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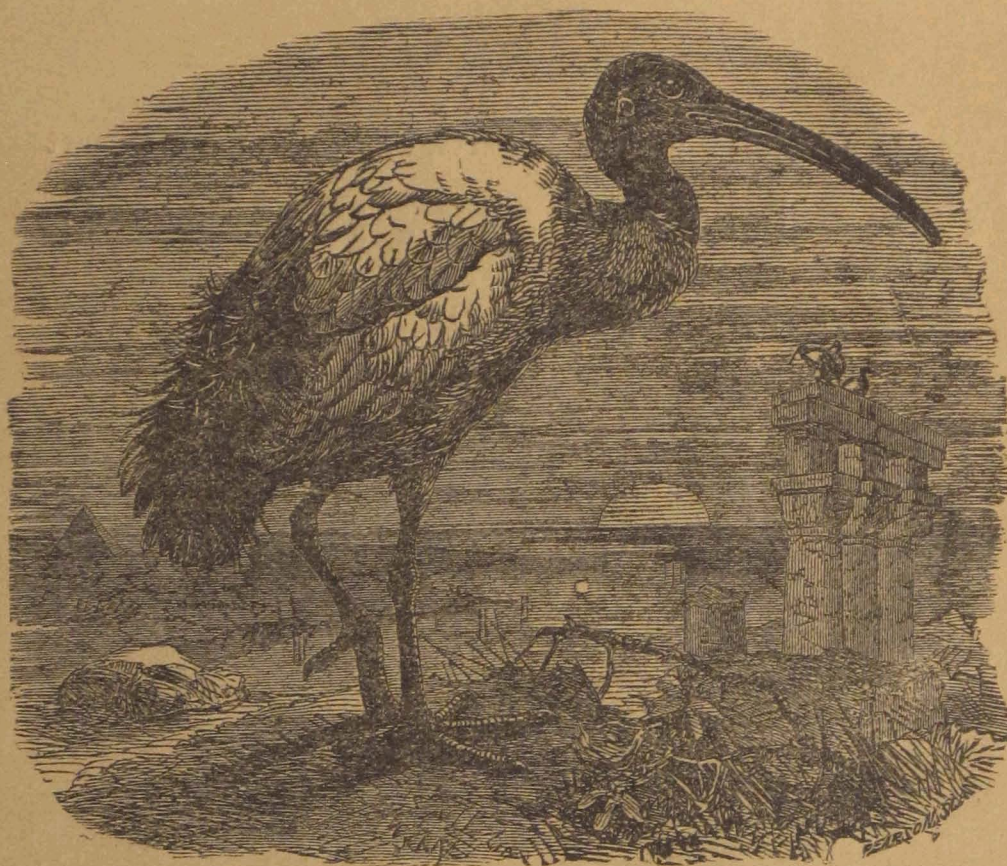
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IV.—Notes on the Birds of Spiti, a Himalayan Province
of the Punjab. By WALTER KOELZ.

DURING the course of certain ethnographical studies sponsored by the University of Michigan and Cranbrook Institute of Science, I visited the District of Spiti. In so far as time and opportunity permitted, observations were made on the avifauna, and a collection of bird-skins was made. The specimens on which this paper is based have been deposited in the University of Michigan Museum of Zoology.

The whole month of September 1933 was spent in the province. On 1 September I entered by crossing Kunzam La, and on 1 October I passed across the Spiti border below Lari. The Pin Valley was visited only up to Mikim and Khar. My route ran only along the roads of the valley-bottom that lead from one settlement to another.

That capable naturalist Mr. Hugh Whistler visited the district from 13 to 24 July, 1922, but did not get below Kibor or into the Pin Valley, and, therefore, did not know the area most favourable to bird life. His observations are recorded in 'The Ibis,' 1923, pp. 611-629. He lists of his own observation thirty-five species, and six others that were reported by Dr. F. Stoliczka, who visited the country over fifty years before (*vide* "Ornithological Observations in the Sutlej Valley, N.W. Himalaya," Journ. Asiat. Soc. Bengal, xxxvii. no. 1, pt. 2, 1868, pp. 1-70; and August von Pelzeln, "On the Species of Birds collected by Dr. Stoliczka in Thibet and the Himalayas," Ibis, 1868, pp. 302-321). My observations, which have probably been made over more territory and over a longer period, have another feature, namely, that they cover at least a part of the migration period. To these factors is undoubtedly due the longer list of species included in this paper. Three of Whistler's species and five of Stoliczka's I did not find, but I have collected specimens of fifty-four forms new to the fauna, report four from sight records, and call attention to four others that I believe to occur. Stoliczka's species not found by me are: *Lerwa lerwa*, *Acanthis spinoides*, *Adelura cæruleocephala*, *Rhyacornis fuliginosus*, *Carpodacus rhodochroa*. All but the last I have taken in Lahul at

