick up food from the ground, lest the beak should become worn. Some game fowl were so wedded to the hand that they will starve rather than pick up food from the ground]—etc., i.e., whatever the cocker eats himself, and give it *halwa*, of yolks of eggs.

"In the morning give half a belly-full of the *halwa*, and on the top of it half a belly-full of balls of coarse wheaten flour. After exercising the cock, put on the muzzle, spout water over its face, shampoo (by grasping and pressing all the limbs and joints) with the hand, and confine in a *qalqul* or square coop, releasing it at

four in the afternoon. After a time look and see if it is thirsty, and if it is, take it out of the coop and give it water. At four o'clock release it. If it is thirsty it will drink. If it is not thirsty and won't drink, then again spout it and shampoo it, and exercise it for an hour. After that bring it into the house, and confining a hen in a small basket-cage, let loose the cockerel that it may see the hen and run round and round her, and by the exercise increase his strength, but do not let him mate with the hen. After running, lift up the cockerel, and shampoo him. In the evening see whether the cock has digested its food. If it has, then in the evening too give it *halwa*, etc., as before. If, however, the cock has not digested its morning meal, give it a few whole peppercorns; the cocker had, too, better continue to give it peppercorns in the evening, and keep it awake by lamplight for an hour, tickling it under the pope's nose to make it oil itself. Then setting it down on a swing made out of a child's cot, swing it for an hour, or else place it on a perch. Then confine it somewhere in a safe place in a basket-cage. In the morning at prayer-time [*i.e.*, about an hour before sunrise], take it out of the coop, give it water to drink, and then spout it, and, putting on the muzzle, let it exercise itself for a full hour. After this feed it. You must gradually increase the amount of *halwa*, and decrease the amount of flour, feeding and treating the bird as already described for forty days. Once a week too, at night, you must foment it with a damp, hot pad, fomenting those parts of the body that have accumulated fat. The places to foment are, first from the head to the neck, or rather to the shoulders, next the two wings on the top, next the thighs inside and outside, also the hip joints and the loins, and underneath between the legs, omitting the lower stomach, and also the breast. The object of fomenting is to make flesh and joints hard and strong.

"When the cockerel is ten months old, fight it one *pani* with a *dalba* of its own age, but first put the muzzle on to the *dalba*. Afterwards spout and suck the cock's beak and face well, to remove blood-spots, and damp a rag in water and clean the inside of the throat with it."[2]

The *dalba* is muzzled and hobbled before being pitted against its aristocratic antagonist.

One writer states that a cockerel should not be fought till he is one year old, and that he should then be pitted against one of his own age for five minutes the first day, ten the second, and fifteen the third, and then for as long as desirable; and that, at the expiration of the fixed time, the birds should be separated and their beaks sucked and blown upon. (If a child falls and hurts itself, Indians generally blow upon the seat of injury with the idea of cooling the spot and lessening the pain.)

"If the jaws be fleshy, or if the wattles are large, and it is desired to remove them, then extract the oil of *bhilawan* and rub it on the cock's face, and if it please God this defect will be removed and will not return. If the comb is too large and it is desired to cut off it, then, after fighting, cut the comb immediately to the size desired, applying to the wound the white web of a small spider, or else staunch with small feathers plucked from under the cock's wings: until a recovery takes place, do not spout the cock. Then take a quarter of a piece of turmeric and add half a nux vomica nut and a little edible lime and heat over the fire, and plaster the mixture thickly on the cock's face; if it is the cold season, keep the cock in the sun; if the hot, in the shade. The cock must not be fed during the day, but in the evening after fomentation, when it should be fed on *halwa* or on bread dipped in fresh milk. In the evening, the cock should be fomented with a pad dipped in a liquid decoction.

"After fifteen days, when the cock has recovered from its wound, let it be fought for two *pani* with the unmuzzled *dalba*, and act as described above. After twenty-two days let the trainer fight his cock three *pani* and act as before. After forty days let him fight four *pani*, and lastly, after an interval, five *pani*. After fighting five *pani*, he should foment the cock's face with a small bag of *halwa*, and dipping a pad into the hot liquid application, he should foment the loins, the hip joints, both the shoulder joints, the breast, and between the legs as described above. After this evening fomentation, he should feed the cock

on *halwa*, or on bread dipped in fresh milk. In the morning he should again foment in the same manner, and, mixing some of the best *missi* in wine, should heat it on the fire and paint the cock's face thickly with it. Increase gradually the number of *pani* up to eleven, acting as just described. Then fight your cock for a wager with some one, having first put it on dry food, and please God the cock of your antagonist will be unable to face yours.

"Just before fighting your cock, you (being in a state of ceremonial purity) should repeat once into each of its ears the words, 'Allah the Immutable,' and exhale your breath, and if it please God Most High your cock will never deteriorate.

"Should your cock show signs of flight, then give it this corrective:

"Musk, *tabashir*, small cardamoms; pound and put in a paper. Take of juice of Indian sweet fennel seed two ounces and put it in a vessel. When you see that your cock intends flight, first give it two *mashas* of the powdered medicine, and then two *tilas* of the juice. Your cock will go mad and will never quit the field.

"When you wish to cease fighting your cock, and to pair him with a hen, do so, but pair him with a mature hen, but this must be in the warm days of spring. You must not mate your cock with a young hen."

LEGENDS AND SUPERSTITION

Since the first domestic cock crowed, mankind has admired, hated, or feared it, has thought of it with reverence, with dislike, or with superstition. We have space for mention of but one or two of the legends which have arisen concerning it.

