

J. H. Riley,
Falls Church, Va.

THE
BIRDS OF TUNISIA



The Berbers of Tunisia.



Photography by Miss A. Davidson & Co.

Author's encampment in the Tunisian Sahara.

P. Birds

QL
692
T8W45
1912
B115

THE
BIRDS OF TUNISIA

BEING A HISTORY OF THE BIRDS FOUND IN
THE REGENCY OF TUNIS

BY
J. I. S. WHITAKER
F.Z.S., M.B.O.U., ETC.

VOL. II.

269455
Y
e

London
R. H. PORTER
7, PRINCES STREET, CAVENDISH SQUARE, W.
—
1905

P. H. Riley,
Falls Church, Va.

CONTENTS OF VOLUME II.

	PAGE.
TITLE PAGE	iii.
CONTENTS	v.
LIST OF PLATES	vii
SYSTEMATIC INDEX	ix.
BIRDS OF TUNISIA	1-396
INDEX TO VOLS. I. AND II.	397-410

LIST OF PLATES.

VOL. II.

	PAGE.
AUTHOR'S ENCAMPMENT IN THE TUNISIAN SAHARA	<i>Frontispiece</i>
ROMAN TOMB AT KASRIN (THE ANCIENT CILLIUM), CENTRAL TUNISIA	<i>to face xviii.</i>
BUBO ASCALAPHUS DESERTORUM	,, 80
LARUS AUDOUINI	,, 370

MAP OF NORTH-WEST AFRICA.

SYSTEMATIC INDEX.

Family STURNIDÆ.

	PAGE
<i>Sturnus vulgaris</i> , Linn. Common Starling	1
<i>Sturnus unicolor</i> , Marm. Sardinian Starling	3
<i>Pastor roseus</i> (Linn.). Rose-coloured Pastor	5

Family CORVIDÆ.

<i>Pyrrhocorax graculus</i> (Linn.). Chough	7
<i>Garrulus cervicalis</i> , Bonap. Algerian Black-headed Jay.	9
<i>Pica mauritanica</i> , Malh. Moorish Magpie	11
<i>Corvus monedula</i> , Linn. Jackdaw	13
<i>Corvus cornix</i> , Linn. Grey Crow	15
<i>Corvus corax tingitanus</i> (Irby). Irby's Raven	17
<i>Corvus umbrinus</i> , Sundev. Brown-necked Raven.	22

Order PICARIÆ.

Family CYPSELIDÆ.

<i>Cypselus apus</i> (Linn.). Swift	24
<i>Cypselus murinus</i> , Brèhm. Pallid Swift	27
<i>Cypselus affinis galilejensis</i> (Antin.). Pale White-rumped Swift	28
<i>Cypselus melba</i> (Linn.). Alpine Swift	31

Family CAPRIMULGIDÆ.

<i>Caprimulgus europæus</i> , Linn. Nightjar	33
<i>Caprimulgus ægyptius isabellinus</i> (Temm.). Isabelline Desert-Nightjar	36
<i>Caprimulgus ruficollis desertorum</i> , Erl. Pale Rufous-naped Nightjar	38

Systematic Index

Family PICIDÆ.

	PAGE
<i>Dendrocopus numidicus</i> (Malh.). Algerian Greater Pied Woodpecker	40
<i>Dendrocopus minor</i> (Linn.). Lesser Pied Woodpecker	43
<i>Gecinus vaillanti</i> (Malh.). Algerian Green Woodpecker	45

Subfamily IYNGINÆ.

<i>Ijnx torquilla</i> , Linn. Wryneck	47
---	----

Family ALCEDINIDÆ.

<i>Alcedo ispida</i> , Linn. Kingfisher	49
---	----

Family CORACIIDÆ.

<i>Coracias garrulus</i> , Linn. Roller	51
---	----

Family MEROPIDÆ.

<i>Merops apiaster</i> , Linn. Bee-eater	52
<i>Merops persicus</i> , Pall. Blue-cheeked Bee-eater.	56

Family UPUPIDÆ.

<i>Upupa epops</i> , Linn. Hoopoe	57
---	----

Family CUCULIDÆ.

<i>Cuculus canorus</i> , Linn. Cuckoo.	59
<i>Coceystes glandarius</i> (Linn.). Great Spotted Cuckoo.	62

Order STRIGES.

Family STRIGIDÆ.

<i>Strix flammea</i> , Linn. Barn-Owl	65
<i>Asio otus</i> (Linn.). Long-eared Owl	67
<i>Asio accipitrinus</i> (Pall.). Short-eared Owl	69
<i>Syrnium aluco</i> (Linn.). Tawny Owl	70
<i>Scops yiu</i> (Scop.). Scops-Owl	72
<i>Carine noctua glaux</i> (Savigny). Southern Little Owl	73

Systematic Index

xi.

PAGE

<i>Bubo ascalaphus</i> , Savigny. Egyptian Eagle-Owl	77
<i>Bubo ascalaphus desertorum</i> , Erl. Desert Eagle-Owl	80

Order ACCIPITRES.

Family VULTURIDÆ.

<i>Gyps fulvus</i> (Gmel.). Griffon-Vulture	82
<i>Neophron perenopterus</i> (Linn.). Egyptian Vulture	86

Family GYPAËTIDÆ.

<i>Gypaëtus barbatus</i> (Linn.). Bearded Vulture	88
---	----

Family FALCONIDÆ.

<i>Circus aeruginosus</i> (Linn.). Marsh-Harrier	91
<i>Circus pygargus</i> (Linn.). Montagu's Harrier	93
<i>Circus cyaneus</i> (Linn.). Hen-Harrier	94
<i>Circus macrurus</i> (S. G. Gmel.). Pallid Harrier	95
<i>Buteo buteo</i> (Linn.). Common Buzzard	96
<i>Buteo desertorum</i> (Daudin). African Buzzard	98
<i>Buteo ferox</i> (S. G. Gmel.). Long-legged Buzzard	100
<i>Aquila maculata</i> (Gmel.). Greater Spotted Eagle	102
<i>Aquila rapax albicans</i> (Rüpp.). Pale Tawny Eagle	103
<i>Aquila chrysaëtus</i> (Linn.). Golden Eagle	106
<i>Nisaëtus fasciatus</i> (Vieill.). Bonelli's Eagle	108
<i>Nisaëtus pennatus</i> (Gmel.). Booted Eagle	110
<i>Haliaëtus albicilla</i> (Linn.). Sea-Eagle	112
<i>Circaëtus gallicus</i> (Gmel.). Short-toed Eagle	113
<i>Astur palumbarius</i> (Linn.). Goshawk	115
<i>Accipiter nisus</i> (Linn.). Sparrow-Hawk	116
<i>Milvus milvus</i> (Linn.). Kite	119
<i>Milvus migrans</i> (Bodd.). Black Kite	121
<i>Elanus cæruleus</i> (Desf.). Black-winged Kite	123
<i>Pernis apivorus</i> (Linn.). Honey-Buzzard	125

	PAGE
<i>Falco peregrinus</i> , Tunst. Peregrine Falcon	127
<i>Falco punicus</i> , Levaill. jr. Lesser Peregrine	129
<i>Falco barbarus</i> , Linn. Barbary Falcon	132
<i>Falco biarmicus feldegi</i> (Schleg.) Lanner	135
<i>Falco eleonoræ</i> , Gené. Eleonoran Falcon	138
<i>Falco subbuteo</i> , Linn. Hobby	141
<i>Falco æsalon</i> , Tunst. Merlin	143
<i>Falco vespertinus</i> , Linn. Red-footed Falcon	144
<i>Falco tinnunculus</i> , Linn. Kestrel	146
<i>Falco naumanni</i> , Fleisch. Lesser Kestrel	148
<i>Pandion haliaëtus</i> (Linn.). Osprey	150

Order STEGANOPODES.

Family PELECANIDÆ.

<i>Phalacrocorax carbo</i> (Linn.). Cormorant	153
<i>Phalacrocorax graculus</i> (Linn.). Shag	155
<i>Phalacrocorax pygmaeus</i> (Pall.). Pygmy Cormorant	156
<i>Sula bassana</i> (Linn.). Gannet	157
<i>Pelecanus onocrotalus</i> , Linn. Roseate Pelican	159

Order HERODIONES.

Family ARDEIDÆ.

<i>Ardea cinerea</i> , Linn. Common Heron	161
<i>Ardea purpurca</i> , Linn. Purple Heron	163
<i>Ardea alba</i> , Linn. Great White Egret	164
<i>Ardea garzetta</i> , Linn. Little Egret	166
<i>Ardea lucida</i> , Rafin. Buff-backed Heron	168
<i>Ardea ralloides</i> , Scop. Squacco Heron	171
<i>Ardeola minuta</i> (Linn.). Little Bittern	172
<i>Nycticorax griseus</i> (Linn.). Night-Heron	174
<i>Botaurus stellaris</i> (Linn.). Bittern	175

Family CICONIIDÆ.

	PAGE
<i>Ciconia ciconia</i> (Linn.). White Stork	177
<i>Ciconia nigra</i> (Linn.). Black Stork	179

Family PLATALEIDÆ.

<i>Platalea leucorodia</i> , Linn. Spoonbill	181
--	-----

Family IBIDIDÆ.

<i>Ibis eremita</i> (Linn.). Red-cheeked Ibis	182
<i>Plegadis falcinellus</i> (Linn.). Glossy Ibis	185

Family PHÆNICOPTERIDÆ.

<i>Phœnicopterus roseus</i> , Pall. Flamingo	186
--	-----

Order ANSERES.

Family ANATIDÆ.

<i>Anser anser</i> , (Linn.). Grey Lag-Goose	191
<i>Anser fabalis</i> (Lath.). Bean-Goose	192
<i>Cygnus olor</i> (Gmel.). Mute Swan	194
<i>Cygnus cygnus</i> (Linn.). Whooper Swan.	195
<i>Tadorna tadorna</i> (Linn.). Common Sheld-Duck	197
<i>Tadorna casarca</i> (Linn.). Ruddy Sheld-Duck	198
<i>Anas boschas</i> , Linn. Mallard	200
<i>Marmaronetta angustirostris</i> (Ménétr.). Marbled Duck	201
<i>Chaulelasmus streperus</i> (Linn.). Gadwall.	202
<i>Spatula clypeata</i> (Linn.). Shoveler.	204
<i>Nettion crecca</i> (Linn.). Teal.	205
<i>Querquedula circia</i> (Linn.). Garganey Teal.	207
<i>Dafila acuta</i> (Linn.). Pintail.	208
<i>Mareca penelope</i> . (Linn.) Wigeon.	210
<i>Netta rufina</i> (Pall.). Red-crested Pochard	211
<i>Nyroca ferina</i> (Linn.). Pochard	213

	PAGE
<i>Nyroca nyroca</i> (Güld.). Ferruginous Duck	214
<i>Fuligula marila</i> (Linn.). Scaup-Duck	215
<i>Fuligula fuligula</i> (Linn.). Tufted Duck	217
<i>Clangula glaucion</i> (Linn.). Golden-eye	218
<i>Edemia fusca</i> (Linn.). Velvet-Scoter.	219
<i>Edemia nigra</i> (Linn.). Common Scoter	219
<i>Erismatura leucocephala</i> (Scop.). White-headed Duck	220
<i>Mergus merganser</i> , Linn. Goosander	222
<i>Mergus serrator</i> , Linn. Red-breasted Merganser	223
<i>Mergus albellus</i> , Linn. Smew	224

Order COLUMBÆ.

Family COLUMBIDÆ.

<i>Columba palumbus</i> , Linn. Ring-Dove	226
<i>Columba œnas</i> , Linn. Stock-Dove	228
<i>Columba livia</i> , Bonnat. Rock-Dove	230
<i>Turtur turtur</i> (Linn.). Turtle-Dove	231
<i>Turtur senegalensis</i> (Linn.). Egyptian Turtle-Dove	233

Family PTEROCLIDÆ.

<i>Pterocles arenarius</i> (Pall.). Black bellied Sand-Grouse	234
<i>Pterocles alchata</i> (Linn.). Pin-tailed Sand-Grouse	238
<i>Pterocles senegallus</i> (Linn.). Senegal Sand-Grouse	240
<i>Pterocles coronatus</i> , Licht. Coronetted Sand-Grouse	242

Order GALLINÆ.

Family PHASIANIDÆ.

<i>Caccabis petrosa</i> (Gmel.). Barbary Partridge	245
<i>Caccabis petrosa spatzi</i> (Reich.). Desert Barbary Partridge	248
<i>Coturnix coturnix</i> (Linn.). Quail	248

Family TURNICIDÆ.

PAGE

<i>Turnix sylvatica</i> (Desfont.). Andalusian Hemipode	253
---	-----

Order GRALLÆ.

Family RALLIDÆ.

<i>Rallus aquaticus</i> , Linn. Water-Rail	257
<i>Porzana porzana</i> (Linn.). Spotted Crake	258
<i>Porzana bailloni</i> (Vieill.). Baillon's Crake	259
<i>Porzana parva</i> (Scop.). Little Crake	260
<i>Crex crex</i> (Linn.). Land-Rail	261
<i>Porphyrio caruleus</i> (Vand.). Purple Gallinule	263
<i>Porphyriola alleni</i> (Thomps.). Allen's Gallinule	269
<i>Gallinula chloropus</i> (Linn.). Moor-hen	271
<i>Fulica atra</i> , Linn. Coot	272
<i>Fulica cristata</i> , Gmel. Crested Coot	274

Family GRUIDÆ.

<i>Grus grus</i> (Linn.). Crane	275
<i>Grus virgo</i> (Linn.). Demoiselle-Crane	277

Order LIMICOLÆ.

Family OTIDIDÆ.

<i>Otis tarda</i> , Linn. Great Bustard	280
<i>Otis tetrax</i> , Linn. Little Bustard	282
<i>Otis undulata</i> (Jacq.). Houbara Bustard	284

Family ŒDICNEMIDÆ.

<i>Œdicnemus œdicnemus</i> (Linn.). Stone-Curlew	287
<i>Œdicnemus œdicnemus saharæ</i> (Reich.). Desert Stone-Curlew	288

Family GLAREOLIDÆ.

	PAGE
<i>Glareola pratincola</i> (Linn.). Pratincole	289
<i>Glareola melanoptera</i> , Nordm. Nordmann's Pratincole	290

Family CHARADRIIDÆ.

<i>Cursorius gallicus</i> (Gmel.). Cream-coloured Courser	291
<i>Charadrius pluvialis</i> , Linn. Golden Plover	293
<i>Squatarola helvetica</i> (Linn.). Grey Plover	295
<i>Ægialitis alexandrina</i> (Linn.). Kentish Plover	296
<i>Ægialitis dubia</i> (Scop.). Lesser Ringed Plover	297
<i>Ægialitis hiaticola</i> (Linn.). Ringed Plover	299
<i>Eudromias morinellus</i> (Linn.). Dotterel	300
<i>Vanellus vanellus</i> (Linn.). Lapwing	301
<i>Streptilas interpres</i> (Linn.). Turnstone	303
<i>Hæmatopus ostralegus</i> , Linn. Oyster-catcher	305

Family SCOLOPACIDÆ.

<i>Recurvirostra avocetta</i> , Linn. Avocet	306
<i>Himantopus himantopus</i> (Linn.). Black-winged Stilt	307
<i>Phalaropus hyperboreus</i> (Linn.). Red-necked Phalarope	309
<i>Scelopax rusticula</i> , Linn. Woodcock	310
<i>Gallinago major</i> (Gmel.). Double Snipe	312
<i>Gallinago gallinago</i> (Linn.). Common Snipe	314
<i>Gallinago gallinula</i> (Linn.). Jack-Snipe	315
<i>Tringa alpina</i> , Linn. Dunlin	317
<i>Tringa minuta</i> , Leisl. Little Stint	319
<i>Tringa temmincki</i> , Leisl. Temminck's Stint	320
<i>Tringa subarquata</i> (Güld.). Curlew-Sandpiper	321
<i>Tringa canutus</i> , Linn. Knot	323
<i>Machetes pugnax</i> (Linn.). Ruff	324
<i>Calidris arenaria</i> (Linn.). Sanderling	326
<i>Totanus hypoleucus</i> (Linn.). Common Sandpiper	327
<i>Totanus ochropus</i> (Linn.). Green Sandpiper	328

Systematic Index

xvii.
PAGE

<i>Totanus glareola</i> (Linn.). Wood-Sandpiper	330
<i>Totanus stagnatilis</i> , Bechst. Marsh-Sandpiper	331
<i>Totanus calidris</i> (Linn.). Common Redshank	332
<i>Totanus fuscus</i> (Linn.). Spotted Redshank	334
<i>Totanus canescens</i> (Gmel.). Greenshank	335
<i>Limosa limosa</i> (Linn.). Black-tailed Godwit	336
<i>Limosa lapponica</i> (Linn.). Bar tailed Godwit	337
<i>Numenius arquata</i> (Linn.). Common Curlew	339
<i>Numenius phaeopus</i> (Linn.). Whimbrel	340
<i>Numenius tenuirostris</i> , Vieill. Slender-billed Curlew	341

Order GAVIÆ.

Family LARIDÆ.

Subfamily STERNINÆ.

<i>Sterna hirundo</i> , Linn. Common Tern	343
<i>Sterna dougalli</i> , Mont. Roseate Tern	345
<i>Sterna minuta</i> , Linn. Little Tern	348
<i>Sterna caspia</i> , Pall. Caspian Tern	350
<i>Sterna media</i> , Horsf. Allied Tern	352
<i>Sterna anglica</i> , Mont. Gull-billed Tern	354
<i>Sterna cantiaca</i> , Gmel. Sandwich Tern	355
<i>Sterna fuliginosa</i> , Gmel. Sooty Tern	357
<i>Hydrochelidon hybrida</i> (Pall.). Whiskered Tern	358
<i>Hydrochelidon leucoptera</i> (Schinz). White-winged Black Tern	359
<i>Hydrochelidon nigra</i> (Linn.). Black Tern	361

Subfamily LARINÆ.

<i>Larus ridibundus</i> , Linn. Black-headed Gull	362
<i>Larus melanocephalus</i> , Natt. Mediterranean Black-headed Gull	364
<i>Larus minutus</i> , Pall. Little Gull	366
<i>Larus canus</i> , Linn. Common Gull	367
<i>Larus gelastes</i> , Thienem. Slender-billed Gull	368
<i>Larus audouini</i> , Payr. Audouin's Gull	370
<i>Larus cachinnans</i> , Pall. Yellow-legged Herring-Gull	372

	PAGE
<i>Larus fuscus</i> , Linn. Lesser Black-backed Gull	374
<i>Larus marinus</i> , Linn. Greater Black-backed Gull	375
<i>Rissa tridactyla</i> (Linn.). Kittiwake	376

Family STERCORARIIDÆ.

<i>Stercorarius crepidatus</i> (Banks). Arctic or Richardson's Skua	378
---	-----

Order TUBINARES.

Family PROCELLARIIDÆ.

<i>Procellaria pelagica</i> , Linn. Storm-Petrel	380
<i>Puffinus kuhli</i> (Boie). Mediterranean Shearwater	382
<i>Puffinus anglorum yelkouan</i> (Acerbi). Levantine Shearwater	383

Order ALCÆ.

Family ALCIDÆ.

<i>Alca torda</i> , Linn. Razorbill	385
<i>Fratercula arctica</i> (Linn.). Puffin	386

Order PYGOPODES.

Family COLYMBIDÆ.

<i>Colymbus septentrionalis</i> , Linn. Red-throated Diver	388
--	-----

Family PODICIPEDIDÆ.

<i>Podiceps cristatus</i> (Linn.). Great-Crested Grebe	389
<i>Podiceps griseigena</i> (Bodd.). Red-necked Grebe	391
<i>Podiceps auritus</i> (Linn.). Slavonian Grebe	392
<i>Podiceps nigricollis</i> (C. L. Brehm). Eared Grebe	393
<i>Podiceps fluviatilis</i> (Tunst.). Little Grebe	395



**Roman Tomb at Kasrin (the ancient Cillium),
Central Tunisia.**

(From a Photograph by the Author.)

Family STURNIDÆ.

STURNUS VULGARIS, Linnæus.

COMMON STARLING.

Sturnus vulgaris, *Linn. Syst. Nat.* i, p. 290 (1766); *Sharpe, Cat. Birds Brit. Mus.* xiii, p. 27; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 9 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 124 (1867); *Koenig, J. f. O.* 1888, p. 171; *id. J. f. O.* 1892, p. 370; *Whitaker, Ibis*, 1894, p. 94; *Erlanger, J. f. O.* 1899, p. 487.

Description.—**Adult male**, early spring, from Tunis, North Tunisia.

Greater part of the plumage black, glossed with metallic reflections, purple predominating on the head, neck and upper breast, and green on the other parts of the body; interseapulary region with a slight bronze gloss, and flanks with purple-blue reflectious; back and wing-coverts spotted with triangular whitish-buff spots; wings and tail-feathers blackish-brown, fringed with black and buff; crissum and under tail-coverts black, with broad white margins.

Iris dark hazel; bill yellow; feet reddish-brown.

Total length 8 inches, wing 5, culmen 1·05, tarsus 1·20.

Adult female similar to the male, but duller in colouring.

Young birds are of a dull greyish-brown above, and whitish below.

The winter plumage is duller, and thickly spotted all over with dirty white. The bill at that season is black, and the feet are darker in colour than they are in the spring.

Observations.—The plumage of the common Starling varies somewhat in colour, even in individuals from the same locality, and I have in my collection from Tunis specimens answering fairly well to Dr. Sharpe's description of *S. menzibieri* (*Cat. Birds Brit. Mus.* xiii, p. 33), while others, also from Tunis, resemble more *S. poltaratzskiyi* (Finsch) (*Proc. Zool. Soc.* 1878, p. 712). These examples, however, can hardly be separated from *S. vulgaris*, L. *S. poltaratzskiyi* occurs in the island of Cyprus, whence I have examples, and it may possibly find its way as far west as Tunis.

Mr. Dresser's "Supplement to the Birds of Europe" (vol. ix, p. 233) contains some interesting notes on the Western Palearctic Starlings, and

a table giving the differential characters between them. Mr. Dresser sums up his conclusions at the end of the article as follows:—

“*Sturnus unicolor* may be placed on one side, as it is quite distinct from any other species of Starling. The remaining Starlings may be divided into two groups, viz., those having the wing-coverts green or steely-blue, and those having the wing-coverts purple. The first group contains only *S. vulgaris* and *S. menzbieri* [which, as above shown, cannot be separated from *S. vulgaris*], and to the latter group belong *S. purpurascens*, *S. porphyronotus*, *S. poltaratzskyi* and *S. caucasicus*. Of these I hold that *S. porphyronotus* cannot be separated from *S. purpurascens*, and that both *S. poltaratzskyi* and *S. caucasicus* are very close to *S. purpurascens*, differing therefrom only in being more glossed with green, the former having the back glossed with steely-green, and the rump purple, whereas in *S. caucasicus* the green gloss extends down to the rump.”

On the whole, so far as I have been able to judge from specimens which I have examined, I am inclined to agree with the above remarks, and to look upon *S. menzbieri* as a form of *S. vulgaris*, and upon *S. poltaratzskyi* and *S. caucasicus* as forms of *S. purpurascens*.

The common Starling is most abundant in Northern and Central Tunisia during the winter months, arriving in vast flocks in October and November, and leaving again for the north in the following spring. Apparently Central Tunisia forms the southern boundary of the migration of this species, at any rate I have no note of its occurrence further south in the Regency. This Starling, unlike the following species, is strictly a winter migrant in Tunisia, and, so far as I am aware, never breeds in any part of the Regency. In Algeria and Marocco, where it is also plentiful in winter, the same is probably the case. Loche alludes to isolated pairs of the species nesting occasionally in Algeria, but I know of no authenticated case of such nesting in Tunisia.

Throughout the winter months large numbers of the common Starling are to be met with in many parts of Northern and Central Tunisia, frequenting low-lying water-meadows and marshy plains, and many are netted by the Arabs in the cane-brakes and reed-beds, whither the birds resort of an evening to roost. During this season the market in the town of Tunis is abundantly supplied with Starlings, and being a cheap article of diet they form a frequent, if not a very appetising, “plat” in the “menu” of many a Tunisian household.

In many parts of the Continent Starlings are similarly netted and

eaten, and I know of one place in Piedmont where as many as ten thousand of the poor birds are said to have been taken in a single night in a reed-bed not more than two or three acres in extent. Fortunately, the place in question being private property and its owner not approving of such wholesale slaughter, this netting has been discontinued there.

In its habits the Starling is eminently sociable and gregarious, and on the approach of autumn the birds collect in vast multitudes, at times so great as to actually darken the sky like a cloud. The effect produced by a large flock of Starlings rapidly flying in close order, and varying its shape and conformation from one moment to another, is most striking. In its diet the species may be said to be almost omnivorous, little coming amiss to it; insects, slugs and worms, however, no doubt constitute its principal food.

The Starling is naturally noisy and loquacious; its notes are chattering and unmusical as a rule, but it has a whistle which is fairly melodious. The bird is a great mimic, and when kept in captivity will readily acquire the notes of other birds.

STURNUS UNICOLOR, La Marmora.

SARDINIAN STARLING.

Sturnus unicolor, "*La Marm.*" *Temm. Man. d'Orn.* i, p. 133 (1820); *Sharpe, Cat. Birds Brit. Mus.* xiii, p. 39; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 9 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 127 (1867); *Koenig, J. f. O.* 1888, p. 171; *id. J. f. O.* 1892, p. 371; *Whitaker, Ibis*, 1894, p. 94; *Erlanger, J. f. O.* 1899, p. 485.

Description.—**Adult male**, spring, from Kasrin, Central Tunisia.

Entire plumage of the body glossy black, with purple reflections; wings and tail blackish-brown, the inner primaries and the secondaries lighter towards their tips and fringed with black.

Iris dark brown; bill yellow; feet light brown.

Total length 8 inches, wing 5·25, culmen 1, tarsus 1·20.

Adult female similar to the male, but rather duller in coloration.

Young birds resemble those of *S. vulgaris*, but are a good deal darker.

Observations.—Apparently the yellow bill is assumed in March, and becomes black in June, when the irides and feet also change colour, the

former becoming lighter and the latter darker in shade. The plumage, however, appears to continue glossy for some time longer, until the moult, which generally takes place in July or August.

The Sardinian, or unspotted, Starling is resident in Tunisia, and not uncommon in many places, both north and south of the Atlas. In the neighbourhood of the town of Tunis it is not unfrequently to be seen, and many of the birds are also brought to market. In Central Tunisia I have found the species abundant in the vicinity of Kasrin, and in Southern Tunisia I am told it is common near Tatahouine.

In Algeria and Marocco *S. unicolor* is resident, and not uncommon in certain districts. In the latter country, indeed, Mr. Dodson met with the species in considerable numbers near the city of Marocco, as also on the coast near Ras-el-Ain, in which districts he found fully-grown young birds in the months of May and June. In North Marocco, according to Favier, *S. unicolor* is both resident and migratory, and Colonel Irby alludes to the species as being almost entirely migratory in Andalucia, in South Spain (Orn. Strs. Gib. p. 131). In Sicily the species is resident and breeds in the mountainous districts of the interior, from whence I have specimens obtained at different times of the year. In North-east Africa, apparently, *S. unicolor* is not known to occur. *S. unicolor* is recorded as having occurred in India, but this proves to have been a mistake, the bird taken for it being *S. nitens*, Hume, also an unspotted Starling, although more nearly related to *S. vulgaris* than to the present species.

S. unicolor is to be met with, as a rule, in small colonies in the neighbourhood of cliffs and rocky broken country, which afford suitable shelter and convenient nesting places for the birds. Near Kasrin the character of the country is eminently adapted to this Starling's requirements, and many of the birds consequently breed there. The nests are placed in the holes and crevices of the cliffs, and are loosely constructed of dry grasses or straw, with a lining of feathers. The eggs, of which the usual complement is four to six, are undistinguishable from those of the common Starling, being generally considerably elongated in shape and of a uniform glossy pale blue-green colour. Measurements 29 × 21 mm.

Like *S. vulgaris*, the present species is very noisy and a great

chatterer, particularly during the breeding season, and, like its relative, whistles not unpleasantly. The diet of this, like that of other Starlings, consists mainly of worms, grubs, and insects of different kinds, but there is no doubt these birds occasionally feed on grain, berries, and other vegetable matter, and they may, indeed, be considered omnivorous, as they also devour eggs, and at times even young birds.

PASTOR ROSEUS (Linnæus).

ROSE-COLOURED PASTOR.

Turdus roseus, *Linn. Syst. Nat.*, i, p. 294 (1766).

Pastor roseus, *Temm. Man. d'Orn.* i, p. 136 (1820); *Sharpe, Cat. Birds Brit. Mus.* xiii, p. 63; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 9 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 127 (1867); *Koenig, J. f. O.* 1888, p. 170; *id. J. f. O.* 1892, p. 370.

Description.—**Adult male**, spring, from Italy.

Entire head, nape, neck, upper breast, wings, tail, upper and under tail-coverts, axillaries and thighs glossy black, the head, nape, neck and breast with violet reflections, and the wing-coverts and tail with green reflections, rest of plumage delicate pale rose.

Iris hazel; bill rose-colour; feet brown.

Total length 7·50 inches, wing 5, culmen ·95, tarsus 1·30.

Adult female duller in colour than the male.

Young birds resemble the young of the common Starling, but are rather paler.

In winter the plumage is much duller and browner, most of the feathers at that season being margined with brown.

This exquisitely plumaged bird occurs occasionally in Tunisia as an irregular visitor or wanderer, so irregular, indeed, that years together may elapse without its appearance being recorded in the country. The only instance of its occurrence in the Regency that has come under my notice is that of a specimen which was obtained near the town of Tunis in the spring of 1903, and brought, in the flesh, to the naturalist Blanc, to be preserved and set up. I endeavoured to obtain it for my collection, but the owner would not part with the bird.

BIRDS OF TUNISIA

In Algeria, according to Loche, the species occurs accidentally, and very irregularly. From Marocco there seems to be no note of its occurrence, but it has been met with occasionally in Spain, even as far west as Seville. In Italy, though of distinctly irregular appearance, the species has been met with more often, and has been known to breed in the country, a large colony of these birds having established itself at Villafranca in the Province of Verona, in June, 1875, and nested there between the 5th of that month and the 10th of July, taking its departure shortly afterwards.

In its habits the Rose-coloured Pastor greatly resembles the common Starling, being, like that bird, eminently gregarious and consorting together in large flocks. In some countries these assemblages are so vast that they cause considerable damage to the crops, but they are also of great service in ridding the country of locusts and other insect pests, and being most welcome on that account, are actually protected by the farmers. Besides feeding largely on insects and grain, the species is fond of fruit, and particularly of the mulberry. So fond, indeed, is it of this fruit, that in some countries it goes by the name of the "Mulberry-bird," while in others, from its partiality for locusts, it is called the "Locust-bird."

In its flight the Rose-coloured Pastor resembles the Starling, and when in large flocks, densely packed together, the aerial evolutions of the birds, and the effect produced thereby, are said to be most striking. Canon Tristram (*Ibis*, 1882, pp. 410-414), gives a most graphic and interesting account of the migration of the species, as observed by him in Syria on the occasion of his visit to that country in 1881. The passage of the countless myriads of these birds in thousands upon thousands, as witnessed by him, must indeed have been an "interesting ornithological sight," and one never to be forgotten by an ardent lover of Nature.

The notes of the Rose-coloured Pastor resemble those of the Starling, and the species is said to be equally loquacious and noisy at times. It nests in colonies among rocks and in buildings, usually making use of a hole for the purpose, but often placing its nest on the bare ground. Its eggs, five to seven in number, are white, or very pale bluish-white, smooth and glossy, and about the size of the common Starling's eggs.

Family CORVIDÆ.

PYRRHOCORAX GRACULUS (Linnæus).

CHOUGH.

Corvus graculus, *Linn. Syst. Nat.* i, p. 158 (1766).

Pyrrhonorax graculus, *Temm. Man. d'Orn.* i, p. 122 (1820).

Graculus graculus, *Sharpe, Cat. Birds Brit. Mus.* iii, p. 146.

Trypanocorax frugilegus, *Loche, Expl. Sci. Alg. Ois.* i, p. 113 (1867).

Fregilus graculus, *Koenig, J. f. O.* 1888, p. 171.

Description.—**Adult male**, spring, from Marocco.

Entire plumage rich glossy black, with slight violet-blue reflections on the head, back, scapulars, neck and breast, and greenish reflections on the wings and tail.

Iris brown; bill and feet dark coral-red.

Total length 15·50 inches, wing 12, culmen 2·10, tarsus 2·10.

Adult female similar to the male.

Young birds have the plumage duller, and the bill and feet are of an orange-colour.

I have not myself met with the Chough in Tunisia, nor do recent travellers in the Regency seem to have done so, but Salvin, when travelling in the Eastern Atlas some years ago, appears to have found the species not uncommon in some of the more mountainous districts.

In the Province of Constantine the Chough is by no means uncommon, and though perhaps somewhat local in its distribution, it is probably to be met with throughout the entire Atlas range. Canon Tristram came across the bird in Algeria in two spots far distant from each other, but both on the edge of the Sahara, one of these localities being the cliffs of Bokhari, south of Algiers, and the other the gorge of El Kantara, south-east of Constantine. Loche records the species from the neighbourhood of Djelfa and Boghar, but says that it is only to be found on the highest mountains of Algeria.

In Marocco the Chough is not at all uncommon. Favier states that it is to be found in large flights near Tetuan, where Mr. Tyrwhitt Drake also observed it, and Colonel Irby mentions having seen a great many of the species about the cliffs of Abyla, or Apes' Hill, opposite to Gibraltar (*Orn. Strs. Gib.* p. 80). I myself have a specimen of this bird from Tilula in the Great Atlas, which was obtained by Mr. E. Dodson in May, 1897.

In its habits the Chough is strictly sedentary, though at times it will abandon a locality and appear in another, without apparent reason. It frequents mountains and rocky cliffs, and in some countries, as in England, evinces a partiality for the sea-coast. In our country, in fact, the species seems to be now quite a maritime bird, being wholly confined to the sea-coast and occurring no longer, as it used to do, in some inland districts. This, however, is no doubt the exception to the rule, for in most countries the Chough inhabits high inland mountains, and in Sicily, where the species is remarkably plentiful, I know of no instance of its making its home on the sea-coast, although there are many localities there calculated to attract it, offering, as they do, secure refuge and ideal nesting sites. The Jackdaws have long discovered these havens of rest on the Sicilian coasts, and are to be found frequenting many of them in large colonies.

Like the Jackdaw and Rook, the present species is distinctly gregarious, consorting in numbers together and breeding in colonies. Its nest is usually placed in a cleft in some inaccessible cliff and is built of dry sticks with a little hair or wool; the eggs, three to six in number, being of a creamy or greenish-white colour, with grey shell-marks and brown surface-spots. In its erratic, though not ungraceful flight, it greatly resembles the Jackdaw, and its note also somewhat resembles the note of that bird. It feeds chiefly on insects and their larvæ, but will also eat grain and seeds of various kinds.

There appears to be no instance of the occurrence of the Alpine Chough (*P. alpinus*) in North-west Africa, nor is the species supposed to be found in the more southern parts of Italy, or in Sicily and Sardinia, though it has apparently been observed in Corsica. I have, however, been assured on good authority that a small colony of the Alpine Chough is to be met with on a certain mountain not far from Palermo, in Sicily, and hope shortly to be able to verify this interesting fact. Though generally considered a shy and wary bird, the Alpine Chough appears to become remarkably tame at times, and at Caux, in Switzerland, is said to come and pick up crumbs of bread close to the hotel windows, and within a few feet of lookers-on.

GARRULUS CERVICALIS, Bonaparte.

ALGERIAN BLACK-HEADED JAY.

Garrulus cervicalis, Bonap. *Comp. Rend.* xxxvii, p. 828 (1853); Sharpe, *Cat. Birds Brit. Mus.* iii, p. 98; Loche, *Expl. Sci. Alg. Ois.* i, p. 120 (1867); Whitaker, *Ibis*, 1896, p. 96; Erlanger, *J. f. O.* 1899, p. 489.

Garrulus melanocephalus, Malherbe, *Cat. Rais. d'Ois. Alg.*, p. 9 (1846).

Description.—**Adult male**, spring, from Ghardimaou, North Tunisia.

Forehead white, spotted with black, crown covered with a thick black crest; nape and sides of the neck rufous, becoming paler lower down; back vinous-grey, scapulars rather paler; rump pale rufous; upper tail-coverts white; tail with the three outer pairs of rectrices blackish-brown, the remaining rectrices being grey on basal half and black on terminal half, with bluish-black bars on the outer webs, more distinct on the lighter portion of the feathers; primaries blackish, with dull white outer webs; secondaries velvet-black, with the basal half of the outer webs pure white, the innermost secondaries with a chestnut patch; greater wing-coverts conspicuously barred with black, blue and white alternately, the lesser coverts grey, washed with rufous; lores, entire space round the eyes, ear-coverts and throat pure white; a conspicuous black moustachial stripe; chest and abdomen pale vinous-grey, washed on the sides and flanks with rufous; crissum and under tail-coverts white.

Iris bluish-white; bill dark brown; feet pale brown.

Total length 14 inches, wing 7.50, culmen 1.20, tarsus 1.70.

Adult female similar to the male, but rather smaller.

Observations.—Although resembling *G. glandarius* to a considerable extent in its general coloration, this Jay appears to differ from that species sufficiently to be entitled to full specific rank. Its white ear-coverts and cheeks alone form a very distinctive specific character.

The range of this Jay appears to be somewhat limited, being, so far as we are aware, restricted to the more northern districts of North-west Africa, where it is resident and found throughout the year.

Two, if not three, other forms of Jay, however, occur in North-west Africa, but owing to a lack of specimens it is not at present possible to arrive at an entirely satisfactory conclusion regarding their identity and relative claims to separation.

The forms referred to are the following:—

G. minor, Verreaux (*Rev. Zool.* 1857, p. 439, pl. xiv.), from South Algeria.

G. œnops, Whitaker (Bull. B. O. C., vii, p. 18), from South Marocco.

G. g. whitakeri, Hartert (Die Vög. der Paläarkt. Faun. p. 33), from North Marocco and possibly North Algeria.

Regarding *G. minor* we know nothing of a positive nature, beyond what has been told us by Verreaux himself (*opus. cit.*) and Loche (Expl. Sci. Alg. Ois. i, p. 122), and the only specimen of it I have been able to examine, is in the British Museum Collection. It is not a very good one, and hardly available for comparison. I had expected to find Verreaux's type in the Turati Collection at Milan, which possesses so many of Loche's specimens, but together with Professor Martorelli, the Director of the Museum, I searched in vain for it there, although we found a specimen labelled *G. minor*, which had apparently been obtained in Germany, and is merely a small example of *G. glandarius*.

Of *G. œnops* the only examples at present known appear to be those obtained by myself, four in number, from the Great Atlas Mountains in South Marocco; three, including the types, are in my own collection, and one in that of the British Museum. These somewhat resemble specimens of *G. hyrcanus* from Persia, but differ to a certain extent in coloration as well as in size. It is interesting to find two closely allied forms so widely separated in their habitat. Further particulars regarding *G. œnops* were given in the *Ibis* for 1898, p. 606.

Dr. Hartert is of opinion that *G. minor* and *G. œnops* are but one and the same bird, and this is quite possible, although I do not find that Verreaux's description of the former entirely agrees with that of the latter, especially in the wing measurement, which in *G. minor* is given as 143 mm., or just about an inch less than it is in *G. œnops*. Further specimens are evidently required to settle this point.

G. g. whitakeri, a Jay from North Marocco, and probably North Algeria, which Dr. Hartert has done me the honour of naming after me, is a form which resembles *G. cervicalis* in its white cheeks and throat, its black crest, and grey back, but lacks the rich rufous colouring of the nape and neck of that species, while in size and other respects it more nearly resembles *G. glandarius* from Europe. A specimen of this form, obtained by Captain Savile Reid near Tangier, exists in the British Museum Collection, and the Tring Museum possesses several examples of it.

G. cervicalis is to be found in most of the higher oak-forests of North Tunisia, such as those near Ghardimaou, El-Fedja, and Ain-Draham, and in some of these it is not at all uncommon. In Algeria the species has been observed by various ornithologists, and throughout the well-wooded districts of the Aurès Mountains it appears to be abundant. Dr. Koenig found it plentiful near Batna and Lambessa, and took nests of the species with eggs and young birds in the month of May. In its general habits, and its harsh, discordant cry, *G. cervicalis* resembles our European bird to a great extent. By some ornithologists, however, it is considered to be less shy than *G. glandarius*, although opinion appears to differ on this point, as other travellers have found it as wary as our bird. Its food consists of acorns and fruit of various kinds, as well as of insects and worms, and at times it will prey upon young birds and eggs. According to Dr. Koenig (*J. f. O.* 1895, p. 103), the nest of this Jay is very like that of *G. glandarius*, and its eggs identical with those of that species, being generally five or six in number, and of a greenish-grey colour, speckled all over with light brown. Measurements 30 × 22 mm.

Whether *Garrulus minor* occurs in Tunisia appears to be uncertain. Baron v. Erlanger (*J. f. O.* 1899, p. 419) mentions having observed Jays in the woods north of Feriana in Central Tunisia, but was unable to secure a specimen, and he thinks the birds seen may have *G. minor*, as Loche's example seems to have been obtained in Southern Algeria.

PICA MAURITANICA, Malherbe.

MOORISH MAGPIE.

Pica mauritanica, Malherbe, *Mém. de la Soc. d'Hist. Nat. de Metz*, p. 7 (1843); Malherbe, *Cat. Rais. d'Ois. Alg.* p. 52 (1846); Sharpe, *Cat. Birds Brit. Mus.* iii, p. 66; Loche, *Expl. Sci. Alg. Ois.* i, p. 118 (1867); Koenig, *J. f. O.* 1888, p. 175; *id.* *J. f. O.* 1892, p. 372; Whitaker, *Ibis*, 1894, p. 94; Erlanger, *J. f. O.* 1899, p. 490.

Description.—**Adult male**, spring, from North Tunisia.

Entire head, neck, back, rump and upper tail-coverts black, with metallic-green reflections; a bare patch behind the eye cobalt-blue; scapulars pure white; tail metallic-green, glossed towards the tip with purple; primaries

blackish, with the greater portion of the inner webs white; secondaries metallic-blue; wing-coverts metallic-green, with blue margins; breast and upper abdomen black; lower abdomen pure white; crissum and under tail-coverts black.

Iris dark brown; bill and feet black.

Total length 18.50 inches, wing 6.80, culmen 1.35, tarsus 1.80.

Adult female resembles the male, but is rather smaller.

Observations.—The blue patch behind the eye is present even in young birds not yet able to fly; apparently this species never shows the grey on the rump present in *P. rustica*, and is altogether a smaller bird, its wing measurement being, as a rule, an inch or more less than in the European species. Morocco specimens seem to have a still shorter wing than Tunisian birds.

This Magpie, another species peculiar to North-western Africa, and with a limited range, is apparently somewhat locally distributed in Tunisia, as well as in Algeria and Morocco, being by no means uncommon in some districts, and rare or entirely absent in others. Although a resident species it is not unlikely that for some reason or other, such as the absence of food or water, this Magpie may shift its quarters to a certain extent and move from one locality to another. This would account for the fact of its being sometimes not found in a district where it was formerly abundant. On the whole, however, *P. mauritanica* seems to be rather more plentiful in the central and southern districts of the Regency than in the north, but I have met with it when travelling through the flat country bordering the River Medjerdah, and it probably also occurs in the neighbourhood of the town of Tunis, as I have more than once seen examples of it in the market.

On the plains between Feriana and Gafsa, in Central Tunisia, I have often met with the Moorish Magpie in small parties, frequenting patches of cultivated land dotted over with thorn bushes, and further south I have found it near Ras-el-Aioun, among the tamarisk bushes bordering the Oued Seldja.

Like Grey Shrikes, Bush-Babblers, and other wary birds, this Magpie is fond of open country, where the monotony of the level plain is only broken by isolated clumps of bushes. These afford sufficient shelter to the birds, and at the same time offer admirable points of vantage from which to spy the surrounding country.

P. mauritanica closely resembles our European Magpie in its general life and habits; its note, also, is not dissimilar. The Arab

name for the Magpie, "*Agaz*," or "*Agag*," like many Arab names for birds, is taken from its harsh cry, and no doubt the name of "*Agasse*," used in some parts of France, has a similar derivation. Like the common Magpie, the Moorish bird will feed on almost anything, and in the arid semi-desert wastes of Tunisia its diet consists largely of locusts and coleoptera, which abound in those regions.

In South Tunisia it is an early breeder, and I have found nests containing nearly fledged young birds as early as the first week in April. Further north it no doubt breeds later.

The nest is nearly always placed in the middle of a thick and almost impenetrable thorn-bush, and at a height of from six to ten feet from the ground; it is of the usual domed shape, composed of sticks and twigs, and lined with a little wool and hair. The eggs, which are generally six in number, although occasionally as many as seven, or even eight, may be found, resemble those of our European bird, being of a greenish colour, finely spotted all over with brown. They measure from 31 to 35 mm. in length by 23 to 25 mm. in breadth.

CORVUS MONEDULA, Linnæus.

JACKDAW.

- Corvus monedula**, *Linn. Syst. Nat.* i. p. 156 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 7 (1846); *Koenig, J. f. O.* 1888, p. 171.
Colæus monedula, *Sharpe, Cat. Birds Brit. Mus.* iii, p. 26.
Monedula turrium, *Loche, Expl. Sci. Alg. Ois.* i. p. 114 (1867).

Description.—**Adult male**, spring, from Sicily.

Forehead, lores and crown glossy black, with purple reflections, nape and sides of the neck grey, shading into black on the mantle and remainder of the upper parts; secondaries and upper wing-coverts with purple reflections, primaries and rectrices with greenish reflections; underparts dull black, shading into grey on the lower abdomen and on the thighs.

Iris whitish; bill and feet black.

Total length 14 inches, wing 9.60, culmen 1.30, tarsus 1.90.

Adult female slightly duller in plumage than the male, and rather smaller.

Observations.—The grounds on which the Jackdaw has been generically separated by some authorities under the names *Colæus* and *Lycos* appear to be hardly important enough to warrant the distinction.

The Jackdaw was once not uncommon in the town of Tunis, and, some twenty years ago I remember seeing several of the birds flying about the old walls and fortifications in the vicinity of the Bardo Palace.

Blanc informs me that he has been told that the species was originally imported into Tunis from Malta, a few pairs of the birds having been brought over from that island, and kept in confinement for some time at the Bardo, where, on being subsequently liberated, they settled down, and rapidly increased in numbers, so much so, that at one time Jackdaws swarmed around the old palace.

Of late years, however, they seem to have disappeared entirely from the town of Tunis, and I do not know positively of any other place in the Regency where they are to be found at the present day. At the same time, however, I think there can be little doubt that the species occurs in some parts of Tunisia, as it is abundant in certain localities further west.

In the neighbourhood of Constantine Jackdaws are plentiful, considerable numbers of them inhabiting the wonderful ravine surrounding that town, and I have often watched large flocks wheeling about and going through their aerial evolutions.

In Marocco the Jackdaw does not appear to be at all abundant, although Mr. Drake mentions having met with it near Tetuan.

The species is, indeed, very local in its distribution, and is only to be found in certain localities, being sometimes met with in mountainous districts far inland, at other times on the sea-coast. In Sicily, although found in both situations, the latter seems to be preferred, and in various parts of the island large colonies of Jackdaws are to be found living in cliffs overhanging the sea, where they are resident throughout the year.

Very sociable by nature, and essentially gregarious, the Jackdaw is nearly always to be found in colonies, and it may also often be found consorting with other *Corvidæ*. It is not particularly shy, nor as wary and suspicious as most of its congeners.

In its habits it is bright and active, and when kept in captivity, particularly if brought up from the nest, it forms a most delightful

and engaging pet. Its well-known note, not easy to transcribe on paper, is not unpleasant, though should a number of the birds be calling together the noise becomes rather overpowering. Like its congeners, the Jackdaw may be said to be almost omnivorous, its principal food, however, being no doubt insects and their larvæ, as well as worms and slugs. It nests in the holes of cliffs, old walls, and trees, depositing its eggs on a rough layer of sticks, slightly lined with wool or feathers. The eggs are usually four or five in number, and of a pale bluish-green, spotted and blotched with purplish-brown and grey. Average measurements 34×25 mm.

The Jackdaw found in Western Europe has been separated sub-specifically from the Swedish, or typical form, under the name of *C. m. spermologus* (Vieill.), on account of a slight difference in the coloration of its plumage, which is stated to be noticeable chiefly on its underparts.

Specimens from Eastern Europe and some Asiatic countries have the collar on the nape white or whitish, slightly tinged with yellow, and are distinguished under the name of *C. m. collaris* (Drummond). This form appears to be occasionally met with in Italy.

In the more eastern portions of the Asiatic continent another form of Jackdaw occurs, *C. dauricus*, Pallas.

CORVUS CORNIX, Linnæus.

GREY CROW.

Corvus cornix, *Linn. Syst. Nat.* i, p. 156 (1766); *Loche, Expl. Sci. Alg.*

Ois. i, p. 112 (1867); *Koenig, J. f. O.* 1888, p. 170.

Corone cornix, *Sharpe, Cat. Birds Brit. Mus.* iii, p. 31.

Description.—**Adult male**, spring, from Sicily.

Entire head, throat, breast, wings and tail black, more or less glossed with violet-blue, but the primary quills with green reflections; remainder of the plumage ash-grey, some of the feathers with darker shafts.

Iris dark brown; bill and feet black.

Total length 16.50 inches, wing 12, culmen 1.85, tarsus 2.30.

Adult female similar to the male.

The Hooded, or Grey, Crow seems to occur occasionally, though rarely, in Tunisia, and the bird can merely be looked upon as an accidental visitor to that country. Blanc, the naturalist, informs me that only two or three examples of the species have passed through his hands within the last ten years. These may possibly have been stragglers from the island of Sicily, where this Crow is abundant and resident. From the neighbouring island of Malta the species does not appear to have been recorded.

