

# ORNITHOLOGICAL EXPLORATIONS IN ALGERIA.

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(Plates IX.—XI., XV.—XXVI.)

## I. INTRODUCTION.

THE following pages embody the ornithological results of three visits to Algeria, during the years 1908, 1909, and 1911.

In 1908 we left England on February 12, and on the morning of the following day reached Marseilles, on a cold and frosty morning, out of which a bright sun arose on an immaculate blue sky : exceedingly beautiful to us, after weeks of dull, dark English winter days. Consequently our spirits were high when we steamed through the picturesque harbour and bay, in anticipation of a beautiful, fine passage. Unfortunately our hopes were not fulfilled, for during the night, near the Balearic Isles, we encountered a strong wind and heavy seas, and when we arrived off Algiers we had "had quite enough of it," and Algiers itself did not present the often-described "vue ravissante" which it frequently offers, as it was more or less covered with clouds (Pl. XV., top).

Four days we stayed at Algiers, enjoying beautiful weather, observing the usual birds inhabiting the gardens, the "Bois," and woods in the neighbourhood, catching a few *Zygaena algira* and moths, and getting shooting-licences, a quite ceremonious and tedious affair, but necessary in order to avoid troubles and to buy powder, which one cannot get for money unless one holds a licence.

On the 19th we left for Biskra by the night train, reaching El Guerrah in the morning. The sun was brilliant, and from the train we saw on the bare fields and meadows Plovers (*Vanellus*), White Storks, Ravens, Larks and innumerable Sparrows. Near the station called "Les Lacs" a wide expanse of flat water was seen, on it many ducks, a few gulls, and far away on the other side hundreds and hundreds of Flamingoes !

At last Biskra was reached, where we found comfortable rooms in the Hotel Victoria (Pl. XIX., top).

We stayed in that now so well known tourists' oasis, with a tour to Batna and another to El Kantara in between, until the end of April, and obtained a splendid first knowledge of the ornis of the northern portion of the Algerian Sahara. Biskra is a most convenient place for that purpose. One can stay in more or less comfortable hotels, and can get carriages and horses to drive and ride, and the neighbourhood is very interesting. Within a day's excursion one can climb the wild and bare rocky hills forming, so to say, the northern boundary of the real desert, can become acquainted with the ornis of the oasis of date-palms, or visit the plain of El Outaya with fields and gardens, or get a glimpse of the real desert, many dry clayey stretches, real sand-dunes near Oumash, stony desert close to the town and again immediately south of Bordj Saada, patches of sebcha or salt-desert, as well as the banks and beds of desert-streams, the Oued Biskra and Oued Djeddi, especially rich in migrants of many kinds.

A visit to Batna was soon terminated : the hotel (now under another and better management) was not comfortable, and reminded us too little—the weather,



however, only a few degrees above freezing-point, with driving rain and sleet, too much—of home at that time of the year.

On the other hand we enjoyed the beautiful grand scenery of El Kantara (Pl. XVII., XVIII.). It was cold there also most of the time, but we saw Bearded Vultures on many occasions, caught the pretty *Euchloë charlonia* and other butterflies among the halfa-grass on the mountains, in similar places as *Euchloë falloui*, which, together with *E. charlonia*, we had previously caught on the Djebel Bou Ghezal, on the edge of the desert near Biskra.

Along the high wall of almost bare rocks near El Kantara one of the commonest birds is the tame *Ammomanes deserti algeriensis*, and next to it perhaps *Galerida theklæ hilgerti*, while *Oenanthe leucura syenitica* is also very characteristic for this region. On the rocks themselves birds are rather scarce; a few pairs of the *Galerida* and a very few of the *Oenanthe* are to be seen on the top, where little plateaux thickly covered with halfa and a number of low plants exist, and now and then a *Caccabis petrosa spatzi*. Besides these one sees no birds on those heights, except now and then a *Petronia*, or flying overhead some Neophron, a Golden Eagle, or Bearded Vulture, Ravens, and Red-billed Choughs, which nest on steep cliffs.

By the end of April we wended our way northwards again and stayed a few days in the large town of Constantine, the Cirta of Roman times (Pl. XV., bottom). The stupendous ravine of the Rummel, which traverses the middle of the town, was full of bird life: Egyptian Vultures and White Storks nested in it, actually hundreds of Lesser and Common Kestrels, swarms of Jackdaws and Rock Pigeons, and numerous Alpine Swifts; standing in the street in some places one could see these birds sailing or dashing underneath along the ravine, while close behind roared the traffic of the town—omnibuses, heavy carts, and carriages, also men of most varied nations, Berbers, Arabs, Mauretanian Jews, French and Italians.

From Constantine we returned to Algiers, the neighbourhood of which is much finer in May than in winter, when it is visited by many thousands of tourists, of whom very few stay on till May, and hardly any one into June. Yet, the luxuriance of the foliage and the wild flowers, the song of the Nightingales in every suitable place, and the warm, yet not too hot temperature, are perfection, and the eye of an entomologist is gladdened by the sight of a good many butterflies, among them Swallow-tails and *Charaxes jasius*—though the number of species is nothing compared with what one sees in the Alps and Pyrenees, or in some tropical countries, during the right time of the year.

During this trip we had no taxidermist with us, and Hartert did all the skinning; only in Biskra J. Steinbach, the well-known South American collector, skinned some mammals for us and helped us when we had large birds or an unusual number on one day. We brought home on this occasion 376 bird-skins.

On February 18, 1909, we left England the second time for Algeria, and this time we had secured the services of Mr. Carl Hilgert, who accompanied the late Baron von Erlanger during his travels in Tunisia and his journey to Abyssinia and through Somaliland into East Africa.

We reached Algiers on February 22, after a good voyage. It was pleasantly warm, but the nights cold, and vegetation and insect life were less advanced than the year before at the same time, though a few *Zygaena algira* were caught,



as in 1908. The high mountains in the Kabylie and the Little Atlas were deeply covered with snow, and winter sports were being indulged in at Les Glacières, Blidah.

On the 28th we left for El Kantara, which we found rather barer and still drier than before, owing to the drought and the terrible devastation of the locusts the year before, which had lasted up to July and locally even to August. We witnessed it in March and April 1908 near Biskra. Locusts were then seen everywhere. We have seen the air so thick with them that one could not take aim at Alpine Swifts flying overhead; we saw them descending on a cornfield, which immediately began to sink down visibly until it had almost entirely disappeared; and once, near El Kantara, it looked as if the mountain-side began to move when they rose from a hill-slope. Along the railway from Batna northwards, and later on from Algiers to Blidah, clouds upon clouds rose before the engine, and all one could do was to wonder that any green plants remained at all.

We did our best to collect the birds of the surroundings of El Kantara as far as the Djebel Metlili, with its picturesque gorge of Tilatou (Pl. XVIII., top). The greatest surprise was the discovery of Tree-creepers. In the extensive date-palm plantations south of the gorge of El Kantara Tree-creepers are found, frequenting the stems of the palms, fig-trees, apricots and vines. Whoever would have imagined this bird here, and still more that it should be the same as that found in the pine woods of the Atlas Mountains near Batna, Blidah, and other places?—yet we cannot see any difference.

On March 11 we went to Biskra, whence we made excursions to the mountains, to Zaatcha and Tolga, and to Oumash, but much of our time was taken up with preparations for our journey to the south.

On March 25 we left Biskra with a caravan of sixteen camels and nine mules, and accompanied by our friend Dr. Nissen of Algiers.

It was a fine, sunny day. *Apus murinus brehmorum* and *Apus melba* were passing northwards; and near Bordj Saada, sitting on the telegraph wires and tamarisk bushes which cover the plain of Mouleïna between Bordj Saada and Biskra, the first *Merops persicus chrysocercus* were seen. We travelled as far as Bir Djefair, where we camped near a well with excellent water—the only really good one on the road to Touggourt.

The second day we travelled only as far as Bordj Chegga, where camp was pitched for the second time (see text-figure); and in the evening we were visited by a heavy sandstorm, which raged nearly until midnight. After leaving Bordj Saada the tamarisk bushes disappear and a wide sandy plain covered with innumerable stones extends to far beyond Bordj Chegga, where the sand begins to prevail more and more. The sandy plain, however, is not smooth and even, but covered with countless little sand-hills, the nucleus of which is or has been in each case a bush of *Limoniastrum*, *Salsola*, or another plant. Each isolated plant arrests the sand that flies across the plain with every wind—and winds are frequent—and a miniature dune is formed; the plant is partly protected by the surrounding sand, but the latter runs down from the top and threatens to suffocate the plant, so that it strives for air and grows upwards, dying off at the lower end. Thus the hillock grows and grows, and is crowned with a plant, until the latter dies off and the little mountain remains. These sandhills, hardened more and more in the course of time, form the centres of all the animal life except some of the birds. In these hillocks a rodent, *Meriones getulus*, the Djerd of the Arabs,



makes its holes, which are used for nesting by *Oenanthe* ("Saxicola") *moesta*, and are sometimes inhabited by the dreaded, deadly Asp (*Cerastes cornutus*), the Lefa of the Arabs, and a beautiful harmless snake, *Zamenis diadema*. In these hillocks one sees disappearing the pretty lizard, *Acanthodactylus scutellatus*, and in them hides the nocturnal Gecko, *Stenodactylus guttatus*. Also the beetles, the common *Anthia sexmaculata* and *Graphipterus*, and the rare and gigantic *Anthia cenator*, as well as some *Tenebrionidae*, disappear among these hillocks, the former with wonderful swiftness. In this sandy plain also stony patches occur, like little islands in the sea of sand, and on these is found the pale *Galerida theklæ deichleri*. Along the roads and on the sand we see *Galerida cristata arenicola*, which it is almost impossible to miss, while the other form is easily overlooked when one does not know exactly where to search for it; this was



OUR CAMP AT BORDJ CHEGGA.

the reason why we only discovered its real home on our way back. *Ammomanes phoenicura arenicolor* (*A. cinctura auctorum*, errore) is found all over the stony ground, and it is met with almost immediately south of Bordj Saada.

From Kef el Dor, where there is a heliographic telegraph station of the Government, one descends into a vast plain of hard soil saturated with salt and saltpetre, very tedious and with very little bird-life, dry enough at that time, but covered with water after heavy rains and dangerous for camels, which easily slip on the greasy surface. This district lies, like the whole Chott Melrhir, below the level of the sea. In dry times the salt crystallises on the surface, and glitters in places like snow. No vegetation is visible, with the exception of isolated, thick, roundish tufts of halophilous plants of a greyish green colour, all of two species, *Halocnemon strobilaceum* and *Limoniastrum guyonianum*.

This is the country of the "mirage" or "fata morgana." There appears constantly in the distance what seems to be a vast lake, dotted with islands and towering clusters of trees, and on pushing onwards nothing but the same eternal grey-green clumps of bushes or some kind of stipa meets the eye.

In spite of this wonderful spectacle one is quite pleased when at last



palms appear that remain trees and do not vanish and turn to little stunted bushes, but, taking shape, become a fine oasis. Thus one passes through Ourir, with a hospitable and kind manager of the Compagnie sud-algérienne, and enters Mrair or Mraier, which means "mirror." There is a little hotel kept by an Alsatian, who does what he can for the travellers. The next night we pitched camp at a place called Nza ben Rzig, near the\* heliographic telegraph station of El Berd, and a very heavy sandstorm made the night terrible. Every minute it seemed certain that the tents would be blown down, and though they stood the storm excellently they suffered, especially Hartert's own small tent. The roar of the wind, together with the banging of the canvas, the snorting and roaring of the camels, which crowded round the tents, and the sand which penetrated everything, made sleep impossible for the greater part of the night.

The following day remained very windy, but fortunately the wind and sand were at our back, so that we could make good progress all the same. *Oenanthe hispanica hispanica* was met with, evidently on passage to the north; Swallows in numbers, *Calandrella brachydactyla* by thousands. In Djamma we found again a little "hotel," where, however, the number of beds was very small, so that two of us were invited by the Kaid of Ourlana to sleep in his extensive house, which was gladly accepted. The oasis is very fine and orderly. *Turtur senegalensis aegyptiacus* was very numerous, Sparrows were in great numbers.

On March 31 we rode fifty kilometres to Touggourt, mostly through uninteresting sebecha, but in the beginning through sandhill desert; and there Rothschild shot our first *Galerida theklæ deichleri*, of which we found no more until we reached Kef el Dor again on the way back: had we looked for stony patches we might perhaps have seen some, but as it was we passed them by, maybe quite close, for they are so wonderfully adapted to the soil that they are easily overlooked if they do not happen to be on the wing or singing. Touggourt (Pl. XIX., bottom) is a vast oasis, and actually consists of a number of villages, some quite far apart from the others. In the European quarter is a garrison, post and telegraph office, a good many M'zabite and a few European shops and an hotel. The oasis is rich in rather deep ditches with water, in which a water-beetle (*Hydrous*) and two kinds of small fishes abound. Sparrows (see beyond) are numerous, *Turtur senegalensis aegyptiacus* and Scops-owls are common. Of migrants *Oenanthe oenanthe*, *Anthus trivialis* and *campestris*, *Jynx torquilla torquilla*, *Motacilla flava flava* and *rayi*, *Sylvia cantillans cantillans*, and Swallows were often observed.

One day we made a most interesting excursion to Temacin and the Zaouia, where a very great and far-famed Marabout resides, who insisted that we should have luncheon in his house, and where we ate the best couscous we ever tasted, and strange Arab sweets.

On April 4 we left Touggourt, travelling eastwards in the direction of El Oued. Even so late in the year it was cold in the morning, the thermometer only showing 8° C. After leaving the oasis and passing through low ground with an extensive sheet of water to the north, we soon entered the sand-region, and dunes were encountered after some hours. In the morning it was windy, but after twelve o'clock it became quite calm.

It is difficult or impossible to describe the simple beauty of the rich yellow sandhills, with the scantiest vegetation in the valleys, the spotless blue sky overhead, and the great quiet, here and there interrupted by the wonderful melan-



choly notes of the "Muka" (*Certhilauda*), the guttural call of the Cream-coloured Cursor, or the lively little song of the sand-coloured little *Sylvia nana deserti*.

Nearly all the way from Touggourt to El Oued the traveller passes through a sea of sand-dunes (Pl. XXIII., bottom), and there are only a few wells, after a short day's march, near the Bordjs or rest-houses, which are strong stone buildings with adjoining stables and surrounded by a stone wall. They contain a few tables and rough seats, and may be used by travellers. We took advantage of them all the way from Touggourt to El Oued, where they are quite clean and not as cold as farther northwards.

Near Bordj Ferjan the bushes of *Ephedra elata* became higher, some showing thick stems, and creeping along the ground like the "Knieholz" in the Alps. The place of the halfa of the north (*Stipa tenacissima*) is here entirely taken by the "drin" (*Aristida pungens*) and *Aristida floccosa*. Here and there some curious bushes without leaves arrest our attention: *Retama raetam*, and *Calligonum comosum*. Although attaining a height of two metres or so, and *Retama* sometimes even more, all have a curious weatherbeaten, meagre appearance. In these bushes the rare *Passer simplex* was seen, which here builds its nest in clefts and holes of the stems of such bushes, or in low palm-trees, but elsewhere also in the stone walls of wells.

El Oued, the chief oasis of the "Souf," was reached on April 7. It is perhaps the strangest oasis in the Sahara (Pls. XXII. and XXIII., top). The palms are not watered by little ditches, as they are in all the oases on the edge of the desert—the entire Oued R'hir from Ourir to Touggourt, at Laghouat, Berryan and Ghardaïa, and, we believe, in most places—but take their water from natural subterranean rivers or reservoirs, or maybe only moist soil. They are therefore only planted in the deepest depressions between the dunes, and it is wonderful to think how the Arabs found these places out. These palm-gardens are constantly filled up with sand, sandstorms being frequent, and, it is said, blowing two hundred days in the year. Men, women, and children are therefore constantly carrying baskets full of sand out of the gardens, in order to keep them clear. Nothing grows under the palms, except a few onions, broad beans, and other vegetables loved by the Arabs; no weeds are seen. The houses of the town (Pl. XXIV.) are also most peculiar, each house and generally each single room having a round domed roof of plaster, made of the pounded gypsum which occurs in extensive layers under the loose sand of the surface, separating, as it were, the latter from the damp lower formation. The walls of the buildings consist of the same material mixed with more sand and mud; but even mud is rare, and wood hardly exists, as no palm-tree is sacrificed for its wood! The dates of El Oued, and indeed of the whole of the "Souf" or "Oued Souf," as the district is called, are among the best in the world, and in delicacy surpass even those of Touggourt and Wargla.

Our time in El Oued was almost lost, as a heavy sandstorm was blowing three days and two nights. With difficulty did we enter some of the palm-gardens and collected Sparrows, which are plentiful, and Palm-doves, which appeared to be the only resident birds, and shot some migrants in a garden of the town, among them the first *Jynx torquilla mauretanica* and a large dark North European *Caprimulgus europaeus europaeus*. Other birds noticed, and mostly secured, were *Phoenicurus phoenicurus phoenicurus*, *Phylloscopus sibilatrix* and *collybita*, *Oenanthe oenanthe* and *hispanica*, *Anthus trivialis*, *Upupa epops*,



*Calandrella brachydactyla*, *Motacilla flava*, *Sylvia atricapilla*, *communis*, *conspicillata*, *Muscicapa hypoleuca*, and *Caprimulgus aegyptius saharæ*. Probably Owls occur, but we saw none, and nothing could be heard through the roaring of the gale. Ravens (doubtless *umbrinus*) and *Passer simplex* were said to visit the oasis occasionally.

On April 10 we left El Oued. The wind had subsided, and all was quiet and bright. Wheatears, Swallows, and Common Bee-eaters, also Quails, were on migration, *Certhilauda* poured forth its melancholy song. The nights during our journey to Touggourt were dark, and with our acetylene lamps we caught great numbers of Moths, mostly *Palpangula cestis*, *spilota*, *straminea*; and a new species, *Palpangula hilgerti* Rothschild (*Entomol. Zeitschr.* xxiii. 1909, p. 142), as well as *Leucanitis algira* and *kabylaria*, *Lithostege marmorata*, *Orea myodea*, *Timona striata*, *Copieucullia cyrtana*, *Brachygalea albolineata*, a species of *Lymantria* with red hindwings, and several fine *Pyralidae*; even Longicorns flew to the lamps, and several large black Tenebrionidae ran over the sand towards the light, if it was not placed too far away from the bordj, round which they seemed to live. It is quite astonishing to find so much insect life in the desert, among sand-dunes with the scantiest vegetation.

Late on April 13 we were back at Touggourt. If there were some flies during our previous visit, they were at this time so plentiful as to defy description, and we can hardly imagine what it must be in the autumn, when the dates are ripe, and when there really **are** flies, as our host declared, while at present he did not seem to think much of them.

In Touggourt we met with both *Hippolais pallida reiseri* and *opaca*, the latter undoubtedly, the former probably on passage. *Phylloscopus bonelli*, *Jynx torquilla torquilla*, *Motacilla flava flava*, *Oenanthe oenanthe*, *Phoenicurus phoenicurus* and *ochruros gibraltariensis* were on migration.

The ornithology of the oasis is very poor. Palm-doves, Sparrows, Scops-Owls, and a few Kestrels seem to be almost the only nesting birds in the palm-groves. Many other birds which enliven the northern oases of Biskra, Zaatcha, Tolga, Oumash (Pl. XXI.) and El Kantara, for example, are entirely absent—such as Blackbirds, Goldfinches, Greenfinches, *Serinus*, *Parus caeruleus ultramarinus*, *Emberiza striolata sahari*, *Emberiza calandra*—nor did we see Ravens at or near Touggourt.

On April 15 we left Touggourt once more, and on the 22nd we arrived at Biskra. So far we had become acquainted with fine days and sandstorms in the desert, with heat and cold, but we had not yet experienced a thunderstorm. This we did when in camp near Tamerna Djedida, and one of our tents at last **was** blown down. We also had another heavy sandstorm, but on the whole the journey ran smoothly enough, except that towards the end our friend Dr. Nissen became rather ill, probably from the somewhat dangerous brackish water, or maybe from some tinned food.

On account of the bad nights we had little opportunity to light the lamps for moth-catching; only at Mraier we caught a fair number of smaller moths, among them two new species: *Cleophana picturata* and *Talpocharis deserti* Rothschild. (*Entom. Zeitschr.* xxiii. p. 142). In Mraier we shot some *Hippolais pallida reiseri*. Our last evening in the desert, at Bordj Saada, was magnificent, the fiery sunset, with the Aurès Mountains in the distance, being a sight never to be forgotten.



We remained in Biskra until April 30, when we moved to El Kantara, where we stayed five days. *Ammomanes deserti algeriensis* and *Oenanthe leucura synetica* had eggs. In vain did we search for *Euchloë pechi*, one of the rarest palaearctic butterflies, and hitherto the rarest one of Algeria, though *Euchloë charltonia* and *Melanargia ines* were numerous and several *Papilio machaon hospitonides* were seen.

Ten days were spent at Batna and Lambèse, one of which was devoted to the ascent of Mount Mahmel [see in list under *Oenanthe (Saxicola) seebohmii*], another to an excursion to the ruins of the Roman city of Timgad. This was one of the most interesting days we spent in Algeria, but not ornithologically, most of the way being through fields and bare hill-sides only covered with short grass and countless wild artichokes, where hardly another bird was seen except Crested Larks and Skylarks, and a few *Oenanthe hispanica hispanica*.

On May 15 we left Batna for Hammam Meskoutine, in the northern Atlas range. The way from El Guerra to Hammam Meskoutine was extremely beautiful, the whole landscape being clad in luxurious green, with millions of red and yellow wild flowers; and whole mountain-sides and fields were deep scarlet from the countless poppy-flowers—which were here of a deeper, more pleasing red than in Europe. Black Kites, Golden Eagles, and Griffon Vultures were seen from the train.

Hammam Meskoutine is a most interesting place, the hot springs being very curious (see Pl. XVI.). The heat of the water as it bubbles up from the springs supplying the hot waterfall and the baths is about 90° C., and it has been estimated that the total output is about 25,000 gallons per hour. All round the springs strange cones, some of fantastic shape, are seen, formed by the lime deposited by the hot waters, which have frequently changed their course when the latter became blocked up by their own deposits. These springs were used by the Romans, and known as the *Aquae Tibilitanae*. Remains of Roman aqueducts, baths, etc., are numerous, and those in Guelma, the nearest town, are of the greatest interest.

The ornithology of Hammam Meskoutine is rich and interesting, but there are no real forests near by—only bush, scrub, gardens, and fields. Mount Taya is of supreme interest to an ornithologist, and doubtless to entomologists as well, but it is a long excursion by rail and mule. Bearded and Griffon Vultures, Falcons and Golden Eagles are still nesting on the stupendous cliffs as they did fifty years ago, when Dr. Selater visited the place, in spite of the mining operations and frequent blasting of the rocks.

The stay in Hammam Meskoutine terminated this year's visit to Algeria, and early in June we returned to England, bringing with us 733 bird-skins.

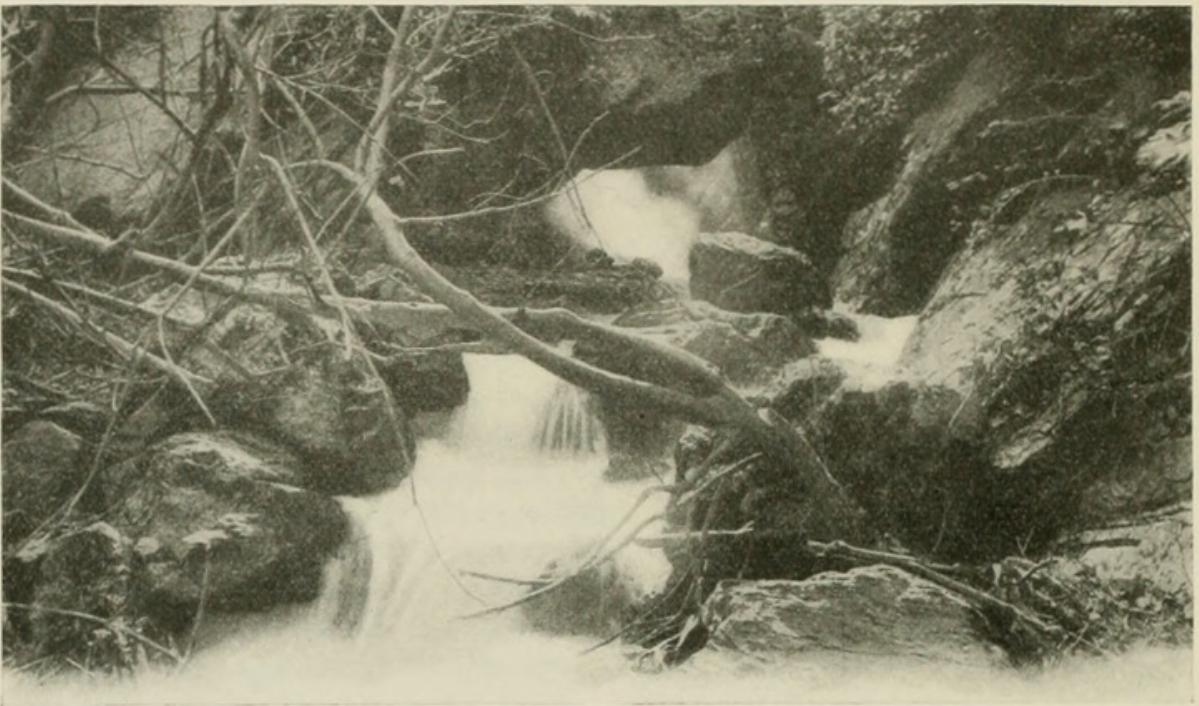
A third visit to Algeria took place in 1911. On January 18 we left Tring, and in the evening of the 21st we reached Algiers, being several hours late, chiefly on account of a strike of firemen in Marseilles, which the steamer left more than two and a half hours late. We were again accompanied by Mr. C. Hilgert.

From February 1 to 18 we stayed again at Hammam Meskoutine, whence we visited the oak-woods of Aïn Mokra, Lake Fetzara and the Djebel Taya, and took part in a wild-boar hunt among the neighbouring hills, when twelve wild pigs, among them some fine old tuskers, were killed. Many of the summer birds we found in 1909, such as the Nightingales which were our delight in May, Red-necked Nightjars, and *Caprimulgus europaeus meridionalis* were of course absent, and the



innumerable toads and frogs, which in May fill the night with their croaks and calls, were silent. Winter visitors, especially Song-Thrushes, were extremely numerous, and often formed part of the meals in the hotel; but Eagles and Vultures, which we had been told were much more plentiful in the winter, were less frequently seen than in May.

From February 19 to March 17 we stayed in our old quarters in the Hotel Victoria in Biskra, and made excursions in the neighbourhood in almost all directions. As usual at this time of the year, Biskra was full of tourists, and among them not a few lovers of nature and naturalists. In 1908 we had the good fortune to find staying in the same hotel with us the veteran African explorer and renowned botanist Professor Schweinfurth, and many a pleasant hour was spent in his interesting company. This time some kindred spirits were met with in the persons of Messrs. Meade-Waldo and G. H. Gurney, jun., who collected insects.



THE HOME OF THE DIPPER IN ALGERIA.

From March 17 to 27 we were again in El Kantara, most of our time being spent in search of Bearded Vultures and Golden Eagles, and in the unsuccessful hunt for *Euchloëpechi*. From El Kantara we travelled back again to Algiers, which we left by motor-car on April 1. Dr. Nissen accompanied us again on our journey to the south. Leaving Algiers, we travelled westwards to Blidah, and thence to the picturesque "Gorges de Chiffa," where we made a short stop at the restaurant in the "Ruisseau des Singes," where dozens of Monkeys, among them enormous specimens, were seen, and a few Dippers on the stream some distance upwards. The stream is indeed ideal for *Cinclus*, which do not seem to be rare at all, though we did not see them anywhere else. In the great town of Medea, renowned for its wines, we had luncheon, and in the afternoon reached Boghari, 190 kilometres from Algiers, where we slept.

Boghari is a picturesque little place, a few kilometres from the old fortress of Boghar (the Castellum Mauritanum of the Romans), and below the Arab and Jewish quarters. The place is most interesting for a zoologist, lying, so to say, at the foot



of the northern Atlas and on the north edge of the "Hauts Plateaux," the huge flat plateaux between the northern and southern chains of the Atlas. Travelling by rail from Constantine to Biskra this zoogeographical belt is not well marked and not very noticeable, mountains and hills coming up between, and the country being more cultivated, while still farther east, in Tunisia, on account of the S.W.—N.E. direction of the Atlas, it is still narrower, though such a belt is marked between El Oubira (near Tebessa) on the western frontier and Feriana, according to Mr. Whitaker (*B. Tunisia* I. p. x). Here, south of Boghari, these Hauts Plateaux are very extensive, forming an immense, little inhabited and little cultivated flat stretch of land, for the most part thickly covered with halfa-grass (*Stipa tenacissima*).

Though comparatively near the coast and so close to the Atlas Mountains, the fauna on the arid rufous-buff rocks some 10 kilometres to the south is more Saharian than one would expect from looking at the map; *Oenanthe* (*Saxicola*) *leucura syenitica* is common, and so is *Erythrospiza githaginea*, and the Crested Lark is no longer the dark *Galerida theklæ harterti* which we saw commonly in the Métidja plain and even near Medea, but the pale *G. theklæ hilgerti* (see chapter on Crested Larks). It is here where *Comatibis eremita* was found over fifty years ago, and still exists, though in small numbers.

On the steep banks of the deeply eroded river-bed Lesser Kestrels and Little Owls appeared to be numerous. The caterpillars of an Arctiid moth were exceedingly numerous. Their nests covered the short grass and the young wheat, and the little caterpillars were seen by millions. Probably they belonged to a species of *Cymbalophora*, maybe *haroldi* or *powelli*. The next day we rushed over the great halfa-plateau to Djelfa, the capital of the Ouled-Naïl tribe, to which belong nearly all the dancing-girls and prostitutes of the southern parts of Algeria.

We stopped in several places, observed *Oenanthe moesta* and *deserti*, and *Oe. oenanthe* and *hispanica* on migration, shot a few *Galerida theklæ hilgerti* and caught *Euchloë charlonia*, *belemia* and *belia* auct. (nec Linné), also fresh *Thestor mauritanicus* and quite worn *Thestor ballus*.

Evidently these great halfa-plains must be the home of *Alaemon duponti*, and *Galerida cristata randoni* (see chapter on Crested Larks), both of which we failed to observe anywhere in Algeria. Houbara-Bustards were often seen. On April 4 we arrived at Laghouat, a very beautiful town, said to be one of the hottest in Algeria in summer, the temperature sometimes rising to 50° C., while in winter, though cold, it never reaches zero. The Catholic church and the new mosque are very fine buildings, the fortress and other military buildings crowning the rocks above are picturesque from the distance, many of the streets have colonnades under which one can walk protected from the sun, and everything is wide and clean; nevertheless typhoid and malarial fevers are said to be common. Our chief object at Laghouat was to collect the long-billed Lark which Tristram discovered here in 1856, and we accomplished this without great difficulty, though this form, *Galerida cristata marorhyncha*, was far rarer than *G. theklæ carolinae*, which occurred almost everywhere on the red stony plain south of Laghouat and even at the foot of the hills and in the wide bed of the Oued Mzi, which later on, after receiving a few tributaries (*i.e.* when there is water in them!) becomes the Oued Djeddi, the biggest (temporary) river or Oued in the Algerian Sahara, and which, beyond Bordj Saada, south of Biskra, like the Oued Biskra, is lost in the Chott Melrhir (or Melghir). The long-billed Crested Lark is almost confined to places where there are fields or an attempt at cultivation, and farther south, to



the neighbourhood of the dayats; but it is never seen on the vast reddish buff stony plain, where *G. t. carolinae* occurs.

On the hills *Euchloë charlonia* was flying, and in a mostly dry river valley some fifteen kilometres to the south we found a rich vegetation and *Euchloë charlonia* and *falloui* were common. How different a locality to find the latter, to the neighbourhood of Biskra, where it only flies on the ragged, torn and dry dark-coloured height of the Djebel bou Ghezal! The reason, however, was easily understood, for its food-plant, *Morecandia arvensis* var., grew in abundance.

Some pools of water were alive with millions of *Apos numidicus*, a crustacean which is found in almost every pond and pool from Laghouat to Ghardaïa, and elsewhere. A vast plain extends to the south of Laghouat, the ground reddish buff, with innumerable stones of the same rufous buff colour, and a scanty vegetation of low thick bushes of a greenish grey colour, consisting of hardly more than three species of plants—*Artemisia herba-alba* dominating over everything else, and often for miles the only plant noticed, *Anabasis articulata* and *Haloxylon articulatum*.

In certain places sand appears, and there halfa grows, and now and then a *Helianthemum hirtum* with pretty yellow flowers gladdens the eye. On the whole this *Artemisia*-covered plain, with its innumerable stones and scanty bird life—sometimes a *Houbara*, *Galerida theklæ carolinae*, the pretty *Otocorys bilopha*, an *Ammomanes*, or the rare thick-billed *Rhamphocorys clot-bey* is seen, but hardly anything else—is the most fatiguing desert of all, while it lacks the serene beauty of the sand-dunes. We were glad that we were able to pass through this desolate country at motor-speed; but this, unfortunately, was frequently rudely checked! The last night in Laghouat a very heavy thunderstorm with terrible rain came down, and the “road”—if it can be called by that name, for, though generally good, in places the road was hardly visible—had greatly suffered. Soon after Laghouat we got into deep mud, of which there had been no sign a couple of days before, and afterwards we took the wrong road and became stuck five times in deep sand. It necessitated much labour in each case to get off again: bushes of *Artemisia*, bunches of *Stipa* (if there were any) and whatever we could get hold of, had to be torn out and placed in front of the wheels, and then, with all hands on the wheels or body of the carriage and “full speed ahead” we began to move, but often not before a considerable time had elapsed. We were, therefore, quite glad when the first “dayats” were reached. What an extraordinary sight—a park-like clump, sometimes of great extent, of fine old trees in little depressions in the middle of the most desolate stony desert! These dayats with their old *Pistacia*-trees (Pl. XXV.), Betoum of the Arabs, *Pistacia atlantica* of botanists, always stand in little depressions where the water remains in the rainy season, and there is but little vegetation except the fine, thick, often gigantic Betoums, an outer ring of prickly “sarib” or “jujubes,” *Zizyphus lotus*, and in the surrounding desert the endless *Artemisia*, and other low, greyish green plants.