elevations of about 10,000 feet, and they may occur regularly in Spiti. Whistler did not find these species either, and one might believe that the avifauna had changed did it not appear more likely that Stoliczka was slack in his records. I say nothing of his reporting the Lammergeier (*Gypaëtus barbatus*) as destructive to lambs and kids in Lahul, and as being deluded by the upper-class Kuluese, who esteem its flesh, into impaling itself on spears by baiting with a live partridge! (*l. c.* p. 12). Such tales are only another instance of the conjunction of a credulous listener and an obliging narrator. Nor need one be greatly surprised at the observing in the Himalayas of strays far removed from the general range of their species. When, however, *Pyrrhula erythrocephala* is recorded as common in Lahul (*l. c.* p. 59), *Ianthia cyanura* as often seen about Korzok in Rupshu (*l. c.* p. 45), *Siphia strophhiata* as "noticed repeatedly in Rupshu" (*l. c.* p. 32), one might suspect that there had been carelessness in the recording of observations. Whistler's three species are *Pyrrhospiza p. humii*, *Charadrius m. atrifrons*, and *Gyps fulvus*. The first two undoubtedly occur locally, but the last is probably a straggler.

Whistler described well the country he visited, and his remarks should be read by those who are interested in the physio-graphical features of the country. I quote the following:—"Spiti Province has an area of about 3000 square miles: of this the major portion is entirely uninhabited, and consists of enormous mountain-ranges grouped on both sides of the Spiti River, which is the main artery of the country. The lowest parts of the Spiti Valley are 11,000 feet above sea level. The average elevation of the mountain-ranges is about 18,000 feet, and the highest peak rises to 23,000 feet. It will be clear, therefore, that Spiti ranks amongst the highest mountain areas of the world; and when it is added that of the various avenues of approach to the country several include many stages through uninhabited mountains over mere sheep paths, it will be realized that the country is aptly described as one of the least accessible of the empire."

The main range of the Himalayas separates the district from India, and a parallel range divides it from the Tibetan

Plateau. The Spiti River, that flows from Kunzam La through the district, has heavily eroded the glacial plain that was formed between these two chains, and settlements have been possible only on the remnants of the old plain, especially where lateral drainage supplies irrigation water. From the river valley one sees more often the worn-down, rubble-clothed hills than the sombre, rugged, glacier-nursing peaks that form the backbone of the encompassing wall, and the landscape is thus different from that of the adjacent province of Lahul, where there are no buttressing hills against the mountain core.

The Spiti River has in places, down as far as Dankhar, made for itself a wide channel, and in September flows through its gravelly bed in a series of rivulets. It can be forded then in certain places. Here and there, where the river has deserted a portion of its bed, as near Rangrik, Kahze, and Dankhar, there are green plains bearing thickets of willow, tamarisk, and *Hippophae*, watered often by copious springs. These patches, which the Tibetans call "pang," are favourable places for bird-life. Below Dankhar the river's course is largely through a gorge. There are a few small tarns that also attract birds: one above Dankhar, a few near Kibor, and one above Mane.

The flora of the country is exceedingly interesting, and varies as one goes down the river. Until Kibor, the shrub-growth of the hillsides is chiefly "drama" (*Caragana*), and the settlements have few trees, mostly willow. Below Kibor tall clumps of roses and creeping *Ephedra* grow abundantly on the hillsides, and here and there are patches of sprawling juniper and remnants of a former stand of cedar trees (*Juniperus*). The lower settlements at Mane have good groves of poplar and willow. The distribution of these plants of course affects directly the occurrence of various species of birds. The destruction of the cedar trees for fuel and house construction may have eliminated certain species, such as *Adelura cæruleocephala*, which Stoliczka alone reports. In Lahul the bird frequents the cedar forests. In Spiti there are still stumps of long-dead cedars and some second-growth shrubs from others not yet dead, and even a few magnificent trees that have probably stood for centuries at Po and Mane. That trees were

not more abundant in Stoliczka's time may perhaps be inferred from Andrew Wilson's statement in 'The Abode of Snow' (p. 223) that he saw "one solitary apricot tree at Lari, and some fine willows at Po; but that about exhausts my arboreal recollections of Spiti." Wilson went along my route in the summer of 1873.