In Algeria also, according to Loche, the Hooded Crow occurs accidentally. I have no note of its occurrence in Marocco.

In its habits and general life this Crow closely resembles the Carrion-Crow, though it is more gregarious than that species. In localities where both species occur they interbreed freely, and hybrids between the two are constantly met with, and according to some good authorities are fertile. In Italy hybrids between these two Crows do not seem to be uncommon, and I have myself shot what appeared to be one of them in Piedmont.

Like most other *Corvidæ* the present species is extremely wary and not easily taken unawares. It is fond of ranging over open country and moorlands, quartering the ground in search of food like a Harrier, though during the breeding season it resorts to wooded and more secluded localities. In Sicily I have found it nesting in oak-woods far inland and at a considerable altitude. The sea-shore also appears to be much frequented by this bird, no doubt for the sake of the offal and dead fish that may be thrown up by the waves. In its diet this species is far from being fastidious, and will feed on carrion or almost anything that may come in its way.

Its call-note is a loud croak, similar to that of the Carrion-Crow, but some fine-eared people maintain that the notes are easily distinguishable. Its flight is heavy and not very rapid.

Examples of the Hooded Crow from Sicily are smaller than those from North Europe, the difference in the length of the wing between the two being in many cases as much as one inch. These Sicilian birds may be the same as those from Sardinia, which Dr. Kleinschmidt has distinguished under the name of *C. c. sardonius* (Orn. Monats. 1903, p. 92), but I cannot say I notice any constant or appreciable difference between the plumage of Sicilian specimens and that of North European birds.

Going eastward into Persia we find the Hooded Crow with the

lighter portions of its plumage nearly white, while still further east in the Asiatic continent another form occurs in which these parts are drab-grey. The former has been named *C. capellanus*, Scclater, and the latter *C. sharpii*, Oates.

Neither the Carrion-Crow nor the Rook, so far as I am aware, have been recorded as occurring in Tunisia, but according to Loche both species have been met with on passage in Algeria, and they may therefore be found in the Regency also.

As recently pointed out by me (*Ibis*, 1904, p. 477), both *C. corone* and *C. frugilegus* occur in Sicily in winter, but they do not appear to breed there. The occurrence of the former species in Sicily had previously been considered as extremely doubtful.

CORVUS CORAX TINGITANUS (Irby).

IRBY'S RAVEN.

Corvus tingitanus, *Irby, Ibis*, 1874, p. 264; *Koenig, J. f. O.* 1892, p. 372; *Whitaker, Ibis*, 1894, p. 95; *Erlanger, J. f. O.* 1899, p. 493.

Corvus corax, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 7 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 108 (1867); *Koenig, J. f. O.* 1888, p. 175.

Description.—**Adult male**, spring, from Djebel Semama, Central Tunisia.

Entire plumage glossy black, with brownish reflections on the head and nape, and violet-purple reflections on the rest of the upper parts, and on the throat, where the feathers are lanceolate, and, to a slight extent, bifurcate; bill deep and curved.

Iris dark brown; bill and feet black.

Total length 22 inches, wing 15·50, culmen from gape 2·50, height of culmen at base 1·10; tarsus 2·75.

Adult female similar to the male, but slightly smaller in size.

The young are duller in colouring, and the iris pale grey. The winter plumage is less glossy, and at times distinctly brownish.

Observations.—There seems to be a considerable amount of individual variation in the size of this Raven in Tunisia; in some examples the wing measures as much as 16·50 inches, and is as long as that of many specimens of *C. corax*, while in others it measures only 14 inches. The largest individuals in my collection come from Central Tunisian districts, and the smallest from the south of the Regency and the island of Djerba. Mr.

Dresser gives 13·80 as the length of the wing of a female of this species, but this must have been an exceptionally small bird. Specimens from Marocco seem rather more uniform in size, and are never so large as some examples from Tunisia.

The wing formula appears to be the same as in *C. corax*, the fourth primary being the longest, the third slightly less, the fifth still less, the second about an inch less than the third, and the first about three inches less than the second.

Whether the name of *C. leptonyx*, Peale (U.S. Expl. Exped. p. 105, 1848), is applicable to the present form of Raven, it is difficult to say. Were such to be the case, according to the law of priority, the name *tingitanus* would have to give way to it, but the description of *C. leptonyx* is somewhat vague, and does not apply well to the North-west African bird. Under the circumstances, therefore, it seems advisable to retain the name of *tingitanus* by which this form has hitherto been known. The name *C. leptonyx* seems to have been given to a Raven found in Madeira, but as none of these birds appear to be resident there, but are only to be met with in the island on passage, it is impossible, failing any type specimen, to say what form Peale's name really refers to. I may here observe that the Raven occurring in the Western Canary Islands has been distinguished subspecifically under the name of *C. c. canariensis*, Hart. and Kleinschm., and that occurring in Spain, under the name of *C. c. hispanus*, Hart. and Kleinschm. (Novit. Zool. 1901, p. 45).

This small Raven, although closely allied to *C. corax*, L., is no doubt a fairly distinct subspecies, recognisable by its smaller size and generally somewhat-differently shaped bill. It also differs from the common Raven in many of its habits and, according to some careful observers, in its note.

Besides being found generally throughout the whole of North-west Africa, this Raven, or another closely allied form, occurs as a resident on some of the Canary Islands, and, as a visitor, in Madeira. On the small island of Hierro, one of the Canary group, the bird seems to be so abundant that it is a positive pest. Mr. Meade-Waldo, writing on the Ornis of this island (*Ibis*, 1890, p. 432), gives the following interesting notes regarding this Raven:—

“Probably nowhere in the world is the Tangier Raven (*C. tingitanus*) more numerous than here; it is always in sight, flying in flocks, large and small, walking about close to one, and showing but little fear. They would come to our tent and greedily pick up the bodies of birds that had been skinned, and the pine-forest, where our tent was pitched, resembled a scattered rookery. The pairs in November

frequently sat by their old nests and made most ridiculous noises, sometimes almost resembling a song. The peasants tell me (and I can quite believe it, for food for so many must be very hard to get) that the Ravens do them a great deal of harm, that they have great difficulty in saving their lambs from them (for at Hierro sheep take the place of the goats of the rest of the islands), that they are equally destructive amongst their crops, and that if it were not for the Ravens the island would support many more people."

According to Colonel Irby, *C. c. tingitanus* crosses the Straits of Gibraltar from Marocco to Spain, but no specimens of the species appear to have been actually obtained in the latter country. Its occurrence, there, however, is not improbable, as it seems to have occurred on the island of Sardinia on more than one occasion. The Royal Florence Museum possesses an example of it, obtained at St. Antioco, a small island off the south-west coast of Sardinia, on August 9th, 1894, and another specimen from the same island is recorded as existing in Count Arrigoni's collection at Monselice, near Padua. The wing measurement of the Florence specimen is 15.25 inches, and its bill is distinctly that of *C. c. tingitanus*. I may here observe that the Ravens found in Sardinia appear to be subject to considerable variation in size, the majority being somewhat smaller than typical *C. corax*. Specimens in my own collection from that island vary in their wing measurement from 15.25 to 16.50 inches. The shape of the bill, however, in Sardinian birds does not usually differ appreciably from that of *C. corax*. Dr. Kleinschmidt has recently distinguished the Sardinian Raven under the name of *C. c. sardus* (Orn. Monats. 1903, p. 92).

Throughout Marocco and Algeria, from the former of which countries hails the type of this Raven, *C. c. tingitanus* is abundant, both north and south of the Atlas, being found in sandy desert districts, as well as in the more wooded and cultivated parts.

In Tunisia the species is to be met with throughout the greater part of the Regency, and is the Raven of the country, although in the extreme southern region *C. umbrinus* also occurs. It appears to be generally distributed throughout Northern and Central Tunisia, being, however, more abundant in some localities than in others. In the neighbourhood of Feriana and Kasrin in Central Tunisia the species is particularly plentiful, and at the former place large flocks of the bird may be seen of an evening, wending their way home from the

plains to the hills close by, where they pass the night. During the day they are dispersed in pairs over the low-lying country, in search of food, but towards evening they congregate together for the homeward flight. There is no doubt that this Raven is gregarious to a great extent, differing in this respect from *C. corax*, which is not generally so, although at times even that species, according to various authorities, may be found in large flocks. In the neighbourhood of Gafsa and on the south-western plains of the Regency, *C. c. tingitanus* seems to be less numerous than it is further north, but I used to meet with it in those districts occasionally, and generally in the vicinity of the *oueds*, or dry river courses, where the high banks afford convenient shelter and suitable nesting sites. South of the Chott Djerid it is not uncommon in the Matmata districts, and near Tatahouine, where it meets *C. umbrinus*.

As a rule, both in Tunisia and Algeria, I found this Raven shy, and almost unapproachable, and it was only with the greatest difficulty I now and then succeeded in obtaining a specimen of it. In one particular district the bird was so wary, that it was only with the help of an equally wily Arab sportsman, that I was able to secure an example of it, and that was with its head nearly completely severed from the body. Why the bird should be so wild in districts where it is not persecuted, it is difficult to understand, particularly as it is capable of becoming very tame in other parts, and under apparently identical conditions.

In its diet *C. c. tingitanus*, like most *Corvidæ*, may be said to be omnivorous, feeding upon almost anything that may come in its way, from a young lamb or kid to the smallest grasshopper or other insect, locusts and coleoptera in the more desert regions affording the species abundant food. The Raven also feeds on the eggs of other birds and has been seen carrying off an egg in its bill. The note of *C. c. tingitanus*, a hoarse *caw*, is thought by some authorities to differ from that of the common Raven. Like that species, however, it has other notes besides its usual call-note. A tame Raven I have in my garden at Palermo possesses quite an extensive *repertoire*, some of its notes being exceedingly soft and inusical, while others are the reverse. At times it seems to be discoursing to itself in a low key, and the sounds it then utters might easily be mistaken for those of the human voice. The bird, which was brought up from the nest, is remarkably tame and familiar, so much so indeed, as to be rather

troublesome at times, though always most amusing. Like others of its kind, however, it is a sad thief, having, *inter alia*, a special liking for door keys. These it extracts from their sockets, and hides in some out of the way spot, where they are sometimes found months afterwards.

C. c. tingitanus commences nesting operations in March, as a rule, and by the beginning of April eggs may be found in the more southern districts. At Ras-el-Aioun, near Gafsa, I found full clutches by the middle of April, and at Djebel Semama and Djebel Selloum about a fortnight later. In every instance the nest was placed in some hole in a high river bank or cliff, and not in a tree, although trees were plentiful in the two latter districts.

C. corax also seems to prefer cliffs and rocks as sites for its nest, although it also frequently builds in trees. That Irby's Raven, however, nests in trees as well as in cliffs is undoubted, as Dr. Koenig found it breeding in Aleppo-pine trees near Batna (J. f. O. 1899, p. 94), and Taczanowski also seems to have observed the same fact, and moreover apparently found the species nesting in colonies, as he mentions having "counted as many as twenty nests within a short distance"—presumably of each other. Canon Tristram too, when writing of the breeding of these birds, says that "although not breeding in communities, the nests are frequently within a few yards of each other" (*Ibis*, 1859, p. 291).

The high marl banks of the Tunisian *oueds*, which are really small cliffs, are favourite sites for the nest of this Raven, and when built in such places, they are generally inaccessible, save to the bare-footed Arab urchins, who scale the crumbling sides like cats. The nests are composed of a few sticks, loosely put together, and lined with a little wool or camel's hair, and occasionally a bit of rag or cotton stuff from some Arab encampment. The eggs vary in number from four to six, and resemble small examples of those of *C. corax*, being generally of a pale sea-green, plentifully spotted all over with small spots and larger blotches and streaks, the shell-marks being grey, and the surface-marks blackish-brown. Eggs in my collection vary in measurements from 44 to 53 × 30 to 34 mm.

CORYUS UMBRINUS, Sundevall.

BROWN-NECKED RAVEN.

Coryus umbrinus, Sundevall, *K. Vet. Ak. Handl.* 1838, p. 198, (*ex Hedenborg M.S.*); Sharpe, *Cat. Birds Brit. Mus.* iii, p. 17; Erlanger, *J. f. O.* 1899, p. 495.

Description.—**Adult**, winter, from Tatahouine, South Tunisia.

Entire head, neck and mantle umber-brown; rest of upper plumage brownish-black, with violet reflections; tail and quill-feathers darker; underparts dark umber-brown; bill rather straight and fine.

Iris dark brown; bill and feet blackish.

Total length 20·50 inches, wing 15·35, culmen from gape 2·50, tarsus 2·65.

Adult female similar to the male.

A young bird from Djerba differs from adult examples in having a decided bottle-green gloss on its primaries, and in being generally rather darker in coloration.

Observations.—I see no reason to unite this Raven specifically with *C. corax*, as some authors have done, for, besides its brown coloration, its very differently shaped bill appears to be a good distinguishing character.

The first intimation I had of the existence of this Raven in Tunisia was in 1895, when on reading over Mr. Aplin's report of his collecting trip in the Regency, I found mention made of his having met with *brown-headed* Ravens near Tatahouine. It was not, however, until some time afterwards that I obtained, through the naturalist Blanc, undoubted specimens of the bird, and was able to verify this interesting fact. The same year Baron v. Erlanger, when travelling in South Tunisia, also met with this species, and included it in his list of Tunisian birds. (*J. f. O.* 1899, p. 495.)

C. umbrinus is common in North-east Africa and Palestine, its range extending eastward into Asia, as far as Baluchistan, and it had hitherto been looked upon as an eastern species, till its occurrence in the Cape Verde Islands, and now in Tunisia, upset that opinion. Whether the form met with in the Cape Verde Islands is exactly the same as that found further east I cannot say. From Algeria

and Marocco this species does not appear to have been recorded so far, but it may possibly occur in some of the southern districts of both those countries. In Tripoli I think there can be no doubt that it occurs, though Mr. E. Dodson failed to secure any specimens of it when recently collecting in that country.

In Tunisia, *C. umbrinus* is apparently to be met with only in the extreme southern districts, but where the species occurs it appears to be fairly common. According to Mr. Aplin and M. Blanc, it is to be found near Tatahouine, Metamur, Medenine, Oglet-Ksar, and Djerba, or in fact throughout the greater part of the south coast region of the Regency, from Gabès down to the Tripoli frontier.

The species appears to be generally met with in pairs, although at times in flocks; and Erlanger mentions having shot one of these birds near Medenine, which was in the company of several individuals of *C. c. tingitanus*, searching for food on some rubbish heaps. The same author obtained from Paul Spatz, of Gabès, a clutch of four eggs, said to be of the present species, which were taken from a tree on March 19th, 1898. The ground colour and marking of these eggs seem to have been a little paler than those of the eggs of *C. c. tingitanus*.

According to other authors, *C. umbrinus* builds its nest in cliffs and among rocks, as well as in trees, depositing from four to six eggs similar to those of *C. corax*, but richer in colour, and measuring about 43×31 mm.

Order PICARLÆ.

Family CYPSELIDÆ.

CYPSELUS APUS (Linnæus).

SWIFT.

Hirundo apus, *Linn. Syst. Nat.* i, p. 344 (1766).

Cypselus apus, *Illiger, Prodromus*, p. 229 (1811); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 18 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 100 (1867); *Koenig, J. f. O.* 1888, p. 165; *id. J. f. O.* 1892, p. 360; *Whitaker, Ibis*, 1896, p. 96.

Micropus apus, *Hartert, Cat. Birds, Brit. Mus.* xvi, p. 442.

Apus apus, *Erlanger, J. f. O.* 1899, p. 515.

Description.—**Adult male**, spring, from the town of Tunis, North Tunisia.

General colour of plumage dull blackish-brown, with a slight metallic gloss; chin and upper throat greyish-white.

Iris, bill and feet very dark brown.

Total length 7·50 inches, wing 7, culmen from gape 0·65, tarsus 0·55.

Adult female resembles the male.

The young birds have pale margins to the feathers.

The common Swift appears to occur throughout North-west Africa generally as a summer migrant, but is more abundant in some localities than in others. The first arrivals in spring are generally to be seen in Tunisia about the end of March, after which date fresh visitors keep pouring in until the vernal migration ceases. The bulk of the migrants continue their course northward, but many remain and breed in the town of Tunis, and other places in the north of the Regency. In some of the southern districts also the species appears to breed, and Baron v. Erlanger mentions having found it nesting at Gafsa (*J. f. O.*, 1899, p. 516). I myself have specimens from that town obtained in the month of May.

Until recently it was supposed that *C. apus* never bred south of the Mediterranean, being there entirely replaced, as a breeding species,

by the Pallid Swift, but later and more careful observations have proved this supposition to be wrong. On the contrary, as I have already stated above, many of these Swifts breed in Tunisia, and out of a large series of specimens of the two species, which were sent me from Tunis in the month of June, fully half of the birds proved to be of the present species.

In the choice of its summer quarters the Swift evinces a marked preference for certain localities, and like the common Swallow, may be found abundant in one spot, and entirely absent in another close by, which apparently offers the same attractions of food and environment. In Sicily, the Swift is to be found in summer in vast numbers in some of the towns on the west and south-west coast, but is totally absent from many others, where one might expect it to be equally abundant.

As already mentioned, *C. apus* reaches Tunisia in spring about the end of March, but occasionally a few of the birds may be seen before that date, particularly in the more southern districts. At Kairouan I have found the species, together with *C. murinus*, at the beginning of April, in certain numbers, hawking for insects around the Great Mosque of Sidi-Okba. Mr. Aplin, when collecting in Tunisia in 1895, found both species in large numbers at Kairouan and at El-Djein towards the end of April, and wrote to me regarding the birds as follows:—

“In an old disused Mosque court-yard at Kairouan, I saw *C. apus* enter a hole in the roof. At the big Mosque I saw Swifts more numerous by far than at any other place I have been in. Many were about the town, but most were collected here. As I stood on the tower, a perfect swarm, like bees, were in the air around me, and as I looked down on the dazzling white court, it seemed full of them, darting about, low down over the hot pavement. On the tower the birds passed close to me, and I had a very good opportunity of observing them. *C. apus* was present, but by far the greater number were *C. pallidus*, looking on the wing, almost as brown as *C. melba*, and as they pass close above you, the large extent of white throat is apparent. The cry of *C. pallidus* is a little different from that of *C. apus*, being less resonant, and like ‘*swee-a*,’ or simply ‘*swee*,’ One or two White-rumped Swifts were among the swarm, chubby looking little birds, but without the dash of the bigger birds.”

Mr. Aplin again met with Swifts in the wooded districts of North

Tunisia and near Ghardimaou, in the month of May. Baron v. Erlanger also found the common Swift in the forest districts of North Tunisia, where the species was breeding in the holes of Cork and Ilex-oak trees (J. f. O. 1899, p. 515). This fact is interesting, as the sites usually chosen by the Swift for its nest are holes in buildings, often in old towers and church steeples, as also sometimes in cliffs and unused quarries, but rarely in trees.

The autumnal migration of *C. apus* in Tunisia seems to commence about August 20th, and by the beginning of September the greater part of the birds have disappeared. I cannot hear of the present species, or indeed of any of the Swifts, wintering in the Tunisian Regency, or in any part of North-west Africa. The small White-rumped Swift would be the one most likely to be found sedentary there, as it appears to be so in Palestine and some other Eastern countries, but so far as I am aware, even that species is only a migrant in North-west Africa.

The note of the common Swift, generally to be heard as the bird dashes swiftly past one, is harsh and piercing. Its long narrow wings, with its wonderfully developed pectoral muscles and its conformation generally, admirably qualify the bird for rapid progress through the air, and its powers of flight are remarkable. I was once somewhat surprised to see a Swift flying comparatively slowly and in an eccentric fashion round a building in course of construction, and my surprise was still greater when soon after I saw the bird suddenly dash itself against a wall and remain on an underlying parapet motionless, and apparently lifeless. On obtaining the bird, with the assistance of one of the workmen, I found that it was not dead, but only dazed, though judging from its draggled appearance it was evidently suffering from some malady. I put it in a quiet nook in a garden, out of the reach of cats and such-like marauders, expecting to find it dead the following morning, but on returning to look for it, found it had disappeared.

The food of the Swift seems to consist entirely of winged insects. The breeding season of the present and other species of Swifts in Tunisia is rather a late one, and does not commence, as a rule, before May. Its nest is generally composed of a little straw and stems of plants, with a few feathers, the whole being matted together with a glutinous secretion from the bird's mouth.

The eggs are usually two in number, and are of a pure unglossed white, their average measurements being 25×17 mm.

CYPSELUS MURINUS, Brehm.

PALLID SWIFT.

Cypselus murinus, *Brehm, Vogelfang*, p. 46 (1855).

Micropus murinus, *Hartert, Cat. Birds Brit. Mus.* xvi, p. 446.

Cypselus pallidus, *Koenig J. f. O.* 1892, p. 361; *Whitaker, Ibis*, 1896, p. 97.

Apus apus murinus, *Erlanger, J. f. O.* 1899, p. 516.

Description.—**Adult male**, spring, from the town of Tunis, North Tunisia.

General colour of plumage mouse-grey, rather paler on the forehead, and darker on the wings and tail; chin and throat white; a dark spot immediately in front of the eye.

Iris, bill and feet dark brown.

Adult female similar to the male.

Observations.—The present species is considered by some ornithologists to be but a form, or sub-species of *C. apus*, but the mere fact of its occurring and nesting in the same localities as that species, and yet preserving its identity, should be sufficient to entitle it to full specific rank.

The Pallid Swift is common in Tunisia as a summer migrant, arriving together with the preceding species, about the end of March, or beginning of April, breeding in the Regency, and leaving again for the south on the approach of autumn. I know of no instance of the species wintering in Tunisia.

In both Algeria and Marocco the Pallid Swift is common in spring and summer, and I cannot say I notice any appreciable difference between examples from the latter country and those from Tunisia. In South Spain, and in Madeira and the Canaries, the present species is also to be met with, though another form, the smaller and darker *C. unicolor*, seems to occur as well in some of the Canaries and in Madeira.

In Malta the Pallid Swift has occurred occasionally as a straggler, and two examples of the species from that island are to be found in the Florence Museum, as well as one captured in Italy itself, this latter having been obtained at Spezia in 1887. According to Count Arrigoni, this Swift occurs in Italy more often than is generally supposed to be the case and in 1903 no less than thirteen examples of it appear to have been obtained from Taranto in the south of the Peninsula (*Man. Orn. Ital.* p. 143).

Throughout the spring and summer months *C. murinus* is remarkably abundant in some Tunisian towns, and, as mentioned in the preceding article, in certain favoured localities the species simply swarms and may be seen in vast numbers, often in the company of *C. apus*, busily engaged in hawking for food.

The once sacred City of Kairouan, with its numerous Mosques and Zaouias, seems to have a particular attraction for Swifts, the centre of this attraction being the Great Mosque of Sidi-Okba, one of the finest Moorish edifices in existence, in the construction of which Roman spoil seems largely to have been employed. From the spacious cloistered court of the Mosque rises a lofty quadrangular tower, or minaret, whence a magnificent view of the surrounding country is to be obtained. Another favourite haunt of the Swifts is El-Djem, the site of the ancient city of Thysdrus, with its wonderful amphitheatre, around and about which myriads of these birds may be seen disporting themselves throughout the day.

In the town of Tunis itself considerable numbers of the Pallid Swift are to be met with during the spring and summer, and no doubt the species is common in several other towns of the Regency, although like *C. apus*, it shows a preference for certain places and is absent from others.

In its habits generally the present species resembles the common Swift, but its note, according to Mr. Aplin, differs somewhat from that of *C. apus*. Its nest and eggs resemble those of that species.

CYPSELUS AFFINIS GALILEJENSIS (Antinori).

PALE WHITE-RUMPED SWIFT.

Cypselus affinis, *Gray and Hardw. Ill. Ind. Zoology* i, pl. 35, fig. 2 (1832); *Koenig, J. f. O.* 1888, p. 165; *id. J. f. O.* 1892, p. 361; *Whitaker, Ibis*, 1895, p. 102.

Micropus affinis, *Hartert, Cat. Birds Brit. Mus.* xvi, p. 453.

Micropus koenigi, *Reichenow, Orn. Monatsb.*, 1894, p. 191.

Apus affinis koenigi, *Erlanger, J. f. O.* 1899, p. 517.

Description.—**Adult male**, spring, from Ras-el-Aioun, South Tunisia.

Forehead very pale mouse-grey, becoming darker on the crown and nape, and dark blackish-brown on the back; rump pure white; upper tail-coverts,

tail and wings mouse-grey; chin and throat pure white; breast, abdomen and flanks blackish-brown; crissum and under tail-coverts mouse-grey, slightly edged with whitish.

Iris, bill and feet dark brown.

Total length 5·25 inches, wing 5·25, culmen from gape ·50, tarsus ·40.

Adult female similar to the male.

Observations.—The White-rumped Swift found in Tunisia has been separated by Dr. Reichenow from typical *C. affinis*, under the name of *M. koenigi* (Orn. Monats. 1894, p. 191), but it so closely resembles *C. affinis galilejensis* (Ant.), that I cannot but refer it to that subspecies. Examples from Tunisia are perhaps generally a trifle paler on the forehead than those from Palestine, but the difference is extremely slight. In point of size I do not notice any appreciable difference between the two.

This small Swift, although fairly generally distributed throughout the mountainous districts of South Tunisia, does not appear to occur north of the Atlas, except as an occasional straggler. It is to be met with in certain numbers on the low ranges of mountains bordering the plains lying to the west of Gafsa, where the species breeds, small colonies of it being found nesting on the Djebel Tfel, the Djebel Seldja and other hills in that district. I have also specimens of the bird, or notes of its occurrence at Sobria, south of the Chott Djerid, and various places in Central Tunisia. The Djebel Meda, near Gabès, appears to be much frequented by this Swift and has at least one breeding colony of the species.

So far as I have been able to ascertain, the present species arrives in South Tunisia, together with other Swifts, towards the end of March and beginning of April, and after nesting, leaves again towards the end of August, or early in September. Although the species is said to be sedentary in Palestine and further east, I cannot hear of its being so in the Tunisian Regency, or indeed anywhere in North-west Africa, and conclude, therefore, that its winter quarters are further south. The species, either in its typical, or in a slightly darker form, appears to occur in West and South Africa right down to the Cape.

In South Algeria the White-rumped Swift doubtless occurs, as it does in Tunisia, though I have no positive information regarding this. From Morocco I have examples of it, which were obtained in spring near Morocco City, and at Mazagan on the west coast. These particular specimens are rather darker than Tunisian examples, but I

have recently seen other specimens from Marocco which appear to be identical with Tunis birds.

In Europe the species has occurred occasionally as a straggler, and at least two examples of it have been obtained in Italy, one of these, a male, having been captured near Rome in July, 1890, the other at Genoa, in May, 1890. The former is preserved in the Royal Florence Museum under the Register number 3240, and the latter is in the collection of Sig. S. Queirolo, of Genoa. In its general habits this small Swift resembles its larger congeners to a great extent and will consort with them when hunting for insects. Mr. Aplin saw one or two individuals of the species flying about the Great Mosque at Kairouan, together with *C. apus* and *C. murinus*. Had only *C. melba* also been present on that occasion, he would have had the possibly unique experience of seeing no less than four different species of Swift on the wing together at the same time.

The flight of the White-rumped Swift, although Swift-like, is less rapid than that of the larger species, and as a rule, not so lofty, indeed the bird will constantly pass close over one's head, or within a few yards of the ground.

As above mentioned, the present species breeds in colonies, choosing, usually, for this purpose caverns on mountain sides, the nests being placed close to each other, and attached to the roof or walls of the cave, or under a projecting ledge of rocks. As a rule they are at a considerable height from the ground, and inaccessible without the aid of a ladder, or other similar appliance, but Baron v. Erlanger seems to have found one of these colonies on the Djebel Freiou, where the nests were quite accessible, being merely a few feet from the ground. The nests, like those of some others of the genus, are firmly stuck to the rock by means of a viscid secretion produced by the bird, and at a distance have the appearance of large hornets' nests. I have no eggs of the species from Tunisia, but presumably they do not differ from those taken in Palestine, which are elongated in shape, of a pure unglazed white, and measure about 22×13 mm.

In my article on *Chelidon urbica* I have alluded to a mixed breeding colony of that Martin and the present species, which I discovered in a mountain gorge near Metlaoui, in South Tunisia. The site chosen by this colony was in a recess or cavern, hollowed out of the mountain side by the river Seldja, which runs through the gorge, and in times gone by, must have been a far more important river than it is at the

present day, to judge from the effects of its action on the hard rocks forming its banks.

The nests of the two species, *C. affinis galilejensis* and *C. urbica*, which seemed to be intermingled together, were placed at the top of the cave, where it commenced to arch over, and at a height of about forty feet from the ground. Apparently the two species were living in perfect harmony with each other.

CYPSELUS MELBA (Linnæus).

ALPINE SWIFT.

Hirundo melba, *Linn. Syst. Nat.* i, p. 345 (1766).

Cypselus melba, *Illiger, Prodrromus*, p. 230 (1811); *Loche, Expl. Sci. Alg. Ois.* ii, p. 98 (1867); *Koenig, J. f. O.* 1888, p. 165; *id. J. f. O.* 1892, p. 360; *Whitaker, Ibis*, 1894, p. 95.

Micropus melba, *Hartert, Cat. Birds, Brit. Mus.* xvi, p. 438.

Cypselus alpinus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 18 (1846).

Apus melba, *Erlanger, J. f. O.* 1899, p. 513.

Description.—**Adult male**, spring, from Ain-Rhorab, Central Tunisia.

Above pale mouse-grey, with a faint metallic lustre, darker on the quills and tail; most of the feathers with paler fringes; chin, throat and abdomen pure white; pectoral band, flanks, crissum and under tail-coverts mouse-grey, margined with whitish.

Iris and bill very dark brown, feet livid brown.

Total length 8·50 inches, wing 8·60, culmen from gape ·90, tarsus ·60.

Adult female similar to the male.

Observations.—Specimens vary slightly in shade of colour, two in my collection from South Tunisia, being rather paler than the generality of these birds, but I cannot say whether this difference is constant in a large series, and in any case it is extremely slight. Herr v. Tschusi has, however, recently described a bird of this species from Tunisia as a new form under the name of *Apus melba tuneti* (*Orn. Jahrb.* xv, Heft 4, p. 123).

The Alpine Swift occurs commonly in Tunisia as a regular summer migrant, arriving together with the other species of Swifts, towards the end of March, or the beginning of April, and leaving again on the

approach of autumn. Although a large portion of the migrants pass on northwards, many remain and breed in the Regency, selecting the higher mountains and most inaccessible spots for that purpose.

The Alpine Swift is eminently a mountain species, and in the midst of such surroundings as these, may be seen to the greatest advantage, no bird seeming more in its element than this fine Swift, as it dashes past on its powerful wings, and circles round and round the precipitous cliffs, where its nest is placed.

The species occurs commonly both in Algeria and Marocco, as well as in Tunisia, and probably breeds in both those countries.

During the early days of April I met with many of these Swifts on migration, crossing the low ranges of hills to the west of Gafsa, and as the birds were flying at a comparatively low altitude, was able to secure a few specimens.

At Gafsa itself, and also at Ain Rhorab, near Kairouan, I have seen large numbers of Alpine Swifts at different times during the month of April.

The cry, or note of the species, is loud and harsh, and may constantly be heard. Its food consists entirely of winged insects.

Like other Swifts, the present species commences nesting rather late in the spring, and apparently only one brood is reared in the season. As I have already stated, in Tunisia the species breeds in inaccessible spots among the higher mountains, but in Southern Europe it will sometimes select a high tower or other similar building as a site for its nest, and Mr. Howard Saunders says that the species formerly bred annually in the old Cathedral at Berne (*Man. Brit. Birds*, p. 253). I have never succeeded in actually taking a nest and eggs of this Swift in Tunisia, but they are no doubt identical with those obtained in Europe, the nest being saucer-like, and constructed of straw and feathers felted together with mud, and agglutinated with the bird's saliva, while the eggs, two to four in number, are pure un glossed white, and measure about 30×19 mm.

Family CAPRIMULGIDÆ.

CAPRIMULGUS EUROPÆUS, Linnæus.

NIGHTJAR.

- Caprimulgus europæus**, *Linn. Syst. Nat.* i, p. 346 (1766); *Hartert, Cat. Birds Brit. Mus.* xvi, p. 526; *Malherbe, Faune Orn. de l'Alg.* p. 9 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 102 (1867); *Koenig, J. f. O.* 1888, p. 164; *id. J. f. O.* 1892, p. 359; *Whitaker, Ibis*, 1895, p. 102.
- C. vulgaris**, *Malherbe, Faune Orn. de l'Alg.* p. 9 (1855).
- C. europæus meridionalis**, *Erlanger, J. f. O.* 1899, p. 519.

Description.—**Adult male**, spring, from near the town of Tunis, North Tunisia.

General colour above ashy-grey, finely pencilled and marked with blackish-brown; crown broadly streaked with black; scapulars and wing-coverts richly marked with blackish-brown and buff; quills irregularly barred with rufescent-buff; the three outer primaries with large white patches on the inner webs; tail irregularly barred with blackish-brown, the two outer rectrices on each side broadly tipped with white; throat buff, finely pencilled and barred with blackish, the lower part with some conspicuous white feathers, the sides margined with rufescent-buff and black; sides of the head with elongated rufescent-buff feathers, margined with black; breast and abdomen grey-buff, pencilled and irregularly barred with brown; crissum and under tail-coverts yellowish-buff, barred with dark brown; claw of middle toe serrated; mouth furnished with bristles on its sides.

Iris black; bill black; feet reddish-brown.

Total length 10·50 inches, wing 7·80, culmen from gape 1·20, tarsus 0·75.

Adult female resembles the male, but lacks the white patches on the wings and tail, these being replaced by yellowish-buff patches. In size the female is usually larger than the male, but the difference is slight.

The Common Nightjar or Goatsucker is of regular passage in Tunisia, the bulk of the migrants arriving, on the way north, in April and May, and returning southward in the early autumn. Those that remain and breed in the Regency, depart together with the migrants returning from the north in autumn, and I know of no instance of the species wintering in Tunisia.

In Algeria and Marocco the Nightjar occurs more or less abundantly, as it does in Tunisia, although in Marocco, according to Favier, it is less numerous near Tangier than *C. ruficollis*.

From Tripoli I have specimens of *C. europæus*, obtained in the month of April.

During the spring months the Nightjar is very abundant in some of the wooded districts of the Regency, as is also the case throughout most Mediterranean countries. In Sicily, during the last week of April and the first fortnight of May, the number of Nightjars passing is sometimes so great that between fifty and one hundred birds are occasionally killed by a single "cacciatore" in a day. I recollect a friend of mine at Palermo once bringing home no less than sixty-four Nightjars, which he had shot in one morning on a small property he owns near that town, and he told me that he might have killed several more.

As the flight of this species is at times rather puzzling, Nightjar shooting, as a sport, is considered by no means despicable by the Sicilian sportsman. Whether the same can be said of the flesh of this bird as an article of food I cannot say, but large numbers of Nightjars are certainly eaten in Sicily and in other countries where the species is plentiful.

The habits of the Nightjar are interesting, but owing to the bird being more or less crepuscular and nocturnal, they are not perhaps observed as often as they otherwise would be. During the daytime the Nightjar generally stays quietly in some thickly foliaged tree, whence it only comes forth towards sundown in pursuit of insects. The bird's mode of resting (one can hardly call it *perching*) is peculiar, the body being stretched lengthwise along a branch and pressed closely thereto, which no doubt aids the bird in escaping detection. Whether the object of the pectinated claw found in birds of this family is to enable them to cling more closely to branches when in this position, it is difficult to say, but the theory is at least as tenable as that of its serving to clean their rectal bristles, or enabling them to take a better hold of their prey. The last supposition, indeed, should be put aside entirely, as the birds' feet are probably never used for the purpose of seizing or holding the insects on which they prey, the latter being captured with the mouth and chiefly on the wing.

Moths and winged-beetles form the principal food of this and other members of the family, though caterpillars and grubs of various kinds are also eaten by them.

Owing to its erratic flight and to its peculiar habits generally, the Nightjar is looked upon by many people as a foolish bird, although

others contend that it is anything but stupid, but on the contrary, most intelligent, and particularly clever in eluding pursuit and escaping from its enemies. Hence, in Sicily the bird goes by the name of "Nganna-fuoddi," or "the deceiver of the foolish."

The fact probably is that, as in the case of some other species, the Nightjar's sight is not suited to the strong daylight, and that when observed in the daytime, the bird's behaviour and movements appear somewhat strange. Its rapid twisting flight is, however, easily explained by the nature of the insects it pursues.

The Nightjar's usual "*churring*" note is uttered by the bird when resting. When flying it is said to utter a sharp whistle, and also to clap its wings together quite audibly. It is fond of settling in the middle of a bare road or pathway, and if undisturbed, will remain there motionless for a considerable length of time.

The species makes no nest, but deposits its eggs, two in number, on the bare ground, or in a slight hollow, among the undergrowth of a wood or plantation.

The eggs are considerably elongated in shape, and are of a glossy greyish-white colour, streaked and marbled with violet-grey and brown. Average measurements 29×21 mm.

The Nightjar which breeds in Tunisia has been separated subspecifically from typical *C. europæus* on the ground that it differs from that species both in size and coloration. I have in my collection from Tunis no Nightjars obtained later than the month of April, and am not therefore perhaps in a position to speak authoritatively on this point. The specimens I have from the Regency, and which I have compared with South European examples, do not certainly differ from the latter either in size or coloration, and cannot be referred to anything but *C. europæus*. Both in size as well as in shade of colouring I may observe there is a certain amount of individual variation in this species, and in a series of some thirty specimens from Sicily at present before me some examples are dark and others pale, while the length of the wing in males varies from 7.40 to 8.10 inches, and in females from 7.50 to 8.30 inches.

CAPRIMULGUS ÆGYPTIUS ISABELLINUS (Temminck).

ISABELLINE DESERT-NIGHTJAR.

Caprimulgus ægyptius, *Licht. Verz. Doubl.* p. 59 (1823). *Hartert Cat. Birds Brit. Mus.* xvi, p. 562; *Malherbe, Faune Orn. de l'Alg.* p. 9 (1855); *Koenig, J. f. O.* 1888, p. 165; *id. J. f. O.* 1892, p. 360; *Whitaker, Ibis*, 1895, p. 102.

C. isabellinus, *Temm. Pl. Col.* 379 (1825); *Malherbe, Faune Orn. de l'Alg.* p. 9 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 105 (1867).

C. ægyptius saharæ, *Erlanger, J. f. O.* 1899, p. 525.

Description.—**Adult male**, spring, from Tozer, South Tunisia.

General colour of plumage above bright sandy-isabelline, finely pencilled, and vermiculated with pale grey; a few narrow black streaks on the crown and sides of the head; some black marking on the scapulars and upper wing-coverts; wings and tail irregularly barred with blackish-brown; greater portion of the inner webs of the quills white; underparts sandy-isabelline, finely barred and vermiculated with light brown; a patch on the throat white; sides, flanks, and under wing-coverts with the barring almost obsolete.

Iris black; bill dark brown; feet light brown.

Total length 10·50 inches, wing 7·70, culmen from gape 1·10, tarsus 0·80.

Adult female similar to the male, but slightly larger.

There are apparently two fairly separable forms of pale-coloured or what might be called Desert-Nightjars, one being grey, the other isabelline. In Egypt both forms seem to occur, and Captain Shelley, as far back as 1872, pointed out this fact, although he did not consider the difference between the two of sufficient importance to call for their separation.

In Tunisia, apparently the isabelline form alone occurs, and to this Baron v. Erlanger has given the name of *C. ægyptius saharæ* (*J. f. O.* 1899, p. 525).

If Lichtenstein's description of his *C. ægyptius* (*Verz. Doubl.* p. 59) be applicable to the grey form, this must no doubt bear his name; but Temminck's name of *C. isabellinus*, if we are to judge by the plate and description given of the bird (*Temm. et Lang., Pl. Col.* 379), undoubtedly appears more applicable to an isabelline-coloured form.

Temminck, it is true, does not seem to have recognised the differ-

ence between the two forms, and merely observes that Lichtenstein's name of *C. ægyptius* is not appropriate, because there are other Nightjars to be found in Egypt. Under the circumstances, however, and considering what I have stated above of Temminck's plate and description being applicable to an isabelline-coloured bird, I think the name of *C. isabellinus* must stand subspecifically, and the Tunisian Desert-Nightjar be referred to it.

In addition to the difference in the general coloration of the two forms, there would seem to be much closer *barring* in the grey form than in the isabelline form, particularly on the sides of the body and under wing-coverts, this *barring* in Tunisian examples being nearly obsolete.

The wing measurement in the two forms does not seem to differ appreciably, that of males being about 7·70 inches, and that of females about 8 inches.

This pale Nightjar occurs in the more southern districts of Tunisia, but is not to be found, except as a straggler, north of the Atlas. In Algeria it is also to be met with south of those mountains, and Dr. Koenig found it not at all uncommon in the neighbourhood of Biskra (J. f. O. 1895, p. 178). North of the Atlas he never met with the species, and Loche is no doubt wrong when he speaks of it as being found in the wooded districts of Constantine.

I have no note of the occurrence of this Nightjar either in Marocco or in Tripoli, but should think that it certainly occurs in the latter country, and possibly also in the former. Although the species is no doubt distinctly a desert one, it occurs as a straggler from time to time north of the Mediterranean, and I have myself obtained an example of it in Sicily (*Ibis*, 1899, p. 475), from which island it had previously been recorded twice. Examples of the species have also been obtained in Malta, and even as far north as England and Heligoland.

In Tunisia this pale Nightjar can hardly be called common, but at the same time it is not by any means rare. I have specimens of it from the neighbourhood of Gafsa, Tozer, and Oglet-Zellés, all obtained during the spring months. Apparently it arrives in the Regency about the middle of March, nests there, and departs again in the autumn. I know of no instance of its being met with in Tunisia during the winter.

In its general habits this Nightjar does not seem to differ from

C. europæus. I have not been fortunate enough to meet with its eggs myself, but Baron v. Erlanger mentions having found two clutches of the species. Two eggs obtained at Oglet-Nachla on May 11th he describes as being of a dull grey-yellow, with hardly perceptible ash-grey shell-marks, and grey-yellow surface-blotches. They measured respectively 34×21 , and 32×21 mm.

CAPRIMULGUS RUFICOLLIS DESERTORUM, Erlanger.

PALE RUFOUS-NAPE NIGHTJAR.

Caprimulgus ruficollis, *Temm. Man. d'Orn.* i, p. 438 (1820); *Hartert, Cat. Birds Brit. Mus.* xvi, p. 531; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 18, (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 104 (1867); *Koenig, J. f. O.* 1892, p. 359; *Whitaker, Ibis*, 1898, p. 126.

C. ruficollis desertorum, *Erlanger, J. f. O.* 1899, p. 521.

Description.—**Adult male**, spring, from Djebel Chambi, Central Tunisia.

Sides of head silvery-grey; centre of head rufous, broadly streaked with black; neck collar tawny-yellow, varied with brown and black markings; back, rump and upper tail-coverts silvery-grey, pencilled and streaked with black; the two central tail-feathers grey, bordered with buff, and irregularly barred with black, rest of tail-feathers rufous-brown, barred with black, the three outer pairs being broadly tipped with white; scapulars and wing-coverts pencilled with grey and brown, broadly bordered with bright buff, and streaked with black; quills dark brown, barred with rufous, the three outer primaries with large white patches on the inner webs; underparts yellowish-buff, faintly barred and vermiculated with brown; a white patch on each side of the throat, some of the white feathers being tipped with black.

Iris black; bill and feet brown.

Total length 12 inches, wing 8, culmen from gape 1.20, tarsus .80.

Adult female resembles the male, but the white patches on the tail and wings are generally smaller.

Observations.—The general coloration of this Nightjar is paler and more rufous than that of specimens of *C. ruficollis* from Spain, which may be taken as typical. The difference is perhaps most marked on the underparts, which, in Tunisian examples, are far less *barred* than in Spanish ones. The white markings on the rectrices and primaries are also generally rather more extended in the Tunisian birds, than in typical *C. ruficollis*. The white

tips are sometimes found on the three outer pairs of rectrices, at other times only on two, while on the primaries, besides the large white patches on the three outer pairs, there is often a small patch, or an indication of one, on the fourth primary.

The form of Rufous-naped Nightjar occurring in Tunisia, and breeding south of the Atlas, has been separated by Baron v. Erlanger, from typical *C. ruficollis*, Temm. on account of its somewhat paler and more rufous coloration (*J. f. O.* 1899, p. 521). This difference appears also to have been noticed, and pointed out by Dr. Hartert, when treating of the *Caprimulgidae* in the British Museum Collection (*Cat. Birds Brit. Mus.* vol. xvi., p. 532), and although slight, it certainly exists, and is apparently constant, as shown by the series of specimens in my collection from Tunisia. The form is no doubt a good geographical one, and must therefore be allowed subspecific rank, although its points of difference or divergence from the typical form are less marked than in the case of some other desert races or subspecies. Presumably there is no migration of this desert form further north than Tunisia, except it be perhaps for an occasional rare straggler. In the more southern parts of Algeria it doubtless occurs, but in Morocco, according to what Erlanger writes, and judging from a single specimen in my collection, obtained near the City of Morocco, the darker form only occurs. Erlanger seems to have noticed a slight difference in colour between specimens he obtained in districts north, and those south of the Tunisian Atlas, although both were always paler than typical *C. ruficollis* from Spain and Morocco. I cannot say I have noticed any difference between the examples in my collection from northern and southern Tunisian districts, all appearing identical in coloration.

The habitat proper of the Rufous-naped Nightjars is South-west Europe and North-west Africa, in the latter of which countries the range of the species extends throughout Morocco, Algeria and Tunisia. From Tripoli there appears to be no record of its occurrence up to the present time, but the species probably occurs there in limited numbers, and in its pale desert form, as in Tunisia. In the Regency this Nightjar, though far from uncommon, is apparently less abundant than it is further west, in Algeria and Morocco, where it seems to be as plentiful in certain districts as it is in South Spain. The species is further reported to occur in some of the Canary Islands. Examples

of it have occasionally been obtained in Portugal, South France, Sicily and Malta, and its capture has been recorded from as far east as Dalmatia, and as far north as England, while Canon Tristram states that he had seen a specimen of the bird at Jerusalem, which he had every reason to believe had been shot close to that city (Fauna and Flora, Palestine, p. 85). An example of this species obtained near Trapani, in Sicily, as recently as June 3rd, 1898, is preserved in the Palermo Museum.

In Tunisia this Nightjar generally arrives towards the end of April, and having bred, departs early in the autumn. Occasional stragglers may be met with late on in the autumn, but I know of no instance of the species wintering north of the Sahara.

In its general habits, as well as in its flight and note, the Rufous-naped Nightjar resembles *C. europæus*, although it seems to be quite as much at home on the arid hill-sides, and among the dwarf-vegetation of the south, as it is in the more humid districts and leafy woods of the north of the Regency. I have obtained examples of it in spring at Ras-el-Aionn in the south, and at the foot of the Djebel Chambi, in Central Tunisia, while, through Blanc, I have specimens obtained from North Tunisia.

A single egg in my collection, of *C. ruficollis desertorum*, from Central Tunisia, obtained at the end of May, is glossy whitish-grey, with large greyish-green shell-marks and a few large brown surface-blotches, distributed evenly over the whole shell. It measures 34×22 mm.

Family PICIDÆ.

DENDROCOPUS NUMIDICUS (Malherbe).

ALGERIAN GREATER PIED WOODPECKER.

Picus numidus, Malherbe, *Mém. Acad. Metz*, 1842, p. 242.

Picus (Leuconotopicus) numidicus, Malherbe, *Rev. Zool.* 1845, p. 375; *id. Cat. Rais. d'Ois. Alg.* p. 15 (1846).

Dendrocopus numidicus, Cab. & Heine, *Mus. Hein.* iv, p. 34 (1863); Hargitt, *Cat. Birds Brit. Mus.* xviii, p. 217; Whitaker, *Ibis*, 1896, p. 97.

Picus numidicus, Loche, *Expl. Sci. Alg. Ois.* ii, p. 79, pl. 9, figs. 1 and 1a (1867).

Dendrocopus numidus numidus, Erlanger, *J. f. O.* 1899, p. 530.

Description.—**Adult male**, spring, from Ghardimaou, North Tunisia.

Forehead light buff, nape crimson, rest of upper parts glossy black, with the exception of the lores, ear-coverts, a patch on each side of the neck, scapulars, and bars on the wings, which are white; the three outer pairs of rectrices are also irregularly barred with white; throat and breast dull white, the latter with a broad pectoral band, or gorget, of black and crimson feathers intermixed; a black moustachial stripe joining the gorget; abdomen soiled white; middle of abdomen, crissum and under tail-coverts bright crimson.

Iris pale reddish; bill dark slate; feet greyish-brown.

Total length 9 inches, wing 5, culmen 1.20, tarsus .90.

Adult female, similar to the male, but without the crimson nape. The young bird has a black forehead and nape, while the fore-part of the crown is crimson.

Observations.—Individuals vary slightly in the proportion of black and crimson on the pectoral gorget, as also in the length of the bill, and size generally, although the species is always rather smaller than our *D. major*. The forehead and underparts of some examples are often very dark, but this is probably due to soiling, and is usually found in specimens obtained in forests, where there happen to be charred trees.

This dark coloration is particularly noticeable in examples obtained in spring and summer, freshly moulted birds having their underparts and foreheads cleaner and lighter in colour.

This Woodpecker, the representative in Tunisia and Algeria of *D. major* (L.) is to be found in most of the oak-forests of the north of the Regency, where it is sedentary, and in some districts not at all uncommon. In Algeria it also occurs in most of the wooded parts north of the Atlas.