The soil is like the dry mud of a barn floor, without undergrowth, except a few *Zizyphus*-bushes; and only in a few dayats the Arabs plant wheat in favourable years, like the present one. The fears, expressed by Professor Massart in 1898 (*Bull. Soc. r. de botan. de Belgique* xxxvii p. 314) that *Pistacia atlantica* was doomed to extinction are absolutely groundless. When Massart visited the dayats, there had been an exceptionally long period of rainless years and everything was parched and unusually dry. The author did not see



one single young Betoum. He made out that no young tree could ever grow up, because their short roots were not able to reach the damp, deep, clayey layers out of which the large old trees still took water, their life-element, and that therefore they were destined to perish, on account of the ever-increasing aridity of the desert. Whether this ever-increasing sterility be a fact or not, the Betoums are now, thirteen years later, quite strong and healthy, and young ones in every stage were found.

The life-history of these Betoums is most peculiar. The seed cannot grow up, or at least the young plant has no chance whatever to live, unless it is sheltered against the inclemency of the climate—cold or hot winds or driving dust and sand; and the teeth of the camels are also to be taken into account, though these “ships of the desert” are not so very numerous in this region of the Sahara.

The necessary shelter is found in the prickly *Zizyphus*-bushes! In the midst of them or under their branches the seedling can grow up sheltered and safely; the young tree grows to the height of its involuntary host, grows up beyond it, commences to develop a crown, and by the time it is large enough to be independent of the prickly bush, begins to kill the latter, which cannot live in the shade.

This region of the dayats is, like all the country passed since Boghari, more or less high ground, generally about 700 metres above the level of the sea. At the largest of the dayats, Tilrhempt or Tilghempt\* (Pl. XXV.) known for its able cook, the keeper El Aïd ben Massaoud, we found tolerable rooms and remained there four days. The dayats were not found as rich in bird life as we had expected. Perhaps the only birds nesting in them now are a great many Scops-owls, very many *Crateropus fulvus*, some *Lanius excubitor elegans*, a few *Athene noctua glaux*, Ravens, Kestrels, and a small number of *Sturnus unicolor*.

At present many species passed through on their migration to the north. We observed or obtained: *Falco subbuteo jugurtha*, *Cuculus canorus*, numerous *Hirundo urbica*, *Chelidon rustica*, *Riparia riparia*, *Motacilla flava flava*, *Lanius senator*, *Muscicapa hypoleuca* and *striata*, several species of *Phylloscopus* and *Sylvia*, *Emberiza hortulana*, *Milvus korschun*, *Coracias garrula*, *Merops persicus chrysocercus*, *Columba oenas*, *Upupa epops*, and *Caccabis petrosa spatzi*. We do not think that any of these birds would stay to nest, though of the Hobby we are not sure. Golden Eagles, which were common in Tristram's time, are unknown. Sparrows nest in the buildings of the bordj, and in the surrounding desert are found some Houbara-Bustards and Sandgrouse (? species), both species of Crested Larks, *Otocorys bilopha*, *Ammomanes phoenicura arenicola*, farther away doubtless also *Rhamphocorys clot-bey*, and *Oenanthe moesta*.

While driving from one dayat to another Dr. Nissen said he saw a curious greenish bird. Hartert seeing something moving, fired, and killed a huge, beautifully coloured specimen of *Uromastix*, the spine-tailed lizard. We were at once struck with the different look of this creature to those so common near Biskra. We think we must have seen a hundred or more at the latter place. Several times they were seen among the rocks of the Djebel Bou Ghezal, and looked quite grey. Often they were brought alive for sale, and many were always on sale, stuffed, in the

\* The latter spelling is now adopted officially and on some French maps, but one hears almost always “Tilrhempt,” the Arab letter expressed by our r or g sounding guttural, to our ears much more like an r than a g. Formerly one read only Tilrhempt, and still finds it thus on most maps.



market, where one day we saw dozens brought in to be stuffed on the spot, and all were more or less dull grey in appearance. Besides the one shot near Tirlhempt, we got others at the same place from old El Aïd ben Massaoud, several at Ghardaïa, and a number—though no adult males—at Laghouat. The old specimens were larger than almost every one caught about Biskra, and the upperside of a bright light green or yellowish green, with the head and underside quite black, or black with a few lighter spots and patches. Biskra specimens are more or less grey, with only a greenish or yellowish tinge, and we have seen none with a black underside, though some specimens have small black spots. It must be admitted that young specimens from the M'zab country are not separable from Biskra ones, though the majority have a more greenish back, and all show at least frequent small black dots on the underside. The specimens in the M'zab country—old males and females (British Museum)—attain often a length of 25 cm. (without the tail)—*i.e.* a little above the greatest length—which is not very frequent—of Biskra specimens. Under these circumstances it seems reasonable to separate the form inhabiting the M'zab country (Ghardaïa, Tirlhempt, Laghouat) under the name of

***Uromastix acanthinurus nigriventris* subsp. n.**

from the typical *U. acanthinurus*. Type (Tirlhempt) in the Tring Museum; cotypes (one M'zab country taken by Lataste, two caught by ourselves) in the British Museum.

On April 16 we left Tirlhempt for our last goal—Ghardaïa, the capital of the Beni M'zab. It was bitterly cold, a strong *south* wind blowing against us; the thermometer showed only 8° C. Again we sped over the same clayey rufescent ground, with countless stones and generally three or four plants at the utmost, though in depressions plants were more numerous. Near Berryan, the first M'zabite town, rocky hills appear, the ground becomes more varied and broken. At Berryan we took luncheon in the "bordj," or rest-house. The road from Tirlhempt was comparatively good, but after Berryan became worse again. There was no fear of becoming stuck in sand or mud, but often we had to pass over bare and not very smooth rock, which shook our perhaps not too good machines most terribly. Berryan had greatly interested us, and after that town we saw several *Rhamphocorys*, two of which we bagged. Shortly before Ghardaïa, after descending the last steep road to the M'zab valley, our machine broke down. We had to walk the last half-mile, and the motor was ignominiously towed into the desert-city by particularly stupid-looking mules.

Ghardaïa (Plate XXVI.) is very picturesque, the French fort and the various old towns of the M'zabite community crowning the rocks, the modern town, with the few European houses and the oasis, filling the wide river valley.

The M'zab are a most peculiar tribe, mostly smaller than the tall Arabs, with square shoulders, wide chests, and strongly developed calves, as compared with the—on the whole—slim, thin-legged true Arabs. They belong to a different religious sect, and build different mosques (see Plate XXVI.), are much more industrious, quieter, fond of trade and agriculture—also, judging from the orderly look of their streets, gardens, and cemeteries, cleaner. Nevertheless lice, especially *Pediculus vestimentum*, are exceedingly numerous, and bed-bugs are not unknown, though apparently not over-plentiful; human fleas, however, which are absent from the whole of the Sahara (and tropical Africa except where introduced), do not occur.



The cemeteries are truly beautiful as compared with the entirely bare Arab ones. They are covered with green bushes and (at this time) with innumerable lilac and white little flowers, and each grave is ornamented with pieces of broken pottery, broken instruments, or other broken things, evidently to signify the broken life of the deceased. There are also special little houses near the cemeteries for ablutions, without which prayers may not be said; and for the grand prayer, said on certain days in the year, large platforms like big elevated barn-floors are built.

The most extraordinary feature, and a remarkable proof of the industry of the people, are the deep wells, of which over 1100 are said to exist in the M'zab valley alone. They are being worked almost the whole day, by mules, horses, cattle, and camels, bringing up bucket after bucket of the fluid element without which the palms and gardens cannot exist. Far superior to all Arab oases we have seen are the M'zabite ones, and the beautiful appearance is chiefly due to the vines which are trained like garlands from palm to palm and along the walls.

The bird life in the oases is almost as poor as elsewhere, but the Grey Shrike (*Lanius excubitor elegans*) and *Crateropus fulvus* nest in them, the number of both Turtle-doves, *Turtur turtur arenicola* and *senegalensis aegyptiacus*, is enormous, and often *Oenanthe* (*Saxicola*) *leucopyga* nests in the wells or on houses and stone walls.

Excursions were made eastwards, in the direction of Guerrara, where a few Crested Larks, *Ammomanes* of both species, *Otocorys* and *Rhamphocorys* were found, but a search for their rare eggs was in vain. The ascent from the valley to the plateau over bare rock was rather slippery for the mules, but accomplished without misfortune. Ravens, *Milvus korschun* and *Neophron* visited the abattoirs near the town, Kestrels were seen several times, and Scops-owls heard in the gardens.

Here at last, for the first time during this trip, the nights were dark, warm, and without wind. Consequently we could use our lamps, and caught hundreds of moths. It was striking that *Geometridae* were almost entirely absent, and among the *Noctuidae* the genus *Cleophana* was most richly represented. Of butterflies a very light form of *Euchloë falloui* was collected on the rocks, but was particularly difficult to catch on account of the rugged rocks and strong wind; and Dr. Nissen and Walter Rothschild also caught *Teracolus nouna*!

On April 24 we returned once more to Tiltrempt. On arrival there the other motor, which conveyed our luggage, broke down hopelessly and had to be abandoned. The luggage was put on a cart, which travelled about one mile, when a wheel broke in pieces. In the dark of the night everything had to be transferred to another cart, and at last started off—and actually reached Laghouat safely!

At Tiltrempt, too, we had this time occasion to catch moths, among them the beautiful green *Cleophana warionis* and the rare *Cossus aries* Püngeler, hitherto only known from two specimens taken in Palestine. On April 26 we reached Laghouat, which we left again on April 28. While in Laghouat we went once more to the big plain full of *Zizyphus* and the, now quite dry, "oued" where *Euchloë charltonia*, *falloui* and others were flying. Quails, *Motacilla flava* and *Anthus pratensis* were still on migration. Crested Larks had young ones, *Melanocorypha calandra* and *Sylvia conspicillata* were found with eggs.

On the way from Laghouat to Boghari, before we came to the little caravanserai of Guelt es Stel, we had a great misfortune. Probably some one cut



the rope with which two cases, containing all our birdskins and insects brought together during the journey to the M'zab country, were tied on to the back of our motor, or else it got cut through by the sharp edge of the box ; anyhow, when we arrived at Guelt es Stel it was seen with indescribable horror that both cases had fallen off ! In less than one minute Hartert was on the seat by the side of the chauffeur and rushing back over the same road with all possible speed. After a long drive he saw a big white mass in the halfa-grass—the box containing the birds broken open, and the skins strewn over the desert sand. Fortunately the nomads, who evidently had broken it open, could do nothing with the birds, and not a single one was missing ; but some cigar-boxes containing sixteen clutches of eggs were gone—probably only because of the wooden boxes, which the Arabs covet very much. Among the eggs were properly identified clutches of *Galerida theklæ carolinae* and *cristata macrorhyncha* and a splendid series of eggs of *Ammomanes deserti algeriensis* and *Emberiza striolata sahari*.

The other box, with all the insects and many other things, after searching in vain all the tents of a nomad camp, in spite of great unwillingness of the owners, was found hidden away some distance from the road among some tamarisk bushes. As it was we got off luckily enough with comparatively little loss ; and moreover the enforced delay at Guelt es Stel led to a wonderful discovery : Rothschild, Nissen, and Hilgert utilised the time of waiting by catching butterflies on the hill-slopes near by, and caught the rare *Euchloë pechi*, for which we had constantly been looking out, and for which we had in vain ascended the highest mountains near El Kantara a number of times. The honour of the first capture belongs to Dr. Nissen, who made it known to us in dramatic style.

The next day we stayed again at Boghari, searching in vain for *Comatibis eremita*, while Nissen and Hilgert went back to Guelt es Stel for more *Euchloë pechi*, though they got only a small number, the strong wind being a great hindrance to collecting.

On April 30 we returned to Algiers. The crossing of the Atlas was cold, especially near Medea, an icy rain trying to wash off the fine whitish dust with which we had been covered in the southern plain. Our stay at Algiers was much longer than we had wished for, on account of one of us falling ill ; and thus much time was lost, as Algiers is not a suitable locality for an ornithological collector.

From May 17 to 26 we stayed at Hammam R'hira. Much of the time there was spent in collecting lepidoptera, especially the beautiful *Zygaena*, which was described twice within two months under the names of *Zygaena théryi* and *Zygaena nisseni* by Abbé Joannis and Walter Rothschild, and the lovely *Zygaena algira*, a generation of which became more and more plentiful.

Insect life was very plentiful, especially beetles, *Cicadidae* and others. In the vineyards the large *Cicadella cantans* was often seen whirring off with a great rattling noise, pretty *Buprestidae*, *Longicorns*, *Curculionidae*, and a host of Hymenoptera and Diptera were collected. Hilgert was fortunate enough to catch a specimen of the Bee-hawk-moth *Haemorrhagia fuciformis*. This was rather a surprise, as Dr. Seitz (*Entom. Zeitschr.* vol. xxiii. p. 105) had categorically declared that statements of its occurrence in North Africa rested on wrong identifications. Also another moth said by Dr. Seitz not to occur in Algeria, *Chaerocampa porcellus*, was caught by Dr. Jordan and Rothschild at Blidah Glacières, and this race had even previously been described from specimens caught at Teniet-el-Had under the name of *Chaerocampa porcellus colossus*.



The most interesting birds we found near Hammam R'hira, a well-known bath, celebrated already in Roman times, among mountains covered with pinewoods and extensive vineyards producing excellent wines, were *Circaëtus gallicus* and *Eutolmaetus pennatus*, the Booted Eagle, which we observed thoroughly. Here too we stayed longer than we had intended, and could not carry out all our plans, on account of the renewed illness of one of us ; and on the 14th we left Algiers and arrived late next day at Marseilles, after a rough passage.

This time we brought home 507 birdskins. The following notes are therefore based on a material of 1626 birds of our own collecting, in addition to which we have some bought from Flückiger and Steinbach, and have compared many of Tristram's old collection.

Our special thanks are due to the French authorities, who everywhere showed us the greatest consideration and civility, and most willingly gave every help required ; also to our friend Dr. Nissen, and several other private persons.

## II. LIST OF BIRDS COLLECTED AND OBSERVED.

### 1. *Corvus corax tingitanus* Irby.

The Raven is spread all over Algeria, from the northern coast-region to the northern Sahara ; but it is not so common, as far as our observations go, in the mountains of the north, and rarely seen in the fertile plains, while it is very common in the south, and especially on the northern edge of the Sahara.

*C. c. tingitanus* does not inhabit the Sahara. It is common in the northern oases, Biskra and others, on the foot of the southernmost mountains of the Atlas system, but it does not extend far south of Biskra, and appears to be absent from Touggourt. In El Oued Ravens are occasionally seen, according to information received, but there can be no doubt that they belong to *C. corax umbrinus*, which is the true desert Raven.

Ravens are also found near Laghouat, where they nest on the mountains, and a few in the Dayats, where they have their nests on the highest trees.

A great number of Ravens were seen about the slaughter-houses near Ghardaïa. We did not succeed in shooting any, but they seemed to be all *C. c. tingitanus*, and not *umbrinus*.

We collected only a few Ravens near Biskra. They agree with a good series from Southern Morocco and others from Tunisia.

*Corvus corax corax* does not occur in Algeria. It is replaced by *C. c. tingitanus*, and in the middle of the desert by *umbrinus*. Statements of the occurrence of *C. c. corax* in Algeria refer probably all to *C. c. tingitanus*, which was not distinguished from *corax* until Irby described it as *Corvus tingitanus* in 1874. Even as late as 1888 Koenig mistook it for *corax*.

### 2. *Coloeus monedula cirtensis* subsp. nov.

We saw a great many Jackdaws in Constantine, where they were breeding in the stupendous gorge of the Rummel, but were not able to obtain specimens. A large proportion showed the brown, apparently unmoulted quills generally seen in young birds, and they were shining quite rufous in the sun.

Quite recently Mr. Paul Dechabert got for us a series of ten specimens. Two specimens which we have from Tangier do **not** belong to the Algerian race.



This new subspecies differs from *C. m. spermologus* by the much lighter, pure slate-grey undersurface. This is especially noticeable on the breast and abdomen and under tail-coverts, and even on the under wing-coverts, the throat being darker. Also the hindneck is more dull grey, and the crown is not quite so purplish. Thus *C. m. cirtensis* resembles, in the colour of the underside, more *C. m. monedula* and *C. m. collaris* (which two forms are very closely allied), but the underside is not so mouse-grey, being pure slate-grey, and there is no indication whatever of the creamy-white patch on the sides of the neck, the latter also being much less whitish grey. Wings 225—243 mm. (none sexed). Type, December 4, 1911, Constantine. Named after its locality, the town of Constantine, the Cirta of the Romans.

### 3. *Pyrrhonorax pyrrhonorax* (L.)

*Upupa Pyrrhonorax* Linnaeus, *Syst. Nat.* ed. x. p. 118. (1758—This name is indisputable. The description "atra, rostro pedibusque rubris" can only refer to the Chough, and never to the Alpine Chough.)

Undoubtedly widely but locally distributed in the Atlas range. We met with it near El Kantara and on Djebel Metlili, where it is common, and saw several flocks among the rocky ranges of the Bou Ghezal and its continuations west of Biskra.

We shot four specimens near El Kantara. The eye is dark coffee-brown. The wings of specimens from the Atlas appear to be generally rather long, but specimens from the Alps and even from Ireland have frequently equally long wings—these forms can therefore not be separated.

Mr. E. Flückiger obtained a number of specimens on the Djebel Ahmar-kaddou, north-east of Biskra.

### 4. *Garrulus glandarius cervicalis* Bp.

The Algerian Jay is not rare in the forests, and especially in the oak-woods. Rothschild saw it frequently near Blidah Glacière in 1908, but the only place till 1911 where we collected a series was in the mountains above Lambèse. There, on May 9 and 11, Hartert and Hilgert, when collecting in the higher parts of the mountains, where the forest is thick and high, obtained eight specimens. These birds vary to a certain extent, like all Jays, but they agree in having a somewhat dark area on the jugulum, and in size. The wings measure about 178 to 185 mm., while the wing of a male shot in the same place by Koenig measures over 188 mm., and it must not be forgotten that all these birds are in rather worn plumage and that the wing-measurements as obtained from them are slightly too small. Comparing these birds with skins from Northern Tunisia and North Algeria, it is noticeable that some of the latter are larger, their wings measuring from 180 to 195 mm., and that they have the dark jugular area frequently missing. Tschusi described North Tunisian birds as *Garrulus glandarius koenigi* (*Orn. Jahrb.* 1904, p. 99), but our comparisons leave no doubt that none of the differences supposed to exist between the two forms are constant or exist at all, except **possibly** the two pointed out above.

Unfortunately, however, if two forms were distinguishable, it would be the wrong form which Tschusi named. Sixty years ago birds were not likely to be collected in the somewhat distant forests near Lambèse, and a Jay would



at that time have come from North Algeria in all probability. Even the original description points to the fact that it was **not** taken from a Lambèse specimen, for no mention is made of a dusky jugular band, and the wing measurement is given as 190 mm. ! It must also be remembered that North Algeria and North Tunisia have the same fauna—moreover, Aïn Draham, the terra typica of *G. g. koenigi*, is on the frontier—while the fauna of the southern Atlas range, the Aurès Mountains as they are often called, differs in some respects from that of the northern range of mountains. It is naturally the geographical distribution, which is dependent on the physical nature of the country and not the political frontier—that is to say, not the question whether a bird comes from “Algeria” or from “Tunisia”—which is of importance to us. In 1911 we collected a female on the Djebel Taya and two males near Hammam R'hira. These birds agree in all details of coloration with our series from Lambèse, and their wings (somewhat worn) measure only about 170, 177 and 178 mm. This proves our contention of the impossibility of separating a northern and a southern form in Algeria, and we regard *koenigi* as a mere synonym of *cervicalis*.

The iris of the Algerian Jays was found to be dull lilac or reddish grey, the bill black, feet pale brownish flesh.

Flückiger obtained Jays on the Djebel Cheliah in July 1903.

The existence and distribution of *G. glandarius minor* is still somewhat mysterious. The probable type of this form, and the only specimen from Algeria known to us in any collection, is that in the British Museum. Hartert (*Vög. pal. Fauna*, I. pp. 31, 32) came to the conclusion that Mr. Whitaker's "*Garrulus oenops*" from Morocco was a synonym of "*G. minor*," and this is probably correct, though Mr. Whitaker (*B. Tunisia*, ii. p. 10) still thinks that *minor* and *oenops* might differ in certain respects, and that this question can only be settled by comparing further specimens. Such have been obtained by Riegenbach, who sent us not less than twenty skins from the South Moroccan Atlas, from Tamerouth (Tamarut), Temeroui, Fenzou and Tizi Taletoukiar. Their wings measure: males 160–165, females 149–160 mm. "Iris blue."

Where now does this bird occur in Algeria? Loche in his great work said he obtained it in "the south of the province of Alger," without stating the exact locality. In his first tentative list, entitled *Catalogue des Mammifères et des Oiseaux observés en Algérie*, Paris, 1858, where in many instances exact localities are given which are not found in his great work, however, he mentions a male, evidently then in the "Exposition permanente" in Algiers, from Djelfa! Unfortunately we did not before know of this statement, as we received the rare little book only quite recently, but when passing through Djelfa we do not remember having seen any woods in the immediate neighbourhood.

##### 5. *Pica pica mauritanica* Malh.

Strange to say, and to our disappointment, we never saw or heard a Magpie in Algeria.\* In 1892 Professor Koenig found it common near Batna, while in 1893 he never was able to see the sign of one. In the *Journ. f. Orn.* 1895 he raises the question at length why this might have been the case: he thinks it might possibly have been because 1893 was a very dry year, while 1892 was an unusually wet one—an explanation which seems to us to be very unlikely, though we cannot offer a better one in its place.

\* Mr. Herzig obtained specimens near Bou Saada, where it breeds.



6. *Sturnus vulgaris vulgaris* L.

Common Starlings winter in quantities in Algeria, where we met with them at Hammam Meskoutine and Biskra, in February and March 1908, 1909, and 1911. We even came across a flock as far south as Bordj Chegga, south of Biskra, on March 26, and shot two specimens.

7. *Sturnus unicolor* Temm.

It is strange that this bird, which is common in many parts of Tunisia and Morocco, should be rare in Algeria. We only saw it in the Dayats between Laghouat and Ghardaïa. They were very rare and shy, and we were able to shoot only two specimens. These agree with others from Morocco and S. Europe.

8. *Oriolus oriolus oriolus* (L.)

Orioles pass through Algeria in great numbers, and some appear to breed in the mountain forests of the north.

About the middle of April many passed through Batna, and between the 5th and 12th of that month through Laghouat in great numbers. On April 18 we shot a male about halfway between Biskra and Touggourt. On April 28 great numbers frequented the gardens and plantations of Biskra, and an Italian poacher shot dozens of them.

They must, however, breed in the north, for we obtained an adult female at Hammam Meskoutine on May 20. It was in good condition, though the ovary was quite small.

9. *Coccothraustes coccothraustes buvryi* Cab.

*Coccothraustes Buvryi* Cabanis, *Journ. f. Orn.* 1862. p. 259 (Algerien).

The Hawfinch of Algeria has been separated by Cabanis, as above, in 1862, but this description has been overlooked until 1903 (Hartert, *Vög. pal. Fauna*, i. p. 57). The next ornithologist who referred to this form was Mr. Witherby (*Ibis*, 1905, p. 192). When writing about the distinctness of *C. c. buvryi* Hartert had only examined two females, so rare was this form in European collections.

The differences of *C. c. buvryi* from *C. c. coccothraustes* are as follows :

The bill is smaller, *i.e.* shorter, and therefore it appears to be less pointed. Only quite exceptionally examples from Europe have bills with the culmen as short as in *C. c. buvryi*. The difference in the colour of the crown and back is not constant, though generally it is slightly less dark in *C. c. buvryi*. The rump and upper tail-coverts, on the other hand, are considerably paler, much less rufous, and often quite greyish, especially the rump. The white markings of the primaries are generally much smaller—partly because the quills themselves are so much shorter—but the differences are not always so important as shown in the figure on p. 192 of the *Ibis* for 1905, because the extent of these white patches varies very considerably both in European and Algerian specimens.

The difference in the colour of the underside is rather striking, *C. c. coccothraustes* being darker, and the flanks more rufous, the latter being more vinous or more greyish in *C. c. buvryi*. The extent of the white on the rectrices is not always less than in *C. c. coccothraustes*—in fact it is often fully as wide as in European birds.



The most striking difference is, perhaps, the small size of the Algerian form. The wings of seventeen males measure 96 to 99, once only 94, and once 100 mm., while the wings of thirty European males measure 102 to 108, only in four instances as little as 100.5 and 100.

The females of *C. coccothraustes buvryi* differ in size of bill and wings, much paler and more greyish crown, and in their paler and less yellowish rump and upper tail-coverts. The wings of seven Algerian females measure 96 to 98 and one 99 mm.

The iris of the males is pale grey, that of the females duller and more brownish grey, the feet are of a brownish flesh-colour, and the bills—our whole series consisting of spring specimens—are bluish, or more correctly basally pale bluish grey, with the lateral parts and tip bluish slate, and the lower jaw whitish in the middle.

We only met with the Hawfinch in three places: at Batna and its surroundings, as far as the woods above Lambèse; at Algiers; and at Hammam Meskoutine. At Batna they were common and in flocks during the first week of May. One saw them in the trees in the middle of the little town, and in the gardens around, busily engaged in feeding upon the green seeds of the elm-trees which began to ripen. We saw them also along the roads to Lambèse, and a few in the forests above Lambèse. Later on, during the second half of May we saw them singly and in pairs near Hammam Meskoutine. They were generally not in the least shy, but rather tame.

#### 10. *Loxia curvirostra poliogyna* Whit.

We obtained a single male, partially dull red, partially yellowish green near Algiers town on February 27, 1909. It shows the high and thick beak of the N.W. African form.

Wing: 96.5 mm.

One of us heard Crossbills in the high Aleppo pines near Lambèse, but could not get sight of a specimen.

In 1911 we found the Crossbill quite common in the pine-woods near Algiers in January. Young striped birds were shot, an adult female with large breeding patch and an almost full-grown egg, on January 27, 1911. Also an adult male which shows very little red; in fact, bright red males of this race appear to be rare. Crossbills—young striped ones and old—were also seen and heard in May near Hammam R'hira. The old female shows hardly any green.

#### 11. *Chloris chloris aurantiiventris* (Cab.).

This form was first described from a male from the south of France. Specimens from N.W. Africa, Spain, and South France do not seem to differ, and they form a rather distinct, brighter, more yellow subspecies of *C. chloris chloris*.

According to Whitaker (*B. Tunisia*, i. p. 197) the northern form (*C. c. chloris*) occurs in winter in Algeria. We have not tried to collect Greenfinches in winter, though we have observed small flocks near Algiers.

*C. c. aurantiiventris* breeds commonly in the wooded districts of Northern Algeria from Algiers to Batna and Lambèse, and farther west as far south as Laghouat. We collected a series of males and some eggs near Hammam Meskoutine



and Batna. Nests were found on Aleppo pines near Algiers and Batna, and in olive-trees near Hammam Meskoutine from the first week of May till the middle of that month.

The eggs measure as follows: clutch of five:  $28 \times 15$ ,  $22.3 \times 15.2$ ,  $22 \times 15$ ,  $23.5 \times 15.2$ , and  $23 \times 15.5$ ; clutch of four:  $20.8 \times 14.9$ ,  $20.5 \times 14.8$ ,  $20.3 \times 14.1$ , and  $19.8 \times 14$ ; another clutch of four:  $21.2 \times 14.8$ ,  $19.8 \times 14.8$ ,  $20.5 \times 14.9$ , and  $20.7 \times 15$  mm. All the eggs are rather pointed.

The wings of our adult males measure 85–89 mm.

Iris brown. Feet brownish flesh-colour. Bill brownish flesh-colour, lower mandible whitish.

## 12. *Carduelis carduelis africanus* (Hart.)

*Acanthis carduelis africanus* Hartert, *Vög. pal. Fauna* i. p. 69 (Spain and N.W. Africa; type: W. Morocco).

The Goldfinch of N.W. Africa is so closely allied to the one from Madeira, that it cannot be said to differ from the latter except by the generally larger bill, the culmen measuring up to 16.1 mm. The colour-differences supposed to exist between the two forms are not constant, these birds differing much according to season; the appearance of the white nuchal patch is a very uncertain character, as it depends a good deal on the preparation. The size of the N.W. African form is about the same as that of the Madeiran form, our present fine series showing that the latter are not constantly smaller. The bill in *africanus* is generally larger and thicker at base, but single specimens are found in which this character is not visible, and perhaps Moroccan birds have the bills—as a rule—somewhat thicker.

The Goldfinch is common and breeds from Algiers town and Bône in the north to Laghouat and El Kantara, where we obtained eggs; we have seen it at Biskra, as late as the end of April, and it undoubtedly breeds at Biskra as well. South of Biskra and of Laghouat we have not seen a specimen.

The wings in our series of males measure about 74–77, in a male from Seksawa in the Atlas in S.W. Morocco (Riggenbach) even 80 mm.

## 13. *Carduelis cannabina nana* (Tschusi).

The small North-West-African form of the Linnet—differing only in its shorter wings, while the beak is, on the contrary, inclined to be large—is very common from the sea-shore to Biskra. It breeds near El Kantara, and probably also at Biskra, but not farther south. We found it not rare at Boghari, but did not see it at Laghouat or farther south. The wings of our Algerian males measure 75–76.5 mm.

Flocks of Linnets are seen in winter, and these are said to be northern migrants. We have no doubt that this is quite, or at least partially, correct, because an adult male shot in the palm-groves of the oasis of Biskra, on February 22, 1908 (No. 12), has a wing of fully 80.5 mm., and must belong to the northern *Carduelis cannabina cannabina*.

## 14. *Carduelis spinus* (L.).

This bird, which is probably not a regular winter visitant to Algeria, was common at Hammam Meskoutine in February 1911. On the 8th, while having our luncheon in the new restaurant, we saw a flock feeding on the grass outside



the window, and soon obtained half a dozen. Afterwards we saw flocks almost daily up to the 18th of the month.

### 15. *Serinus canaria serinus* (L.).

More or less common from Algiers and Bône to Biskra and the other oases at the foot of the Atlas range, but not noticed south of Biskra. Farther west Laghouat is the southern limit of its occurrence. We cannot prove that it breeds near Laghouat, and in fact we saw none in the gardens towards the end of April, but flocks were seen outside the town on April 10.

### 16. *Erythrospiza githaginea zedlitzi* Neum.

*Erythrospiza githaginea zedlitzi* Neumann, *Orn. Monatsber.* 1907 p. 145 (Algeria and Tunisia : Type, Biskra).

The specimens from Algeria and Tunisia are generally larger than those from Nubia and Upper Egypt. While the wings in the males of our small series from Nubia measure about 82-86, those from Algeria and Tunisia have wings ranging from 85 to 90, and only one has a wing of only 84 mm. Generally the bill is also slightly larger in the western form, but the difference is small. Looking at the series it is further evident that the crown of the head is greyer, more ashy, in the Nubian birds, more brownish in those from Algeria and Tunisia, and the rosy edges to the feathers of the body-plumage are wider in *E. g. zedlitzi*.

The "Trumpeter" is found only south of the Atlas. Coming from the north it commences at Boghari and just north of El Kantara, and is not rare on bare rocky ranges from El Kantara to Biskra, on the Djebel Bou Ghezel, and on rocky hills near Chetma, Zaatcha, and on the Djebel Amarkhaddou. It is also common at Laghouat. South of Biskra it ceases entirely, and is not found anywhere between Biskra and Touggourt, nor elsewhere in the real desert; it extends, however, south to the Mزاب country, where it is not rare about Ghardaïa, among the rocky hills.

We found the "Trumpeter" generally rather silent, and its often described vibrating trumpet-note is a fine, small sound, which cannot be heard far even when only a moderate wind is blowing.

The iris is dark brown, feet bright reddish brown, and the bill orange, with the extreme tip brown.

Nothing has so far been on record about this bird from Morocco. Mr. Riggensbach, however, sent us a male, obtained on June 11 at Tizi in the S.W. Atlas. Its wings are so much worn that they cannot be measured; the beak is very thick, in fact as thick as in *E. g. amantium* from the Canary Islands. It would be interesting to compare a series!

(Mr. Neumann mentions as one of the localities "Constantine." Unless the specimen thus labelled in the Berlin Museum has been a stray bird, it can hardly have come from that town, which is north of its range, and of a very different nature from its real home in South Algeria.)

### 17. *Fringilla coelebs coelebs* L.

The European Chaffinch is known to occur in Algeria and Tunisia, but has always been supposed to be rare. Nobody has proved the Chaffinch to breed in Algeria, though Dixon declared that he found it common near Philippeville as late



as the middle of May. If this observation is correct, one would, from that date, suggest that they were breeding, and it is to be much regretted that this question was not investigated. In 1908 we did not come across any Chaffinches, but in 1909 we obtained two males and two females near the town of Algiers, on February 27, where they appeared to be common. We also saw examples near Algiers and Hammam Meskoutine in January and February 1911.

#### 18. *Fringilla coelebs africana* Lev.

(Cf. Hartert, *Vög. pal. Fauna* i. p. 127.)

The Algerian Chaffinch is very common in the gardens and woods of Northern Algeria. We found it common at the "Bois de Boulogne" and other woods and parks near Algiers, near Constantine, at Batna and Lambèse, near Hammam R'hira, Bône and Hammam Meskoutine. In all these districts it is breeding and resident. We also came across it at El Kantara and Biskra in the month of March, but whether it was breeding in these places we doubt very much. No specimens were seen at Laghouat in April 1911.

Eggs were taken near Batna on May 8, and at Hammam Meskoutine on May 17. Nests and eggs do not differ in any essential way from those of *F. coelebs coelebs*. We found one nest in an olive-tree, others in pines. The eggs we took measure  $21.7 \times 15.1$ ,  $22.1 \times 15$ ,  $20 \times 15$ ,  $19.7 \times 15.1$ ,  $19.1 \times 15$ , and  $19.5 \times 15.1$  mm.

The distribution of *F. coelebs africana* is a wide one, as it extends from Algeria to the south-west Atlas in Southern Morocco. It was found there near Mogador, and more common near Imintanout, Tamarouth, Seksawa and Imizen in the Atlas Mountains. On the other hand it is replaced by the rather paler *F. coelebs spodiogenys* in parts of Tunisia, and by the smaller and darker *F. coelebs koenigi* in the neighbourhood of Tangier in North Morocco.