The fields about the houses attract many birds. Especially after the harvest of wheat, barley, and peas, the chief crops, almost all species collect to feed on the stubble.

I am much indebted to Dr. C. B. Ticehurst, Mr. James L. Peters, Dr. Ernst Mayr, Dr. Josselyn van Tyne, and Dr. Pierce Brodkorb, for assistance in preparing this manuscript. Dr. Ticehurst has commented on the nomenclature and has saved me many errors. My other friends have given me assistance in determining certain races by comparison with collections in their charge. This assistance is gratefully acknowledged.

Corvus corax tibetanus Hodgson.

A pair of Ravens occur in the environs of nearly every village throughout the area. A pair visited camp at Drokpo Yokma, below Baralatza, on 30 August.

Corvus coronoides intermedius Adams.

The Crow was first met on 23 September at Mane, in the lower valley. A flock of four roosted in the poplars there, and one was collected. There were similar small flocks at Po and Tabo.

Pyrrhocorax pyrrhocorax himalayanus (Gould).

The Chough occurred in flocks throughout the district, often in the neighbourhood of fields, where it fed on the ripened grain. The birds do considerable damage to the crops. They take a head and beat out the grain by a few blows of the beak, and leave most of the kernels scattered on the ground for the Pigeons. A flock can, in a short time, work great damage, and leave the ground white with chaff. They do not eat the grain from the new-sown fields. The *Ephedra* berries were very common in 1933, and many of the Choughs were feeding on them.

***Pyrrhocorax graculus forsythi* Stoliczka.**

The Alpine Chough was not observed at all abundantly. A few were feeding on the meadows at Ladarse. One collected had eaten crickets. I have never seen large flocks of these birds anywhere in the mountains, but my Lahul friends tell me that in Lahul they assemble in flocks of more than a thousand to feed on the *Juniperus* berries in the autumn. They often visit the houses in summer and winter to feed on cheese, beer mash, etc., but never do damage to the fields.

***Tichodroma muraria* (Linnæus).**

The Wall-Creeper was first seen in the deep gorge above Kibor on 7 September. A specimen was taken there next day and two others at Kibor village on the day following. Near Kahze two were taken on 12 and 13 September. At Guling on 19 September two were taken, and two were seen at Dankhar on 26 September. One Kibor specimen has still the nestling dark mouse-coloured throat, but the white feathers are beginning to appear there.

***Cinclus cinclus cashmeriensis* Gould.**

A young bird was collected on 7 September in the small stream that runs into the gorge below Kibor, on the Losar road. Another was found dead in the same place. Though careful watch was kept on all watercourses, no other Dippers were seen.

***Cinclus pallasii* Temminck.**

A bird of this species was shot on the stream that forms the boundary between Tibet and Spiti on 1 October. It was, however, lost in the torrent. The natives at Mane and Po knew about Dippers and said they occurred on the streams there, but I could not be sure from their accounts that they distinguished between the two species.

***Saxicola torquata maura* (Pallas) (*indicus* auct.).**

A female was collected at Lidang on 15 September. A male was taken at Mane on 22 September, and at Lari on 29 September. Wing-measurements: 68.5, 68, and 70.5 mm. respectively.

Saxicola torquata przewalskii (Pleske).

An adult male (wing 76 mm.) was taken at Mikim on 20 September.

Œnanthe leucomela leucomela (Pallas).

A female was collected at the foot of the Ki Monastery on 10 September. No others were seen. I have taken the species during the breeding season in Lahul and Ladakh, and it probably breeds in Spiti.

Œnanthe deserti oreophila Oberholser.

A few of these birds were found in most localities throughout the district. All specimens taken had completed the autumn moult.

Phœnicurus ochruros phœnicuroides (Moore).

The Black Redstart was probably the commonest bird in the district. It was found most commonly about the settlements, but also scattered about elsewhere. All specimens taken had completed or nearly completed the autumn moult. The wings of sixteen males from Lahul, Spiti, and Zankskar, most of them in worn summer plumage, measure (80) 84–87·5 mm. Fourteen winter males from Sind and South Punjab measure 80·5–83 mm. I can see no colour differences. Sind is the type-locality for *phœnicuroides*.

Chaimarrhornis leucocephala (Vigors).