One Al-Qazwini, who died about 1283, wrote an Arabic work, the "Aja ib-ul-Makhluqat," or the "World of Wonders," and has this to say about the domestic cock:

"The cock is the most lustful and vainest of birds. It heralds the dawn. One of the strangest things about it is that it knows the watches of the night, and apportions the times for its night-crowing according to the length or shortness of the nights; for

instance, if the night is fifteen hours in length, he crows, at stated intervals, the same number of times as he does in a night of nine hours; and this he does by a God-given instinct. It is related that the Prophet (may the Peace and Blessing of God be upon him) said, 'God the Most High has created a cock beneath His Throne, with wings that can extend beyond the East and the West; and towards dawn he spreads his wings, and flaps them, and raises his voice in praise of Him, crying, "Glory to the Most Holy King," and when he has ceased, all the cocks in the Earth join in returning that cry, flapping their wings in like manner.' It is said that the chief caller-to-prayer amongst the cocks is that breed that has long wattles and a castellated comb. The cock has a sense of jealous honour about his wives, and he is generous to them, and cares for them. It is a belief that, should a man rise from sleep at cock crow, he will be fresh and bright all day. A white cock puts to flight the lion. The best of cocks is the game cock. His points are: a red comb, a thick neck, small and black eyes, sharp claws, a loud cry. A cock is unselfish to his hens; he takes a grain in his beak and casts it to them. It is said that he does this in the time of his youth, when his passions dominate him; but that when he ages he no longer does so. The cock defends his hens from the attack of an enemy, and at night collects them in a safe place and stands guard at the door. They say, too, that the cock lays one egg in his lifetime, called in Arabic *bayzat 'l-'uqr*, and that it is very small. The following lines are by the poet Bashshar:—

> "Thou hast visited me but once in all this time.
> Make not thy visit rare like the egg of the cock."

"It is a belief that one who slaughters a white cock with a divided comb will suffer loss in his possessions and in his house, and also that the Devil never enters a house in which such a cock is to be found. As for the properties of the several parts of the cock, if the comb be dried and pounded and given to drink, bad habits will depart from a man. The smoke of the dried comb of a white or of a red cock does good to a madman. The gall ap-

plied as a collyrium to the eyes, cures dimness of sight, or a film over the eye. Some physician has said that the gall must be placed in a silver vessel and used continuously to obtain a cure. Polonias has said that the gall of a cock, mixed with mutton broth and taken in the morning on a fasting stomach, is a cure for loss of memory. If the wing bone be bound on one suffering from intermittent fever, the fever will depart. If a rider ties that bone on his loins he will suffer no fatigue. The blood, used as a collyrium, is beneficial for film over the eyes. If the blood drawn in a cockfight be mixed with food and given to a number of people, it will cause dissension amongst them. If you take a cock's blood and mix it with honey and place it on the fire, the application will increase a man's virility. If you take the dried flesh of a cock and pound it with equal quantities of gall nuts and sumach, and make pills the size of peas, and administer them with a draught of water to one that has a pain, he will be relieved on the spot. In the stomach of the cock there is a pebble, sometimes sky-blue in colour and sometimes crystal, which, if suspended around the neck of a madman, cures him."

THE COCK IN HUMAN HISTORY

Several years ago, I had the enviable opportunity of sharing with Dr. John P. Peters, an attempt to trace the relation of the cock to mankind from ancient historical times. There seems little doubt but that the original home or centre of distribution of the Red Junglefowl, the most anciently inhabited part of its present range, lies to the east and south, in the Burmese-Malayan portion of its habitat, rather than farther east in China, or to the west in the Indian region. Distributional study of other birds, such as the Himalayan kaleege pheasants, makes it certain that these originated in southern Burma and have since migrated westward, along an elongated sub-Himalayan finger, as far as Kashmir. The same holds true of a number of other forms of life, both mammalian and avian. There is no doubt that the Red Junglefowl is of tropical or sub-tropical origin.

Neither it nor its domesticated descendants can bear extreme cold; and the elaborately specialized exposed comb and wattles could have been evolved only in a warm country. The three other species of Junglefowl are all tropical, and the affinities of the group among the other pheasants are altogether with southern Chinese and Malayan genera.

Like the mallard duck and the rock dove, the Red Junglefowl has, for times long antedating human history, been a species especially susceptible to domestication, and with early civilizations such as arose in China and India, it is not surprising that domestication and variational breeding began before the proofs of hieroglyphics and written record.

Tradition carries back the domestication of the cock in China to as early as 1400 B.C., and the modern name for the bird, *ki* or *kai*, can be traced to the Chou Dynasty, which extended from 1122 to 249 B.C. In a very ancient dictionary, *ki* is defined as "the domestic animal which knows the time." In the *Ir-ya*, a glossary of the time of Confucius, it again is found. While there is evidence that in very early times the cock was an object for sacrifice in China, yet those people were quick to see the utilitarian value of the fowl, and to breed several distinct varieties. The Cochin China fowl is one of the most extreme, mutation-like of the early established breeds.

In India, it is necessary to depend upon literary rather than monumental evidence of the early occurrence of the cock. In the Indus period of the Aryan invasion, the time of the Rig Veda, there is no mention of the cock, but about 1000 B.C., when the Aryans had reached the Ganges, in the Atharua and the Yajur Vedas, the cock is well known. This supplements our zoological distribution theory, and also emphasizes the significance of the fact that Solomon's Phœnicians, who found and imported the peacock from that part of India which they could reach by sea, did not find the cock.

In the White Yajur Veda the name of the cock, *kukkuta*, is onomatopoetic. We read, "Then cut a cock whose tongue is sweet with honey; call to us manly vigour; may we with thee in every

fight be victors." And a verse attributed to Chanakya, about 320 B.C., says you may learn four things from a cock:

1. To fight. 2. To get up early. 3. To eat with your family. 4. To protect your spouse when she gets into trouble.

If, as seems certain, the cock moved northward and westward, against the line of Aryan invasion, it should have reached Bactria and Persia at a very early date, and judging by the part which the cock plays in Persian religion and mythology, and the manner of reference to it in Zoroastrian literature, its advent must have antedated considerably 600 B.C.