Mr. Whitaker (*B. Tunisia*, i. p. 215) says that we have separated *F. coelebs koenigi* (*F. spodiogenys koenigi* Rothschild and Hartert, *Orn. Monatsber.* 1893, p. 97, 1894, p. 75), but scarcely on sufficient grounds. Probably Mr. Whitaker mixed together his specimens from the south and north of Morocco, for, if he had compared a series from Tangier only, he would have seen at a glance, if nothing else the smaller beak and the very small amount of white at the bases of the median secondaries, in comparison to the Tunisian *spodiogenys* and the south Moroccan and Algerian *africana*. In our collection only the series from Tangier is referable to *koenigi*, and it was probably a mistake that one of us included such localities as Marrakesh, Tilula and Ras-el-Ain in the range of *koenigi* (*Vög. pal. Fauna* i. p. 128).

Near Mazagan one of us, during a week's camping out in a most suitable orange-wood on the banks of the Oum R'bia, particularly noticed the absence of Finches; and Mr. Riegenbach, who collected there several years, never obtained an example anywhere near Mazagan.

#### 19. *Petronia petronia barbara* Erl.

*Vög. pal. Fauna* i. pp. 143, xxi, note 6.

Kollibay (*Orn. Monatsber.* 1905, p. 24) separated the Algerian form under the name of *Petronia petronia algeriensis*. We have carefully compared 13 Algerian skins with 16 from Tunisia, but cannot find the slightest difference. The Algerian birds must therefore be united with *P. p. barbara* of Tunisia.



The Rock-Sparrow is widely spread in Algeria. In Northern Algeria we found it, in February and on May 15, on the Djebel Taya, at an altitude of 1000 m. and higher. Near El Kantara we came across it several times, and twice saw it close to Biskra. Wherever we saw or heard it, it was very shy, so that we only managed to shoot a few specimens on the Djebel Taya, and two at El Kantara. Near Biskra they were so wild that we could not get a shot at one. On Tenerife one of us found Rock-Sparrows (*Petronia petronia madeirensis*) not at all shy.

Mr. Flückiger collected *P. p. barbara* near Batna and Lambèse, and at Kerrata in North Algeria. South of Biskra it has not been noticed.

## 20, 21. The Sparrows.

(Plate XI., and explanation.)

There has been much uncertainty about the Sparrows of N.W. Africa. It has been generally admitted that both *Passer domesticus* and *hispaniolensis* are common, while several authors also supposed *Passer italiae* to be more or less numerous (cf. Loche, Koenig, Whitaker, especially *B. Tunisia* i. p. 205). Some ornithologists (Meade-Waldo in Morocco, Whitaker in Tunisia) have also stated that they met with evident hybrids, and Whitaker (t.c. p. 203) informs us "that in some villages of Western Tunisia a bastard race is found, partaking of the characters of both species." In 1904 one of us, when reviewing the Sparrows for his work on the Birds of the Palaearctic Fauna (*Vög. pal. Fauna* i. pp. 147-58), noticed differences between the House-Sparrows of N.W. Africa and those from Europe, and employed for the former the name *Passer domesticus tingitanus* Loche, and he refuted the idea of the occurrence of *P. italiae* in N.W. Africa, while he was doubtful about the alleged hybrids (p. 152, note). Hybrids—as we now know them to be—were named "*Passer ahasver*" by Mr. Kleinschmidt (*Orn. Monatsber.* 1904, p. 7), and the more or less established bastard race of the southern oases has been called "*Passer flückigeri*" by the same author, from Algerian specimens (*Orn. Monatsber.* 1904, p. 158, type Touggourt), and "*Passer italiae bergeri*" by Graf Zedlitz, from Tunisian examples (*Orn. Monatsber.* 1908, p. 41, type Gafsa).

Our observations and collections in Algeria have definitely shown that both *P. domesticus* (in a slightly differentiated form, for which the name *P. domesticus tingitanus* is now being used), and *P. hispaniolensis* occur, that *P. italiae* does not occur, and that the House Sparrows interbreed freely with the Spanish Sparrows, to such an extent that in many places it is easier to get hybrids than pure-bred examples of either the House or the Spanish Sparrow, and that in the oases of the south a bastard race with chestnut crown has become more or less fixed, so that only three or four birds were found there which one might call *hispaniolensis* while collecting a series of over forty specimens, and seven which show unquestionably an admixture of *domesticus*-colour on the crown, though with much accentuated black bases to the feathers, these black bases being characteristic of the N.W. African race. On the other hand, we have not been able to obtain a single undoubtedly pure *P. domesticus tingitanus* in Touggourt or El Oued, although we were constantly on the look-out for grey-headed Sparrows: we have, however, received a male from Mr. Flückiger, shot in the oasis of Touggourt on April 2, 1904 (No. 182 of the Flückiger collection), which has the whole crown grey, with the black bases showing through, yet the chestnut colour encroaches a little behind the eyes; the sides have no black stripes.

In and around Algiers town Sparrows are extremely numerous, and many



thousands retire with great noise to the palms on the Place de la République for the night. There it is of course impossible to shoot any, but near Mustapha Supérieur, the residential suburb of Algiers, we obtained a few specimens, which show that even here hybridisation takes place, for one male has the crown grey with chestnut centres to the feathers. Near Hammam Meskoutine, in North Algeria, we have collected a series, amongst which are several absolutely typical, and even ultra-typical *hispaniolensis*, with enormously wide black stripes along the sides, others which one might almost call typical *domesticus*, showing very little of the black bases to the feathers of the crown characteristic for *P. domesticus tingitanus*, while others show them greatly enlarged, so that nearly the whole crown is black, and some of the latter distinctly show a strain of *hispaniolensis* blood by having some black stripes on the sides of the breast. The majority of the males from Hammam Meskoutine, however, have the crowns mixed black and grey and chestnut in various degrees, and the sides either unstriped, with indications of stripes only, or with a small amount of striping.

At Batna, in the Southern Atlas range, we shot the purest *P. domesticus tingitanus* ♂, with a bluish grey crown and no lateral stripes; another male which, though the striping is somewhat sparse, one might call *hispaniolensis*, one with an almost black crown; and another with the crown mixed grey and chestnut. At El Kantara pure *hispaniolensis*, pure *domesticus tingitanus*, and a number of evident hybrids were obtained. It was in 1908, when we came to Biskra, where Sparrows are exceedingly common, that our interest in the Sparrows received the greatest impulse.

Mr. Steinbach, who was then staying at Biskra for his health, showed us two Sparrows which he had sent to Professor Reichenow, and which had been returned to him marked as "*Passer bergeri*." Soon after we received by post No. 3 of the *Ornith. Monatsber.* vol. xvi, in which Count Zedlitz had described "*Passer italiae bergeri*." Certainly the skins which Mr. Steinbach showed us agreed with Zedlitz's description, but we had already collected in the same place both typical *hispaniolensis* and *domesticus tingitanus*, as well as evident hybrids.

From that time we have lost no opportunity of collecting Sparrows, and we have now before us a series of 144 Algerian males and 30 females, the latter, however, being of very little use, as they teach us nothing, for the females of the various forms are hardly distinguishable.

With regard to *P. italiae* we must point out that, although some of the bastard forms with chestnut heads and no stripes on the sides are not easy to distinguish from true *italiae*, the latter has the back more chestnut rufous striped with black, and with little buff only, while the so-called *italiae* from Algeria has the back buff, striped with black, with little or no chestnut, therefore much lighter and less rufous. These so-called *italiae* from N.W. Africa have afterwards been called *flückigeri* and *bergeri*. Had a **series** of these birds been carefully compared with a **series** from Italy, they could not have been considered to be true *italiae*. Count Zedlitz, having collected only three skins, could not know that they were a bastard race, and under the circumstances his course—i.e. separating them as a new subspecies of *italiae*—was not at all unwise, though we now know that it is not right.

One more fact must be pointed out:

Comparing 50 males from the southern oases (Touggourt, El Oued, and Gafsa in Tunisia) with an equal number of males from Northern Algeria, it is



noticeable that the southern birds are lighter above, the back having hardly any or no chestnut, the light stripes being buff, and the edges to the quills paler, more buff or sandy; while northern birds have the outside of the wings darker, more brown, and the back generally more chestnut, or in the cases of pure-bred *hispaniolensis*, more black-and-white.

The question now arises, how to name Algerian Sparrows. Ornithologists are accustomed to put a name to their specimens, and in fact this seems to be the highest ambition of some collectors and museum officials. To us it is of little importance compared with the establishment of facts like those just now explained. At the same time the question should be discussed, as it is sure to be raised. The North Algerian House-sparrow with a grey head should be called *Passer domesticus tingitanus* Loche (1867). Loche enumerated four Sparrows for Algeria: *P. domesticus*, *tingitanus*, *hispaniolensis*, and *italiae*. His *domesticus* he described as having a blue-grey crown, *tingitanus* with a dark brownish grey crown ("gris brunâtre foncé"), *hispaniolensis* with a chestnut crown and striped sides, and "*italiae*"—by which name he evidently meant the southern hybrids—with a chestnut crown and no stripes on the sides. His name *tingitanus* (ex Bonaparte, nomen nudum) evidently refers to males with the brownish edges to the feathers of the crown not worn off, the latter becoming pure bluish-grey only when worn.

Therefore in Northern Algeria we have *P. domesticus tingitanus* and *P. hispaniolensis hispaniolensis*, with hybrids between the two. The southern birds, on the other hand, are a nomenclatorial puzzle. Our rules of nomenclature—now almost universally adopted, with the exception of a number of British and a few other ornithologists—provide for genera, species, and subspecies, but of course not for a bastard race "in the making." As we have said before, the series of southern birds (Tonggourt, El Oued, etc.) is, without exception, pale and separable from the northern birds, while those from Biskra and El Kantara also agree better with the southern ones, but are sometimes intermediate. The names *flückigeri*, *ahasver* (both of 1904, and both printed on the same page, but *flückigeri* fortunately standing first), and *bergeri*, refer to the southern race, at least this is absolutely certain with *flückigeri* and *bergeri*, while from Marrakesh, the typical locality of *ahasver*, a series is not available. One might therefore call the race of the southern oases "*forma hybrida flückigeri*." It is remarkable, however, that those birds which we may call pure *hispaniolensis* from the south are also paler, while, as we have said above, none of our southern birds can be called **absolutely pure** grey-headed House-sparrows.

To illustrate our observations, a number of Sparrows' heads are figured on Plate XI. (See explanation of plate.)

Regarding the habits, we may observe that in Biskra, El Kantara, and elsewhere in the south all Sparrows live together, and nest both in the date-palms and on buildings, if they find suitable holes in them. We could not say if in North Algeria the Spanish and the House-sparrow live separately, and whether *P. hispaniolensis* has remained true to its nesting in trees, while it is well known that *P. domesticus tingitanus* (like *P. domesticus domesticus*) breeds chiefly on buildings, but also frequently in trees.

We have shot, eighteen miles south of Biskra, at an isolated "Bordj," both typical *hispaniolensis* and an almost typical *tingitanus* with one shot out of the same flock, and both species as well as hybrids out of the same tree at El Kantara, where they were assembling in the evening.



The above was written in 1910. In the year 1911 we could not spend as much time on Sparrows as before. At Boghari we saw (in the hotel-yard) only *P. domesticus tingitanus*, and collected four fine males, two hardly showing any black bases on the crown, one so much that the head appeared black with grey margins. At Tirlhempt one male was a typical *tingitanus*, the other had a chestnut patch on the forehead, and the light back of *hispaniolensis*, as well as some lateral stripes. At Ghardaia five males were shot, all without lateral striations, three with grey heads, two with some admixture of chestnut. True *hispaniolensis* were not noticed by us. At Algiers, besides grey-headed birds, a chestnut-headed male was shot, but its back is not at all light.

## 22. *Passer simplex saharæ* Erl.

We have carefully compared the types of *P. simplex* from Nubia in the Berlin Museum with our skins, and find that it is quite true that the males from Nubia are darker grey, and somewhat more brownish on the upper surface, than those from the Tunisian and Algerian Sahara, while the females are more rufescent. The same difference is obvious in a pair (cotypes) from Nubia in the Riocour Collection, received by Riocour in exchange from Lichtenstein. It must, however, not be forgotten that the Nubian specimens are nearly a century old, and that fresh material is highly desirable from Nubia, where all recent explorers failed to come across this bird. The light bill of the Nubian bird, in opposition to a black beak in *P. simplex saharæ*, is not a subspecific character, but is the difference between birds shot in autumn and in the breeding season. This is evident from our Tunisian and Algerian skins, and Heuglin described the bill of the old male as black, while the types of *Passer simplex*, being shot in November, have light bills. The difference in size between the two forms is minute, if it exists at all.

This lovely Sparrow inhabits only the regions of the sand-dunes, where it is chiefly seen near wells. Koenig found it breeding in the wells, but we found nests in trees, like Tristram half a century ago. We saw these Sparrows only feeding on the ground.

They are not found anywhere between Biskra and Touggourt, nor very near Touggourt to the south. The first time we came across them was at a place about one-fourth of the way to El Oued. Here Hartert found a nest at a height of six feet on a young date-palm on April 4. It was built in the angle where the first leaves were growing, and consisted of straw and hay, lined with some feathers.

Unfortunately Hilgert, who was walking on the other side of a high dune, and knew nothing of the nest, shot the female. The nest was empty, the birds were evidently still building, and so we did not get the eggs. A similar bad fortune was ours on the way back from El Oued, on April 11, when we found a small hole in one of the stunted, low trees of *Ephedra elata*. Hilgert tore the stem to pieces with herculean strength, but our disappointment was great when we found only a ready-built nest of the Sparrow, and no eggs.

Altogether we shot three males and three females. The males had the bill uniform black, iris dark brown, feet very light brown, almost of a brownish flesh-colour.

In the females the bill is deep brown, almost black, but the basal half or two-thirds of the lower and part of the upper mandible are pale horn-brown.

Wings : males 78-79.5, females 75-77 mm.

Dybowski collected the Desert Sparrow at El Golea.



The Arabs in Algeria call the bird "Zaouch abiad," meaning the "White Sparrow."

### 23. *Emberiza calandra* L.

The Corn Bunting is a very common bird all over Algeria, from the coast to the southern slopes of the Atlas. Even a few miles south of Biskra, as far as corn is planted, it is common enough, but farther south it has not been noticed. Farther westwards we saw it as far south as Laghouat.

Dr. Parrot has recently separated the Corsican form (*E. calandra obscura*, *Orn. Monatsber.* 1910, p. 153). We have no specimens from Corsica, but cannot see any differences in a series from Sardinia, nor are we able to separate the Algerian and Moroccan birds. In the latter country the species is common near Mazagan, and Mr. Riggenbach sent a specimen from Imintanout, where it was breeding, in the Atlas. A clutch of five fresh eggs was found on May 19.

### 24. *Emberiza cia africana* Le Roi.

We met with this species above Lambèse, at the edge of an oak-forest, on May 5, and at an altitude of 1800 m., on a bare plateau with hardly a bush, on the Djebel Mahmel, on May 12. In both places the birds were undoubtedly nesting, being found in pairs and in full song, with the testes enlarged. We found the iris light rufous brown, feet very light brown, almost whitish, the upper mandible dark bluish horn-colour, the lower pale bluish horn-colour.

Mr. Riggenbach has sent us skins from Fenzou, Tizi Orcus, and Tamarouth, in the Atlas of S.W. Morocco.

We have also a specimen collected by Mr. Elwes near Lambèse, in 1882. Professor Koenig does not mention having seen it in Algeria.

In 1911 we shot a male at a considerable height on Djebel Taya, on February 14, 1911, and saw others among the juniper bushes near El Kantara.

Dr. le Roi (*Orn. Monatsber.* 1911, p. 79) separated the North African form under the name *E. cia africana*. This subspecies is easily recognisable, the grey of the throat not reaching so far on to the chest, the abdomen being as a rule very slightly paler, and the bill slenderer and longer. The chin is, however, not more whitish in freshly moulted specimens.

### 25. *Emberiza cirrus* L.

We have several times seen and heard the Cirl Bunting near Batna, and at El Kantara in March. A single specimen was shot at El Kantara, on March 7. It breeds in Morocco near Mazagan, Mogador, and Seksawa, in the S.W. Atlas.

We found the species breeding near Hammam R'hira and took a nest with five eggs on May 20, 1911. The latter are typical, being just like European eggs.

### 26. *Emberiza hortulana* L.

One of us thinks he saw a male near El Kantara, and a fine male was shot in the Dayat of Tilrhempt, between Laghouat and Ghardaïa, on April 14, 1911.

### 27. *Emberiza schoeniclus schoeniclus* L.

A female was shot on the Oued Biskra, near Biskra, February 20, 1911.



28. *Emberiza striolata sahari* Lev.

The distribution of this pretty and tame little bird is rather peculiar. In Tunisia and Algeria it occurs only south of the Atlas. In Eastern Algeria, coming from the north, we find it first around and in El Kantara, then throughout the plain of El Outaya to Biskra, and along the southern slopes of the Atlas in the Ziban oases, such as Chetma, Tolga, and doubtless many others. South of the oasis of Biskra, with its palm gardens, this bird has not been observed, but farther west it extends more to the south, being found numerously in the M'zab country about Ghardaïa. Still farther to the west its distribution southwards is of course unknown, the south of Morocco beyond the Atlas being zoologically an absolute terra incognita; but there it is found north of the Atlas, having been shot by Mr. Riegenbach at Imintanout in the S.W. Atlas, and two specimens near Mazagan, while it is common in Mogador, where one of us saw it on the market place in 1901.

We have collected a good series in 1908 and 1909, at El Kantara and Biskra, and in 1911 at Ghardaïa. It would seem as if this species moulted its body plumage twice in the year, for three of our specimens collected in March have part of their body plumage moulting, while October birds (from Morocco) have evidently just finished a moult.

Fresh eggs were found at Ghardaïa during the second half of April 1911.

29. *Rhamphocorys clot-bey* Bp.

In 1908 these extraordinary Larks were frequently seen in troops near Biskra, from January to the first week in March, and Mr. Steinbach shot more than a dozen. After the first week in March he did not see specimens. In 1909 a pair was shot about two miles from Biskra on stony ground. It was evidently on its nesting ground, as the female had strongly enlarged eggs, and would have laid in about eight days' time. The iris is dark coffee-brown, the bill whitish blue-grey with a blackish tip, feet dirty white. We saw several in confinement in a game-dealer's shop, which had been captured two years before.

In 1911 we passed through the real home of *Rhamphocorys*. About five kilometres south-west of Laghouat, on April 10, a pair flew over our heads, of which Hilgert shot the male.

Flying on the motor southwards to Tilrhempt, we saw none, nor near Tilrhempt, to our disappointment. Going farther south, we saw the bird at Aïn Seffra, and about 18 kilometres north of Ghardaïa, but having before us long distances to traverse, and with the constant probability of a breakdown, we could not do more than shoot a couple of specimens, one Rothschild, one Hartert, neither of us having shot the species before.

Our hope was, to find the eggs near Ghardaïa, but we did not come across the bird except from eight to fifteen kilometres eastwards, on the road to Guerrara. There we found two pairs, and saw one flying overhead, and spent many hours in vain in search of the valuable eggs, but whether the birds had not yet laid (as seemed to be the case) or whether we had no luck, the coveted prize was not obtained. A female shot north of Ghardaïa on April 16 seemed to have laid an egg, while the female of one of the pairs east of that town, which we eventually shot, had the ovary but slightly enlarged.



We found *Rhamphocorys clot-bey* sometimes quite fearless, on other occasions, however, shy enough. The greatest difficulty is to **see** the birds, when they go about singly or in pairs, and during the breeding season they do not fly much, and are rather silent. Their upper surface matches the reddish sandy grey colour of the stony desert to perfection. When they fly, the wide white ends of the secondaries show strikingly, and in size and manner of flight there is a similarity to the Calandra Lark.

The usual note of this Lark is a drawn "tsi tsi," not quite unlike the call of *Ammomanes cinctura*, but stronger, louder. A male which Hartert saw running along the ground began some notes of a joyous warbling song, but did not continue long. On no other occasion have we heard a song, and we never saw one of these Larks soaring in the air.

The female has the black area on the underside less extended, and is slightly smaller: wings of males 126-130, of females 119-121 mm.

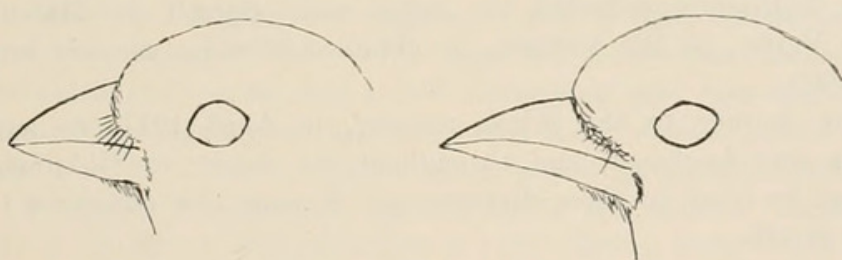
### 30. *Melanocorypha calandra calandra* (L.)

The Calandra Lark is a very common bird all around Batna and Lambèse, and is common as far south as the last fields beyond Biskra. Somehow, in 1909, we did not see the Calandra Lark near Hammam Meskoutine, where no other species of Lark seemed to breed with the exception of *Galerida theklae harterti*.

The specimens we collected near Batna and Biskra do not call for many systematic remarks. The colour of the upperside varies very much individually, so that it does not seem to be possible to separate any subspecies, except the considerably paler *M. calandra psammochroa* Hart. from East Persia, Transcaspia, etc.

The bill varies very much in shape, as may be seen from the accompanying figures of the beaks of two of our adult males from Southern Algeria.

In 1911 these Larks were observed in great numbers in the fields near Laghouat. They were in full song all through the month of April, and it



was wonderful to see four, five or more males close by in the air, pouring forth their beautiful song. The latter has no doubt been overrated by some writers, but is nevertheless magnificent. A clutch of eggs was found on April 27. It is of the usual type.

### 31. *Calandrella brachydactyla brachydactyla* (Leisl.)

This little Lark is exceedingly common in Algeria. It appears to winter in the southern parts, where flocks are seen from February to the middle of April. In March it is perhaps the commonest bird in the desert near Biskra. The Arabs call it "Tleesh" or "Dreesh." Two of our birds are undoubtedly breeding birds: one shot flying off its eggs south of El Kantara, May 3, one at Lake



Fetzara in North Algeria, May 21. The latter is slightly darker, less sandy, than the one from El Kantara and, indeed, our whole series from South Algeria; but this is probably due to the light edges of the feathers being more worn off. On the whole our series from Algeria, Tunisia, and Morocco is more sandy on the upper surface, and the heads are more rufous than in birds from Southern Europe; but it appears—judging from our series—to be impossible to draw a line, there being too much variation. Messrs. Erlanger and Whitaker have used the name "*itala*" for the Tunisian form. Erlanger called all his Tunisian birds "*itala*," while Mr. Whitaker says that typical *brachydactyla* occurs rarely in North Tunisia.

These rare "typical *brachydactyla*" are perhaps eastern *C. brachydactyla longipennis*. On March 20 Mr. Steinbach fired into a flock of Short-toed Larks behind his house in Biskra and killed two birds which had not the usual sandy rufescent colour and appeared quite greyish. One of these he gave us. It agrees well with dark specimens of the eastern subspecies, *C. b. longipennis* (*Vög. pal. Fauna* i. p. 216).

In case one wishes to separate the African form from that of South Europe the name *itala* cannot be used for it. "*Melanocorypha itala*" Brehm (*Handb. Naturg. Vög. Deutschl.* p. 311, 1831) was described as coming from "Italien, besonders Sardinien"; this was probably an inexactitude, as the collection contains only a young bird and an adult, both from Sardinia. The old bird is from July, and therefore its plumage very worn—moreover it is over eighty years old! Nevertheless it does not appear to be of so sandy a colour as most Algerian birds; the rufous head is very obvious, but this is also not unfrequently the case in Southern Europe.

Hartert is now convinced that he accepted the distribution of *C. brachydactyla brachydactyla* to go too far eastwards: specimens from Eastern Persia and Persian Baluchistan evidently all belong to the eastern form (*longipennis*), and the latter occurs also in the autumn in Palestine, where, however, birds apparently not different from the Western form are breeding. The Hon. N. Charles Rothschild collected the latter near Shendi in March, while in the Natron Valley, at Bir Victoria, he obtained a rather greyish *longipennis* on March 7, 1903.

On our journey to the M'zab country, in April 1911, we saw flocks of these Larks near Laghouat, and throughout the desert to Ghardaïa, but they did not seem to breed in these districts, and became less numerous towards the end of the month.

### 32. *Calandrella minor minor* (Cab.)

This little Lark is not so universally common as *C. brachydactyla*, but somewhat local. It is not at all rare near Biskra, where it was one of the first birds we shot, near "Fontaine Chaude." We found it neither in fields nor in the sandy desert, but only on clayey steppe. We came across it near Sidi Okba in March, at "Mouleïna" south of Biskra, and near Oumash on March 14. In the last locality it was undoubtedly breeding, as we saw a pair, the male of which was singing. The song is not loud and voluminous, but pleasant, and is uttered while on the wing or on the ground. Mr. Flückiger met with *C. minor* near Biskra in December and January.

Large flocks were met with in the plain of El Outaya on February 23, 1911,



and on this day as well as five days later near Biskra three and four were killed with one shot.

Early in April they were seen, evidently in pairs, near Laghouat, and about the middle of the month near one of the Dayats not far from Tirlhempt, where it was apparently breeding, though they did not yet seem to have eggs.

### 33. *Ammomanes deserti algeriensis* Sharpe.

The distribution of the various forms of *Ammomanes deserti* is not yet quite certain, especially that of *A. deserti deserti* and *A. deserti isabellina*. With regard to the Algerian form, however, it is quite certain that it is the only one inhabiting Algeria and Tunisia as far as they are explored, and that it is very constant in these countries. It appears to extend throughout the Sahara as far east as the Libyan desert, where it reaches the Nile.

The Algerian common Desert-lark inhabits stony desert and rocky plateaux and slopes in the southern Atlas mountains, where it occurs frequently just north and south of El Kantara. Near Biskra it is everywhere to be met with where the ground is stony, and on the slopes of the rocky ridges in the desert, but not on the top of them. Rather to our surprise we also found it a good way south of Biskra, near Bord Chegga and Kef-el-Dor, in places where the ground is very stony, and even patches of bare rock appear. It is absent from the regions of the sand-dunes and from the sebcha-depressions.

We found clutches near Biskra, April 27, 1909, and on April 30 and May 3 near El Kantara. The nests have curious positions. One was placed under a flat stone, so that it was just protected from above; the nest was a thick soft padded structure, and consisted of the whitish buff flowers of a desert plant (? *Gnaphalium*), and short pieces of plant-stems. The eggs were hard set, April 27, 1909. A second nest was quite similar to the last one. A third was under a small bush, and by its side was a flat stone. A fourth was also under a small bush, but instead of a large stone it was on the two outward sides surrounded by a four-inch-wide wall of little stones, evidently collected by the birds. It seems that the large stone is some sort of protection, and the birds not finding one heap up a wall of little stones themselves. The clutches number three or four. The eggs are milk-white, almost without gloss, with brownish grey spots, and a few underlying pale grey markings. In another clutch the markings are more frequent and much smaller, mere dots, and the shell is more glossy. Another has the rather glossy ground-colour cream, with a faint pink tinge, and the spots pale reddish brown and mauve. Measurements  $22.5 \times 15.8$ ,  $22 \times 16$ ,  $22.5 \times 15.8$ , and  $22.9 \times 15.5$ ;  $22.7 \times 16.9$ ,  $23.4 \times 16.3$ , and  $23 \times 16.5$ ;  $21.1 \times 16$ ,  $20.4 \times 15.1$ , and  $20.6 \times 15.7$  mm.

In 1911 we found these Larks near Laghouat, on stony hills, and very common in the M'zab valley, near the town of Ghardaïa. Eggs were frequently found during the second half of April.

### 34. *Ammomanes phoenicurus arenicolor* (Sund.)

At first sight the Bar-tailed Desert-lark appears to be very similar to *A. deserti*, but a closer examination shows, in addition to the black tips to the rectrices, that the wing is of a very different shape; the inner secondaries are considerably longer than the outer ones, and the second (first long) primary is about as long as the third, or only a millimetre or so shorter, while in *A. deserti* it is considerably shorter.



The distribution is very interesting. While the species is absent from North Algeria and the Atlas, and even from the neighbourhood of Biskra, it appears suddenly on the stony desert-plain south of Bordj Saada, between 30 and 35 kilometres south of Biskra. This stony plain is partly sandy, and it is on that kind of soil only where we found it—stony stretches intermixed with sandy tracts; but it is absent from the regions of the sand-dunes proper. There is quite an amount of variation in these birds, some being more greyish, others more isabelline, others again more reddish; but none approach *A. phoenicura cinctura* from the Cape Verde Islands or any of the Asiatic representatives.

Besides our series collected between Bordj Saada (30 km. south of Biskra) and Touggourt, we have skins from the Natron Valley near Cairo, from Kerma and Shendi in Nubia (N. C. Rothschild), and a pair collected by Comte Dalmas near Cape Blanco ("Baie du Lévrier") on May 10, 1895. As far as one can judge from their very worn plumage, the latter do not differ from *A. p. arenicolor*. Iris dark brown; feet pale brownish flesh, toes greyish or whitish; bill pale horn-colour, tip darker.

In 1911 we found this little Lark by no means rare from a few miles south of Laghouat to the region of the Dayats, in places where the desert was not too densely covered with stones, but where a few bushes and partly sandy or clayey soil existed. We also came across it on the stony elevated plateau east of Ghardaïa, where *Ammomanes deserti algeriensis* was also common, though the latter was more partial to the rocky hills.

### The Crested Larks.

Crested Larks are the horror of "lumpers," who do not care to trouble about closely allied forms, and the delight of those who study the geographical representatives of species! Moreover the Crested Larks occur in many parts of South Europe and North Africa in two separate species, each of which shows a similar variation in close connection with the soil and surroundings of the areas inhabited by them.

Of the long-billed species, *Galerida cristata*, we did not find a representative in North Algeria, but only found forms of *G. cristata* south of El Kantara, from Laghouat southwards to Ghardaïa, and throughout the country traversed from Biskra to Temacin, south of Touggourt; while of the other species, *Galerida theklae*, we collected four forms—a very dark one in North Algeria, a paler one in the southern parts of the Atlas range down to Biskra, a very pale desert form in the desert, and a red form from Laghouat to Ghardaïa.

But, although we failed to find them, a darker long-billed race appears to exist after all in Algeria. One of us united with *G. c. macrorhyncha* (1859) Loche's *Galerida randonii* (described 1860); the exact locality of which was not known. There is, however, in the Museum at Milan, which contains the greater part of the Loche collection, a Crested Lark named *G. randonii*, from Aïn Oussera, between Djelfa and Laghouat. This is the region of the "Hauts Plateaux," with their sea of half-grass. In this region we saw only a form of *G. theklae*, though specially looking out for long-billed forms, but we passed through on a motor-car and did not properly collect in these districts. As the *theklae*-form of this country is *hilgerti* and not *carolinae*, it is quite possible—though not necessary—that the *cristata*-form also differs, and the Milan specimen is indeed much darker than specimens of *macrorhyncha* in the same museum, and we have a specimen from the Riocour-collection, which is also darker. Evidently the Milan specimen is the type of *randonii*,



because a male from Aïn Oussera is the only specimen mentioned by Loche in the *Catalogue* of 1858. Although the two species found in one locality always agree to a certain extent, and sometimes wonderfully, in their coloration, they differ in habits. The *cristata*-forms have a short song, uttered often on the ground, or during a short flight, while the song of *G. theklæ* is longer, very rarely uttered on the ground, but generally while soaring skywards. This habit is noticeable in the northern dark form, but still more in the paler ones on the southern slopes of the mountains; and it is most developed in the sandy pale desert-form, which often remains for twenty or thirty minutes in the air and is almost lost to sight, its beautiful, melancholy song filling the solemn tranquillity of the desert.

The two species, the longer-billed *G. cristata* and the shorter-billed *G. theklæ*, however, do not differ only in appearance and song, but also in their eggs: while those of the forms of *G. cristata* have large blotches, those of the *theklæ*-forms have small spots and dots and as a rule a stronger gloss. Thus a series of clutches presents a very different aspect, though single eggs of the one species might closely resemble or not be distinguishable from certain varieties of the other.

#### NOTE ON *GALERIDA CRISTATA MACRORHYNCHA*.

The types in the Tristram collection, a male and a female, were collected at Laghouat in South Algeria, in November 1856.

They differ considerably in size, as is more or less the case with all Crested Larks, but especially with the long-billed forms of the *cristata* group. In colour they are less rufescent than *G. c. riggenbachi* from Morocco, a little darker than *G. c. arenicola* of the eastern Algerian Sahara (south of El Kantara, Biskra, Oued R'hir, Touggourt, etc., and the corresponding parts of Tunisia), and less dark than North Tunisian long-billed Crested Larks. Therefore, judging from the type specimens and a still darker specimen from the Riocour collection labelled "*Galerida Randoni*," and said to come from the Algerian Sahara, one of us united the birds from Laghouat and North Tunisia under the name of *G. c. macrorhyncha*, though puzzled by their curious distinction.

Messrs. Kleinschmidt and Hilgert (*Orn. Monatsber.* 1905, p. 188) separated the North Tunisian birds as *G. cristata carthaginis*; this was done merely for zoogeographical reasons. They say (t.c. p. 190) that the type of *G. macrorhyncha* Tristr. might be either an abnormally dark specimen of *arenicola* or *gafsa*, or a light *riggenbachi*, and that the distribution of the form would be enigmatical if it were the same as "*carthaginis*" from North Tunisia. Therefore they gave a name to the latter, but they did not attempt to say how it differed from *G. c. macrorhyncha* and *G. c. randonii*. They only stated how it differed from *G. c. arenicola* and "*gafsa*," which we do not separate from *arenicola*. Undoubtedly, however, both *macrorhyncha* and *randonii* are nearer to *carthaginis* than the very pale *arenicola*.

In 1911 we were able to go down to Laghouat and collect a series of 23 specimens of the long-billed Crested Lark, topotypical *G. crist. macrorhyncha*, at Laghouat and the country of the Dayats south to Ghardaïa. Having shortly before shot the long-billed Crested Larks near Biskra, we were at once struck by their great similarity; we had expected to find a conspicuously darker and larger form, while, according to our recollection, there was no appreciable difference.