The White-capped Redstart was first seen at Mane, where a specimen was collected on 22 September. One of my men shot one at Po on 28 September, but lost it in the stream. Otherwise none were seen, but the natives in the two villages knew the bird.

Cyanosylvia suecica abbotti Richmond.

Individuals were fairly common in the *Hippophae* thicket below Rangrik, at Shelgo, and at Shichiling. A male taken on the 12th September was in adult dress, except for a few juvenile feathers on the sides of the neck.

Monticola solitaria longirostris Blyth.

The species was first seen in the gorge below Kibor on 7 September, but no specimens were taken till Shelgo on the

14th. Thereafter specimens were collected at Guling, Dankhar, and Po. Wings of four males measure 123-124.5 mm.; one female, 125 mm.

Myophonus temminckii temminckii Vigors.

This bird was not seen, but there is every likelihood that it occurs. The natives around Po say that it is found there. I have taken the species in Lahul, Purig, and Zankskar.

Prunella rubeculoides (Moore).

The Robin Accentor was seen from Bara Latza to near Losar, and at Ladrassa. It was nowhere common. Specimens taken at Ladrassa are juveniles with adult feathers coming in on the breast.

Hemichelidon sibirica gulmergi Baker.

A single specimen was observed, a juvenile collected at Mane on 23 September.

Lanius schach tephronotus (Vigors).

A specimen in juvenile plumage was taken in the *Hippophae* thicket below Dankhar on 24 September. No others were seen, but the species is known to the Po villagers, and probably breeds there.

Acrocephalus dumetorum Blyth.

The species occurred at Rangrik in the *Hippophae*-willow thicket on 10 September, and at Shelgo on 13 September. A specimen was taken in each locality.

Sylvia curruca blythi Ticehurst & Whistler.

This species was seen only at Dankhar, where, on 25 September, two were collected in the *Hippophae* and other scrub on the hillside. Several others were seen there. ~

Sylvia communis rubicola Stresemann.

A single specimen, a juvenile male (wing 73 mm.), was taken on 1 September a few miles above Losar.

Phylloscopus affinis (Tickell).

First seen below Losar, where a specimen was collected in the *Hippophae*-willow thicket on 4 September. In certain

places, namely, in areas of such thicket at Rangrik and Shelgo, it was not uncommon.

Phylloscopus collybitus sindianus Brooks.

The species was first observed at Shelgo, where it was common in the *Hippophae* thicket. Thereafter specimens were taken at Lidang and Dankhar. The birds taken all appear to be typical *sindianus*. The second primary in five specimens is between the ninth and the tenth in length, in one it is between the eighth and ninth. The same form occurs in Lahul, Zankskar, Purig, Ladakh, and Rupshu.

Phylloscopus griseolus Blyth.

Generally distributed in the river bottom, and is especially common about the settlements. First seen above Chandratal on 31 August, and then met daily while in the district.

Phylloscopus inornatus humii (Brooks).

Specimens were found at every locality throughout the valley. The second primary in thirteen specimens is between the seventh and eighth in length; in one specimen it is between the eighth and ninth.

Phylloscopus nitidus viridanus Blyth.

Two specimens were taken at Losar on 3 and 4 September, and others were obtained at Rangrik, Shelgo, Kahze, and Guling. The second primary in five birds is between the sixth and seventh in length, in one case equals the seventh, and in another is between the seventh and eighth.

Cephalopyrus flammiceps flammiceps (Burton).

At Mane on 22 September the species was fairly common in the poplar and willow trees with the various *Phylloscopi*. I have found them similarly common in Lahul in September 1931 and in Ladakh in September 1932, so that the regular migration route is probably in this district. No autumn birds seen have any orange-red on the plumage.

Oriolus oriolus (Linnæus).

Kuyuk, as the bird is known to the Tibetans, was reported from Khar, in the Pin Valley, by my friends Dr. Bhagwan Singh and Tsering Trashi of Kyelang, Lahul. The Thakur

Rup Chand, who knows the bird well, says he saw a pair in Kyelang in July 1933. I have seen the bird in Purig and have reason to believe it ascends the Sutelj Valley in Kunawar to Poo. Further, the Spitians say specimens occasionally are seen in the lower valley.

Pastor roseus Linnæus.

A juvenile male was taken in the grain-fields at Kibor on 8 September. At Rangrik two more were seen in the *Hippophae*-willow thicket on the 10th; one was seen there on the 11th and on the 12th. The Martins attacked the birds when they were flushed from the bushes on all three occasions. One was seen at Mane on the 23rd. All these birds were in dull juvenile plumage like the specimen taken.