The first mention of the cock in Grecian literature is by Theognia about 525 B.C., but his image occurs on coins from the temple of Artemis at Ephesus of at least 700 B.C. In the Metropolitan Museum in New York is a Corinthian Alabastron with a well-executed cock, dated 650–600 B.C. As to the Chinese the fowl was primarily an edible bird, and to the Persians an object of sacrifice, so to the later Greeks his fighting qualities appealed strongest. To them, he was primarily a game cock, and cock-fights were the commonest representations on coins. While so common during the middle and later periods, the cock does not enter into Greek mythology, neither is it mentioned in either Hesiod or Homer, nor in those widespread legends or folklore tales which originated in the early period of Greek development.

The establishment of the cock in Greece was only a slight advance compared with the steady progress along the line of the Iranian invasion, which carried the bird through Bactria and Persia on into Scythia and Europe, stretching across finally to the British Isles and spreading down from Gaul into central Italy. Long before Greek colonists carried the bird to southern Italy, it had passed on to the northward, and was being carried southward through Italy on the line of an independent advance. The first European distribution of the cock was overland rather than by sea, or by coastal colonists. The Romans found it well established in Gaul, England, and among the Germans. The Greeks knew it as the Persian bird, the Romans called it *gallus* after their return from Gaul. Cæsar tells of the religious signifi-

cance of the cock among the Gauls and of its religious importance. Indeed, we realize that no nation has more right to its national bird than France, by constant association and symbolism from the earliest times down to *le chanticler d'aujourd'hui*, the singer, the herald of the dawn.

The Greeks carried the cock southward to the Phœnician cities, but only at a late date did it become well established on the Syrian mainland. As early as 700 B.C., the Assyrians and Babylonians received the fowl from the Medes and Persians, where it had been known since 1000 B.C. We do not know where the Aramæans—those natives of the lands stretching from the western frontiers of Babylonia to the highlands of western Asia—first obtained the cock. But from them, in the intercourse of later times, the cock was introduced to the Jews in Palestine about 200 B. C.

Besides the dove and peacock there is no mention of domesticated fowls in the Old Testament, with one or two very doubtful exceptions. Certainly, during all the time covered by that period, the cock was quite unknown to the people as a whole. Both the New Testament and the Talmud mention the cock, as in Mark 13: 35: "Watch ye therefore; for ye know not when the master of the house cometh, at even, or at midnight, or at the cock-crowing, or in the morning." And in Berakhoth 60 b: "Praised be thou, O God, Lord of the world, that gavest understanding to the cock to distinguish between day and night." To-day, the cock is the one sacrificial animal of the Jews: at Yom Kippur, as an atonement offering—a cock by a man, a hen by a woman. And indeed, in ancient Palestine, there was at first considerable opposition to the ordinary economic breeding of fowls, by those who considered the birds as special objects of religious significance.

Strangest of all is the historical distribution of the cock in Egypt. The Egyptians, who reached far and wide through their dependencies for strange creatures and objects, whose artists crystallized in exquisite sculptured bas-relief and paintings even the separate species of ducks and geese, doves and quail with which they were familiar, could never have failed to depict the

characteristic mien, or the comb, hackles, or tail of the cock, had they known that bird. Yet before the Roman period there is no image on Egyptian monuments, or word or sign for cock in their language. It is strange that no hint of chickens or casual fowls should have been brought by the Persians or the Grecian mercenaries of Psammetichus. However we may fail to explain the silence of all the dynasties, no cock or hen is known to have reached Egypt at an earlier date than 50 B. C.

CEYLON JUNGLEFOWL

Gallus lafayetti Lesson

BRIEF DESCRIPTION.—Male: Hackles of neck and mantle and all but the largest wing coverts pale straw to deep golden yellow, with a black or chestnut central stripe; back and rump orange-red, with much of the visible portion glossy violet; secondaries purplish, and tail coverts and tail greenish blue; greater coverts partly blue, partly chestnut; a violet patch on the lower neck; remainder of under parts bright orange-red; with the chestnut stripe becoming dominant on the belly, and black on the lower belly and flanks; comb red, with a central yellow patch; face, throat, and wattles red; iris yellow; legs and feet pink or yellow. Female: Crown brown, nape rufous; mantle, back, and wing coverts brown or grayish, vermiculated with black; secondaries with irregular bars of black, buffy white and chestnut; tail chestnut, mottled with black; upper breast mottled black and brown, with white shaft stripes, which become dominant on the lower breast, with b ack margins and cross band; iris yellow; legs and feet brownish yellow.

RANGE.—The Island of Ceylon.

GENERAL ACCOUNT

The home range of the Ceylon Junglefowl varies greatly. It is undoubtedly strictly resident throughout the year in most of the dry maritime districts, but in the low hills and the jungles which fringe the slopes of the higher mountains of the interior, it may show a marked seasonal migration. This is induced, not, of course, on account of change of temperature, but owing to the fruiting of certain food plants localized in well-defined districts.