Making a long story (of shooting, skinning, carefully comparing and measuring all our material) short, we will state that in fact the two forms separated by Tristram in 1859 are very closely allied, and only differ in having on an average slightly different dimensions, as well as a very slightly different shade of colour, the birds from Laghouat to Ghardaïa, which chiefly inhabit the neighbourhood of the dayats and cornfields, being generally a little larger and sometimes darker, those found from the plain of El Outaya to Tougourt, which inhabit principally uncultivated sandy soil and often real sand-desert (though not as a rule the bare sand-dunes of the Souf), being as a rule a little smaller and a shade paler, when series for series are compared. The differences in the size of the bill are very slight and not constant, though *G. c. macrorhyncha* have often larger bills.

When one of us wrote about the Crested Larks before, he thought the differences between these two forms were much greater, or he would perhaps not have separated them from the scanty material then available. The reason for this is that the ♂ type of Tristram's *G. macrorhyncha* is an unusually large specimen with an exceptionally large bill, and that his specimens have become darker, through being more or less soiled and kept in insufficiently tight-fitting cabinets for more than half a century. Had Canon Tristram collected twenty of each of these forms instead of two of one and three of the other, he would probably not have separated them.

The ♂ type of *G. macrorhyncha* has a wing of 118·5, a culmen of 26, and a tail of 75 mm.; the ♀ wing 110, culmen 23, tail 68 mm. Our 15 males have the wings 110·5 to 116·5, and culmina up to 25, our 8 females wings of 102 to 105·5 mm. Our series of 70 males and females of *G. cristata arenicola* measure: ♂ wings 103–112, once 113 (a male from south of Tougourt, shot together with a fairly small female), ♀ 100–104 mm. The culmina reach a maximum of 24, but are generally shorter.

While the Algerian and Tunisian forms of *Galerida cristata* are **comparatively** easy to understand (their range of variation being much smaller), those of the species *G. theklae* are extremely difficult, because their variation is astounding. Having examined (Mr. Rothschild, Ernst Hartert and Carl Hilgert, during a visit of the latter to Tring) 132 Algerian and Tunisian specimens, belonging to the Collections of Tring and Ingelheim, of the pale races (*i.e.* leaving out the dark northern form called *harterti*), we have made the following observations:

The series from Central Tunisia—*i.e.* from south of the Atlas range, about Gafsa, from the Djebel Batoum, Djebel Sidi Aich, Djebel Tfel, Djebel Sidi ben Aoun, the Seggi, Bou Hamran, Bir Mrabout, and thereabouts—vary from an upperside of a pale sandy rufous tinge with cinnamon-rufous spots, to a pale buff sand-colour with blackish brown spots, while the majority are of a pale greyish sandy coloration between the two extremes. Although the extremes are strikingly different, they are connected by intermediate ones, and there can be no doubt that all these birds, 36 in number, belong to one form. The soil here is more or less rocky or stony, interspersed with oases and fertile ground, and with more or less of the scanty vegetation peculiar to such districts.

The birds from these districts were named *Galerida pallida* by Mr. Whitaker, and I introduced the name *superflua* for them, because *pallida* had been anticipated by Brehm.

If we compare with these birds the ten skins collected by the late Baron



Carlo Von Erlanger in the stony Sahara of South Tunisia, at Tataouine, Sanger Oued Oum el Graf, Biar Darsen, and the Djebel Sidi Ahmed ben Mohamed, they strike us at once as being mostly of a brighter cinnamon-rufous coloration, only three or four being more greyish and blackish. Erlanger made the mistake of calling the latter (four) "*superflua*," while he very correctly gave a new name, *Galerida theklæ carolinae* (in honour of his mother, Baroness Carolina) for the reddish specimens; all his birds, however, inhabiting the same area—very desolate stony desert, partially flat, partially mountainous, with very scanty, uniform vegetation—belong doubtless to the same subspecies, and all the ten skins must therefore be called *G. t. carolinae*. It is curious that the error of naming the less reddish specimens from the same places "*superflua*" was repeated by Messrs. Kleinschmidt and Hilgert, in the generally excellent, carefully compiled "Katalog der Collection von Erlanger," in which Mr. Kleinschmidt co-operated in the whole of the genus *Galerida*.

So far, with the exception of one or two skins without exact locality sold by Schlüter some years ago, only the specimens collected by the Erlanger expedition were known of *G. t. carolinae*. In April 1911 we came across many reddish specimens of the *theklæ* group near Laghouat, Tirlhempt, and east of Ghardaïa, and as soon as we came into the uniform stony desert south of Laghouat, Hilgert remarked, "Why, this is exactly the same formation and soil as in the South Tunisian desert, where we found '*carolinae*'!"

Confronting the 36 examples which we collected near Laghouat, Tirlhempt, and Ghardaïa, we find them to come so close to "*carolinae*" that we must, for the time being, unite them with the latter. It is true, however, that about 15 of the South Algerian specimens are greyish, while practically only two from South Tunisia are rather grey, and that the majority of the red South Algerian birds are slightly paler than most Tunisian ones; but we must not forget that the South Tunisian series is so much smaller, and that it was collected while Erlanger and his able taxidermist, Mr. Hilgert, were somewhat run down after a long desert journey, and before they knew the importance of and the great interest attached to their discovery. They did not, under the circumstances, lay themselves out to get all possible variations; it is therefore quite possible, and we believe most likely, that a larger series will show the same variation as our birds from South Algeria. Moreover all Erlanger's birds were taken in January, all ours in April. If we unite the two forms, we must suppose that the area of distribution of this form in South Tunisia and that in South Algeria are connected by stony desert-plateaux, which are all inhabited by *G. t. carolinae*, while *G. t. deichleri* is found in the sandy desert, where the latter is interspersed with smaller or larger stony islands, and where there is more or less vegetation, but not in the shifting, bare dunes.

As we have said, red and grey birds were found together in the same districts, and sometimes one of a pair was the extreme of red, the other almost the greyest of the series.

These birds were very common on the stony desert south of Laghouat, on the rocks close to Laghouat, in the river bed of the Oued Mzi, which farther becomes the Oued Djeddi, and just north of this river. It was found everywhere to the south of Laghouat, was common about Tirlhempt, but rare near Ghardaïa, where we only obtained a pair 16 kilometres east of Ghardaïa—the only ones we saw. We found some nests near Laghouat, more or less sheltered in grass tussocks. A clutch of four fresh eggs was found on April 10, both parents being shot. Unfortunately



these eggs were lost afterwards, but we discussed them, and remember well how strikingly they differed from the eggs of *Galerida cristata macrorhyncha*, found the same day, in being smaller, less elongate, and having numerous small dots and spots instead of large blotches. This is a universal difference between eggs of the *cristata* and *theklae* forms.

But forms of *G. theklae* are also found everywhere else in Algeria. The very dark birds of the north (*G. t. harterti*) are discussed elsewhere, but the pale birds found on the rocky hill-ranges near Biskra, near El Kantara and northwards to Batna, have hitherto been regarded as *G. theklae superflua*! This is a most pardonable error, but a glance at the series of not less than fifty skins from exact localities, collected by ourselves and Mr. Flückiger, show that it is not quite correct, because these birds are all more or less greyish and never go to that reddish extreme so common in Central Tunisia among topotypical *G. t. superflua*. Out of our fifty birds only three or perhaps four can be said to have any reddish tinge at all, and thus to approach only slightly that coloration so common among true *superflua*. The majority of these birds are quite greyish on the back and rump, and this form is much more constant than either the true *superflua* from Central Tunisia or *G. t. deichleri*. This can be said with full confidence, because we have taken special care to get a good series and all possible variations; we have also the extremes of Flückiger's spoil, and we have seen these birds daily for weeks during three visits to El Kantara, and often enough about Biskra and Batna, and had we ever seen a reddish bird, we should have been most astonished and carried it off as a great treasure.

As this form cannot be united with either *superflua* or *carolinae*, it requires a new name, and we propose to call it

### *Galerida theklae hilgerti*

after Mr. Carl Hilgert of Ingelheim, whose knowledge of the Crested Larks of N.W. Africa, and whose keen interest in these birds deserves all praise and acknowledgment.

The type of this subspecies is a male collected by ourselves at El Kantara, on March 2, 1909, No. 42.

As we have said before, these birds are rather constant; at the same time we cannot deny that the twelve skins before us from Batna and Lambèse are all on the dark side, if we may say so. They can, however, not be separated, and also the birds we collected near Boghari and between Boghari and Djelfa in Central Algeria cannot be separated from *G. t. hilgerti*.

Thus the following forms of the genus *Galerida* have been found in Algeria:

### 35. *Galerida cristata macrorhyncha* Tristr.

*Galerida macrorhyncha* Tristram, *Ibis* 1859, pp. 57, 426 (Northern border of Sahara. Types: Laghouat, November 11 and 12, 1856).

Common here and there near Laghouat among the cultivated fields and on the river, among the scanty cultivation and stony stretches surrounding most of the dayats, and (rare) to the east of Ghardaïa, in a half sandy half stony plain, where we saw one pair and obtained it.

For measurements see above.



36. *Galerida cristata randonii* Loche.

*Galerita randonii* Loche, 1858 : Nomen nudum ; first descr. : *Rev. & Mag. Zool.* 1860. p. 150, pl. xi., fig. 2 (" Dans les plaines où croît abondamment le stipa tenacissima." Terra typica Aïn Oussera ; ex *Catalogue*, 1858.)

Apparently restricted to the " Hauts Plateaux."

The status of this form is as yet uncertain. It seems to have at least the size of *macrorhyncha*, thus being larger than *carthaginis*, and to be in colour between the latter two forms.

37. *Galerida cristata arenicola* Tristr.

*Galerida arenicola*, Tristram, *Ibis* 1859., pp. 58, 426. (" Hab. in Saharæ Algeriensis regione arida." " I met with it only in the extreme east of the Algerian and in the Tunisian Sahara ").

While in the *Ibis* 1859, pp. 58, 426, as quoted above, no exact localities are given, Tristram stated in his book *The Great Sahara*, p. 300, that he obtained the type on January 1, 1857, a little east of Temacin, at El Ouibed : this statement, however, is wrong. The description of the " species " does not agree with the two birds from El Ouibed, which are *G. theklæ deichleri*, and which Tristram called *isabellina*, and *arenicola* was actually got near Tamerna, between Touggourt and Biskra, these being the specimens to which the description applies and which are labelled as the types of *arenicola* by Tristram.

We found this form from the plain of El Outaya, south of El Kantara, around Biskra (except on the rocky hill-ranges where *G. theklæ hilgerti* is found), and all the way south to Touggourt and Temacin. It occurs in the sandy desert, along the caravan routes, and here and there on cultivated land side by side with *G. theklæ hilgerti*, which as a rule, however, is far more a rock-haunting bird.

While there is a great amount of individual variation in colour in all the forms of *Galeridæ theklæ*, this *G. cristata arenicola* is remarkably constant—in fact, a less variable series than ours from the plain of El Outaya to Temacin could hardly be found.

The measurements have been given above.

[*Galerida cristata carthaginis* Kleinschm. and Hilg.]

is found in North Tunisia, but whether it occurs in North Algeria we are not able to say. Wherever we collected in the north, we only found *G. theklæ harterti*. The wings of 18 skins measure only up to 113 and seldom more than 110 mm., but generally not more than 109 to 111 mm., the smallest probably being females. The culmen does not exceed 22·5 mm. The colour is even darker and distinctly more washed-out than in *G. c. macrorhyncha*.]

38. *Galerida theklæ harterti* Erl.

*Galerida theklæ harterti* Erlanger, *Journ. f. Orn.* 1899. p. 332 (North Algeria and Tunisia to the northern slopes of the Atlas. Type evidently from North Tunisia).

We found this very dark Lark, with an almost chocolate upperside, common in the north of Algeria : in the " Sahel," i.e. the fertile region of vineyards and fields between the coast and the northern slopes of the mountains, and all around Hamman Meskoutine to Bône, even up to 1200 metres, on the Djebel Taya, east of Hamman Meskoutine, between Constantine and Guelma. We have also a skin from Medea, one from Kerrata, and one from Constantine, which evidently



belong to this same form. This form is also fairly constant, though occasionally specimens are paler or otherwise darker than the average, but there is not one of our skins about which there could be any doubt whatever that it belongs to the same form. We have a few skins from Schlüter in Halle, bought from an Italian bird-skinner in Algeria and said to be from the neighbourhood of Bône, which are much too pale to belong to *harterti*, but agree well with our series of *hilgerti*.

As from our own observations as well as those of other naturalists in Algeria a lighter form of the same species has never been found within the area inhabited by a darker one, or vice versa, we do not for a moment believe that these specimens of *hilgerti* ever were obtained near Bône, but they might have been bought on the market, where they were brought from the south.

It is true that occasionally Crested Larks stray out of their area in winter or autumn, but that a number of specimens should leave the southern slopes of the Atlas and visit the coast near Bône cannot be admitted.

The soil where we found *G. t. harterti* is generally of a deep chocolate or dark brown colour.

Wings of the males 104—106, sometimes up to 108, or only 102 mm.; of females 97—102 mm.

A clutch of four very hard-set eggs was found on May 3, 1911, near Hammam R'hira, on the ground on a hill covered with grass and thistles, between fields and pine-woods. The eggs are white and covered with small olive-brown spots and underlying grey ones, thus being not unlike eggs of *Motacilla alba*, or some varieties of *Lullula arborea*, except for their much larger size. They measure  $23.6 \times 17.4$ ,  $23.4 \times 17.8$ ,  $23.6 \times 17.7$ , and  $24 \times 17.7$  mm.

### 39. *Galerida theklæe hilgerti* Rothsch. & Hart.

*Galerida cristata hilgerti* Rothschild and Hartert, *antea*, p. 492.

This Lark inhabits the southern slopes of the Atlas, where we found it from Batna and Lambèse to El Kantara and Biskra; south of Biskra it disappears, and is represented south of Bordj Saada by *G. theklæe deichleri*; farther west we found it from Boghari to Aïn Oussera. It is always found on stony ground or dry stony fields, and mostly on the bare rocky hillsides, among slabs and boulders of stone. It is very common all round El Kantara, on the foot and slopes of Djebel Metlili, and especially in the picturesque Gorge of Tilatou, and near Batna. This race is constant enough, though, as in almost every bird, a certain amount of variation is noticeable. The colour of the upper surface may generally be called a pale sandy greyish brown. The soil where it is found is mostly of a pale sandy clay-colour, but it is also met with on the dark soil of fields within its area.

Wings of males 104—108, females 95—101 and even 102 mm.

In the corresponding districts of Tunisia this form is represented by *G. theklæe superflua*.

### 40. *Galerida theklæe carolinae* Erl.

*Galerida cristata carolinae* Erlanger, *Orn. Monatsber.* 1897. p. 186 ("Hab. in Sahara petraica Tunesiae, typus ex Oued-oum el Graf").

As stated above, we found this form, varying greatly individually, from the river-bed at Laghouat to the region of the Dayats, and in a few pairs in the rocky



hills east of Ghardaïa. In these districts it occurred together with *G. cristata macrorhyncha*, but while the latter was more or less partial to the cultivated soil and places round the Dayats, this *theklae* form was often found in the most desolate stony desert, where *macrorhyncha* did not occur. Sometimes, nevertheless, especially near the Dayats, both could be seen close together; but whenever a male soared high in the air, pouring out its wonderful melancholy song, it was invariably a *G. theklae carolinae*, the *G. cristata macrorhyncha* making short flights only and uttering a short song, like Central European Crested Larks.

The wings of 25 males measure 102—108, those of 12 females 95—101 mm.

Eggs were found on April 10 near Laghouat, four forming the full clutch.

#### 41. *Galerida theklae deichleri* Erl.

*Galerida theklae deichleri* Erlanger, *Journ. f. Orn.* 1899. p. 339 (Douz in Tunisia).

The distribution of this beautiful sand-coloured bird is very interesting. Travelling southwards from Biskra, after leaving the fields, one passes over a wide plain through which the Biskra river (Oued Biskra) flows, and which is, to a large extent, covered with *Tamarix*. In this plain one finds only *Galerida cristata arenicola*, and no *theklae*. All along the caravan route to Tougourt *G. c. arenicola* is more or less common, but no *theklae* are, as a rule, seen. Only the last day of our journey south one of us shot a specimen of *G. t. deichleri*, but our search for more was in vain. We made it a special point on our return journey to collect this Lark; but the first, second, third, and fourth days not a sign of it was seen. The fifth day, in the early morning, we shot a specimen on the stony plain near Kef-el-Dor, and that same day obtained six others. That day (April 19) and the following ones we found out how and where to find *G. t. deichleri*. It does not inhabit the sand-dunes, nor the sebcha plains, but wherever stony patches occur, like little islands, in the more sandy desert, there it lives. There one can hear it from a distance by its flute-like, melancholy song, uttered while soaring skywards like a skylark, and can shoot it, with some patience. The delicate, pale, more or less reddish or light cinnamon sand-colour distinguishes it at a glance from its northern representatives. Even the underside is much whiter than in *harterti* and slightly lighter than in *hilgerti*, and the spots on the chest are not deep brown, as in the latter two races, but of a much paler brown. The coloration is sometimes almost like that of *G. cristata arenicola*, but mostly very much lighter. Both *G. theklae hilgerti* and *G. theklae deichleri* are, however, easily distinguishable from *G. cristata arenicola* by the shorter and comparatively thicker bill, shorter wing, and less reddish sandy, more greyish under wing-coverts and axillaries.

The individual variation in this subspecies is greater than in others. While it can never be mistaken for any of the other forms we came across, some specimens are more reddish, others more yellowish, and on April 21, about 40 kilometres south of Biskra, we came across a pair, which we shot, of which one, the female, was much more greyish than any others, while the male was about the sandiest, most reddish one we obtained.

The wings of our males measure 100—105, those of the females 95—102.5 mm.

Mr. Riegenbach shot a female of a form of *G. theklae* at Rio de Oro on June 9, 1902. Its plumage is worn to such a degree that it is impossible to say to which form it might belong, but its wings appear to be very short, and



it is undoubtedly a *theklae* and not *cristata*. It might belong to *G. t. caroliuae* or *deichleri*, or to an unknown subspecies.

We are much obliged to the authorities of the Liverpool Museum for kindly sending us for examination and comparison the Algerian Crested Larks from the Tristram Collection.

It is highly interesting that Tristram distinguished all the forms which we separate at present, and he collected specimens of all of them except *G. cristata randonii* and *G. theklæ hilgerti*, as he seems to have passed through their countries without staying to collect much.

He calls our *Galerida theklæ harterti* simply "*Galerida cristata*," our *G. theklæ carolinae* he named "*G. abyssinica*," our *G. theklæ deichleri* he called "*G. isabellina*," our *G. cristata arenicola* is his *G. arenicola*, and our *G. cristata macrorhyncha* his *G. macrorhyncha*.

Probably he was not the only one of the older ornithologists who correctly separated all these forms, and he knew more about them than many modern writers, though his nomenclature was at fault, as he used names applying to very different N.E. African forms for his Algerian discoveries, which thus remained unnamed until Erlanger named them in 1897 and 1899. We should doubtless have known more about Crested Larks prior to twelve years ago (Erlanger's period), if subsequent ornithologists had not found Crested Larks too troublesome and lumped them nearly all. Tristram's Larks were examined by Mr. Dresser, when he wrote his immortal work on the *Birds of Europe*, and they have all labels with Dresser's identifications, from which we learn that Dresser agreed with Tristram in his naming of the *G. macrorhyncha* and *G. isabellina* (our *G. t. deichleri*), while he united both Tristram's *arenicola* and his *abyssinica* (our *G. t. carolinae*) with "*Galerita cristata*," thus undoing part of Tristram's work.

There are now in the Tristram collection in Liverpool: 2 *G. c. macrorhyncha*, 2 *G. c. arenicola*, 5 *G. t. carolinae* (all very red, four from Laghouat and one from the M'zab country), and 2 *G. t. deichleri* from "El Ouïbed" among the first dunes east of Temacin, in the direction of El Oued.

It is worth noticing that Tristram always spelt the name *Galerida* and not *Galerita*, as became the custom for some time afterwards, though *Galerita* (with t) was preoccupied for a genus of beetles.

#### 42. *Lullula arborea harterti* Hilgert (? *pallida*).

*Lullula arborea harterti* Hilgert, *Katalog Collection Erlanger*, p. 113 (1908—"Tunesien," type ♂ ad. Aïn bou Driés, 29. v. 1899).

Woodlarks from N.W. Africa are certainly paler than North European *L. arborea arborea*, and especially more olive, less rufous, on the back and rump. It is, on the other hand, rather difficult to separate them from *L. arborea pallida* Zarudny: our Transcaspian specimens are still paler than Tunisian and Algerian ones, but those collected by Mr. Witherby in East Persia appear not to be separable from N.W. African ones. There are apparently other cases in which southern and south-eastern birds differ from North and N.W. European ones and are not separable *inter se*. More material is necessary to settle these questions.

We found Woodlarks breeding near Batna and Lambèse, where Mr. Elwes in



1882 and Flückiger in 1902 also collected examples, while Koenig even found the eggs.

In the early morning, in May 1911, we heard the beautiful song of the Woodlark on hills sparingly covered with pines, near Hammam R'hira.

#### 43. *Alauda arvensis cinerea* Ehmccke.

*Alauda cinerea* Ehmccke, *Journ. f. Orn.* 1903. p. 149 (Barnoul in W. Siberia).

Skylarks are abundant in Algeria, and especially in the south. We have collected eight specimens in February and March near Biskra and in February near Algiers and Hammam Meskoutine, and compared a number in the collections of the late Erlanger and Professor Koenig. All these winter birds are very much more greyish or mealy than European Skylarks, and it is apparently correct to call them *A. arvensis cinerea*. All these winter birds have comparatively short bills—culmen 14 to 15 mm. at the utmost. By a curious accident it happens that all our specimens are females, but we have compared males in the collections of Erlanger and Koenig which are not essentially different. Apparently these winter Larks disappear in April.

#### 44. *Alauda arvensis harterti* Whit.

*Alauda arvensis harterti* Whitaker, *Bull. B. O. Club* xv. p. 19 (1904—Breeding in Tunisia).

Skylarks breed in many parts of Algeria, and in considerable numbers near Batna and Lambèse. We shot several specimens near Batna, and also on the Djebel Mahmel, at an elevation of about 1800 m., on May 12. All these specimens appear to be slightly less sharply marked and not quite so mealy as the winter Larks, but that may partly be due to the worn edges of the feathers. There is, however, another feature which distinguishes them easily: the bill is longer and comparatively slenderer, the culmen measuring 16 to 17 mm. We have, so far, only a small series of four males and one female, all shot in May near Batna and on the Djebel Mahmel. The female has, as always in Skylarks, the wing shorter than the male, but the bill is as long as in males and still thinner.

It remains to be found out if these Larks are resident all the year round in Algeria and Tunisia.

Curious to say, we found no Skylarks breeding at Hammam Meskoutine, nor near Hammam R'hira.

#### 45. *Alaemon alaudipes alaudipes* (Desf.)

We found the "Bifasciated Lark" wherever sand-dunes were predominant. Near Biskra they appear on the dunes about 15 kilometres to the south-west, and we shot one near Sidi Okba. South of Bordj Saada it is found wherever dunes or sandy stretches occur in the stony plain or even in the sebcha, and near Touggourt it is common. It lives chiefly where there is some vegetation—*Limoniastrum*, *Salicornia*, *Salsola*, and other bushes—on the sand, but also among the most desolate and bare dunes from Touggourt to El Oued. One's attention is, at least in spring, nearly always drawn to it by its beautiful song, which consists of a series of ascendant flute-like notes, sometimes followed by a lively twitter. Nothing can describe the beauty of these melancholy, plaintive notes; and the bird, when slowly rising into the air or descending with its conspicuously black-and-



white wings spread out, or swiftly running along the sand, the colour of which it bears to perfection, is a striking and wonderful object.

The nests we found were always placed on the top of a bush—generally *Limoniastrum* or *Salsola*—and were composed of twigs of *Limoniastrum* and other bushes, thickly felted together with risps and dry flowers, as well as cobwebs. Among the dunes near Bordj M'Gaitla, east of Touggourt, we found little young birds on April 5, while between Touggourt and Biskra several fresh nests did not yet contain eggs by April 20.

The little young ones taken from the nests have the same colour as the old birds, even the spots on the chest being visible, though small. The iris was brown, the bill horn-colour, gape yellow, tongue yellow with the tip and two spots near the base black, feet pale flesh-colour.

The Comte de Dalmas obtained this Lark at Cape Blanco (Baie du Lévrier), west coast of Sahara, in May 1895, when cruising in his yacht along the coast.

In 1911 we observed the Bifasciated Lark near Laghouat, on the sands south and east of the town, but only in small numbers.

#### 46. *Eremophila alpestris bilopha* (Temm.)

This beautiful little Lark is conspicuous by the black markings on the head and throat, as well as from its peculiar call-note. It is never found in Northern Tunisia, nor among the mountains of the southern parts we visited, and not even near Biskra. It inhabits stony plains in the true desert, and is therefore not uncommon near Bordj Chegga, between Biskra and Touggourt. It was there that we found it on April 19, 20 and 21, and collected nine specimens. It was tamer than most other Larks, and once seen easily obtained. The iris is dark brown, feet black, bill blackish horn-colour, base of lower mandible pale bluish.

Mr. Aharoni sent us a large series of this bird from the North Syrian desert, near Karyatain, Rhoda and Palmyra, where it is common.

South of Laghouat began another region suitable for this Shorelark, and we found it common enough southwards to the region of the Dayats and near Ghardaïa. Here again we were most unfortunate in not finding a nest. At Laghouat we were undoubtedly too early, and so we were apparently at Tirlhempt, where a bird was actually observed scratching out a little depression for the nest, which it afterwards forsook. Near Ghardaïa, however, we shot a female with an egg more than half full-size, so that the time was there evidently nearly right. Also here we found these Larks quite fearless. They prefer the stoniest desert, if it is not quite bare of vegetation, and especially where *Helianthemum hirtum*, a plant with beautiful yellow flowers in April, is thriving.

#### 47. *Anthus trivialis trivialis* (L.).

From the end of March and throughout April the Tree-Pipit passes through Southern Algeria on migration. We obtained specimens at Biskra, between Biskra and Touggourt, and near El Oued.

#### 48. *Anthus pratensis* (L.).

This species also passes through Algeria, and we obtained a female at "Fontaine Chaude," near Biskra, on March 19, 1909. It was common near Hammam Meskoutine and Biskra in February 1911.



49. *Anthus campestris* (L.).

We have noticed this species on passage in April, and obtained specimens at Biskra, and between Touggourt and El Oued, and saw it near Laghouat. We also came across it on the nesting-grounds near Batna, and 1800 m. high on Djebel Mahmel. Specimens vary individually. Of two males shot on May 7, near Batna, one is much darker, the other paler, more isabelline. The supposed eastern subspecies (*Agrodroma campestris minor* R. Blasius, ex Homeyer MS.) does not seem to exist. Its small size and scarcely developed black malar line are peculiar to the females. The wing of a female shot at Biskra measures barely 82 mm.

50. *Anthus spinoletta spinoletta* (L.).

We did not ourselves come across the Water-Pipit, but Steinbach shot a female near Biskra on December 20, 1907, which we received from him. This is perhaps the southernmost locality in N.W. Africa on record.

51. *Motacilla flava flava* L.

Nowhere did we come across any breeding Wagtails, though we particularly looked out for them, but we saw several small parties on migration near Biskra in April. A male specimen shot on April 8 is *M. flava flava*. The same form was common at Touggourt early in April, near Laghouat, and in the dayats near Tiltrempt in April 1911, and a female was shot at Ghardaïa on April 20. At Touggourt we also saw *M. flava rayi*, and Rothschild thinks he recognised a Black-headed Yellow Wagtail near Biskra in March. The only specimen on record from Algeria of the latter appears to be one obtained by Loche near Aïn Oussera.

52. *Motacilla alba alba* L.

Obtained once in Biskra in March, and common in the neighbourhood from February 20 to the end of the month in 1911. Also seen near Laghouat early in April 1911.

53. *Motacilla boarula boarula* L.

Two seen and one shot on February 6, 1911, at Hammam Meskoutine. The body plumage was in full moult.

54. *Certhia brachydactyla mauritanica* With.

The N.W. African Tree-Creeper is very closely allied and hardly distinguishable from *C. brachydactyla ultramontana* from South Europe. Three out of our ten birds have a distinct buff spot on the fourth primary, and this spot is often absent in *ultramontana*.

We were never more astonished than when we found this bird, on March 7, in the palm-oasis of El Kantara, where there are no other trees than date-palms and a few apricots, oranges, and fig-trees. Nevertheless, we obtained three males there. They were singing and quite at home among the palms.

Afterwards we found these Creepers common in the oak-woods above Lambèse, near Batna, in May, but their plumage was rather worn at that time.

Mr. Riegenbach found these Creepers in the oak-woods of Temeroui in the Atlas of S.W. Morocco.



55. *Parus major excelsus* Buvry.

We have only seen this species near Algiers, at Hammam R'hira, and Hammam Meskoutine. Near Algiers young birds had already left their nest for some time on May 5, 1908. The wings of a pair of old birds measure, ♂ 76, ♀ 72 mm.

56. *Parus caeruleus ultramarinus* Bp.

This Titmouse is common in most suitable places in Algeria from Algiers to Biskra. It is at home equally in the pine and oak woods of the north and in the oases of El Kantara and Biskra. Farther west it goes south to Laghouat, but is **not** found in the dayats or in Ghardaïa.

57. *Parus ater ledouci* Malh.

We collected some specimens in the woods above Lambèse and near Batna, where these birds frequent the Aleppo pines, and one of us saw some at Hammam R'hira and Les Glacières, Blida. The bill is dark horn-grey, almost black, the feet of a leaden blue-grey.

58. *Lanius excubitor algeriensis* Less.

(Cf. Hartert, *Vög. pal. Fauna* i. p. 425.)

To our disappointment we never came across this form. Mr. Bishop, the American ornithologist, however, bought a specimen on January 10 from an Arab near Algiers, who shot it while out shooting thrushes for the market.

59. *Lanius excubitor dodsoni* Whit.

We did not obtain specimens of this subspecies, but a clutch of eggs received from our faithful guide Chelli Brahim, near Batna, probably belongs to *dodsoni*. These eggs are somewhat larger than the majority of eggs of *elegans*.

60. *Lanius excubitor elegans* Swains.

(Cf. Hartert, *Vög. pal. Fauna* i. p. 427 ; *Nov. Zool.* 1906, pp. 395, 396.)

We have found the pale form of the Grey Algerian Shrike from the plain of El Outaya to Biskra, all the way down to Tougourt, and as far south as Temacin, also between Tougourt and El Oued. All the birds collected (eleven in all, besides which we have another nine collected by Flückiger near Biskra and Tougourt) show little variation in colour and size, and in markings only those described by Hartert. The nests we found were mostly placed in the thorny bushes of *Zizyphus lotus*, rarely in *Tamarix*. The nests contained from 3 to 5 eggs. The earliest ones we found on March 8, and those were fairly hard-set, but fresh eggs were taken as late as April 20.

The eggs measure:  $28 \times 19.9$ ,  $28 \times 19.5$ ,  $27 \times 19.5$ ,  $27.2 \times 19$ , and  $28.5 \times 19$  mm.;  $26 \times 19.1$ ,  $25.9 \times 14$ ,  $25.5 \times 19.6$ ,  $25.5 \times 18.7$ , and  $25.5 \times 18.5$  mm.;  $25.5 \times 19.4$  mm.;  $23.4 \times 18.5$ ,  $24 \times 18.8$ ,  $24 \times 18.1$ , and  $23.5 \times 18.5$  mm.;  $25.6 \times 19$ ,  $26.8 \times 19$ ,  $28.4 \times 18.5$  mm.;  $25 \times 18.4$ ,  $24.3 \times 18.7$ , and  $24.5 \times 19.1$  mm.;  $26.8 \times 19$  mm.;  $28.8 \times 18$ ,  $25 \times 18.5$ ,  $25 \times 18.4$ , and  $25.7 \times 18.4$  mm.

During our 1911 expedition we first came across *L. e. elegans* near Laghouat, where it was not rare in the *Zizyphus* bushes south of the town. The first specimen



we shot was in worn plumage and exceptionally dark, so that at first we thought we had hit upon another form, but we soon shot in the same plain specimens as light as the lightest Biskra ones. Farther south these Shrikes were by no means rare in the dayats, every dayat being inhabited by one or two pairs.

These Shrikes were most numerous in the gardens of the M'zab country, in the oases of Berryan and Ghardaïa. A very curious fact is, that while they are very wide-awake and only to be obtained with full charges of a sporting gun in all the other places we visited (though they are more daring near their nests), they were quite tame and confiding in the M'zab oases, so that it was easy to shoot them with a very small bore walking-stick gun. While we found these Shrikes almost entirely confined to the *Zizyphus* and *Tamarix* bushes near Biskra and everywhere south to Touggourt, as well as near Laghouat and in the dayats, in the M'zab oases they were numerous in the gardens, sitting on the fences, palm-trees, wells and walls. They probably nested in the palms and trees of the gardens, as in many places there were neither *Zizyphus* nor *Tamarix* near. In the M'zab country we saw young ones being fed by their parents in April. The nestling plumage is sandy buffy grey on the upperside, the wing-coverts and secondaries have wide buff instead of white edges, the lores are grey instead of black, the sides of the breast are greyish buff, very indistinctly barred with grey.

#### 61. *Lanius senator senator* L.

*Lanius senator flückigeri* Kleinschmidt, *Falco* iii. p. 68 (1907—Terra typica Lambèse in Algeria.)