Pyrhospiza punicea humii Sharpe.

Whistler records the taking of two specimens of this species at Tharcha, above Losar. I have collected specimens in Lahul and Zankskar, but I did not find the bird in Spiti.

Carpodacus rhodochlamys grandis (Blyth).

A common bird from Lara onwards down the valley. It seems to prefer the vicinity of rose-bushes, and was most often found feeding on the hips of the numerous rose-bushes that ornament the dry hills of the lower valley. The birds assemble in small flocks for shelter in the willow thickets along the streams. They were found particularly common between Dankhar and Po.

Carpodacus erythrinus roseatus (Hodgson).

A common bird, found most frequently about settlements, usually in small flocks.

Carpodacus rubicilloides lappersonei Meinertzhagen.

This bird was not found as abundantly as the next in the Spiti District. It occurred from Dankhar down, but not commonly, and only three females were taken: Mane, 22 September (two), and Shichiling, 24 September. In the upper stretches of Kunawar, especially at the village of Chango, a large flock was stationed, and there a good series of specimens was obtained. It appears to be less a bird of the

drama scrub than the other, though at Puga, Rupshu, both species were found in the drama in June 1932. Wing-measurements: nine males, 105.5–113.5 mm.; six females, 106–108 mm.

Carpodacus rubicilla severtzovi Sharpe.

These Finches were fairly common from Losar to Mane. None were observed below Mane. About the villages they were feeding in the grain- and pea-fields, but they also occurred in flocks at Ladarse, where their food was the seeds of the drama. Individuals were almost always found in any large fruiting patch of this shrub. On 5 September a juvenile in first plumage showed the beginning of moult on the crown and wings. One first-year male had nearly finished moult to a pale rosy dress. Many females were in worn plumage with no sign of moult. Wing-measurements: eight males, 119–123 mm.; eight females, 111–117 mm.

Carduelis caniceps caniceps (Vigors).

Occurred at Losar, where juveniles and adults were collected on 2 and 3 September. It was not found again till the 15th, at Lara.

Serinus pusillus (Pallas).

First seen at Ladarse, where there were small flocks on 5 September. No specimens were taken after Kibor on 7 September.

Acanthis flavirostris ladacensis Meinertzhagen.

Occurred all through the district from Losar to Kahze. Most of the adults were in worn breeding plumage, but a pair from Kahze on 14 September had nearly completed their moult. Juveniles in first plumage were taken on that date. The birds came regularly to roost in the *Hippophae* thickets at Rangrick and Shelgo.

Passer domesticus parkini Whistler.

A common bird about the settlements, where it feeds on the grain-fields and nests in the brush on the house-roofs. The natives say this species leaves in winter. At Lidang, Lara, and Kahze there were flocks of at least two hundred. An albino, juvenile female, was taken at Khar on 20 September.

Emberiza cia stracheyi Moore.

First seen at Lara, where two specimens were collected on 15 September. Thereafter it was found fairly common at Mane, Po, and Tabo.

Emberiza icterica Eversmann.

A juvenile male was collected on 24 September at Shichiling, below Dankhar. A specimen was also taken in Zankskar, at Cha, in October 1932, and at Kianchu, Rupshu, on 20 August, 1933. Thus it appears to be either a straggling migrant or a casual breeder in this part of the mountains.

Montifringilla nivalis adamsi Adams.

This species was first observed at Ladarse, where a flock was feeding about the base of a peak near the meadow. They were common again near Kibor, but thereafter were not met with. Specimens taken are birds in first plumage or worn adult dress.

Fringalauda nemoricola altaica (Eversmann).

One of the common birds of Spiti. All the birds collected were already in winter plumage except a few that were still in first plumage.

Fringalauda brandti hæmatopygia Gould.

A nestling was taken at Dopo Yokma on 29 August. The species was observed in Spiti proper only below Kunzam La on 1 September.

Delichon cashmeriensis Gould.

A number of House-Martins were hawking over the fields at Losar, where a male was taken on 3 September. The flocks were common also at Rangrik from the 10th to 13th.

Riparia rupestris (Scopoli).

These Martins were common over the river bottom at Traktse, above Losar, at Losar, and down to Rangrik. As we proceeded down the valley they became rarer, and we finally did not meet them at all, presumably because they had migrated for the winter.