While I have stalked and watched Ceylon Junglefowl in the forests of the hills, I became most intimate with the bird in the semi-arid scrub of the southeast coastal lands. Here the vege-

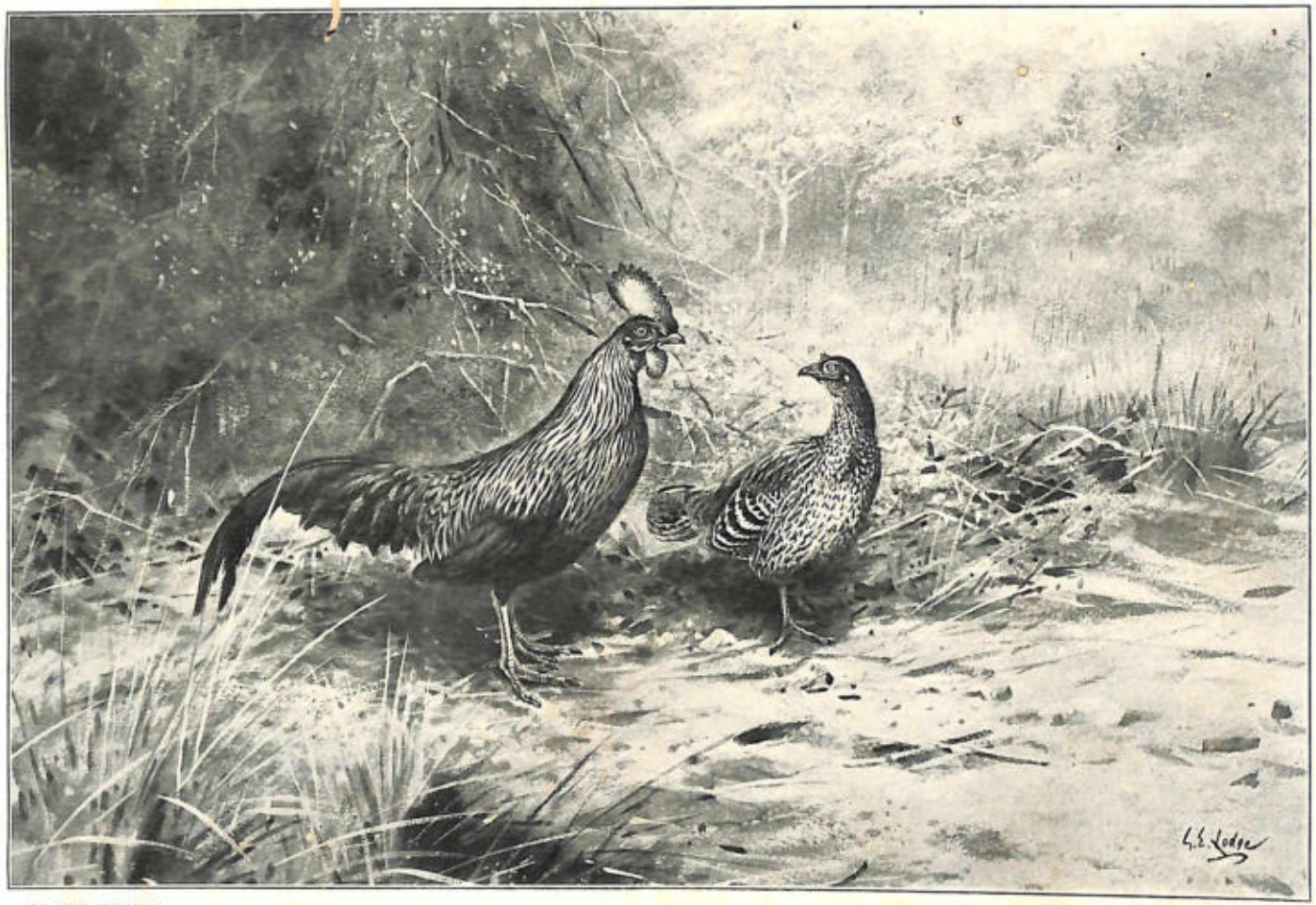


PLATE XXXIII

Painted by G. E. Lodge

CEYLON JUNGLEFOWL

Gallus lafayetti (Lesson)

(For detailed caption see page xxiv)

tation is eucalyptus, acácias, and mesquite, with introduced cacti now forming one of the dominant floral features. The region as a whole is park-like, the thorn bushes and trees forming glades, sometimes dry and sandy, or again with little pools of water, and a thick carpeting of coarse grass. Into these open spaces, the Junglefowl come to feed and exercise, leaving the denser coverts, in which they roost and to which they retire during the heat of midday.

In such a region, well up on the southeast coast, I found them very abundant in March. It was possible to hear as many as a dozen birds calling, as one listened in the early morning, and during a walk of several miles in any direction, their numbers did not seem to decrease. As one approached any given bird, it would take alarm and cease crowing, and not infrequently I would catch a momentary glimpse of it as it dashed away, but a little farther on, the voice of another bird would come into range, then others to right and left, and, standing quietly one could count as many individuals as from the first point of listening.

I have never seen more than five birds together at one time, and of these, three were birds of the year, very evidently the brood of the remaining pair. I believe these Junglefowl to be rather unsocial, except that several hens with their broods seem to flock together at times, the association being, however, somewhat loose except during the early life of the chicks.

The voice of the Ceylon Junglefowl is very characteristic, and not to be confused with the notes of any other bird in the island. When softened and modified by distance, the crow has a reasonably close resemblance to the syllables *George Joyce*, but when heard at close quarters, the quality which hints of an insistent summons to this particular gentleman disappears, and a third distinct note becomes audible. The syllables and the tempo which close attention suggests is as follows: *tsek*, ——, ——, *craw*, *croi!* The dashes represent fifths equal in time to the duration of each of the three notes. The whole utterance is snapped off short at the end, and the accent falls upon the final

syllable. There is little variation, and while I have been able to recognize each one of three or four out of the dozen which I could hear from my hammock each morning, it was only by such means as a very slight difference in accent or a slurring over of the middle tone. When suspicious, but not certain of danger, the cock utters the *tsek* alone. When alarm begins to be felt, this changes to *clock, clock*. This note, too, is uttered when they hear any unusual noise as they are about to go to roost. A bird in captivity, which when approached is so timid that it rushes nervously about looking for some way of escape, usually, at the same time, utters this sound. The call of the cock to the hen is a low *chack, chack*, sometimes followed by a muffled tremolo of content. The cry of utter despair when the bird is suddenly flushed by dog or man, and takes to its wings in extremity of terror, is the usual loud gallinaceous cackle—a series of harsh, shrill cries which convey their meaning to every creature within earshot. The challenge is accompanied, especially in the early morning, by a clapping together of the wings, and this appears to me to stand for a much more serious challenge than when the crow alone is uttered.