Hartert (*Vög. pal. Fauna* i. pp. 435, 436) has described the variations of the Red-headed or Woodchat Shrike, and specially discussed the N.W. African birds. Attempts to separate the latter have repeatedly been made: Koenig and several other authors believed that they had lighter heads, Erlanger stated they had a stronger ochre tinge on the sides, Kleinschmidt (in litt. 1906) thought their rump was lighter, Hilgert (in litt. 1906) thought their heads were deeper rufous. It is curious that not one of these opinions is the same as the other, and that they in two cases contradict each other. But this is not all. In 1907 (*l.c.*) Kleinschmidt made another attempt to separate the N.W. African form, supplying it with a new name—*Lanius senator flückigeri*. He then had made new discoveries: the black frontal band was narrower on an average, and was sometimes absent in the females, and the base of the central rectrices was "very often" white. Kleinschmidt's name, however, cannot be accepted. It is true that in the skins collected by Flückiger the black frontal band is generally somewhat narrower than in European specimens, but in some specimens from N.W. Africa it is as wide as in Central European ones; it is not very rarely absent or only indicated in the females; but such birds—probably younger individuals—occur also in various parts of Europe. The white base to the central rectrices is of very rare occurrence: it is not seen in any of our Algerian specimens (and we have at this moment before us 15 males shot late in May and June in N.W. Africa). The only exceptions are the ♀ from Tunis and a ♂ from Turin (Italy) mentioned by Hartert on p. 437 of his book. It therefore comes to this, that Algerian (and other N.W. African) birds do not differ from European ones, although the black frontal band is in many specimens narrower than in many European ones. This one character is, in our opinion, not constant enough to justify the naming of the supposed form. Kleinschmidt has not informed us how many specimens



he compared, but probably his series was not a large one, especially of European birds. Kleinschmidt says his new name has the value that it proves that German *Lanius senator* are not N. African birds pushed onwards to the north by a migration wave,\* but were already at home on the Rhine a century and a half ago. Certainly the history of the species proves this fact, but not the new name given to the N.W. African bird by Kleinschmidt! Moreover, the creation of new names should not be experiments or instruments to prove historical facts, but if a bird is "named," the characters given in the diagnosis should enable us to distinguish it. We deny that this is possible in the present case, and therefore do not admit the name *flückigeri*.

With regard to the Woodchat Shrike in Algeria: it is not seen there in the winter, its winter quarters being farther south, in Senegambia, Nigeria, and Hausaland; but it passes through in great numbers in April and end of March (our first specimen seen and obtained was on March 23), and breeds commonly near Batna, and everywhere to the north of Batna. We found the nests on olive trees and in bushes, containing eggs in May.

Among the series we collected (fifteen apparent migrants from El Oued and Touggourt to Biskra, and eleven breeding birds from Lambèse, Batna, Hammam Meskoutine and Alger) are two without white bases to the outer primaries: one from Biskra, April 18, 1908, probably still on migration, though possibly breeding; one from Lambèse, May 5, 1909, undoubtedly at its breeding-place. These birds do not seem to be separable from *L. senator badius* of Sardinia and Corsica, which appears to be distinguishable by nothing but the absence of a white base to the outer primaries.

We should be only too glad to deny the validity of the form *badius*, but as all the eight adult males, shot sufficiently late in Sardinia and Corsica to be certain that they were breeding birds, have no speculum, and Kleinschmidt also has a series from Sardinia without speculum, this cannot be accidental, and *badius* must be looked upon as a good insular race, though specimens like it are sometimes found in N.W. Africa.

In 1911 we saw Red-headed Shrikes on passage at Tilrhempt (in the dayats) and Laghouat, as well as a very few on their nesting-ground near Algiers and Hammam R'hira.

## 62. *Pycnonotus barbatus barbatus* (Desf.).

We only came across this bird in three places—Hammam R'hira, the plain of Aïn Mokra on Lake Fetzara, and Hammam Meskoutine—and collected a few specimens.

It occurs only in N. Algeria. As all the allies, and especially the very closely allied *P. barbatus inornatus*, are tropical birds, the latter inhabiting W. Africa from Senegambia to the Niger, the Algerian form (which differs only in a slightly longer wing and tail from *inornatus*) must have reached N.W. Africa along the west coast, and not across the Sahara, or else we should find it in the oases and S. Algeria generally.

We cannot understand why we did not succeed in finding the nests at Hammam R'hira in May, when the birds were seen daily in the gardens.

\* The term "wave" is an unhappy one for the phenomenon of migratory movements, as will be explained elsewhere.



63. *Muscicapa hypoleuca speculigera* Bp.

*Muscicapa atricapilla speculigera* Bp., Hartert, *Vög. pal. Fauna* i. p. 482.

*Muscicapa hypoleuca speculigera* t.c. i. p. xxxix.

Whitaker (*B. Tunisia* i. p. 180) erroneously denies the possibility of separating this well-marked subspecies from the European form, and the differences have been fully pointed out by Erlanger and Hartert, *l.c.* We found this form not rare during May near Lambèse, and obtained three beautiful males, which bear out every one of the distinctive characters. None of them has any white in the tail. The iris is dark brown, bill and feet black.

64. *Muscicapa hypoleuca hypoleuca* (Pall.).

(*Muscicapa atricapilla* auctorum.)

We met this bird on passage near Biskra in April, also near Batna in April 15 (1908), at Mraier, half-way between Touggourt and Biskra, April 18, and at El Oued, April 8. All these specimens were males; one had an entirely brown upperside, and none of the others an entirely pure black upper surface.

65. *Muscicapa striata striata* (Pall.).

The Spotted Flycatcher passed through Biskra on migration in April 1908. In 1909 we found it common at Hammam Meskoutine, during the second half of May; it was undoubtedly "at home," in its breeding place, though we did not find nests—probably because it was still too early. A bird shot near Algiers, on May 4, was also probably a breeding bird. In spite of the closest examination, we are not able to find any character by which to distinguish the Algerian birds from Continental European ones. This is the more surprising as the form from the islands of Corsica and Sardinia (*Muscicapa striata tyrrhenica* Schiebel, *Orn. Jahrb.* 1910. p. 102; Parrot, *Orn. Monatsber.* 1910. p. 154) appears to be different. Half a dozen specimens from Sardinia in the Tring Museum have the spotting on the forehead much less distinct, more washed out, and the striations on the underside also a little less distinct. The supposed differences in the colour of the upperside and size mentioned by Parrot are not borne out by our Sardinian examples.

In February we did not find any Flycatchers at Hammam Meskoutine, nor were any noticed at Hammam R'hira in May. On passage the species was not rare in the dayats about the middle of April.

66. *Phylloscopus sibilatrix erlangeri* Hart.

*Vög. pal. Fauna* i. p. 516.

Unfortunately we are not able to add much to the history of this somewhat doubtful form. We found it fairly common in the pine-woods near the town of Algiers, from May 4 to 6, 1908, and collected three specimens. The familiar shivering song of the English and German bird was not heard. An adult male was also obtained half-way between Touggourt and Biskra on April 18. These birds are rather light and yellowish, but the difference is very slight. No nest was found!

67. *Phylloscopus collybita collybita* (Vieill.).

We have not found the Chiffchaff breeding in Algeria, but it is common in winter and during migration. The latest date was a female shot at Biskra on April 21, 1908. At Laghouat it was common on April 5 and 8.



68. *Phylloscopus trochilus trochilus* (L.).

We found this species very common in March and the first week in April, near El Kantara and Biskra, the first specimen being obtained at Biskra as early as February 26, 1911.

69. *Phylloscopus bonelli bonelli* (Vieill.).

We first came across Bonelli's Warbler at Biskra, on April 25, 1908, when it was quite common in the so-called "mimosas" of Beni Mora. They were then evidently still in migration. A male was shot at Touggourt on April 14, 1909. We found the species on its breeding-places in the woods above Lambèse during the first half of May 1909, whence we also have several specimens collected by Flückiger. Riegenbach found this species in the south-western Atlas, in May, at altitudes of about 1500 m, and on the Djebel S'chorr, in the province of Rahamma, in Morocco, on May 11, 1903. The same collector sent specimens from Thiès, in Senegambia, shot on March 16.

In 1911 the species was common in the dayat of Tirlhempt in the middle of April, and we also recognised it in the tamarisks by the river bed at Ghardaïa as late as April 23.

70. *Cettia cetti cetti* (Marm.).

We did not often come across this species in Algeria. A few were seen near Biskra late in February 1908, and one was shot on February 26. In 1909 we found it near Hammam Meskoutine, where it had young in May; and in 1911 it was not rare in the thick bushes intermingled with *Arundo donax* along the river near Hammam Meskoutine in February. Its loud metallic note could often be heard, but we only shot one specimen.

71. *Acrocephalus arundinaceus arundinaceus* (L.)

Half-way between Biskra and Touggourt, on April 18, 1909, a Great Reed Warbler was seen in the bushes near some pond and swamp. The bird was, however, not obtained, but shot at and lost.

We also heard the song of many birds which must have been Great Reed Warblers, in the reeds on Lake Fetzara, late in May 1909, but were not able to reach them, as no boat was available.

72. *Acrocephalus streperus*.

We heard the song of Reed Warblers among the reeds in the middle of Lake Fetzara late in May 1909, but were not able to reach them. Judging from the song, as heard from a distance, they must have been *A. streperus*.

73. *Acrocephalus schoenobaenus* (L.)

Met on migration from April 4 to 18 at Biskra, Djamma and Kef-el-Dhor between Touggourt and Biskra, and in its breeding-home at Lake Fetzara in North Algeria, on May 21.

74. *Hypolais icterina* (Viell.).

It was rather surprising to find this species together with the—apparently—commoner *H. polyglotta* in the month of May. We shot a male which sang



lustily, on May 7, 1909, near Batna. This might have still been a migrant, its testicles being small. On the other hand an adult female with largely swollen eggs was shot at Hammam Meskoutine on May 24, in enormously high nettles, growing like reeds close together on the river bank. Although we did not find the nest, it being too early, there can be no doubt that this species was nesting there.

Dr. Ansorge obtained a male in November in Angola, in which the first primary is 2 mm. longer than the primary-coverts, and a similar one has been received from Italy, shot on September 10. It seems that *H. icterina*—at least birds of the year—has the first primary longer in autumn than in spring, and we would call the attention of collectors to this phenomenon.

#### 75. *Hypolais polyglotta* (Vieill.).

We found this Warbler above Lambèse on May 5, and fairly common at Hammam R'hira and near Hammam Meskoutine during the second half of May. Every specimen obtained is quite typical in the size of the first primary, shape of wing, and length. The iris is brown, the feet pale brown or olive, toes more olive, bill dark horn-brown, lower mandible pale fleshy pink, inside of mouth bright orange.

We cannot regard either the "Melodious" or the "Icterine Warbler" as "shy and retiring in their habits," as Mr. Whitaker calls them.

#### 76. *Hypolais pallida opaca* Cab.

This large form was found not at all rare near Hammam Meskoutine during the second half of May 1909. It was undoubtedly breeding there, though we did not find a nest. As we only obtained males, which attract one from some distance by their song, it may be supposed that the females were sitting on their eggs.

We also shot a male at Touggourt on April 14, others at Biskra on April 25, 27, and 28. We take it that the Touggourt and Biskra specimens were still on migration, though the dates of the latter are rather late. Probably the place of *opaca* is in these oases taken by *reiseri*.

The iris of *opaca* is dark brown, the gape light orange-yellow. Feet greyish brown to brownish lead-grey, toes darker and more grey. Upper mandible light horn-brown, lower pale yellowish or whitish to pale pink.

We found the birds generally in tamarisks and tall nettles. The song is less varied than that of the yellow species, somewhat monotonous and more acrocephaline, but still at once recognisable as that of a *Hypolais*.

#### 77. *Hypolais pallida reiseri* Hilgert.

*Hypolais pallida reiseri* Hilgert, *Falco*, 1908. p. 3 (Biskra); Hartert, *Vög. pal. Fauna* i. p. 574.

Probably this form has been mistaken for either "*pallida*" or *opaca* by some naturalists, and will also be found in S. Tunisia. *H. p. reiseri* differs from *H. p. pallida* by its much paler upperside, and generally longer first primary, from *H. p. opaca* by its much smaller size and paler colour.

We found *H. p. reiseri* at Biskra on April 20 and 30, at Touggourt on April 14, and at Mraier (half-way between Touggourt and Biskra) on April 18, 1909. Its song is monotonous, like that of *opaca*, but very much weaker and thinner, and can be easily distinguished.



That *reiseri* breeds at Biskra appears to be certain, as it was found there as late as May 5 (1882) by Mr. H. J. Elwes, but was at that time mistaken for *H. p. pallida*. As we have said under *H. p. opaca*, we take it that *reiseri* replaces *opaca* in the oases south of the Atlas Mountains during the breeding season, until the contrary is proved.

All the *reiseri*, five specimens altogether, we found were either seen among the tamarisk bushes or, at Biskra, in the so-called mimosas. The wings of our six skins, all males, measure: 64—67 mm.

(We heard the song of this or another *Hypolais* at Ghardaïa, on April 22, but did not obtain the bird, which seemed to be rather grey in appearance.)

#### 78. *Sylvia hortensis hortensis* (Gm.).

(*Sylvia orphea* olim.)

Breeds undoubtedly near Algiers and Batna, where we obtained specimens in May, and we also shot one near Biskra, April 7, which was probably on migration. Iris pale sulphur-yellow, feet slate-grey or horn-grey, bill dark slate, base of lower mandible bluish grey. Probably numbers winter in Algeria, as we saw several as early as January 22 at Algiers.

#### 79. *Sylvia borin borin* (Bodd.).

(*Sylvia hortensis* auct. mult. errore !)

We only came across the "Garden Warbler" in two places. We shot a male east of Touggourt, in the desert, on April 4, and found it on its breeding-ground at Hammam Meskoutine, where it was frequenting the gardens and olive-trees.

We have compared two pairs we collected at the latter place, and cannot find any difference from European birds.

#### 80. *Sylvia atricapilla atricapilla* (L.)

Breeds commonly in North Algeria, migrates through the country in the early spring, and evidently winters there, as we found it common near Algiers town as early as January 22. It was then in full song. Possibly it only breeds in the northernmost parts, and the birds we saw in January and February are resident in the place.

Clutches of eggs, containing 3 and 4, mostly more or less incubated, were found near Algiers and Hamman R'hira from May 13 to 27, 1911.

#### 81. *Sylvia communis communis* Lath.

In March and April not rare near Biskra and in the oases between Biskra and Touggourt, but all these birds were apparently on passage.

This Warbler nests in North Algeria. It was commonly breeding near Hammam R'hira, and a clutch of 6 hard-set eggs was taken May 19, 1911. It was several times observed near Hammam Meskoutine, and a male was shot near Lake Fetzara, May 21, 1909, where it was also undoubtedly breeding. The N.W. African birds do not seem to differ in any way from European ones.

Mr. Riggenbach sent some skins from the S.W. Atlas in Morocco and from Mazagan, but they are probably all migrants, not breeding birds.



82. *Sylvia nana deserti* (Loche).

This beautiful little Warbler, with its pure white underside and an upperside exactly of the colour of the sand-dunes, is by no means rare in the sandy desert, whether it is flat or forms dunes of considerable height. Koenig only came across it 50 km. south of Touggourt, but we found it on the sand-dunes between Oumash and Biskra, and wherever there was sand of some extent, from near Kef el Dohr southwards, between Biskra and Touggourt, while in the valleys between the dunes on the way from Touggourt to El Oued, with scanty vegetation of *Limoniastrum*, *Ephedra*, *Calligonum*, *Aristida pungens* ("Drin"), here and there an *Euphorbia guyoniana*, and very few other plants, it was not rare at all. It is, however, absent from all stony desert and sebcha. As a rule we found it somewhat shy and wary.

The song, which is sometimes uttered during a short flight, like that of *Sylvia communis*, but mostly while sitting on a bush, is a pleasant typically sylviine song, not very unlike that of *S. communis*.

The nest is rather deep, somewhat shaped like that of a Reed Warbler, though of course not woven round stems, but placed in a fork of a branch or twig. The nests we found were conspicuous enough, from 3 to 3½ feet from the ground in *Ephedra* or *Calligonum* bushes. They were composed of grasses, stalks and leaves, interwoven with *Gnaphalium* blossoms, and softly lined with wool and cobwebs or bits of thread. Diameter of cup 2—2½ in., depth 2½—3¼ in.

The three eggs are white or pale greenish, spotted with pale olive-brown and pale grey shell-marks. The markings form an ill defined ring or are mostly confined to the big end. The eggs of a clutch we found on April 6, 1909, about 40 km. west of El Oued, measure 16·5 × 12·4, 16·2 × 12·4 and 15·4 × 12 mm. A week later, on April 13, we found two empty nests, on which the birds were sitting!

Koenig (*Journ. f. Orn.* 1895, pl. 1), figured both sexes, but the male (in the foreground) is much too red, not isabelline enough, and the female (in the background) looks quite different\*. In fact the sexes are perfectly alike in every way! We have collected 25 skins. Their wings measure: ♂ 56—59, mostly 56—57 mm.; ♀ 54—57·5, mostly 55—56 mm.

The iris is bright sulphur-yellow, or bright lemon-yellow; feet cream-colour (sometimes more yellow); upper bill and tip of lower horn-brown, lower and cutting edge of upper pale flesh-colour.

83. *Sylvia melanocephala melanocephala* (Gm.)

We found this bird common near Biskra, Hammam Meskoutine, and Algiers, and one male was shot near Kef el Dohr, south of Biskra, March 28, 1909, but we could not say if it was breeding so far south; this last specimen has a strong rosy tinge on the sides of the abdomen, which we do not find so well marked in any other male in our collection.

The form from the Western Canary Islands [*S. melanocephala leucogastra* (Ledru)] is well distinguishable by its smaller size alone. Dr. Sassi's failure to recognise it (*Orn. Jahrbuch*, 1908, p. 34) was probably due to his not separating the examples from the Eastern Islands, which belong to *S. m. melanocephala*.

Hartert (*Vög. pal. Fauna*, i. p. 593) raised the question, if the form from

\* Comparing various copies, we found that they were not all alike, but the faults were the same in all of them.



N.W. Africa might not be separable on account of the purer white under tail-coverts. The series now collected by us does not bear this out, although some of the males have remarkably white under tail-coverts.

The iris is dull ochre, the orbital ring dull red, feet light brown. Bill black, base of lower mandible pale (pale flesh, whitish).

A number of these birds appear to winter in Algeria, while others are doubtless migratory. We found them quite common near Algiers and Hammam Meskoutine from the last week of January to the middle of February.

Full clutches, of three eggs each, were found near Algiers on May 13 and 16. The eggs, as is well known, vary very much, and our three clutches belong to three quite different types : one clutch is pink, covered all over with faint pinkish brown spots, another creamy white with large patches of brown and underlying ones of ashy grey, the third greenish white with olive-brown and greyish patches, this last one resembling very closely the eggs of *Acrocephalus streperus*. The measurements of the first clutch are  $18.5 \times 14.5$ ,  $18 \times 14$ , and  $18 \times 14$ ; those of the second  $17.6 \times 13.6$ ,  $17.7 \times 13.5$  and  $17.3 \times 13.5$ ; those of the third  $18.7 \times 14$ ,  $19 \times 14.1$  and  $18.7 \times 13.9$  mm. The first and third contained Cuckoo's eggs.

#### 84, 85, 86. *Sylvia cantillans*.

(*Sylvia subalpina* auctorum !)

Formerly all "Subalpine Warblers" were supposed to be the same. In 1899 Erlanger noticed differences between his Tunisian and Herzegovina specimens, but wisely refrained from giving a new name to either of these forms. In 1906 Tschusi (*Orn. Jahrb.* 1906, p. 141), named the Tunisian form, but he apparently based his distinction chiefly on comparison with S.E. European examples, which are quite different, both from the topotypical *cantillans* (Italy), and the N.W. African form, and his description is by no means clear. In 1909 Hartert (*Vög. pal. Fauna*, i. pp. 596, 597) separated three forms :

*Sylvia subalpina subalpina* : S.W. Europe and Italy.

„ „ *inornata* : N.W. Africa, and

„ „ *albistriata* : S.E. Europe.

Of these the last, *albistriata*, differs in size and shape of wing, while the other two are very closely allied, and only differ in the colour of the underside. Nevertheless, so far they seem to be easily separable, and it is by no means impossible that even more forms might be distinguished if sufficient series were compared.

Examining our Algerian birds, we find them to belong to all three races :

*Sylvia cantillans* \* *inornata* Tsch.

We found this race on the breeding-grounds near Batna and Lambèse in May, and also at Biskra.

A male was shot at Tilrhempt on April 15. A few specimens were obtained near Bordj Chegga and at Touggourt, but they were most probably on migration. Mr. Riegenbach collected this form at Fenzou and Temeroui, in the S.W. Atlas in Morocco, in the middle of April.

This form has, apparently, always a more cinnamon colour on the underside

\* The name *cantillans* is earlier than *subalpina*, and refers to this species, not to the Dartford Warbler, as erroneously supposed by Richmond.



and less white in the middle of the abdomen. The sides are almost of the same colour as the throat. Wings of our ten males : 59—61 mm.

*Sylvia cantillans cantillans* Pall.

This form was not rare near Biskra in March 1908, and we found it in the desert between Touggourt and El Oued, early in April, and at El Oued itself. They must have been on migration. A male shot at Batna on April 16 evidently belongs to this form as well.

The rufous colour of the underside in this form is more reddish, less cinnamon than in *S. c. inornata*, and the sides are much paler than the throat, the white in the middle of the abdomen is more extended. Wings of males 59—60 mm. Some males—not only autumn birds—are pale vinous underneath.

*Sylvia cantillans albistriata* (Brehm).

We found this bird—doubtless on migration—east of Touggourt, on April 12, and near Biskra and Oumash in March and early April.

In colour these birds are not different from *S. cantillans cantillans*, except that the edges to the wings appear to be less buffy brown, but the second primary is longer, and the wing much longer : 63—67 mm.

87. *Sylvia conspicillata conspicillata* Temm.

We found this Warbler fairly common near Biskra and Oumash from February to April, and shot it near Zaatsha. It was breeding also, in small numbers, near Laghouat and Batna.

A very pretty nest was found in a small heap of dead branches of *Zizyphus* near Laghouat, April 25, 1911. It contained two eggs of a pale greenish buff colour, covered all over with tiny greenish brown spots and dots. They are rather pointed, and measure  $17 \times 12.7$  and  $16 \times 12.5$  mm.

These birds have a spring moult, for specimens shot during the first half of March were moulting their body plumage.

88. *Sylvia sarda* Temm.

We shot, in 1909, four specimens of "Marmora's Warbler" : a female at Biskra, March 18, a male at El Kantara, March 2, and two females near El Kantara, March 6. Iris : ♂ light ochre ; ♀ dull ochre or dull cinnamon-brown ; orbital ring pale brick-red ; feet pale orange flesh-colour.

These birds were doubtless on passage.

In 1911 this bird was quite common at Biskra from February 21 to the middle of March. The body plumage of most of the birds shot was moulting, and in one case the tail also.

89. *Sylvia deserticola* Tristr.

This somewhat rare species breeds commonly in the Southern Atlas range, the so-called Aurès Mountains, near Batna and Lambèse, and spends the winter, when these mountains are frequently covered with deep snow for some time, in the desert, where it was discovered by Tristram. Dixon and Elwes found the bird on its breeding-ground near Batna, where its life-history was fully studied ten years later.



The first specimen we obtained was a very pale female with buff patches on the back, which we shot on passage south of Biskra on April 19. Others were shot on the Col de Sfa near Biskra, in the desert between Biskra and Oumash, both in March, others again in the vast sand-desert between El Oued and Touggourt on April 5 and 11.

When at Batna on April 15 and 16, 1908, we were unable to find this bird, which was quite common there in May 1909. Although in 1908 we did not visit quite the same spots, and the weather was abominable, we do not think that we overlooked the bird, but conclude that it only arrives after the middle of April on its breeding-ground. Altogether we collected six adult males and five females.

The iris is ochre, feet light reddish brown, the upper bill and tip of lower mandible are dark horn-brown, base of lower pale brown.

Wings : Males and females 54—55 mm.

#### 90. *Sylvia undata toni* Hart.

Neither in 1908 nor in 1909 did we come across any Dartford Warblers, but in 1911 we had better luck. The first one was a very adult female, almost coloured like a male, shot on January 28 near Bonzarea, a few kilometres from Algiers, in thick gorse bushes. Afterwards we found it quite common in the thick bushes on the Oued Biskra, late in February and to the middle of March, when they became rarer. These birds were doubtless on passage, but seem to winter at Biskra, as Mr. Meade-Waldo observed them several weeks before, and Flückiger shot one south of Biskra on January 14, 1903. All these birds belong to the African form ; their wings measure 49·5 to 53 mm.

Afterwards we found them common near Hammam R'hira, where they were breeding on the outskirts and in the middle of the pine-woods. Unfortunately we were too late for the eggs, as the young had mostly left their nests. We shot two of these nestlings, which are much more grey, less rufous on the upper surface, than English young birds. Only one of our birds from Biskra was renewing its rectrices ; the others were not moulting, though probably they would moult their body-plumage before they bred.

The iris is cinnamon brown or brownish orange, the bare orbital ring orange red or brick-red ; the upper bill and tip of mandible is blackish horn-brown, base of lower dull or pale orange ; feet dull orange or yellowish brown.

#### 91. *Agrobates galactotes galactotes* (Temm.).

We have only come across these birds near El Kantara and Biskra, where they were frequenting opuntia hedges and tamarisk bushes, also the gardens of Biskra. They appear to be migratory, for we never saw any until April, while Koenig states also that they did not arrive at Biskra until March 19, 1892.

#### 92. *Scotocerca inquieta saharæ* (Loche).

This pretty little bird is found among the thick pad-like bushes of *Limoniastrum*, *Halocnemon*, and other plants, as well in the sandy desert as in the sebcha. It is found in small numbers between Biskra and Oumash, and in the plain of Mouleïna, south of Biskra, but it is much more common south of Bordj Saada, and all the way down to Touggourt in suitable places. We have, however, never seen it among the dunes east of Touggourt.



The nests were found well hidden in desert bushes. They contained three eggs on April 19 and 20. The nests were always longitudinal, not so round as figured by Koenig, and they were lined with quantities of feathers of *Pterocles alchata*, *Houbara*, and other birds.

The six eggs we took measure  $15 \times 11.5$ ,  $15.8 \times 11.6$ ,  $16 \times 11.7$ ,  $16.2 \times 11.7$ ,  $16 \times 11.4$ , and  $16.4 \times 11.9$  mm.

On April 20 a nest with naked young, and young being led by their parents were seen.

The adult bird has the iris pale greenish yellow or sulphur-yellow, feet light orange-brown or reddish brown (by no means pale yellow!), bill greyish brown or brown, lower mandible, except tip, flesh-colour. The young birds have the iris pale greyish blue, feet flesh-colour, tarsi reddish, bill fleshy horn-brown.

It is remarkable that three of our birds—in the middle of the breeding season—had moulting tails, and one of them also the wings!

In 1911 we found this species common in March, in the "Mouleïna" south of Biskra, and saw a few near Laghouat, among the sand-hills near the river. Two we shot are rather dark rufous brown, but we have similar ones from South Tunisia, and the shade of colour in these birds varies and becomes generally darker in strongly worn specimens.

### 93. *Cisticola cisticola arquatus* (Müll.).

We only found this bird near Biskra, where it was not particularly rare. All specimens shot in March, except one, a female killed March 13, 1909, are moulting part of their body-plumage, especially on the head, nevertheless a male from April 28 looks already very worn.

The mouth of the male is black inside, that of the single female we shot was of a yellowish flesh-colour, not "dark yellow."

In February and early in March 1911 *Cisticola* was quite common in the bushes near the Oued Biskra. The spring moult of the body-plumage was only beginning. All males shot had the mouth inside entirely black, the females flesh-colour or yellow.

### 94. *Crateropus fulvus fulvus* (Desf.).

Inhabitant of desert tracts where bushes are more or less plentiful, and especially where the *Zizyphus* abounds, in which it builds its bulky nests. In 1909 we only saw it near Zaatcha, west of Biskra, on March 17, and near Bordj Chegga, south of the latter town. On March 26 and April 19 some Arabs brought us fresh eggs near Bordj Chegga, and on the same day also young birds were found in a nest. Three more eggs were brought to us near Biskra on April 27. The eggs vary in size from  $23.2 \times 16.6$  to  $24.5 \times 19$  and  $25 \times 17$  mm.

The iris of the adult birds is bright red-brown with a whitish outer ring. Feet light stone-brown; bill blackish brown. In a female from Laghouat the iris was "brown with a narrow pale sulphur-yellow outer ring."

In 1911 a few were seen and obtained near Laghouat, and whole families were observed in the oasis of Ghardaïa, but these birds were exceedingly common in the dayats. In the impenetrable thickets of *Zizyphus*, which more or less surround every dayat, they were continuously noticed. They go about generally in strings, one following the other in single file, uttering a vibrating, trilling,



piping note; but they also have a fine flute-like song, beginning high and sinking in a scale towards the end. In the dayats we found many nests, but none with eggs.

95. *Turdus viscivorus deichleri* Erl.

In the *Vög. d. pal. Fauna* i. p. 649 the N.W. African Mistle-thrush is distinguished on account of its huge bill. The account of the Thrushes was written before we went to Algeria in 1909, and the judgment on *T. v. deichleri* was principally based on a series from the S.W. Atlas in Morocco, collected by Riggerbach, which all have huge bills. Unfortunately we only obtained a male and a female near Lambèse. These do not show the huge bills of the Moroccan birds, but their beaks are slightly larger than in European birds. A better series from Algeria must be compared before deciding whether more than one race occurs in N.W. Africa.

On May 11 a fresh nest, ready made, but without eggs, was found by Hilgert above Lambèse, where Mistle-thrushes are not rare.

In 1911 we only obtained a female in the oak forest of Djebel Taya, in North Algeria, on February 14. This has the bill still smaller than the Lambèse specimens. The wing measures 150 mm. We believe it to be a migrant from Europe.

96. *Turdus philomelos philomelos* Brehm.

(*Turdus musicus* auct. errore, nec L. 1758!).

A common winter visitor in the northern and central parts of Algeria, and we have shot it as far south as El Kantara (March 11, 1909). Near Algiers it was abundant in February 1909 and 1911, and it was extremely common near Hammam Meskoutine in February 1911. A few were seen at Biskra early in March 1911.

97. *Turdus merula mauritanicus* Hart.

We have collected a fine series of Blackbirds in the oases of El Kantara and Oumash, near Biskra, and they are indistinguishable from our Moroccan birds (types of *T. m. mauritanicus* from the Mhoiwla, on the banks of the Oum R'biah, a day's march inland from Mazagan).

The females are very constant and very dark, the underside sooty grey without brown. Bill orange.

We found eggs in April at Biskra and Oumash, and on May 3 in the oasis of El Kantara. We also obtained a clutch near Lambèse on May 8, but omitted to shoot the bird. The eggs resemble those of European Blackbirds in every way.

98. *Turdus merula algirus* (Mad.).

The North Algerian Blackbird is not rare in North Algeria. It is common near Hammam Meskoutine, and in the oak-woods of Aïn Mokra, on Lake Fetzara, not rare near Algiers and in the woods about Hammam R'hira.

The females are of the same colour as those of *T. merula mauritanicus*. In fact, the only difference is the smaller size. The wings of the females measure 118—120 mm., against 118—128 (mostly considerably above 120) in *mauritanicus*. The wings of the males (we obtained altogether six) measure 120—121, once 126, and once, in a male shot at Alger, January 31, 1911, 130 mm.! This last bird is not typical, of course, being rather *mauritanicus* according to its size, but it



is probably an exceptionally long-winged individual. Its tail measures only 107.5 mm., and is thus shorter than in *mauritanicus*.

Unfortunately we omitted to shoot Blackbirds near Batna and Lambèse, so that we are not sure which of the forms it is that frequents those districts.

We found eggs in May. A clutch of three was already incubated.

99. **Monticola solitarius solitarius** (L.).

(*Monticola cyanus* auct.)

Breeds evidently from North Algeria to Batna. It is also seen in February and March at El Kantara, and in the oasis of Oumash; in these latter places, however, it keeps mostly to the villages, and we doubt if it nests there.

A few were seen near Hammam Meskoutine and Biskra in February, and a male shot at the former place February 12, 1911.

100. **Monticola saxatilis** (L.).

Rock Thrushes breed in Northern Algeria, and pass through the oases of the desert on migration. We shot them at El Oued (April 8, 1909), and in the desert between that town and Touggourt on April 6, 1909.

They breed, among other places, at an altitude of about 2000 m. on Djebel Mahmel, where we shot a fine male on May 12. It was undoubtedly breeding there. The wing, very much worn as it is, measures 122 mm., while the migratory male has a much longer wing. These differences, however, are probably individual ones.

101. **Oenanthe oenanthe oenanthe** (L.).\*

(*Saxicola oenanthe* auct.)

The Common Wheatear is a common migrant in Algeria, passing through the country in March and April. We observed and obtained specimens at Biskra and between Biskra and Touggourt, and at Touggourt on April 1. At El Kantara one was shot as late as May 3, which did not belong to the large race.

102. **Oenanthe oenanthe leucorhoa** (Gm.).

Cf. Hartert, *Vög. pal. Fauna* i. p. 681.

We shot a male at Biskra, March 22, 1908, which we do not in the least hesitate to regard as belonging to the big Greenland form of the Wheatear. We also saw a specimen shot by Mr. Steinbach which seemed to belong to this race.

103. **Oenanthe oenanthe seebohmi** (Dixon).

Cf. Hartert, *Vög. pal. Fauna* i. p. 682.

This bird, which differs from *O. oenanthe oenanthe* by being lighter on the upperside, and by the male having a black throat—though not very rarely single white feathers are seen in the latter—is not rare on the Djebel Mahmel in the Aurès Mountains, where it was discovered by Messrs. Dixon and Elwes in 1882, though they failed to recognise it as anything rare or new, and shot only two males! Professor Koenig was the first to discover the female, more than ten years later. Doubtless this very interesting Wheatear occurs on many high mountains of the

\* About the generic name of the Wheatears and Chats see Mathews, *Nov. Zool.* 1911, p. 20. His conclusions, we are sorry to say, are perfectly correct, and must be accepted.



Southern Atlas ranges, as it was not only found on the bare mountains near Lambèse and on Djebel Chelia by Flückiger, but also in Morocco, in the Western Atlas, at Tilula, Zarakten, and Seksawa by Messrs. Dodson and Riggenbach.