In Marocco, however, the species appears to be replaced by a closely allied form, intermediate between *D. major* (L.) and *D. numidicus*, which was distinguished by L. Brehm under the name of *Picus mauritanus* (Naumannia, 1855, p. 274). This form differs from *D. numidicus* chiefly in having the black and crimson band across the breast incomplete, the black stripes on the side of the throat and neck extending only partly across the breast, on the middle of which there are merely a few red feathers. *D. mauritanus* is also said to be slightly smaller, and to have the outer rectrices more distinctly barred with black than those of *D. numidicus*. It is apparently not at all uncommon in some parts of Marocco and Mr. Meade-Waldo found it plentiful in the Atlas region of that country, particularly in the forest of Marmora, to the east of Rabat (*Ibis*, 1903, p. 212).

The Algerian Pied Woodpecker was stated by Malherbe and by Dr. Bolle to occur in the Canaries, but both Canon Tristram and Mr. Godman, when collecting in those islands, met with only *D. major*, or a form of it, which Dr. Koenig has since distinguished subspecifically under the name of *D. major canariensis* (J. f. O. 1890, p. 350). Apparently this form differs from typical *D. major* (L.) in being darker on the under-parts and in having a stouter bill. I may here observe that Count Arrigoni has recently separated the Sardinian Greater Pied Woodpecker from *D. major* (L.) under the name of *D. major harterti*, likewise on account of the dark coloration of its underparts, distinguishing it also from *D. major canariensis*, because of its darker ear-coverts and neck patches (Avicula, 1902, p. 103). The dark colouring of the underparts of the Sardinian bird was first pointed out by Mr. Hartert in 1900 (Nov. Zool. vii, p. 528). It would seem to be a constant character in Sardinian birds, and all the specimens I have seen from that island show it, as well as examples from Corsica; but apparently it is not confined to birds from those islands alone, for I have myself shot similarly plumaged individuals in Piedmont, and it is said to be met with also in specimens from south of the Apennines. The colour is a nut-brown, inclining to chocolate, and differs from the dingy brown, or smoke-grey coloration found in many examples of *D. numidicus*, from Tunisia, and which, as mentioned above, is probably due to the soiling of the feathers. Another species, or form of the Pied Woodpecker showing this brown coloration on its underparts, is *D. pælzami* (Bogd.) from the Caucasus, but this is a smaller bird than *D. major*, and apparently differs slightly from it in other respects.

In Tunisia *D. numidicus* is most often met with in the high oak-woods near Ghardimaou, El Fedja and Ain-Draham, from all of which districts I have examples of the species.

With reference to what I have said of some of these being soiled by contact with charred tree-trunks and branches, I may observe that forest-fires were of common occurrence some years ago, both in Tunisia and Algeria, and considerable damage to valuable property was thereby occasioned. Of recent years, however, the French authorities have taken measures to prevent these fires, which, as a rule, were caused by the Arabs, either wilfully, in order to obtain a richer pasturage for their flocks, or out of sheer carelessness. Mr. Aplin, when collecting in the neighbourhood of Ghardimaou and El

Fedja, found that the woods of that district had suffered greatly from these forest-fires, and in one of his letters to me wrote "that in some parts it was most difficult to make one's way about on account of the thickets of hard blackened stems of the tree-heath, (*Erica arborea* L.) and other shrubs, which used to cover one with black marks, and give one the appearance of having been rubbed all over with a burnt cork."

Some other species of birds from these districts, such as for instance the Tree-creeper, and the Woodlark, also show this soiling of plumage very markedly.

In its note, and in its general habits, the Algerian Greater Pied Woodpecker resembles our European bird, being of a solitary and shy disposition, though less wary and suspicious than the Green Woodpecker. It frequents deciduous woods for the most part, particularly those rich in old trees, in the decayed trunks and branches of which an abundance of the bird's natural food is to be found. This consists mainly of insects and their larvæ, though worms and slugs are also eaten, as well as, it is said, certain berries and seeds. When the bird is probing a trunk or branch for food, the hammering or tapping of its hard and powerful bill may be heard a long way off. The flight of the species, like that of most Woodpeckers, is undulating. In its nesting habits it appears to differ in no way from *D. major*, but I have no positive information on the subject, beyond what is given by Loche, who states that it deposits four or five eggs in the hole of a tree, the eggs being pure glossy white, and measuring about 23 × 18 mm.

DENDROCOPUS MINOR (Linnæus).

LESSER PIED WOODPECKER.

Picus minor, *Linn. Syst. Nat.* i, p. 176 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 22 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 82 (1867).

Dendrocopus minor, *Koch, Syst. baier. Zool.* i, p. 73 (1816); *Hargitt, Cat. Birds Brit. Mus.* xviii, p. 252.

Picus (Leuconotopicus) minor, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 17 (1846).

Picus ledoucii, *Malherbe, Faune Orn. de l'Alg.* p. 22 (1855).

Dendrocopus minor ledouci, *Erlanger, J. f. O.* 1900, p. 1.

Description.—**Adult male**, spring, from Ain-Draham, North Tunisia.

Forehead and lores buff; crown crimson, intermixed with white; nape and a superciliary stripe joining it, as well as a moustachial stripe, black; space round the eye, and a patch on each side of the neck white; ear-coverts buff; remainder of the upper parts black, barred broadly with white on the middle of the back, wings, and outer pairs of rectrices; under parts buff, streaked with black on the sides, flanks and crissum.

Iris pale rose; bill dark slate; feet dark grey.

Total length 5·50 inches, wing 3·40, culmen ·65, tarsus ·55.

Adult female similar to the male, but without the crimson crown.

Observations.—The Lesser Pied Woodpecker found in Algeria was distinguished by Malherbe from typical *D. minor* (L.) under the name of *Picus ledoucii*, chiefly on the grounds of its being smaller than our European bird. My Tunisian specimens, however, show no difference whatever, either in size or coloration, from typical *D. minor*, and I cannot do otherwise, therefore, than refer them to that species.

This small Woodpecker occurs in most of the oak-woods of North Tunisia, and is sedentary there, although not abundant. I have specimens of it from the neighbourhood of Ain-Draham, and it is said to be not uncommon in some of the forests near Ghardimaou.

In Algeria, according to Loche, the species is to be found generally distributed, although nowhere common. Mr. J. H. Gurney and Dr. Koenig have both obtained specimens of it from that country. In Marocco I have no note of its occurrence, but it is probably to be found there also.

The species is said to have occurred in the Azores, but not on any of the other Atlantic islands, so far as is at present known, and even in the Azores Mr. Ogilvie Grant informs me its occurrence is extremely doubtful.

In its habits this little Woodpecker resembles the preceding species to a considerable extent, and like it is active and restless, although somewhat less shy and wary. It frequents the same description of woods, and apparently feeds upon the same insects and their larvæ as *D. numidicus*. I have no information of a positive nature regarding the nidification of this species in Tunisia, but according to Loche this does not differ from that of the Lesser Pied Woodpecker in Europe, the bird laying four or five glossy white eggs in a hole in a tree. Average measurements 19 × 14 mm.

GECINUS VAILLANTI (Malherbe).

ALGERIAN GREEN WOODPECKER.

Chloropicus vaillantii, Malherbe, *Mém. Acad. Metz*, 1846-7, p. 130; *id.*
Faune Orn. de l'Alg. p. 22 (1846).

Gecinus vaillantii, Bonaparte, *Consp. Gen. Avium*, i, p. 126 (1850);
Loche, *Expl. Sci. Alg. Ois.* ii, p. 83 (1867); Whitaker, *Ibis*, 1896, p. 97.

G. vaillantii, Hargitt, *Cat. Birds Brit. Mus.* xviii, p. 41.

G. vaillantii vaillantii, Erlanger, *J. f. O.* 1899, p. 527.

G. vaillantii koenigi, Erlanger, *J. f. O.* 1899, p. 529.

Description.—**Adult male**, spring, from Ghardimaou, North Tunisia.

Forehead and region round the eye dark grey; entire crown and nape bright flame-crimson; the lower part of the nape with a few bright yellow feathers; back green; rump and upper tail-coverts flame-yellow; primaries dull brown, spotted on the outer webs with pale buff; secondaries and wing-coverts dull green; tail dull brown, slightly washed with dull green and distinctly barred with dark brown; a broad black moustachial stripe; chin and throat dull white; rest of the under parts pale greyish-green, faintly barred with dull green on the flanks, lower abdomen, crissum and under tail-coverts.

Iris bluish-white; bill lead-colour above and yellowish at the base of the lower mandible; feet greenish-grey.

Total length 12 inches, wing 6·30, culmen 1·50, tarsus 1·10.

Adult female similar to the male, but with a dark grey crown, the nape only being crimson.

Observations.—Examples of this species occasionally vary somewhat in coloration. A specimen, apparently adult, in my collection, is greyer than the usual form, and another example has its wings of a buff colour. I may here observe that examples of *G. viridis* from Europe, often show a good deal of yellowish-buff colour on their primaries, which is probably merely due to fading.

The Green Woodpecker of North-west Africa, first described by Malherbe (*Mém. Soc. Roy. Acad. Metz*, 1846-1847, p. 130), was considered by him to be intermediate between *G. viridis* (L.) and *G. canus* (Gm.), partaking equally of the characters of each of those species. *G. vaillantii* is, however, fairly distinct from both the above Woodpeckers, and has a clearly defined and circumscribed range of its own, limited apparently to the Atlas region.

In Tunisia the species is resident throughout the better wooded districts of the North-west of the Regency, and is not uncommon in

the higher oak-forests of Ghardimaou, El-Fedja, Ain-Draham, and Camp de la Santé. Baron v. Erlanger also met with it in the Aleppo-pine woods near Ain-bou-Dries, in the high plateaux country further south.

In Algeria this Woodpecker has been met with by various travellers, and seems to be generally distributed throughout the wooded parts of Constantine, and particularly of the Aurés range, and in some districts it is by no means uncommon. In Marocco the species occurs throughout the Atlas districts, and Mr. Meade-Waldo found it very common in the mountains, even above the limit of trees (*Ibis*, 1903, p. 212).

In the description of forest it frequents, *G. vaillanti* appears to show no marked preference, being found equally abundant among deciduous oaks, ever-green oaks, or coniferous trees, and in this respect apparently differs from *G. viridis*, which more or less shuns the latter. In the fine forest country lying immediately north of the Medjerdah Valley, which may be considered as the principal habitat of the species in Tunisia, the lower-lying woods are mostly of cork-oak, while the upper ones are of deciduous oak, with a thick undergrowth of tree-heath, bracken, and other low-growing plants, patches of rich grass land intervening here and there. It is in the higher woods that Woodpeckers, both Green and Pied, are chiefly to be met with, and during the spring and summer months it would be difficult to find more perfect or ideal breeding quarters than these secluded forest retreats, where vegetation is so luxuriant and water is never wanting.

That *G. vaillanti* should also occur in the dry Aleppo-pine woods further south in the Regency, may at first sight seem somewhat remarkable, but it is not so surprising when we consider that these woods are situated on high tableland, at a considerable altitude above sea-level. The temperature of these districts is said to be cool and pleasant during the greater part of the year, excessive heat, even in mid-summer, being unknown there.

In its habits *G. vaillanti* more or less resembles *G. viridis*, being active, restless, and wary; it is indeed far more wary than the preceding species, and extremely difficult to approach. Its flight, like that of *G. viridis*, is dipping and undulating, and its food consists chiefly of insects and their larvæ, which are extracted from the trunks and branches of old trees, or taken on the ground. Ants and their eggs are said to be a favourite food of this bird. Like *G. viridis*,

it is very noisy at times, and its loud ringing or laughing note does not differ appreciably from that of our bird.

Like its congeners, *G. vaillanti* deposits its eggs in a fairly deep hole in a tree, which is bored by the bird itself, if one ready-made exactly to its liking is not to be met with. The eggs, according to Loche, are four to five in number, of a glossy pure white, and measures about 27×19 mm. Baron v. Erlanger found an egg of this species at Ain-bou-Dries, which he says was of a yellowish shade; and much more glossy than the eggs of our Green Woodpecker usually are; its measurements were 26×19 mm.

Subfamily IYNGINÆ.

IYNX TORQUILLA, Linnæus.

WRYNECK.

Yunx torquilla, *Linn. Syst. Nat.* i, p. 172 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 17 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 86 (1867); *Koenig, J. f. O.* 1888, p. 170.

Iynx torquilla, *Licht. Cat. Rer. Nat. Rariss. Hamb.* p. 15 (1793); *Hargitt, Cat. Birds Brit. Mus.* xviii, p. 561; *Koenig, J. f. O.* 1892, p. 370; *Whitaker, Ibis*, 1895, p. 103; *Erlanger, J. f. O.* 1900, p. 2.

Description.—**Adult male**, spring, from Oum Ali, South Tunisia.

General colour above silvery-grey, beautifully pencilled and marked with black, browner on wings; crown barred with brown and white; nape and back broadly striped down the middle with brown and black; scapulars slightly striped with black; primaries dark brown, barred with buff on the outer webs; tail grey, richly pencilled and barred with irregular blackish-brown bands; ear-coverts brown, with a light buff stripe above; throat and upper breast yellowish-buff, finely barred with brown; abdomen whitish, slightly spotted; sides greyish-brown, with cross bars of dark brown; flanks and crissum pale buff, barred with dark brown.

Iris dark brown; bill pale brown; feet greenish-brown.

Total length 7 inches, wing 3.40, culmen .55, tarsus .75.

Adult female similar to the male.

Observations.—There would appear to be a certain amount of individual variation in the coloration of this species, some specimens being darker

and others paler, while the chin and throat are sometimes highly tinged with yellow, and at others almost entirely devoid of that colour.

The Wryneck, or "Cuckoo's-mate," as it is often called in England, is common in Tunisia during the spring and autumn passage, and possibly a few individuals remain and breed in the country, although I have no positive knowledge of their doing so. In winter the species is also occasionally to be met with in the Regency, as it is in some parts of South Europe, indeed from its not unfrequent appearance in Italy during the colder months, one may conclude that a good many individuals of the species winter north of the Mediterranean. In Sicily I have often obtained specimens of the Wryneck in mid-winter.

The bird is of common occurrence in Algeria, and according to Loche, breeds there. In Marocco, it is also to be met with on passage, but does not seem to be as plentiful as it is further east.

Owing to its inconspicuous plumage, and to its natural shyness and unobtrusive ways, this bird is not so often noticed as it otherwise would be, but should the opportunity present itself, its habits and peculiar movements are well worth observing, particularly its mode of capturing insects, for which the long retractile tongue of this bird is admirably adapted. Apparently the diet of the Wryneck is composed entirely of insects, which are obtained by the bird both on the branches of plants and on the ground, ants and their eggs forming an important item in its food. The stomachs of those I have examined have generally contained almost exclusively ants, swallowed whole, a few flies being occasionally found in the mass.

The Wryneck, except in spring, is generally a silent bird, but its note when heard is loud and unmistakable; it also makes a hissing sound, like that of a snake, which is uttered by the sitting bird. The young, when only a few days old, are said to acquire this hissing note, and to develop the extraordinary habit of writhing the head and neck, peculiar to birds of this genus.

The Wryneck breeds in the holes of trees, laying from six to ten glossy white eggs, measuring about 19 × 14 mm.

Family ALCEDINIDÆ.

ALCEDO ISPIDA, Linnæus.

KINGFISHER.

Alcedo ispida, *Linn. Syst. Nat.* i, p. 179 (1766); *Sharpe, Cat. Birds Brit. Mus.* xvii, p. 141; *Malherbe, Faune Orn. de l'Alg.* p. 10 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 94 (1867); *Koenig, J. f. O.* 1892, p. 367; *Whitaker, Ibis*, 1896, p. 97.

A. ispida spatzi, *Erlanger, J. f. O.* 1900, p. 7.

Description.—**Adult male**, spring, Ghardimaou, North Tunisia.

Forehead, crown, nape, moustache, wings and scapulars dull bluish-green, barred and spotted to a great extent with light greenish-blue; back, rump, and upper tail-coverts bright azure-blue, tail dark blue; lores and ear-coverts chestnut; a small stripe running from the base of the upper mandible towards the eye black; entire throat, and a patch on each side of the neck buffy-white; remainder of underparts chestnut, slightly paler on the centre of the abdomen.

Iris black; bill dark brown above, orange below; feet reddish-orange.

Total length 7 inches, wing 2·95, culmen 1·60, tarsus ·35.

Adult female resembles the male, but is rather duller in colouring.

The Kingfisher occurs more or less sparingly throughout the greater part of Tunisia, and is naturally more often met with in the well-watered districts of the north than in the arid regions of the south of the Regency. Although nowhere abundant, according to Blanc, a good many examples are obtained during the autumn and winter months in the immediate vicinity of the town of Tunis.

Unfortunately, like many other brightly-plumaged birds, the present species is in great request *pour la mode*, not only amongst Paris milliners, but generally on the Continent, and in Tunis it is not more respected than elsewhere.

In Algeria and Marocco the Kingfisher seems to be rather more abundant than it is in Tunisia, and in some of the well-watered districts of those countries, where the species is resident and breeds, it is more or less common. In Tunisia the bird is both resident and migratory. It undoubtedly breeds both north and south of the Atlas, and Baron v. Erlanger found a nest containing nearly full-grown nestlings on the Oued Gafsa, while Mr. Aplin constantly met with King-

fishers near Ghardimaou throughout the month of May, and secured a specimen on the 31st of that month.

Though probably preferring the neighbourhood of fresh water, the Kingfisher seems to be equally at home on the sea-coast and on inland salt-lakes. In Sicily the species may often be found frequenting the salt-pans common in some parts of that island. Canals also, of either fresh or salt water, are favourite haunts of this bird, provided they contain sufficiently clear water for it to detect its prey. The Kingfisher's food consists of small fish, varied to a certain extent by crustacea and water insects. Occasionally, as the bird has a voracious appetite, it will seize quite a fair-sized fish, and I once shot a Kingfisher in the act of swallowing a fish as long as the bird itself! Being solitary in its habits, it is nearly always found alone. It may often be seen sitting motionless on some stone or post, or on a bough overhanging water, and intently watching for its prey. It is a silent bird as a rule, but when disturbed suddenly will utter a sharp piercing cry of alarm as it darts away over the water at lightning speed, a glimpse of brilliant blue being all that one sees of the bird. Its Moorish name, "Kandil-el-Behar," or "Light of the Sea," is not inappropriate.

The eggs of this species, five to eight in number, are generally deposited at the end of a long tunnel bored in a river bank, or earth-mound near water, and are placed on the bare ground. They are very round in shape, and of a pure glossy white, measuring about 22×20 mm.

After a careful comparison of specimens of Kingfishers from different parts of Tunisia with a series from Europe, I cannot find any grounds for separating the Tunisian bird subspecifically. (*Cf.* Erlanger, *Jour. f. Orn.* 1900, p. 7.)

Specimens in my collection from Marocco appear to be identical with those from Tunisia.

Family CORACIIDÆ.

CORACIAS GARRULUS, Linnæus.

ROLLER.

Coracias garrula, *Linn. Syst. Nat.* i, p. 159 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 9 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 88 (1867); *Koenig, J. f. O.* 1888, p. 167; *id. J. f. O.* 1892, p. 369; *Whitaker, Ibis*, 1895, p. 103; *Erlanger, J. f. O.* 1900, p. 13.

C. garrulus, *Sharpe, Cat. Birds Brit. Mus.* xvii, p. 15.

Description.—**Adult male**, spring, from El Kef, North Tunisia.

Forehead and chin whitish; crown and nape pale greenish-blue; mantle and scapulars cinnamon-brown; lower back and rump ultramarine-blue; upper tail-coverts, and the two central rectrices dull bluish-green, the other tail-feathers dark greenish-blue, tipped with pale blue, the two exterior rectrices with a small dark patch on their tips; quills black, glossed on their outer webs with dull blue; the outer secondaries bluish-black, the innermost secondaries dull chestnut; greater and median wing-coverts pale greenish-blue, the least wing-coverts rich ultramarine-blue; underparts pale greenish-blue.

Iris hazel; bill blackish; feet yellow-brown.

Total length 12.50 inches, wing 8, culmen 1.30, tarsus .90.

Adult female similar to the male.

Observations.—Occasionally the outermost pair of rectrices project beyond the others, and I have seen a specimen in which these feathers were at least half an inch longer than the rest.

This handsome species is exceedingly plentiful throughout the Regency during the spring passage, the first arrivals being generally observed soon after the beginning of April, after which date these birds are constantly to be seen throughout the remainder of the spring, and until the end of summer, when they return southward. Considerable numbers of Rollers breed in North and Central Tunisia, but so far as I am aware, not in the more southern districts of the Regency.

In Algeria and Marocco the species is as abundant as it is in Tunisia, and has been found breeding by Mr. Meade-Waldo in the Maroccan Atlas, at an elevation of over 6,000 feet above sea-level (*Ibis*, 1903, p. 212).

In North-east Africa the Roller seems to be merely a bird of passage, and no instance of its breeding there is known. The range of this species is apparently a very wide one, extending throughout nearly the whole of the European and African Continents, as well as throughout a considerable part of Asia. It has been known to breed as far north as Sweden and Northern Russia, while its winter quarters are in South Africa, extending down to the Cape.

Towards the end of April the passage of Rollers in Tunisia may be said to be at its height, and when on the march with my caravan along a road lined by telegraph wires, we constantly had small parties of these birds accompanying us for some distance, and perching on the wires immediately in front of us.

The Roller's English name is not inappropriate, as its flight is decidedly "rolling," and at times not unlike that of the Tumbler-pigeon. The bird is of a restless nature, and very wary. Its food consists chiefly of coleoptera and other insects. Its note or cry is harsh and deep, and is uttered by the bird chiefly when on the wing.

In Tunisia the Roller generally selects as a site for its nest a hole in some steep river bank or cliff, in which it deposits from four to six glossy white eggs, with strongly developed pores. The average measurements of the eggs are about 34×27 mm. The nest-hole sometimes extends so far into the bank, that the eggs can only be reached by much digging. In wooded countries holes in trees are often chosen as nesting sites.

Family MEROPIDÆ.

MEROPS APIASTER, Linnæus.

BEE-EATER.

Merops apiaster, *Linn. Syst. Nat.* i, p. 182 (1766); *Sharpe, Cat. Birds Brit. Mus.* xvii, p. 63; *Mallerbe, Cat. Rais. d'Ois. Alg.* p. 17 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 90 (1867); *Koenig, J. f. O.* 1888, p. 168; *id. J. f. O.* 1892, p. 368; *Whitaker, Ibis*, 1894, p. 95; *Erlanger, J. f. O.* 1900, p. 3.

Description.—**Adult male**, spring, from Gafsa, South Tunisia. Forehead whitish, becoming greenish-blue on the sides and higher up

on the crown; remainder of the crown, nape and mantle, glossy rich chestnut-brown; back, scapulars and rump glossy brownish-yellow, tinged with green; upper tail-coverts and tail green, the two central rectrices projecting nearly an inch beyond the others; primaries greenish-blue, fringed on inner webs with blackish; outer secondaries chestnut, fringed with blackish, inner secondaries green; least wing-coverts green, greater wing-coverts chestnut; a stripe from the base of the bill, eye-region and ear-coverts black; chin and upper throat golden-yellow, becoming whitish below the ear-coverts; a narrow black band immediately below the yellow throat; rest of the underparts glossy greenish-blue, the former colour predominating above, and the latter below, and becoming very pale blue on the crissum and under tail-coverts.

Iris deep crimson; bill black; feet brown.

Total length 10 inches, wing 6, culmen 1.50, tarsus .45.

Adult female similar to the male, but rather duller in colouring, and with a lighter black throat-band.

Young birds have the upper part entirely greenish, and have no black throat-band.

Like the preceding species, the Bee-eater is exceedingly abundant throughout the Tunisian Regency as a summer migrant, arriving in spring, and leaving again for the south on the approach of autumn. The earliest date on which I have met with the species in Tunisia has been March 7th, when I observed a flock of these birds flying over the Gafsa oasis. So early a date is, perhaps exceptional, as the bulk of the migrants do not arrive until April, and in North Tunisia many do not appear until May. It is of course not unnatural that the southern oases should be visited by these birds some time before the districts north of the Atlas.

Throughout Algeria and Marocco the Bee-eater is as common in spring and summer as it is in Tunisia. In Egypt and probably throughout North-east Africa generally, the species is abundant on migration, although not so common as *M. persicus*, and apparently, comparatively few of the birds breed in that country. Like the Roller, the present species winters in South Africa, and ranges north throughout a great part of Europe, as also in Asia.

During the height of the spring passage, Bee-eaters positively swarm in some parts of Tunisia. At Gafsa, I have sometimes seen the birds all over the town and oasis, flying low down, and actually hawking for insects in the streets like Swallows. In Sicily, where Bee-eaters are also very common during the spring migration, I have never found the birds so fearless and confiding, but rather the contrary.

Probably, however, this was owing to their being then actually on passage.

In this last-named country the arrival of the "Pizzaferris" or "Iron-bills," as the Bee-eaters are there called, is hailed with delight by the Sicilian sportsmen, being supposed to herald an abundant passage of Quails. Certainly the two species *do* arrive in Sicily together in vast numbers, but so also do many other migrants, assisted by the favourable wind that may be blowing.

In Southern Italy, and probably throughout the Mediterranean sub-region, the spring passage of the Bee-eater, like that of several other migrants, is effected during the early hours of the day. Later on the birds descend from the high altitudes at which they have been travelling, and pass the remainder of the day hunting for food among the olive-groves and other trees, in which they roost, preparatory to the next day's journey.

The return migration of the species in autumn is far less noticeable than the spring passage, but this is probably due to the fact of its being effected during the night, as mentioned by Colonel Irby (Orn. Str. Gib. p. 66).

Bee-eaters migrate in large flocks, and their approach, even at the height at which they travel, is made known long before the birds are actually in sight by their unmistakable cry, which as the flock comes nearer, fills the air with its sound. Monotonous as this cry no doubt is, coming out of the clear blue sky above, it strikes the ear not unpleasantly, and has a certain charm about it, in my particular case perhaps enhanced by old associations. Many pleasant moments have I spent watching these gorgeously plumaged birds wheeling round and round in gradually diminishing circles over some olive-grove, or darting to and fro over the cornfields in pursuit of insects, their brilliant colours flashing in the sun's rays like burnished metal.

The Bee-eater's flight is particularly bold and dashing, almost rivalling that of the Swallow. Like the Roller, the species seems fond of perching on telegraph wires. When perching on trees, or flying low down, the Bee-eater has another note, differing somewhat from that which it utters when high in the air, and the noise a flock of these birds make when settling down in some tree to roost, is a veritable Babel of sound. Orange-groves, as well as olive-groves, are greatly frequented by Bee-eaters for the sake of the bees attracted by

the sweet scented blossoms. Bees seem to be the principal prey of this species, and there is no doubt that the birds devastate many a hive, although they also feed on other winged insects. So bold are they at times in the pursuit of their prey, that they will actually enter a house where hives are kept, and capture the bees, as it were, on their very threshold. I recollect on one occasion, when watching some Bee-eaters at Gafsa, an Arab boy offering to bring me some of the birds alive. True to his word, the urchin appeared the following morning with a dozen or more live Bee-eaters, which greatly to the lad's surprise, I forthwith proceeded to set at liberty. It seems the boy's parents kept bee-hives in a room in their house, and by leaving the door of this room wide open, the birds had been enticed to enter, and then secured by closing the door on them.

The Bee-eater breeds as a rule in colonies, depositing its eggs in holes bored in the ground; the nesting season generally commences about the beginning of May, and is continued throughout June. Mr. Aplin found the species breeding in the neighbourhood of Ghardimaou in North Tunisia, during the month of May, most of the birds seeming to prefer the high perpendicular cliffs for this purpose, but he also dug out a nest with five fresh eggs from the bank of a dry water-course, only about two and a half feet in height.

The holes sometimes extend a long way into the ground, occasionally as much as nine feet or more, and when cliffs or banks are not available, the holes are bored diagonally, or even vertically, into the ground. The amount of labour required for the excavation of some of these shafts or tunnels must be great, and the bills of the poor birds seem often to be worn down considerably in consequence. Old holes, however, appear to be sometimes used for nesting purposes. The eggs, of which five or six form the usual complement, are laid on the bare ground at the extremity of the shaft, and are often surrounded by an accumulation of insects' wings and other similar matter. The eggs are glossy pure white, as a rule very round in shape, and measure on an average 25×20 mm. Occasionally, however, eggs are to be met with of a more elongate shape.

MEROPS PERSICUS, Pallas.

BLUE-CHEEKED BEE-EATER.

Merops persicus, *Pall. Reis. Russ. Reichs.* ii, *Anhang*, p. 708 (1773)

Sharpe, Cat. Birds Brit. Mus. xvii, p. 66; *Whitaker, Ibis*, 1898, p. 126

Erlanger, J. f. O. 1900, p. 6.

M. ægyptius, *Loche, Expl. Sci. Alg. Ois.* ii, p. 91 (1867).

Description.—**Adult**, spring, from Gafsa, South Tunisia.

Forehead white, becoming pale turquoise-blue on the cheeks and over the eyes; remainder of the upper plumage bright glossy-green, slightly washed with blue on the rump and upper tail-coverts; the two middle rectrices, which project about three inches beyond the others, bronze-green, tipped with blackish-green; quills also tipped with blackish-green; a stripe running from the base of the bill below and behind the eye, black; chin golden-yellow, throat bright chestnut; rest of underparts green.

Iris deep crimson; bill black; feet dark brown.

Total length 12 inches, wing 6·25, culmen 1·50, tarsus ·50.

Adult female similar to the male.

In Tunisia this Bee-eater appears to have been but seldom observed, and I have never met with it, but a single specimen from the Regency was given to me by a French innkeeper at Gafsa, who informed me that he had shot the bird in the oasis of that town. He added, moreover, that, although not common in the neighbourhood of Gafsa, the species was to be seen there every year. The only other mention of the occurrence of *M. persicus* in Tunisia, of which I am aware, is that made by the Italian naturalist, Alessi, who records having met with the species between Nefta and Tozer in the Djerid (*J. f. O.* 1892, p. 316).

In Southern Algeria, on the contrary, this Bee-eater seems to be far from uncommon, having been observed by various ornithologists and travellers in that country. Mr. J. H. Gurney, jun., met with it at Ghardaia and Mr. C. Dixon observed it at Biskra, while Dr. Koenig found it plentiful in the Algerian Sahara south of this latter town, the species, according to him, being in some districts more numerous than *M. apiaster*. This being the case, it is difficult to understand why the species should be rare in Southern Tunisia, seeing how common it also is further east; I am inclined to think that the reason *M. persicus* has not been more often recorded from the Regency is

simply owing to the fact that the southern districts of that country have been less visited by naturalists than the corresponding ones in Algeria.

From Marocco I have no note of the occurrence of this Bee-eater, but it may possibly be found there south of the Atlas, as the species appears to occur all along the West African coast, south of the Empire. In Tripoli it probably also occurs, though I have no specimens of it in my collection from that country.

The Atlas Mountains no doubt form the northern boundary of its range in North-west Africa, the few instances recorded of its occurrence further north being probably isolated cases of wanderers.

According to various authorities, *M. persicus* arrives from the south in spring, a little earlier than *M. apiaster*.

In its general habits it appears to resemble that species to a certain extent, though not entirely. Among other things it differs from the common Bee-eater in constantly alighting on the ground when in search of food, and in its flight is also somewhat different. In its breeding habits, however, it differs in no way from *M. apiaster*, nesting in colonies, and placing its eggs in holes or tunnels in the ground. The eggs are also of a glossy white, almost spherical, and merely a trifle smaller than those of the preceding species.

Family UPUPIDÆ.

UPUPA EPOPS, Linnæus.

HOOPOE.

Upupa epops, *Linn. Syst. Nat.* i, p. 183 (1766); *Salvin, Cat. Birds Brit. Mus.* xvi, p. 4; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 17 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 96 (1867); *Koenig, J. f. O.* 1888, p. 169; *id. J. f. O.* 1892, p. 366; *Whitaker, Ibis*, 1894, p. 95.

U. epops pallida, *Erlanger, J. f. O.* 1900, p. 15.

Description.—**Adult male**, spring, from Central Tunisia.

Head, with a well-developed crest, light cinnamon, the foremost crest-feathers broadly tipped with black, and the hindermost with white and black; sides of head, throat, breast and nape pale roseate-cinnamon; upper back grey; lower back and scapulars black, broadly barred with pale buff;

rump white; upper tail-coverts black, slightly tipped with white; tail-feathers black, with a broad white band across the middle and descending obliquely towards the tips of the outer rectrices; quills black, barred with white; the innermost secondaries barred and striped with pale buff; abdomen, crissum and under tail-coverts white; flanks somewhat striped with brown.

Iris brown; bill black at tip and flesh-coloured at base; feet grey.

Total length 12 inches, wing 5·80, culmen 2·30, tarsus ·80.

Adult female resembles the male, but is rather duller in colouring.

The winter plumage is duller than that of spring.

The Hoopoe is one of the earliest summer migrants in Tunisia, the first arrivals being generally observed towards the end of February or beginning of March, after which date, and until the end of April, the migration of the species continues unabated.

By the middle of May, the spring passage may be considered as ended, but throughout the summer Hoopoes may be found in Tunisia, as a considerable number remain and breed in the Regency, both north and south of the Atlas Mountains. The return migration in autumn appears to be far less noticeable than the spring one, owing perhaps to this passage being effected during the night, or in the early hours of the morning. During the late autumn a few Hoopoes are to be seen in the Regency and, I am informed, stragglers occasionally occur in the middle of winter.

Throughout Algeria and Marocco the Hoopoe is as common as it is in Tunisia, and it is abundant in Tripoli also.

As a rule the Hoopoe is to be seen singly, or in pairs, but during the periods of actual migration small parties of the birds may be noticed together, and I have occasionally observed as many as a dozen individuals within a short distance of each other. Wooded country is mostly affected by the Hoopoe, particularly the outskirts of plantations and hedge-rows, and the well-bushed hill-sides, common in some parts of Tunisia, are favourite resorts of the species. The clumps of wild jujube bushes abundant in the semi-cultivated districts are also much frequented by these birds, which may often be seen flitting from bush to bush, their strongly-marked plumage rendering them very conspicuous. The Hoopoe's flight is light and undulating.

The bird may often be noticed on the ground, probing the soil with its long bill in search of food, which consists chiefly of worms, beetles and other ground insects. On the outskirts of villages it may

sometimes be seen close to buildings, hunting for insects on dunghills and refuse heaps.

When on the ground the Hoopoe struts about something after the manner of a pigeon, and when its crest is erected looks very striking, but unless the bird happens to be excited the crest is generally carried folded up at an oblique angle to the crown of the head.

The soft and rather mournful note of the Hoopoe may be heard at a considerable distance, particularly in the open country far away from human habitations, when it is often the only sound that breaks the stillness of the surroundings; it may be rendered best by the monosyllable "poo," softly repeated two or three times. There can be no doubt the bird owes most of its vernacular names as well as its scientific name, to its note and not to its crest.

Few birds are regarded with more superstitious belief, particularly among the Arabs. Numerous legends are attached to it, one of the prettiest being that the Hoopoe was originally a King's daughter transformed into a bird, bearing on its head a crown of gold, but owing to the weight of the precious metal and the persecution its value entailed on its wearer, a crown of feathers was eventually substituted for the more costly insignia of royalty. The Hoopoe was well known to the ancients, and is one of the species often found depicted on their decorative drawings.

The Hoopoe generally breeds in a hole in a tree, but occasionally in a crevice of a wall or bank, where it deposits from four to six eggs of a pale marbled-greenish colour, but owing to the filth which seems almost invariably to be found in this bird's nest, the natural colour of the eggs is often scarcely distinguishable, unless they happen to be quite fresh. Average measurements, 26×17.50 mm.

FAMILY CUCULIDÆ.

CUCULUS CANORUS, Linnæus.

CUCKOO.

Cuculus canorus, *Linn. Syst. Nat.* i, p. 168 (1766); *Shelley, Cat. Birds Brit. Mus.* xix, p. 245; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 15 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 76 (1867); *Koenig, J. f. O.* 1888, p. 166; *id. J. f. O.* 1892, p. 365; *Whitaker, Ibis*, 1894, p. 95; *Erlanger, J. f. O.* 1900, p. 17.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Above bluish-slate; quills brown, barred with white on the inner webs; tail blackish-slate, tipped with white, and with small white spots on each side of the shafts of the feathers; throat and upper breast pale French-grey; rest of the underparts white, barred with blackish-brown.

Iris and eyelids bright golden-yellow; bill blackish above and greenish below, and yellowish at the base of the lower mandible; feet orange-yellow; claws light brown.

Total length 12·75 inches, wing 8·25, culmen ·75, tarsus ·85.

Adult female, spring, from Tunis, North Tunisia.

Resembles the male, but with a brownish tinge on the breast, and buff on the rest of the underparts; some of the tail-feathers more spotted.

Total length 12 inches, wing 7·70, culmen ·70, tarsus ·80.

Young, spring, from Tunis, North Tunisia.

Above rufous, barred with blackish-brown; tail rufous, barred with blackish, and spotted and tipped with white; throat and upper breast buff, barred with brown; rest of underparts cream, barred with dark brown. Very young birds have a small white patch on the back of the crown, and are much darker in colour generally, most of the feathers being fringed with white.

The earliest date on which I have heard the Cuckoo in Tunisia is March 28th, but the species no doubt arrives in the Regency somewhat before that date, and Blanc informs me that he has found it at Tatahouine on the 20th of that month. Although nowhere abundant, it is to be met with generally throughout the wooded country of the Regency, and breeds in the more mountainous districts north of the Atlas. I have immature specimens of the bird obtained during the summer months, and Mr. Aplin found the species in full song in the early part of June in the woods near Ghardimaou. Towards the end of summer most of the Cuckoos depart, but a certain number may be met with throughout the autumn months, and according to Blanc, an occasional straggler occurs in the south of the Regency even in winter. He further states that he *heard one calling* in the Gabès oasis, in December, 1894.

In Algeria and Marocco the species is not uncommon. In Madeira and the Canary Islands it apparently occurs also, but very irregularly, although at times abundantly. Mr. Meade-Waldo mentions it as being particularly numerous on Tenerife in the spring of 1890, when that island was visited by an unusually large number of migrants of all sorts (*Ibis*, 1890, p. 429.)

I have met with the Cuckoo in the semi-desert country of

Tunisia, lying to the west of Gafsa, about the middle of April, but the species probably never breeds in those arid regions, and perhaps the most southern districts where it possibly does so are those between Bou-Chebka and El-Oubira, where I have heard the species calling lustily towards the end of April. According to some observers the males arrive some days before the females, and this is not improbable, as it is the case with some other species.

Owing to its shyness and wariness the Cuckoo is more often heard than seen, but its presence is unmistakably proclaimed by the well-known note uttered by the male, and at times so unceasingly repeated that it becomes monotonous.

The female has a lower and different note, insignificant as compared with that of the male.

The Cuckoo's flight is bold and graceful, and resembles that of some of the smaller Hawks, for which it is not unfrequently mistaken. In Sicily, where the present species and the Red-footed Falcon often arrive together on migration and frequent the same olive-groves in search of insect food, this mistake is constantly made. The spring passage of the Cuckoo in some parts of Sicily, notably near Palermo, is very conspicuous, particularly on days when the "sirocco" or south-east wind happens to be blowing. On such occasions large numbers of the birds may be seen, and many are shot by the native sportsmen when Quail shooting.

The Cuckoo seems to feed almost entirely on insects and their larvæ, hairy caterpillars forming an important item in its diet. The skin of the latter or any other indigestible matter eaten by the bird, is cast up in pellets.

Respecting the peculiar breeding habits of the Cuckoo quite a mass of interesting information has been accumulated and recorded, but a good deal no doubt still remains to be learnt on the subject. The species appears to be entirely polygamous and non-nesting, and places its eggs in the nests of other insectivorous birds, which act as foster-parents and for obvious reasons are usually smaller and weaker than itself. The female is stated to lay five or six eggs, as a rule, in the course of the season, but some authorities assert that she lays as many as twenty; the egg is said to be first deposited on the ground, and then carried by the bird in its bill to the nest she may have selected for its reception and incubation. According to interesting compilations made on the subject, the number of

species known to have been chosen as foster-parents to the Cuckoo's offspring is a large one; Mr. Bidwell gives a list of 119 species, and Dr. Rey one of 146 species.

The coloration and marking of the eggs vary greatly; in some cases, though by no means in all, they resemble the eggs of the foster-parent. A light shade appears to predominate as a rule, either grey tinged with greenish-blue, or grey tinged with pale rufous, and with darker markings.

The eggs are decidedly small for the size of the bird, generally measuring about 23×18 mm. and often less.

Shortly after it is hatched, the young Cuckoo ejects the rightful occupants of the nest, either nestlings or eggs, being materially assisted in this operation by the curious depression or hollow in its back, which seems to have been given it by Nature expressly and solely for that purpose, as it disappears entirely as the bird grows older. The young usurper then absorbs the exclusive and undivided attention of its foster-parents, which, far from resenting what has taken place, and obeying no doubt some mysterious, but irresistible law of Nature, seem to become greatly attached to the stranger, and devote themselves entirely to it, until it is able to shift for itself.

COCCYSTES GLANDARIUS (Linnæus).

GREAT SPOTTED CUCKOO.

Cuculus glandarius, *Linn. Syst. Nat.* i, p. 169 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 15 (1846).

Coccytes glandarius, *Gloger, Handb. Vög. Eur.* p. 451 (1834); *Shelley, Cat. Birds Brit. Mus.* xix, p. 212; *Whitaker, Ibis*, 1898, p. 126; *Erlanger, J. f. O.* 1900, p. 19.

Cuculus abyssinicus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 15 (1846).

Oxylophus glandarius, *Loche, Expl. Sci. Alg. Ois.* ii, p. 74 (1867).

Description.—**Adult male**, spring, from North Tunisia.

Entire upper part of the head delicate bluish-grey, with a well-developed crest; rest of upper parts greyish-brown, the secondaries and wing-coverts tipped with white; tail, with the exception of the two middle rectrices, broadly tipped with white; throat, upper breast, and sides of the neck yellowish-white; rest of underparts whitish, washed with grey on the flanks.

Iris brown ; bill blackish ; feet dark grey.

Total length 15·50 inches, wing 8·25, culmen 1·10, tarsus 1·40.

Adult female similar to the male, but rather smaller.

The Great Spotted Cuckoo is by no means rare in Tunisia, during the spring and summer months, and like the common Cuckoo, is to be met with principally in the northern and more wooded parts of the Regency, where it breeds. The date of its arrival in spring seems to be earlier than that of the preceding species. I have no positive information as regards Tunis, but Colonel Irby mentions February 25th and March 2nd, as the earliest known dates of its arrival in Andalucia, and states that the bulk of the birds appear there between March 7th and 28th (Orn. Strs. Gib. p. 69).

Favier states that the species crosses over from Marocco to Europe as early as January, but this must be exceptional. According to Mr. Howard Saunders the Great Spotted Cuckoo is common throughout the summer in Spain as far north as the vicinity of Madrid, where it breeds in large numbers, generally depositing its eggs in nests of the Magpie and occasionally in those of the Blue-winged Magpie and Raven (Man. Brit. Birds, 2nd ed. p. 289). In Italy the species occurs accidentally as a straggler, and examples of the bird have been obtained there occasionally, chiefly from the Ligurian districts and the island of Sicily. It is said to visit Greece and South Russia, and occurs in summer in Asia Minor, Palestine and North Persia, while in Egypt, Nubia and Somaliland it is a common breeding species. It winters in South Africa and ranges as far as Cape Colony.

According to Loche, this Cuckoo is not uncommon, as a summer migrant, in all the wooded localities of Algeria.

Mr. O. Salvin met with it when travelling in the Eastern Atlas, and states that the wooded hills on the south side of Lake Djendeli, and the neighbourhood of the Madracen, are favourite breeding haunts of the species (*Ibis*, 1859, p. 318).

In its habits and in its note *C. glandarius* differs considerably from *C. canorus*. Captain Shelley says that in Egypt the species may be met with abundantly in the clumps of Sont-trees, usually in pairs, or small family parties, and is by no means shy, often sitting motionless on a bough while one walks beneath the tree (Birds of Egypt, p. 162).

Canon Tristram, in some interesting notes on a journey made by

him through Syria (*Ibis*, 1882, p. 407), states that the species, unlike *C. canorus*, migrates sociably in large bands, and that he more than once met with such flocks.

The note of the male is said to be a harsh "kark, kark," and that of the female "burroo, burroo." When on migration the birds are sometimes very noisy and clamorous. The food of this species consists of insects and largely of caterpillars.

Like the common Cuckoo, the present species is parasitical in its breeding habits, making use of other birds for the hatching of its eggs and the bringing-up of its offspring. In Spain, as mentioned above, the common Magpie, and occasionally the Blue-winged Magpie and the Raven, are made to do duty as foster-parents. In Egypt, the bird chosen appears to be the Hooded-Crow (*C. cornix*), and in Somaliland the Fantail Raven (*C. affinis*), while in North-west Africa the Moorish Magpie (*P. mauritanica*) is said to be selected for the purpose. I have not myself met with the eggs of this Cuckoo, nor have I any information regarding its breeding in Tunisia. Apparently the species deposits a larger number of eggs than the common Cuckoo. Mr. Howard Saunders says he has found as many as four of its eggs in a Magpie's nest, together with six eggs of the latter bird, and in Somaliland Mr. E. Lort Phillips appears to have found no less than eight of its eggs in the same nest with four of *C. affinis*. The eggs are elliptical in shape, and of a pale greenish colour with grey and brown markings. They measure about 31 × 23 mm.

Order STRIGES.

Family STRIGIDÆ.

STRIX FLAMMEA, Linnæus.

BARN-OWL.

Strix flammea, *Linn. Syst. Nat.* i, p. 133 (1766); *Sharpe, Cat. Birds Brit. Mus.* ii, p. 291; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 7 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 91 (1867); *Koenig, J. f. O.* 1888, p. 164; *id. J. f. O.* 1892, p. 358; *Whitaker, Ibis*, 1895, p. 103.

Strix flammea meridionalis, *Koenig, J. f. O.* 1895, p. 171; *Erlanger, J. f. O.* 1898, p. 477.

Description.—**Adult male**, winter, from town of Tunis, North Tunisia.

Facial disc white, with a yellowish-buff ruff or frill, the inner feathers of which are whitish, and the outer ones on the lower part tipped with brown; the region immediately surrounding the eye rufous; upper parts generally yellowish-buff, most of the feathers, particularly on the back, with the terminal portion pencilled with grey, and spotted and streaked with white and dark brown; quills pale orange-buff, becoming white on the inner webs, and barred with greyish-brown; tail yellowish-buff, barred with greyish-brown; entire underparts silvery-white, with a few minute dark spots on the flanks.

Iris almost black; bill flesh-white; tarsus feathered down to toes, which are sparsely clothed with bristles, middle claw with a serrated margin.

Total length 13 inches, wing 11·50, culmen 1·25, tarsus 2·30.

Adult female similar to the male, but rather larger.

The young are at first covered with white down, but assume the plumage of the adult bird long before they are able to fly.

The Barn-Owl is resident, and occurs generally throughout Tunisia, being, however, more often met with in the north than in the south of the Regency. In the immediate vicinity of the town of Tunis itself the species is by no means uncommon, and the Arabs often capture it alive in the holes of the old walls and buildings of the neighbourhood. The Roman ruins, common in many parts of the country, are also frequented by this Owl, the fine amphitheatre of El Djem in particular being one of its favourite haunts.

In Algeria and Marocco the Barn-Owl is to be met with more or less abundantly. Specimens in my collection from the north of the latter country, seem to be rather darker in colour than the majority of those from Tunisia.

Notwithstanding its undoubted utility to mankind in general and to the farmer in particular, this poor bird is as much persecuted in Tunis as elsewhere, for the sake of its feathers, which are greatly in request for ornamenting ladies' hats. The superstitious dislike in which the bird is generally held by ignorant folk may also have a good deal to do with the cruel war which is waged against it.

The food of the Barn-Owl consists mainly of mice of different kinds, but rats and other small mammals are also eaten as well as bats, and occasionally small birds, and even insects. In the desert-districts of the Regency, Jerboas and Gerbilles form the bird's principal prey, and their remains may constantly be found in the nesting holes of this Owl. Its noiseless flight, due to the exquisitely soft character of its plumage, enables it to approach and seize its victim without difficulty, and a single pair of these birds, with their young, are sufficient to keep down the vermin within a considerable radius of their abode. The young have voracious appetites, and in countries where food is scarce it is as much as their parents can do to find a sufficient supply. Loche mentions a case that came under his notice of a pair of Barn-Owls bringing from fifteen to twenty small rodents every night to their brood of three young birds.

Apparently the young are able to walk about, and pick up the food their parents bring them, while still covered with down.

Owing to its strictly nocturnal habits, this species is less often seen than it is heard, its shrill cry or shriek, being plainly audible in the stillness of the night at a considerable distance. Besides this cry, the bird has another and totally different note, which is more of a snort, and which seems to be uttered by both old and young.

The Barn-Owl breeds, as a rule, in old buildings and hollow trees, and occasionally in cliffs, laying three to six pure white eggs without gloss; the average measurements of the eggs are 36×31 mm. No true nest is made, but the refuse of the birds' food, and their castings, may often be found surrounding the eggs or nestlings.

This Owl is subject to considerable variation in coloration, and has been subdivided under various names. Pale examples from Tunisia have been distinguished under the name of *S. flammea*

meridionalis, Koenig (J. f. O. 1895, p. 171), but perhaps without sufficient reason, as the difference in colour does not appear to be constant, or more than that found in some European specimens. I have a specimen from the small island of Djerba in South Tunisia, which has its facial disc and frill pure white, its upper plumage merely tinged with yellow and with no trace of grey, while its underparts are of a pure silvery spotless white. Blanc informs me that he has occasionally obtained similarly plumaged birds in the vicinity of Tunis itself, and considers them merely as cases of albinism. The question no doubt requires further study.