These Junglefowl are extremely adverse to flying, and invariably try to escape on foot. I once saw a hen rise and partly fly, partly scale, a distance of seventy-five yards before settling again into the scrub—the longest flight of which I have record. There seems to be no racial weakness of wing power, only the flat country which they prefer offers no incentive to exercise of this function. Their gait when unalarmed is dignified and alert. The tail is usually held quite low, except during challenge, courtship, and approach to battle, when it is raised as high as in any domestic cock.

The feeding habits of the birds are the surest indications of their presence, when no vocal utterance gives us a hint of their proximity. This may be purely circumstantial, as their tracks and evidences of scratching along roads or about the nests of white ants or it may be the actual noise of this latter habit. In the semi-arid coastal regions the fallen leaves do not decay

as soon as in the humid jungles, and among these, harbouring a multitude of insects and seeds, the birds scratch vigorously in the same manner as the domestic fowl. The crackling and rustling of the leaves may be heard at some distance, and form a very easy way of locating the birds. This by no means, however, ensures an approach within sight, for after every effort which they make, the birds listen intently, and are able to detect the very slightest noise. Many times, after the most careful stalk, I have utterly failed to catch even a glimpse of the bird.

The feeding begins in the early morning and continues until the heat begins to be oppressive. The birds then retire to the shade of some dense-foliaged tree or undergrowth, and either dust themselves, or doze, or strive to rid themselves of ticks and other parasites.

The regions swarm with hostile creatures, eager for prey such as the Junglefowl, but most of these are nocturnal. So, before dusk has settled down, the birds go to roost. They seem to choose a perch as high as possible, but always within the foliage itself, never upon an exposed limb at the top of the tree.

The most widespread way of shooting Junglefowl, practised by Europeans, Singhalese, and Tamils, is to attract them by imitating the sound of the clapping of the wings which often precedes the vocal challenge. When the sportsman has made his way into a good position, as close as possible to several crowing birds without having aroused their suspicions, he crouches low on the ground and begins to call. If he is a native, the hollow sound of the clapping wings, *wop! wop! wop! wop!* is made by striking the thigh with the hollowed hand. Europeans produce an imitation of equal excellence by making a pad of a pocket handkerchief, holding it in one hand, and striking it with the palm of the other, both hands being hollowed. It is only when the cock thinks its preserve is being encroached upon, or if a wandering, unmated bird be near, that it will heed the challenge. But when once aroused, its anger increases as it approaches, and it is apt to burst into sight without warning. Only a moment is permitted to the sportsman, as the keen sight

of the bird takes in the situation at a glance, and like a flash it turns and vanishes bevond recall.

GRAY JUNGLEFOWL

Gallus sonnerati Temminck

BRIEF DESCRIPTION.—Male: Hackles on neck and mantle fringed with gray, with black centres along which are several yellow or whitish spots like sealing wax; median and greater wing coverts very similar; back, lesser coverts, and under parts brown or black, with a greater or less amount of gray, forming a fringe and central stripe; rump and tail coverts purplish, tail glossy green. Female: Upper mantle rusty, with broad, buffy-white shaft stripe; under parts brown, mottled with black, the light shaft stripe disappearing posteriorly; under parts predominantly white, fringed and sparsely mottled with black.

RANGE.—Western, central, and southern India.

Where quiet jungle roads are found, frequented by cattle and mules, these birds will often be found in the early morning, and as many as fifteen have been seen within the space of a few miles. The Gray Junglefowl is decidedly not a gregarious bird, however, and I have never heard of a real flock or covey. When several are found together, it will be noticed that there are almost never more than two adults, presumably the parents of the remaining more or less immature birds. Generally, they are found singly or in pairs.

The voice of the Gray Junglefowl is very characteristic. During the breeding season, especially when the weather is cloudy, the cock may call at intervals throughout the day, but, as a rule, in the cold weather its challenges are confined to early morning and toward sunset. The crowing seems to extend beyond the actual limits of breeding in any one locality, being heard sometimes from October or November until May, during the period of most perfect plumage. The utterance is not difficult to imitate, and, with very little practice, the bird may be made to answer. I have never, however, been able to draw the bird within sight or even very far in my direction, as is so easily done with other species.

Disregarding several published descriptions, which fall very wide of the mark, we find that one reliable author transcribed it as a broken, shrill *ak-ak-ak-khee!* uttered very deliberately and at intervals.

Gray Junglefowl come into the open, as upon roads, or at the edge of fields, or in open patches in the jungle itself in early morning, retiring to cover as the heat increases. During midday, they remain quietly on the ground or on low branches, seeking food rather casually, preening their plumage, or indulging in the luxury of dust baths. Toward evening, they again resume activity, coming again into the open, or descending to some favourite stream to drink. In cloudy weather, however, they move about in the open throughout the day.

The food of the Gray Junglefowl is varied in character, consisting in general of various seeds and grain, small fruits and berries, with occasionally leaves and flower petals, while insects of almost any order, but especially termites, are acceptable. Sometimes, their crops will be crammed with nothing but grass seeds, or again, millet from the fields of the natives, or after land has been burnt over, they enjoy the tender, juicy shoots of the newly sprouted grass.