Hartert and Hilgert made a special tour to Mount Mahmel on May 12, 1909. Hartert wrote about this trip :

"In the early morning we left Batna in a small automobile, picking up an Arab guide, kindly supplied by the authorities, at Lambèse. At the foot of Djebel Mahmel we found excellent mules with good saddles, and started at once at a brisk pace up the mountain. At the beginning the road was good, but later on it became very rough, and the crossing of several streams was not over pleasant. However, all went well—only the guide's mule once stumbling in a stream, without damage to itself or its rider—and after less than two hours' ride we had left the lower regions behind. The vegetation was different, trees had ceased, bushes were only seen in sheltered places ; the air became cooler, and the large snow-patches above us looked very near. We were on a sort of sloping plateau, covered with short grass and other small plants, and with numerous stones and boulders, here and there traversed by steep rocky ridges. Here, at a height of about 1700 metres, the first *Oenanthe seebohmii* was seen by the guide, whom we had instructed, but a torrent was between it and ourselves, and we did not shoot it. At altitudes from about 1800 to almost 2000 metres the bird was quite common, and it was not very difficult to obtain thirteen specimens. Indeed, we could have collected even more, but I thought it would be wise to make use of the opportunity, which might never occur again, to get also some of the other birds of Djebel Mahmel, and we were quite satisfied with our series.

"It was very beautiful on the heights of Djebel Mahmel, and the sun was shining until noon, but afterwards it became cooler and cloudy, rain threatening. No butterflies were seen, but a moth (a new form of *Eurranthis plumistraria*) was common just below 2000 m., not far from the summit, which consists of steep, wildly torn rocks. Black Kites and Kestrels were common. Skylarks soared in the air, belonging to *Alauda arvensis harterti* Whit.; Tawny Pipits were not rare. *Monticola saxatilis* was in full song not far below the top, and *Diplootocus moussieri* was numerous on the lower slopes, though one was also seen at nearly 1900 m.

"The song of Seebom's Chat is short, somewhat harsh, though hardly different from that of our Wheatear. No doubt eggs could easily be found on Djebel Mahmel about the middle of May, but our time was too limited for a thorough search, and it appeared to be early. Mr. Whitaker sent a collector to Djebel Mahmel with a view to obtaining nests and eggs of *Saxicola oenanthe seebohmii*, but this man did not even come across the bird, though he professed to have spent two days on the mountain. This appears to us quite impossible. Every collector who has hitherto visited the mountain (Dixon, Koenig, Flückiger, and ourselves) found the bird easily, and it is clear that Whitaker's man never ascended the mountain itself, as he obtained only a clutch of *Saxicola hispanica* with the female parent—and the latter species does not occur in the higher regions, but is common down below, at 1000 to 1100 ft. or so

"At 2 p.m. it became very cold, and we began to descend. We saw many Kestrels and Black Kites, and at the foot, among oak trees, *Coracias garrula*, Blackbirds, *Diplootocus moussieri*, and a *Falco subbuteo jugurtha*, which, however, we were not able to shoot. A welcome meal was prepared for us by the Arabs—a



whole sheep roasted on a spear, kouskous, and our own provisions brought from Batna, making up the grandest meal imaginable for us, as we had had nothing to eat from before 5 a.m. to 4 p.m. The rain that had threatened broke out on our way home, but was no longer any hindrance to us, and we reached Batna again before dark."

The plumages of Seeböhm's Chat have been described and figured by Dixon, Koenig, and Hartert. It remains only to remark that Koenig, on May 5, obtained a male in change of plumage, and that we shot, on May 12, a male which agreed in plumage absolutely with an adult female of the same date. It had no sign of an ovary, but the right testicle was distinct, though only of the size of a No. 12 shot. Another male was shot with large testicles, above grey, but without any black on the throat!

It seems, therefore, that not all the males assume the final plumage during the first year.

#### 104. *Oenanthe deserti homochroa* Tristr.

(*Saxicola deserti* auct.)

*Saxicola homochroa* Tristram, *Ibis* 1859. p. 50. (Description of a female from the Tunisian Sahara.)

All Algerian and Tunisian birds have a warmer, more rufous tinge on the upperside, than those from Nubia, which have a colder, less rufescent back, and a distinct greyish tinge on the crown. They differ from the large eastern race, *O. deserti atrogularis* (cf. *Vög. pal. Fauna* i. p. 684) principally in being smaller, still less greyish and lighter, and as a rule in having less pronounced white on the inner webs of the quills. We have thus evidently to do with three, not only two, races:

1. *O. deserti homochroa*: Sahara from Cape Blanco on the Atlantic coast to the Libyan desert and the Natron valley near Cairo, on the left side of the Nile. (The name *homochroa* must be used, as it had been given to Saharan birds, though Tristram was mistaken in separating the female on account of its white throat.)

A male shot among the sand-dunes of Oumash, near Biskra, on April 10, 1908, differs from all the rest in being almost white underneath and very pale above, with a grey tinge on the hindneck. It had strongly swollen testicles.

2. *O. deserti deserti*: Nubia, and probably Palestine. The names *deserti* and *paradoxa* refer to the Nubian form, not to the one from the Libyan desert and Natron valley.

3. *O. deserti atrogularis*: Asia (see distribution in *Vög. d. pal. Fauna* i. p. 684).

*O. deserti homochroa* is common in the clayey desert, as well as in the sandy stretches, if there are hillocks hard enough for more or less permanent holes, in which the bird can nest, or if there are slabs of hard earth, stones or bushes giving sufficient shelter; but it is absent from the driving sand-dunes. It is also found on the edges of the sebcha, but is absent from the rocky mountain ranges.

It is consequently common near Biskra, and is found all the way to Tougourt, but not in the "Souf." It was also common near Laghouat, and seen east of Ghardaïa, where hard-set eggs were found on April 21. The eggs are of a beautiful greenish blue, spotted with rufous. South of Biskra fresh eggs were found on April 21. One of our skins has the wing 93 mm., but generally it is not more than 88—90 mm. long.



105. *Oenanthe hispanica hispanica* (L.).*(Saxicola hispanica hispanica auct. rec.)*

(The confusion about the names for the western Black-eared and Black-throated Chats is ended by adopting Linnaeus' oldest name of 1758, as above, and by recognising the obvious fact that this bird is "dimorphic" inasmuch as the black-throated and white-throated birds belong to the same species, and this phenomenon occurs both in the western and eastern races. For the application of the various names see Hartert, *Vög. der pal. Fauna* i. pp. 685 and 687.)

This bird is common on passage from about the third week in March to the middle of April, and we found it as far south as Laghouat and half-way between Biskra and Touggourt. It also breeds commonly in North Algeria and as far south as El Kantara, where a nearly finished nest was found on May 3. Many were seen in May in the plain of Métidja, between the coast and the "Little Atlas," near Alger, among the vineyards, often sitting on telegraph wires, stones and fences.

Full clutches of three and five eggs were taken near Algiers on May 14 and 16, 1911. The nests were placed in shallow holes in quarries, about 8 and 12 feet from the ground. The eggs are greenish blue, richly marked with pale rufous.

They measure:  $21 \times 15.5$ ,  $20.9 \times 15.5$ ,  $21.6 \times 15.6$ , and  $20 \times 15$ ,  $21.4 \times 15.5$ ,  $20.6 \times 15.3$ ,  $21.5 \times 15.5$ ,  $20.6 \times 15.4$  mm.

The males of both pairs were white-throated. The proportion of black- and white-throated males appears to be about equal.

106. *Oenanthe hispanica xanthomelaena* (Hmpr. and Ehr.).

The eastern form of the Mediterranean Chat is by no means rare on passage in Algeria. We shot one at Batna on April 15, 1908, four near Biskra on March 21 and April 3, 4, and 8, 1908, and on March 29 and 30 and April 1, north of Touggourt and at Touggourt itself. Five are black-throated and three white-throated.

Mr. Whitaker says he took a nest with eggs near Gafsa. This is very extraordinary, as the western form breeds commonly in Tunisia, and we have no knowledge of both forms occurring together in the breeding season. Perhaps the male had remained behind unintentionally.

107. *Oenanthe moesta* (Licht.).*(Saxicola moesta auct.)*

This species is resident in the clayey and partially in the sandy and stony desert, but is never found among the sand-dunes and in the mountains. It is found in places where the soil contains salt. We found it consequently by no means rare in the desert south and west of Biskra, and southwards to Tamerna Djedida, north of Touggourt, also north of Laghouat and in the regions of the dayats between Laghouat and Ghardaïa. There is a good deal of variation in the plumage, some of the males being blacker, others more greyish on the back, and the crown sometimes darker, sometimes paler; in the females too the back is occasionally much lighter than usual.

*O. moesta* is not shy, and during the breeding season is easily noticed by its peculiar rolling note: this is uttered continuously when one approaches the nest, and these rolling notes, together with some piping ones, also make up the song of the male.



In 1908 we obtained two nestlings near Biskra, which are described in *Vög. d. pal. Fauna* i. p. 694. In 1909 we found a clutch of four eggs near Bordj Chegga, March 26, but they were so hard-set that only two could be successfully blown. In 1911 we were at last in time, and, after digging out an empty fresh nest on March 1, we took four clutches on March 13, and nests with young birds were found south of Laghouat and near the dayats.

The nests are built in the deserted burrows of *Meriones getulus* (the "djerd" of the Arabs) and other smaller mammals. The nest is often from four to five feet from the entrance hole, and sometimes the burrows are curved, and branch off into various arms. They are mostly in the hillocks formed by the sand, but sometimes on a bank or even in the almost flat ground. The nest itself consists outwardly of rootlets and stems of grass or other plants, and the bulk is built with sheep's wool, camel's hair and other hairs, pieces of string, wool or rags, sometimes a few feathers, and not rarely (in two nests out of five) with snakeskin. The full number of a clutch is undoubtedly four, though three may form a full clutch sometimes; but in the one case out of five where we found three, the clutch was apparently not a full one.

In the clutch taken in 1909 and in the three full clutches of 1911 there is in every case *one* egg distinctly paler, almost white, while the others are pale greenish blue, with sometimes numerous, but generally not many small rufous spots. The three eggs of the incomplete clutch of March 13, 1911, are more richly spotted than the others. The measurements are:  $22 \times 17.1$ ,  $22 \times 17$ ,  $22.5 \times 17$ , and  $23 \times 16.6$ ;  $24.2 \times 16.5$ ,  $24.5 \times 16.5$ ,  $25.5 \times 16.4$ , and  $25.5 \times 16.9$ ;  $23.5 \times 18$ ,  $24.5 \times 17.1$ ,  $24.6 \times 18$ , and  $24.9 \times 17$ ;  $24.4 \times 16.6$ ,  $25 \times 16.9$ ,  $25.1 \times 16.7$ , and  $25.2 \times 16.5$ ;  $24.3 \times 16$ ,  $24.3 \times 16.2$ , and  $24.3 \times 16.8$  mm. Thus it is seen that the size varies a good deal, even in the same clutch.

#### 108. *Oenanthe lugens halophila* (Tristr.).

(*Saxicola lugens halophila* auct.)

Coming by railway from the north, one first meets with this species in the plain south of El Kantara, and all around Biskra, where it inhabits the low, bare, rocky cliffs in the desert, without going as high up on the mountains as *O. leucura syenitica*. In the M'zab country we saw it near Berryan. It also occurs sparingly in the real desert at the edges of sebchas, as far south as Touggourt and Wargla. It is a beautiful bird, the whitish cap being very conspicuous. The song is generally short, but pleasant, and is mostly uttered while the bird perches on a rock. The four or five eggs are of a very pale greenish blue, of a rather thick oval, spotted with rufous, and measure on an overage (nine eggs)  $20.16 \times 15.61$  mm.

The males vary a little, the cap being more buffish grey or more whitish, and the black area of the back wider or narrower. The females, however, vary considerably in the colour of the throat, which is sometimes quite black, with hardly a few buffy edges to some feathers, more often blackish grey and grey, less frequently almost entirely white. There is nothing to show that the black-throated or white-throated birds are older or younger.

#### 109. *Oenanthe leucura syenitica* (Heugl.).

See Hartert, *Vög. pal. Fauna* i. p. 698.

The males of *O. leucura leucura* and *O. l. syenitica* (the African form) are very much alike in their colour; though most of the South European birds are of



a deeper black, occasionally males are met with in N.W. Africa—see one shot at El Kantara March 22, 1911, and one from the Moroccan Atlas, collected by Mr. Riegenbach—which are fully as deep glossy black, but the black tip to the tail is always narrower in European birds. The females differ very strikingly, the European ones being very much darker; and it is strange that it was left to one of ourselves to discover this difference!

In North Algeria this beautiful bird is entirely absent, but near El Kantara one can scarcely fail to see it during one's first walk, as it perches on a rock pours forth its rich and pleasing song, and, after one or two curtsies, disappears behind a boulder or among the rocks.

It inhabits only the bare rocks south of the Atlas, and is found up to considerable heights. It is absent from the desert, and in the far south—near Wargla, for example, and in the M'zab country—is entirely replaced by *O. leucopyga*. Traversing the Atlas at Medea, one comes across *O. leucura* at Boghari, where it is common; and one may see a few on the way down to Laghouat, but we only saw a pair at Laghouat, and none farther southwards.

The nest is placed in clefts, crevices or holes among the rocks, and is always recognisable by the great quantity of flat small stones leading up like a pathway to the nest. It is astonishing how the birds manage to carry together all these stones, and the object is not quite clear, though doubtless they form some sort of protection; *Oenanthe lugens* also carries stones to the nest, and several Larks, such as *Ammomanes deserti algeriensis*, do it in some cases. The nest itself is a bulky structure of grass and rootlets, richly lined with wool, hair and feathers. The four, rarely five, eggs we found near Biskra and El Kantara late in April and early in May, but we took a couple of nestlings fully feathered (though wings and tail were still quite short) at Biskra on April 27, and found naked young ones near Boghari on April 2.

The nestlings are extremely interesting, as they fully resemble adult birds.

#### 110. *Oenanthe leucopyga* (Brehm).

(*Saxicola leucopyga* auct.)

Travelling southwards from Medea, Boghari, Djelfa, Laghouat to Ghardaïa, we were sharply on the look-out for this fine Chat, which we had not yet seen alive; and it was on the rocks north of Berryan, the first town of the M'zabites, that we saw it for the first time. From Berryan southwards and at Ghardaïa it took the place of *O. leucura syenitica*, which does not occur there.

Though when seen from a distance *O. leucopyga* looks very much like *O. leucurus*, it is, in fact, a very different bird: the plumage is more jet-black and glossy, the amount of black on the rectrices very different, and the sexes are alike.

There has been much doubt about the birds with an entirely black head and those with a white crown being the same or not, and it has been suggested that the latter are older, because some young birds found had entirely black heads. There can be no doubt whatever that the black- and white-headed birds are the same, and white-crowned ones with black feathers are found as well as black-crowned with white feathers. There is also no proof whatever that white-headed birds are older than others. That the few young birds found had all black heads might be only accidental. The song seemed to us less powerful than that of



*O. leucura*, but this was possibly due to the season, as all the *leucopyga* had already young ones in their nests. It is curious that of the paired pairs we saw and obtained, both sexes had either black or white crowns, an observation already made by Professor Koenig: we did not, however, shoot many specimens, as most of them had young and we could not bring ourselves to kill many at that time. The young is like the old bird. The nests we found in clefts and crevices on walls surrounding cemeteries and down in the walls of wells, often in the middle of the town of Ghardaïa, quite close to human dwellings.

We found a dried-up egg in an old nest of last year, which was pale blue, nearly white, with a few rufous spots. When we were at Ghardaïa, April 16 to 24, all these birds had young ones, still naked, with the feathers beginning to sprout. The number of young in three nests was in every case three. Three, and probably sometimes four, is therefore the number of a clutch of *O. leucopyga*.

#### 111. *Saxicola torquata rubicola* (L.) \*

(*Pratincola rubicola* auct.)

We met with Stonechats at Biskra in March and February, and saw them not unfrequently at Hammam Meskoutine in February. During the breeding season we found them by no means common, only observing some in the plain of Metidja, and near Bône, from the automobile.

#### 112. *Saxicola rubetra spatzi* (Erl.)

*Pratincola rubetra spatzi* Erlanger, *Journ. f. Orn.* 1900 p. 101 (Tunisia); Hartert, *Vög. pal. Fauna* i. p. 703.

We obtained Whinchats near Biskra and Ghardaïa in April (6 to 25), but never saw one during the breeding season, in May or June.

The five specimens we obtained are all rather pale, and should belong to *S. r. spatzi*, though it must be said that the latter is not easily recognised, some North and Central European specimens being just as pale as undoubted *spatzi*.

#### 113. *Phoenicurus ochrurus gibraltariensis* (Gm.).

(*Phoenicurus tithys* auct. errore!)

The Black Redstart winters in Algeria, where we saw it in February and March at El Kantara, and near Biskra.

It is evident that the species does not breed in Algeria, or we should have found it in one of the many eminently suitable places in the north.

#### 114. *Phoenicurus phoenicurus phoenicurus* (L.)

Common on migration in Algeria, frequently met with from El Kantara to Tougourt, during the last week in March, and on April 6 and 10, at Laghouat.

#### 115. *Phoenicurus phoenicurus algeriensis* (Kleinschm.)

This form has been discussed by Hartert, *Vög. pal. Fauna* i. p. 719. We found it on its breeding-ground in the oak-woods above Lambèse, but were so

\* The name *Pratincola* is preoccupied, having been used for the Pratincoles (*Glarcola*). The correct generic name for the Whinchats and Stonechats is *Saxicola*; cf. Mathews, *Nov. Zool.* 1911. p. 21.



busy with other work that we only obtained one male. This certainly bears out the peculiarities of the race described by Mr. Kleinschmidt, but this form requires further attention. Mr. Witherby found it breeding near Hammam Meskoutine, but unfortunately we did not come across it either there or anywhere else in the Northern Atlas.

#### 116. *Diplootocus moussieri* (Olphe-Galliard).

(Cf. Hartert, *Vög. pal. Fauna* i. p. 731.)

Moussier's Redstart breeds in the Atlas Mountains, and in winter is found in the Northern Sahara. We only found it during the breeding season in the Southern Atlas ranges, near Batna and Lambèse, at the foot of the Djebel Mahmel and up the latter to an elevation of about 1800 or 1900 m. We did not see it anywhere in the north, neither near Hammam Meskoutine, on Djebel Taya, nor at Hammam R'hira and Algiers town, but Mr. Flückiger met with it not unfrequently near Kerrata in North Algeria.

A nest with four slightly incubated eggs of the rich blue variety was found near Lambèse on May 5, 1909, under a small bush, on the ground. It consisted of small rootlets and stalks, and was richly lined with hair and feathers.

Dresser, in his "Manual," followed Koenig in placing this species in the genus "*Pratincola*" (rectius *Saxicola*). This is a great mistake. On account of its short tail and other peculiarities it is best kept in a special genus, but it is nearest to *Phoenicurus*. In structure, coloration, and eggs it is a Redstart, in habits it is a mixture of a Redstart and Stonechat.

#### 117. *Luscinia megarhynchos* Brehm.

Nightingales do not winter in Algeria, but they pass through on migration in some numbers, and nest in great quantities in the Atlas, from the coast region to the Aurès mountains (Lambèse). Among the hills near Algiers, and at Lambèse, the song of many males may be heard in the evening, and they are wonderfully common near Medea and at Hammam Meskoutine, and are also found at Hammam R'hira. On May 16 and May 28 slightly incubated clutches of four eggs each were found at Algiers and Hammam Meskoutine. The eggs measure:  $21 \times 16$ ,  $20.1 \times 15.5$ ,  $20.5 \times 15.5$ ,  $21.9 \times 16$ , and  $21.6 \times 16$ ,  $21.7 \times 16$ ,  $22 \times 16$ ,  $21.5 \times 16$  mm.

Hartert has discussed the Algerian form of the Nightingale in his book, vol. i., p. 734. We still feel that it would be too risky to name it, though recently the late Dr. Parrot has separated the Corsican race on very slight grounds.

#### 118. *Luscinia svecica cyanecula* (Wolf).

Bluethroats are not very rare on passage, though far from common, near Biskra, late in February and throughout the month of March. Two males belong undoubtedly to the white-throated form, and so does evidently a female shot on February 27.

Another female shot March 18 has a less developed black jugular crescent and is much more yellowish buff on the under-surface. It might possibly belong to another race, but female Bluethroats are too variable, and the differences between the females of the various forms too uncertain to come to any definite conclusion from a single female.



119. *Dandalus rubecula witherbyi* Hart.

*Vög. pal. Fauna* i. p. 753.

This form is indeed difficult to distinguish, yet it would be rash to neglect it. It seems that the rufous of the throat is darker than in *D. r. rubecula*, and that the beak is stouter, without reaching the proportions of *D. r. melophilus*. Other differences are evidently not constant.

We shot an undoubted *witherbyi* at Hammam R'hira on May 20. These birds were not very rare in the woods near Hammam R'hira. Mr. Witherby also found the Robin breeding near Blidah Glacières.

In the habits there is no difference between this and other Robins. Of the birds shot in winter, a male shot near Algiers February 25, 1909, and a male from Hammam Meskoutine, February 4, 1911, seem to belong to this form.

120. *Erithacus rubecula rubecula* (L.).

Robins are very common in winter in Algeria, especially near Hammam Meskoutine and Algiers, and they are not rare near Biskra on migration in February and March. They all seem to belong to the North and Central European form, with the exception of the above-mentioned specimens.

121. *Troglodytes troglodytes kabyloorum* Hart.

*Vög. pal. Fauna* i. p. 780.

The Algerian Wren is not rare in certain suitable places in the Atlas Mountains, at Hammam R'hira, Hammam Meskoutine, near Batna and Lambèse, and in the gardens and neighbourhood of Algiers. It differs from *T. t. troglodytes* in being more olive, less reddish, on the upperside, and having a thicker and generally longer bill.

A clutch of five hard-set eggs was taken near Algiers on May 5. The eggs are well marked, and measure  $15.7 \times 12.5$ ,  $15.9 \times 12.1$ ,  $16.1 \times 12.2$ ,  $16.6 \times 12.6$  and  $17.2 \times 12.2$  mm. Two single eggs were found on May 16, and these two were also hard set! Young birds were flying about at Hammam R'hira on May 19.

122. *Cinclus cinclus minor* Tristr.

This bird was named by Tristram under the erroneous notion that it was smaller than European Dippers, because he compared a single female with a few European ones, which were probably all males. We only came across it in one single place—*i.e.*, in the Gorge de Chiffa, where it inhabited a mountain torrent near the Ruisseau des Singes. The accompanying photograph exactly shows its home, where we saw it on the very branches seen in the photo (see p. 464). The single female we obtained does not show the long bill, which is remarkable in the specimens from Morocco and Djebel Chelia, where Mr. Flückiger found it. In fact this female only differs from Central European Dippers in the more olive-brown head and neck, which is also darker than in *C. c. meridionalis* (the *C. c. albicollis* of Dresser and other authors). (Cf. Hartert, *Vög. pal. Fauna*, i., p. 793.)

123. *Chelidon rustica rustica* (L.).

The common Swallow is—and has always been—a very common breeding bird in Algeria, from the sea-shore apparently south to the northern edge of the



Sahara, though we are not **certain** that it nests south of Batna, but believe that it breeds in Biskra, at least.

Hartert (*Vög. pal. Fauna* i. p. 801), and also Hartert and Kleinschmidt (*Falco*, 1910, No. 2, pp. 20, 21) have explained that N.W. African specimens are often, if not generally, smaller than European ones; but the difference appears to be so slight and uncertain that it does not seem advisable to name the southern form. It must, however, be said that we have not collected a series of breeding birds, and that not very many specimens could be examined.

Swallows also migrate through Algeria in great numbers, but none winter in the country, even the breeding birds disappearing in autumn and not returning before late in March and April.

[On April 16 Rothschild saw, during the march from Tamerna to Nza-ben-Rzig, two Swallows with a rufous rump. They were, unfortunately, not near enough to shoot, and passed on very quickly. They can only have been *Chelidon daurica rufula*.]

#### 124. *Hirundo urbica meridionalis* Hart.

*Vög. pal. Fauna*, i. p. 809 (1910—type Hammam R'hira). See also: *Falco*, 1910, No. 2. p. 20.

House-Martins breed in several places in Algeria in great quantities. Many thousands of nests are to be seen on the barracks in the fortress of Batna, many breed in Algiers town and the suburbs, hundreds of nests are placed on the church and most other buildings in Hammam R'hira. Old Martins' nests were also seen in Laghouat, and all along the railway line in Northern Algeria Martins were seen here and there on the wing. These birds breed rather late. During the first week in May they begin to build, but we have seen many only building their nests as late as the last week in May. On May 18 a single nest at Hammam R'hira contained two or three eggs (not taken), but all the others were still empty.

The N.W. African Martin is smaller than ours. The wings of 8 males measure 101—104.5, those of 14 females 98—106 mm., while European Martins have wings of 108—114 mm.

Probably *H. urbica urbica* passes through Algeria on migration.

#### 125. *Riparia riparia riparia* (L.).

Sand-Martins are common on migration in April, while a few were already seen in March. We have not met them anywhere during the nesting season, nor have other recent ornithological visitors to Algeria.

#### 126. *Riparia rupestris* (Scop.).

The Crag-Martin is very common near El Kantara, on the Djebel Metlili—especially in the picturesque gorge of Tilatou—and on the rocks near Biskra, in February, March and April. It no doubt nests near El Kantara and in Northern Algeria, though we have not seen any nests.

#### 127. *Apus melba melba* (L.).

The Alpine Swift passes through South Algeria in March. A good many seem to pass along the Oued Biskra, and we saw and shot specimens between Biskra and Tougourt.

Great numbers nest in the town of Constantine, partly on the rocks of the Rummel gorge, partly (at least in 1908) under the tiles of a large building. A good



number also nest on Djebel Taya in North Algeria, and doubtless on many other high mountains. On Djebel Taya, in May, some almost flew into our faces, while we were lying in wait for Vultures and Lammergeyers.

#### 128. *Apus apus* (L.).

A good many Black Swifts of the North European black form pass through Southern Algeria in April, and great numbers nest in Algiers and other towns of Northern Algeria. The latter are not distinguishable from our birds, though some reach a length of the wing from 180—182 mm., which is a quite exceptional size for European birds. As an apparently larger form inhabits Dalmatia and other parts of South Europe, the reoccurrence of "typical" *apus* in N.W. Africa would be a very curious problem, which at present is not quite solved, because the status of the larger South European "*kollibayi*" is not quite settled.

#### 129. *Apus murinus brehmorum* Hart.

This form of the Pallid Swift passes through Southern Algeria in April, and nests commonly in the north, at least at Algiers and in its neighbourhood, and at Bône.

In 1908 we found it building its nest under an archway on the same house with the Black Swift, and at Algiers it can frequently be seen on the wing at the same time as the black species. If near enough the two birds can easily be distinguished on the wing, though in habits and notes they do not seem to differ in any way whatever.

#### [*Apus affinis galilejensis* (Antin.).

Among the rocks south-west of Biskra, near Zaatsha, Hartert and Hilgert both recognised a white-rumped Swift on March 17, 1909, which must have belonged to this species.]

#### 130. *Caprimulgus europaeus europaeus* L.

The North European Goatsucker passes through Algeria on migration. Rothschild shot a male at El Oued on April 8, 1909.

#### 131. *Caprimulgus europaeus meridionalis* Hart.

The small Mediterranean form of the Goatsucker breeds in suitable places throughout the Atlas range, as we found it common at Hammam Meskoutine, not rare at Hammam R'hira, and at Batna and Lambèse, while we have also received skins from North and South Morocco (Tamarouth in the south-western Atlas, Riggerbach leg.), and Koenig, Erlanger and Whitaker found it in Tunisia. It must be migratory, as it is absent from its breeding-places in the winter months.

There is a great deal of variation in the general coloration, some specimens being darker, others paler, but the smaller size is always characteristic of this form. Habits and notes are the same as those of the larger form.

#### 132. *Caprimulgus ruficollis desertorum* Erl.

Erlanger, *Journ. f. Orn.* 1899, p. 521, pl. xi. (Tunisia); Hartert, *Vög. pal. Fauna* ii. p. 851.

Contrary to Hartert's former ideas, a paler form of the Red-necked Nightjar is separable. While *C. ruficollis ruficollis* is found in Spain and Morocco, all Tunisian and Algerian specimens we examined belong to Erlanger's *desertorum*. The name is not well chosen, as this bird breeds chiefly in the woods and hill-slopes covered



with scrub and bushes ; a single specimen was shot by Koenig on the Oued N'ça, in the desert, but this must have been on migration. In the winter no Nightjars remain in the hills. They breed near Lambèse, Batna, Hammam Meskoutine, and Hammam R'hira.

In habits and notes these Goatsuckers do not seem to differ from *C. europæus*.

### 133. *Caprimulgus aegyptius saharæ* Erl.

Erlanger, *Journ. f. Orn.* 1899, p. 525, pl. xii, upper figure ; Hartert, *Vög. pal. Fauna*, ii. p. 854.

This beautiful bird, the plumage of which matches the desert-sand in a most remarkable manner, was found among the sand-dunes between Oumash and Biskra on March 20, in several places between Touggourt and El Oued early in April, especially near Bordj Mgeitla, at El Oued, and about 40 kilometres south of Biskra, where the eggs were taken on April 21, 1909.

Altogether we collected ten skins, all of which are of the same tint, thus entirely confirming the differences of *saharæ* pointed out by Erlanger. The iris is very deep brown, the bill dark slate or brownish, flesh-colour at base, feet purplish grey or brownish flesh-colour.

The eggs were of course laid on the bare sand. They are pale grey with pale olive brownish-grey patches and dots, and some underlying grey spots and patches, and measure  $31.5 \times 22$  and  $32 \times 21.5$  mm.

We found these birds in almost bare sand-desert with the scantiest vegetation, and among low tamarisk bushes and other desert vegetation, but nowhere except on sandy ground.

Neither Professor Koenig nor we found these birds before the second half of March, and then they were in little flocks of from five to seven individuals. This would point to their being migratory to a certain extent, but more information is required to accept this as a fact.

We never heard a note of the Egyptian Nightjar, but Koenig tells us that it whirrs like *C. europæus*.

### 134. *Merops apiaster* L.

The Common Bee-eater breeds in many suitable places from North Algeria (Hammam R'hira, Hammam Meskoutine) to Biskra. It is a migrant, not arriving before the beginning of April. Unless it be the "Persian Bee-eater," there is hardly a more beautiful bird. Its colours, the marvellous gliding flight, and the lively, rolling bell-like note combining to make it one of the most fascinating birds of Algeria. The arrival of large flocks on a clear April morning is an event for every lover of nature.

We have seen Common Bee-eaters as far south as Bordj Mecht el Kaïd in the sand-dunes of the Souf, where we saw a flock on passage on April 10, and at Ghardaïa in the middle of April, presumably also on passage.

### 135. *Merops persicus chrysocercus* Cab. & Heine.

(Plate IX.)

*Merops chrysocercus* Cabanis and Heine, *Mus. Hein.* ii. p. 139 (1860—Senegal) (Type examined).

*Merops persicus saharæ* Neumann, *Orn. Monatsber.* 1908—"Oasen der Sahara von Biskra bis zum Tschadsee").

The Saharan form of the Persian Bee-eater is distinguishable from *M. persicus persicus* by the following peculiarities : the upperside is lighter green with a bright



golden-yellow tinge, which makes the whole plumage appear yellowish green when held away from the light ; the blue is only visible in worn breeding plumage ; the underside is lighter green ; the bill is slenderer ; the middle rectrices are much more elongated ; under the eye in *M. persicus persicus* there is a distinct white line, which in *M. persicus chrysocercus* is only indicated, or even entirely absent.

This form breeds in great numbers along the banks of the rivers or river-beds in the Northern Sahara, south of Biskra, and probably in other parts of the desert. We have seen and collected it as far south as Temacin, south of Touggourt (April 3, 1909), and Rothschild saw a flock at Tirlhempt, between Ghardaïa and Laghouat. Skins were shown to us in Laghouat. It is rare in South Tunisia, and winters south of the Sahara, on Lake Chad and on the Senegal.

This Bee-eater is in our opinion one of the loveliest birds we ever saw alive in Algeria. Its colours are not so gay as those of *Merops apiaster*, but much more delicate and harmonious.

To be camped at an oasis, where hundreds sleep for the night on the palm-trees, is an experience never to be forgotten.

The call-note is the same as that of *M. apiaster*, only a little shorter and softer.

The plate shows an adult male in fresh autumn plumage shot by Boyd Alexander on Lake Chad, October 31, 1904, and a head of a male obtained 50 kilometres south of Biskra, April 19, 1909, as well as a *M. p. persicus* collected by Zarudny in S.E. Persia.

### 136. *Upupa epops epops* L.

We cannot separate the N.W. African Hoopoes from the European form. There is, however, much individual variation.

The Hoopoe is a migrant even in Algeria, appearing in the spring early in March. None seem to stay throughout the winter, and many of the arrivals pass on to Europe, while others remain to breed, probably from the Northern Sahara up to the seashore.

A female shot on March 8 had the body-plumage still moulting.

### 137. *Coracias garrulus garrulus* L.

The Roller passes through Algeria in April (Biskra, Tirlhempt, Laghouat), and nests near Batna, Lambèse, and at the foot of Mount Mahmel, and doubtless in many other localities in Northern Algeria.

### 138. *Alcedo ispida pallida* Brehm.

The Kingfisher nests in Algeria from the northern Atlas to Biskra, but it is everywhere rare, and at least as shy as, if not more so than, anywhere in Europe.

This form is spread from Morocco to Syria. It only differs from *A. ispida ispida* by the beak, which averages slightly slenderer and is often more elongated, and somewhat shorter head-feathers, and in many specimens the abdomen is paler. (See the forthcoming vol. ii. of *Vög. d. pal. Fauna*, p. 882.)

### 139. *Picus vaillantii* (Malh.)

We found the Algerian Green Woodpecker in the oak-woods above Lambèse and Batna, where it was not very rare, and noticed it in the oak-wood on the slopes of Mount Taya east of Constantine, as well as very sparingly on old oaks about four



hours from Hammam R'hira and near Lake Fetzara. We found the iris of adult males white or whitish pink, the bill olive horn-grey, base of lower mandible pale greenish yellow, feet greyish green.

140. *Dendrocopus major numidus* (Malh.)

Found in many of the oak-woods of Algeria, though we only saw and shot it in the forest on the slopes of Mount Taya east of Constantine. It is apparently not found in pine-woods, or else we should surely have come across it near Hammam R'hira and elsewhere. Neither Professor Koenig nor any one of ourselves saw it near Batna and Lambèse.

141. *Jynx torquilla mauretanica* Rothsch.