***Motacilla alba dukhunensis* Sykes.**

This form was found first at Mane on 22 September, where it was common. Five specimens were collected. It occurred thereafter down the valley.

***Motacilla alba personata* Gould.**

This was one of the common Wagtails of the district, and was found in every locality.

***Motacilla alba alboides* Hodgson.**

Black-backed Wagtails were first seen at Rangrick when, on the night of the 11th, a large flock stopped for a moment by the tent and then went on down the valley. Specimens were collected at Lara on the 15th, and the species was regularly met thereafter.

***Motacilla flava beema* Sykes.**

A female in autumn dress was taken at Kibor on 8 September.

***Motacilla cinerea melanope* Pallas.**

Specimens were taken at Mane, Po, and Tabo. It is one of the uncommon Wagtails.

***Motacilla citreola calcarata* (Hodgson).**

One of the common birds of the district. All the birds were either in first or winter plumage.

***Anthus trivialis haringtoni* Witherby.**

Pipits were very common throughout the district. Numerous specimens were collected, and all seemed to be of this race.

***Anthus roseatus* Blyth.**

The first individuals were collected on 7 September at Dumle, where a few were feeding along the stream. At Khar, in the Pin Valley, they were not rare. Specimens were taken also at Kibor, Rangrik, Dankhar, Po, and Tabo.

***Otocorys alpestris longirostris* Moore.**

One of the common birds of Spiti, found almost everywhere along valley bottoms. Adults taken even in late August were

mostly in new plumage, but juveniles moult more slowly. A young male on 13 September had still a few of the first feathers on the head and back. The bills of birds from Spiti and cis-Himalayan Lahul average smaller than in those from trans-Himalayan Lahul and Zankskar. Birds taken from the latter area are largely in worn plumage, and those characters cannot be compared.

***Alauda arvensis intermedia* ? Swinhoe.**

Five specimens in various stages of moult were taken at Kahze on 13 September, and a male in fresh plumage at Lidang on 17 September.

***Calandrella acutirostris* Hume.**

First noted near Kiomo, where a juvenile with half-grown tail was taken on 4 September. Thereafter family parties or small flocks were seen at all the villages. Most of the specimens taken are in juvenile plumage or are moulting adults.

***Calandrella brachydactyla dukhunensis* (Sykes).**

A flock of fifteen was seen at Kioto on 4 September, and similar small flocks were seen daily to Kibor. Here a specimen was secured on 10 September. The birds were very difficult to collect on account of their eccentric behaviour. They fly in Plover-like unison, circle widely, and alight, often only to rise again at once for some distant resting-place. They are by no means easy to approach, or even find, on the ground. Below Kibor the species was of usual occurrence. At Kahze there were flocks of several hundred, feeding on the stubble of the grain-fields. At one shot twenty-seven were taken there, all males but four. I found these Larks equally common in Zankskar in the autumn of 1932. Wing measurements: twenty-four males, 95–103 mm. ; four females, 94–98 mm.

***Jynx torquilla japonica* Bonaparte.**

Two specimens were taken at Guling, in the Pin Valley, on 19 September. Another was seen at Mane on the 23rd. While not exactly like typical specimens of *japonica*, the two birds are nearer to this form than to typical *torquilla*.

Upupa epops Linnæus.

Hoopoes occurred sparingly throughout the district. Specimens taken at Losar and at Po are pale, and there is considerable white in the crest. They are males; wings measure 150 and 155 mm. A male from Kahze, wing 146 mm., is darker than these. I am unable to distinguish the various races of the species that might be found in the region.

Apus apus Linnæus.

A single Swift was seen near Mane on 22 September. The species is common in Zankskar, Purig, and Lahul, and is undoubtedly not rare in the summer in Spiti. Whistler (1923) records having seen a "small party" at Kibor on 20 July, 1922.

Cuculus canorus Linnæus.

The natives below Kibor know the Cuckoo and say it occurs there in summer. I have taken it in Lahul, Purig, and Ladakh in summer, and do not doubt that it visits Spiti.

Gypaëtus barbatus (Linnæus).

The Lammergeier is generally distributed throughout Spiti, and was observed in several places from Losar down. None was killed because of the difficulty of transporting the bulky skins, so it is not known what race of the species occurs here.

Gyps himalayensis Hume.

Generally distributed. A large flock had assembled to eat a dead horse at Kibor on 9 September. No specimens were collected. Whistler reports *Gyps fulvus* at Kibor, but I have never seen the species in the high mountains.