At the meeting of the British Ornithological Club held on June 15th, 1904, the Hon. Walter Rothschild exhibited and made some interesting remarks on a series of Barn-Owls, illustrating the great geographical variation in the species. Among the numerous forms or races treated of, that from Sardinia, described under the name of *Aluco flammea ernesti* (Kleinschmidt), seems most closely to resemble the pale Tunisian birds, but it is doubtful whether any of these light coloured Barn-Owls are more than mere albinistic examples.

ASIO OTUS (Linnæus).

LONG-EARED OWL.

Strix otus, *Linn. Syst. Nat.* i, p. 132 (1766).

Asio otus, *Lesson, Man. d'Orn.* i, p. 116 (1828); *Sharpe, Cat. Birds Brit. Mus.* ii, p. 227; *Erlanger, J. f. O.* 1898, p. 489.

Strix (Otus) vulgaris, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 7 (1846).

Otus vulgaris, *Loche, Expl. Sci. Alg. Ois.* i, p. 96 (1867); *Koenig, J. f. O.* 1888, p. 141; *id. J. f. O.* 1892, p. 357.

Description.—**Adult male**, from North Tunisia.

Facial disc tawny-buff, the ruff tipped with blackish-brown; and on the lower part with white and blackish-brown; region round the eye blackish-brown; bristles round the beak whitish, tipped with black; general colour of plumage, both above and below, tawny-buff, striped with blackish-brown, and pencilled with brown, grey, and white on the crown, back, and wing-coverts; two conspicuous tufts on the crown tawny at the base, and blackish on the greater portion, with a little white on the inner webs of the feathers; quills and tail barred with brown; abdominal feathers tipped with white, and also slightly barred with brown.

Iris orange-yellow; bill and claws blackish-brown; tarsus feathered to the claws.

Total length 14.50 inches, wing 12, culmen 1.20, tarsus 2.

Adult female similar to the male, but slightly larger.

The Long-eared Owl, although nowhere abundant, is not unfrequently met with in the more wooded and mountainous districts of North Tunisia, where it is resident and breeds. The species, however, appears to be also migratory to a certain extent in the Regency, and according to the naturalist Blanc, is more often met with during the winter and early spring, than at other times of the year.

South of the Atlas it has been found by Baron v. Erlanger in the Aleppo-pine woods of Ain-bou-dries, where the species was breeding in the month of June. There appears to be no record of its occurrence in any of the more desert-districts of Tunisia, and possibly the southern range of the bird may not extend beyond the above-named district.

Loche mentions the species as being common in Algeria, and particularly in the mountainous and wooded parts, but whether he includes the Sahara districts as well, is not clear. My collection contains specimens from North Marocco obtained in the month of March.

In its habits the Long-eared Owl is almost entirely nocturnal and arboreal, frequenting for the most part thick pine-woods and evergreen forests, where it passes the day, only coming forth when evening sets in. Mice and other small mammals form its principal diet, but small birds and even insects are also sometimes eaten. The species seems to be more silent than most Owls, and its note is not often heard.

High trees are generally chosen by this Owl for its nest, but it is said occasionally to breed in the clefts of rocks as well. The old nests of other large birds are often made use of, with a slight addition of wool or feathers as a lining. The eggs, usually three in number, are pure white and rather glossy; they measure about 40 × 33 mm. Those in my collection from Tunis were obtained in May, and in some parts of the Regency eggs of the species may even be found in June, which is later than is usually the case in England.

ASIO ACCIPITRINUS (Pallas).

SHORT-EARED OWL.

Strix accipitrina, *Pall. Reise Russ. Reichs*, i, p. 455 (1771).

Asio accipitrinus, *Newton's ed. Yarr. Birds*, i, p. 163 (1872); *Sharpe, Cat. Birds Brit. Mus.* ii, p. 234; *Whitaker, Ibis*, 1894, p. 95; *Erlanger, J. f. O.* 1898, p. 491.

Strix (Otus) brachyotus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 7 (1846).

Brachyotus ægolius, *Loche, Expl. Sci. Alg. Ois.* i, p. 97 (1867).

Brachyotus palustris, *Koenig, J. f. O.* 1888, p. 163; *id. J. f. O.* 1892, p. 358.

Description.—**Adult female**, spring, from North Tunisia.

Facial disc creamy-white, with some grey feathers; region round the eye blackish-brown; bristles round the bill creamy-white, tipped with dark brown; ruff white, mottled with buff and dark brown; ear-tufts, which are very short, dark brown; remainder of plumage above and below creamy-white, thickly marked and striped with dark brown, the wings and tail being more rufescent, and barred with dark brown.

Iris bright yellow; bill and claws black; feet covered with short feathers. Total length 14 inches, wing 12, culmen 1·25, tarsus 1·80.

Adult male similar to the female, but rather smaller.

No other species of Owl, and but few birds, have so wide a range as the Short-eared Owl, the distribution of which apparently extends over the greater part of the two hemispheres.

In Tunisia the species is not uncommon during the periods of migration and in winter, when it is generally distributed both north and south of the Atlas Mountains. In Central Tunisia I have frequently met with these Owls on the Halfa-covered plains in spring, when the birds have been on passage, and I have notes of their occurrence in winter from both North and South Tunis. South of the Chott Djerid Mr. Aplin often met with the species in February.

The Short-eared Owl frequents, as a rule, open country covered with a low-growing vegetation, and evinces a partiality for wet, marshy land, although in Tunisia, when on migration, it may just as often be met with on the dry semi-desert plains. When flushed in the daytime, this bird flies off at a fair pace, and apparently without being in the least inconvenienced by the glare of daylight; in fact, the species seems to be more diurnal in its habits than most other Owls, and may sometimes be seen pursuing its prey during the daytime. Its food is

the same as that of most Owls, consisting chiefly of mice and other small rodents.

I have no note of the Short-eared Owl breeding in Tunisia, but Loche says it breeds in Algeria (*Expl. Scient. Alg. Ois. i*, p. 98), and Favier mentions it as breeding near Taugier (*Orn. Strs. Gib. p.* 139). The latter naturalist also states that this species interbreeds with *Asio capensis*, a statement which requires confirmation.

In Europe the present species breeds on open moorland, or on the borders of marshes, depositing from three to six eggs in a slight depression in the ground, surrounded by grasses. The eggs are white and measure on an average 39×31 mm.

So far as I am aware, there is no instance on record of the occurrence of *Asio capensis* [*A. nisuella* (Daud)] in Tunisia, although the species appears to occur in Algeria and Marocco, as well as in South Spain.

SYRNIUM ALUCO (Linnæus).

TAWNY OWL.

Strix aluco, *Linn. Syst. Nat. i*, p. 132 (1766).

Syrnium aluco, *Boie, Isis*, 1828, p. 315; *Sharpe, Cat. Birds Brit. Mus. i*, p. 247; *Loche, Expl. Sci. Alg. Ois. i*, p. 94 (1867); *Koenig, J. f. O.* 1888, p. 141; *id. J. f. O.* 1892, p. 286; *Erlanger, J. f. O.* 1893, p. 483.

Strix (Syrnium) aluco, *Malherbe, Cat. Rais. d'Ois. Alg. p.* 7 (1846).

Description.—**Adult male**, spring, from North Tunisia.

Facial disc greyish-white, barred with dark brown; bristles round bill dull white, tipped with black; ruff grey, mottled with buff and blackish-brown; general colour above grey, thickly streaked and marked all over, but particularly on the crown, with blackish-brown; back, wings and tail rather more rufous and pencilled; underparts greyish-white, streaked and slightly barred with blackish-brown.

Iris black; bill greenish-grey, becoming yellow at tip; claws brown; feet feathered down to the claws.

Total length 16 inches, wing 11, culmen 1.40, tarsus 2.

Adult female similar to the male, but larger, the wing measuring 11.75 inches.

Observations.—This Owl is subject to both rufous and grey phases of plumage. Specimens in my collection from Tunisia are all of the grey

variety, some being very dark in coloration. On account of its darker colour Mr. H. F. Witherby has recently distinguished the Tawny Owl from Algeria and Marocco under the name of *Syrnium aluco mauritanicum* (Bull. B. O. C. xv, p. 36).

The English name of Tawny Owl is hardly appropriate in the case of this species as found in Tunisia, the bird met with in the Regency, and generally I believe in North-west Africa, being of the grey, and not the tawny-rufous variety. In Southern Europe both phases of plumage occur, the *grey* being perhaps the commoner of the two, particularly in Southern Italy. In that country a third form is occasionally met with, of a very dark blackish-brown colour. This difference of coloration appears to be entirely independent of age, sex, or season.

S. aluco is resident and not at all uncommon in the more wooded parts of North Tunisia, but does not appear to be recorded from the districts south of the Atlas, and this range of mountains may possibly form the limit of the species' southern range.

In Algeria, according to Loche, this Owl is very common, being found in all the wooded and mountainous districts, and it appears to be more or less abundant in North Marocco.

In its habits the species is eminently nocturnal, and is therefore less often met with than it would otherwise be. It frequents thick woods and forests, and is also partial to mountainous and rocky localities. It is rather noisy, and its deep note may often be heard in the stillness of the night.

Its food, like that of most Owls, consists chiefly of small mammals, and occasionally small birds and insects.

The species is rather an early breeder, and generally deposits its eggs in the hollow of some old tree, or in a mountain-cleft. The eggs, usually three or four in number, are pure white, and measure about 45 × 40 mm.

SCOPS GIU (Scopoli).

SCOPS-OWL.

Strix giu, *Scop. Ann. i, Hist. Nat.* p. 19 (1769).

Scops giu, *Newton, Ooth. Wolley.* i. p. 153 (1864); *Sharpe, Cat. Birds Brit. Mus.* ii, p. 47; *Koenig, J. f. O.* 1888, p. 162; *id. J. f. O.* 1892, p. 351; *Whitaker, Ibis*, 1895, p. 103.

Strix scops, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 7 (1846).

Scops aldrovandi, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 7 (1846).

Scops zorca, *Loche, Expl. Sci. Alg. Ois.* i, p. 104 (1867).

Pisorhina scops, *Erlanger, J. f. O.* 1898, p. 485.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Facial disc, which is not clearly defined, grey with a blackish ruff on each side; general colour of upper parts grey washed with rufous-brown and pencilled and streaked with black and dark brown; wings and tail irregularly barred; underparts greyish white, mottled with rufous and streaked with black; feet feathered as far as the toes, which are bare.

Iris yellow; bill blackish; toes greyish.

Total length 8 inches, wing 6, culmen .75, tarsus 1.10.

Adult female similar to the male in plumage, but rather larger.

Observations.—There seems to be a certain amount of variation in coloration between examples of this Owl from North and South Tunisia, those from the latter region being rather more rufous than those from the former.

This small Owl is abundant in Tunisia during the periods of migration, and to a less extent throughout the rest of the year. In Algeria and Marocco the species is also numerous, particularly during the spring and autumn, and Loche states that it is to be met with in the former country at all seasons. In Italy, although eminently migratory, it is to be found occasionally during the colder months, even as far north as Tuscany, while in Sicily it is not uncommon in winter, and may be considered as sedentary in that island, as it is also said to be in Sardinia.

In the Tunisian Regency this little Owl may constantly be met with after the end of March, both north and south of the Atlas. In the more northern districts olive-groves seem to be its favourite haunts, in the southern districts palm-oases, but the species is also often to be found frequenting pine woods and mimosa thickets. In the Gafsa oasis I used frequently to hear these Owls of an evening

among the palms, and by waiting quietly for a little while under the trees, I occasionally got a glimpse of the birds, although as a rule, they keep very still, remaining stationary in one spot, generally at the top of a palm-trunk, just below the branching crown of the tree. Nestling close to the grey trunk, and remaining perfectly motionless, as they usually do, when anyone is near, it is almost impossible to distinguish the birds in the dim evening light, though their cry enables one to locate their whereabouts very fairly. The note of the Scops-Owl is plaintive and rather monotonous, being well rendered by the monosyllable "*kiu*" or "*giu*" repeated at intervals. I cannot agree with those who consider that the Arab name for this bird "*Marouf*" expresses it. The Italian name, *Chiu*, is far more appropriate.

Authors seem to disagree as to this Owl being strictly nocturnal in its habits, but there is no doubt that it is more or less so. The species is chiefly insectivorous, but will also prey on small mammals, and in captivity it will eat almost anything that is given it. According to some authorities the bird is easily domesticated, and becomes remarkably tame and familiar. In Tunisia, as elsewhere, it is rather a late breeder; nests and eggs are not met with, as a rule, before May, and are to be found even up to the end of June. The nest is usually placed in the crown of a palm, or in the trunk of an olive-tree, but old Magpies' nests are frequently used for the purpose. Both male and female take part in the incubation of the eggs. These are generally four or five in number, and pure white; their average measurements are 29.50×25 mm.

Baron v. Erlanger gives some interesting particulars regarding the nesting of the species in Tunisia (J. f. O. 1898, p. 487).

CARINE NOCTUA GLAUX (Savigny).

SOUTHERN LITTLE OWL.

Noctua glaux, Savigny, *Syst. Ois. de l'Egypte, &c.*, p. 45 (1810).

Carine glaux, Irby, *Orn. Str. Gibr.* p. 58 (1875); Sharpe, *Cat. Birds Brit. Mus.* ii, p. 135.

Strix passerina (*Athene noctua*), Malherbe, *Cat. Rais. d'Ois. Alg.* p. 7 (1846).

Athene persica, *Loche, Expl. Sci. Alg. Ois.* i, p. 106 (1867).

A. glaux, *Koenig, J. f. O.* 1888, p. 161; *id. J. f. O.* 1892, p. 349; *Whitaker, Ibis*, 1894, p. 95; *Erlanger, J. f. O.* 1898, p. 478.

Description.—**Adult male**, spring, from Kasrin, Central Tunisia.

Upper parts sandy rufous-brown, the crown and nape streaked with small longitudinal stripes, and the remainder of upper plumage mottled with large whitish spots, most pronounced on the hind neck and upper wing-coverts; quills banded with whitish; tail barred with buffy-white; facial disc ill-defined; the feathers round the eye and on the chin white; bristles round the bill white, tipped with black; a band across the upper breast white; rest of underparts whitish, heavily striped with sandy-brown, and becoming purer on the crissum; toes clothed with stiff hair-like feathers, or bristles.

Iris bright yellow; bill greenish-yellow; toes greyish.

Adult female similar to the male.

Observations.—Comparing a fair series of this Owl from Tunisia with specimens of *C. noctua* from Europe, I cannot find any appreciable difference between the birds except that of colour, the latter being generally of a chocolate-brown shade, while the former are sandy or rufous-brown. In Tunis itself, however, there is considerable variation in colour, according to the particular locality inhabited by the birds, examples from northern districts being, as a rule, darker than those from southern and more desert regions. Specimens from North Marocco are rather darker and more rufous than any Tunisian birds, and approximate more to typical *C. noctua* from Europe, but examples from South Marocco resemble some from Tunisia. In point of size there seems to be no appreciable difference between *C. noctua* and *C. n. glaux*, although there is considerable individual variation in this respect to be found in both forms. The marking of the upper plumage of this bird is peculiar. The bases of the feathers are grey, then comes a white bar, followed by sandy-brown, enclosing two oval white patches, one on either side of the shaft, but sometimes the two spots are united, forming one large central patch. The wing-coverts have the white spot only on the outer webs of the feathers.

This small Owl, which seems to be merely a form or subspecies of *Carine noctua* (Scopoli), is the representative of that species in Tunisia, and generally throughout the greater portion, if not the whole of North-west Africa. As mentioned in the observations following the description of the bird, it appears to differ from *C. noctua* only in its more sandy and rufous coloration, being, moreover, even within its own habitat, subject to a considerable amount of individual colour-variation, northern examples being darker than those

from southern regions, while specimens from central or interlying districts are intermediately coloured. Where the darker and paler forms meet, it is more than probable that mating occurs between them, as mentioned by Canon Tristram.

This little Owl is resident, and one of the commonest birds in Tunisia, being universally distributed throughout the Regency, and apparently as much at home on the arid wastes and barren mountains of the south, as it is in the green and fertile districts of the north. In Central Tunisia the species is also remarkably abundant among the olive-groves, which cover a large extent of that part of the country. The "*Booma*," as this Owl is called by the Arabs, seems to be particularly partial to olive-trees, the gnarled and hollow trunks of which doubtless afford shelter and convenient nesting sites for the birds.

Being to a certain extent diurnal, as well as fearless and unsuspecting, or perhaps what some might call stupid, this Owl is constantly in evidence, and may often be closely approached before it takes flight. I have even known it allow a railway train to dash past, as it perched on the permanent way within but two or three feet of the rails. The bird was probably too much dazed by the sudden and noisy approach of the train, to be capable of using its wings, or of moving at all.

Old well-shafts are favourite resorts of these Owls, both for shelter as well as, during the breeding-season, for nesting, and the Arabs frequently take the birds alive in such spots. Owing to the facility with which it is tamed, and its adaptability in confinement, the species is much used by continental bird-catchers, particularly in Italy, as a lure for small birds. Any species of Owl, however, will answer this purpose, and I have known an Eagle-Owl thus used with great success. Although generally seen singly, or in pairs, the Little Owl may occasionally be met with in small parties, and in districts where the species is plentiful, as many as a dozen or more individuals may be found together. The food of this Owl consists chiefly of small rodents and birds, but it also eats insects, and in South Tunisia frequently preys upon locusts.

Its note, like that of the Scops-Owl, is sad and plaintive, and when heard incessantly, for hours together, as I have often heard it when camping near the home of a pair of the birds, it is irritatingly monotonous. The note may be fairly well rendered by the monosyllable "*cu*" or "*quew*," softly repeated once or twice, the call of the male bird being in a different key from that of the female.

The breeding season of this species commences in April, and continues throughout that and the following month. A hole in an old wall, or a cleft among rocks, is generally chosen by the bird as a site for its eggs, no regular nest being made. Hollows in old trees are also used for the purpose, and the Roman ruins which abound in some parts of Tunisia are in special favour as breeding haunts of the species.

The number of eggs laid varies from three to five, their colour is pure white, and their average measurements about 32×28 mm.

Although no doubt originally imported into England from abroad, the Little Owl seems now to have every right to rank as a British bird, numbers of the species existing in a perfectly wild state in various parts of the country.

Under the name of *Athene chiaradiæ*, Prof. Giglioli has recently described as a new species a Little Owl which appears to vary from the ordinary type of *C. noctua* in having dark brown instead of yellow irides, and in being somewhat differently plumaged, as well as slightly smaller (Avicula, 1900, pp. 57-60). The type of *A. chiaradiæ*, a male, was obtained, as a nestling, in July, 1899, at Pizzocco, in the Friulian Alps, from whence other similar examples have since been procured. These specimens, some of which, both living and dead, I have myself examined, have all been obtained as nestlings at various times, together with co-nestlings of undoubted *C. noctua* with the usual yellow irides, the last nest, taken in July, 1902, containing *two* dark-eyed and *three* yellow-eyed birds. On this occasion the two parent birds were also captured, both of them having yellow irides, and being apparently inseparable from *C. noctua*, although neither were perfectly typical examples of that species, but varied slightly from it, each in a different way.

A full and detailed account of this strange and interesting discovery has been published by Prof. Giglioli (*Ibis*, 1903, pp. 1-18 and pp. 137-138), and papers on the subject have also been written by Prof. Martorelli (Att. Soc. Ital. Sc. Nat. xl, Milan, 1902), and by Signor Vallon (Att. Acc. di Udine, ser. 3, viii, Udine, 1901). The case is no doubt a most singular and highly interesting one. Considering all the circumstances connected with it, and putting aside as untenable the theory of hybridism being in any way responsible for it, the most natural conclusion we can come to regarding these examples of so-called *A. chiaradiæ* appears to be that they are but highly abnormal

individuals of *C. noctua*, the progeny of parents themselves aberrant, though less divergent, from the usual type. What cause or combination of causes may have brought about so intensified a modification of the normal form it is difficult, not to say impossible, to tell. A derangement in the vascular system for the distribution of pigment may account for the *heterochrosis*, but whatever may be its explanation, the fact is none the less a most remarkable one, and constitutes a highly interesting problem in Natural History.

Prof. Giglioli also mentions two cases of albinism in the Little Owl which had come under his notice. In one the irides, instead of being pink (*i.e.*, devoid of pigment, as in most cases of total albinism), were of a darkish greenish-grey colour; the entire plumage was snowy white, except the middle portion of the tail-feathers, and those round the bill, which were tinged with yellow, and the bases of the body and inner wing-feathers, which were all deeply tinged with vinaceous rose colour. This specimen, which I have myself had the pleasure of examining, is preserved in the Italian collection of the Royal Zoological Museum of Florence.

BUBO ASCALAPHUS, Savigny.

EGYPTIAN EAGLE-OWL.

Bubo ascalaphus, *Savigny, Syst. Ois. de l'Egypte, &c.* p. 50, pl. v. (1810);
Sharpe, Cat. Birds Brit. Mus. ii, p. 24; *Koenig, J. f. O.* 1888, p. 163;
id. J. f. O. 1892, p. 351; *Whitaker, Ibis*, 1893, p. 126.

Ascalaphia savignyi, *Loche, Expl. Sci. Alg. Ois.* i, p. 102 (1867).

B. ascalaphus barbarus, *Erlanger, J. f. O.* 1898, p. 142.

Description.—**Adult male**, autumn, from North Tunisia.

Facial disc rufous-brown; chin and a band below the ruff white; bristles surrounding the bill white, tipped with black; ruff rufous-brown, fringed with black; upper parts generally rufous-buff mottled and streaked with blackish-brown, the crown, rather short ear-tufts, scapulars and wing-coverts being darkest, and the nape and rump lightest: tail irregularly barred with blackish-brown; wings also conspicuously barred with same colour; breast warm rufous-buff, striped with large blackish streaks, surrounded by paler spots; abdomen and rest of under parts warm rufous-buff, the terminal portion of most of the feathers being whitish and barred with fine narrow brown markings; feet thickly feathered down to the claws.

Iris yellow; bill and claws blackish.

Total length 18 inches, wing 13·50, culmen 1·80, tarsus 2·65, middle claw 1.

Adult female similar in plumage to the male, but larger.

This species, like many others in Tunisia, varies considerably in coloration, according to the particular locality inhabited, individuals from the northern and more humid districts being, as a rule, darker than those found in the arid semi-desert regions of the south.

Specimens of this Owl in my collection from North Tunisia are identical, or almost so, in point of coloration, with typical examples of *B. ascalaphus* from Egypt. Specimens from Central Tunisia appear to be slightly paler, while those from the south of the Regency are extremely pale, belonging clearly to a desert form, and meriting subspecific separation. Baron v. Erlanger, in his work on the Tunisian Ornithology (*J. f. O.* 1898, p. 492), has made two subspecies of this Owl, calling one *B. a. barbarus*, and the other *B. a. desertorum*, the habitat of the former, according to him, being the country north of the Atlas, and that of the latter the region south of those mountains.

Apparently Erlanger had no specimens of this Owl available for comparison from North Tunisia, the type of his *B. a. barbarus* being from the Oued Kasrin in Central Tunisia.

While fully admitting the claim of the pale desert-form to subspecific distinction, I cannot agree to the northern form being separated on account of any difference in colour, for, as I have already remarked, some individuals are indistinguishable, or nearly so, from typical examples of *B. ascalaphus* from Egypt. Tunisian birds, as a rule, appear to be rather smaller than Egyptian ones, but the difference is trifling and in a large series is probably not constant.

According to the naturalist Blanc, *B. ascalaphus* is not uncommon in some parts of North Tunisia, where the species is resident and breeds. He informs me that specimens of the bird are occasionally brought to him by the Arabs.

In the neighbourhood of Kasrin in Central Tunisia, Erlanger met with this Owl, and obtained both old and young birds.

Dr. Koenig (*J. f. O.* 1895, p. 172) mentions having found *B. ascalaphus* in the Algerian Sabara, when journeying from Ouargla to

the Djebel Klima, as also near Khroubs, north of the Atlas, but says that the species is not common in Algeria, according to his experience. Dr. Koenig also mentions having obtained a living bird of this species in Tripoli (*J. f. O.* 1888, p. 163). I have no note of the occurrence of this Owl in Marocco, but it is not unlikely that it is to be found there. The species is said to have occurred in Sicily, Sardinia and Spain, but there seems to be no authentic record of these occurrences.

B. ascalaphus generally frequents rocky spots, such as mountain sides and gorges, but may also be found in the vicinity of old ruins and deserted buildings, and in Egypt ancient ruins seem to be its favourite haunts and breeding quarters. Mr. E. Cavendish Taylor obtained two eggs of the species, together with the female bird, on one of the Pyramids.

B. ascalaphus, however, evidently adapts itself to the physical character of the country it inhabits, and in some parts of Palestine, according to Canon Tristram (*Fauna and Fl. Palestine*, p. 93), it resorts to burrows in the ground.

In its general habits the species resembles the European Eagle-Owl to a considerable extent, but owing to the difference of its environment, it naturally varies in some respects. It is generally to be found in pairs, the two birds being rarely far apart. Though chiefly nocturnal, it does not seem to object to the light of day, being frequently met with in spots exposed to the full rays of the midday sun, and when disturbed, flies off, apparently in no way inconvenienced by the strong light. The principal food of the species consists of the small rodents which abound in most of the semi-desert districts it frequents, but it also preys on hares and birds.

Like its European congener, *B. ascalaphus* thrives in confinement, and if well cared for, would no doubt live to the same great age which that bird is known to attain in captivity.

The breeding-season of this species is rather early in the spring, and the site chosen for its eggs is generally among rocky cliffs or ruins. No true nest is made, but the castings of the parent birds are usually found surrounding the eggs, which are two or three in number, pure white, and measure about 52×42 mm.

According to various authors, *B. bubo* occurs in Algeria, and may therefore also be found in Tunisia, though I have no knowledge of its doing so. An example obtained by Loche in Algeria is pre-

served in the Milan Museum, under the No. 17,406. This example is rather small and light-coloured but otherwise not abnormal. A few years ago *B. bubo* was not uncommon in Sicily, but is now apparently rare in that island.

BUBO ASCALAPHUS DESERTORUM, Erlanger.

DESERT EAGLE-OWL.

Bubo ascalaphus desertorum, *Erlanger, Orn. Monatsb.* 1897, p. 192 ;
id. J. f. O. 1898, p. 495.

Description.—**Adult male**, autumn, from Tatahouine, Southern Tunisia.

Facial disc white, slightly tinged above and behind the eyes with pale buff; bristles near the bill white, very slightly tipped with pale brown; ruff white fringed with blackish-brown; chin and a band below the ruff white; upper parts generally pale yellowish-buff, mottled with white, and sparsely streaked with blackish-brown, the scapulars and least wing-coverts being darkest, and the nape and rump palest; tail and wings broadly barred with blackish-brown; breast very pale yellowish-buff, striped with a few dark brown blotches; rest of the underparts white, washed with pale buff, and barred on the sides and flanks with narrow pale brown vermiculated markings; feet feathered down to the claws.

Iris bright yellow; bill and claws black.

Total length 18 inches, wing 13·25, culmen 1·50, tarsus 2·70, middle claw 1·15.

This Owl is clearly a desert form of the preceding species and has no doubt rightly been distinguished by Baron v. Erlanger under the above subspecific name.

The remarkably pale hue which some specimens attain is well shown in the accompanying excellent plate, executed by Mr. Grönvold from an example in my collection, obtained at Tatahouine in South Tunisia.

Similarly plumaged birds were obtained by the Hon. N. C. Rothschild and Mr. A. F. R. Wollaston near Shendi in the Sudan, when they visited that country in 1901 (*Ibis*, 1902, p. 27).

In Tunisia this Owl apparently occurs only in the more southern hilly districts, where it is seldom met with, owing to its nocturnal



Bubo ascaripus desertorum.

and retiring habits. Erlanger met with the species on the Djebel Sidi-Ali-ben-Aoun, where he obtained a pair, with their eggs, and a third specimen was given to him by a gentleman at Gabés (J. f. O. 1898, p. 495).

The Eagle-Owls mentioned by Dr. Koenig as having been obtained by him in the Algerian Sahara and in Tripoli, were presumably of the present form.

Of the habits of *B. a. desertorum* we know but little, but they probably do not differ from those of the preceding form. According to Messrs. Rothschild and Wollaston, the species lives in isolated pairs on rocky hills, and may be as often found on the sunny as on the shady side of a hill, its breeding-quarters being at times exposed to the full heat of the sun. The birds are very much on the alert, and when disturbed, fly off without hesitation.

Respecting the breeding of this species, Erlanger states that the site selected for that purpose by the pair he obtained in South Tunisia was at the entrance to a cavern in a cliff-side; three eggs were found deposited in a hollow in the sand, surrounded by the castings of the birds, and the refuse of their food. The eggs were white, two of them measuring each 53×42.5 mm., and the third 56.5×42 mm.

Order ACCIPITRES.

Family VULTURIDÆ.

GYPS FULVUS (Gmelin).

GRIFFON-VULTURE.

Vultur fulvus, *Gmel. Syst. Nat.* i, p. 249 (1788).

Gyps fulvus, *Gray, Gen. of Birds*, i, p. 6 (1844); *Malherbe, Faune Orn. de l'Alg.* p. 5 (1855); *Loche, Expl. Sci. Alg. Ois.* i, p. 3 (1867); *Koenig, J. f. O.* 1888, p. 142; *id. J. f. O.* 1892, p. 292; *Whitaker, Ibis*, 1895, p. 103.

G. hispaniolensis, *Sharpe, Cat. Birds Brit. Mus.* i, p. 6.

Vultur (Gyps) kolbii, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 5 (1846).

G. fulvus occidentalis, *Erlanger, J. f. O.* 1898, p. 449.

Description.—**Adult male**, spring, from Djebel Ressas, North Tunisia.

Crown covered with stiff hair-like feathers of a creamy-white colour; neck covered with short white down; a ruff of soft creamy-white downy feathers at the base of the neck; upper parts generally of a pale fulvous earth-brown or stone-colour, darker on the mantle and back, and lighter on the wing-coverts; quills blackish-brown; tail dull black; under surface warm rufescent-brown, the feathers with lighter centres.

Iris bright hazel; bill grey; rather yellowish on the ridge of the culmen; cere very dark grey; feet grey.

Total length 45 inches, wing 29, culmen 3.50, tarsus 4.

Adult female similar to the male, but rather smaller.

Young birds are generally rather darker, and more rufous, particularly on the crop patch, while the ruff round the neck is composed of lanceolate feathers, and not of down, as in the adult.

Observations.—The present species has been subdivided by Professor Schlegel into two subspecies, *Vultur fulvus orientalis* and *Vultur fulvus occidentalis*, the Griffon-Vulture inhabiting North-west Africa being referred to the latter. Dr. Sharpe's name of *Gyps hispaniolensis* is also referable to the North-west African bird, which does not differ from Spanish examples. The characters, however, on which these distinctions have been based appear to be extremely slender, and are not constant, or sufficient to justify separation. Under the circumstances, therefore, I prefer to retain the North-west African Griffon under the name of *Gyps fulvus*.

The Griffon-Vulture is resident and abundant in some parts of North Tunisia, but, so far as my experience goes, is not so often to be met with south of the Atlas mountains, being indeed entirely wanting in many of the southern districts of the Regency, even where fairly high mountains occur.

Baron v. Erlanger, however, appears to have met with the species on various occasions in Southern Tunisia, even as far south as Galbel-Assued, which lies to the south-west of Douirat (J. f. O. 1898, p. 449).

In North Tunisia the Griffon is to be found on most of the higher ranges of mountains. The Djebel Ressay, or Lead-Mountain (so called from the large quantities of ore obtained there), about ten miles to the south-east of the town of Tunis, was formerly a favourite haunt of these birds, and some years ago I found a large colony breeding there. On the occasion of my last visit to Tunis in 1902, the colony had disappeared and only a few scattered pairs were breeding on the mountain, the nest of one of which was discovered. In the neighbourhood of Zaghouan, about twenty miles south of the town of Tunis, the Griffon is also plentiful. Mr. Salvin (*Ibis*, 1859, p. 178), found this Vulture plentiful in the Eastern Atlas, not far from the town of Souk-Ahras, and in other localities near the Algerio-Tunisian frontier, and he gives some interesting particulars regarding this and other large birds of prey met with in that neighbourhood.

In Algeria, according to Loche, the Griffon is very common in all three provinces, and it also occurs in Marocco, being, according to Favier, numerous near Tangier. From South Marocco I have no note of its occurrence, nor yet from Tripoli, although the species probably occurs in both these countries.

In its habits the Griffon-Vulture is sociable and gregarious, and at times is found congregating in vast numbers. Eminently a mountain bird, its home is in cliffs and inaccessible precipices, but it may occasionally be encountered soaring over plains at a considerable distance from any mountains or rocky country.

When perching by its nest or on the ground, particularly if gorged with food, the bird seems dull and heavy, but when on the wing its flight is powerful and untiring, and is capable of being sustained for hours together. When soaring, the bird ascends to a great altitude and often disappears out of sight. It was for long a vexed question among ornithologists whether the Vulture depends chiefly on its keen-

ness of sight or on its sense of smell for its food, but there appears now to be little doubt that the former is the sense which guides it entirely in its search for this. The bird's habit of soaring and circling high overhead certainly points to such being the case. Once food has been discovered by one of these birds it is sufficient to attract a host, for, as Canon Tristram no doubt rightly conjectures (*Ibis*, 1859, p. 280), the Griffon which first descends its quarry and descends to it, is observed and immediately followed by another of its kind further off, which in its turn is followed by others still further away, and so on, until all the Vultures of the neighbourhood are gathered together at a spot where a short time previously but one or two of the birds at most may have been in sight. Like other Vultures, the Griffon feeds almost exclusively on carrion, and in the warm climates which form its chief habitat, it must be looked upon as a most useful bird, fulfilling, as it so admirably does, the part of public scavenger. Although exceedingly voracious, and in the habit of gorging itself to repletion when food is plentiful, the species is probably capable of fasting for a considerable length of time, and must often do so in districts where flocks and herds are not numerous. These birds are so greedy that they may sometimes be closely approached when feeding, and I remember on one occasion surprising a large party thus engaged and watching them fly off heavily within easy gunshot of me. Cold, however, as well as repletion, would seem to paralyse the Griffon and render it incapable of action, and I recently saw a living bird of this species, which had been captured near Palermo in a snowstorm by a cloak thrown over its head. Fortunately for Vultures snowstorms are of unusual and exceptional occurrence in Sicily.

The Griffon is easily tamed, and when brought up from the nest, becomes very domesticated and fearless of man. During my last visit to the Djebel Ressay, near Tunis, I very nearly, by mistake, shot a tame bird of this species, which had been taken from the nest the previous year. This bird, which was perfectly free, was in the habit of taking long flights in the neighbourhood, and of associating with wild birds of its kind, but always returned to the house where it had been brought up, evidently looking upon this as its home. It would allow itself to be stroked and patted, and seemed perfectly at its ease among human beings.

The Griffon is an early breeder, and its eggs are to be found in Tunisia, as a rule, between the end of February and the end of March.

In some parts of South Spain, according to the late Mr. Stark (*Orn. Straits Gib.* p. 147), fresh eggs of the Griffon may be obtained, roughly speaking, from February 1st to March 1st, the majority of the birds laying between February 10th and 20th, while near Malaga, many lay as early as the latter half of January.

The species generally breeds in colonies, which are often composed of a large number of pairs, but occasionally single pairs are to be found breeding at a considerable distance from others of the species.

As many as fifty pairs, or more, may sometimes be found breeding together, but smaller colonies are more often met with. The colony above alluded to by me, as breeding on the Djebel Ressas, near Tunis, must have numbered about twenty pairs, but even this number forms an imposing spectacle when, suddenly startled from their eyries by a gunshot, the birds simultaneously rise into the air, and circle overhead.

Precipitous cliffs and ravines are chosen as nesting sites, the caves and clefts where the nests are placed being often of a large size, and generally protected above by overhanging rocks. The nests themselves are mostly rough structures, composed merely of dry sticks, but at times dry grass is also utilised. The single egg, which forms the usual complement, is white, as a rule, roughly grained, and often stained with blood and dirt, but occasionally eggs are found, with some natural markings, such as spots or blotches of a brown or rufous colour. Mr. E. Cavendish Taylor's collection contains a fine egg thus marked. Two eggs may sometimes be found in a nest, but this is more or less exceptional. Eggs in my collection measure on an average 95×69 mm.

I have no knowledge of the occurrence in Tunisia of the Cinereous Vulture (*V. monachus*), though Loche states that it is to be found occasionally in Algeria, and examples of this species obtained by him at Zaccar in that country are preserved in the Milan Museum under the Nos. 17,315 and 17,315A.

NEOPHRON PERCNOPTERUS (Linnæus).

EGYPTIAN VULTURE.

Vultur percnopterus, *Linn. Syst. Nat.* i, p. 123 (1766).

Neophron percnopterus, *Savigny, Syst. Ois. de l'Égypte, &c.*, p. 16 (1810); *Sharpe, Cat. Birds Brit. Mus.* i, p. 17; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 5 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 11 (1867); *Koenig, J. f. O.* 1888, p. 141; *id. J. f. O.* 1892, p. 286; *Whitaker, Ibis*, 1894, p. 96; *Erlanger, J. f. O.* 1898, p. 442.

Cathartes percnopterus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 5 (1846).

Description.—**Adult male**, spring, from North Tunisia.

Entire plumage creamy-white, with the exception of the primaries which are black, and the secondaries which are greyish-brown; front of head and throat bare; the feathers on the hind part of the crown and nape lanceolate.

Iris red; bill black at tip, otherwise yellow; feet flesh-colour.

Total length 27 inches, wing 19, culmen 2.40, tarsus 3.25.

Adult female, similar to the male.

The young birds are of a dark brown colour. One in my collection is dark brown throughout, with merely a few creamy-white feathers on the back, rump and shoulders. The iris of the young bird is dark hazel.

Observations.—Apparently the iris of this species changes greatly in colour according to age, and varies from dark hazel in the young bird to a deep red in the adult. I have often seen living birds of the species in aviaries with lemon-yellow irides.

This is a common species throughout the greater part of the Regency, particularly during the periods of passage; though resident all the year round in Tunisia, the species is also migratory there to a considerable extent, and many more individuals are noticeable during the spring and autumn than at other seasons. This species is eminently migratory in its instincts, and although it appears to be sedentary in some parts of Southern Europe, by far the greater part of the birds observed north of the Mediterranean are certainly migrants, which arrive in spring, and leave again for the south in the autumn. In Sicily I have frequently seen the Egyptian Vulture in spring, and the species undoubtedly breeds in that island, nestlings of it having been obtained there at different times. There is a young *Neophron* in my collection, apparently only a few weeks old, which was captured on one of the mountains near Palermo, where I am

assured, on good authority, the species is resident in limited numbers throughout the year.

In Algeria and Marocco the present species seems to be abundant, and in the latter country, according to Favier, "it appears near Tangier in flocks during migration, some remaining to nest in the vicinity, awaiting the return of the autumnal migration to winter probably in the interior of Africa" (Orn. Strs. Gib. p. 152).

In North Tunisia I have often seen this Vulture on the Djebel Ressay, or Lead-Mountain, near the town of Tunis, and I once shot one there as it was soaring far above me at the very top of the mountain. The bird unfortunately fell into a deep gully, from which I failed to recover it. Further south in the Régency the species may be met with more or less sparingly wherever mountains occur. The distribution of the Neophron seems to be more universal in the Régency than that of the Griffon-Vulture, though numerically it may not be so abundant as that species. The Neophron indeed is only to be found, as a rule, in pairs or singly, and rarely in flocks, except when actually on migration or when attracted by food, on which occasions the birds may be observed congregating together in considerable numbers. Visitors to Constantine may see several of these Vultures frequenting the wonderful ravine surrounding that town, where the birds feed on the garbage and refuse thrown there. The Neophron is certainly one of the foulest feeders in existence, though, like other Vultures, most useful as a scavenger in warm climates.

The ravine of which I have just spoken, is the haunt of other birds besides the Egyptian Vulture, numberless Kestrels, Jackdaws and Ravens being abundant there, as well as other smaller species. In Southern Tunisia the Neophron may often be seen lazily soaring over some Arab "*douar*," or encampment, patiently biding its time, and content to continue its aerial evolutions for hours together on the chance of a meal. Haste is entirely contrary to its nature, the habits of the bird being in perfect harmony with the general atmosphere of tranquillity which pervades the Saharan region.

In confinement the Neophron becomes remarkably tame, and lives peaceably with others of its kind.

The breeding-season of the present species commences about the beginning of April, the site generally chosen for its nest being a hole or cleft in a crag, protected by overhanging rocks. The nest is usually composed of a few dry sticks, with a little wool and pieces of cotton

stuff or rags from some Arab encampment. The eggs are nearly always two in number, rarely more or less, and vary considerably in their shape, colour and marking. As a rule, however, they are of a dirty yellowish-white, richly marked with reddish-brown spots and blotches; they measure about 65×52 mm. Unlike the Griffon, this Vulture breeds in isolated pairs, but several pairs may sometimes be found nesting in the same mountain range if it is sufficiently extensive to provide a separate territory for each.

Family GYPAËTIDÆ.

GYPAËTUS BARBATUS (Linnæus).

BEARDED VULTURE.

Vultur barbatus, *Linn. Syst. Nat.* i, p. 123 (1766).

Gypaëtus barbatus, *Storr, Alpenreise*, p. 69 (1784); *Sharpe, Cat. Birds Brit. Mus.* i, p. 228; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 5 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 13 (1867); *Koenig, J. f. O.* 1888, p. 146; *id. J. f. O.* 1892, p. 292.

G. barbatus atlantis, *Erlanger, J. f. O.* 1898, p. 395.

Description.—**Adult male**, from Sicily.

Crown, nape, sides of head, and hind neck creamy-white; lores, a broad stripe passing over and round the eye, an irregular stripe extending along the centre of the crown and a small patch below the eye deep black, these parts being chiefly covered with bristles; a beard of black bristles springing from the base of the lower mandible; back and rest of the upper parts blackish-grey, rather glossy, most of the feathers with white shafts, and those on the mantle, scapulars and upper wing-coverts with a cream-coloured median line and tip; under parts rusty-orange colour on the chin, throat and breast, becoming paler on the abdomen and remainder of the lower surface; tail wedge-shaped; feet feathered down to toes.

Iris pale straw-colour; sclerotic membrane blood-red; bill bluish-horn, darker at the tip; feet lead-colour.

Total length 45 inches, wing 31, culmen 3.50, tarsus 3.50.

Adult female similar to the male.

The genus *Gypaëtus* seems to form a link between the true Vultures and the *Falconidæ*, and its characters are no doubt such as to require its being placed in a separate family.

Although gradually but steadily disappearing in Europe, this magnificent bird is still to be found in certain numbers on the higher mountain ranges of North-west Africa, where it appears to be universally, though naturally more or less sparingly, distributed throughout the entire Atlas region from Tunis to Morocco. Regarding its occurrence in the latter country we have comparatively little information, but the species undoubtedly exists there, and I have myself seen a specimen of it from Morocco in Mr. J. H. Gurney's collection at Keswick Hall, Norwich. In Algeria the species has been more often observed, and to Loche, Salvin, and other ornithologists we are indebted for excellent notes concerning the bird, and its occurrence in that country, and the Eastern Atlas generally. Several Algerian specimens are to be found in the Paris and Milan Museums, as well as in various private collections.

In the Tunisian Regency, though nowhere abundant, the Bearded Vulture is by no means rare, and it is to be sincerely hoped that, notwithstanding the rapid opening up of the country, and consequent encroachment on its breeding haunts, the species may continue to exist there.

Salvin, when travelling in the Eastern Atlas, met with *Gypaëtus* on several occasions, and found the species breeding near Souk Ahras, Djebel Dekma, Khifan-M'Sakta, and Kef-Laks.

The naturalist Blanc informs me that he has occasionally received examples of this Vulture from the neighbourhood of Zaghouan, as well as from the Djebel Ressay near the town of Tunis. Dr. Koenig also has met with the species on the Djebel Ressay, and obtained a specimen there (J. f. O. 1888, p. 146). Baron v. Erlanger states that it is not at all of unusual occurrence in Tunisia, and that in the south of the Regency he knew of four mountain ranges where the species breeds. He secured a fine male specimen of it on the Djebel Sidi-Aich (J. f. O. 1898, p. 399).

I have myself seen this grand bird on more than one occasion, when travelling in the Regency, though never at close quarters.

In its general habits the Lammergeyer, or Bearded Vulture, resembles the Vultures more than it does the Eagles, although in its solitary disposition it certainly differs from the former, and, as Canon Tristram rightly says, it is neither gregarious as *Gyps fulvus*, nor sociable as *Neophron percnopterus*. It is in fact generally to be met with singly, or at most in pairs.

Noble and dignified as this bird is in its appearance, and in its flight, it appears to be the reverse in its instincts and general behaviour, being indeed cowardly and timid, incapable of showing fight, or of resisting the attacks of other birds of prey its inferior in size. Even the maternal instinct, which should prompt it to defend its young, seems to be wanting in this bird, as it will allow its eyrie to be approached and despoiled, without venturing to attack the intruder, or showing any resistance, but flying off and leaving the coast clear. Its chief food seems to be carrion, though it is said at times to seize weakly lambs or kids, and other smaller animals and birds alive. According to Mr. Salvin, its food in the Eastern Atlas "consists principally of the land tortoises (*Testudo mauritanica*), which abound throughout the country. These it carries to some height into the air, and lets fall on a stone to break the shell." The poet Æschylus is said to have been killed by a tortoise having been dropped on his bald head by one of these birds!

This Vulture's Spanish name of "*Quebrantahuésos*" or "Bone-breaker," Colonel Irby tells us, is applied to the bird from its well-known habit of dropping bones from a great height on to the rocks below, in order to break them up into fragments small enough to be swallowed.

The breeding-season of this Vulture in Europe and North-west Africa is an early one, apparently commencing in February or even in January, and in the Himalayas, according to Mr. A. O. Hume, it is still earlier, eggs of the species having been met with on December 4th.

The site usually chosen for the eyrie is a hollow or cave in some precipitous cliff or sheer precipice, often quite inaccessible, and almost invariably so without the aid of ropes and other appliances. The eyrie itself is very bulky, being composed of sticks and twigs, with a lining of wool or other soft material. Erlanger mentions an eyrie found by him in Tunisia, which was composed of Halfa-grass. The eggs, which are generally two in number, are either of a rusty orange colour, or of a dull yellowish-ochre; they measure about 78×68 mm., and specimens from eastern countries are, as a rule, larger than those from West Europe and North-west Africa.

Baron v. Erlanger has described the Bearded Vulture of the Atlas region as a distant subspecies under the name of *Gypaëtus barbatus*

atlantis (J. f. O. 1898, p. 395), stating that it differs from typical *G. barbatus* in the marking of the throat and cheeks, and in the feathering of the feet, as well as in its lesser size and more slender proportions, and that it stands, so far as plumage is concerned, between *G. barbatus* and *G. ossifragus*, resembling the latter in point of size.

As regards the marking of the throat and cheeks I may observe that specimens from Europe sometimes have these parts spotless, and merely show the dark streak behind the eye. With regard to the feathering of the tarsus, most of the Algerian specimens I have examined certainly do not have the feathering extending quite down to the toes, and in this respect they no doubt stand between *G. barbatus* and *G. ossifragus* as Erlanger says, but the character does not appear to be altogether constant, for I have seen a specimen from Algeria in the Paris Museum which has its tarsus completely feathered down to the toes, as in the European bird. Baron v. Erlanger seems to have had but a single specimen from Tunisia for comparison, and although I think it is quite possible he is right in his separation, an examination of further material is no doubt necessary before the question can be satisfactorily settled.

Family FALCONIDÆ.

CIRCUS ÆRUGINOSUS (Linnæus).

MARSH-HARRIER.

Falco æruginosus, *Linn. Syst. Nat.* i, p. 130 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 7 (1846).

Circus æruginosus, *Savigny, Syst. Ois. de l'Égypte, &c.*, p. 30 (1810); *Sharpe, Cat. Birds Brit. Mus.* i, p. 69; *Loche, Expl. Sci. Alg. Ois.* i, p. 82 (1867); *Koenig, J. f. O.* 1888, p. 160; *id. J. f. O.* 1892, p. 348; *Whitaker, Ibis*, 1896, p. 98; *Erlanger, J. f. O.* 1898, p. 435.

C. rufus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 7 (1846).

Description.—**Adult male**, spring, from North Tunisia.

Entire crown and nape creamy-white, tinged here and there with rufous and slightly striated with brown; back and scapulars chocolate-brown; primaries blackish-brown; secondaries and larger wing-coverts grey; tail

grey; chin creamy-white, slightly streaked with brown; greater portion of the under-surface rufescent-buff, broadly striped with dark brown; flanks and thighs rufous-brown.

Iris lemon-yellow; bill brown; cere yellow; feet yellow.

Total length 20 inches, wing 15.50, culmen 1.50, tarsus 3.50.

Adult female, spring, from North Tunisia.

Dark chocolate-brown throughout, except for a few buff-coloured feathers on the nape. Soft parts as in the male.

Total length 23 inches, wing 16.75, culmen 1.60, tarsus 3.70.

The Marsh-Harrier is abundant as a regular migrant in all the marshy districts of Tunisia, being specially noticeable during the spring passage. According to Blanc the species occasionally occurs in the Regency in winter, and is said to be met with in some parts of the country all the year round. It is no doubt quite possible that such is the case, but it is a question whether any of the Harriers are strictly resident in North-west Africa, and it seems more probable that the birds found there in winter are not those which have been there during the spring and summer but winter visitors from countries further north.

In Algeria and Marocco the present species is plentiful on migration, and is to be found wherever there are lakes and marshes. Judging from what Loche writes about this bird, it breeds in suitable localities in the former country, while, according to Favier, it is resident as well as migratory in the vicinity of Tangier.