An exceedingly dark specimen of a Wryneck was shot during a heavy sandstorm at El Oned, on April 8, 1909. Though *J. torquilla torquilla* was met with on passage in several places of the south, this dark and very small form was not seen until we came to Hammam Meskoutine, where it is not rare in February as well as in May. It also occurs near Algiers, where we found it late in January. It is thus evident that it is partly migratory, partly resident in North Algeria. It is easily distinguished from the North European *torquilla* by its generally much and always somewhat darker and less rufescent upperside, differently coloured, more yellowish, not so rufous throat, and wider bars on the underside, as well as considerably smaller dimensions. In coloration it agrees, however, with *Jynx torquilla tschusii* Kleinschm., first described from Sardinia, and inhabiting Corsica, Sardinia, and Italy, but its dimensions are slightly smaller.

In habits the Algerian Wryneck agrees with the English form.

142. *Jynx torquilla torquilla* L.

The larger, lighter-coloured North European Wryneck is a common bird of passage in Algeria, where we came across it in March and April at Biskra, Touggourt, and Temacin, south of Touggourt.

143. *Cuculus canorus minor* A. E. Brehm.

*Cuculus canorus minor* A. E. Brehm, *Allg. D. Naturhist. Zeitung* 1857. p. 444 (Summer bird in Spain).

The Cuckoo of N.W. Africa is smaller than European Cuckoos. As long ago as 1857, A. E. Brehm clearly separated the Cuckoo found in Spain in summer as *C. canorus minor*, stating at the same time that the common Cuckoo occurred only on migration.

We failed to collect skins of Cuckoos in Algeria. After the migration period they were only met with near Hammam Meskoutine, where they were by no means common, and in the neighbourhood of Algiers, where shooting was at the time prohibited. We found, however, two eggs, on May 13 and 16, 1911, near Algiers, both in the nests of *Sylvia melanocephala*. Both are almost perfectly alike, being of a reddish cream-colour densely spotted with pale brown and underlying pale brownish grey spots. One was with a clutch of three pink eggs, the other with three greenish eggs, closely resembling Reed Warbler's eggs. The Cuckoo's eggs resemble the former, and even more another variety of the eggs of



*S. melanocephala* which we found close by, but are unsuited for the eggs which resemble those of Reed Warblers. Both eggs are strikingly smaller than the majority of European eggs, measuring only  $20.6 \times 15.5$  and  $20.3 \times 14.7$  mm.

*Cuculus canorus canorus* is probably migratory through Algeria. We saw Cuckoos on passage in the dayats near Tirlhempt, and once near Biskra, but do not know if they were of the big race or of the small one. Cuckoos are not seen in Algeria in winter, therefore *minor* must also be migratory.

#### 144. *Strix aluco mauritanica* (With.).

*Syrnium aluco mauritanicum* Witherby, *Bull. B.O.C.* xv. p. 37 (1905—"Marocco and Algeria."

Type from Les Glacières, above Blidah, in the "Little Atlas" of Algeria, in Witherby's collection); *Ibis* 1905. p. 196.

The "Tawny Owl" from N.W. Africa differs from *S. aluco aluco* in having hardly any tawny colour in its plumage. While *S. aluco aluco* varies greatly, all N.W. African specimens which we have seen are somewhat more barred on the upper and under surface and generally darker and more greyish, though single specimens may be found that do not differ from extreme European specimens.

These Owls are rare in Algeria. We have been able to compare the following specimens only:

The type from Les Glacières, above Blidah.

Two from Batna, purchased from Maître-Sellier Taillefer.

One from Hammam Meskoutine.

One from North Morocco, near Tangier.

Mr. Witherby has seen two others.

#### 145. *Bubo bubo ascalaphus* Savigny.

Our acquaintance with this bird has, unfortunately, remained hitherto very scanty.

The first we saw was one mounted in the dining-room at the Hôtel Bertrand at El Kantara, which was shot from the balcony of the hotel by the waiter, Henry Tacon. Mr. Thériat told us that he had occasionally, but very seldom, flushed such Eagle-owls among the juniper bushes on Mount Metlili, when stalking Mountain or Barbary Sheep. In 1909, May 2, we obtained a beautiful male on the mountains south of the pass, called the Red Mountains. Its iris was orange-yellow, feet greyish horn-colour with horn-grey claws, bill horn-black, cere slate-colour. This bird agreed in every detail with the one stuffed in the hotel; and another, obtained while still wet, from a bird-stuffer in Laghouat, is also of the same colour. A third one, bought in Constantine, and said to come from Biskra (which is just as likely to be incorrect as right), is a shade paler, while one which Hartert compared with the one from El Kantara, and which had been shot by Professor Koenig near Wargla, is much lighter and paler. It seems, therefore, that Erlanger was right when he separated a paler southern form from the darker northern race, and his observations were also fully endorsed by Mr. Whitaker.

We have bought an *ascalaphus* from Schlüter, labelled (original label) Cabo Forgas, Morocco. Cape Forgas is on the Mediterranean coast in North Morocco, and, as the bird shows signs of having been kept alive, it may have been brought there from farther south. We have also received from Mr. Riegenbach two fine



skins from Cherarda and Kanafa in South Morocco. These three Moroccan skins are very dark, still darker than those from Algeria; but one collected by Messrs. N. C. Rothschild and F. R. Henley on the Chaphren Pyramid in Egypt is just as dark, and absolutely indistinguishable, while Shendy specimens are as light as any from South Tunisia.

Mr. Dresser, on Plate 692 in the Supplement to his *Birds of Europe*, figures as *Bubo ascalaphus* an Eagle-owl which, judging from the plate, is not an *ascalaphus* at all. This skin was kindly sent us from the Manchester Museum. It agrees with the plate, though the latter is a little too dark. This skin was given to Mr. Dresser by the late J. H. Gurney, sen. It is said to be from Egypt, but as it has no original label, date, or exact locality, this may be doubted. It has only one wing. The bird agrees best with the type of our *Bubo bubo aharonii*, but is a little lighter on the abdomen, neck, and head. It resembles *Bubo bubo bengalensis*, but is larger, and stands in many ways between our Eagle-owls of Europe and the African *ascalaphus*. Whether it came from Egypt, and whatever it may be, it should never have been figured as a typical *ascalaphus*.

Since describing our *Bubo bubo aharonii* we have received, from Mr. Aharoni, other Eagle-owls from Palestine, which are not distinguishable from *ascalaphus*.

We have no doubt that *ascalaphus* is only found in South Algeria; all reliable information from Loche to this day points to this. Formerly, and probably still, an Owl closely allied to *Bubo bubo bubo* is found, though very rarely, in the Northern Atlas, but we have not been able to get specimens or reliable information about it.

#### 146. *Asio otus otus* (L.).

In the oak-woods above Lambèse, on May 11, 1909, a male of the Long-eared Owl was shot, and this was the only instance when we came across it. We have, however, several skins collected in North Tunisia by Paul Spatz during the breeding season. These specimens do not seem to differ from European *otus*. Iris bright orange. Bill blackish horn-grey; cere dark flesh-colour. Feet pale bluish flesh-colour, claws dark horn-colour, nearly black.

#### 147. *Tyto alba alba* (Scop.).

The Barn-owl is one of those forms which extend from the Mediterranean countries through Spain, southern and western France, by way of the Channel Islands to England. Therefore we have hitherto called our English Barn-owl "*Strix flammea kirchhoffi*," a name given by C. L. Brehm to the Spanish form. This nomenclature, however, is not tenable: the generic name *Strix* must be confined to the "Brown Owls" (*aluco*), while the first generic name available for the Barn-owls is *Tyto* of Billberg. Moreover, the specific name *flammea* Linnaeus 1766 is invalidated by *Strix flammea* Pontoppidan 1764, a name undoubtedly referring to the Short-eared Owl.\* Therefore the next oldest name, *Strix alba* Scopoli, must be used.

Algerian, Moroccan, and Tunisian Barn-owls cannot be separated from Italian ones, therefore we must call them *Tyto alba alba* !

Barn-owls are generally by no means common in Algeria. Professor Koenig

\* Apart from this Linnaeus' name *Strix flammea* was primarily based on the "*Strix capite laevi corpore luteo*" of the *Fauna Suecica*, which was merely taken from one of Rudbeck's pictures, which represents a Short-eared Owl!



obtained a single one, which was given him at Oued Taga, at the foot of Djebel Mahmel. We never saw one alive until 1911, when we shot an adult male on the steep bank of a river-bed south of Biskra on February 2. On May 25 and 31 we killed two adult males at Hammam R'hira, and two half-grown nestlings were brought to us by an Arab, who took them from the roof of a building. One we bought at Constantine. Once we heard the note near Hammam Meskoutine, and we were told that Barn-owls were not rare at Batna and near Algiers.

#### 148. *Athene noctua glaux* (Sav.).

Without being able, at the moment, to go into an exact study of all the geographical forms of the "Little Owl," we have compared our series of Egyptian, Algerian, and Moroccan specimens, and come to the conclusion that the old way of uniting all of them under the name *glauca* is at least much better than their separation into ten subspecies, two of which received new names, by Herrn Kleinschmidt, *Falco* iii. (1907) pp. 65, 66, and v. (1909) p. 19.

Comparing four specimens collected by Messrs. N. C. Rothschild and Wollaston at Cairo, and a number of Egyptian specimens in the Brehm collection, with our twelve Algerian, three Tunisian, and fifteen Moroccan skins, we cannot find any constant characters by which to separate them.

It is true that the specimens from the Brehm collection from Egypt are more rufous than our Algerian ones, but those from Cairo are of the same colour as the latter. It is also true that the type of Brehm's *intercedens* from Aïn Mokra, near Bône, is more rufous than our own series of Algerian specimens from South Algeria; but it seems that Brehm's skins have become somewhat darker and reddish through having been kept in dark boxes, and evidently sometimes not quite dry enough. In no case can we judge from this single specimen that North Algerian specimens belong to a darker and more rufescent race than those from South Algeria—especially not in Owls, which often vary very greatly in their general coloration. Moroccan specimens (named *ruficolor* by Kleinschmidt) agree in every respect with those from Biskra. Riegenbach sent us a fine series from Mazagan, Rahamna and Mogador; they vary in size like Algerian ones.

If, in the end, several forms could be separated in North Africa, the North Algerian form would have to be called *A. noctua numida* Levaillant jun. 1850, and Brehm's *intercedens* 1858 would be a synonym. No doubt Levaillant's plate is too red, but so are several others of his figures, and Loche seemed to think that the plate in question was not unsatisfactory. Should any South Algerian birds be separable, then this might rather be the case with those from the M'zab country and the dayats. Two specimens we shot at Tirlhempt are rather light, but they are not alike, one only being very pale, the other hardly different, though a little more reddish than a series from Biskra. Kleinschmidt, however, called the Biskra form "*Strix saharæ*" (*Falco* v. 1909. p. 19).

We never came across these Owls in North Algeria proper, but saw a number near Boghari, and collected a series of ten near Biskra. At Tirlhempt we only shot two, but saw one each there and east of Ghardaïa, which we unfortunately did not get. They, too, appeared to be rather pale. It must, however, not be forgotten that Owls vary in most cases, and that there is a good deal of variation in the Biskra series.

This Owl lives among rocks, as well as on steep river banks near Biskra and Boghari, and in the trees of the dayats.



149. *Otus scops scops* (L.).

Although Ritter von Tschusi zu Schmidhoffen has split the Mediterranean Scops-owls into various forms, we are, to our regret, unable to follow him.

We have collected seven specimens in the dayat of Tiltrempt, five at and near Biskra, four at Touggourt, three at Hammam Meskoutine, and have a topotypical skin from Tallah, in Tunisia, shot at the same date as the types of Tschusi's *Pisorhina scops erlangeri*,\* besides series from the Mediterranean north of Africa.

The individual variation of these birds is considerable, and makes the separation of so many races quite impossible. Putting together and confronting half a dozen or so each from various localities in Algeria, one might easily be tempted to split, but for one or two specimens in each series which agree with the other lot, and the bigger the series are, the more such disagreeing specimens are found, nor are there any geographical areas inhabited by different forms. If northern birds differed from southern ones on an average, we would gladly separate them, notwithstanding a few contrary individuals; but if specimens from the olive-woods of Hammam Meskoutine in the Northern Atlas, and others from the vast date-palm gardens in the oasis of Touggourt agree, and if two shot from the same palm-leaf in Oumash differ considerably, it becomes insignificant that the majority—though not all!—from the dayats are a bit paler and greyer. Moreover we find similar and greater variations in other countries.

This exceedingly pretty little Owl is more or less common in the whole of Algeria. Its very singular, melodious call can be heard in the gardens of Mustapha Supérieur, Algiers, and it is by no means rare at Hammam Meskoutine. Koenig found it near Batna, and from the end of March one hears it every night in the public gardens and among the date-palms of Biskra. It is also quite common at Touggourt, and we heard it in Ghardaïa, and every night in Laghouat; but we found it commonest of all in the dayat of Tiltrempt. On a quiet evening, when the all-too-frequent wind was not blowing, one heard five, six, or maybe more, calling at the same time; and if one carefully searched one could find them in the daytime hidden on the branches of the gigantic old terebinth trees, sometimes in the well-known funny or grotesque attitudes which they so often assume.

We found the iris varying from sulphur-yellow to golden yellow. The bill is dark horn-grey or olive, the feet olive or plumbeous grey.

150. *Gyps fulvus fulvus* (Gm.)

We are sorry to disagree with Count Zedlitz and our late friend Carlo von Erlanger, who separated *Gyps fulvus fulvus* of S.E. Europe and *Gyps fulvus occidentalis* of S.W. Europe and N.W. Africa—according to Erlanger also Egypt! Comparing adult birds only, we find the lightest specimen to be one from Roumania, while Erlanger said that the western form is "drastically" lighter (*Journ. f. Orn.* 1904. p. 142); nor can we find the statement that the western form has lighter bills borne out by our series. Also Zedlitz's and Erlanger's former opinion (in 1898, changed afterwards in 1904) that "*occidentalis*" is smaller is erroneous.

We visited a single breeding-place, in May 1909, on Djebel Taya, east of

\* *Orn. Jahrb.* xv, 1904. p. 101.—The correct generic name of the Scops-owls is *Otus*, and not *Pisorhina*.



Constantine. There these Vultures were seen by Sclater, Salvin, and others half a century ago, and are still far from rare, in spite of the active blasting and mining operations on the mountain. It is from the Djebel Taya, probably, that these Vultures visit the neighbouring plains and the valley of Hammam Meskoutine, where we have seen them occasionally; and one day in May 1909 a big flock passed over the hot springs, probably coming from some dead animal on which they had feasted. An adult male was shot on Djebel Taya, at an altitude of about 1200 m., on May 17, 1909.

Iris gold-brown. Feet greenish grey, claws horn-black. Bill pale yellowish horn-colour, tip and cere dark slate-colour; bare skin on neck pale bluish grey. Spread of wings 253 cm.

Rothschild observed Griffon Vultures at Les Glacières, near Blidah. We twice saw single ones near Biskra, but never observed any south of Biskra in the real desert.

#### 151. *Neophron percnopterus percnopterus* (L.).

The "Egyptian Vulture" is common in many parts of Algeria. We saw it frequently at Constantine, near Guelma and Hammam Meskoutine, Batna, El Kantara, and Biskra, once near Touggourt, once near Laghouat, and a few times on the route from Boghari to Laghouat, at Berryan and Ghardaïa. Near Ghardaïa about a dozen *Neophron* were seen on a shallow pond feeding on the innumerable *Apos*, a Crustacean which abounds in ponds near Laghouat, in some of the dayats, and in this place near Ghardaïa.

At El Kantara these Vultures nest regularly, and we received an egg which is of the usual type.

#### 152. *Gypaetus barbatus atlantis* Erl.

Erlanger, *Journ. f. Orn.* 1898. p. 395, plates iv and v.

The North-West African Bearded Vulture is closely allied to the South European one, and stands somewhat in between the latter and the Abyssinian form. It differs from *G. barbatus barbatus* merely in the markings of the face, the black shaft-stripes being fewer and narrower on the sides of the head, and almost or entirely absent from the chin and upper throat, and the absence of the jugular crescent of black spots, though this is probably sometimes indicated. The feathering of the tarsus varies, but it appears to be generally less extended, thus being intermediate between that of the European and Abyssinian forms. Erlanger attached much value also to the lesser strength of the toes and thickness of the tarsus, but these characters, though convincingly shown on Plate V. by Pastor Kleinschmidt, vary and are therefore not of any taxonomic value.

We have now three adult Algerian Lammergeyers:

♀ ad. Shot on nest, Djebel Metlili, March 21, 1911. Length of wing 79 cm.

♀ ad. Near Kerrata, North Algeria, May 5, 1904. Shot by Mr. Flückiger. Wing, 74 cm. Spread of wings, 246 cm.

♂ ad. Djebel Taya, May 25, 1909. Wing, 74 cm.

It will thus be seen that the size varies a little, but it is not much less, if at all, than in many South European examples.

The iris is very beautiful: cream-yellow with a wide bright orange-red ring. Bill horn-grey, feet lead-grey, claws dark horn-grey.

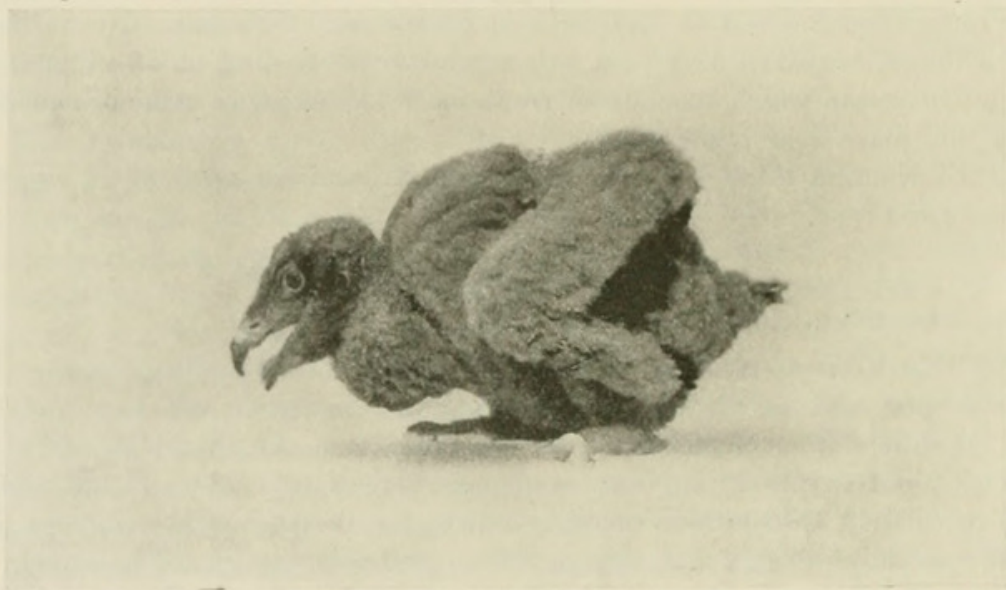
Like other great birds of prey, with the exception of some Vultures which are



more or less gregarious, the Bearded Vulture cannot be called common, but rather rare, although it is found here and there all over Algeria in suitable places—viz., quiet, little-disturbed mountains with steep rocks, on which it finds holes or ledges to nest in. The first time we saw it was at El Kantara, 1908, where a pair were frequently seen passing over the gorge and hotel. A goatherd took one of us to a place where he declared the “Bou-lechia” (the Arab name of *Gypaetus*, meaning “the father or owner of the beard”) was nesting. An Arab climbed to the nest, which was empty and contained wings of a small bird only: though the man declared he had taken the young Bearded Vulture from the nest the year before, and it was his belief that it nested there then, this was probably not the case. It is true that most Arabs know the bird; but many do not, for we have received Bonelli’s Eagle as a “Bou-lechia,” and were taken to a Buzzard’s nest said to be that of the *Gypaetus*. We also saw a Lammergeyer twice near Biskra, where it seems to come for food from the mountains.

Both in 1909 and 1911 we saw specimens on the Djebel Taya, east of Constantine, where it was observed half a century ago by Selater and Salvin, and in 1909 we obtained there a beautiful male.

In 1911 we were taken to a nest on the Djebel Metlili. To reach the place



THE NESTLING BEARDED VULTURE.

was not easy. After a long ride followed a long climb, and at last we saw the bird’s head and neck looking out of a hole in the middle of a steep cliff. We got right under the nest, but only the head and neck being visible a rifle-shot was useless, unless one wished to destroy the bird—which was not our object, of course—and it was too high for shot: shots fired with the twelve-bore, when the bird was driven out, remained without any effect. Hartert and Hilgert returned next day and climbed an opposite steep mountain, from where it was possible to look into the nest, and thus succeeded in shooting the female with a rifle.

The nest was situated in one of the queerest places ever seen: what looked like a steep mountain-side was a sheet of rock, standing out like a huge rough plank, and only a few yards wide on the top. Some Arabs volunteered to take the contents of the nest—for a good remuneration of course. After they had been away for hours they had to send for more ropes, and at last succeeded in bringing in a



loud-chirping heap of down and an addled egg. The young vulture was so pretty and voracious that we decided to keep it alive. As long as we were in El Kantara we crammed it with chicken's heads and sparrows, and afterwards left it in the care of the waiter. When we left Algeria, in June, we received it—nearly full-grown, and accompanied by another Bearded Vulture of the same age. Both birds are at present flourishing in an aviary at Tring. The egg measures  $81.7 \times 65.3$  mm.

We also received a young bird from the nest in the first grey-brown plumage, and still with down on head and neck, on May 20, and bought another young one in its second year from a dealer in Algiers.

We were assured in Laghouat that *Gypaëtus* occurs near there, and Mr. Ratcliffe saw it on the Djebel Amour, north-west of Laghouat.

### 153. *Aquila chrysaetus* (L.).

The Golden Eagle is widely spread over Algeria, but naturally not common anywhere. It is found from the northern Atlas to the M'zab-country, for we have shot it near Hammam Meskoutine, and saw it flying along the railway line between Batna and Kroubs and near Berryan, and we also saw a live one taken from a nest near Ghardaïa. A fine adult male was shot with dust shot from a vehicle near Hammam Meskoutine, being disturbed while eating a Barbary Partridge. Its iris was dull yellow, variegated with rufous-brown; bill dark blackish horn-grey, base pale greenish horn-colour. Spread of wings 188 cm. It is rather uniform dark brown; but we cannot at present discuss the geographical forms of the "Golden Eagle."

On March 25, 1911, a pair of Golden Eagles were seen some five or six kilometres from El Kantara. The female—its larger size could easily be seen when the two were flying together—suddenly swooped down and disappeared behind a bush on one of the highest and most perpendicular places of the cliff. It seemed to move about behind the bush, and Hilgert, thinking it might be feeding there, fired with the rifle at the bush, with the sole result that the eagle departed with great speed. Hardly a quarter of an hour later, the pair returned and "displayed" in a most wonderful way. Both were circling round at great height, freely uttering their cries, not quite unlike the barking of a small high-voiced dog, or between that and the mewing of a Buzzard. Now and then they would swoop down with wings drawn in, and regain their flight with outspread wings when nearly coming to the rock; and not rarely the female and once the male turned right over, floating on their backs for a moment, with claws stretched out skywards, and the mate would shoot down so as almost to hit it. All this display in the wonderful clearness of the air, under a cloudless blue sky, and in the great solitude where nothing could be heard but the song of a Crested Lark or of an *Ammomanes*, was of an incomparable beauty for a lover of nature. After a rather long time the female again disappeared behind the bush on the cliff, and never came out again. Not before then did we grasp that there must be the nest. Again a bullet was fired through the bush, without hitting the bird, which, like the Bearded Vulture on the Djebel Metlili, was too high for shot. Next day Hilgert climbed with difficulty to a ledge under the nest, but even from there shot would not touch the bird. At last we got some Arabs to climb to the top of the mountain and let a man down to the nest—which was a dangerous thing, as the rock was partly overhanging and had many sharp edges, which were apt to cut the rope. Nevertheless they succeeded. It then turned out that behind the bush was a hollow so large that the man,



when stooping down to pick up the eggs, was invisible from below : no wonder the bullets did not touch the bird ! The nest consisted entirely of halfa-grass, and contained two richly marked, hard-set eggs. They measure  $68.5 \times 55.5$  and  $70.7 \times 57.7$  mm., while one taken near Hammam Meskoutine measures  $72.1 \times 55.6$  mm.

In 1857 Tristram found the Golden Eagle nesting in numbers on the terebinth trees in the dayats. We do not know how and when they disappeared, but only thirteen years later Mr. Gurney, who passed through the dayats along the same route, saw no Eagles at all. We are certain that none are nesting there now—at least not along the usual roads and near Tiltrempt—for neither Mr. Ratcliffe nor ourselves ever saw an Eagle or saw nests large enough for them.

#### 154. *Aquila rapax belisarius* Lev.

This very rare species inhabits the mountain forests of North Tunisia and Algeria, and we have also received it from Mr. Riegenbach, from the Moroccan Atlas.

Only once did we see a specimen, but that was not an unmixed pleasure. We were waiting for an Arab keeper and boat at Aïn Mokra, on the Lake of Fetzara, when close to the station a Tawny Eagle sprang up before our feet while none of us had his gun loaded. The bird was distinctly recognised, and had been feeding on a domestic hen. Reports of its occurrence near Biskra are probably erroneous, though it might be found in the forests of the Aurès Mountains and stray to the edge of the desert, notwithstanding that it is by no means a desert bird.

#### 155. *Eutolmaetus fasciatus fasciatus* (Vieill.)

(Bonelli's Eagle.)

This species is probably by no means rare in Algeria, as we saw it near Biskra, Tilatou, Batna, Guelma, and Hammam Meskoutine, and in the Gorge de Chiffa ; but the only specimen we obtained was an adult female from Tilatou, near El Kantara. Its iris was light brown with yellow veins, the bill blue-grey, dark towards the tip, feet dull pale yellow. The claws of this Eagle appear to be comparatively more formidable than those of a Golden Eagle.

#### 156. *Eutolmaetus pennatus* (Gm.)

The Booted Eagle is not rare in Algeria. We have seen it flying on the outskirts of Algiers, near Constantine and Batna. On April 20 we received a freshly skinned female at Laghouat, shot there two days before. It was not, however, until we came to Hammam R'hira that we made the full acquaintance of this very pretty Eagle. There we saw it almost every day, sailing high above the pine-woods or dashing through the trees ; and sometimes, especially on a sunny day in the early morning, a pair would play in the air, screwing themselves high up, then dropping down like a stone, and chasing each other. Their cry is a sharp "be be be" or "be be be be," sometimes even more frequently repeated. When first heard one does not think of an Eagle, but rather of a kind of Sandpiper. Two nests stood on pine-trees (*Pinus halepensis*) in the thick forest, close to the stems of the trees. They were built entirely of dead branches, laid out and decorated with green pine-twigs. A couple of fresh eggs were taken on May 20, and two



hard-set ones on May 28. These eagles are very bold and very swift flyers. They prey on small mammals, such as rabbits, smaller rodents, and birds. A winged bird runs at an enormous speed, unlike a Golden Eagle; and thus we lost two in the densely wooded ravines, full of the very thorniest brambles and *Smilax*. Iris brownish orange, feet dull yellow, claws black. The eggs measure  $53.5 \times 43$  and  $53.7 \times 43.6$ ;  $55.7 \times 44.5$  and  $55 \times 45$  mm. One is well marked with pale rufous, the other three white without distinct markings.

### 157. *Buteo ferox cirtensis* (Lev.)

Buzzards have always been a difficult group to study. It has been the custom to distinguish, besides the European *Buteo buteo*, the eastern *Buteo desertorum* and the larger eastern *Buteo ferox*. Few writers have gone further in subdividing these forms, and *Buteo cirtensis* has universally been treated as a synonym of *desertorum*. In 1898 Erlanger, however, treated "*Buteo cirtensis*" as a separate species, but without explaining why. It is also interesting that Sharpe, as long ago as 1874, made a remark that "North African *Buteo desertorum*" sometimes had a striking resemblance to *B. ferox*. In 1904 Oscar Neumann for the first time put *cirtensis* in its right place, correctly treating it as a subspecies of *ferox*, while *desertorum* was regarded as an eastern form of *Buteo buteo*, as had been done before by Hartert and others. Neumann, however, did not attempt to say how these two species (i.e. *ferox* and *buteo*) differed from each other, and therefore nobody could understand his reasons, unless he knew these birds well and had a series of each before him to compare. Count Zedlitz in 1909 and 1910 emphatically declares that he fully agrees with Neumann's and Erlanger's views, but he too avoids stating the differences of the two species. Now, this is not such an easy task as one might think. It is very much as in some Cuckoos: there is, as Swinhoe wrote in 1863, "a difficulty of pointing out sufficiently recognisable characters to enable others to distinguish the particular species which the discoverer wishes to describe from its numerous closely allied congeners," although one knows perfectly well that they are different. Judging from our series we come to the conclusion that the *ferox*-group is distinguishable by its stronger build, the **beak and feet being more powerful**, the tail is entirely barred in quite young birds only, and **adult birds have quite unbarred tails**, while the *buteo*-group has **weaker bills and feet**, and **the tail never loses its bars entirely**. Even in the least barred ones of the *buteo*-group before us there remain five or six distinct and well-defined bars on the outer webs of the lateral rectrices, and a black subterminal bar with traces of others on the central pair of rectrices. The statement repeated in many books that old *desertorum* have an entirely unbarred tail is probably only due to the fact that *B. ferox cirtensis* has always been mixed up with *desertorum*. Of course the latter is only an eastern representative of *buteo*, while *cirtensis* is merely a much smaller race of *ferox*. It is clear that *buteo* and *ferox* are species and not representatives, as they inhabit the same areas in the eastern countries.

*Buteo ferox cirtensis* is not rare in the southern portions of Algeria, but less numerous in the north. In the forests of the Northern Atlas it does not seem to breed, but nests on the rocks near El Kantara, Biskra, and Laghouat, and Professor Koenig found it as far south as Wargla.

On April 26 a nest, previously marked a month earlier, was found containing two exceptionally well marked eggs, measuring  $57.6 \times 44.9$  and  $54.4 \times 45$  mm.



The nest was on an overhanging rock on Djebel Bon Ghezal, high up and overlooking the desert, but only about 25 feet above a ledge of the rock which was easily accessible. The female was shot while leaving the nest. Another nest was seen on Djebel Metlili, at an enormous height and quite inaccessible. Most specimens received from Riggerbach from Haha, Mogador, and near Mazagan, in Morocco, are underneath of a yellowish cream-colour or rufous, with narrower or wider dark rufous stripes, thighs and flanks cinnamon-rufous; but an adult bird bought at Algiers has the entire under-surface cinnamon-rufous, and another evidently younger bird with barred tail has the underside quite white, including flanks and thighs, broadly striped with brown.

#### 158. *Milvus korschun korschun* (Gm.).

We cannot see our way to separate the N.W. African form of the "Black Kite" from the S.E. and Central European one.

This species is common in Algeria, both as a migrant and nesting, but it appears to be absent in the winter. It nests mostly on cliffs and rocks. We have received a number of eggs from the neighbourhood of El Kantara. They are of the usual type. We do not remember having seen the species at Touggourt; Koenig shot it there, but probably on migration; the palm trees not offering opportunities for nesting, and there being no cliffs, these birds can hardly breed there. At Ghardaïa, however, they were very numerous in April; numbers could be seen round the slaughtering-places near the town. In the winter not a single Kite was seen there by Mr. Ratcliffe.

#### 159. *Circus aeruginosus* (L.).

The Marsh-Harrier was seen in great numbers, and a female was shot on Lake Fetzara February 2, 1911. Single ones were not unfrequently seen near Biskra late in February and March. When we visited Lake Fetzara in May 1909 we did not see this species.

Judging from these observations, this bird passes through Algeria as a migrant and winters in suitable localities, but it is doubtful if it breeds there now, though Loche stated that it bred in marshy districts.

#### 160. *Circus macrourus* (Gm.).

A bird of passage, and perhaps the commonest of its genus. It appears also to winter in small numbers. A beautiful male was shot at Biskra on February 22, 1911, and a female at Laghouat on April 3.

#### 161. *Circus pygargus* (L.).

(Montagu's Harrier.)

This bird is evidently rare in Algeria and Tunisia. Whitaker calls it "far from common in Tunisia," Erlanger never saw it, but obtained it from Blanc, Koenig only saw and shot one male.

We also shot only one single male near Biskra, April 19, 1908, and distinctly recognised it on one other occasion in the same place.



162. *Accipiter nisus punicus* Erl.

*Accipiter nisus punicus*, Erlanger, *Journ. f. Orn.* 1898, p. 429.

We have not a sufficient series to be able to speak authoritatively on the point of difference between *A. nisus nisus* and *punicus*, but it seems that the latter is a paler race which must be separated.

The Sparrow-hawk is common in the woods of North Algeria, and we saw it not infrequently near Hammam R'hira. A juvenile male with brown upperside with a few blue-grey feathers was shot near Lambèse on May 8, 1909.

163. *Circaëtus gallicus* (Gm.)

The Short-toed Eagle is not rare in Algeria from the Northern Atlas to Biskra and Laghouat.

We found two nests. The first on the Djebel Bon Ghezel, near Biskra, on April 24, 1909. The nest stood on a steep and high cliff, and was placed on the top of a *Zizyphus*-bush about three feet high. It was a large platform of dead branches, laid out with green twigs of *Limoniastrum* and other desert plants. It contained a single hard-set egg of the usual type. Another nest was found in the mountain forest near Hammam R'hira. It was placed on the side of a steep ravine, rather difficult of access, on a branch of a *Pinus halepensis*, quite a distance from the stem. It contained, on May 21, a snow-white downy young one, evidently only a day or two old.

We have frequently seen these Eagles near Hammam R'hira, Hammam Meskontine, Batna, Blidah, and in the Gorge de Chiffa. On a sunny morning the pair often soar above the wood, where the nest stands, frequently uttering their loud long-drawn mewing, and occasionally a shorter note, resembling that of a small high-voiced dog, but the usual notes are not in the least "harsh," though rather loud.

Snakes of various kinds are really the favourite food of the "Snake-Eagle," as it is called in German, and we found remains of them in their nests and stomachs.

164. *Falco subbuteo jugurtha* Hart & Neum.

*Falco subbuteo jugurtha* Hartert and Neumann, *Journ. f. Orn.* 1907. p. 591 (Morocco, Algeria, Tunisia).

*Falco subbuteo gracilis* (non Brehm!) Erlanger, *Journ. f. Orn.* 1898. p. 461, pls. x., xi.

The Algerian race of the Hobby is paler on the upperside, has narrower striations on the breast and abdomen and a lighter forehead than *F. subbuteo subbuteo*. The moustachial stripe is also narrower.