Aquila chrysaëtos Linnæus.

A Golden Eagle was seen at Ladarse hunting for Snow-Cocks, and at Kibor one inspected the carcass of a horse. At Po the natives said a pair had done away with at least a dozen lambs that year. These Eagles are said to be resident here and in Lahul.

Milvus migrans lineatus (Gray).

Only once observed. A female specimen was taken at Lidang on 17 September. Its stomach was filled with grasshoppers.

Circus macrourus (S. G. Gmelin).

First seen at Kibor on 10 September, and thereafter observed almost every day. A pair was taken at Mane on 22 September.

Circus pygargus Linnæus.

A juvenile male was taken at Guling on 19 September. No others were seen that could be positively identified.

Circus æruginosus æruginosus (Linnæus).

This Harrier was found at every settlement. The first specimen was taken at Traktse, above Losar, on 1 September. Single specimens were taken at Losar on 3 September, Kibor on 7 September, and Mane on 22 September. The food of three stomachs was (a) a *Calandrella*, (b) two lizards and a small rodent, (c) a Sparrow and a *Phœnicurus*.

Accipiter nisus (Linnæus).

An individual was seen at Shichiling, below Dankhar, on 24 September and another at Po on 26 September. A specimen of *A. nisus melanoschistos* was collected at Nago, Kunawar, on 5 October. I have also taken breeding specimens or nestlings in Lahul and Ladakh.

A large black Hawk mottled lighter, such as I have never seen before or since, was flushed from a willow at Po, 26 September.

Falco tinnunculus tinnunculus Linnæus.

A young female (wing 244 mm.) was taken at Guling on 21 September. It was moulting to adult plumage on the rump.

Falco tinnunculus subsp. ?

Three Kestrels were feeding on the plain at Ladarse on 5 September, and two females were taken. The wings measure 259 and 277 mm. Both are by far the darkest birds of the species I have ever taken; the bars above and the stripes below are very broad. The food of both was a kind of tailed cricket.

Columba rupestris turkestanica Buturlin.

One of the common and widely distributed birds of Spiti. A small flock (about 20) occurred at every town from Losar down to Kibor. They fed for the most part on the stubble of

the grain-fields. At Kahze, Dankhar, and at Khar there were flocks of about a hundred. Young birds taken on 2 September had nearly finished the moult to winter plumage.

Columba livia neglecta Hume.

First met at Kahze, where six were collected on 13–14 September. There were less than a dozen seen here, though the Tibetan Pigeon was common. Thereafter it was found in all the villages except those of the Pin Valley, but was nowhere common until Lari, where in a flock of about a hundred and fifty it outnumbered the Tibetan bird. Four were taken here.

Columba leuconota leuconota Vigors.

A small flock (five or six) was seen around Chandratal and Kunzum La on 31 August. Then no more were seen anywhere till a juvenile was collected from a flock of *C. r. turkestanica* below Guling on 21 September.

Streptopelia orientalis meena (Sykes).

A pair was seen at Lidang and one was secured. At Dankhar and Mane there were flocks of 15 or 20, and the birds were found thereafter until we reach Lari.

Streptopelia senegalensis cambaiensis (Gmelin).

A pair was seen at Mikim, in the Pin Valley, on 20 September and a female was collected. I have previously taken the bird at Sunnam, Kunawar, at an elevation of about 10,000 feet, so the species probably occurs regularly here also.

Syrrhaptes tibetanus Gould.

I have found the Tibetan Sand-Grouse commonly on Baralatza Pass, and it may occur in Spiti.

Coturnix coturnix subsp. ?

A male was shot at Kahze on 13 September. Another bird was seen at Dankhar on the 25th. No information about the species was forthcoming from natives. They consider the birds to be young Chukors. This specimen is darker and greyer above than any other I have taken in India, and may perhaps be referable to *ussuriensis* Bogdanov, a form of which I have not been able to see authentic specimens.

Alectoris græca chukar (Gray).

Chukors were first seen at Dumle, above Kibor, on 7 September. None was seen at Kibor, but from Kahze down they were common around the towns. They occurred also in the lower part of the Pin Valley, but were not seen above Guling. A bird in first plumage was taken at Lara on 15 September.

Tetraogallus himalayensis himalayensis Gray.

These birds occurred abundantly in certain localities in the district. At Ladarse, Kibor, and Lari there were large assemblages around the peaks. Three birds killed at Lari had eaten *Artemisia* leaves, *Ephedra* berries, and heads of a rye-like grass. They were not fat.