Eminently a denizen of the plains and open country, the Marsh-Harrier is never to be met with in mountainous or wooded districts, and even when roosting at night it does not resort to woods, but rests on the ground. It is especially fond of marshes and swampy plains, and may generally be noticed skimming over such localities within a few feet of the surface of the ground, beating or quartering it in a leisurely and methodical manner, like a well-trained dog hunting for game. Its flight is slow and measured, occasionally soft and gliding, and from time to time it drops to the ground for a few moments. No spot or corner of the marsh escapes a visit from the bird, and no wounded duck or snipe evades its sharp and watchful eye. Apparently this Harrier rarely, if ever, strikes a bird on the wing, but seizes its quarry on the ground, small mammals, insects and reptiles all falling a prey to its voracious appetite, as well as birds; even fish in shallow water are sometimes seized by it and the eggs of water-fowl are made

to pay a heavy toll. As an instance of the insatiable appetite of this species and its young, may be mentioned the fact recorded by Mr. Seebohm, as having been communicated to him by Dr. Holland, of a pair of Marsh-Harriers, in one day, bringing to their nest no less than six partridges, four hares, and two leverets!

Like other Harriers, the present species places its nest, made of dry flags, twigs and grasses, on the ground, generally in the middle of a clump of reeds. The eggs, from four to six in number, are usually very pale bluish, or almost white and devoid of markings, but examples slightly marked with pale brown are occasionally met with. Average measurements 50 × 40 mm.

CIRCUS PYGARGUS (Linnæus).

MONTAGU'S HARRIER.

Falco pygargus, *Linn. Syst. Nat.* i, p. 126 (1766).

Circus pygargus, *Sharpe, Cat. Birds Brit. Mus.* i, p. 64; *Erlanger, J. f. O.* 1898, p. 434.

Circus cineraceus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 7 (1846).

Strigiceps cineraceus, *Loche, Expl. Sci. Alg. Ois.* i, p. 85 (1867).

Description.—**Adult male**, spring, from North Tunisia.

Above pale slate-grey; upper tail-coverts barred with white; central pair of rectrices grey, the remainder grey, barred with white and rufous; primaries black; secondaries slightly barred with black; axillaries and under sides of the body white, barred and striped with rufous; throat and breast grey, becoming white on the abdomen and rest of the underparts.

Iris yellow; bill black; cere yellow; feet yellow.

Total length 18.50 inches, wing 15, culmen 1, tarsus 2.35.

Adult female rather larger, and generally darker and browner in coloration.

Observations.—In this species the outer web of the fifth primary has a plain margin, without any notch, while the second primary has a notch *high up*.

This species, according to my experience, appears to be far from common in Tunisia, although Blanc says it is abundant in some seasons during the spring migration, and is occasionally to be met

with in the Regency in winter. It is said to be not uncommon in Algeria and Marocco, and according to Favier, is to be found breeding near Tangier, being nearly as common there as the Marsh-Harrier.

In its habits Montagu's Harrier does not seem to differ much, if at all, from the preceding species; it frequents the same localities, hunts for similar prey in the same systematic way, and roosts at night on the ground.

Like other Harriers, it constructs a bulky nest of flags and grasses on the ground, and lays from four to six eggs, of a pale greyish, or bluish-white, and usually unspotted, though specimens have been found with rufous markings on them. The eggs are smaller than those of its congeners, and, according to Loche, generally measure 45×34 mm.

CIRCUS CYANEUS (Linnæus).

HEN-HARRIER.

Falco cyaneus, *Linn. Syst. Nat.* i, p. 126 (1766).

Circus cyaneus, *Boie, Isis*, 1822, p. 549; *Sharpe, Cat. Birds Brit. Mus.* i, p. 52; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 7 (1846); *Koenig, J. f. O.* 1892, p. 348; *Whitaker, Ibis*, 1895, p. 103.

Strigiceps cyaneus, *Loche, Expl. Sci. Alg. Ois.* i, p. 90 (1867).

Description.—**Adult female**, spring, North Tunisia.

Above brown, with an admixture of creamy-white, particularly on the nape and neck; rump and upper tail-coverts pure white; tail barred; below creamy-white, striped with broad brown markings, which become more rufous on the abdomen, flanks and crissum.

Iris yellow; bill blackish; cere yellow; feet yellow.

Total length 21.50 inches, wing 15.50, culmen 1.25, tarsus 2.50.

Adult male smaller than the female, and of an ashen blue-grey colour throughout.

Observations.—In this species the outer web of the fifth primary is notched.

The Hen-Harrier does not appear to be at all common in Tunisia, although I have obtained specimens of it in spring from districts in

the north and centre of the Regency. Loche states that the species is very abundant in Algeria, and that it breeds there, but perhaps he may have mistaken some other Harrier for it. In Marocco, according to Favier, it appears to be seldom met with near Tangier. On the Spanish side of the Straits, Colonel Irby states that this Harrier, though a resident, is most frequently to be seen in winter, and the same seems to be the case in Italy and some other Mediterranean districts.

Resembling its congeners to a great extent in its general habits, the Hen-Harrier appears to differ from them in often frequenting mountain sides and open moors at some distance from water; it is also bolder in the pursuit of its prey, chasing birds on the wing, and not only seizing its victims on the ground. Like the Marsh-Harrier it will attack birds as large as partridges, as well as hares and rabbits.

In its nesting habits the Hen-Harrier is said to resemble the preceding species, but its eggs are rather larger.

CIRCUS MACRURUS (S. G. Gmelin).

PALLID HARRIER.

Accipiter macrourus, *S. G. Gmel. N. Comm. Petr.* xv, p. 439, pls. 8 and 9 (1771).

Circus macrurus, *Sharpe, Cat. Birds Brit. Mus.* i, p. 67; *Whitaker, Ibis*, 1895, p. 103; *Erlanger, J. f. O.* 1898, p. 432.

Strigiceps swainsoni, *Loche, Expl. Sci. Alg. Ois.* i, p. 88 (1867).

Circus pallidus, *Koenig, J. f. O.* 1888, p. 160; *id. J. f. O.* 1892, p. 348.

Description.—**Adult male**, spring, from North Tunisia.

Above French-grey; upper tail-coverts grey, barred with white; tail-feathers, with the exception of the central pair, also barred with white; primaries blackish; secondaries white on the inner web; breast very pale grey, becoming white on the rest of the underparts.

Iris pale yellow; bill black; cere yellow; feet gamboge-yellow.

Total length 18 inches, wing 13·80, culmen 1, tarsus 2·60.

Adult female resembles somewhat the female of *C. pygargus*.

Observations.—In this species the outer web of the fifth primary is plain, and the second primary has the notch *low* down.

This is undoubtedly the commonest of all the Harriers found in Tunisia, being particularly abundant during the periods of migration, when considerable numbers of the species may sometimes be observed together. It occurs also, though more sparingly, throughout the Regency during the winter months, and probably breeds in some parts of the north.

Loche states that it is tolerably common in Algeria, and that although he had never actually found its nest, he had met with young birds of the species which must have been bred in the country. In Marocco Favier records it as occurring on passage near Tangier. The species appears to be not uncommon in Southern Italy and other Mediterranean countries, being more plentiful to the east than it is to the west.

In its general habits the Pallid Harrier is considered to resemble the Hen-Harrier to a great extent, and like that bird is sometimes to be found hunting for its food in localities far distant from water. Cornfields and bush-covered plains in Tunisia are much frequented by this bird, but marshes and fens are always its chief haunts.

In its flight and food it does not differ from other Harriers, and its nest and eggs are said to resemble those of *C. pygargus*.

BUTEO BUTEO (Linnæus).

COMMON BUZZARD.

Falco buteo, Linn. *Syst. Nat.* i, p. 127 (1766).

Buteo vulgaris, Sharpe, *Cat. Birds Brit. Mus.* i, p. 186; Malherbe, *Faune Orn. de l'Alg.* p. 8 (1855); Koenig, *J. f. O.* 1892, p. 346.

Buteo cinereus, Loche, *Expl. Sci. Alg. Ois.* i, p. 41 (1867); Koenig, *J. f. O.* 1888, p. 140.

Description.—**Adult male**, winter, from Italy.

Upper parts dark brown, with a slight admixture of buff on the feathers of the nape; quills blackish at the tips and grey on the outer web, the basal half of the inner web being white slightly barred with brown; tail-feathers brownish-grey, closely barred with dark brown and broadly tipped with a band of the same colour, edged with buff, the outer rectrices with some white on their inner webs; chin, throat and entire breast dark brown, some of the feathers being slightly margined with whitish; abdomen buffy-

white, barred with dark brown ; sides and flanks dark brown ; crissum and under tail-coverts white, slightly barred with brown.

Iris brown ; cere and feet yellow ; bill blackish ; claws black.

Total length 20 inches, wing 15·25, culmen 1·35, tarsus 2·80.

Adult female, similar to the male, but rather larger.

Observations.—This species varies considerably in the colour of its plumage as well as in its size, so much so indeed that by some ornithologists it has been considered as worthy of specific subdivision. A common form in Southern Italy is the pale brown one with much white on its plumage, particularly on the underparts.

Young birds of this species have the iris of a glassy grey colour.

The Common Buzzard is said to be found occasionally in Tunisia, though I cannot say that I myself have ever met with the species there, and if it really occurs in the Regency, it must be rare. Blanc informs me that in the course of ten years he has not received more than two or three examples of the bird, these having been obtained in the winter and spring months.

Loche states that the Buzzard is of universal distribution in Algeria, but it seems probable that specimens of *B. desertorum* in immature plumage, were mistaken by him for the present species. In Marocco, according to Favier, the Common Buzzard is seen in flights on passage in March and April, and Colonel Irby states that he has seen these birds crossing the Straits in March (Orn. Strs. Gib., 2nd Ed., p. 168). Mr. Howard Saunders tells us that the species “ inhabits the Cape Verde Islands, Canaries and Madeira, while the Azores owe their name to its abundance, when the Portuguese discovered that group (Man. Br. B., 2nd Ed., p. 322).

Mr. Meade-Waldo also informs us that the Buzzard is fairly numerous in the Ladera of El Golfo (Hiero).

Regarding the nesting of the present species in Tunisia, or indeed anywhere in North-west Africa, I am without any information.

In its habits the Common Buzzard is generally looked upon as being a dull lazy bird, but although its flight may be heavy, the species is probably as active as many other Raptores, and it is certainly very watchful, and always on the alert. Its flight, when roaming over woods in search of its prey, is slow and apparently laboured, but the bird is fond of soaring in graceful circles to a considerable altitude, on such occasions generally uttering its clear

mewing note. Small mammals and birds form its principal food, but reptiles and insects are also eaten by it, as well as carrion. In captivity it becomes very tame, particularly when taken from the nest.

BUTEO DESERTORUM (Daudin).

AFRICAN BUZZARD.

Falco desertorum, *Daud. Traité d'Orn.* ii, p. 162 (1800).

Buteo desertorum, *Vieill. Nouv. Dict.* iv, p. 478 (1816); *Sharpe, Cat. Birds Brit. Mus.* i, p. 179; *Koenig, J. f. O.* 1888, p. 157; *id. J. f. O.* 1892, p. 346; *Whitaker*, 1895, p. 103.

Buteo ferox, *Malherbe, Faune Orn. de l'Alg.* 1855, p. 8.

Falco ferox, *Malherbe, Faune Orn. de l'Alg.* 1855, p. 8.

Falco cirtensis, *Malherbe, Faune Orn. de l'Alg.* 1855, p. 8.

Buteo cirtensis, *Loche, Expl. Sci. Alg. Ois.* i, p. 44 (1867); *Erlanger, J. f. O.* 1898, p. 408.

Description.—**Adult male**, spring, from North Tunisia.

Head and neck creamy-white, with pale rufous-brown striations; back, scapulars, rump, and upper wing-coverts light rufous-brown; primaries blackish-brown; tail pale rufescent-brown, barred with a darker shade of brown, the bars on the central pairs of rectrices being almost obsolete; entire underparts creamy-white, sparsely striped, and chiefly on the thighs, with rufous.

Iris greyish-brown; bill blackish; cere and gape yellow; feet light yellow.

Total length 19 inches, wing 14·50, culmen 1·35, tarsus 2·70.

Adult female, similarly coloured, but larger.

Total length 21 inches, wing 15·25, culmen 1·45, tarsus 3.

Observations.—Individuals vary considerably in shade of colour, probably according to age. Tunisian examples are, as a rule, much paler than those from Marocco.

The African Buzzard is considered by some ornithologists to be but a form or subspecies of the Common Buzzard, and there is no doubt there is considerable affinity between the two. On the whole, however, I am inclined to look upon them as specifically distinct, as besides differing greatly from one another in their plumage coloration generally, the difference in the marking of the tail appears to

offer a fairly distinctive character. In *B. buteo* the bars on the tail are more numerous and closer together than they are in *B. desertorum*, and moreover, never seem to disappear entirely, or become obsolete with age, as in the latter species; on the other hand, I do not find that the difference in the proportions of the middle toe, which is thought by some to be a distinguishing feature, is sufficiently constant to be taken into account. The fact of the two species occurring in the same country, if fully established, would be an argument in favour of their being considered specifically distinct one from the other.

The Algerian or Desert Buzzard occurs generally throughout the Tunisian Regency, being however, more often met with in the semi-desert country, and among the lower hill ranges of the central and southern districts, than in the woodlands and higher mountains of the north. The species appears to be universally distributed throughout North-west Africa, and is more or less abundant in both Algeria and Marocco. In the former country I found it not uncommon on the plains to the east of Biskra, and on the southern slopes of the Aurès mountains, while from Marocco my collection possesses examples of it, obtained at Shaf-el-Akab, Garbia, and in the neighbourhood of Tangier. In Spain and Portugal, as also in Italy, this Buzzard has been met with occasionally, but it can only be regarded as an accidental visitor to South-west Europe, though abundant in the South-east of our Continent. Apparently the species occurs throughout the whole of the African Continent, and a considerable portion of Asia.

While resembling the Common Buzzard in many ways, the African Buzzard appears to differ from that bird in its more active habits, and in its more graceful appearance and flight. It is sometimes to be seen soaring to a great height, and then dropping suddenly down, and sweeping along within a few feet of the surface of the ground, its flight and movements being particularly graceful and dashing. Its cry is shrill and piercing. Its food consists chiefly of the small mammals and reptiles so abundant in semi-desert regions, but it also feeds on insects to a considerable extent, locusts entering largely into its diet during the periods of their invasions.

The breeding-season of this species in Tunisia may be said to commence towards the end of March, and extends throughout April, into May. Holes in low cliffs are generally chosen as sites for the

nests, these being often easily accessible without the aid of ropes or other appliances. That the species, however, nests in trees as well as among rocks, is undoubted, and Colonel Irby (Orn. Strs. Gib., p. 38) mentions having obtained a nest of this bird with two eggs, from the top of a high olive-tree at Garbia, West Marocco, and having shot the pair of old birds, one of them off the nest. These two specimens are in the Lilford collection, now in my possession; they are both very rufous coloured birds, and darker than the majority of Tunisian examples. The nest of this Buzzard is a bulky flat structure, composed, as a rule, of sticks and twigs, with a lining of wool and grass, but in districts where the Halfa, or Esparto-grass grows plentifully, it is often composed entirely of that material. The usual complement of eggs appear to be three, but often only two are laid. In colouring and marking, as well as in size and shape, the eggs vary not a little, being, however, generally of a faint bluish, or greenish-white, spotted and blotched with rusty-brown. They are often, however, spotless, or very slightly streaked with dark brown, and occasionally have pale lilac shell-marks and dark brown surface-spots and blotches. Average measurements 55×45 mm. Both sexes appear to take part in the incubation of the eggs.

BUTEO FEROX (Gmelin).

LONG-LEGGED BUZZARD.

Falco ferox, *S. G. Gmel. N. Comm. Petrop.* xv, p. 442, tab. x (1769).

Buteo ferox, *Thien. J. f. O.* 1853, p. 108; *Sharpe, Cat. Birds Brit. Mus.* i, p. 176; *Koenig, J. f. O.* 1888, p. 158; *id. J. f. O.* 1892, p. 346.

Description.—**Adult male**, from North Tunisia.

Forehead creamy-white, with fine brown striations; crown pale rufescent brown, with rather darker striations; nape white, sparingly streaked with brown; rest of upper parts earth-brown, the feathers of the mantle and wing-coverts margined with rufous; primaries dull black, their outer webs silvery-grey, and their inner webs pure white on the basal half; secondaries brown, with their inner webs white, barred and marbled with rufescent-brown; tail creamy-white on the basal portion, becoming rufescent-brown towards the tip and slightly barred with darker brown on most of the feathers; chin and throat creamy-white, with very fine striations; breast

rather darker and more streaked with rufous-brown; abdomen, sides and flanks still darker rufous-brown; crissum and under tail-coverts creamy-white.

Iris hazel; bill slate; cere and feet yellowish.

Total length 24 inches, wing 18.50, culmen 1.60, tarsus 3.60.

Adult female, similar to the male, but rather larger.

Of this large Buzzard I have but two specimens from Tunisia, for one of which I am indebted to my friend Mr. E. Cavendish Taylor, who happened to see it amongst Blanc's birds in Tunis and kindly informed me of the fact. The other example in my collection was also obtained from Blanc. Both appear to have been secured in the neighbourhood of the town of Tunis.

Dr. Koenig also obtained a specimen of *B. ferox* from Blanc (J. f. O. 1888, p. 158), but the species is probably not common in the Regency or in any part of North-west Africa, although Bonaparte, Malherbe, and other authors have mentioned its occurrence in the country. The species is indeed an Eastern one, its habitat proper being in South-east Europe, North-east Africa, and a portion of the Asiatic Continent. It has, however, occurred occasionally in Italy, and specimens of it, obtained chiefly from the south of the Peninsula, Sicily and Sardinia, are to be found in collections.

In France, also, the species is stated to have occurred occasionally, though rarely.

In its habits the present species is said to resemble the Common Buzzard, but as it appears to be essentially a denizen of the plains and steppes, it probably resembles more closely the African or Desert Buzzard. Canon Tristram, writing of the birds of Palestine, calls *B. ferox* the Buzzard of that country, and says that the species is gregarious in winter, segregating in pairs in spring.

Like other Buzzards the present species feeds on small mammals, reptiles and insects, and, in marshy districts, on frogs.

AQUILA MACULATA (J. F. Gmelin).

GREATER SPOTTED EAGLE.

Falco maculatus, *Gmel. Syst. Nat.* i, p. 258 (1788).

Aquila maculata, *Dresser, Ann., and Mag. Nat. Hist.* Ser. 4, xiii, p. 373 (1874); *Sharpe, Cat. Birds Brit. Mus.* i, p. 246.

Aquila nævia, *Malherbe, Faune Orn. de l'Alg.* p. 5 (1855); *Loche, Expl. Sci. Alg. Ois.* i, p. 28 (1867); *Koenig, J. f. O.* 1888, p. 140; *id. J. f. O.* 1892, p. 286.

Description.—**Adult male**, winter, from Italy.

Above dark earth-brown, becoming rather more rufous or fulvous on the crown and nape, and whitish on the rump and upper tail-coverts; quills and tail blackish-brown, the latter unbarred and slightly tipped with buff; underparts rufous-brown.

Iris brown; bill blackish; cere and feet yellow.

Total length 27 inches, wing 20, culmen 2.25, tarsus 3.75.

Adult female, similar to the male, but rather larger, its wing measuring 22 inches.

Observations.—Immature birds, which have not acquired their full plumage, are darker and have large oval fulvous white spots on their scapulars and upper wing-coverts, and on the tips of their secondary quills. The thighs are also spotted, and the tail is barred to a slight extent. Among the specimens of this Eagle in the Lilford collection is an example in which the spots on the upper parts are of a tawny-brown instead of whitish. This is no doubt the transitional stage between the immature and adult plumage.

This Eagle appears to be found occasionally in Tunisia, but is probably rare there, and of merely accidental occurrence. Salvin, when travelling in the Eastern Atlas, seems to have met with a pair of the species at the Djebel Dekma, and Malherbe mentions having obtained it from the neighbourhood of Bone, which is not far from the Tunisian frontier. Loche includes this Eagle among the birds of Algeria, stating, however, that he had rarely met with it, and considered it as merely a bird of passage in that country.

Malherbe appears to have obtained the species from the vicinity of Oran, but it seems to be unrecorded so far from Marocco. In Spain, however, this Eagle undoubtedly occurs, examples of it having been obtained there from time to time. In Italy it is generally to be met with in its immature dress and rarely in adult plumage.

In its habits the Greater Spotted Eagle is said to be rather sluggish, and its flight is heavy. It frequents wooded country and the borders of lakes and marshes, where it finds its favourite food in the shape of frogs, though it appears also to be partial to fish, either fresh or decomposed. It also preys on other creatures, such as small mammals, birds and snakes, and does not disdain carrion.

In some Eastern countries where the species is common, this Eagle is often to be met with in considerable numbers, and any large piece of water is sure to be haunted by several of the birds, which may be seen perching on trees bordering the water-side, on the look-out for game. It is not particularly shy, and may sometimes be easily approached, particularly if it should happen to be intent on its prey. It is said rarely to soar to any height, or indeed to leave the trees, to which it is so attached by habit, and which also invariably form its nesting quarters.

The Lesser Spotted Eagle (*A. pomarina* or *A. pomerana*, as it should no doubt properly be spelt), does not appear to have occurred in North-west Africa, though it is said to be met with occasionally in Southern Europe. The Lilford collection contains a male example of it procured as far west as Malaga.

AQUILA RAPAX ALBICANS (Rüppell).

PALE TAWNY EAGLE.

Falco rapax, *Temm. Pl. Col.* i, pl. 448 (1828).

Aquila rapax, *Lesson, Traité d'Orn.* p. 37 (1831); *Sharpe, Cat. Birds Brit. Mus.* i, p. 242; *Malherbe, Faune. Orn. de l'Alg.* p. 6 (1855).

Aquila albicans, *Rüpp. Neue Wirbelth.* p. 34, pl. 13 (1835).

Aquila nævioides, *Loche, Expl. Sei. Alg. Ois.* i, p. 24 (1867); *Koenig, J. f. O.* 1888, p. 140; *id. J. f. O.* 1892, p. 286.

Aquila rapax albicans, *Erlanger, J. f. O.* 1898, p. 419.

Description.—**Adult.**

General plumage above and below creamy-grey or sand-colour; primaries black; secondaries brown; greater wing-coverts and scapulars light brown; tail greyish-brown, slightly tipped with creamy-grey, and showing faint traces of bars on some of the feathers.

Bill blackish, darker at tip; cere and feet yellow; claws black.

Total length 26 inches, wing 20·50, culmen 2·50, tarsus 3·40.

Observations.—The above description is taken from an unsexed and unlabelled specimen in the Lilford collection, which corresponds well with the description and plate given by Loche of Levaillant's *Falco belisarius* (Expl. Scient. Alg. Ois. i, p. 24, pl. 2).

In the same collection there is another similar example, also unlabelled, and two others which are more tawny in coloration, one of which, obtained in Spain, is no doubt referable to typical *A. rapax*, and the other, which is rather smaller, to *A. vindhiana*.

A fifth specimen in the Lilford collection, labelled "*A. cullenæi*, female, E. Mus. C. N. Bree, M.D.," is of a larger size, and is marked somewhat differently.

The Tawny Eagle occurs throughout Africa generally, either in its typical or in its pale form, while eastward it ranges as far as Palestine, beyond which, in Asia, it is replaced by the closely-allied though somewhat smaller *A. vindhiana*, Frank.

In Europe this Eagle is of rare occurrence, though in Bulgaria, according to Dr. W. H. Cullen, it is a permanent resident in the neighbourhood of Kustendjie (*Ibis*, 1867, p. 247), and it was on a specimen obtained by him as a nestling in that district, that Dr. Bree bestowed the name of *Aquila culleni* (Bree, Birds of Eur., 2nd Ed., i, p. 89).

In Spain the species appears to have been met with occasionally, and it has once or twice been obtained in the Island of Sardinia.

In Algeria and Marocco the Tawny Eagle is not uncommon, and Loche states that it is to be found in all three provinces of the former country, while examples of it have been obtained from various parts of the latter. Mr. C. Dixon appears to have observed the species near Lambessa in Algeria.

In Tunisia the species is not unfrequently to be met with in the northern and more wooded parts of the Regency, but apparently does not occur south of the Atlas Mountains, where the country is arid and, to a great extent, treeless. Baron v. Erlanger obtained specimens of it, an adult bird and a nestling, in the Aleppo-pine woods near Ain-Bou-Dries in the Atlas district, and observed it farther north in the evergreen-oak forests near Camp de la Santé. Salvin appears to have met with the species near Kef-Laks, and at Djendeli, and probably it occurs generally throughout the Atlas region.

In its habits this Eagle is said to be sluggish, and though not shy, is by no means bold or courageous, preying chiefly on small

mammals, birds and carrion, in preference to larger animals. It is, however, voracious, and will attack other birds of prey smaller than itself, and rob them of their quarry. The species appears to nest principally in high trees, though at times it is said to resort to cliffs for that purpose. Its eyrie is a large one, and is formed of dry twigs and branches, with a little grass.

According to Loche it lays two eggs of a greyish-white colour with faint reddish or lilac shell-marks, and darker rufous and brown surface-spots, the average measurements of the eggs being 70×60 mm. Its breeding season is rather later than that of most Eagles.

The Tawny Eagle found in Tunisia appears to be referable to the pale form, which has been separated subspecifically from *A. rapax* (Temm.), under the name of *A. rapax albicans* (Rüpp) (Neue Wirbelth. p. 34. pl. 13); the type comes from Abyssinia, and is in the Senckenberg Museum at Frankfort. Levaillant junior's *Falco belisarius*, of which a plate is given in Loche's work, is also no doubt referable to this subspecies.

Whether this pale form has been rightly separated, is open to question, but the general opinion, including that of so good an authority on the subject as Mr. J. H. Gurney, appears to be in favour of its being so, and of the form being considered as a good local race or subspecies.

At the same time the fact quoted by Mr. Gurney in his excellent notes on *A. rapax* and its allies (*Ibis*, 1877, pp. 224-236) of a nesting pair of this Eagle having been obtained by Mr. Jesse in Abyssinia, in which the two sexes differed totally from each other in the colour of their plumage, one being dark and the other light, seems to be a strong argument against separation, and seems to indicate that great variation exists in the coloration of this species. The pair of Eagles alluded to were shot by Mr. Jesse himself in Abyssinia on April 27th, 1868, and were thus referred to by him (Trans. Zoo. Soc. Lon. vii, p. 201) :—

“Female. Iris brown; cere yellow; bill almost black.

“Male. Iris yellowish-grey; cere dirty-yellow; beak bluish-grey at base; black at tip.

“The pair above noted were killed the same day, one on the nest, the other as he swooped down to look for his companion; these two examples sufficiently illustrate the variation to which this Eagle is subject, the female bird being almost entirely cream-coloured, and

the male so brown as to be verging on black; the iris and beak are different in each; the remaining five specimens I got vary considerably, none, however, being so dark or so light as the pair above mentioned." The Abyssinian Tawny Eagle does not seem to differ from typical *A. rapax* from South Africa in form or measurements, but merely in coloration and marking.

AQUILA CHRYSÆTUS (Linnæus).

GOLDEN EAGLE.

Falco chrysaëtos, *Linn. Syst. Nat.* i, p. 125 (1766).

Aquila chrysaëtus, *Dumont, Dict. Sci. Nat.* i, p. 339 (1816); *Sharpe, Cat. Birds Brit. Mus.* i, p. 235; *Koenig, J. f. O.* 1892, p. 293; *Whitaker, Ibis*, 1894, p. 96; *Erlanger, J. f. O.* 1898, p. 412.

Aquila chrysaëtos, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 5 (1846).

Falco fulvus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 5 (1846).

Aquila fulva, *Loche, Expl. Sci. Alg. Ois.* i, p. 18 (1867).

Description.—**Male**, spring, from Oglet-Alima, South Tunisia.

Head and nape tawny-buff; remainder of the upper plumage generally dark brown, paler on the wing-coverts, and darker on the primaries; the base of the tail mottled with white; underparts brown, the white bases of the feathers showing here and there; feet feathered down to the toes.

Iris hazel; bill dark slate, blackish at the tip; cere and feet bright yellow.

Total length 34 inches, wing 23.50, culmen 2.40, tarsus 4.0.

Female similar to the male, but rather larger.

The Golden Eagle occurs throughout Tunisia generally, but is perhaps more abundant in the north than in the south of the Regency. Nowhere, however, can it be called at all common, and it is unusual to find more than one pair of the species frequenting the same mountain range during the breeding season.

In Algeria the Golden Eagle is by no means uncommon, both north and south of the Atlas. In some of the southern Dayats, according to Canon Tristram, the species appears to be remarkably numerous, and may almost be said to be gregarious, several pairs of the birds being found frequenting the same Dayat, and apparently living together in perfect harmony. Loche and Salvin both record

the species as abundant in Algeria. In Marocco it also occurs, though perhaps less abundantly than it does further east.

In North Tunisia the species may be met with on most mountain ranges, even within a short distance of a town or village. I recollect on one occasion, when returning to Tunis from an excursion to the ruins of Oudena, near that town, shooting a fine Golden Eagle as it flew from the remains of a dead fox, upon which it had been feeding in the middle of the road. The fox must have been dead for some time judging from its unsavoury odour. On another occasion, at the end of a fruitless stalk after Barbary Mountain Sheep (*O. tragelaphus*) on the Djebel Selloum in Central Tunisia, I suddenly came upon a Golden Eagle which darted out from under the ledge of a cliff within a few feet of me. Although loaded with ball, I could not resist the temptation of a shot, as the bird was so close to me, but I only succeeded in hitting it far back, and knocking out a handful of feathers from its tail. The poor bird flew off at first in a somewhat erratic way, being minus a considerable portion of its steering gear; but recovering itself, finally succeeded in making good its escape.

The furthest point south where I have observed the Golden Eagle in Tunisia has been between Oglet-Alima and Tamerza, where I once killed one of these birds, as it flew over my head.

Baron v. Erlanger, however, mentions having met with the species in the month of January, as far south as the Djebel Dekanis. This lies in about the same degree of latitude as the districts in the Algerian Sahara, where Canon Tristram found the species so abundant, and nesting in company. It is a curious fact that a bird like the Golden Eagle, usually so absolute and despotic in its habits, and so jealous of its breeding-haunts, should here consort sociably with others of its kind. The reason is perhaps, as suggested by Canon Tristram, the impossibility of finding other nesting places in the vicinity, but the fact is none the less remarkable, and forms a good illustration of the effect peculiar conditions of environment may have in modifying the habits of birds.

In its nature and disposition the Golden Eagle is bold and courageous as a rule, though at times it has been known to allow a smaller and weaker bird to drive it away. It preys on lambs, kids, hares and birds, and in South Tunisia, on young gazelles to a considerable extent. It will, however, often feed on carrion, as I have myself had an opportunity of verifying. Its flight is powerful and graceful, and

it is fond of soaring to a great altitude, from whence, like Vultures and some other Raptores, it scans the underlying country in search of its prey.

The breeding-season of the Golden Eagle in Tunisia seems to commence early in March, and extends over a couple of months. In most countries the species nests either in trees or among rocks, according to circumstances, but in Tunisia the latter situations are generally selected, although Salvin, writing of his bird-nesting in the Eastern Atlas, says that instances of the Golden Eagle building in trees were by no means of unfrequent occurrence. Holes or clefts in cliffs, protected by an overhanging ledge of rocks, are favourite spots, and here a large flat structure is formed of sticks and twigs, both fresh and dry, with a lining of grass or other soft plant-material. The usual number of eggs laid is two, but the complement seems to vary from one to three. In size and coloration there is considerable variation, but typical eggs may be said to be of a white or pale greenish-white, with lilac or grey shell-marks, and rufous-brown surface-spots and blotches; average measurements are about 70 × 60 mm.

The Imperial Eagle (*A. heliaca*) is said by Malherbe and by Loche to occur in Algeria, and the former states that he had obtained it from Guelma, which is not far from the Tunisian frontier. I have no knowledge, however, of the species being met with at the present day anywhere in the Regency. In Marocco, according to Colonel Irby (Orn. Strs. Gib. p. 171), the Imperial Eagle, no doubt in its western form (*A. adalberti*), is said by Favier to be rare near Tangier, and Col. Irby himself examined Moorish specimens in immature plumage, and saw what he considered to be this Eagle on the wing.

NISAËTUS FASCIATUS (Vieillot).

BONELLI'S EAGLE.

Aquila fasciata, Vieill. Mém. Linn. Soc. Paris, p. 152 (1822).

Nisaëtus fasciatus, Sharpe, Cat. Birds Brit. Mus. i, p. 250; Whitaker, Ibis, 1898, p. 126; Erlanger, J. f. O. 1898, p. 424.

Aquila Bonelli, Malherbe, Cat. Rais. d'Ois. Alg. p. 6 (1846).

Pseudaëtus Bonellii, Loche, Expl. Sci. Alg. Ois. i, p. 29 (1867).

Aquila Bonellii, Koenig, J. f. O. 1892, p. 338.

Description.—**Adult male**, autumn, from North Tunisia.

Above earth-brown, darker on the quills; upper tail-coverts and tail barred with dark brown, the exterior tail-feathers having a little white on their inner webs; underparts light rufous-brown, finely striated with dark brown on the throat and breast.

Iris yellow; bill dark lead-colour; feet feathered down to the toes.

Total length 27 inches, wing 18·50, culmen 1·90, tarsus 3·60.

Adult female, winter, from North Tunisia.

Above dark brown, blackish on the quills; tail grey-brown, barred with dark brown above, and with a broad dark brown band at the tip; cheeks rufous-brown; underparts white, with elongate pear-shaped stripes of dark brown; flanks dark brown. Soft parts as in the male.

Total length 28 inches, wing 20·50, culmen 2·10, tarsus 4.

Observations.—Individuals of this species vary somewhat in size, as well as in colour and marking, according to their age.

This Eagle appears to be fairly common and resident throughout Tunisia, being found both in the north and south of the Regency, wherever there are mountains of any size affording suitable breeding sites.

I have never myself obtained it there, but have specimens from the neighbourhood of the town of Tunis, where, according to the naturalist Blanc, the bird is to be met with on all the more important mountain-ranges, such as those near Zaghouan and the Djebel Ressay. It is said to occur near the town of Sousa on the east coast, and Dr. Koenig obtained a young bird of this species from the Djebel Batteria near Hammanet, also on that coast. According to Baron v. Erlanger, who had several opportunities of observing Bonelli's Eagle in Tunisia, the species is far more abundant south of the Atlas than it is north of those mountains, and appears to be universally distributed throughout all the arid hill districts of Southern Tunisia.

In Algeria and Marocco, Bonelli's Eagle is by no means uncommon. In Spain and Portugal it seems to be more or less generally distributed, being resident in some parts of those countries. The species occurs throughout the greater portion of Southern Europe as well as Palestine, where it would appear to be abundant.

In its habits and in its flight Bonelli's Eagle greatly resembles the Falcons, and is indeed more like them than the larger Eagles. It is said never to feed on carrion or to touch anything not captured by itself, its principal prey being hares and rabbits, as well as large birds,

such as Bustards, Sand-grouse and Pigeons. When inhabiting districts near lakes or marshes it is said to subsist chiefly on water-fowl, and in dry, sandy localities it will feed on small rodents and even on snakes and other reptiles. In captivity the species is generally wild and untameable, although, according to Loche, it is sometimes capable of becoming remarkably docile and of living peaceably with other birds of prey, provided there be no interference on the part of the latter with its food supply.

The same author relates a curious story of a pair of young Bonelli's Eagles, which were struck by lightning and killed before his eyes (*Expl. Scient. Alg. Ois. i, p. 31*).

The species, though distinctly a rock-nesting one, has been stated by Loche and other ornithologists to nest occasionally in trees. In South Tunisia, however, according to Erlanger, it invariably breeds among rocks, choosing, as a rule, the highest and most inaccessible mountain-ridges as a site for its eyrie, which is a flat structure composed of dry sticks and twigs, and lined with Halfa-grass. In wooded districts, however, fresh green branches and twigs are frequently employed in the construction of the nest. The eggs, as a rule, are two in number, and of a soiled white, slightly streaked and spotted with rufous or brown; their average measurements are about 70×52 mm., but they vary a good deal in size. Both sexes appear to take part in the incubation of the eggs, and both have been found on the nest at the same time, according to Colonel Irby, who gives some excellent notes regarding the nesting of this Eagle at Gibraltar (*Orn. Strs. Gib., pp. 176-178*). The species is an early breeder, nesting operations sometimes commencing in January, and eggs being laid in February and March.

NISAËTUS PENNATUS (Gmelin).

BOOTED EAGLE.

Falco pennatus, *Gmel. Syst. Nat. i, p. 272 (1788)*.

Nisaëtus pennatus, *Sharpe, Cat. Birds Brit. Mus. i, p. 253*.

Ieraetus pennatus, *Loche, Expl. Sci. Alg. Ois. i, p. 132 (1867)*.

Aquila pennata, *Koenig, J. f. O. 1888, p. 151; id. J. f. O. 1892, p. 339*.

Description.—**Adult female**, spring, from Spain.

Forehead whitish, crown and nape fulvous, streaked with dark brown; upper parts dark earth-brown, varied with creamy-buff on the scapulars and rump; tail dark earth-brown, slightly tipped with creamy-buff, and obscurely barred on some of the feathers; primaries black, becoming paler and slightly barred on the basal portion of the inner webs; secondaries dark earth-brown, paler and barred on the inner webs; underparts creamy-white, the chin and throat thickly streaked with rufous-brown, and the breast less so.

Bill slate, darker at tip; cere and feet yellow.

Total length 21 inches, wing 15·40, culmen 1·60, tarsus 2·40.

Adult male, similar to the female but smaller.

This small Eagle appears to be rare in Tunisia, and may possibly only occur there on passage, as it is eminently a migratory bird. I have but one example of the species from the Regency, and Blanc, the naturalist, states that he has only obtained specimens of it once or twice during the many years he has resided in the country. Malherbe appears to have received examples of it from the neighbourhood of Bône, and Salvin met with the species when travelling in the Eastern Atlas, and states that he saw it more than once about the Djebel Dekma.

Loche and Taczanowski both speak of the Booted Eagle as occurring in Algeria, the former stating that although rare, the species breeds in that country. In Marocco, according to Mr. C. F. Tyrwhitt Drake, it has been seen on a few occasions at Tetuan and Tangier, and Favier speaks of it as being both a migratory and a breeding species in the vicinity of Tangier. In Spain the Booted Eagle appears to be common during the summer season, and a regular breeding species, though leaving that country in winter. Further east in Europe, the species is said to be rare in some countries, but not uncommon in others.

In its habits *N. pennatus* somewhat resembles the Buzzards, chiefly frequenting wooded districts, and feeding on small mammals and birds. It is said to be far from shy, and when nesting, to be most devoted to its mate and to its nestlings. Its note is a clear wailing cry.

In captivity, according to Colonel Willoughby Verner, who, when in Spain, brought up several of the young, this species is bold and fearless at first, but when full grown becomes sulky and savage.

HALIAËTUS ALBICILLA (Linnæus).

SEA-EAGLE.

Vultur albiulla, *Linn. Syst. Nat.* i, p. 123 (1766).

Haliaëtus albicilla, *Leach, Syst. Cat. Mamm. &c.*, p. 9 (1816); *Loche, Expl. Sci. Alg. Ois.* i, p. 34 (1867); *Koenig, J. f. O.* 1888, p. 140; *id. J. f. O.* 1892, p. 286.

Haliaëtus albicillus, *Sharpe, Cat. Birds Brit. Mus.* i, p. 302.

Description.—Almost **adult male**, winter, from the Island of Galita, North Tunisia.

Head and neck creamy-white, streaked with brown; remainder of plumage mostly dark ash-brown, the quills blackish and the tail, which is wedge-shaped, white tipped with brown; underparts dull brown.

Iris, bill, cere and feet yellow.

Total length 33 inches, wing 24, culmen 3, tarsus 4.

Adult female similar to the male, but rather larger.

The fully adult bird has the tail entirely white.

The young bird has most of its plumage, including the tail, dark ash-brown.

The Sea-Eagle, or White-tailed Eagle, is to be found on the north coast of Tunisia, and I have an example of it obtained on the small island of Galita, in December, 1904. Another example was obtained by Blanc, in January of the same year, in the neighbourhood of Tabarca. The species is apparently not common anywhere in the Regency and I am unable to say if it is resident there.

The Sea-Eagle appears to occur in Algeria, although Loche states that he seldom met with it, and had never seen an adult bird of the species.

From Marocco I have no note of its occurrence, but it is probably to be found from time to time in that country, as it has been met with in the Canaries, and also occurs occasionally in Spain. The species indeed would appear to inhabit the whole of the Palæarctic Region, though rare in many parts of it. In North-east Africa, however, contrary to what obtains in the North-west of the Continent, the Sea-Eagle is tolerably abundant and has been found nesting in considerable numbers in the marshy lagoons of Lower Egypt, one of its favourite breeding-haunts there being the reed-beds of Lake Menzaleh.

As its name implies, this Eagle is a denizen of the sea-coast, and

is usually to be found in such localities, though it may also be met with in the vicinity of inland lakes and rivers, often at a considerable distance from the sea. It is said to be rather sluggish and inactive, but when pressed by hunger, displays no little dexterity on the wing. It rarely attacks anything larger than a hare or rabbit, and preys largely on wild-fowl, as well as on fish thrown up on the sea-shore, not disdaining carrion and garbage. Its note is a shrill yelping cry.

CIRCAËTUS GALLICUS (Gmelin).

SHORT-TOED EAGLE.

Falco gallicus, *Gmelin, Syst. Nat.* i, p. 259 (1788).

Circaëtus gallicus, *Vieill. Nouv. Dict. d'Hist. Nat.* vii, p. 137 (1817); *Sharpe, Cat. Birds Brit. Mus.* i, p. 280; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 6 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 38 (1867); *Koenig, J. f. O.* 1888, p. 140; *id. J. f. O.* 1892, p. 286; *Erlanger, J. f. O.* 1898, p. 436.

Falco brachydactylus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 6 (1846).

Description.—**Adult male**, spring, from El-Oubira, Central Tunisia.

Above dark earth-brown, becoming blackish on the quills; upper tail-coverts with white bases and tips; central rectrices barred with a darker shade of brown; the remaining rectrices also barred, and with white inner webs and white bases; underparts white, striped with light earth-brown on the throat and breast, and slightly barred with that colour on the abdomen, flanks and under tail-coverts.

Iris, which is very large, bright golden yellow; bill blackish; cere and feet grey; the tarsi bare and covered with hexagonal scales.

Total length 26 inches, wing 21, culmen 2, tarsus 3·90

Adult female, spring, from Djebel Eshkul, North Tunisia. Similar to the male, but slightly larger.

Total length 27 inches, wing 22, culmen 2·10, tarsus 4.

The common English name of Short-Toed Eagle is hardly well chosen, a better and more appropriate one for the species being that of *Serpent-Eagle*, the name by which the bird is known in some other countries, owing to its preying chiefly on snakes and other reptiles.

This fine bird is not at all uncommon in some parts of Tunisia, particularly in the north of the Regency, where it is resident. I have met with it on several occasions both in North and Central Tunisia, and the naturalist Blanc informs me that he often receives

examples of the bird from Arab sportsmen, and occasionally meets with one exposed for sale in the Tunis market. Regarding its occurrence in the south of the Regency I have no information, the most southern district where I have met with the species being that of Feriana, within a short distance of which Aleppo pine woods occur. In Algeria, where the Serpent-Eagle seems to be generally abundant, Canon Tristram appears to have met with the species as far south as the desert of Souf. It is equally numerous in Marocco, and is said to have been obtained in Senegal, while in some parts of Spain it is a common species, and apparently resident to a great extent.

In the localities it frequents, as also in its appearance, flight and habits, *Circaëtus gallicus* seems to resemble the Buzzards more than the Eagles. Its flight, as a rule, is slow and heavy, though at times it may be observed soaring in graceful circles at a considerable altitude. It is far from shy, being perhaps the most fearless of all Raptores, and may be described as foolishly tame, for it will allow a man to walk up to it within easy gunshot. I have more than once approached these birds within full view of them as they perched on a telegraph post or hayrick. They seem particularly fond of perching on telegraph posts, and if undisturbed will remain motionless in such positions for a considerable length of time, and in an attitude of dignified repose.

Though undoubtedly fond of the neighbourhood of woods and forests, the species is also constantly to be found frequenting open plains and rocky broken country, where its favourite food abounds. It may also frequently be met with in the vicinity of marshy land, where frogs and other small amphibians are plentiful. Lizards and snakes, however, seem to form its chief food, but the species occasionally preys upon small mammals and birds, and it is said to eat locusts and other insects. Mr. H. F. Witherby informs me that he has found in the crop of one of these birds a small snake, which had been swallowed whole. Baron v. Erlanger relates the somewhat strange case of a young bird of this species, which he had taken from the nest, and which curiously enough would not touch lizards or snakes, but eagerly devoured freshly-killed birds.

The Serpent-Eagle is said to be very noisy at times, particularly during the breeding-season, when its loud and harsh note may often be heard.

The breeding-season of this species commences towards the end

of March, and appears to extend throughout April and May into June. Both sexes take part in the incubation of the eggs. The species nests, as a rule, in trees, often at a considerable height above the ground, but in districts where trees are scarce it will resort to cliffs for that purpose, selecting, when possible, as the actual site for its nest a stunted tree or bush growing out of the rocks. Baron v. Erlanger gives some interesting particulars regarding the nesting of the Serpent-Eagle in Tunisia, from which it would appear that the bird is somewhat indifferent as to the height of the tree or bush it may select for its nest, and that the latter is rather small for the size of the bird, being a flat structure composed externally of stout sticks and internally of fresh twigs with a lining of Halfa-grass, among which may often be found pieces of snakes' or lizards' skins. Abundant remains of these reptiles are also to be found in the immediate vicinity of the eyrie. Erlanger never found more than one white, unspotted egg in a nest, the measurements varying from 72 to 62 mm. in length and from 59 to 55 mm. in breadth. Both Loche and Salvin speak of clutches of this species being composed of two eggs, and Canon Tristram also says that in Africa he had found two eggs in a nest, although in Palestine never more than one.

ASTUR PALUMBARIUS (Linnæus).

GOSHAWK.

Falco palumbarius, *Linn. Syst. Nat.* i, p. 130 (1766).

Astur palumbarius, *Cuv. Règne Anim.* i, p. 320 (1817); *Sharpe, Cat. Birds Brit. Mus.* i, p. 95; *Loche, Expl. Sci. Alg. Ois.* i, p. 70 (1867).

Falco (Dædalion) palumbarius, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 6 (1846).

Description.—**Adult female**, spring, from Spain.

Above dark earth-brown, with a slight white supercilium and a few white feathers on the nape; tail broadly barred with a darker brown, and slightly tipped with white; below whitish, closely barred all over with narrow brown bars.

Total length 24 inches, wing 14, culmen 1.40, tarsus 3.

Adult male similar to the female, but smaller.

The Goshawk appears to be rare in Tunisia, and Blanc informs me that he has obtained only two or three examples of it during the

past ten years. I am unable to say whether it nests in the Regency but it possibly does so, as it is apparently resident in Algeria and Marocco. According to Favier the species is not only resident near Tangier but is also frequently seen on passage, though rarely to be met with in winter.

The Goshawk frequents forests and wooded localities, particularly those where game is plentiful. It is exceedingly rapacious, and its swiftness and agility on the wing enable it to seize its prey with facility. At times it will even boldly visit the neighbourhood of a farm-yard and carry off poultry. It is said never to touch carrion.

The species nests in trees, often making use of the old nest of some other bird. The nest is a large structure, composed chiefly of dry twigs and root-fibres, and the eggs, three or four in number, are pale bluish-white, occasionally marked with rufous; average measurements 60 × 46 mm.

ACCIPITER NISUS (Linnæus)

SPARROW-HAWK.

Falco nisus, *Linn. Syst. Nat.* i, p. 130 (1766).

Accipiter nisus, *Pall. Zoogr. Rosso-As.* i, p. 370 (1811); *Sharpe, Cat. Birds Brit. Mus.* i, p. 132; *Malherbe, Cat. Rais d'Ois. Alg.* p. 6 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 72 (1867); *Koenig, J. f. O.* 1888, p. 152; *id. J. f. O.* 1892, p. 340.

A. nisus punicus, *Erlanger, J. f. O.* 1898, p. 429.

Description.—**Adult male**, winter, from Italy.

Above dark slate; forehead and eyebrows slightly rufescent; primaries blackish-brown, with darker bars; secondaries with white spots on each side of the shafts; tail barred with four blackish bands; chin rufescent; cheeks and sides of the neck light chestnut; greater part of the under surface white, very closely barred with light chestnut, the sides and flanks being entirely of that colour; under tail-coverts white.

Iris bright golden-yellow; bill dark slate; cere yellowish; feet bright lemon-yellow; claws black.

Total length 12·50 inches, wing 8, culmen ·65, tarsus 2.

Adult female, from North Tunisia.

Above dark slate-brown, the feathers on the nape and sides of the neck showing their white bases; a whitish streak extending over and behind the eye; primaries faintly barred with blackish bands; secondaries with white spots on each side of the shafts, forming almost white bands; tail barred

with five broad blackish bands, and tipped with a narrow whitish fringe; underparts greyish-white, the chin and throat slightly striped, and the rest of the plumage barred with narrow blackish-brown bars; under tail-coverts white; downy tufts on the flanks pale rufous.

Soft parts as in the male.

Total length 15 inches, wing 9.50, culmen .75, tarsus 2.25.

The Sparrow-Hawk is not uncommon in the wooded districts of Northern and Central Tunisia, where it is resident and breeds. The species is, however, probably also migratory to a considerable extent in the Regency, many more individuals being observable there during the periods of passage than at other seasons. In South Tunisia I have never met with it, but this is not surprising when we consider how distinctly arboreal this species is, and that the greater part of that country is destitute of trees. It may occur there occasionally in winter, as a migrant, though it probably never breeds south of the Atlas.