They roost in trees, and when deer hunting at daylight, sportsmen have often flushed them from their perches. They usually select some bent bamboo stalk, or again, frequent a clump of dense evergreens, perching high up and always in thick jungle.

JAVAN JUNGLEFOWL

Gallus varius (Shaw and Nodder)

Brief Description.—Male: Rounded comb green and purplish red; single, median throat wattle brilliantly coloured red, yellow, and blue; top of head, neck, and upper mantle of short, square-tipped feathers, black edged with greenish bronze; lower mantle shining green, fringed with black; lower back and rump elongate, narrow feathers black edged with pale yellow; lesser and median wing coverts similar, but with an orange-red fringe; tail glossy green; flight feathers and lower plumage black. Female: Head, neck, and mantle sandy brown, with an indistinct, concentric black band; rest of

upper parts black, usually glossed with green, irregularly barred and margined with buff; bars on secondaries buffy white. Throat white, under parts pale buff with darker margins and indistinct mottlings.

RANGE.—The islands of Java, Madura, Kangean, Bawean, Bali, Lombok, Sumbawa, Flores, and Alor.

GENERAL ACCOUNT

To the visiting ornithologist, Java is one of the most difficult countries in the East in which to get orientated for any definite work. The island is so densely populated that it would seem a matter of but a few casual inquiries to learn much of the habits, or at least of the haunts, of so conspicuous a bird as the Green Junglefowl. I had, indeed, no lack of proffered help, but all of so indefinite a nature that it was more of an embarrassment than assistance. The very names were most confusing, all, at various times and places, being interchangeable, both the terms for the red and the Javan Junglefowls and the hybrids between the latter and domestic poultry.

There is no doubt that the Javan Junglefowl does occur in the wooded mountains where I myself have seen it, but it is uncommon, and this rarity is not because of the difficulty of finding it in the dense forests, but an actual status. In the interior, a favourite haunt is a deserted coffee plantation, partly overrun with jungle. As we approach the drier coastal area, especially toward the east, the bird becomes more abundant, and in several different places, within sound of the waves beating on the coral reefs, I have found it in large numbers. In such localities, one is at once struck by the general superficial resemblance between the country and the corresponding haunts of the Ceylon junglefowl. Here, in the region most favoured of the Javan bird, is no hint of jungle. Leaving behind the lofty, humid, dense-jungled mountains of the interior, we find a narrow coastal belt of low, rolling, or level country, covered for the most part with a stunted, semi-desert vegetation. So much alike is all this region that an account of one locality, that in the vicinity of Patjiran, may well stand as representative of the typical home of this Junglefowl.

My studies of this species began early in September. At this



Painted by G. E. Lodge

PLATE XXXIV

JAVAN JUNGLEFOWL

Gallus varius (Shaw and Nodder)

(For detailed caption see page xxiv)

season, the whole earth cried out for the rains which had not yet begun. The rainy season is usually November, December, January, but there is often more or less condensation of moisture in October.

Leaving the rest house, or *pasanggrahan*, I made my way through cactus hedges and across ploughed fields, and climbed a steep limestone ridge three or four hundred feet high. At the summit was a huge, balanced boulder, and from its rounded, weather-worn back I could overlook many miles of country. Here I began my systematic study of the wild life of the Javan Junglefowl.

These limestone ridges are very characteristic of this north-eastern coast, forming sometimes low lines of hills extending inland, often at right angles to the shore. Between these run small streams, and up to the very slopes of the ridges almost every patch of ground is given over to rice, tapioca, ground bean, Indian corn, or castor oil.

In the case of most of the birds of the family of pheasants treated of in these volumes, one is concerned chiefly with their wild surroundings, but the Javan coast is almost a solid band of cultivation, and we are forced to link this Junglefowl very closely with this human environment. Farther inland, a few stragglers may live in comparative isolation, but here, in its typical home, one is never out of sight of the native fields. The native Javanese think of little else besides their fields, and crave no flesh besides their dried fish, so the Junglefowl are seldom disturbed.

At this season, the grass was dry, the bushes and vines crackled at a touch, and even the cactus pads looked yellow and shrivelled. As I climbed the ridge, the sun beat down with terrific force. Even the butterflies—the yellows and the reds—often sought the shade of tiny stones. Everywhere on the ridge the steel-gray weathered limestone cropped out in a myriad points and sharp edges. One's shoes were soon cut up; a single sweep of the butterfly net reduced it to tatters. For the vegetable life, too, as if following out some law of this region, Nature provided a thousand spikes and thorns and briers.

Toward the summit of the ridge, I began to feel the cool sea breeze, which brought no moisture, but which, because of its very dryness, made the great heat easy to endure. The rocks stood up more boldly the higher I ascended, and great water-worn fissures and crevices appeared. In one place, I found a well-worn little path, feathers, and abundance of Junglefowl sign. Here I could look down and inward twenty feet or more, and see the light from the other side of this ridge shining through. So, somewhere in the cool ramifications of this rocky maze, these birds, as I subsequently made certain, spent the heat of the day, and here some of them roosted at night.

From his lookout on the summit of the ridge, a Junglefowl, emerging at dawn from this roosting cavern, would see the steep slope dropping rapidly away, a mass of cacti draped with a tangle of briers; stubby treelets like Japanese stunted conifers; and aromatic shrubs and herbs, smelling of mint and pennyroyal. Like a myriad toadstools, the sago and coconut palms dot the fields, and now and then a feathery wisp of giant bamboo, at this distance appearing exactly like a graceful clump of ferns. Winding up and down the slopes, enclosing only fields of pointed coral rock, are frail stone walls, built of heaped-up bits of angular limestone, all half hidden by sprawling cactus.