Porzana pusilla pusilla (Pallas).

A specimen was taken on the closely-cropped meadow beside a spring stream at Rangrik on 10 September. Another was taken in an irrigation streamlet at Lari on the 29th.

Gallinula chloropus indicus Blyth.

A specimen was taken at Rangrik on 10 September. It had dug a hollow for itself under a spray of grass on the meadow beside a spring stream. The cattle had eaten all the cover, so that the bird was exposed outside of this retreat. It attracted my attention when it fled to its shelter from feeding in the water. The remains of another one that had been eaten lay a few feet away. Below Dankhar, at Shichiling, there was plenty of cover, and here three birds were taken on the 24th. One of these hid most effectively in a situation which seemed empty of all possibilities.

Charadrius mongolus atrifrons Wagler.

I arrived in Spiti after the breeding season of these birds, and hence did not find them. A number had collected around Yunnan Tso, below the Baralatzza Pass in Lahul, on 26 August. Whistler (1923) records the species above Losar on 24 July, 1922.

Actitis hypoleucos (Linnæus).

A specimen was seen on 1 September above Traktse. The species was not seen again till one was taken at Rangrik on 10 September. It occurs in Zankskar and Purig in summer.

Tringa ochropus Linnæus.

A specimen was seen on 1 September above Trakste, and one was taken at Losar on the 3rd. No others were seen till Kibor, where two were collected on 8 September. One was taken at Po on the 27th.

Tringa glareola Linnæus.

The species was first noted at Dumle, above Kibor, where a specimen was collected on 7 September. Thereafter it was occasionally found in suitable places. The collection contains specimens from Kibor, Shelgo, Rangrik, and Mane.

Tringa nebularia (Gunnerus).

Single specimens were collected at Chandratal on 31 August, at Rangrik on 10 September, and at Shelgo on 12 September. Another was seen at the mouth of the Pin River on 17 September.

Erolia temminckii (Leisler).

The species was first seen at Rangrik on 10 September, where several were feeding along the river. Then specimens were taken at Shelgo, Shichiling, Mane, and Tabo. Most of the specimens have a darker border to the back-feathers, so that the appearance is scaly.

Capella solitaria (Hodgson).

A bird that I believe from its pale coloration and habits to have been a Solitary Snipe was seen at evening on 12 September around the springs at Shelgo. The species perhaps breeds in Lahul, and the habitat at Shelgo is apparently like those it frequents in Lahul.

Capella stenura (Bonaparte).

A specimen of *Capella* that may have been of this species was seen at Kibor on 8 September. At Rangrik on the 10th a male was taken. No others were seen.

Philomachus pugnax (Linnæus).

A female was taken at Shelgo, below Kahze, on 13 September. No others were seen.

Ibidorhyncha struthersii Vigors.

From above Losar the river appears to offer suitable habitats for this species, but though the places were explored, none was found till Rangrik. One was collected there on 11 September, and another was seen a little farther down on the next day. At Lari on the 14th one was seen. In front of Khar two were collected at one shot on the 20th. These birds had fish in their stomachs. The natives know the species, and say that one to three may be seen together all the year round. It is not clear how they manage to pick a living in winter, when the snow must often cover all the shore-line and much of the bed of the river. In Lahul I am told, by people whom I have always found reliable, that *Capella solitaria* spends the winter about large springs. In heavy snowfall these springs are almost totally buried, and the birds must live in the stream-made tunnels under the snow.

Chlidonias leucopareia indica (Stevens).

A specimen was collected along the Spiti River in front of Lidang on 17 September. I have taken the species also at Leh, so it probably regularly occurs along the mountain rivers.

Casarca ferruginea (Pallas).

Three birds were found on a small pond near Kibor on 8 September, and two were collected. The natives said there was a flock of young on the pond in summer. Above Dankhar there is another pond where the natives said these birds reared young. I have found the species exceedingly common over the range that divides Spiti from Rupshu.

Anas acuta Linnæus.

A Pintail in female plumage was seen with the Teal at Rangrik on 11 September. A flock of five was seen at Rangdum, in Zankskar, on 12 September, 1931, and probably stray birds generally rest in the mountain pools on migration.

Anas querquedula Linnæus.

The first individual of the species was seen at Traktse, above Losar, on 1 September. On the river plain below Rangrik it was fairly common, and several were collected on 10 and 11 September.