In Algeria the Sparrow-Hawk is very common, according to Loche, who, in his Catalogue of Algerian Birds, also includes the so-called large race, distinguished by Becker and Meissner as *Falco nisus major*, and by Degland as *Astur major*. Later travellers in Algeria, however, do not seem to have found the Sparrow-Hawk at all abundant in that country.

In Marocco the species is both migratory and resident, and has frequently been met with in the neighbourhood of Tangier and Tetuan. I have examples of it from North Marocco, obtained in the month of March.

As already observed, the present species is distinctly arboreal, being rarely found at any distance from woods and plantations, and those situated in the midst of richly cultivated country, where game abounds, are its most favoured resorts. Wilder districts, far removed from cultivation, where bird-life is less abundant, are not so much to its liking. Bold and rapacious by nature, and amazingly swift and agile on the wing, the Sparrow-Hawk is the terror of all the small birds in the woodlands it frequents. Though usually preying on birds smaller than itself it will often attack larger birds, such as pigeons and partridges, as well as young hares and rabbits. Poultry-yards are frequently visited by this bold marauder, which with silent but swift approach, will suddenly swoop down, and carry off a chick before its mother's eyes.

Its flight, when hunting for food, is generally close to the ground, over which it glides rapidly, but without apparent effort, from time to time swerving aside, for the closer inspection of some bush or corner likely to hold its prey. This it always strikes with its talons and devours *on the ground*, leaving a little heap of feathers, or fur, as a sad testimony of its handiwork.

When nesting, the Sparrow-Hawk may often be seen soaring at a considerable altitude above the wood which holds its eyrie. This is usually placed in a high tree, and is, as a rule, built by the bird itself, although occasionally it is said to use the old nest of some other bird, such as the Crow or Wood-Pigeon. In Tunisia, Baron v. Erlanger met with nests of this Hawk in Aleppo-pine trees, at a height of from twenty to twenty-five feet above the ground, built close to the trunk, and composed of pine twigs, the shallow interior being lined with small pieces of bark; the eggs, or nestlings in the nest, were two or three in number. Eggs of this species in my collection from Central Tunisia, obtained in May, do not differ from European examples, being of a pale greenish-white, with faint lilac shell-marks and large surface-blotches of rufous-brown; the average measurements are 40×32.50 mm. The nesting-season of the Sparrow-Hawk in Tunis appears to extend over April and May, and during this season it is said to utter a soft note, like "gu, gu, gu," but its usual alarm-note is a shrill "krick" repeated two or three times.

Baron v. Erlanger has separated the Tunisian Sparrow-Hawk from typical *A. nisus*, calling it *Accipiter nisus punicus* (J. f. O. 1898, p. 429). I have not a sufficient series of adult specimens from Tunisia to be able to speak authoritatively on the point, but judging from the examples I possess, and knowing as we do what a great variation there is in the plumage and marking of this species, I see no reason for separating it.

Mr. Dresser, in his article on *A. nisus* (Birds Eur. v. p. 616), after devoting several pages to descriptions of birds of this species from different parts of the world, concludes as follows: "After a careful study of the present species, which has occupied us nearly two months, we have to regret that the material examined has not proved sufficient to give any definite result regarding the Sparrow-Hawk, &c."

MILVUS MILVUS (Linnæus).

KITE.

Falco milvus, *Linn. Syst. Nat.* i, p. 126 (1766).

Milvus iclinus, *Sharpe, Cat. Birds Brit. Mus.* i, p. 319.

Milvus regalis, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 6 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 76 (1867); *Koenig, J. f. O.* 1888, p. 140; *id. J. f. O.* 1892, p. 286.

Milvus milvus, *Erlanger, J. f. O.* 1898, p. 403.

Description.—**Adult female**, spring, from North Marocco.

Forehead whitish, finely striated with dark brown; crown, nape and sides of head and neck pale rufescent white, streaked with dark brown, the white bases of the feathers being conspicuous on the nape; rest of the upper plumage dark brown, margined with rufous, showing here and there the white bases to the feathers; primaries blackish, becoming brown towards the bases; secondaries dark brown, with lighter inner webs barred with dark brown; tail, which is deeply forked, rufous, slightly barred on the inner webs of most of the feathers with dark brown; chin white, slightly striated with blackish; breast pale rufous, streaked with dark brown, and shading into whitish on the lower abdomen and crissum.

Iris light stone-grey; bill slate, blackish at the tip; cere and gape dull yellow; feet pale yellow; claws black.

Total length 24 inches, wing 19, culmen 1·80, tarsus 2·25.

Adult male similar to the female, but smaller.

The Kite is by no means abundant in Tunisia, its range there being apparently confined to a very circumscribed portion of the country. The species, however, undoubtedly occurs as a resident in the north of the Regency, and I have myself seen it in the neighbourhood of Chemtou, on the Tunis-Bône Railway, a district noted for its beautifully coloured and richly veined marble. This is the only locality where I have observed the Kite in Tunisia at sufficiently close quarters to be able to identify it with certainty, although in two or three other parts of the Regency I have seen birds which appeared to be of the species.

That the Kite is more or less rare in the Regency at the present day, appears to be unquestionable. Blanc, the naturalist, informs me that during the many years he has resided in Tunis he has only received two or three examples of the species, while Baron v. Erlanger, during his recent journey in the Regency, only met with it on one occasion, when he had a specimen brought to him which

was said to have been taken from a nest in the forest of Ain-Drahām.

When travelling in the Eastern Atlas, some years ago, Salvin appears to have met with the Kite more often, and mentions no less than four places where he found it nesting (*Ibis*, 1859, p. 183). He writes as follows concerning the species and its breeding: "For the most part we found that the nests of the Kite were much dispersed; I have no instance noted of more than a pair occupying one cliff. When in a rock they were usually placed where a small tree or shrub grew out of a crack. Such was the case at Djebel Dekma, Khifan, M'Sakta, and Kef Laks, with a single exception. In this case the nest was in a hole in the precipice that forms the western termination of Djebel Dekma. The young in this nest were hatched in the first week in April. About the Ouled Zeid country, north of Souk Harras, the nests were usually in trees. Nearly all the eggs we obtained were remarkably devoid of colouring."

From the foregoing account, one may gather that the Kite was formerly more abundant throughout the Eastern Atlas than it is now.

From Central and Southern Tunisia there seems to be no record of the occurrence of the species.

In Algeria, according to Malherbe and Loche, it is common. The latter author considers that Algerian examples of the bird are smaller than those from Europe.

In Marocco Mr. Tyrwhitt Drake found the Kite not uncommon at Tetuan in winter, and according to Favier, it is resident as well as migratory in the neighbourhood of Tangier. My own Marocco collection contains an example of it obtained at Shaf-el-Akab in March.

The species appears to be found in the Canaries and at Madeira, being particularly abundant at Tenerife, and according to Dr. Dornh, it also occurs in the Cape Verds. Throughout Southern Europe and the Mediterranean islands it is more or less common, while eastwards it ranges into Palestine and Asia Minor, though in North-east Africa its occurrence appears to be doubtful.

In the localities it frequents, and in many of its habits, the Kite resembles the Buzzards, though in its general appearance, and in its flight, it is a lighter and more graceful bird. When soaring, as it is fond of doing, its flight and movements are particularly graceful and attractive. It will remain for hours together in the air, circling slowly round and round in gradually widening or nar-

rowing curves, according as it ascends or descends, its wings outspread but motionless, its deeply-forked tail alone moving from time to time, in order to guide the bird's course. Occasionally it will ascend to a great height, and even disappear out of sight, but when the bird is hungry and searching for food, it keeps comparatively near the ground.

Small mammals, weakly birds, reptiles, and even insects, form its diet, while carrion is not disdained, but as the bird is timid and cowardly, it will rarely attack any creature capable of showing fight and defending itself.

Fish are said to be often taken by this bird, as they lie on the surface of the water. The Kite is silent as a rule, but during the breeding-season it utters a shrill and rather plaintive cry.

The species apparently nests either in cliffs or on high trees, the nest itself being a bulky structure composed of dry sticks, and generally lined with wool and bits of rag, or other extraneous materials. The eggs, usually three, and less often four in number, are white, or pale greenish-white, with greyish shell-marks and rufous-brown spots and blotches. Average measurements 60 × 45 mm.

MILVUS MIGRANS (Boddaert).

BLACK KITE.

Falco migrans, *Bodd. Tabl. Pl. Enl.* p. 28 (1783).

Milvus migrans, *Strickland, Orn. Syn.* p. 133 (1855); *Koenig, J. f. O.* 1892, p. 346; *Whitaker, Ibis*, 1895, p. 103.

Milvus korschun, *Sharpe, Cat. Birds Brit. Mus.* i, p. 322.

Milvus niger, *Malherbe, Faune Orn. de l'Alg.* 1855, p. 8; *Loche, Expl. Sci. Alg. Ois.* i, p. 77 (1867).

Milvus korschun reichenowi, *Erlanger, J. f. O.* 1898, p. 404.

Description.—**Adult male**, spring, El Oubira, Central Tunisia.

Entire head, throat and nape, whitish, streaked with blackish-brown upper parts generally dark brown, inclining to rufous on the wing-coverts; primaries dull black; the tail, which is only slightly forked, dull brown, indistinctly barred with dark brown; breast clove-brown, gradually shading into rusty-brown on the abdomen and into rufous on the flauks, most of the feathers, particularly on the breast, streaked with blackish-brown.

Iris bright hazel; bill and claws black; feet and cere yellow.

Total length 23 inches, wing 17.75, culmen 1.50, tarsus 2.20.

Adult female differs but slightly from the male.

Observations.—Specimens in my collection from Tunis vary somewhat in their colouring and marking.

The Black Kite is abundant in Tunisia, particularly during the spring migration, when it may constantly be seen in large flocks on passage. Many individuals remain and breed in the Regency, but, so far as I know, they all leave again in the autumn and do not pass the winter in the country.

In Algeria and Marocco the species is also common. When travelling in Tunisia in spring-time I used constantly to meet with these Kites, and often saw a pair or two following my caravan for some distance. These birds may also frequently be seen circling over the Arab *douars*, attracted no doubt by the scraps of food and offal to be found in the vicinity of the tents; so fearless and daring are they at times that they will swoop down into the middle of an encampment and carry off a piece of meat, or other "bonne-bouche," before one's eyes.

The flight of this Kite is bold and at the same time graceful, and a flock of these birds circling over one's head and going through their aerial evolutions is a fine sight. During a considerable portion of the year, the species, although not strictly gregarious, is to be found consorting in numbers, and may even be met with in company of other birds of prey, such as Buzzards. Although by choice a feeder on carrion, the Black Kite preys to a considerable extent on the small mammals so abundant on the semi-desert plains, and will also feed on reptiles, locusts and grasshoppers. It is also said to be fond of fish. Its note is a shrill cry or whistle.

The species seems to bear captivity well, and when brought up from the nest will become very tame. I have one of these Kites which was captured at sea off the coast of Sicily, as it alighted on the deck of a vessel, together with two others of its kind. Although not as a rule common or of general distribution in Italy, the species occasionally visits certain parts of the Peninsula in considerable numbers.

The Black Kite breeds either in isolated pairs or in colonies, and according to circumstances, places its nest either in a hole in a cliff, or on a tree. In the South of Tunisia, where trees are few and far between, the nest is generally to be found in cliffs and hill-sides, often at no great altitude. In North and Central Tunisia the olive-tree is

often chosen as a site for this bird's nest, which is a mass of sticks roughly put together and lined with a little wool or hair. Two eggs are generally laid and vary considerably in colour and marking, the ground colour being white, or greenish-white, more rarely very pale blue, and the spots, streaks and blotches, are reddish-brown. The average measurements are 55×41 mm.

Baron v. Erlanger has separated the Black Kite of Tunisia from typical *M. migrans* (Bodd), under the name of *Milvus korschun reichenowi*, on account of its supposed smaller size and different colour; but after comparing a fair series of Tunisian specimens with examples from various parts of Europe, I fail to find sufficient grounds for this separation. It is true that individuals of this species from some parts of Eastern Europe are rather larger than the generality of Tunisian birds, but those from Western Europe are, as a rule, identical in size with the latter and cannot be separated from them. Among specimens from the same country, moreover, there is a certain amount of individual variation in size. With regard to the colour of the plumage and marking, there is also considerable variation between individuals, but this is probably due to age and season, and I cannot find any constant difference in this respect between Tunisian examples, and those from Europe.

Canon Tristram (*Ibis*, 1859, p. 290), and Loche (*Expl. Scient. Alg. Ois.* i, p. 78) both include the Egyptian Kite (*M. ægyptius*) in their lists of Birds of Algeria, but they were probably in error in doing this, as that species does not seem to occur anywhere in North-west Africa, although it is apparently common further south in West Africa.

ELANUS CÆRULEUS (Desfontaines).

BLACK-WINGED KITE.

- Falco cæruleus**, *Desf. Mém. Acad. R. des Sciences*, 1787, p. 503, pl. 15.
Elanus cæruleus, *Strickland Orn. Syn.*, p. 137 (1855); *Sharpe, Cat. Birds Brit. Mus.* i, p. 336; *Loche, Expl. Sci. Alg. Ois.* i, p. 80 (1867); *Whitaker, Ibis*, 1895, p. 103; *Erlanger, J. f. O.* 1898, p. 492.
Falco (Nauclerus) melanopterus, *Malherbe, Faune Orn. de l'Alg.* p. 7 (1855).
Elanus melanopterus, *Koenig, J. f. O.* 1888, p. 159; *id. J. f. O.* 1892, p. 346.

Description.—**Adult female**, spring, from North Tunisia.

Forehead whitish-grey, becoming bluish grey on the crown and nape, and slate-grey on the back, scapulars, rump and quills; median and lesser wing-coverts black; the two middle rectrices bluish-grey, the remaining tail-feathers whitish, with some grey on the inner webs; entire underparts silvery white, slightly tinged with pale grey on the sides of the breast.

Iris orange-red; bill black; cere and feet yellow.

Total length 13 inches, wing 10·75, culmen 1, tarsus 1·30.

Adult male similar to the female.

Observations.—This species seems to vary considerably in size, for I have an example (sex not recorded) from Egypt, in which the wing measures 11·50 inches, whereas the usual length appears to vary from 10·25 to 10·75 inches.

The Black-winged, or Black-shouldered Kite, as it might more correctly be styled, is not uncommon in Tunisia, and according to the naturalist Blanc, is resident throughout the year in the Regency, examples being often brought to him for preparation, even in the middle of winter. He, however, adds that it is more plentiful in spring than at any other season, which is natural, as the bird is migratory.

In Algeria and Marocco the species is not uncommon, and according to Loche (*Expl. Scient. Alg. Ois. i*, p. 83), it is generally distributed throughout the former country, and breeds there. This Kite rarely strays north of the Mediterranean and although there are undoubted instances of its occurrence from time to time in Europe, the species can only be looked upon there as an occasional straggler. It is, indeed, eminently a semi-tropical bird, its range extending throughout the greater part of the African Continent.

In its habits, the Black-winged Kite is said to resemble the Harriers to a certain extent, and like those birds, it seems to be fond of frequenting open fields and flat country in preference to mountainous and thickly wooded districts. It appears, however, to be much given to perching on trees and telegraph posts, whence a good lookout can be obtained, the bird being exceedingly watchful and always on the alert. Though generally met with singly or in pairs, this species may sometimes be found congregating in certain numbers, probably either when actually on passage, or when an abundance of food in some particular spot forms an attraction. According to some observers, the bird is crepuscular to a certain extent, and is often to

be seen hawking its prey in the evening towards sunset. Its flight, although fairly graceful and rapid, is unlike that of other Kites, and on the wing it is said to resemble some of the Gulls, the comparative shortness of its tail perhaps causing this impression.

The food of this species appears to consist chiefly of insects, such as locusts and coleoptera, but it also preys on small mammals and birds, and is said to attack even Pigeons.

Its cry or whistle is rather loud and piercing. The bird can be easily tamed, if brought up from the nest, and thrives well in captivity. I have not myself met with the nest and eggs of the species in Tunisia, but, according to Blanc, it breeds in Mimosa bushes, or low trees, making rather a large flat nest composed of small sticks and twigs, neatly lined with soft grass. The eggs, from two to four in number, resemble those of the Kestrel, being creamy-white, thickly covered with dark red spots and blotches; they measure 42 × 34 mm.

PERNIS APIVORUS (Linnæus).

HONEY-BUZZARD.

Falco apivorus, *Linn. Syst. Nat.* i, p. 130 (1766).

Pernis apivorus, *Cuv. Règne An.* i, p. 322 (1817); *Sharpe, Cat. Birds Brit. Mus.* i, p. 344; *Loche, Expl. Sci. Alg. Ois.* i, p. 46 (1867); *Koenig, J. f. O.* 1888, p. 158; *id. J. f. O.* 1892, p. 346; *Whitaker, Ibis*, 1896, p. 98; *Erlanger, J. f. O.* 1898, p. 401.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Crown and sides of the head pale bluish-grey; rest of the upper-plumage brown, becoming darker on the terminal portion of quills; tail greyish-brown with four broad dark brown bars, and several less distinct narrow bars intervening; underparts light brown, finely striated with dark brown, and barred on the abdomen, flanks, and under tail-coverts with buffy-white.

Iris light yellow; bill blackish; feet yellow.

Total length 22 inches, wing 16, culmen 1.25, tarsus 2.

Adult female, upper parts dark earth-brown; underparts pale creamy-white, thickly striped and spotted with dark earth-brown; otherwise resembling male. Soft parts and measurements as in male.

Young. Upper parts dark earth-brown, with a good deal of creamy-white on the nape; underparts creamy-white, thickly striped with dark earth-brown. The broad bars on the tail very faintly indicated.

Observations.—Few birds show such diversity in the coloration and marking of their plumage as the present species; these differences are apparently not solely due to sex, age and season, but also to individual variation. The dark brown dress, with white spotted underparts, seems to be the plumage most often met with; the adult male garb described above, is less often noticed; while the most uncommon of all appears to be the uniform deep chocolate, or blackish phase of plumage, without a speck of white. I have in my collection one example of the latter type, which shows a slight ashy-blue tinge on the cheeks, and this feature leads me to think that this very dark attire belongs to the adult, and not to the young bird.

The arrangement or pattern of the bars on the tail appears to be constant throughout all stages of plumage, and is a characteristic of the species.

The Honey-Buzzard occurs in Tunisia as a summer migrant, being occasionally observed during the spring passage in certain numbers, although rarely in the large flocks, in which it is to be found sometimes in some parts of Southern Italy and Spain. One of the more tardy migrants, the species is not often seen before May, and stragglers may even be found migrating at the end of that month and early in June. The return passage, which is effected between the end of August and the end of September, is far less conspicuous than the vernal migration.

In Algeria, according to Loche, the Honey-Buzzard is rare, but in Marocco it appears to be observed in considerable numbers on migration, both in spring and autumn.

In Sicily, where large flocks of Honey-Buzzards may be seen in spring, the arrival of the "Lavornie," as these birds are called by the Sicilians, is considered to portend the imminent close of the passage of Quails, and their advent is therefore looked upon by the local "caeciatori" with anything but delight. In Calabria, on the contrary, the native gunners hail the appearance of the Honey-Buzzards with pleasure, and on days when the wind is favourable for the passage of the birds, every man or youth who possesses a gun will sally forth to the rocks and heights overlooking the sea-coast, there to await the arrival of the expected visitors. So numerous are the birds at times, that a good shot will bring home a score or more of them. These he distributes among his relations and friends, the flesh of the Honey-Buzzard being considered by the "Calabresi" excellent eating. Curiously enough, though so abundant in some

parts of Italy, this species is but rarely observed in the island of Sardinia. Olive-groves are much frequented by the species, no doubt for the sake of the bees and wasps, which generally swarm in such plantations. These insects and their larvæ form one of the chief items of this bird's food. A certain proportion of honey may be eaten by the Honey-Buzzard, when plundering a hive, but this is probably only swallowed together with the insects themselves, and does not form the object of the raid. When meditating a descent in some particular spot, the birds may be seen circling slowly round and round in gradually diminishing curves for some time before they actually venture to come down. The species, though lazy and sluggish in its habits, is on such occasions, fairly wide awake, and takes every precaution against a possible ambush. Besides feeding largely on insects it will sometimes prey on small mammals and birds. The note of the species is a shrill cry.

I have no knowledge of the Honey-Buzzard breeding in Tunisia, or indeed anywhere in North-west Africa, though I think it quite likely that the species nests in districts north of the Atlas.

FALCO PEREGRINUS, Tunstall.

PEREGRINE FALCON.

Falco peregrinus, *Tunstall, Orn. Brit.* p. 1 (1771); *Koenig, J. f. O.* 1888, p. 140; *Whitaker, Ibis*, 1898, p. 126.

Falco communis, *Sharpe, Cat. Birds Brit. Mus.* i, p. 376; *Loche, Expl. Sci. Alg. Ois.* i, p. 48 (1867).

Description.—**Adult female**, winter, from North Tunisia.

Forehead whitish; crown, nape, mantle, and moustachial patch very dark slate; lower back, scapulars, and rump bluish-slate, becoming paler on the rump, and barred with a darker shade of slate; quills very dark slate, marked on their inner webs with creamy spots; tail bluish-slate, barred with dark slate, and slightly tipped with cream colour; chin, throat, and upper breast creamy-isabelline; abdomen the same, but spotted with dark slate, and barred with that colour on the sides and flanks.

Iris brown; bill dark slate; cere and feet yellow.

Total length 20 inches, wing 14·75, culmen 1·50, tarsus 2·20.

Adult male similar to the female, but smaller.

Young female, winter, North Tunisia.

Above blackish-brown, the forehead and nape with an admixture of creamy-white or buff, and the feathers of the back, rump, and upper wing-coverts fringed with dusky rufous; quills blackish; tail barred with pale rufous, the central rectrices unbarred; moustachial stripe blackish; chin creamy-white; rest of underparts creamy-white, heavily striped with dark brown. Soft parts and measurements as in the adult.

The Peregrine Falcon is to be found in Tunisia, but is not common there, and probably only occurs in the country as a winter migrant. My Tunisian collection contains but few examples, and these were mostly obtained by the naturalist Blanc, in the neighbourhood of the town of Tunis. Dr. Koenig also appears to have found the Peregrine scarce in Tunisia, and there can be no doubt that the species is more or less rare in the Regency.

In his article on *Falco barbarus*, Baron v. Erlanger mentions having obtained a Falcon from the neighbourhood of Gabès, which judging from the length of its wing, over 14 inches, must have belonged to the present species. It certainly could not have been *F. barbarus*. It was a young male and was shot on February 15th.

Further west this Falcon is perhaps more abundant, as both Taczanowski and Loche record it as occurring throughout Algeria, the latter stating that it breeds in that country, while in Marocco, according to Mr. Tyrwhitt Drake and Favier, the species is common and breeds in the neighbourhood of Tangier.

Whether the breeding Peregrines met with by these ornithologists have been true *F. peregrinus*, or the smaller Mediterranean form, *F. punicus*, is not clear, but the resident species in North-west Africa is probably the latter. Throughout Southern Europe and the Mediterranean basin the true Peregrine Falcon appears to occur chiefly as a winter migrant, but the species is also resident in some parts of Italy, and may possibly be so in certain districts south of the Mediterranean.

Combined with marvellous powers of flight and surprising agility, the Peregrine is endowed with a boldness and fearlessness which secure it a foremost place among the Raptores, and at once entitle it to rank as a "prince among birds." Few other species, even among the larger birds of prey, will venture to enter the lists with it in single combat. In the old days of Falconry the Peregrine, owing to its many excellent qualities, was naturally held in high esteem and looked upon as almost sacred by the votaries of the chase.

Even until comparatively recent times, among the Arabs of North-west Africa the Peregrine, with one or two other species of Falcon used by them for hawking, was similarly highly prized and most jealously protected, but of late years, since the introduction of fire-arms among the Arab tribes, the "noble science" has been more or less abandoned by them.

The present species frequents mountainous country as a rule, and may often be found in the neighbourhood of the sea-coast, where it preys on the water-fowl and rock-pigeons usually abundant in such localities. It also feeds on other birds as well, and on small mammals.

FALCO PUNICUS, Levaillant, jun.

LESSER PEREGRINE.

Falco punicus, *Levaill. jr. Expl. Alg. Atlas, Ois.* pl. 1 (1850); *Malherbe, Faune Orn. de l'Alg.* p. 6 (1855).

Description.—**Adult male**, from Sicily.

Entire crown, nape, moustachial patch, shoulder and upper wing-coverts blackish-slate; back, rump, and upper tail-coverts slate-grey, barred with blackish-slate; primaries dark brownish-slate; secondaries slate-grey, barred with dark slate: tail slate-grey, becoming darker towards the tip, and barred with blackish-slate; chin, throat and breast cream-colour, slightly tinged towards the abdomen with light rufous; abdomen, sides of body, flanks and thighs closely barred with blackish-slate.

Total length 15 inches, wing 11.50, culmen 1.10, tarsus 1.90.

Soft parts as in *F. peregrinus*.

Observations.—I have no adult example of this Falcon from Tunis. The specimen above described is one of three in the Palermo University Museum, all much alike in coloration and size.

The present and the following species of Falcon are no doubt closely related to *F. peregrinus* and are considered by many good ornithologists as mere races or forms of that species. Whether the relationship is sufficiently close to warrant the three Falcons being connected specifically and merely separated subspecifically, I am not prepared to say, our present knowledge regarding the two smaller

forms being unfortunately somewhat limited. Under the circumstances, therefore, and until we know more about these smaller Falcons, I consider it advisable to treat them as specifically distinct, not only from *F. peregrinus*, but also from one another. I shall, however, be quite prepared to learn that *F. punicus* and *F. barbarus* are specifically inseparable, one from the other, whatever may be the case as regards their relationship to the larger *F. peregrinus*. I cannot, however, entertain the theory held by some ornithologists, that *F. punicus* is nothing but a hybrid between *F. peregrinus* and *F. barbarus*.

Another small Falcon, the specific identity of which is very doubtful, is *Falco minor*, Bp., which is chiefly found in South Africa, and possibly occurs north of the Equator.

Regarding all three of these small Falcons, further information is required, and more complete series of specimens of each are needed before we can unravel the mystery in which they are at present shrouded, and come to some satisfactory conclusion as to their identity.

In my collection from Tunisia, I have no examples of *F. punicus* in fully adult plumage, though I have specimens in immature dress, which I can only refer to this species. According to Professor Giglioli (*Avifauna Italica*, p. 254), he received an adult male of this species, obtained near Tunis in 1876, which in its appearance tallied perfectly with the figure of the type of *F. punicus*, Levaill. (*Expl. Scient. Alg. Ois.* i, pl. 1). Salvin appears to have obtained an adult male of the species at the Djebel Dekma in the Eastern Atlas, which he afterwards presented to the Norwich Museum. Another example, a female, also from the Eastern Atlas, which was kept alive for some time by Mr. J. H. Gurney, is also preserved in the Norwich Museum. These two specimens are referred to by Mr. Gurney, in his table of measurements of this and allied species (*Ibis*, 1882, pp. 313 and 315), where we find the following results of a careful examination of a fair series of specimens.

	<i>F. punicus.</i>	<i>F. barbarus.</i>	<i>F. minor.</i>
Male wing	11.25 — 11.60 ..	10.95 — 11.40 ..	10.80 — 11.25
Female wing	13.0 — 13.30 ..	11.10 — 11.60 ..	12.70 — 12.95

Alluding to the relative measurements of these three Falcons, Mr. Gurney writes as follows: "It will be seen by this summary that, as regards the females, *F. barbarus* is the smallest species of the three,

F. punicus the largest, and *F. minor* intermediate in size between the other two; whilst as regards the male sex, the dimensions of *F. barbarus* and *F. minor* are nearly identical, *F. punicus* being slightly larger than either."

F. punicus appears to occur not unfrequently both in Algeria and Marocco as well as in Tunisia, and the Lilford collection contains examples chiefly from Tangier and Mogador. In the same collection there is an adult male of *F. punicus* obtained at Viorna, Liebana, Province of Santander, North-west Spain. This specimen is also referred to in Mr. Gurney's table of measurements, likewise one from the Island of Iviza, but the latter is no longer to be found in the Lilford collection. According to Mr. Gurney, specimens of *F. punicus* have also been obtained in the Mount Taurus district, from Smyrna, and from Cape Spartel, and the species probably occurs throughout the greater part, if not the whole, of the Mediterranean subregion. A specimen from Egypt in the Lilford collection appears to be referable to *F. punicus*, and is labelled as such.

On most of the Italian Islands, as also in some parts of the Peninsula itself, the species has undoubtedly been obtained.

The two Sardinian Falcons for which Dr. Sharpe first proposed the specific name of *brookei*, but subsequently referred to *F. peregrinus*, no doubt really belong to this latter species, if we are to judge from their measurements, which Mr. Gurney gives as follows: "Female, killed April, 1869, one wing 13·70, the other wing 14·25, tarsus 1·90, middle toe s.u. 2·15. Female, killed April, 1871, one wing 13·50, the other wing 13·90, tarsus 2·0, middle toe s.u. 2·10 inches." Mr. Gurney adds that he agrees with Dr. Sharpe in his later opinion regarding these two Falcons.

In most of the localities where it has been observed *F. punicus* appears to be sedentary, but whether it is so throughout its entire range, or whether it is migratory to a certain extent, remains yet to be ascertained.

In its habits it resembles *F. peregrinus* and, like that bird, frequents rocky mountains and steep cliffs, particularly those on or near the sea coast, where wild fowl and pigeons are abundant. These birds constitute its favourite food, but it no doubt also preys on other birds, as well as on small mammals, and possibly on reptiles. It is said to be bold and courageous, as well as swift and dashing in its flight.

F. punicus has been found nesting on several of the Mediterranean Islands during the months of April and May. The eggs, three or four in number, are pale reddish or yellowish-red, closely covered all over with dark rufous-brown spots and blotches, and measure on an average 49×40 mm.

FALCO BARBARUS, Linnæus.

BARBARY FALCON.

Falco barbarus, *Linn. Syst. Nat.* i, p. 125 (1766); *Sharpe, Cat. Birds Brit. Mus.* i, p. 386; *Koenig, J. f. O.* 1895, p. 198; *Erlanger, J. f. O.* 1898, p. 454.

Gennaja Barbara, *Loche, Expl. Sci. Alg. Ois.* i, p. 55 (1867).

Description.—**Adult male**, spring, from Marocco.

Forehead rufescent-buff; crown, nape, and hind neck blackish-brown, the feathers mostly with dark centres, and the nape with some rufous feathers; broad moustachial patch sooty-black; back, scapulars, wing-coverts, and secondaries bluish-grey, with darker bars and shafts; primaries dark brown, with rufescent bars on the inner webs; rump and upper tail-coverts bluish-slate, barred with darker slate; tail the same, and tipped with creamy-buff; chin, throat, and upper breast creamy-white, tinged with rufous; abdomen the same, but more highly tinged with rufous, and slightly spotted with small dark brown drop-like marks; sides of body and flanks dove-grey, barred with dark brown.

Iris dark brown; bill slate, darker at the tip and yellowish at the base; cere and feet bright yellow.

Total length 14.50 inches, wing 11, bill 1.10, tarsus 1.65.

Female similar in plumage to the male, but rather larger.

Young male, spring, from Tunis.

Forehead rufescent-buff, slightly striated with black; crown blackish, tinged with rufous; nape and hind neck rufous, striped with black; rest of the upper plumage blackish, the feathers margined with rufous; tail blackish, barred and tipped with rufous; conspicuous moustachial patch black; chin, throat and sides of the neck rufescent-buff; breast and abdomen rufous, striped with rather fine streaks of black; thighs rufous-buff, slightly striped with brown; crissum and under tail-coverts rufescent-buff.

Soft parts almost the same as in the adult male.

Total length 14 inches, wing 10.25, bill 1.10, tarsus 1.50.

Observations.—What I have written in the preceding article regarding the uncertainty as to the specific identity of *F. punicus*, will apply equally to the present species, but as there stated, it seems advisable, at any rate for the present, to treat both these small Falcous as specifically distinct, not only from *F. peregrinus*, but also from one another.

Although the chief habitat of *F. barbarus* is no doubt North-west Africa, the species can hardly be considered as common there, or of universal distribution throughout the country. Indeed, so far as Tunisia is concerned, judging from my own experience, and that of other recent travellers in the Regency, I should be inclined to call it distinctly rare there at the present day, whatever may have been the case once. Its range, moreover, in Tunisia is probably more or less restricted to the Atlas districts of the north-west, and does not extend far, either in an easterly or southerly direction. In Algeria, and particularly in the province of Constantine, the species may be less uncommon than it is in Tunisia, owing to the greater extent of mountainous country to be found there, though I have no actual knowledge that such is the case; but the contrary, for Dr. Koenig, when travelling in Algeria, seldom met with the bird, and considers it rare in that country. It is true, Dr. Taczanowski and Loche both speak of the species as being the commonest Falcon of Algeria, but they must surely have been alluding to the Lanner and not to the present species.

Canon Tristram met with this Falcon occasionally in Algeria, and shot a specimen of it in winter in the M'zab district.

In Marocco the Barbary Falcon occurs, and I have a fine adult male specimen of it, which was obtained by Mr. E. Dodson at Ras-el-Ain, on the south coast of the Empire.

According to Dr. Sharpe, a Falcon obtained by M. A. Bouvier in the Cape Verd Islands, is referable to the present species. North of the Mediterranean, and on the islands of that sea, the Barbary Falcon appears to have been met with occasionally, though rarely. The Lilford collection contains an immature specimen presumably referable to this species, which was obtained at the Isola Rossa on the south coast of Sardinia, and there seems to be no doubt that this Falcon has twice been met with in Malta. An example in the British Museum from Granada is also, according to good authority, referable to *F. barbarus*. The species is said to occur in Egypt, and

further east its range extends as far as India. *Falco babylonicus*, Gurney, appears hardly distinguishable from *F. barbarus* or *F. punicus*. I have two examples of it from India, which are almost identical in plumage with some specimens from North-west Africa, being merely a trifle more rufous on the nape and underparts. The wing in both cases measures 12.75 inches, one specimen being marked as a female, while in the other the sex is not indicated.

In Tunisia, as above mentioned, the principal habitat and breeding-quarters of this Falcon are undoubtedly the mountainous districts of the north-west of the Regency. Salvin, when travelling in the Eastern Atlas, saw the species often, and took its nest at the Djebel Dekma and Khifan M'sakta. At the latter place he found a nest with four eggs, on the 9th of April, the eggs being then on the point of hatching. Some years ago the species must have been far from uncommon in the above districts, as Salvin writes that, he "was present at the siege of three of their eyries, besides discovering others which were inaccessible" (*Ibis*, 1859, p. 187). A specimen of this Falcon shot by Salvin at Kef-Boudjato in the Eastern Atlas, has had the rare distinction of being figured no less than three times in standard ornithological works, viz., in the *Ibis*, in Mr. Dresser's "Birds of Europe," and in Dr. Bree's "Birds of Europe." The specimen in question, an adult female, was presented by Salvin to the Norwich Museum, where it is at present preserved.

Beyond what we learn from Salvin, comparatively little is known respecting the habits of the present species, but they probably do not differ much, if at all, from those of the Peregrine. The Barbary Falcon appears to have been greatly employed once by the Arabs for "hawking," and in confinement is said to be docile and tractable. Its nest is said to be always placed in some hole in a steep cliff, while its eggs, three or four in number, resemble those of the Peregrine, but are rather smaller.

FALCO BIARMICUS FELDEGGI (Schlegel).

LANNER.

Falco feldeggii, *Schlegel, Abh. Geb. Zool.* p. 3, Taf. 10, 11 (1841); *Sharpe, Cat. Birds Brit. Mus.* i, p. 389.

F. feldeggi, *Koenig, J. f. O.* 1888, p. 154; *id. J. f. O.* 1892, p. 341; *Whitaker, Ibis*, 1895, p. 103; *Erlanger, J. f. O.* 1898, p. 155.

Gennaja Lanarius, *Loche, Expl. Sci. Alg. Ois.* i, p. 53 (1867).

Description.—**Adult male**, spring, from North Tunisia.

Forehead creamy-white; crown and nape pale isabelline-rufous, very sparsely striated here and there with fine blackish streaks; moustachial stripe, region round the eye, and an irregular stripe behind the eye extending to the sides of the neck and mantle, blackish; back, scapulars, and upper wing-coverts brown, barred and margined with a lighter shade of brown, or greyish-brown; rump and upper tail-coverts ashy-blue, barred with brown; tail, including the central rectrices ashy-grey, closely and irregularly barred with pale isabelline-rufous; quills blackish, barred on the inner webs with pale rufous; chin and throat creamy-white, becoming creamy-isabelline, or creamy-rufous on the breast and rest of the underparts, breast slightly striated, and abdomen, flanks and thighs spotted with dark brown.

Iris dark hazel; bill bluish-slate, darker at tip, and yellowish at base; cere and feet yellow.

Total length 16 inches, wing 12, culmen 1, tarsus 1·85.

Adult female similar to the male, but larger.

Total length 18·50 inches, wing 14, culmen 1·10, tarsus 2.

Young bird a few months old.

Forehead whitish; crown and nape isabelline, thickly streaked with blackish; rest of upper parts dark brown, the feathers margined with isabelline; tail dark brown, tipped subterminally with isabelline, the four central rectrices unbarred, and the rest barred with isabelline; chin and cheeks cream-colour, slightly striated with blackish; heavy moustachial stripe, and stripe behind the eye blackish; rest of the underparts creamy-isabelline, thickly striped with dark brown.

Iris dark hazel; bill and cere pale slate; feet pale greenish-grey.

Observations.—After having examined a fairly large series of Lanners from different parts of Africa and Europe, and putting aside the South African *F. biarmicus* as distinct from all others on account of its unspotted underparts when fully adult, I cannot recognise but one form. This should no doubt be treated as a subspecies of *F. biarmicus*, apparently the oldest name for the group, and bear the name of *F. biarmicus feldeggi* (Schlegel).

There is undoubtedly a certain amount of variation in plumage between

Lanners from different localities, but there appears to be no constant character to justify their separation. Dr. Kleinschmidt has distinguished the Tunisian bird under the name of *F. erlangeri* ("Aquila," 1901, p. 33).

Examples in my collection from Tunisia vary a good deal individually, some being paler and others darker in coloration. In North-east Africa the Lanner also seems to vary considerably, and Mr. J. H. Gurney, alluding to this species in Egypt, writes as follows: "I may refer to the circumstance of my son and a fellow-traveller having shot an adult pair of these Falcons at Esné in that country, which were sitting together on the same tree, and of which the female was a typical pale *F. feldeggi* and the male sufficiently dark to merit the title of *tanypterus*, being very little less intensely coloured than the darker individuals from Abyssinia or Sennaar."

The Lanner, together with some other species of Falcon, are by some ornithologists referred to the genus *Hierofalco*, Cuvier.

This fine species is a resident in Tunisia, and the commonest of all the large Falcons, particularly in the more southern regions, although it is by no means rare in the northern districts of the Regency. I have in fact numerous examples of it obtained in the neighbourhood of the town of Tunis and other parts of the north, and Blanc informs me that the native Arab sportsmen constantly bring him freshly-killed specimens.

The true home, however, of this species in North-west Africa appears to be the southern slopes of the Atlas, and the semi-desert country stretching away to the south of those mountains, where stony plains, bounded by arid cliffs, succeed each other in terraces, gradually dropping down to the level of the Sahara. Here the Lanner may constantly be met with, and is one of the few birds which throughout the entire year enliven those desert wastes with their presence.

Dr. Koenig found this species breeding on the Djebel Batteria in North Tunis (J. f. O. 1892, p. 341), and Baron v. Erlanger repeatedly met with it in Central and Southern Tunisia, taking several nests with eggs (J. f. O. 1898, p. 455).

In Algeria and Marocco the Lanner appears to be as abundant as it is in Tunisia. Although I have no specimens from Tripoli and Cyrenaica, the species no doubt also occurs in those countries, as it is plentiful in North-east Africa. It may, indeed, be said to occur throughout the whole of North Africa, from east to west, and is probably the commonest of all the large Falcons in this region.

North of the Mediterranean the Lanner occurs more or less

sparingly in South Spain, some parts of Italy, Dalmatia (whence come the specimens on which the name *feldeggi* was founded), Herzegovina, Montenegro and Bulgaria, in some of which countries it breeds. Lord Lilford also met with the species on the island of Standia off Crete, and Canon Tristram found it common in Palestine.

In its habits the present species does not appear to differ from other large Falcons. It is, however, essentially a desert-bird, and though generally frequenting cliffs and rocky ground, may often be observed in the open plain at some distance from any mountain. The bird is highly prized by the Arabs for hawking, and although the "noble art" of Falconry is no longer so popular in North-west Africa as it used once to be, one may still see the sport carried on by some well-to-do "Caid," or Governor of a district.

The reason given by the Arabs for the decrease of Falconry in their country, is the cost of keeping the birds, but this I cannot think sufficient to account for it, and should be inclined rather to attribute the falling off to the introduction of fire-arms, and the greater facility afforded by such weapons of filling the game bag more quickly, and with a minimum of trouble, the latter a consideration of no slight importance in the eyes of the Arab!

The Lanner is said to be easily domesticated, if brought up from the nest, as the birds usually are, when required for hawking. Judging, however, from a young bird of this species which was sent me alive from Tunis when about two months old, and which lived for some time in my garden, I should say that this Falcon never entirely throws off its natural distrust of man, or becomes very familiar.

The Arab name for this bird "Tuer," or "Tair-el-Hor," which means the Noble Falcon, is apparently applied equally, in some districts, to the Barbary Falcon, and in Marocco to the Peregrine, all three species being used for Falconry. The name "Bourni" is also sometimes used for Falcons employed for the chase.

The note of this species is a shrill cry or shriek, and the monosyllable "*cri*" repeated two or three times, expresses its alarm cry very well.

The Lanner commences nesting operations about the beginning or middle of March, generally selecting as a site for its nest a hole or cleft in a cliff, often at no great height. In Spain the species has been found breeding in trees, and occupying the old nests of raptorial

birds, but this is probably exceptional. The usual complement of eggs appears to be three or four, and the variation in their size, colour, and marking is often considerable. They are, however, generally pale reddish, or yellowish-red, covered all over with darker red spots and blotches, and measure on an average 48×40 mm.

I have never obtained or heard of the Saker Falcon having been met with in Tunisia, but it may occur there occasionally, as a straggler, for examples of it are not unfrequently obtained in Italy, and specimens are to be found in most museums of any importance in that country.

Loche includes the species among the birds of Algeria, but the specimen on which he bases this inclusion appears to be that of an immature individual of *F. feldeggi*. An example, indeed, labelled as *F. saker*, obtained by Loche in Algeria, which is preserved in the Milan Museum, under the No. 17,316, is precisely a young specimen of *F. feldeggi*. This example is probably the very one referred to by Loche. His plate (*Expl. Sci. Alg. Ois. i*), which is that of an undoubted specimen of the Saker, appears to have been drawn from an example in the Paris Museum, obtained from the Vienna Museum.

The Saker is said to have been obtained in Western Marocco, a living specimen having been imported by Mr. Castang from Mogador. This specimen subsequently passed into the possession of the late Lord Lilford.

FALCO ELEONORÆ, Gené.

ELEONORAN FALCON.

- Falco eleonoræ**, Gené, *Rev. Zool.* 1839, p. 105; *Sharpe, Cat. Birds Brit. Mus.* i, p. 404; *Malherbe, Faune Orn. de l'Alg.* p. 7 (1855); *Whitaker, Ibis*, 1898, p. 126; *Erlanger, J. f. O.* 1893, p. 466.
Hypotriorchis eleonoræ, Loche, *Expl. Sci. Alg. Ois. i*, p. 60 (1867).

Description.—**Adult male**, spring, from North Tunisia.

Above sooty bluish-black, rather darker on the quills, and lighter on the tail, which is slightly barred on the inner webs; moustachial stripe bluish-black; chin and throat buff, finely striated with blackish; rest of the underparts dull rufous, clouded and striped with blackish; flanks rather more rufous, and finely striated with black.

Iris dark brown ; bill bluish at the base and blackish at the tip ; cere and feet greenish-yellow.

Total length 15 inches, wing 12·30, culmen ·80, tarsus 1·30.

Adult female similar in plumage to the male, but slightly larger.

Observations.—Among the large series of examples of this species in the Lilford collection, now in my possession, may be found examples in the various stages of plumage, several being in the uniform dark sooty dress, though most are in the Hobby-like plumage. The uniform dark attire appears to be acquired by both sexes.

This fine Falcon occurs in Tunisia, but is probably not common there, and I have only two specimens of it from the Regency, both of which were obtained in the neighbourhood of the town of Tunis. The species may possibly be less uncommon in some parts of the country little known to, or visited by, naturalists, but the character of the greater part of the Tunisian coast is not calculated to attract the bird, which is eminently a cliff-loving species, and one not to be found, as a rule, on flat, low-lying shores. Uninhabited, or thinly populated islands, with steep precipitous cliffs, are the favourite haunts of this Falcon, which is probably rarely to be found far from the sea. Salvin, it is true, met with it on the Eastern Atlas, at a considerable distance from the coast, but it is no doubt exceptional to find this species far inland.

Loche includes the Eleonoran Falcon in his list of Algerian birds, but says it is rare in the country, and chiefly to be met with in the Province of Constantine, and on the Tunisian frontier. Mr. Dixon also mentions having met with it at Phillippeville. In Marocco the species is said to occur at Mogador, and it is also probably to be found in other localities along that coast.

The species occurs on several of the islands of the Mediterranean, but is scarce except on a favoured few, where it breeds, and is probably resident all the year round. Upon other islands it seems to be merely an accidental, or irregular visitor, and there can be but little doubt that the species is to a certain extent migratory.

Among its chief strongholds in the Mediterranean may be mentioned the small island of Dragonera off the west coast of Majorca, where Mr. Howard Saunders found the species most abundant in 1870 ; Toro and Vacca, two islets off the south-west coast of Sardinia,

where Lord Lilford, Mr. A. B. Brooke and others, have found it plentiful at different times; and the small Greek islands near Naxos, where Dr. T. Krüper first met with it in 1862, and from whence I have several examples.

On the Italian mainland the Eleonoran Falcon has occurred occasionally, but is rare, as it also is in Sicily, and the Palermo University Museum possesses but a single example of the species obtained in the island; this is a fine male specimen in adult plumage, which was shot near Palermo on the 4th of August, 1891.

Another example of this Falcon, which was brought alive to a friend of mine in Palermo, in the spring of 1892 or 1893, was said to have been captured at sea between the African and Sicilian coasts. This bird lived in confinement for some time and appeared to be very docile and tractable.

Although evidently rare on the Sicilian coasts, the species is probably less so on some of the smaller barren islands adjoining Sicily. In August, 1882, Prof. Giglioli found a colony of about twelve pairs of these birds on the small island of Lampionne, near Lampedusa, the southernmost of the Italian islands, and took a nest containing no less than seven eggs (*Avifauna Italica*, p. 256). This is an unusually large number of eggs, the ordinary complement of a clutch of this species being three, and often only two.

In some of its habits, as well as in its cry, the present species resembles the Peregrine.

Its food consists chiefly of small birds and small mammals, but it is said to eat lizards, and even insects occasionally.

I have no information regarding the nesting of the Eleonoran Falcon in Tunisia, but according to various good authorities, the species is a very late breeder and its nests and eggs, as a rule, are not found until July and even August. Salvin, writing of the birds of this species which he obtained at Lake Djendeli, says that the eggs in their ovaries were but very slightly developed at the end of May.

Clefts and holes in inaccessible cliffs are chosen as sites for the nest, and the number of eggs laid, as already mentioned, is usually two or three.

An egg of the species in my collection from Lampionne, kindly given me by Prof. Giglioli, is of a pale reddish colour, dotted all over with minute spots of a reddish-brown. It measures 43×32 mm.

FALCO SUBBUTEO, Linnæus.

HOBBY.

Falco subbuteo, *Linn. Syst. Nat.* i, p. 127 (1766); *Sharpe, Cat. Birds Brit. Mus.* i, p. 395; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 6 (1846); *Whitaker, Ibis*, 1895, p. 104.

Hypotriorchis subbuteo, *Loche, Expl. Sci. Alg. Ois.* i, p. 62 (1867).

Falco subbuteo gracilis, *Erlanger, J. f. O.* 1898, p. 461.

Description.—**Adult male**, spring, from Bou-Chebka, Central Tunisia.

Forehead and superciliaries pale buff; crown and nape dark brown; ear-coverts and moustachial stripes blackish-brown; two nuchal patches, almost joining each other, pale buff, mingled with rufous; rest of the upper parts dark slate-grey, palest on the rump and tail, and darkest on the quills, which are banded on the inner webs with rufous, as are also all the tail-feathers, with the exception of the central pair; chin, throat, and cheeks creamy-white, breast, abdomen and sides of the body creamy-white, with conspicuous longitudinal blackish markings; crissum, under tail-coverts and thighs rufous.

Iris brown; bill slate, darker at tip and yellowish at base, bare skin round the eyes, cere and feet yellow.

Total length 13 inches, wing 10·80, culmen ·80, tarsus 1·20.

The **adult female** resembles the male in colouring, but is rather larger, the wing generally measuring about 11 inches.

The **young** are very much darker on the upper parts, being dark brown, with slight buff margins to the feathers; crissum and thighs pale rufous.

The Hobby is not uncommon in Tunisia, particularly during the spring migration, and apparently occurs in the Regency throughout the year, being most often met with in the more wooded localities of the northern and central districts, where it nests. According to Blanc, the bird is to be found in the neighbourhood of the town of Tunis in winter, and examples of it occasionally are exposed for sale in the Tunis game-market.

In the southern districts of the Regency the species is more rarely met with, this being no doubt due to the arid nature of the country, and the absence of woodlands.