We saw the Hobby in May at Batna and at the foot of Djebel Mahmel, but unfortunately had no chance of shooting it. There they must have been on their breeding-grounds, but it is a question whether they stay through the winter, for we met them, apparently on passage, in May at Laghouat and in the dayats. The three we obtained at Tilrhempt and Laghouat belong to the North African form.

165. *Falco naumanni naumanni* Fleisch.

(*Falco cenchris* aut.).

The Lesser Kestrel nests abundantly in the stupendous gorge of the Rummel in Constantine. It is a wonderful sight to watch these pretty Falcons



flying to and fro from rock to rock. They doubtless nest in other localities as well—as, for example, on the river banks near Boghari—and are passing through South Algeria in March, having been noticed and shot at El Kantara and Biskra. Sometimes they migrate in big flocks; more than twenty were seen together one day in March near El Kantara.

#### 166. *Falco tinnunculus* L.

The Kestrels from N.W. Africa vary very much. While some are undoubtedly paler than the majority of European ones, others are quite as dark and even, sometimes, richer marked and coloured. We are, therefore, as yet uncertain whether a N.W. African race can be separated or not.

The Common Kestrel is found all the year round all over Algeria. It nests from the Northern Atlas mountains to the bare rocky cliffs in the Northern Sahara, near Biskra and Zaatsha. Professor Koenig saw it also near Wargla and a few times in the M'zab country. The southernmost places where we observed and obtained specimens were in Temacin, south of Tougourt, and in the dayats near Tirlhempt. Its nests are placed on cliffs (Constantine, Biskra, El Kantara), on steep river banks (Boghari), and on trees (Batna, according to Koenig); Tirlhempt, on terebinth trees.

#### 167. *Falco peregrinus punicus* Lev.

(It must be pointed out that the name *barbarus* cannot possibly be used for this form, as it was merely based on a figure and description by Albin, which is absolutely unidentifiable. Moreover there is only one resident race of this group in Algeria and Tunisia, and that is undoubtedly the Mauretanian race of the Peregrine, as shown by the Spanish and Sardinian races, which stand in the middle between the North European Peregrine and that from N.W. Africa. The name *punicus* of Levaillant jun. refers to this bird, which thus becomes *Falco peregrinus punicus*.)

There is little doubt that this form predominates over *F. biarmicus erlangeri* in Northern Tunisia. We have a specimen from the neighbourhood of Hammam Meskoutine, and we believe that we distinctly recognised it on the Djebel Taya, and near Lambèse, while other Falcons which we saw might as well have been *F. biarmicus erlangeri*.

Mr. Riggenbach sent us a splendid series from the neighbourhood of Mogador and Djebel Tixa in the Moroccan Atlas. Three eggs from the South Moroccan Atlas measure  $53 \times 40.5$ ,  $53.6 \times 39.5$ , and  $51.1 \times 39$  mm.

#### 168. *Falco biarmicus erlangeri* Kleinschm.

This form differs from *F. biarmicus tanypterus* only by its somewhat smaller size, the wings being 1—2 cm. shorter; the females have the wings only from 335 up to 358 mm. Professor Neumann (*Journ. f. Orn.* 1904. pp. 369—371) has already stated this fact, but since then we have examined a large series, Riggenbach having sent 16 adult and 27 young specimens of this Falcon. The markings of the head vary even more than Erlanger has shown on his plate. The cross-barring on the feathers of the upperside is sometimes present, sometimes not, and this does not seem to depend on age.

This Falcon undoubtedly predominates in South Algeria over *F. peregrinus punicus*. The Falcons we saw kept by the late Bashaga's falconer in Biskra were



all *F. biarmicus erlangeri*, and so are those nesting on the rocks of El Kantara; and probably a Falcon which sometimes visited Laghouat, to catch pigeons round the houses, belonged to this form.

Riggenbach sent us a clutch of four eggs, accompanied by the parent birds, from Morocco. These are lighter and less red than the eggs of *F. peregr. punicus* from the same place, and measure  $49.5 \times 38$ ,  $49.6 \times 38.5$ ,  $50.4 \times 39.1$ , and  $51 \times 38.5$  mm.

#### 169. *Phalacrocorax carbo carbo* (L.)

Cormorants are common on the northern coasts and lakes, but we did not collect any and therefore cannot say to which race they belong.

Mr. August Oser, however, sent us a specimen obtained at Biskra, December 1, 1908, of *Ph. carbo carbo*—not, as one might have expected, *Ph. carbo maroccanus* (*Bull. B. O. Club*, xvi. p. 110). The desert is doubtless a most unexpected place for a cormorant!

#### 170. *Ardea cinerea cinerea* L.

The Grey Heron is not rare in Algeria. The southernmost place where we saw it is near Biskra, at Bordj Saada, where the Oued Biskra and Oued Djeddi come close together.

#### 171. *Ardea purpurea purpurea* L.

Appears to be not rare on the Algerian Lakes. We saw it on and received specimens from Lake Fetzara in North Algeria.

#### 172. *Bubulcus lucidus* (Raf.).

Common and resident in Northern Algeria. Great numbers were seen on Lake Fetzara on May 21, 1909, and one shot, while in February 1911 only a few were observed.

#### 173. *Ardeola ralloides ralloides* (Scop.)

Several specimens were seen in the Oued Biskra in April 1908, and a very fine male shot on April 18. Iris yellow, outer portion of ring more brownish golden yellow. Feet yellowish green, top of toes and lower part of tarsus olive. Upper beak and part of lower blackish horn-brown, rest greyish green; cere yellowish green.

#### 174. *Ardetta minuta* (L.).

On April 26, 1908, we found an adult female sitting in a mimosa hedge at Biskra, and easily obtained it with a small walking-stick gun. It is said, by Loche, to be resident, while Mr. Whitaker knows it, in Tunisia, to be a common spring migrant.

#### 175. *Nycticorax nycticorax nycticorax* (L.).

Probably common in suitable localities, and met with by Tristram as far south as Tougourt. We have received it from the neighbourhood of Hammam Meskoutine, and saw it flying over the station at Batna in the early morning in May.

#### 176. *Ciconia ciconia ciconia* (L.).

White Storks nest in great numbers in Algeria, but nowhere are they, as far as our experience goes, so common as in the neighbourhood of and especially in the



town of Batna. On May 5, 1909, we counted as many as eight nests on the town-hall alone, and there were several more in 1908. Another nest is on the church, and a number more on other houses as well as in the neighbourhood on buildings and trees. A stork was nesting, in 1909, on a Roman archway near Lambèse, and another pair on the tallest of the columns in the famous ruins of Timgad.

Very few, if any, White Storks remain in North Algeria all through the winter; but they do not go far south, and the majority probably remain in South Algeria, where they may frequently be seen near El Outaya and Biskra.

About the middle of February a few Storks were seen near Guelma, but whether they had remained there throughout the winter, or had already arrived from the south, is of course not possible to say. According to Mr. Whitaker the Storks return to Tunisia about the end of February.

On March 5 a Stork was shot near Biskra, and two were obtained for us in the Tell-country south of Bône by Monsieur Dechabert. These specimens differ in no way from North European ones.

No doubt some European Storks pass through Algeria on their way to tropical and South Africa, but the majority of them appear to take a more easterly or westerly route, mostly travelling by way of the Nile, others over Spain and Morocco.

#### 177. *Comatibis eremita* (L.).

It is well known that this grotesque Ibis was found more than fifty years ago in Algeria, but since that time no information has been forthcoming about its occurrence. Loche stated that it nested near Boghar, and Tristram said that he obtained it "on the rocky ridges" near Bou Guizoun, which is now called Bou Ghezoul, on the way to Laghouat. From this several ornithologists have made it "near Laghouat," and we have also been guilty of copying this mistake in our article in the *Novitates Zoologicae*, when we proved that this bird was formerly an inhabitant of Switzerland and must be called *C. eremita*. Bou Ghezoul, however, is a caravanserai south of Boghari, a small town close to the old town of Boghar, there are no other rocks in the neighbourhood than those about midway between Boghari and Bou Ghezoul, and it must have been there where both Loche and Tristram obtained their specimens. Tristram shot his specimen on June 3, 1856, Loche got eggs and was the first naturalist to describe them. Since then nobody seems to have troubled very much about this bird in Algeria, but Koenig was much interested in it, and says that he never came across it, though he inquired and was on the look-out for it in all the suitable places. Evidently, however, he did not visit places that the birds themselves thought suitable, and the most likely place—*i.e.* the one where it was found by Loche and Tristram—has not been revisited by another ornithologist, except by Mr. Gurney, who passed by in 1870, but saw nothing of the bird. We were of course anxious to clear up the question whether and where this bird was still found in Algeria; and as soon as we were in Boghari we inquired about the bird, and found to our surprise that it was well known to some Arabs and several Frenchmen as well. One of the Arabs gave a perfectly clear and unmistakable description of the bird, said it occurred only in the spring months, nested on the rocks south of the town, where it also roosted at night, but in the daytime it was asleep; while another Arab as well as a Frenchman corrected this evident nonsense, saying it left the rocks in the day and would be seen feeding on the fields and along the river. What interested us most was the fact that the Arabs said the name of



the bird was "Oghrab larjun," while in Morocco Hartert was told its name was "Oghrab el bain," both names apparently meaning another kind of Raven, ("Oghrab" = Raven).

After this information our hopes ran high, and the next morning Hartert and Hilgert went off to the steep rocky ridges, in a bitterly cold, blinding north-east wind and rain. Their researches, however, were in vain. There was no sign of the coveted prize, and the Arabs raised the question if it was not perhaps a little too early. This did not seem very likely, but in West Morocco Riggerbach declared positively that these birds only returned to their breeding-places early in April.

On April 3 we continued our journey southwards, seeing or hearing nothing of the bird, except in the little caravanserai of Guelt es Stel, where the keeper told us that he knew the Bald-headed Ibis well, but it did not occur near his place, and was only known from the rocks near Boghari, where he himself had shot one not many years ago.

On our way back, on April 29, we made together another search on the rocks and along the river, but neither did we see it on the fields or river banks, nor on the rocks, although Hartert visited the highest and sheerest cliffs and climbed right over the two most rugged, though more accessible ridges. This was bad luck, as we could not stay longer at Boghari, and the birds were certainly on their breeding-places at that time of the year; and an Arab shepherd told us he had seen some near the river only a few days ago, but there were not many of them, and it was a chance when one saw them. A French gentleman, however, hearing of our researches, promised to send us one of these birds, which he hoped to come across in May; and actually, on June 2, he sent us a beautiful adult male.

This history proves again how tenaciously birds keep to their homes, and that it is always worth while to explore places where certain birds were found as long as fifty or sixty years ago or longer; unless nature or cultivation has altered a place entirely, or the birds (like Rapaces in Europe) have been wantonly destroyed year after year, the same birds will, as a rule, be found where they had their home before.

#### 178. *Plegadis falcinellus* (L.).

We only saw the Glossy Ibis once, on April 15, north of Tamerna, on the route to Touggourt.

#### 179. *Phoenicopterus roseus* Pall.

On February 19, 1908, we saw a great quantity of Flamingoes on the shallow lake between El Guerra and Batna. In 1909, about March 20, Flamingoes occurred south of Biskra. One was received from Arabs by a tourist, one was caught alive and brought to us, and a dead one found near Bordj Saada. On April 16 a decayed dead Flamingo was found north of Tamerna, between Touggourt and Biskra.

#### 180. *Tadorna tadorna* (L.).

Apparently not rare in the winter months, seen occasionally on Lake Fetzara.

#### 181. *Anas platyrhynchos* (L.).

(*Anas boschas* auct.)

Seen in some numbers on Lake Fezzara in February.



182. *Anas crecca* (L.).

Seen in March near Biskra ; seen and shot in February on Lake Fetzara. Feathers on sides and abdomen still moulting in February.

183. *Spatula clypeata* (L.).

Seen on Lake Fetzara in February and received from Mr. Steinbach, who shot one near Biskra.

184. *Dafila acuta* (L.).

The Pintail is not rare in winter on the lakes of North Algeria.

185. *Mareca penelope* (L.).

The Wigeon is common in North Algeria in winter. We obtained a specimen near Constantine in February.

186. *Nyroca nyroca* (Güld.).

The White-eyed Duck appears to be fairly common in North Algeria in winter. We shot one on Lake Fetzara on February 9, 1911.

187. *Nyroca ferina ferina* (L.).

A male was shot on Lake Fetzara, February 9, 1911, in beautiful spring plumage. It appears not to be rare in winter.

188. *Nyroca fuligula fuligula* (L.).

Common on Lake Fetzara in February. The body-plumage of males and females was still moulting on February 9.

189. *Columba oenas* L.

We once distinctly recognised a pair, evidently on passage, in the dayats, where Tristram observed it in 1856.

190. *Columba palumbus palumbus* L.

A comparison of our specimens from Algeria and a good series from the Moroccan Atlas, collected by Riegenbach, has convinced us that the N.W. African Wood-pigeon cannot be separated from the European one. Bonaparte (*Compt. Rend. Paris* xliii. p. 836, 1856) gave the name of *excelsus* to the North Algerian Pigeon, because it excelled all other Algerian Pigeons in size, and had more white on the wings and neck. Erlanger said it differed by being paler, and had more white on the neck, while we thought it was more intensely coloured.

None of these characters hold good. Neither is this supposed form larger than European *palumbus*, nor is there more white on them, nor are they richer or paler in colour.

We must therefore agree with Salvadori, Koenig, and Whitaker, who refused to separate the African form.

We found it common near Lambèse, and not rare in the woods of Hammam R'hira in the Atlas.



191. *Columba livia livia* L.

The Rock-dove is resident in suitable localities in various parts of Algeria, from the north coast to Biskra and Ghardaïa. One sees it on the fields of the Tell-country, and especially numerous at El Kantara and on the rocks near Biskra.

192. *Streptopelia turtur arenicola* Hart.

*Nov. Zool.* i. p. 42 (1894.—Persia and N.W. Africa. Type: Fao, Persian Gulf, Cumming coll.).

The Turtledoves from N.W. Africa vary a great deal, but the cinnamon-brown feathers of the mantle and on the wings are paler than in *T. turtur turtur*. This can easily be seen when a series is compared. Persian specimens appear to agree perfectly with our Algerian series.

A summer resident in the north and south of Algeria, breeding from the Atlas (Hammam R'hira, Hammam Meskoutine) to the oases of the desert: Biskra, Oumash, and very numerous in Berryan and among the palm-groves of Ghardaïa.

193. *Streptopelia senegalensis aegyptiacus* (Lath.).

The Senegal Turtledoves from the countries north of the Sahara are distinguishable from the tropical *T. senegalensis senegalensis* chiefly by their larger size, the wings being about 1 cm. or more longer. As a rule the rump is much less or hardly at all tinged with blue, though younger males and females of the tropical form have also brownish rumps. The colour of the scapulars and inner wing-coverts is duller and not so reddish, the tips of the black jugular feathers of a different, more rosy, less cinnamon rufous.

This pretty Dove is never found north of the Atlas, or, in fact, anywhere except in extensive groves of date-palms. It is therefore found in the oases of Biskra, Oumash, Tolga, Zaatsha, all through the Oued R'hir, in Touggourt, Temacin, and El Oued. It is also extremely common in Ghardaïa and Berryan, though in the latter place it is perhaps outnumbered by *Turtur turtur arenicola*. The bird is not migratory, but absolutely resident.

Plate V. in the *Journ. f. Orn.* 1905, meant to show the differences between *Turtur senegalensis senegalensis*, *aegyptiacus*, and the supposed (but untenable) "*aequatorialis*," is quite misleading. One has the impression that the upper two figures represent ♂ and ♀ of *aegyptiacus*, the lower the typical *senegalensis*.

Professor Koenig says that he found this Dove from El Kantara to Wargla. Our reliable and careful friend, however, must have made a mistake—either from a slip of his memory or his pen—for it is certainly never found in the oasis of El Kantara. We have spent many an hour in the palm-groves of that oasis, and have asked Arabs and Frenchmen, who knew the bird well from Biskra, but its occurrence could in no way be confirmed.

Also Taczanowski (*Journ. f. Orn.* 1870. p. 57) expressly states that it is **not** found in El Kantara or other of the higher oases.

Eggs were found in March and April, and at El Oued young ones already fledged about the middle of April.

194. *Pterocles arenarius* (Pall.).

This species is common enough in the semi-desert—as, for example, in the plain of El Outaya and near Biskra—but very shy, as it is much sought after



and shot at. It was not observed south of Bordj Saada, but occurs along the foot of the hills, near Zaatsha and Tolga.

195. *Pterocles alchata alchata* (L.).

Although undoubtedly common enough in many districts south of the Atlas, we did not have the good fortune ever to shoot at one of these Sand-grouse, though once we saw it in great masses south of Biskra, and have received skins from Laghouat.

196. *Pterocles senegallus senegallus* (L.).

Contrary to what Whitaker says of Tunisia, where he found it the least plentiful of the four species of Sand-grouse, we found *P. senegallus* abundant south of Biskra, and even not very far from the Oued Biskra, near the frequented road to Sidi Okba. Every time we visited Algeria we were able to collect some specimens, and once shot over twenty in one day, when we might have got many more if they had been of any use to us, and we had remained longer in the place where we got them, as they always returned there to drink. This species is a true inhabitant of the desert plains, but is not found in the mountains, nor in the region of the sand-dunes.

It is noteworthy that each species of *Pterocles* has an entirely different note, and by this means we also recognised *P. coronatus* near Mrair and at Ghardaïa, but never came near it.

On April 22 a female was got with a fully developed egg.

197. *Caccabis petrosa petrosa* (Gm.).

The northern dark form of the "Barbary Partridge" is very common in North Algeria, from the Mediterranean coast to the mountain forests of the Southern Atlas near Batna and Lambèse, but it does not seem to occur at any high altitudes. We have also recently received some from Laghouat.

We were able to collect a very fine series near Hamman Meskoutine, all of which agree in the main. Occasionally specimens are found which have the upper chest-feathers chestnut-red in the middle, only the base and edges being grey. This same variety is also found in the other races. The iris is red-brown or rufous, bill dark red, bare skin round eyes pale orange-red, feet red.

Comparing our Algerian series with a good series from Sardinia, we have not detected any difference whatever.

198. *Caccabis petrosa spatzi* Reichenow.

This pale subspecies is widely spread over the southern parts of Algeria. It does not, however, seem to be very numerous in most places, and we were not able to get more than two specimens, being greatly hampered by the game laws, which forbade shooting game-birds after January.

*C. petrosa spatzi* occurs sparingly on the river banks of the Oued Biskra and Oued Djeddi, and near El Kantara. It is also found in the dayats and at Berryan, the northernmost oasis of the Beni M'zab, and Professor Koenig found it on the Oued N'ça in the M'zab country.

Our Algerian specimens agree with typical Tunisian *spatzi*.



We are now acquainted with the following races of *C. petrosa* :

*Caccabis petrosa petrosa* (Gm.). Northern N.W. Africa and Sardinia. The statements of its occurrence in S.E. Europe appear to be erroneous! Cf. Reiser, *Ornis Balcanica* iii. p. 577.

*Caccabis petrosa koenigi* Rehw. Above more slaty, breast more intensely coloured. Canary Islands. (From Tenerife and Gomera in the Tring Museum.)

*Caccabis petrosa spatzi* Rehw. South Algeria and South Tunisia.

#### 199. *Coturnix coturnix coturnix* (L.).

The Quail passes through Algeria on migration, and is one of the principal objects of "la chasse." We have met with it even among the barest sand-dunes between El Oued and Touggourt, where there were little bushes of *Ephedra* or *Limoniastrum*, or a few blades of *Stipa*.

Quails are also nesting in North Algeria, and at least as far south as Batna and the foot of Djebel Mahmel.

#### 200. *Rallus aquaticus aquaticus* L.

Water-rails are said to be common in winter, but we only saw one near Biskra at the end of February.

#### 201. *Porzana porzana* (L.).

Seen several times near Biskra, in ditches, in February and March. A male shot at Biskra February 26, 1911. Iris dull red. Bill greenish olive-yellow, base orange. Feet yellowish green.

#### 202. *Porzana pusilla intermedia* (Herm.).

(Baillon's Crake.)

A fine female obtained at Biskra, April 13, 1908. Iris brownish red. Bill dark olive, spot on upper and greater part of lower mandible grass-green. Feet light olive.

#### 203. *Crex crex crex* L.

Landrails are not rare on passage, and we have several times seen them brought in by the quail-shooters in March and April. We have a male, obtained at Biskra April 11, 1908.

#### 204. *Gallinula chloropus chloropus* (L.).

It is evidently resident, as it is in North Tunisia, in the northern parts of Algeria, as it was seen near Hammam Meskoutine in May. We shot a female at Biskra on April 4, 1908, where several others were seen.

#### 205. *Fulica atra atra* (L.).

Coots were seen in vast numbers on Lake Fetzara on February 2, 1911. We shot several, some of which have enormously developed and highly swollen frontal shields. Similarly large shields seem to be seen in Europe in the breeding season only. Others we shot had small shields, as in Europe. This species breeds on the lake in great numbers.

[We did not see *Fulica cristata*.]



206. *Porphyrio caerulea* (Vandelli).

The Mediterranean Purple Gallinule was met with commonly on Lake Fetzara in February 1911, and they are said to breed there also in great numbers. Loche found it on the same lake half a century ago, and Tristram met with it even at Touggourt! We managed to get, with the help of a French sportsman, who gave us several specimens, a fine series of ten specimens. Though one heard the loud and sonorous cries frequently, one did not see very many of these birds, as they keep mostly to the thick water vegetation, and are not easily put to flight. The Arabs and French called the bird "sultana." The iris is dull red; the bill scarlet with paler tip and a narrow whitish line at base. Feet coral-red, joints of toes tinged with greyish brown; claws greyish brown.

[One of the most interesting puzzles in Algerian ornithology is the occurrence of a specimen of "*Rallus marginalis*" in January in a ditch in the oasis of Biskra, where it was caught by Taczanowski, as recorded in *Journ. f. Orn.* 1870. p. 54. This Rail is altogether an enigma. A few specimens only are known, some from Damaraland, two from Gaboon, one from Kamerun, one from Ribe, near Mombasa, in East Africa, one from near East London in South Africa, and one in the Tring Museum from Aldabra Island, where it was obtained in December by Mr. F. R. Mortimer. Andersson said he found it breeding in Damaraland in February and March. We cannot help thinking that this may be a mistake. If the bird was breeding in Damaraland it would not be a migrant, and how could it come to be found in East and West Africa, in Aldabra—marked by the collector as on migration—and last but not least in Biskra!

We cannot help thinking that it might be a palaeartic bird, the home of which is as yet unknown, and which migrates into Africa in winter.

The systematic position of the species has been much disputed. It was first mentioned by Bonaparte as *Porzana marginalis*, and described under the same name by Hartlaub; Gurney called it *Ortygometra* (which was merely another name for *Porzana*); Sharpe called it *Crex marginalis*, and later on (*Cat. Birds* xxiii. p. 335) *Limnobaenus*; while Reichenow (*Vög. Afr.* i. p. 282) termed it *Corethrura marginalis*.

We see no reason to separate it from *Porzana*.]

207. *Megalornis grus grus* (L.).

We saw once several Cranes in the great plain of El Outaya, between Biskra and El Kantara, early in March 1908.

208. *Anthropoides virgo* (L.).

On April 2 one of us met with a pair of these graceful Cranes in the plain south of Boghari, where they nest. A person in Boghari showed us a female which she had kept alive for some years. It was taken when quite small, and laid a number of eggs. Some of the latter were given to us. They are of the usual type, and measure  $85 \times 55$ ,  $86.5 \times 53$ ,  $86.5 \times 55$ ,  $86 \times 54$ ,  $78.2 \times 56$  mm.

209. *Houbara undulata undulata* (Jacquin).

The Houbara is the only species of Bustard we came across. It is found in the plain of El Outaya and south of Biskra, is comparatively common on



the stony plateau between Laghouat and Ghardaïa, and occurs in the great sea of halfa grass on the "Hauts plateaux."

Like all Bustards it is very shy, and around Biskra it is most difficult to get a shot at one. The Arabs, however, trap it in the breeding season and bring the birds as well as their eggs into Biskra and other places for sale—a most abominable habit, which will soon exterminate them in the neighbourhood of that town. On the great plateaux, which are very thinly populated, they still hold their own in undiminished quantities. They often rose quite close to the motor when we travelled to and from Ghardaïa. A number of eggs measure  $64 \times 45$ ,  $62 \times 44.3$ ,  $64.8 \times 45$ ,  $60 \times 45$ ,  $60 \times 45$ ,  $65 \times 45$ ,  $67.7 \times 46$ ,  $66.5 \times 45.5$ ,  $57.5 \times 45.1$ ,  $61.5 \times 44.1$ ,  $61.2 \times 45.5$  mm.

#### 210. *Oedictornis oedictornis saharæ* Rchw.

Although we do not consider this form a "distinct species," as Prof. Reichenow calls it (see Sharpe, *Handlist Birds* i. p. 172, note), it was perfectly correct to include it in the *Handlist*, as many forms are included which are similarly closely allied subspecies. Comparing a series of these birds with a series of European ones, one notices at once the more sandy tint of the upperside, and especially the back, and the narrower black streaks on the crown, back, and scapulars of *saharæ*. Some specimens, however, of *O. o. oedictornis*—as for example one from Ahlsdorf in the Brehm collection—come close to *saharæ*, and some of the latter are darker on the back, thus somewhat approaching *O. o. oedictornis*. Nevertheless *O. o. saharæ* must be treated as a distinguishable subspecies.

We found *O. o. saharæ* not rare near Biskra, and met with it also near the dayats, in the neighbourhood of Tirlhempt. We did not come across it in North Algeria, where (according to Whitaker) the darker form would have to be expected, though we have never seen any others than pale ones from N.W. Africa. Two specimens from Guelma in North Algeria in the British Museum are also pale.

The iris in the birds we shot varies from sulphur to almost golden yellow; eyelid sulphur-yellow; feet dull sulphur or straw-yellow; bill black, basal half sulphur-yellow. Some eggs measure  $51.5 \times 37.5$ ,  $52 \times 38.4$ ,  $51.8 \times 38.1$ ,  $51 \times 36.9$ ,  $52.5 \times 37.6$  mm.

We are now acquainted with the following forms of *Oedictornis*:

*O. oedictornis oedictornis* (L.): Europe. (Apparently wintering in N.E. Africa, and perhaps in N. Algeria and N. Tunisia.)

*O. oedictornis saharæ* Rchw.: N.W. Africa, Morocco, Algeria, Tunisia; Eastwards through the Sahara to Egypt and Palestine, and perhaps Asia Minor; also Malta.

*O. oedictornis insularum* Sassi: Eastern Canary Islands, Fuertaventura and Lanzarote.—Upper surface very much like that of *O. o. oedictornis*, but slightly more rufescent; shaft-stripes on throat, jugulum and breast heavier and reaching farther backwards, especially on the sides, right down to the flanks. Wings shorter: three specimens, two male and one female, in the Tring Museum, 212—226 mm.

*O. oedictornis* subsp.: Merv, East Persia, Indian desert to Sirsa district. This form closely resembles *O. o. saharæ*, but is not so sandy, more pale greyish on the upperside, and the dark brown spots on the back are much narrower, forming merely broad shaft-stripes. Wings 235—245 mm.

It is difficult to say whether this bird should be called *O. oedictornis scolopax* S. G. Gmelin, described from the south-west end of the Caspian Sea, without



having a skin from that locality; but probably Gmelin's bird will be the European darker form, and the South and East Persian form would require a new name.

*O. oedictemus indicus* Salvad.: India and Ceylon. Fifteen specimens have wings of 205—220, very rarely 225 mm.—It is difficult to understand that Sharpe, in the *Cat. Birds* xxiv. p. 6, did not separate this form.

211. *Glareola pratincola pratincola* (L.)

We met with a small party near Bordj Saada, south of Biskra, on April 22, 1909, and obtained two beautiful adult females. Iris very dark brown, feet blackish brown, bill black, base behind nostrils red.

212. *Cursorius gallicus gallicus* (Gm.).

The beautiful, graceful "Courser," equally swift on foot as on the wing, was met with frequently south of the Atlas. According to Whitaker it occurs also in North Algeria, even near the town of Tunis, and Koenig saw it once near Batna; but we only found it in the desert, south of Biskra and Laghouat. It is sometimes very noisy, and its loud "quit-quit" is often heard before one sees the bird. The Arabs call it the Swak el ibel (*i.e.* the camel-driver), and do not seem to like its being shot. We found it on sandy ground only, but only where there was some vegetation and stones not far away, for among the stones it deposits its eggs, in a little depression in the ground, without a nest. We did not once see it among the high dunes of shifting sand in the "Souf." The iris is dark brown, bill black or blackish horn, feet milk-white. Our two eggs, taken south of Bordj Saada in April 1909, measure  $34.1 \times 27.1$  and  $34.8 \times 27$  mm.

213. *Charadrius dubius* Scop.

Common in North and South Algeria, and apparently breeding as far south as Biskra. Eggs were taken near Hammam Meskoutine in May; they measure  $29 \times 21.5$ ,  $29.5 \times 22$ ,  $28.5 \times 22$ ,  $29 \times 22$  mm.

214. *Charadrius alexandrinus* L.

At least as common as *C. dubius*, and met with near Biskra, Mrair, Tamerna, Touggourt, and Ghardaïa.

215. *Vanellus vanellus* (L.).

Very common in Northern Algeria during the winter months, but not so numerous in the south.

216. *Himantopus himantopus himantopus* (L.).

Seen several times in March and April in the neighbourhood of Biskra, and two shot April 19, 1908.

217. *Gallinago gallinago gallinago* (L.).

The Common Snipe is numerous in winter, in suitable localities, and we have often met it near Biskra in March.

218. *Erolia minuta* (Leisl.).

(*Tringa minuta* auct.)

Only once, near Ghardaïa, April 22, 1911, we came across a couple, and managed to shoot one, which is, of course, in beautiful spring plumage.



219. *Erolia ferruginea* (Brünn.).

(*Tringa subarquata* auct.)

A fine male was also shot on April 22, near Ghardaïa.

220. *Machetes pugnax* (L.).

Appears to be not rare as a migrant. We obtained an adult female at Berryan April 24, 1911.

221. *Tringa hypoleuca* (L.).

(*Totanus* or *Actitis hypoleucos* auct.)

We have seen this common bird in winter near Hammam R'hira and Biskra.

222. *Tringa ocropus* L.

Seen near Hammam Meskoutine and Biskra, and shot at the latter place in February and March.

223. *Tringa glareola* L.

We saw a Wood Sandpiper which had been shot near Biskra, and killed one ourselves near Bordj Chegga on April 19, 1909.

224. *Tringa stagnatilis* (Bechst.).

A flock of over thirty Marsh Sandpipers was met with near Ghardaïa on April 22, 1911, out of which we shot several.

It appears that this species, which is an eastern bird, is rare in N.W. Africa. There seems to be no record from Morocco, and Mr. Whitaker has only a single skin obtained in Tunisia, though Blanc says it occurs in the Regency throughout the year (?) Loche, however, knew it as a migrant in Algeria.

Eye dark brown, bill black, feet pale yellowish olive-green.

225. *Tringa calidris* (L.).

We have heard the notes of the Redshank at Algiers, and identified it from the train near Constantine.

226. *Numenius arquatus* (L.).

We identified some specimens flying over the Chott, near Touggourt, on April 13, 1909.

227. *Numenius tenuirostris* Vieill.

Although we never had one of these birds in our hands, we distinctly recognised a large flock south of Biskra, towards the end of March 1909, and Hilgert thinks that another flock of birds, which we saw near Bône on February 9, belonged to this species.

228. *Thalasseus niloticus niloticus* (Gm.).

(*Sterna anglica* auct.).

If the thick-billed Terns are separated generically, the generic name *Thalasseus* will have to be used, the long-tailed and short-tailed species being placed in the same genus.



We saw three near Ghardaïa on April 22, 1911, two of which we shot. We found the iris very dark brown, bill and feet pure black.

[A small Tern was seen, but not definitely identified, near Bordj Saada, south of Biskra, on April 21, 1909.]

### 229. *Larus argentatus cachinnans* Pall.

In winter these Gulls could be seen daily in Algiers Harbour and along the coast.

[As we did no sea-shooting, no *Procellariidae* were collected, but Levantine Shearwaters were seen from the steamer when approaching the Algerian coast in winter, and while leaving it in June.]

### 230. *Podiceps ruficollis ruficollis* (Pall.).

(*Podiceps fluviatilis* auct.)

Seen and shot on Lake Fetzara, on February 9, 1911.

[*Podiceps nigricollis* was seen the same day, but not obtained.]

**Ostriches** must have been very numerous at one time in the Algerian desert, because pieces of egg-shells are frequently found in the sand districts between Tougourt and El Oued, and also between Tougourt and Wargla. While picking up some of these, about twenty-two miles east of Tougourt, Hartert took also three pieces of a very much thicker egg-shell of a much browner colour. As soon as Rothschild saw them he said they must belong to an extinct large *Struthionid* bird. Being too busy with other urgent things, we handed these fragments over to Mr. C. W. Andrews, who also came to the conclusion that they must belong to an unknown extinct large *Struthionid* bird, and named them

### *Psammornis rothschildi*.

See *Bericht über den V. Intern. Orn. Kongress*, pp. 150 and 169-73.

This bird must have been of gigantic proportions, and probably several other species of the genus *Psammornis* Andrews have existed in the Sahara, because Erlanger and Hilgert found many fragments of large egg-shells in the South Tunisian desert, and this year Hilgert picked up quite a number on the sand among the tamarisk-bushes hardly twenty miles south of Biskra, which appear to be rather different from the type-fragments of *P. rothschildi*. We have handed them also over to Mr. Andrews, who has promised to examine them carefully and to give us his opinion about them before long.

The recent Ostrich, *Struthio camelus*, is no longer found in Algeria proper, where Tristram still found it, and apparently not over rare, between Ghardaïa and Tougourt—on the Oued N'ça among other places.

It has long ago disappeared from there, but we have been told that it is still found not very far south of In Salah, in the centre of the Sahara.

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Rothschild, Lionel Walter Rothschild and Hartert, Ernst. 1911. "Ornithological explorations in Algeria." *Novitates zoologicae : a journal of zoology in connection with the Tring Museum* 18, 456–550. <https://doi.org/10.5962/bhl.part.1696>.

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