Farther to the west, in a broad, low valley between two ridges, I found that Junglefowl abounded, and here I spent many hours, concealed either in my umbrella tent, or behind a sheltering blind of cactus. At early dawn, the birds would work down from the ridges, in small parties of two to five, passing in single file through the corners of the fields. In the lowest part of the valley was the growing rice, and here they would scurry swiftly along the enclosing embankments, frightening up the large doves as they went. Now and then, one would take a low, short flight across a stretch of rice, the passing shadow of the bird sending out a flurry of scaling, twittering sandpipers.

Beyond the ricefields were ground pea and Indian corn, and after hesitating awhile in the dense tangle along the fences, the Junglefowl would gradually spread out and feed. This tangle

was composed chiefly of small aromatic plants and the orange-flowered lantana. The cactus disappears before we reach these low, moist places.

Many of the Junglefowl spend the day in the shade of these tangles, and come out again in late afternoon. A few return when the sun gets high, to the cactus-guarded limestone caves on the ridges, to come down again in the evening for water and a short period of feeding. A few hungry youngsters may be found feeding out late in the morning in the hot sun, but evening is the time when all are visible. In one short walk across two fields, I disturbed thirteen, shooting three in the plumage which I wished to study.

Early in the morning, even before I had reached my place of concealment, I would find a shrike in the top of almost every conspicuous bush, while bulbuls babbled everywhere from the thickets. The shrill voices of little Java boys driving cattle and goats would reach me from the dusty road. One or two native roosters would crow in their lazy, blatant way, then, from half-way up the ridge, there would come the sharp, crisp, virile *Chaw-aw-awk!* of the Green Junglefowl, and I knew the splendid birds were on the move. The sun rises from behind a bank of cloud, and a half-dozen white herons fly past up the valley. Overhead, watchful above a green, unhealthy-looking pool, sits a little maroon kingfisher, perched motionless until the Junglefowl have passed with low clucks on their way to the tangles at the edges of the valley fields.

Such, in general, is the haunt of these wild fowl. But unless we knew of the contrary, we should never suspect a Junglefowl of inhabiting such a dreary, rocky waste. Having nothing to fear from the natives in the way of guns, and, at least in this part of the country, but seldom trapped, the birds were not unusually wary, and when they were feeding, one could, with but little woodcraft, approach to within range, whether of gun or of field glasses. By locating their general range and making as thorough a canvass as possible in one morning, I learned that at least twenty-seven birds were living on or between the three limestone

ridges nearest my headquarters. Besides which I had shot eight others. There was, then, a total of thirty-five Junglefowl which roosted or fed within considerably less than a square mile of territory, and probably many others escaped my rough census.

In September, these birds were in pairs or families, at least as regards their roosting habits. In the daytime, when many of them would drift down into the cultivated valley lands, there would at times be six or eight birds feeding close together, half of which might be adult. But when they separated, never more than a pair of old birds would go off together, either alone or with a following of well-grown young of the year.

I saw considerable evidence that the same individuals roosted in the same place each night, and worked over much the same ground during the daily feeding, and I am inclined to think that the home range of these birds on the coast is extremely limited. On the other hand, forest wardens, the only reliable natives with whom I came in contact, informed me that, in the rainy season, the number of Junglefowl was augmented by birds from the interior, which came down from the hills for some reason toward the coast, and retired at the beginning of the dry season. As even at the height of three thousand feet there would be no temperature change sufficient to account for this general shifting, we must credit it to a direct food stimulus, or a desire to escape from the excessive humidity of the hills at this time of the year.

Although the breeding season had scarcely begun, I found the cocks very voluble, crowing not only in early morning, but even when feeding, and in the presence of other adult cocks. These would sometimes crow *at* one another, the challenge and defiance ending, however, with the vocal outburst. Later, the affair would doubtless entail more serious results.

I was able to master the essentials of the wild fowl's vocabulary from my blind. The note of content, when lazily feeding, or when stretched out on their sides flicking the dust over and through their wings, was a slowly uttered, drawn-out *wăk, wăk, wăk, wăk.* When several captive cocks were placed in their

respective baskets close to one another, they would talk for an hour at a time, the tone being a most irritating, rasping drawl, which seemed never to cease, but as soon as one bird got out of breath, it was instantly taken up by a second, and so on, *ad nauseam*. When suspicion of danger came to the wild birds, and the alarm brought them to full attention in readiness to escape, the note was the syllable *chop! chop! chop!* or *op! op!* uttered many times, sharply and in quick succession. When in this emotional state, the cocks held their heads high, the position distending the brilliant throat wattle into a gorgeous sheet of colour. The tail was, at the same time, lowered, until the feathers fairly dragged on the ground. Another mood, apparently when the bird is certain of impending danger and all too willing to escape, but does not know from which quarter it threatens, is indicated by a series of disagreeable, shrill, metallic tones, drawn out like the content note of a domestic hen, but of the same timbre as the despairing wail of a captured fowl: *awk-awwwwk-aaaawwwwk!* The note of utter despair when a bird is cornered and makes a final wild effort at escape, or when a captive bird is seized by the legs, is a long-drawn-out wail, almost peacock-like, louder and quite different in quality from the last call described, *au-waaaaak!* and uttered only once or twice, after which the bird is silent.

The notes of the female are somewhat different. The call note, which is usually answered by other birds within hearing, sounds like *chak, chak, chak*, repeated slowly six to ten times. The call of suspicion or uneasy curiosity is a high, strident *ak-kak-kak-kak-kak-kak*, kept up at a rapid rate from ten seconds to half a minute. I was told by natives in widely separated parts of Java, that the hen invariably made an outcry when she left her nest to feed—whether after laying an egg or not, I could not learn. This note was given me as *kōwak, kōwak, kōwak, kōkowak*, and such was the general agreement, independently confirmed, that I am inclined to give it some credence; at least I present it for what it is worth.