In Algeria the Hobby appears to be common, and resident in the more wooded districts. In Marocco it also occurs, although, according to Favier, in the neighbourhood of Tangier it is only to be met with on passage. From Tripoli I have no note of its occurrence.

In its habits the Hobby is a true Falcon, being bold, courageous,

and dashing in its flight. At the same time it appears to be remarkably sagacious and intelligent, and when brought up from the nest, becomes very tame and docile, though it rarely lives long in captivity. Mr. Howard Saunders, however, mentions an exception to the rule, in the case of a bird taken as a nestling, which lived in confinement for fifteen years (Man. Brit. Birds, p. 338).

Owing to its agility, and the rapidity of its flight, the Hobby used once to be employed by the Arabs in the pursuit of small game, but it seems never to have been very highly prized by them, or considered in any way equal to the larger Falcons used for Falconry.

In Europe the Hobby used also to be trained to hunt Larks and other small birds, and in several countries it goes by the name of the Lark-Falcon. It preys chiefly on small birds, which it seizes on the wing, and according to some observers, occasionally captures even Swifts and Swallows. Its usual prey, however, is no doubt the Lark, or some other less swiftly-flying species.

Larger birds are often pursued and harried by this active little Falcon, but this is no doubt out of a spirit of mischief or in sport. In addition to small birds, the Hobby feeds upon insects of various kinds, and in Tunisia locusts enter largely into its diet.

In its nesting-habits the Hobby resembles some other species of Raptores, and rarely, if ever, builds a nest for itself. It usually makes use of an old nest belonging to some other species, and occasionally occupies one with eggs in it, allowing these to remain, together with its own. The nests thus taken possession of are generally to be found in lofty trees, such as pines. Baron v. Erlanger mentions having found three eggs of this Falcon in the nest of a Long-eared Owl, together with an addled egg of the rightful owner.

The usual complement of eggs appears to be three or four. These vary considerably in colour and marking, some being cream colour, dotted all over with minute reddish spots, others pale rufous, with reddish-brown spots and blotches. The average measurements are 41×32 mm.

The Hobby found in Tunisia has been separated by Erlanger from typical *F. subbuteo*, and referred to *F. subbuteo gracilis* (C. L. Brehm). I cannot, however, find sufficient reason for such subspecific distinction, as in the fairly large series of the species in my Tunisian collection, may be found individuals, obtained in the breeding-season, which do not differ in any way from European examples. There is no doubt,

a certain amount of variation in colour and size between individuals, but the differences are comparatively slight, and apparently not constant. Brehm's *Falco gracilis* (Naum. 1856, p. 1232), moreover, does not appear to be a good species, and von Heuglin, alluding to the type specimen which was obtained on the Blue Nile, and is preserved in the Berlin Museum, says it is a typical example of *Falco subbuteo*.

FALCO ÆSALON, Tunstall.

MERLIN.

Falco æsalon, *Tunstall, Orn. Brit.* p. 1 (1771); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 6. (1846).

Falco regulus, *Sharpe, Cat. Birds Brit. Mus.* i, p. 406.

Æsalon lithofalco, *Loche, Expl. Sci. Alg. Ois.* i, p. 63 (1867).

Description.—**Adult male**, spring, from Djerba, South Tunisia.

Forehead whitish; crown slate-colour, striated with black; nape and mantle rufous, striated with black; rest of upper plumage bluish-slate, slightly striated with black, and becoming blackish on the quills; tail with a broad subterminal bar, and five indistinct minor bars; chin white; rest of the underparts white, tinged with rufous, and striped with dark brown; thighs and crissum rufous.

Iris brown; bill slate, darker at tip; cere, bare skin round the eyes, and feet yellow.

Total length 11 inches, wing 8, culmen 0·70, tarsus 1·40.

Adult female, spring, from Tunis, North Tunisia.

Forehead whitish; crown brown, striped with black; nape whitish, tinged with rufous and striped with brown; rest of the upper-plumage brown, spotted with pale rufous; tail with six buff-coloured bars; chin white; rest of underparts white, heavily striped with brown; thighs and crissum buff. Soft parts as in the male.

Total length 12 inches, wing 8·50, culmen 0·75, tarsus 1·50.

This small Falcon, although nowhere common in the country, is to be met with in Tunisia in the winter months, and during the periods of migration. It is probably more often to be seen in the northern districts of the Regency, but it also occurs in the south, and I have an example of it, which was obtained on the Island of Djerba. Loche (*Expl. Scient. Alg. Ois.* i, p. 65) says it is resident in Algeria,

having been met with during the breeding-season in Kabylia, and near Boghar, but I have no knowledge of its breeding anywhere in Tunisia. In Southern Europe and the islands of the Mediterranean the species appears to occur only as a winter migrant and one would suppose the same to be the case as regards North Africa.

In its habits the Merlin somewhat resembles the preceding species, being remarkably bold and courageous, as well as strong on the wing, and it does not hesitate to attack pigeons and other birds larger than itself. Sandpipers and other shore-birds often fall victims to it, as the Merlin is in the habit of frequenting sea-coast districts and marshes, particularly during the autumn and spring, when actually on passage.

As in Europe, the Merlin was formerly used by the Arabs for hawking, and being particularly docile and tractable in captivity, it was held in high repute. At the present day, however, no Arab would think of training one of these small Falcons.

FALCO VESPERTINUS, Linnæus.

RED-FOOTED FALCON.

Falco vespertinus, *Linn. Syst. Nat.* i, p. 129 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 7 (1855); *Erlanger J. f. O.* 1898, p. 475.

Cerchneis vespertina, *Sharpe, Cat. Birds Brit. Mus.* i, p. 443.

Erythropus vespertinus, *Loche, Expl. Sci. Alg. Ois.* i, p. 69 (1867); *Koenig, J. f. O.* 1888, p. 154; *id. J. f. O.* 1892, p. 340.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

General colour of upper-parts plumbeous, becoming almost black on the tail and silvery grey on the quills; underparts blue-grey, with the exception of the thighs, crissum and under tail-coverts, which are rich chestnut.

Iris hazel; bill yellowish-horn above and blackish at the tip; cere, naked skin round the eyes, and feet reddish-orange; claws very pale brown.

Total length 12 inches, wing 9·75, culmen ·75, tarsus 1·20.

Adult female, spring, from Tunis, North Tunisia.

Forehead buff, becoming pale rufous on the crown and nape, slightly striated with brown; back, scapulars, and wing-coverts ash-grey, slightly tinged on the upper-parts with rufous and barred with blackish; quills blackish-brown, barred with white on the inner webs; chin and sides of the

neck light buff; region round the eyes blackish: rest of underparts pale rufous, sparsely spotted with dark brown.

Soft parts rather duller in colouring than the male. Measurements almost the same.

The Red-footed Falcon is not uncommon in Tunisia during the spring migration, arriving in flocks towards the end of April, or beginning of May, and departing again northwards after a short stay. Numerically the passage of these birds varies greatly, being particularly plentiful in some years and comparatively insignificant in others. Blanc says the species is to be met with occasionally in the Regency in winter time, but its occurrence at that season is probably exceptional.

According to Loche (*Expl. Scient. Alg. Ois. i*, p. 70), it breeds in some parts of Algeria, but this also may probably be considered as exceptional, for the bird's true breeding home is further north and east. In Hungary and Russia the species nests in considerable numbers.

In Marocco the Red-footed Falcon seems to be more or less rare, as it is also in Spain and generally throughout Western Europe. Further east it becomes commoner, and in many parts of Italy, particularly where open tracts of low-lying country and marshy plains abound, the species is numerous during the spring, though apparently it does not breed there. In Sicily this Hawk may some years be seen in considerable numbers towards the end of April and beginning of May. I have myself, when shooting in the Royal Park of "La Favorita," near Palermo, frequently seen numbers of these birds among the olive-plantations and orange-groves, where an abundance of insects probably formed the attraction. My old friend Doderlein, who also had permission to shoot in "La Favorita," often secured several specimens of these birds at one shot, as they perched closely together on some isolated tree (*Avif. Mod. Sic. p. 322*). The return passage of the species in autumn, like that of many other birds, is far less conspicuous in point of numbers than the spring one.

The Red-footed Falcon is eminently gregarious, and is seldom seen singly, or otherwise than in the company of its fellows, while occasionally it may also be found consorting with other species of *Falconidæ*.

When roosting at night, the birds collect together on some tree,

nestling close to each other. During the early morning hours and late in the evening, they are most often to be seen, as they are then engaged in hunting for food, and being by no means shy, may be approached without difficulty. Their flight, though lacking the dash and swiftness of that of some other Falcons, is exceedingly graceful and buoyant, and a flock of these birds busily engaged in hawking for insects is a pretty sight and one well worth watching.

This Falcon's common Italian name of *Falco cuccolo* is probably derived from its supposed resemblance on the wing to the Cuckoo.

The species appears to be almost entirely insectivorous, but according to some authorities, it also preys upon small birds occasionally. No kind of insect, whether large or small, winged or wingless, seems to come amiss to it, and in Tunisia the bird must find a plentiful supply of food in the locusts and coleoptera which abound there.

The cry of this species resembles somewhat that of the Kestrel, but is perhaps even more shrill and piercing.

FALCO TINNUNCULUS, Linnæus.

KESTREL.

Falco tinnunculus, *Linn. Syst. Nat.* i, p. 127 (1766); *Malherbe, Cat. Rais. d'Ois. de l'Alg.* p. 6 (1846); *Whitaker, Ibis*, 1894, p. 96; *Erlanger, J. f. O.* 1898, p. 467.

Cerchneis tinnuncula, *Sharpe, Cat. Birds Brit. Mus.* i, p. 425.

Tinnunculus alaudarius, *Malherbe, Cat. Rais. d'Ois. de l'Alg.* p. 6 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 65 (1867).

Cerchneis tinnunculus, *Koenig, J. f. O.* 1888, p. 152; *id. J. f. O.* 1892, p. 340.

Description.—**Adult male**, spring, from North Tunisia.

Forehead and superciliary stripes pale rufous; crown and nape delicate blue-grey, with narrow black shaft stripes; cheeks and sides of the head whitish-grey, with a dark grey moustachial stripe; back, scapulars and upper wing-coverts bright rufous, spotted with triangular black markings; primaries blackish-brown, with the inner-webs barred with white; under surface of wing and axillaries white, spotted with triangular and pear-shaped brown markings; lower part of back, rump and upper tail-coverts clear blue-grey; tail blue-grey, with a broad black subterminal band, and white tips to the feathers; throat uniform pale fulvous; breast, abdomen

and underparts generally pale rufous, streaked with longitudinal blackish-brown stripes, and pear-shaped spots on the sides; crissum and under tail-coverts fulvous, unspotted; thighs pale rufous, slightly spotted with blackish.

Iris dark brown; bill bluish-horn at the tip, and greenish-yellow at the base; cere and bare skin round the eyes yellow; feet bright yellow; claws *black*.

Total length 14 inches, wing 10, culmen 0.70, tarsus 1.40.

Adult female, winter, from South Tunisia.

Above clear rufous, striped on crown and nape, and barred on the back, upper wing-coverts and secondaries with blackish; rump pale ash colour, slightly striated with black; tail rufous, barred with black, and with a broad subterminal black band and buff tip; quills dark brown, the inner webs barred with rufous and white; ear-coverts greyish, moustachial stripe, commencing in front of the eye, blackish; chin buff; rest of underparts rufescent-buff, striped on the breast, and spotted on the abdomen and flanks with dark brown.

Soft parts as in male; measurements slightly larger.

The Kestrel is very abundant in Tunisia, and as in many other countries, is quite the commonest of all the birds of prey. Though resident, the species is also migratory to a certain extent in the Regency, its numbers being considerably augmented during the periods of passage. In Algeria and Marocco the Kestrel is as plentiful as it is in Tunisia, and it is also said to occur in Tripoli.

In Central Tunisia I found this Hawk particularly numerous in the neighbourhood of Kasrin, where the rocky ground and precipitous cliffs bordering the *Oued* of that name are admirably adapted to the nesting requirements of this, and other rock-haunting species of birds. During our journey through that district, Kestrels were never out of sight, and some of the birds would often accompany the caravan for a considerable distance, occasionally perching on the telegraph wires that lined the cross country roads. In these semi-desert regions locusts and coleoptera form the principal food of this Hawk, the small rodents, which abound on those plains, being also preyed upon to a considerable extent. Small birds are less often captured, but I have known Kestrels seize Quails, and on one occasion a friend of mine, when riding across a plain, knocked over with the lash of his whip, one of these Hawks, which had just pounced upon a Three-toed Quail (*T. sylvatica*).

The peculiarly graceful and hovering flight of this species cannot

fail to attract the attention of even the most careless observer, and the old English name of "Windhover," has been aptly given to the bird. Its cry is a shrill and piercing "cri-cri-cri."

In its habits the Kestrel is gregarious to a great extent, and in Tunisia is usually to be found nesting in colonies. It may also constantly be found nesting in the immediate vicinity of the Lesser Kestrel, and of other birds, such as the common Rock-Dove, and the Unspotted Starling. Cliffs and old buildings are usually selected as breeding-sites, and the Roman ruins, of which there is no lack in the Regency, are much frequented by these Hawks for purposes of nesting, trees being more rarely chosen. The number of eggs in a clutch, is as a rule, four or five, and in shape these are rather round. They are usually of a pale reddish-white, or cream-colour, dotted over with dark rufous or reddish-brown spots and blotches, sometimes so thickly, that the eggs appear of a uniform rufous colour. Both the colour and marking, however, vary greatly. The average measurements of a series of eggs in my collection are 40 × 32 mm.

The nesting-season of both species of Kestrel extends throughout the months of April and May.

FALCO NAUMANNI Fleisch.

LESSER KESTREL.

Falco naumanni, "*Fleisch*," in *Fischer, Jahrg.* 1818, *teste Naum. Vög.*

Deutsch. i, p. 318 (1822); *Erlanger, J. f. O.* 1898, p. 471.

Cerchneis naumanni, *Sharpe, Cat. Birds Brit. Mus.* i, p. 435.

Falco tinnunculoides, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 6 (1846).

Tinnunculus cenchrus, *Loche, Expl. Sci. Alg. Ois.* i, p. 67 (1867).

Cerchneis cenchrus, *Koenig, J. f. O.* 1888, p. 153; *id. J. f. O.* 1892, p. 340.

Falco cenchrus, *Whitaker, Ibis*, 1894, p. 96.

Description.—**Adult male**, spring, from Kasrin, Central Tunisia.

Head and nape clear blue-grey; back, scapulars, and upper wing-coverts bright cinnamon; lower back, rump and upper tail-coverts bluish-grey; tail bluish-grey, with black shafts, and a broad subterminal black band, tipped with white; quills dark brown, with some white barring on the inner webs; secondaries bluish-grey, partly tinged with cinnamon; chin yellowish-white;

rest of underparts pale cinnamon, with a few minute blackish stripes here and there; crissum and under tail-coverts whitish.

Iris brown; bill bluish and yellowish at the base; cere and bare skin round the eyes yellow; feet bright yellow, claws *whitish*.

Total length 12.50 inches, wing 9.50, culmen .65, tarsus 1.20.

Adult female, spring, from Kasrin, Central Tunisia.

Crown and nape pale rufous, faintly striated with blackish; back, scapulars, and upper wing-coverts rufous, barred with black; rump bluish-ash-brown; tail bluish-ash above, becoming rufous lower down, barred with black and having a broad subterminal black band and white tip; chin whitish-buff; a faint moustachial stripe; underparts rufescent-buff, striped on the breast and upper abdomen with dark brown; crissum and under tail-coverts buff.

Soft parts and measurements as in the male.

The Lesser Kestrel is almost, if not quite, as abundant in Tunisia during the spring and summer as its larger relative, the Common Kestrel, but the bulk of the birds are non-resident and leave the country in autumn. A few individuals, however, seem to remain in the Regency throughout the winter months and Mr. Aplin met with a small flock of these birds on the 8th of February, near Ouhamia, to the south of Gabès.

Loche says the Lesser Kestrel is less common in Algeria than the preceding species. I have specimens of it from Morocco, obtained in February and April; and from Tripoli in April. In Southern Europe the species is plentiful in spring and summer, but is almost entirely migratory. A few of the birds are, however, said to winter in South Spain, Sicily and Sardinia. In Sicily the Lesser Kestrel is called *Falco tunisino*, or *Falco maltese*. According to Doderlein (*Avif. Mod. Sic.* p. 40), the latter name owes its origin to the fact that it was once the custom of the Knights of St. John of Malta, to present their Sovereign with a number of these birds on St. John's Day, June 24th.

In its habits the Lesser Kestrel resembles its larger relative to a great extent, but is even more gregarious and sociable. Its flight and food also appear to be the same, the latter consisting chiefly of insects and small mammals, varied occasionally by lizards or other small reptiles.

In its mode of nesting, too, it resembles the Common Kestrel, breeding in colonies, in the clefts of rocks and in holes of old buildings, but apparently it never nests in trees. The Lesser Kestrel, indeed, seems to make no nest at all, but deposits its eggs on the bare ground in the hole selected as its breeding-home. The number of eggs in a

clutch is generally four or five, and in colouring and marking, as well as in shape, these vary as much as those of the common Kestrel. As a rule they are of a pale reddish-white, or yellowish colour, covered all over with rufous spots and blotches. The average measurements are 35 × 28 mm.

PANDION HALIAËTUS (Linnæus).

OSPREY.

Falco haliaëtus, *Linn. Syst. Nat.* i, p. 129 (1766).

Pandion haliaëtus, *Lesson, Man. d'Orn.* i, p. 86 (1828); *Sharpe, Cat. Birds Brit. Mus.* i, p. 449; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 6 (1846); *Loche, Expl. Sci. Alg. Ois.* i, p. 37 (1867); *Koenig, J. f. O.* 1888, p. 152; *id. J. f. O.* 1892, p. 339; *Whitaker, Ibis*, 1895, p. 104; *Erlanger, J. f. O.* 1898, p. 400.

Description.—**Adult male**, winter, from Tunis, North Tunisia.

Crown and nape creamy-white, streaked with dark earth-brown; ear-coverts blackish; remainder of upper-plumage dark brown, becoming blackish on the quills; the central pair of rectrices light brown, and white on the inner webs; underparts white, with a broad pectoral band of light brown on the breast.

Iris bright yellow; bill blackish; cere and feet bluish.

Total length 23·50 inches, wing 20, culmen 1·90, tarsus 2.

Adult female similar to the male, but somewhat larger.

The Osprey appears to be by no means uncommon on the coasts of Tunisia, and is resident there, according to Blanc, nesting in the more barren and wilder parts of the country or on the small islands adjoining the mainland.

On the Lake of Tunis, where fish are numerous, the species may occasionally be observed, and Blanc informs me that he has seen it on the islands of Kerkennah and Djerba, in the south of the Regency. Salvin and Dr. Koenig also appear to have observed it on El-Bahira, the Tunis lake, while Erlanger met with it on the small island of Knais, near El-Skirra in Central Tunisia, and one of his party noticed another bird in the neighbourhood of the Djebel Sidi-Aich, some way inland. Salvin also saw the Osprey at Bône on the North Tunisian coast.

The occurrence of the Osprey in Algeria has been recorded by Malherbe, Loche and Taczanowski, and in Marocco by Stark and Favier. In the Straits of Gibraltar Colonel Irby says the Osprey is most abundant in winter, and breeds there regularly in limited numbers. In Italy, although not common, the species occurs in several localities, particularly on the Italian Islands, on some of which it breeds and is probably resident all the year round. On the Sicilian coast it is frequently to be met with, more especially on the south-west of the island near Marsala and Trapani, and on the east coast near the Faro of Messina, where the bird goes by the name of *Cefalaru*, from its partiality for the *Cefalo*, or Grey Mullet, abundant in those waters. It may also frequently be seen near the marshes of Catania and Lentini, and is said to breed on Monte Iblea near Syracuse.

Although a resident species in North-west Africa, the Osprey is a bird of passage in many countries, and is eminently migratory and cosmopolitan in its habits, few other birds probably having so wide a range throughout the world.

Feeding, as it does, exclusively on fish, the species is always to be found in the vicinity of water, either fresh or salt, inland lakes and rivers being frequented as much as the sea-coast. It preys upon many different species of fish, but naturally more upon those which are surface swimmers, swooping down upon its prey, often from a great height, and then ascending again with the fish in its talons. Occasionally the fish struck is too heavy to be lifted out of the water, and unless the bird is immediately able to extricate its claws, and disengage itself from its victim, it is dragged beneath the water and loses its life.

I have alluded to the Osprey's partiality for the Grey Mullet, and the Sicilian name given to it on that account, but it appears that in some parts of England also, the bird is called the Mullet-Hawk.

The present species, according to Blanc, undoubtedly breeds in Tunisia and its islands, but I have no positive information regarding nests and eggs found there. In other countries where the species breeds, it selects either a tree, or a suitable ledge of rocks as a site for its nest, which is a bulky structure of sticks and twigs, with a lining of softer materials. The usual complement of eggs appears to be two or three, rarely four, the ground colour being white or buff,

with grey shell-marks, and rufous or claret-coloured surface-spots and blotches. The average measurements are 60×45 mm.

Eggs are generally to be found towards the latter part of April. In some parts of America the Osprey breeds in colonies, but it never seems to do so in Europe.

Both Loche and Erlanger have alluded to the possibility that the Osprey found in North-west Africa may prove sufficiently distinct from typical *P. haliaëtus* to merit separation, in which case it should be referred to *P. albigularis*, Brehm (Vogelfang, p. 12). The reasons for any separation, even subspecific, appear, however, to be insufficient, and such an authority on the subject as Mr. Gurney considers that there is but one species of Osprey.

Order STEGANOPODES.

Family PELECANIDÆ.

PHALACROCORAX CARBO (Linnæus).

CORMORANT.

Pelecanus carbo, *Linn. Syst. Nat.* i, p. 216 (1766).

Phalacrocorax carbo, *Pall. Zoogr. Ross.-As.* ii, p. 297 (1811); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxvi, p. 340; *Loche, Expl. Sci. Alg. Ois.* ii, p. 162 (1867); *Koenig, J. f. O.* 1888, p. 297; *id. J. f. O.* 1893, p. 105; *Erlanger, J. f. O.* 1900, p. 71.

Carbo cormoranus, *Matherbe, Cat. Rais. d'Ois. Alg.* p. 23 (1846).

Description.—**Adult male**, spring, from Tunis, North Tunisia.

General colour of plumage metallic greenish-black, becoming bronze on the back, where the feathers are fringed with greenish-black; head and neck thickly covered with soft elongated white filoplumes; a broad whitish band passing from the back of the eye and surrounding the bare space at the base of the bill; a patch of white feathers on the thighs; tail-feathers fourteen in number.

Iris bright green; bill dark brown, yellowish at the base; feet black; gular pouch yellowish.

Total length 33 inches, wing 13.50, culmen 3.50, tarsus 2.50.

Adult female similar to the male, but rather smaller, duller in coloration and with a smaller crest.

The Cormorant is common all along the Tunisian coast from north to south and, according to Blanc, breeds in the Regency, and is to be met with throughout the year. It may often be seen in winter on the Tunis lake, El-Bahira as it is called, perching on the posts placed in some of the shallower parts, but since the canal was opened between Tunis and Goletta, the bird is not quite so abundant there as it used to be. On some of the inland lakes and rivers the species is to be met with occasionally and I have a note of its occurrence on the River Medjerdah, near Souk-el-Khemis, a long way from the sea-coast.

In Algeria, according to Loche, the Cormorant is not uncommon and is sedentary; while in Marocco, Col. Irby, on the authority of

Favier, states that it is to be found near Tangier from December to February and frequents the coast, lakes and rivers, where it is not uncommon.

In Sicily the species is abundant on most of the coasts, and particularly on that part lying between Trapani and Marsala, where the numerous salt-pans and natural shallows furnish a plentiful supply of food, not only to Cormorants, but to many other species of aquatic birds, and during the winter months are a haven of rest and plenty for them. Among the most important of these localities is the fine inland bay commonly known by the name of the "Stagno di Marsala," celebrated not only for the excellence and abundance of its fish, but also for having been the scene of Dionysius' famous siege of the ancient Phœnician town and colony of Motya, B.C. 396. The small island on which Motya stood and which is now called the Island of San Pantaleo, is surrounded by the "stagno," and the water between it and the mainland is in some parts so shallow that the country carts cross it. The island was indeed once connected with the mainland by a road, the remains of which may be distinctly seen below the surface of the water when it is clear.

Although not particularly sociable or gregarious, the Cormorant may often be found in flocks, these sometimes consisting of many individuals. It is also to be found singly and in pairs. In its habits it is essentially aquatic, and though fond of perching on rocks or posts in the middle of the water, it is more at home in that element itself, swimming and diving with ease. It also flies well, although rather heavily, and when rising from the water apparently experiences some difficulty in getting under weigh. The species in its natural state appears to feed entirely on fish. Though naturally shy and wary, it is capable of becoming very tame and docile if properly treated. Fishing with Cormorants, which I have once had the pleasure of witnessing, is an interesting sport, and in some countries it is said to be carried on as a trade. In the far East it appears to have been practised from time immemorial.

In Tunisia, the species nests chiefly on rocks, building a large structure of sticks, grass and sea-weed, and laying three or four eggs of a very pale or whitish-blue, covered with a rough chalky coating. The eggs measure about 70 × 40 mm.

The distinct species, *Phalacrocorax lucidus* (Licht.) appears to occur on the west coast of Marocco, and Dr. Hartert (Nov. Zool. ix, p. 339) mentions having obtained several examples of it from Cape Blanco.

PHALACROCORAX GRACULUS (Linnæus).

SHAG.

Pelecanus graculus, *Linn. Syst. Nat.* i, p. 217 (1766).

Phalacrocorax graculus, *Pall. Zoogr. Ross.-As.* ii, p. 299 (1811);
Ogilvie-Grant, Cat. Birds Brit. Mus. xxvi, p. 364; *Loche, Expl. Sci.*
Alg. Ois. ii, p. 64 (1867).

Carbo graculus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 23 (1846).

Description.—**Adult male**, winter, from Sardinia.

Entire plumage blackish-green, more glossy on the head and neck, and tinged with bronze on the back, scapulars, and upper wing-coverts, the feathers of which are fringed with velvety-black; tail, quills and underparts rather more dusky; head with a conspicuous crest curving forwards from the occiput. Tail-feathers twelve in number.

Iris green; bill black; the nail yellowish; feet black; bare space round the eye black; bare space on the chin yellowish.

Total length 28·50, wing 10, culmen 3·25, tarsus 2·35.

Adult female, similar to the male, but rather smaller.

The Shag appears to have been met with both in Algeria and Marocco, and although there is no actual record of its occurrence in Tunisia, there is every reason to believe that it is also to be found, though perhaps rarely, on the coasts of the Regency, particularly as the species occurs throughout the Mediterranean, and in some localities is even abundant.

By some ornithologists the Mediterranean Shag is considered to be distinct from typical *P. graculus* (L.), and has been separated under the name of *P. dcsmaresti*, Payraudeau. I am not in a position to say whether there are good grounds for specific distinction, or even for a subspecific one, but may observe that examples are obtained from time to time in the Mediterranean, which do not differ appreciably in any way from those from more northern seas.

More exclusively marine than the preceding species in its tastes and habits, the Shag is rarely found away from the sea-coast, or on inland lakes or rivers. It is essentially gregarious, and may often be observed in considerable numbers. In the localities it frequents it is said to be sedentary.

Its food consists of sea-fish, which it captures in the same way

as the Cormorant does. Its mode of nesting is also similar, and its eggs resemble those of the Cormorant, but are rather smaller.

Carbo leucogaster, Cara, appears to be nothing more than the immature bird of the present species.

PHALACROCORAX PYGMÆUS (Pallas).

PYGMY CORMORANT.

Pelecanus pygmeus, *Pall. Reise Russ. Reichs* ii, p. 712, *Anhang* (1770); *Malherbe, Faune Orn. de l'Alg.* p. 38 (1855).

Phalacrocorax pygmæus, *Pall. Zoogr. Ross.-As.* ii, p. 300, pl. lxxiv, fig. 1 (1811); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxvi, p. 405.

Haliæus pygmæus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 166 (1867).

Description.—**Adult male**, winter, from Sardinia.

Head and neck glossy reddish-brown, except the forehead and lores, which are black; back, scapulars, and upper wing-coverts blackish-grey, the feathers fringed with black; remainder of plumage greenish-black, the tail, quills and underparts rather more dusky, and the latter with a few white streaks.

Iris green; bill, feet, bare space round the eye and on the chin, blackish. Total length 19 inches, wing 8, culmen 1.40, tarsus 1.30.

Adult female similar to the male, but rather smaller.

The Pygmy Cormorant is abundant in some parts of Algeria, and examples appear to have been obtained close to the Algerio-Tunisian frontier, a specimen from Guelma, on the Tunis-Bône railway line, being preserved in the British Museum collection. I feel no hesitation, therefore, in including this species among the birds of Tunisia.

According to Loche this Cormorant is abundant and breeds on the Algerian lakes, being particularly plentiful on Lake Fetzara near Bône, where he counted in one day as many as thirty nests. Examples of this species from Algeria are preserved in the Turati collection of the Milan Museum; they are labelled *Haliæus algeriensis*, but are undoubtedly *P. pygmæus*. In his work on the Algerian Ornis, Loche states that *two* small species of Cormorant, which he calls *H. pygmæus* and *H. algeriensis*, are to be found in Algeria; but from the description given of the birds, and judging from the examples

in the Milan Museum, it is evident that the latter are referable to *P. pygmaeus*, while the former may be referable to *P. africanus* (Gmel).

The Pygmy Cormorant, though common in many parts of South-eastern Europe, appears to be less so in the west of the Mediterranean, and on the Italian coasts it is certainly rare. It has been met with on the islands of Sardinia and Sicily, but is far from common. The species is no doubt very local in its distribution and sedentary in the localities where it occurs. In its habits it resembles its congeners, but differs from them in frequenting lakes and fresh water in preference to the sea, although occurring also on the sea coast to a certain extent. Its food consists chiefly of both fresh and salt water species of fish. It breeds in colonies and in its nesting resembles the preceding species, laying three or four chalky-white eggs of about 45×30 mm. in size.

SULA BASSANA (Linnæus).

GANNET.

Pelecanus bassanus, *Linn. Syst. Nat.* i, p. 217 (1766).

Sula bassana, *Lacép. & Daudin, in Buff. Hist. Nat.* (18mo Didot), *Quadr.* xiv, p. 319, *Ois.* xvi, p. 303 (1799); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxvi, p. 425; *Koenig, J. f. O.* 1893, p. 105; *Erlanger, J. f. O.* 1900, p. 71.

Description.—**Adult male**, winter, from North Tunisia.

Entire plumage pure white, except the crown and nape, which are tinged with yellowish-buff or cream-colour, and the quills and tail, which are black, the latter being cuneate in shape.

Iris glassy-white; bill pale greyish-blue; bare space immediately in front of the eye and at the base of the bill dark grey; feet dark grey, with pale blue lines on the toes.

Total length 35 inches, wing 18.50, culmen 4.50, tarsus 2.25.

Adult female similar to the male.

Immature bird, winter, from North Tunisia.

Entire upper-plumage dull blackish-brown, the head, neck and upper wing-coverts covered with small triangular white spots, which become larger on the rump and upper tail-coverts; the underparts whitish, thickly mottled with dull brown, particularly on the fore-neck.

Bill and feet brown. Measurements almost the same as in the adult.

Observations.—In Mr. Dresser's "Birds of Europe" (vol. vi, pp. 187-189) will be found some interesting notes made by Mr. John Flower, on the peculiar articulation of the Gannet's coracoids to its sternum, the object of this being no doubt to relieve the strain on the shoulder-joint of the bird when striking the water in its descent from a great height. A woodcut of the Gaunet's sternum is also given, illustrating Mr. Flower's remarks.

The Gannet, or Solan Goose, visits Tunisia in winter, and although not common there, is less rare than is generally supposed to be the case, particularly as regards immature birds, which are more frequently to be seen than adult examples in the white plumage. The latter, indeed, do not appear to be often met with on the Tunisian coasts, but occur occasionally, and I have an example in that dress which was obtained near Tunis, besides immature specimens from the east coast of the Regency obtained during the winter months.

Dr. Koenig and Baron v. Erlanger both seem to have observed this species off the east coast not far from Sousa.

Though unrecorded by Loche from Algeria, the species no doubt occurs there, as it does in Tunisia.

Comparatively few Gannets enter the Mediterranean, or at any rate extend their range far eastward in that sea, but according to Colonel Irby, the bird appears to be common in winter in the Straits of Gibraltar and along the west coast of Marocco, whence I have specimens of it, both adult and immature. It does not seem to range far down the West African coast, though its occurrence has been recorded from the Canaries. In Italy, and particularly on the Sicilian coast, the species occurs occasionally, and I have myself obtained both adult and immature specimens near Palermo. In January, 1903, a fine adult example was captured and brought to me alive by some fishermen, who had taken it in their nets off the small Bay of Sferracavallo, near Palermo. I kept this bird in my garden for more than two months, during which time it appeared to thrive, but on the approach of the warm weather, about the end of March, it died.

An adult example of the Gannet, which is preserved in the Lyceum collection at Trapani, appears to have been obtained off the island of Levanzo, near that town, in the month of May, which is a late date for this northern species to be found so far south.

Besides the specimens captured in Sicily, examples of the bird have been obtained in Italy from Liguria, Tuscany, Calabria and

Sardinia. A specimen of it is also preserved in the Civic Museum of Trieste, which is said to have been obtained in the Adriatic.

Essentially a deep-sea bird, the Gannet, except during the breeding-season, is chiefly to be seen on the wing at some distance from any shore, or when in the vicinity of land, where high rocky cliffs rise perpendicularly out of deep water. Its powers of flight are considerable, and it spends the greater part of the day on the wing, from time to time darting down on its prey from a height, with closed wings, often disappearing entirely under the surface of the water. It seems never to take its prey by diving from the surface of the water, or to pursue it by swimming under water. Surface-swimming fish form its chief prey, but in captivity the bird will eat any kind of fish, and even farinaceous food. The bird I kept alive in Palermo seemed to flourish on a mixed diet of fish and "maccaroni." It was very voracious, and when hungry, used greedily to swallow its food immediately it was given to it, apparently unmindful of the presence of lookers-on. Although not very shy, this bird never became what one could call tame or docile, but seemed always to be apprehensive of danger, and when approached, would utter a succession of harsh guttural notes, as if resenting the intrusion. The sharp-edged bill of this species is capable of inflicting a severe wound, as I know from experience.

In the comparatively few localities in Great Britain and other countries where it breeds, the Gannet may be found in colonies of countless numbers, its nests, placed among cliffs, or on rocks, being merely masses of sea-weed, while the single egg laid in each is pale bluish-white, covered with a thick chalky coating, and measures about 80 × 50 mm.

PELECANUS ONOCROTALUS, Linnæus.

ROSEATE PELICAN.

Pelecanus onocrotalus, *Linn. Syst. Nat.* i, p. 215 (1766); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxvi, p. 462; *Loche, Expl. Sci. Alg. Ois.* ii, p. 160 (1867); *Koenig, J. f. O.* 1888, p. 297; *id. J. f. O.* 1893, p. 104.

Description.—**Adult male**, from Europe.

General colour white tinged with rose; primaries and their coverts black; occipital feathers elongated and forming a pointed crest; the feathers on the lower neck also somewhat elongated and tinged with yellowish-buff. Tail composed of twenty-four feathers.

Iris red; bare space round the eye, the forehead and its sides yellowish; bill bluish-grey, with a reddish line down the sides and furnished with a large pouch, capable of being greatly distended; feet pink.

Total length 70 inches, wing 28, culmen 16, tarsus 5.

Adult female similar to the male, but with the crest more developed.

The young bird is pale buff and ash-brown, darker on the back and wings, and dull white on the underparts.

Though abundant further east, the Roseate or White Pelican is of rare occurrence in North-west Africa, and is only occasionally to be met with in Tunisia as a straggler. An example of it was captured alive near Sousa, on the east coast of the Regency, in December, 1903, and kept in confinement for some time, according to Blanc, who wrote to me at the time, offering me the bird.

Loche states that the species is merely an accidental straggler to Algeria, while from Marocco it appears to be so far unrecorded.

On the Italian coasts the species is to be met with occasionally, and specimens of it have been obtained from time to time at various places. Its habitat proper, however, is undoubtedly further east, and in South-eastern Europe, North-eastern Africa, and Asia Minor it is common. Whether it occurs in its typical form still further east in Asia, does not appear to be yet clearly established. The Pelican found throughout a considerable portion of the Asiatic continent and in Indo-Chinese countries, is *P. roseus*, Gm., distinguished by its smaller size, its shorter bill, the absence of any frontal swelling, and by having the tail composed of twenty-two feathers.

The Roseate Pelican, like other members of the genus, frequents lagoons and shallow waters on or not far from the sea-coast, where it obtains its food, consisting entirely of fish. It is essentially gregarious in its habits, and will even associate with other birds not of its own kind. It swims and flies well, though its flight is at first rather laboured when it rises from the water. It breeds in large colonies, on uninhabited islands or marshes, depositing from two to four white eggs thickly covered with a chalky coating and measuring about 90×60 mm.

According to Loche (Expl. Sci. Alg. Ois. ii. p. 159) the Dalmatian Pelican (*P. crispus*) is of very rare and accidental occurrence in Algeria. There appears to be no record of its occurrence in Tunisia, but the species has been met with occasionally in Italy. The Florence Museum contains examples of it obtained in the Peninsula, and the Palermo Museum has a specimen captured in Sicily.

Order HERODIONES.

Family ARDEIDÆ.

ARDEA CINEREA, Linnæus.

COMMON HERON.

Ardea cinerea, Linn. *Syst. Nat.* i, p. 236 (1766); Sharpe, *Cat. Birds Brit. Mus.* xxvi, p. 74; Malherbe, *Cat. Rais. d'Ois. Alg.* p. 20 (1846); Loche, *Expl. Sci. Alg. Ois.* ii, p. 126 (1867); Koenig, *J. f. O.* 1888, p. 272; *id.* *J. f. O.* 1893, p. 87; Whitaker, *Ibis*, 1895, p. 104; Erlanger, *J. f. O.* 1900, p. 37.

Description.—**Adult male**, spring, from Sicily.

Forehead and centre of crown white; sides of the crown and the nape glossy-black, with an elongated crest, two of the feathers much longer than the rest; general colour of the upper parts light bluish-ash; scapulars considerably elongated; primaries black; edge of the wing white; throat and fore neck white, with two or three narrow lines of glossy-black feathers extending down the middle; centre of the breast, and under tail-coverts white; the sides of the breast, and a broad stripe on the sides of the abdomen black.

Iris, a bare space round the eye, and the bill bright yellow; feet dark greenish-grey.

Total length 39 inches, wing 18, culmen 5, tarsus 5·75.

Adult female differs from the male in being smaller, duller in coloration, and with shorter plumes.

Immature bird, winter, from Tuuis, North Tunisia.

Crown and a crest of elongated feathers blackish-grey; rest of upper plumage ash-grey, with a line of black and white feathers extending down the centre as far as the breast; sides of body, flanks and crissum, ash-grey; centre of the abdomen, and under tail-coverts white.

Soft parts almost as in the adult bird; measurements rather less.

Observations.—The *Ardeidæ* are furnished on their underparts with tufts of feathers full of a soft oleaginous powder, the use of which does not appear to be known. Possibly it may be for the purpose of assisting the birds in their fishing, particularly at night or in ruffled water, in the same way as fishermen in the Mediterranean, when searching for *Octopus* at night, are in the habit of sprinkling oil on the water to render it more limpid.

The common Heron is to be met with in winter throughout the Regency, though it is naturally more abundant in the well watered districts of the north than in the drier region of the south. According to Blanc the species is resident throughout the year in North Tunisia, and breeds in the marshes near Bizerta and Mater.

During the winter months the bird may often be seen on the shores of the Lake of Tunis, and on the sea-coast near that town. It is also to be observed in winter on the coasts of the south of the Regency, near the Tripoli frontier.

Loche states that the Heron is abundant on all the Algerian lakes, and that he had found it nesting on the shores of Lake Fetzara. Dr. Koenig met with the species in the month of March on the Oued Biskra in the Algerian Sahara, and Canon Tristram says: "it is occasionally to be seen in the ditches and salt-marshes of the oases in winter" (*Ibis*, 1860, p. 77).

In Marocco the species is said to be abundant in winter, and according to Favier, is both resident and migratory in the vicinity of Tangier.

The Heron frequents the banks of rivers and lakes, the seashore, marshes and water-meadows. Except during the breeding-season, it is solitary and unsociable in its habits, and is rarely to be found otherwise than singly. If undisturbed, it often remains for hours together in one spot, watching for its prey, standing on one leg, with its head drawn in between its shoulders, and apparently asleep or dozing. It is, however, far from being a dull bird, but on the contrary, is very wide-awake and most wary. Its flight is slow and measured, though capable of being maintained for a considerable length of time, and often attaining a great altitude. In old times the Heron used to be a favourite "quarry" with falconers, and the bird was strictly preserved, and protected by law as royal game.

The Heron's food is very varied, consisting of fish, eels, small mammals, reptiles, frogs and shell-fish, and even of worms and insects. It feeds both by night and day.

Its note or cry, uttered by the bird when on the wing, is a harsh loud "*kraak*" repeated once or twice, but as a rule, the bird is silent.

The Heron's nesting habits in North-west Africa seem to differ somewhat from those of its kind in Europe, and more particularly the north of Europe, where these birds breed in large colonies, or

Heronries, selecting, as a rule, trees as sites for their nests. In North-west Africa the individuals of the species that remain to breed, resort to marshes for that purpose, and place their nests on the ground among reeds and other aquatic vegetation. The nest is a bulky flat structure composed of twigs, rootlets, and dry grasses, and the eggs, three or four in number, are of a uniform pale greenish-blue colour, measuring about 62 × 45 mm.

The marshes surrounding the Djebel Eshkul near Bizerta are the favourite resort of this and other species of *Ardeidæ*, which may be found nesting there in considerable numbers and in close proximity to each other.

The Black-necked Heron (*A. melanocephala*), according to Loche, has occurred in Algeria as a straggler (Expl. Sci. Alg. Ois. ii. p. 129). Canon Tristram also appears to have met with the species in the Algerian Sahara (Birds of Eur. vi. p. 226).

ARDEA PURPUREA, Linnæus.

PURPLE HERON.

Ardea purpurea, Linn. *Syst. Nat.* i, p. 236 (1766); Malherbe, *Cat. Rais. d'Ois. Alg.* p. 20 (1846); Loche, *Expl. Sci. Alg. Ois.* ii, p. 130 (1867); Koenig, *J. f. O.* 1893, p. 87; Erlanger, *J. f. O.* 1900, p. 37.
Phoyx purpurea, Sharpe, *Cat. Birds Brit. Mus.* xxvi, p. 60.

Description.—**Adult male**, winter, from North Tunisia.

Crown and elongated nuchal plumes glossy black; sides of the head and neck rufous, with black stripes extending from the gape backward and down the middle and on each side of the neck; rest of upper plumage generally ashen-slate, becoming darkest on the quills and tail; some of the dorsal plumes and the scapulars much elongated, the latter tinged in part with rufous; chin and upper throat white, becoming pale rufous lower down, and striped with black along the centre of the fore neck, ending in very elongated pale buff-coloured feathers, striped with black; breast deep rich chestnut; abdomen chestnut, black in the middle; thighs rufous; sides of the body ashen-grey; under tail-coverts black and white.

Iris and bill bright yellow; feet greenish-grey.

Total length 33 inches, wing 14, culmen 5, tarsus 4.75.

Adult female, similar to the male, but rather smaller and duller in coloration.

The young bird is paler and greyer, and without the long nuchal plumes.

Like the common Heron the present species occurs commonly in Tunisia, and according to Blanc, is resident and to be met with at all seasons in the Regency, though more plentiful during the spring.

In Algeria and Marocco the Purple Heron appears to be abundant, and according to Loche, is resident and found on most of the Algerian lakes. In Sicily the species is particularly plentiful during the spring passage, and is said to be resident in the marshes near Catania.

In the localities it frequents, the Purple Heron differs somewhat from the common Heron, preferring marshes and reed-fringed pools to the more open spots and neighbourhood of running water generally affected by the latter bird. It is also more skulking in its habits and less arboreal than the common Heron, being seldom found in trees, but usually on the ground or among reeds and cane-brakes, where it passes the greater part of the day in retirement. It is chiefly to be seen during the early morning or late evening hours, and appears to be more or less crepuscular in its habits. When on migration the species is usually to be found in small flocks, but occasionally as many as a hundred individuals may be seen together.

The note or call of the Purple Heron is not unlike that of the common Heron, though not quite so loud, and its food appears to be very similar. It breeds in colonies as a rule, and apparently always in marshes or among dense aquatic vegetation and never in trees. The nest consists merely of a few flags or rushes beaten down, with a slight layer of bits of dry rushes to hold the eggs, which are usually three in number and of a pale bluish-green colour. They measure about 55 × 40 mm.

ARDEA ALBA, Linnæus.

GREAT WHITE EGRET.

Ardea alba, Linn. *Syst. Nat.* i, p. 239 (1766).

Herodias alba, Sharpe, *Cat. Birds Brit. Mus.* xxvi, p. 90; Erlanger, *J. f. O.* 1900, p. 36.

Ardea (*Herodias*) *egretta*, Malherbe, *Cat. Rais. d'Ois. Alg.* p. 20 (1846).

Egretta alba, Loche, *Expl. Sci. Alg. Ois.* ii, p. 132 (1867).

Herodius egretta, Koenig, *J. f. O.* 1888, p. 273; *id. J. f. O.* 1893, p. 88.

Description.—**Adult**, spring, from Sicily.

Entire plumage pure white, the occipital feathers, and those of the

lower part of the fore-neck elongated and pointed, while from the lower back a tuft of long filiform feathers extends to beyond the tail.

Iris yellow ; bill black ; feet dark brown.

Total length 43 inches, wing 17, culmen 5·50, tarsus 7·50.

Adult female, similar to the male, but rather smaller.

The young resemble the adult bird in winter plumage, in lacking the occipital and dorsal plumes, and having the bill yellow or yellowish.

This handsome bird is not uncommon in Tunisia, occurring on all the coasts of the Regency, and particularly on the small islands off the east coast. Baron v. Erlanger observed it at Maharès, and on the island of Knais, where he found the species in large flocks. In the neighbourhood of the town of Tunis the bird may occasionally be seen, and examples of it are sometimes brought to the market of that town.

According to Blanc the species breeds in Tunisia, and he states that he has found it nesting on the island of Djerba off the South-east coast of the Regency.

In Algeria, according to Loche, the Great White Heron appears to be not uncommon in the Province of Constantine, and Canon Tristram met with the species far south in the Algerian Sahara and wrote as follows regarding it (*Ibis*, 1860, p. 77) : " Three or four of these magnificent Herons used to resort to the salt lake of Waregla. Again I met with them at Dzouia, Ternaçin, Tamerna and Tuggurt, but always in small flocks, and very shy. Never found, like their congeners, in the ditches or under palm-trees, but in the wide, open marshes and chotts, where they were extremely wary. They are only winter visitants to the Sahara."

In Marocco the species is said to occur, but apparently it is much rarer there than it is further east.

In Sicily this Heron is not at all uncommon, particularly on the southern coast of the island, and at times it is said to occur in large flocks. In Sardinia it is also abundant in some seasons.

In its habits the Great White Heron is said to resemble the common Heron, being fond of frequenting open spots and running water, as well as the seashore, and being very wary and always on the alert. It appears, however, to be more sociable than that species.

Its food consists chiefly of fish, but also of frogs, reptiles, small mammals, and worms.

Its nest is said to be composed of dry rushes and other aquatic

plants, and is always placed on the ground. Its eggs, three or four in number, are pale bluish-green, and measure 60×40 mm.

ARDEA GARZETTA, Linnæus.

LITTLE EGRET.

Ardea garzetta, *Lin. Syst. Nat.* i, p. 237 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 30 (1855).

Garzetta garzetta, *Sharpe, Cat. Birds Brit. Mus.* xxvi, p. 118.

Garzetta egretta, *Loche, Expl. Sci. Alg. Ois.* ii, p. 133 (1867).

Herodius garcetta, *Koenig, J. f. O.* 1888, p. 273; *id. J. f. O.* 1893, p. 88.

Herodias garzetta, *Erlanger, J. f. O.* 1900, p. 36.

Description.—**Adult**, spring, from North Tunisia.

Entire plumage pure white; occipital feathers elongated, two of them projecting some way beyond the others; a tuft of elongated feathers extending from the the lower back beyond the tail; another tuft of elongated feathers on the lower fore-neck, slightly tinged with cream-colour.

Iris pale yellow; bare space round the eye pale slate; bill and feet black.

Total length 25 inches, wing 12, culmen 3·75, tarsus 4·25.

Adult female, similar to the male, but slightly smaller.

In winter the occipital and dorsal plumes are wanting.

Like the preceding species, the Little Egret is not uncommon in Tunisia, and may be found wherever there are lakes or marshes of any size. During the spring passage it is rather more abundant than at other seasons, but it is resident and to be met with in the Regency throughout the entire year.

The species nests in certain numbers on the large marshes adjoining the Djebel Eshkul near Bizerta, which, in years gone by when I first visited them, used to be a veritable paradise for all water-birds, and during the breeding-season were the haunts of most of the species of *Ardeidæ* and *Anatidæ* found in Tunisia. In those days one used to meet with *A. cinerea*, *A. garzetta*, *A. bubulcus*, *A. ralloides*, and *Nycticorax griseus*, all breeding near the Djebel Eshkul in considerable numbers and in comparatively close proximity to each other, but Blanc informs me that things are changed now, and owing to the persecution of the birds by unscrupulous collectors and dealers in

plumes, their numbers are sadly diminished, although a few of each of the above mentioned species are still to be found nesting in the more secluded and impenetrable parts of the marshes.