The Sudanese name for the Junglefowl is onomatopoetic,

spelled in many different ways, but most commonly *Tjangehgar*. To the natives the crow appears to sound something like *tjang-eh-wear*. The crow is three-syllabled, but with no decided break or stop as in that of the common fowl. It is a high, shrill, metallic vocal explosion, *chaw-aw-áwk!* as well as I can write it. These syllables are the result of listening to, and recording on the spot, the crows of about a score of wild birds. Usually, the notes are on one tone, sometimes an individual will slightly raise the last two syllables, or all three may form a gradually ascending scale, scarcely separated by half tones.

When neither rival nor hen is in sight, the tail droops even more than usual, the body is held upright, the head stretched upward and forward, but with the wattle only slightly extended.

The Javan Junglefowl are strong on the wing, although, like the other species of the genus, they will not use these organs unless forced to, but trust to their swiftness of foot to take them out of any ordinary danger. Several times I have cornered one or more birds on a steep cliff and made them fly into the valley. They rise easily, beating rapidly at first, and then descending in a long, scaling curve to the fields below. In the case of the birds which roosted on an islet offshore, there was a voluntary flight of seventy-five yards twice each twenty-four hours, over the shore and the water, sometimes against a stiff breeze, which made it necessary for the birds to beat very rapidly and continuously the entire distance.

The general carriage, of course, varies with the speed and the mood of the bird. The tail is held much lower than in the domestic cock; in the normal walking position, the long central feathers sweep the ground, drooping on each side, so as completely to hide the real tail feathers. When running at full speed, the head and tail are almost in alignment, the latter streaming straight out behind.

Even a slight lowering or raising of the head makes a remarkable difference in the general appearance, owing to the respective retraction or distension of the throat wattle. The comb is, of course, always displayed, but whereas usually only a bit of red

skin is visible above the feathers of the neck, when the bird stands fully erect the blue and yellow areas of skin become very conspicuous, equalling the scarlet of the chin region in the brilliance of their hues.

As in so many of the tropical pheasants, termites or white ants enter largely into the diet of Javan Junglefowl. Every dry and rotted stump on the slopes of the limestone ridges sheltered large numbers of these insects, a few pecks of the bird's beak being sufficient to expose a meal. They also fed on marine or littoral creatures, such as small crabs, shrimps, and snails, and their favourite vegetable item of diet was the juicy fruit of the cactus, and I have shot more than one bird whose whole head was stained red from the juice of this fruit.

The roosting habits of the Junglefowl were of great interest, and I spent considerable time in tracing out the various places where the birds spent the night. I found three separate roosts on low branches in a mass of cacti and other thorny plants, where one or more birds sought safety from nocturnal enemies. Another bird, or perhaps a pair, as the sign seemed to indicate, roosted on a low, sweeping bamboo which had been bent far over, near the foot of a cliff, and partly shielded from above by a dense growth of grass which sprouted from its precarious hold in a niche of the cliff side.

The strange introduction which I had to this bird was the sight of three—two cocks and a hen—flying straight out to sea for some seventy-five yards to an isolated mangrove islet. It may be that this habit was the result of the birds being once driven offshore by some sudden danger at low tide. I noticed that in the case of both these and other individuals, much time was spent about the tidal pools searching for small organisms. At low tide, half the distance to the island became bridged by bare coral reefs, so that, if the birds first found their way to the mangrove islet at low tide, they would have had much less distance to fly than when I saw them at sunset taking off from the very edge of the shore itself. It was the more remarkable that all three birds were young of the year, evidently of the same brood,

whose wing feathers were still in moult. This I ascertained by examination of one of the cocks that I shot. The other birds were not disturbed by the loss of their fellow, and continued to fly out as usual night after night.

The last roosting place which I shall mention was almost equally striking and unexpected. I have already spoken of its location, an underground cavern near the summit of one of the limestone ridges. With the aid of an electric flash lantern, I once made my way to this spot after nightfall, and, dropping a bit of stone into it, I awakened the inmates and heard the unmistakable voices of several Junglefowl, but could see nothing. One day, by means of much painful squeezing, I managed to enter the outer part of this cave, and by a most uncomfortable twisting upside down, I could see into a still deeper portion. Here were several broad, sharp-angled ledges, and the feathers and sign beneath them showed that they must have been used for a long time. They were so isolated from the floor that nothing without wings could have reached them, and here the birds spent their nights in safety. Scores of tiny bats were hanging in festoons on the walls, so that the cavern afforded a shelter to wild creatures both by day and by night. Judging from the number of Junglefowl which every afternoon made their way up the slopes of this ridge, there must have been at least a dozen which found nightly shelter somewhere near the summit. The only reasons, however, that I have for thinking that most of these may have roosted in the cave are, first, that I was unable to find any other roosting place on this entire ridge, and again, judging by the abundance of feathers and sign in even the partial view which I could get of the interior of the cave.

The Junglefowl of the coast seemed to be peculiarly isolated. The other birds of this vicinity had nothing in common with them, and if they were seen anywhere in the neighbourhood of one another, the association was of the most casual character. The natives, as I have said, bothered the birds in this region hardly at all and apparently knew but little of trapping. Their four-footed enemies are very numerous, and the mongoose, mar-

tens, and snakes doubtless make life one great need for vigilance and watchfulness. Wild boars are said to do much damage in fetreting out the eggs and devouring them. It was doubtless the fear of such enemies that drove some of the Junglefowl near Patjiran to utilize such unusual roosting places.

END OF VOL. I