The locality is certainly a most attractive one, the Djebel Eshkul standing between the splendid lake of Bizerta on the one side and extensive marshes on the other, and rising up in their midst like an island. During the winter, indeed, the mountain is almost completely surrounded by water, but this is so shallow in some parts that one can easily wade across it. This I often had to do myself, when wild-fowl shooting there, although in very wet seasons I preferred crossing on horseback. Many a pleasant day's sport have I had in that neighbourhood, for besides the marshes, teeming with innumerable waterfowl of all sorts, the dense "maquis" thickets of the Djebel Eshkul held many wild-boar and an occasional hyæna, and the Arabs of the district, a fine sporting tribe, were always ready to join in a "hunt."

To add to the charms of the spot, from an artistic point of view, there was a herd of semi-wild buffaloes, which roamed at will over the marshes and lower slopes of the Djebel Eshkul, enhancing the savage wildness and picturesque beauty of the situation and giving life-colouring to the scene. These buffaloes were the property of the Bey of Tunis, and were more or less strictly preserved, but as "rogues" were not unfrequently found among them, I made a point, when shooting in their vicinity, of carrying a few ball-cartridges in my pocket, to be prepared for any emergency!

The Little Egret occurs not uncommonly in Algeria and Marocco, and is said to breed in both countries. In Sicily it is sometimes most abundant during the spring, and Doderlein states that he had seen large flocks of the species composed of a hundred individuals or more towards the end of May. The species is said to breed in the island and to be resident there to some extent.

In its habits it is sociable and gregarious, and when breeding in marshes or on the ground, the nests of the species may be found close together and touching each other. Although essentially a marsh, or swamp-loving bird, it may often be met with on the sea-shore. It is not particularly shy, and may be approached without great difficulty. Its snow-white plumage also renders it a conspicuous mark and the bird often falls a victim to the "gunner." Its food appears to be the same as that of the preceding species. In captivity it sometimes becomes remarkably tame and will feed from one's hand, taking

almost anything that is offered to it. Doderlein mentions an interesting case of one of these birds which lived for several months in the Palermo University Museum without attempting to regain its liberty, although the windows of the rooms it inhabited were often wide open. Among the many creatures forming its varied diet were live snakes, and these the bird swallowed whole if not too large, but when the contrary was the case, it would seize the reptile midway and after shaking it repeatedly, would then immerse it in its water-pan and hold it there till life was extinct, afterwards devouring it at its leisure and beginning always with the head (*Avif. Mod. et Sic.* p. 213).

The nest of the present species, which in Tunisia is always to be found in swamps and dense aquatic vegetation, is a slight flat structure composed of dry rushes or similar plants, while the eggs, usually three or four in number, are of a pale bluish-green and measure about 44×32 mm. In some countries the species is said to nest in low trees, and even on rocks and sea-cliffs.

Among the specimens in Loche's collection of Algerian birds acquired by the late Count Turati of Milan and now preserved in the Museum of that town, there are two examples of the American species *Ardea candidissima*, Gm., Nos. 17757 and 17760, which are labelled as having been obtained on Lake Halloula in Algeria. Loche himself does not allude to these examples, or include the species in his list of Algerian birds, but the specimens referred to are undoubtedly of the above species. Whether they are really from Algeria is another question. Count Turati obtained Loche's birds from Schneider of Basle, and it is not improbable that the labelling is incorrect.

ARDEA LUCIDA, Rafinesque.

BUFF-BACKED HERON.

Ardea lucida, Rafinesque, *Caratteri*, p. 5 (1810).

Bubulcus lucidus, Sharpe, *Cat. Birds Brit. Mus.* xxvi, p. 213.

Bubulcus ibis, Loche, *Expl. Sci. Alg. Ois.* ii, p. 135 (1867).

Ardea bubulcus, Koenig, *J. f. O.* 1888, p. 273; *id. J. f. O.* 1893, p. 88.

Description.—**Adult male**, spring, from North Tunisia.

Plumage white, except the crown, which has an elongated crest of vinous-buff feathers, the back which is creamy-buff, with vinous-buff dorsal plumes

extending from the lower part, and the breast which is also washed with cream and has a tuft of vinous-buff feathers proceeding from the lower fore-neck.

Iris, bill and feet yellow; the bare space round the eye greenish-yellow.

Total length 18.50 inches, wing 10.50, culmen 2.40, tarsus 3.25.

Adult female similar to the male.

The young resemble the adult birds in winter, when the plumage is much whiter, and lacks the ornamental plumes.

The feet at that season are much darker.

This is a common and resident species in Tunisia, particularly in the low-lying wet plains and more marshy districts of the north of the Regency, where it breeds, and is to be met with throughout the entire year.

In Algeria and Marocco the Buff-backed Heron appears to be as common as it is in Tunisia, and is also resident in both countries, although, according to Favier, the majority of the birds observed near Tangier pass northwards in spring and return later in the year.

There can be no doubt, however, that the Buff-backed Heron is more of a southern species than most of the other Herons, as with the exception of Southern Spain, in some parts of which it is even abundant and resident, the species is not often found in the European Continent.

In Italy examples of it are obtained from time to time, but it cannot be looked upon as otherwise than rare there.

The type of Rafinesque's *A. lucida* appears to have been obtained from Trapani in Sicily about the year 1810. An example of the species, a female, obtained near Palermo on May 13, 1891, is preserved in the University Museum of that town.

In the Island of Cyprus the species is said to occur not unfrequently.

In Tunis the Buff-backed Heron is abundant on the extensive grass-plains and marshy land near Mater and Bizerta, and is generally to be seen in small flocks in the immediate vicinity of grazing cattle, on and around which the birds find an abundant supply of food in the ticks and other insects which infest these animals. Like Starlings with sheep, these Herons treat cattle in the most familiar way, perching on their backs, and walking round and about them without the least fear.

The trivial names of the species in various languages, as well as

the Latin name of *bubulcus*, owe their origin to the bird's affecting the society of cattle in this way.

In its habits the Buff-backed Heron is eminently sociable and far from shy, being frequently found in the vicinity of buildings and cultivated land, and at times being actually known to follow the plough. Its principal food appears to be insects and worms, but it is said also to eat frogs, reptiles and small mammals.

Its note, or alarm cry, is a harsh "*gra, gra,*" but the bird is silent as a rule.

The present species breeds in colonies, and in Tunisia, in or on the borders of swamps and marshes, the nest being a light flat structure composed of a few dry sticks and rushes loosely put together. The eggs, three or four in number, are as a rule pale bluish-green, and measure about 44×33 mm.

In Marocco Mr. Meade-Waldo found an enormous colony of this species breeding on a low rocky island in the sea between Rabat and Fedulla. This island, which is separated from the mainland by a channel some two hundred yards wide, was absolutely covered with nests, and according to Mr. Meade-Waldo, there must have been some thousands of the birds, many of them still building their nests on May 28, 1901. When passing by this spot on April 1, of the following year, he found it quite deserted. Mr. Meade-Waldo also states that a large number of Buff-backed Herons nest in the city of Marrakesh (*Ibis*, 1903, p. 198 and p. 213).

I use Rafinesque's name for this Heron, as his description appears to apply fairly well to the bird, and there is no good reason to reject it. That of *A. ibis* (Linn. in Hasselq. Voy. and Trav. p. 198, 1766), although much older, seems to have been included by Linnaeus, in his twelfth edition, as a synonym of his *Tantalus ibis*, or the Sacred *Ibis*, and the description of the bird, moreover, does not well apply to the present species. *A. bubulcus*, Audouin, the name by which the Buff-backed Heron has of late generally been known, is of a later date than Rafinesque's name.

ARDEA RALLOIDES Scopoli.

SQUACCO HERON.

Ardea ralloides, *Scop. Ann.* i, p. 88 (1769); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846); *Koenig, J. f. O.* 1888, p. 272; *id. J. f. O.* 1893, p. 87; *Whitaker, Ibis*, 1895, p. 104.

Ardeola ralloides, *Sharpe, Cat. Birds Brit. Mus.* xxvi, p. 202; *Erlanger, J. f. O.* 1900, p. 38.

Buphus comatus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 136 (1867).

Description.—**Adult male**, spring, from North Tunisia.

Head and neck pale cream-yellow, the crown streaked with black; a crest of elongated creamy-white plumes, striped on each side with black; back pale copper-colour, with the lower dorsal plumes considerably elongated; wings and tail white, slightly tinged with creamy-yellow; chin and throat white; breast creamy-yellow, with the lower feathers elongated; rest of the underparts white, tinged with creamy-yellow.

Iris bright straw-yellow; bare space round the eye greenish; bill bluish-grey at the base and black at the tip; feet dull yellow tinged with green.

Total length 18.50 inches, wing 8.50, culmen 2.50, tarsus 2.40.

Adult female similar to the male.

In winter the ornamental plumes are much less developed. The young bird also has these plumes only slightly developed, its upper parts rather darker than in the adult and its lower throat striped with blackish streaks.

The present species is abundant in Tunisia during the spring passage and a good many pairs remain and breed, apparently in the south as well as in the north of the Regency, individuals being met with in some of the oases late in May.

In Algeria and Marocco the species also occurs more or less abundantly on passage, and a certain number nest in both countries. According to Loche it is to be found in Algeria at all seasons, but I have no note of its occurrence in Tunisia during the winter. In its range this Heron is not nearly so essentially a southern species as the preceding one and during the spring and summer months it may be found generally distributed throughout a considerable part of Central as well as Southern Europe. In Sicily it is sometimes particularly plentiful in spring, and may be met with even in the gardens close to large towns.

It frequents marshy localities, the neighbourhood of ponds, and the banks of streams bordered with cane-brakes or reeds, and in its habits is rather seclusive and skulking, passing most of the day in

retirement in some quiet spot. It is chiefly to be observed during the early morning hours, but apparently feeds by day and not by night. Except during the breeding-season, or when actually on passage, it can hardly be called a sociable or gregarious bird, like the preceding species. When migrating, however, it is generally to be found in small parties and occasionally in very large flocks. It is a silent bird as a rule, but has a low deep note. Its flight is slow, but capable of being sustained for a considerable length of time. It feeds chiefly on frogs, small fish, worms and water-insects. It breeds in colonies, at times numbering many hundred individuals, but isolated pairs may often be found. The nest is placed either on the ground, or in low trees, and is a slight flat structure formed of twigs and rushes. The eggs, four or five in number, are greenish-blue and measure about 38 × 28 mm.

ARDEOLA MINUTA (Linnæus).

LITTLE BITTERN.

Ardea minuta, *Linn. Syst. Nat.* i, p. 240 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846); *Whitaker, Ibis*, 1895, p. 104.

Ardeola minuta, *Bonap. Comp. List Birds of Eur. & N. Amer.* p. 48 (1838); *Loche, Expl. Sci. Alg. Ois.* ii, p. 139 (1867).

Ardetta minuta, *Sharpe, Cat. Birds Brit. Mus.* xxvi, p. 222; *Kcenig, J. f. O.* 1888, p. 275; *id. J. f. O.* 1893, p. 88; *Erlanger, J. f. O.* 1900, p. 39.

Description.—**Adult male**, spring, from North Tunisia.

Crown, back, scapulars and tail glossy greenish-black; ear-coverts, sides of neck and nape vinous-buff; quills dull brownish-black; greater upper wing-coverts light grey, median and lesser wing-coverts yellow-buff; underparts yellow-buff, becoming whitish on the abdomen and under tail-coverts.

Iris bright orange-yellow; eyelid and bare space round eye pale greenish-yellow; bill greenish-yellow, darker above.

Total length 9.50 inches, wing 5.75, culmen 1.90, tarsus 1.75.

Adult female, spring, from North Tunisia.

Head brownish-black; sides of the head and neck chestnut; back and scapulars chestnut-brown, margined with fulvous-buff; underparts dull yellow-buff streaked with brown.

Soft parts as in male; measurements rather less.

The young bird resembles the female, but has the underparts rather more streaked.

Like the preceding species, the Little Bittern occurs abundantly in Tunisia during the spring passage, many pairs remaining to breed in the Regency, and its nests are to be found in the oases of the south as well as in all suitable localities north of the Atlas. Loche says it is common and resident in Algeria, but I have no note of its occurrence in Tunisia during the winter, although it is not unlikely that an occasional straggler may be found there in that season, as sometimes happens in Italy.

In Marocco, according to Favier, the Little Bittern is less abundant than it is further east, and the most scarce of all the *Ardeidæ*. Throughout the greater part of Southern and Central Europe the species is more or less abundant during the summer months. In the localities it frequents the Little Bittern resembles the preceding species, being generally found in marshy spots and among thick canebreaks and reed-beds. In its habits it is even more skulking and retiring than that bird and far more solitary and unsociable, being seldom found otherwise than singly, or at most in pairs. During the daytime indeed the bird is not often to be seen, being difficult to flush or dislodge from its haunts, as it is in the habit of creeping away among the dense vegetation in preference to taking flight. It also trusts to its protective colouring and deceptive talent to escape notice by remaining motionless on a cane or other plant, and with its body upright, its neck stretched out, and its bill turned upwards, it looks singularly like part of the plant. The resemblance is wonderful and the *ruse* no doubt often succeeds in saving the bird's life.

The Little Bittern not unfrequently perches on low trees, though it is more often found among dense aquatic vegetation, and particularly in clumps of the common cane (*Arundo donax*) so plentiful in Southern Europe. Its trivial name in many parts of Italy and elsewhere, is derived from its partiality for this plant. The bird is said to feed more by night than by day, and lives on frogs, small fish, worms and aquatic insects. Its note is a low "boom," repeated two or three times. It nests among reeds or other water-plants, and occasionally on low trees and builds a rough structure of twigs and grass. The four or five white, or bluish-white eggs which it usually lays, measure about 34×25 mm.

NYCTICORAX GRISEUS (Linnæus).

NIGHT-HERON.

Ardea grisea, *Linn. Syst. Nat.* i, p. 239 (1766).

Nycticorax grisea, *Selys-Longch. Faun. Belge*, p. 134 (1842).

Nycticorax griseus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 143 (1867); *Koenig, J. f. O.* 1888, p. 275; *id. J. f. O.* 1893, p. 88; *Whitaker, Ibis*, 1895, p. 104.

Nycticorax nycticorax, *Sharpe, Cat. Birds Brit. Mus.* xxvi, p. 146; *Erlanger, J. f. O.* 1900, p. 39.

Description.—**Adult male**, spring, from North Tunisia.

Forehead, superciliary stripes and some long nuchal plumes white; crown, nape, back and scapulars glossy blackish-green; sides of the head and hind neck light dove-grey; entire upper-wing and tail dove-grey; entire underparts white, with a slight grey tinge on the neck and sides of the body.

Iris deep red; bill black at the tip and greenish-yellow at the base; feet yellow, claws black.

Total length 22 inches, wing 12, culmen 3, tarsus 3.

Adult female similar to the male.

In winter the long occipital plumes are wanting.

The young bird is brownish above, with the crown and neck striped, the back and wings ash-brown, with large triangular whitish-buff spots, tail ash-brown, tipped with white, underparts white, slightly streaked with brown.

The Night-Heron is abundant in Tunisia, and according to Blanc, is resident there throughout the year, although more plentiful during the periods of migration than at other seasons. It occurs in all suitable localities in the North of the Regency, as well as in the oases of the South, such as those of Gafsa, Tozer and Nefta, where the species presumably breeds, having been met with at the end of May.

In Algeria and Marocco the Night-Heron appears to be common; Canon Tristram met with it in the far south of the Algerian Sahara at Tuggurt, and believes that it is probably found throughout the whole of the Wed R'hir.

The species appears to have a very wide range in the Old World, occurring throughout Central and Southern Europe (occasionally straying to the North of that Continent), a considerable portion of Asia, and probably the whole of Africa. In China, where the bird is considered sacred, and is consequently unmolested, the species is very plentiful, and breeds in large colonies. Mr. Swinhoe gives an

excellent description of one of these colonies at Canton (*Ibis*, 1861, p. 53).

In Europe it is almost exclusively a summer migrant, arriving in spring and leaving again in the autumn, but examples are said to be occasionally met with in winter in some parts, and particularly in the island of Sardinia. In Sicily, however, where the species is abundant during the periods of passage, and is said to nest in the south-east of the island, I have no knowledge of its occurrence in winter.

The Night-Heron frequents marshes and swampy localities to a certain extent, but seems to be far more arboreal than most Herons, and during the day time is chiefly to be found in trees. At night it no doubt also resorts to trees for roosting purposes. The species, though often observed in the day time, is chiefly nocturnal in its habits, coming forth as a rule at dusk in search of its food, which consists of fish, worms, frogs and insects, varied by a little vegetable matter. Its flight is soft and flapping, but fairly powerful. Its note is a monotonous croak, uttered chiefly at night. The species breeds as a rule in colonies, either in trees, or among bushes and reeds on the borders of swamps. Its nest is roughly built of twigs, rushes and grasses. Its eggs, from three to five in number, are pale bluish-green, and measure about 52 × 36 mm.

BOTAURUS STELLARIS (Linnaeus).

BITTERN.

Ardea stellaris, *Linn. Syst. Nat.* i, p. 239 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 30 (1855).

Botaurus stellaris, *Steph. in Shaw's Gen. Zool.* xi, p. 593 (1819); *Sharpe, Cat. Birds Brit. Mus.* xxvi, p. 253; *Loche, Expl. Sci. Alg. Ois.* ii, p. 141 (1867); *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 79; *Whitaker, Ibis*, 1895, p. 104.

Description.—**Adult male**, spring, from North Tunisia.

Crown and nape black, the feathers of the latter part margined with yellowish-buff; moustachial stripe blackish-brown; general colour of the upper-plumage yellowish-buff, the neck vermiculated and barred behind and on its sides with dark brown; the back thickly striped with black; quills and tail dull black, barred and mottled with dull rufous-chestnut; under-

parts chiefly yellowish-buff, streaked with brown, the middle of the fore-neck and breast streaked with rufous-brown.

Iris yellow; bill yellowish; feet greenish-yellow.

Total length 23 inches, wing 11.50, culmen 3, tarsus 3.50.

Adult female similar to the male.

The Bittern is not uncommon in Tunisia in winter and spring, and breeds in certain numbers in the north of the Regency, though perhaps not in the oases of the south. Salvin states that a few of these birds inhabit the marsh of Zana, where they breed (*Ibis*, 1859, p. 359).

According to Loche, the species is common in Algeria, and partially sedentary. In Marocco Favier says it winters and is seen in abundance on passage, and Col. Irby (*Orn. Str. Gib.* p. 188) adds that it breeds as far south as the neighbourhood of Rabat, from whence he had seen eggs of the species.

In most Mediterranean countries the Bittern is to be found more or less abundantly, and it occurs throughout Europe generally, though rarer in the north of the Continent. In Asia its range eastward extends to Japan, northward to the Yenesei, and southward to Ceylon and Borneo.

It is essentially a marsh bird, frequenting dense swamps and high reed-beds, in the thickest parts of which it passes most of the day in solitary seclusion, coming forth towards evening to feed. Though solitary and unsociable during the greater part of the year, it is said to become gregarious in the seasons of migration, having occasionally been met with in fairly large flocks. Its flight is slow and heavy, and except when actually on passage, is not prolonged for any great distance. Its usual note is a loud croak, but during the breeding-season the male utters, chiefly during the evening or at night, the loud harsh "*booming*" sound, which by some authorities has been likened to the bellowing of a bull (whence probably the name *Botaurus*), and may be heard a long way off.

Its food consists chiefly of small fish, frogs, worms and water-insects. The species breeds as a rule in isolated pairs among dense aquatic vegetation, placing its nest on the ground, and building it of dry rushes or similar material. Its eggs, three to five in number, are of an olive-colour and measure about 52 × 38 mm.

Family CICONIIDÆ.

CICONIA CICONIA (Linnæus).

WHITE STORK.

Ardea ciconia, *Linn. Syst. Nat.* i, p. 235 (1766).

Ciconia alba, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 124 (1867); *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 79.

Ciconia ciconia, *Hartert, Kat. Vogelsamml.* p. 204 (1891); *Sharpe, Cat. Birds Brit. Mus.* xxvi, p. 299, *Erlanger, J. f. O.* 1900, p. 41.

Description.—**Adult male**, winter, from North Tunisia.

Entire plumage pure white, except the quills, primary coverts and scapulars, which are black, and the outer webs of the secondaries, which are washed with grey; the bare space round the eye is black, as is that at the base of the bill, though lower down on the chin it is reddish.

Iris brown; bill and feet coral red.

Total length 44 inches, wing 24, culmen 8·25, tarsus 8·50.

Adult female similar to the male.

The young bird has the colouring of its plumage less pure, and its bill and feet are blackish-red.

The White Stork is not uncommon in North Tunisia during the spring and summer months, arriving as a rule, about the end of February, and leaving again in September. A good many of the birds breed in the north of the Regency, although not in the large numbers that they do further westward, particularly in the Province of Constantine. In Central Tunisia the species occurs more sparingly than it does in the better watered districts further north, and in the south of the Regency it appears to be seldom seen, and then only on passage. In the Algerian Sahara, however, according to Canon Tristram and Loche, it is to be found nesting in the M'Zab country. In North Algeria the species is abundant in several localities, but chiefly in the Province of Constantine. In the city of that name considerable numbers of Storks breed, and in one part of the town almost every house has a nest of the species. In Tunisia I have never met with this bird in winter, but according to Taczanowski, several isolated pairs were to be found wintering in Algeria in 1866.

In Marocco the Stork is very abundant during the periods of migration, arriving sometimes as early as January, and a good many

pairs remain and breed in that country. It appears also to occur in the Canary Islands, though only on passage.

The southern range of this species extends right down Africa to the Cape of Good Hope, while its eastern range reaches as far as Central Asia and India. In Europe the Stork is to be found as a summer visitor in most parts of the centre and south of the Continent, and has been met with as far north as Bergen in Norway. In Denmark, Holland, Belgium, Germany, Greece and Turkey, the species is more or less abundant and breeds, as it does also in the Spanish Peninsula. In Switzerland it also nests in some towns, but in France and Italy it occurs more sparingly, and apparently only on passage. Formerly, however, it is said to have nested regularly in the north of France, and would probably do so still, if it received the same protection that it does in most countries where it breeds. Owing to its being supposed to bring good luck to the house it may select as a site for its nest, the Stork is held sacred in many countries and is protected accordingly. It is indeed a peaceful harmless bird, and affects the neighbourhood of man and his dwellings with the greatest trustfulness and confidence, courting, as it were, his protection.

Its diet, consisting chiefly of mice, reptiles, frogs and insects, renders it a useful friend to the farmer and agriculturist. In Africa locusts form an important item in its diet, and in the terrible invasions of these insect-pests, which so often occur, the Stork must be of great service. The Tunisians, however, do not consider the bird sacred in any way, and simply do not molest it because it is worthless as an article of food, or commerce.

As a rule marshy plains or wet grass-fields are frequented by this bird, and in such localities it is generally to be observed when away from its nesting-home. Being naturally neither shy nor timid, the species often becomes extremely tame and domesticated in confinement. I once kept one, which had been disabled and was unable to fly, for some time in my garden, where it became friendly with all about it, resenting only the approach of any dog and giving utterance to its displeasure on such occasions by a loud clattering of its bill. Apparently the species utters no note or cry, and is silent except for the peculiar clapping together of its mandibles. Its flight is powerful, and when the birds are actually on migration, is maintained at a considerable elevation.

The White Stork commences nesting in Tunisia, and no doubt elsewhere in North-west Africa, somewhat earlier than it does in most parts of Europe. As a rule, eggs are laid at the end of March and in April, and young birds may be met with as early as the beginning of May. North of the Mediterranean the season appears to be a good deal later, and at Basle I have found young birds still in the nest at the end of June. I was told that the Storks arrive regularly in this town on or about February 24, and leave again at the end of August. Certainly by the first week of September, when I have more than once passed through Basle, they had all departed. Apparently only one brood is reared in the course of the year.

In the town of Tunis itself no Storks breed, and the Arabs entertain the curious idea that the species never nests in any town where the Bey resides! The flat terraced roofs and general construction of the houses in Tunis, and some other towns in the Regency, are probably responsible for this absence of Storks' nests. The Tunisian name for this bird is "Belardi."

The usual nesting-sites of the Stork are undoubtedly the tops of houses and buildings, but occasionally trees and cliffs are resorted to for the purpose. Chimney-stacks are much used, and according to Canon Tristran and Loche, the Minarets of Mosques are favourite spots. Corn-stacks and hay-ricks are also sometimes made use of. The nest itself is a large structure, composed of twigs and sticks, with a lining of grass and other soft materials. The eggs, from three to five in number, are pure white and measure 75×52 mm.

The birds return to the same spots every year and each time add fresh material to their nests, which gradually become so huge that at times they have to be removed either completely, or in part.

CICONIA NIGRA (Linnæus).

BLACK STORK.

Ardea nigra, Linn. *Syst. Nat.* i, p. 235 (1766).

Ciconia nigra, Bechst. *Naturg. Deutschl.* iii, p. 56 (1793); Sharpe, *Cat.*

Birds Brit. Mus. xxvi, p. 303; Whitaker, *Ibis*, 1895, p. 104.

Description.—**Adult male**, winter, from North Tunisia.

Head, neck and upperparts generally blackish-brown, with metallic

reflections of bronze, purple and green, becoming darker on the mantle; underparts below the upper-breast pure white; the bare space near the eye and on the chin reddish.

Iris hazel; bill and feet reddish-brown.

Total length 40 inches, wing 21.50, culmen 7, tarsus 7.50.

Adult female similar to the male.

The young bird has a duller plumage generally and its soft parts are also duller in colour.

Although far from common, the Black Stork occurs in Tunisia regularly on passage, and I have examples of it obtained in the north of the Regency. It appears to be seen more frequently in spring than in autumn, though it is to be found in certain numbers also during the latter season. There seems to be no recorded instance of the species breeding in Tunisia, or anywhere in North-west Africa, indeed, from Algeria it is not recorded at all, although it no doubt occurs there, as it does in Marocco, and even, it is said, in Madeira.

The chief breeding-haunts of the Black Stork are in Central and South-eastern Europe, in Palestine, and further east in China.

In winter the species ranges right down Africa to Cape Colony.

In its habits the present species differs considerably from the White Stork, and far from affecting the neighbourhood of human dwellings, gives them a wide berth, frequenting more particularly the open country and secluded localities far removed from towns or villages. It is in fact a shy unsociable bird, and more or less solitary in its habits, but when on passage, contrary to some statements, it may be found in flocks composed of several individuals. Such flocks are occasionally to be seen in Sicily in autumn, and my collection contains an example which was netted on some open moorland situated at some distance from the town of Marsala, which, according to my informant, was annually and regularly visited in autumn by a large flock of these birds. In its flight, food, and peculiar habit of clattering its bill the present species resembles the White Stork. In the choice of its nesting quarters it shows a preference for marshy woods, where it builds in trees, though in some countries it makes use of cliffs for the purpose.

Family PLATALEIDÆ.

PLATALEA LEUCORODIA, Linnæus.

SPOONBILL.

Platalea leucorodia, *Linn. Syst. Nat.* i, p. 231 (1766); *Sharpe, Cat. Birds Brit. Mus.* xxvi, p. 44; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 149 (1867); *Koenig, J. f. O.* 1888, p. 272; *id. J. f. O.* 1893, p. 86; *Erlanger, J. f. O.* 1900, p. 42.

Description.—**Adult male**, winter, from Bizerta, North Tunisia.

Entire plumage pure white, except the lower part of the fore-neck, which is yellowish-buff, and the occipital plumes, which are slightly tinged with cream-colour.

Iris red; bill yellow at the tip, otherwise black barred with yellow; feet black; bare space on the throat orange-yellow.

Total length 32 inches, wing 15·50, culmen 7·75, tarsus 5·50.

Adult female similar to the male.

The Spoonbill is not uncommon in Tunisia, and possibly nests in limited numbers in some parts of the Regency, having been met with, according to Blanc, on the south coast in summer time. It is, however, more abundant in winter and during the periods of migration, and in some localities is said to be particularly numerous in autumn. Baron v. Erlanger found it so in the month of November on the small island of Knais, a little to the south of Sfax, where he met with the species in large numbers, and on one occasion secured four birds out of a flock with one shot (*J. f. O.* 1900, p. 42).

On the Lake of Tunis the species may often be observed, and all along the coast of the Regency it is to be met with in greater or lesser numbers.

Loche states that the Spoonbill is fairly common in Algeria and to be found at all seasons, but he never succeeded in finding its nest. In Marocco it is not uncommon on passage, and appears also to occur in the Azores, the Canaries and Madeira.

The Spoonbill frequents the sea-shore, the borders of lakes, sand-banks and open marshes near the sea, and is seldom found on inland waters or among aquatic vegetation, except during the breeding-season.

In many respects it resembles the White Stork, particularly in

its flight and in its sedate movements when on the ground. Like that bird, too, it is said to utter no true cry, but claps the mandibles of its bill together. It is sociable in its habits, and generally to be found in large or small flocks, but is occasionally met with singly.

Its food consists of small fish, frogs, crustaceans and aquatic insects. It breeds, as a rule, in colonies, and the nest, composed chiefly of dry rushes or flags, is placed either in trees, or on the ground among reeds. The eggs, usually four in number, are dull white, rough in texture, and slightly marked with reddish-brown. Their average measurements are 64×46 mm.

Family IBIDIDÆ.

IBIS EREMITA (Linnæus).

RED-CHEEKED IBIS.

Corvus eremita, *Linn. Syst. Nat.* i, p. 159 (1766).

Comatibis comata, *Sharpe, Cat. Birds Brit. Mus.* xxvi, p. 16; *Loche, Expl. Sci. Alg. Ois.* ii, p. 153 (1867); *Koenig, J. f. O.* 1893, p. 79.

Ibis calvus, *Malherbe, Faune Orn. de l'Alg.* p. 31 (1855).

Description.—**Adult male**, from Asia Minor (*vide* Dresser).

General plumage dark coppery-green, crown black; head and throat bare; feathers on the neck elongated and pointed, forming a ruff; lesser wing-coverts rich coppery-elong.

Bill, naked throat and head, with the legs dull blood-red; iris fiery red.

Culmen 5·2, wing 16·7, tail 8·5, tarsus 3·0 inches.

The tips of the tail-feathers are abruptly acuminate.

Sexes alike.

The young bird is duller in colour, lacks the elongated feathers on the hind neck, and the head and neck are covered with dirty white feathers, tinged with rusty brown.

Observation.—Dr. Hartert (*Nov. Zool.* ix, p. 318 and p. 339) describes the plumage of this bird as black, with a metallic gloss of beautiful green, red and copper on the wings, the bare parts being as follows: bill sealing-wax red, iris orange-red, lighter towards the pupil, edge of eyelid red, under eyelid, as far as folded, whitish, top of head dull slate-black with a reddish orange-yellow stripe in the middle, bare skin on the sides of the head below the eyes and the entire throat cherry-red, feet dirty red.

Dr. Hartert states that the bill of examples from Marocco is in general

larger than that of Abyssinian specimens and alludes to the possibility of subspecific separation being necessary. Should an examination of further material render this advisable, a difficulty would arise as regards the nomenclature, for it is not known to which form the bird from Switzerland belonged, to which the name *eremita* was originally given.

Although there appears to be no recent record of the occurrence of the Red-cheeked Ibis in Tunisia, I include the species among the birds of the Regency, as an example of it from that country (an immature specimen collected by Mr. L. Fraser) is preserved in the British Museum collection and Malherbe states that he had received a specimen from the Province of Bône.

Loche states that the species is to be met with in the neighbourhood of Boghar in Algeria, where it is sedentary (Expl. Scient. Alg. Ois. ii, p. 154) and three specimens collected by him in Algeria are preserved in the Milan Museum under the numbers 17,771—17,773. Canon Tristram also writes concerning its occurrence in Algeria as follows: "This extraordinary bird I never saw during my second sojourn in Algeria; but on my first visit to the Sahara in the spring of 1856 I obtained two specimens in the rocky ridges beyond Bouguizoun on the road to El-Aghouat. Unlike the rest of its family, it resorts only to the most arid and desolate mountain ranges, where it consorts with the Raven and the Falcon. Its food, as I ascertained, consists of lizards and serpents, but it is doubtless ignorant of the flavour of tailless batrachians. It breeds in inaccessible holes of the precipices, which I was unable to reach, though I saw the bird going in and out. Captain Dastugue, of the French 'Génie,' showed me a coarse egg of a deep blue colour, almost the size of that of the Common Heron, which he believed to be the egg of this bird. It does not appear to be gregarious. The bright red legs and feet of a freshly killed specimen are peculiarly coarse and rough in the scales, adapted evidently for rocks and sand rather than mud and water. The bare portion of the head and neck is, as well as the bill, of a brilliant crimson." (*Ibis*, 1860, p. 78.)

In Marocco the Red-cheeked Ibis has recently been met with by Dr. Hartert and Mr. E. G. B. Meade-Waldo, who both appear to have found the species abundant in the neighbourhood of Mazagan, on the west coast of the Empire, the former meeting with it at Cape Blanco, and the latter on the south side of the Wad Moorbey, otherwise known as the Oum-Rbiah or Oum-er-Rebia. Mr. Meade-

Waldo further states that the species also occurs and breeds in the cliffs and caves of the Haha district, at no great distance from Mogador. Dr. Hartert obtained two specimens of the bird at Cape Blanco, and gives some interesting particulars regarding the species.

The Red-cheeked Ibis appears once to have existed in Europe, having been met with, it is said, in Switzerland, as well as in other central and south-eastern parts of the Continent, but at the present day its range seems to be confined to North Africa (as far south as Abyssinia), Arabia and the Euphrates Valley. In the latter district, according to Mr. C. G. Danford (*Birds Eur.* vi, p. 329), the species occurs at Biledjik, on the Mesopotamian side of the Euphrates, where it is an early and regular migrant, arriving in February, but apparently it is not common, or of general distribution throughout that country.

The species seems to be essentially a rock-frequenting bird, being found, as a rule, either on arid hills and mountain-ranges, or among steep and inaccessible sea- and river-cliffs. In its habits it is sociable and gregarious and may be found consorting not only with those of its own kind, but also in the immediate vicinity of, and apparently living in harmony with, other species of birds. Dr. Hartert, in a graphic description of his second meeting with this Ibis at Cape Blanco, relates how, on stones being rolled down the cliff-sides and a gunshot fired, the air was immediately alive with a varied multitude of birds suddenly startled from their homes below, among which were Ibises, Storks, Kites, Kestrels, Ravens, Cormorants, Pigeons, Starlings and Swifts, all occupants of, and probably nesting in, the precipitous sea-cliffs. It must indeed have been a sight not to be forgotten and Cape Blanco must be a fascinating and delightful spot for the ornithologist, as Dr. Hartert remarks.

In its flight and in its movements generally, the present species resembles its allies, and when on the wing, carries its head and feet outstretched. Those who have had the opportunity of observing the species, agree in considering it very silent, although, according to Dr. Hartert, it occasionally utters a deep low "*rrha*," "*rrha*."

Its food consists of beetles, locusts, and other insects, as well as lizards, snakes, centipedes and snails.

It nests in holes in cliffs and precipices, but generally in such inaccessible spots, that little is really known about its nesting. According to Mr. Dresser, the eggs of the species are bluish-white in colour, and measure about 2.52 by 1.74 inches.

PLEGADIS FALCINELLUS (Linnæus).

GLOSSY IBIS.

Tantalus falcinellus, *Linn. Syst. Nat.* i, p. 241 (1766).

Plegadis falcinellus, *Kaup, Natürl. Syst.* p. 82 (1829); *Sharpe, Cat. Birds Brit. Mus.* xxvi, p. 29; *Erlanger, J. f. O.* 1900, p. 43.

Ibis falcinellus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846).

Falcinellus igneus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 155 (1867); *Koenig, J. f. O.* 1888, p. 272; *id. J. f. O.* 1893, p. 86.

Description.—**Adult male**, spring, from Porto Farina, North Tunisia.

Head, neck, mantle, upper-part of the scapulars, lesser wing-coverts and entire underparts rich copper-brown, with metallic reflections on the crown and mantle; the remainder of the upper plumage glossy dark green with purple reflections.

Iris brown; bill dark grey at the base and blackish at the tip; feet blackish-grey.

Total length 22 inches, wing 10·50, culmen 5, tarsus 3·50.

Adult female similar to the male, but rather smaller.

The young bird is much duller in coloration, the head and neck being streaked with white.

The winter dress of the adult bird is duller than the summer one.

The Glossy Ibis is to be found in Tunisia chiefly in winter and spring, but probably a few individuals are to be met with at other seasons as well, and the species may be considered as partially resident in the country. It is perhaps rather more abundant in the north, but may also be observed in the south of the Regency, and has been obtained at Tatahouine. According to Loche, the species is resident and not uncommon in Algeria, and the same seems to be the case in Marocco, where, although chiefly to be observed on passage, according to Favier "some must remain to nest in the country, for they are frequently met with during May, June, and July" (*Orn. Strs. Gib.* p. 191). In Sicily, the Glossy Ibis is abundant on passage, particularly in spring, and Doderlein states that it breeds, or used to do so, in the marshes near Catania, where he himself obtained its young towards the end of May (*Avif. Mod. et Sic.* p. 220).

The principal breeding-quarters of this species in Europe, are in the south-eastern parts of the Continent.

Its geographical range is apparently a wide one, extending to all five divisions of the globe.

In its habits the Glossy Ibis is sociable and gregarious, and may often be found in very large flocks, though occasionally it is to be met with singly or in pairs. It frequents marshes, the borders of lakes and rivers, and the sea-shore, and feeds chiefly on small crustacea, amphibia, worms and aquatic insects. It is silent, as a rule, but utters a low note when suddenly disturbed. Its flight resembles that of the Spoonbill. It nests in colonies, and in marshes or other swampy localities, placing its nest of sticks and dry rushes on the ground, in low bushes, or in trees, according to circumstances. The eggs, three or four in number, are of a dark greenish-blue, and measure about 51×38 mm.

Family PHŒNICOPTERIDÆ.

PHŒNICOPTERUS ROSEUS, Pallas.

FLAMINGO.

Phœnicopterus roseus, *Pall. Zoogr. Ross.-As.* ii, p. 207 (1811); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 12; *Loche, Expl. Sci. Alg. Ois.* ii, p. 146 (1867); *Koenig, J. f. O.* 1888, p. 291; *id. J. f. O.* 1893, p. 102; *Whitaker, Ibis*, 1894, p. 98; *Erlanger, J. f. O.* 1900, p. 40.

Phœnicopterus antiquorum, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846).

Description—**Adult male**, winter, from the Lake of Tunis.

Entire plumage, except the wings, creamy-white, tinged with rose, becoming rather darker on the back and tail; upper wing-coverts, as well as the lesser under-coverts and axillaries vermilion-rose; quills black.

Iris pale yellow; bare space round the eye pale pink; bill pale pink at the base, and black on the terminal portion; feet pale rose.

Total length 50 inches, wing 18.50, culmen 6, tarsus 12.50.

Adult female similar to the male.

The young bird has its plumage whitish with a good deal of ash-brown on the back and wing-coverts, the quills brown, and the axillaries pale rose; bill greyish-rose, and brown at the tip, feet dark grey.

Observations.—Individuals of this species vary greatly in size. Verreaux's *P. erythræus* (Rev. et Mag. Zool. p. 221), appears to have been founded on small and brilliantly coloured examples of the present species.

Though far less numerous on El-Bahira, or the Lake of Tunis, at the present day than it used to be in years gone by, previous to the construction of the canal connecting Goletta with the town of Tunis, this beautiful bird is still one of the first species to greet the sight of the newly arrived traveller in the Regency, and may still be found there, in certain numbers during the winter months. Formerly, when one disembarked at Goletta, and thence travelled by rail to the town of Tunis, skirting the northern border of the lake, it was no uncommon sight to see several large flocks of Flamingoes, each numbering many hundred individuals, dotted over the water, and standing in serried ranks in the shallows on either side of the lagoon, but the increased traffic brought by the opening of the canal has altered this interesting state of things, and the flocks are fewer and smaller than they used to be. A certain number of Flamingoes, however, still visit the Tunis Lake, and the Sebka es-Sedjouni, a smaller lagoon on the south-west of the town, which although not nearly so important as El-Bahira, is of a fair size during the winter and early spring, particularly should rain have been copious. Later on, during the summer months, this smaller lake, which is very shallow, holds but little water, and is in great part dry, or little more than a salt marsh, with the glistening encrustation found on all the Sebkas. It is somewhat curious that Flamingoes, though so plentiful on the Tunis lakes, should only occasionally, and in limited numbers, visit the fine lake of Bizerta, further north, which, together with the adjoining marshes surrounding the Djebel Eshkul, are the favourite haunts of myriads of wild-fowl during the greater part of the year. They are, however, to be found in certain localities along the East coast of the Regency, and I have seen fairly large flocks on the sea-shore between Hammamet and Sousa. In the interior and in the south of the Regency, Flamingoes are to be seen more rarely and chiefly passing overhead on migration. In the Department or Province of Constantine, however, the species may be found in winter on the small inland lakes or marshes of Tinsilt and Mzouri, near the railway line running between El Guerrah and Batna. These lakes, or more properly Sebkas, are not fed by any river, but are formed merely by the winter rains, and in summer are dry, or nearly so. The water they hold is brackish, owing to the large proportion of salt contained in the subsoil. In Algeria generally the Flamingo appears to be met with on all the larger lakes or Sebkas, but, as in

the case of Tunisia, and the whole of North-west Africa, there seems to be no recorded instance of its breeding in the country. In Marocco, as in Tunisia, the species is apparently to be found in greater or lesser numbers throughout almost the entire year, but does not breed there. North of the Mediterranean the Flamingo is chiefly to be found in the more southern parts of Europe, less often in Central Europe, and occasionally as a straggler as far north as England. In South Spain it breeds in considerable numbers in the "marismas" at the mouth of the Guadalquivir, and in years when there is plenty of water, it is said to breed also in the delta of the Rhone, and at Valcarés in France. In Italy it is to be found abundantly in Sardinia, during the autumn and winter months, but does not seem to breed in the island. Its chief haunts in Sardinia are the "stagni" of Cagliari and Oristano, but it is also to be found in one or two other localities, and if these were less frequented by fishermen, it might possibly nest in the island. In Sicily the species is only to be observed on passage, and rarely in any numbers. It appears to breed in the Cape Verd Islands.

The range of the species extends over the whole of Africa, and in Asia from the Caspian to Lake Baikal.

The first arrivals in Tunisia are generally to be seen in August and September, and throughout the autumn and winter months the species is to be found in greater or lesser numbers on the Tunis lakes. Towards the end of February or beginning of March most of the birds leave the country. I have, however, often found a few after that date, and have even seen fairly large flocks of the birds at the very end of March. These were probably freshly arrived migrants. According to the naturalist Blanc, a few Flamingoes may be seen on El Bahira throughout the entire summer, but do not nest. The migration of this species appears to be somewhat erratic, but our knowledge concerning it is very imperfect, and we have yet a good deal to learn regarding the life and habits of the bird. It has not yet been clearly ascertained whether the flocks which frequent the Tunis lakes go northwards or southwards on the approach of spring. Those found on the "stagni" of Sardinia are said to go *south* at that season, and to return from the south in the autumn.

By some ornithologists the present species is considered to be most nearly allied to the Geese, by others to the Herons, but it differs from both. In its habits it is essentially gregarious, and is

always to be found in flocks, these sometimes being very vast, and numbering as many as a thousand individuals. It frequents, as a rule, salt-water lakes and shallows near the sea, where it may be observed standing in the water in long lines, like files of soldiers clad in white, for the other colours of the bird's plumage do not show till its wings are expanded.

Without going into raptures over the beauty of the Flamingo, I am inclined to agree with Mr. J. H. Gurney ("Rambles of a Naturalist," p. 219), in considering it as not overrated by the many writers who have sung its praises, and no lover of birds who has seen and watched Flamingoes *at home*, can fail to have preserved a most lively and pleasing recollection of his observations, and in particular of the sight afforded him by a countless number of these exquisitely plumaged birds rising simultaneously into the air. Mr. Gurney well depicts the peculiar way the Flamingo has of taking to flight when he says "they take several steps in the air, half flying, half walking, and wholly awkward." When fairly on the wing, however, the bird's flight is both graceful and powerful, its neck and legs being carried outstretched to their fullest extent. Although as a rule the Flamingo does not swim, it appears to be able to do so both rapidly and well, as shown by wounded birds in deep water. Its cry, chiefly uttered when the bird first takes to flight, is not unlike that of the common Wild Goose, and when a large flock rises together, the noise made is rather overpowering. Its food consists of small crustacea and worms, and to a great extent of vegetable matter, which is obtained at the bottom of the shallows where it feeds. The peculiar conformation of the bird's bill is no doubt well adapted for searching in soft mud or sand and among aquatic vegetation.

Of the breeding of the Flamingo in Tunisia, or anywhere in Northwest Africa, there seems to be no well authenticated record. It is said that the species, up to comparatively recent years, was in the habit of nesting regularly on the south side of the Lake of Tunis, but judging from the character of the locality indicated, and its proximity to a large town, there is reason to doubt the veracity of this statement. The marshy districts near Djebel Eshkul and Bizerta would be far more likely breeding-ground, but apparently the species, even in winter, does not visit these localities very often. I have, however, two eggs of the Flamingo from Tunis, which were found in a shallow part of the Lake El Bahira, having no doubt been accidentally dropped there by the birds.

Thanks to Mr. Abel Chapman, Colonel Willoughby Verner, and others, a good deal more is known now than formerly regarding the nesting of this interesting species. Mr. Chapman was the first to ascertain that the bird sits on its nest with its legs doubled up under its body, and not stretched out, one on each side of the nest, as had been previously wrongly asserted, and actually figured in drawings. The Flamingo breeds in large communities, and in localities where the water is very shallow, constructing a large conical-shaped nest of mud, wide at the bottom and tapering at the top, the height of the nest varying, as a rule, from one to two feet, according to the depth of the water and its liability to a rise in level. The eggs, which in Europe are usually laid towards the end of May, are deposited in a cavity at the top of the nest. They are two in number, of a chalky white colour, and measure about 90×55 mm.

Order ANSERES.

Family ANATIDÆ.

ANSER ANSER (Linnæus).

GREY LAG-GOOSE.

Anas anser, *Linn. Syst. Nat.* i, p. 197 (1766).

Anser anser, *Hartert, Kat. Vogelsamml.* p. 226 (1891); *Erlanger, J. f. O.* 1900, p. 70.

Anser ferus, *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 89.

Anser cinereus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 358 (1867); *Koenig, J. f. O.* 1888, p. 295; *id. J. f. O.* 1893, p. 103.

Description.—**Adult male**, winter, from Italy.

General colour of plumage ash-brown, darker on the crown, back and scapulars, and paler and more bluish-grey on the rump and wing-coverts; a narrow white line on the forehead; primaries grey, with darker tips, secondaries darker; tail ash-brown, tipped with white; underparts whitish, with a few dark marks on the abdomen; flanks ash-brown, tipped with white.

Iris brown; bill orange flesh-colour, with a white nail; feet flesh-colour, with white claws.

Total length 32 inches, wing 18, culmen 2.50, tarsus 3.

Adult female similar to the male, but rather smaller.

The Grey Lag-Goose is to be found in winter in North Tunisia, and examples of it may not unfrequently be seen in the Tunis market. These are said to be obtained in the extensive marshes lying between Mater and Bizerta, where I have seen vast flocks of Wild-Geese, when shooting in that neighbourhood in the month of February. I was never able to get within shot of the birds, but the Arabs living near Mater often manage to secure a few at flighting time.

The Geese are said to frequent these marshes throughout the winter, arriving in November and December, and leaving again for the North at the end of February or beginning of March. There seems to be no record of Wild-Geese being met with in either Central

or Southern Tunisia, but this is not surprising, considering the absence of any lake or large sheet of water likely to attract them.

According to Loche and Taczanowski, *A. anser* occurs in winter in Algeria, while Favier states that the species is as numerous as *A. fabalis* near Tangier, arriving in Marocco in November and December and going north again in March. Large numbers of this Goose are to be met with in winter in South-west Spain, where the species has occasionally been known to nest, though its true breeding-quarters are further north. The Grey Lag-Goose is essentially gregarious, and is rarely to be found otherwise than in large flocks. It frequents open marshes, lakes, wet fields and plains, where its food is obtainable, this consisting chiefly of grass, grain, seeds and other vegetable matter. It is extremely shy and wary, a good swimmer and diver, and also powerful on the wing, though its flight is at first rather heavy when it rises from the water. Like other members of the family, when on migration or taking a long flight, it assumes a wedge-shaped formation. Its note is a loud and clear "honk."

The derivation of the English term "lag," as applied to this Goose is doubtful, some authorities maintaining that it refers to the species *lagging* behind to breed in England, instead of going further north for that purpose like its congeners, others asserting that it is derived from either the word *lake*, or from *leag* or *lea*.

ANSER FABALIS (Latham).

BEAN-GOOSE.

Anas fabalis, *Lath. Gen. Syn. Suppl.* i, p. 297 (1787).

Anser fabalis, *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 99.

Anser segetum, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 22 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 356 (1867); *Koenig, J. f. O.* 1888, p. 285; *id. J. f. O.* 1893, p. 95.

Description.—**Adult male**, winter, from Italy.

Differs from *A. anser* in its more slender proportions, its rather darker coloration, the absence of any dark marks on the abdomen, and the bluish-grey on the wings, and in having the bill orange with black at the base and on the nail, and the feet orange-yellow.

Total length 32 inches, wing 18, culmen 2·75, tarsus 3.

Adult female similar to the male, but rather smaller.

The Bean-Goose is said to occur in Tunisia in winter, and there is every reason to believe that it does so, the species having been met with in Algeria, not far from the Tunisian frontier. Its occurrence in Algeria has been recorded by Loche, Taczanowski, and Canon Tristram, and according to Taczanowski, it is more abundant on Lake Fetzara than the preceding species. Favier considers that both species are equally common in Marocco, and the present bird is said to have been obtained in Madeira. Colonel Irby, however, states that on the Spanish side of the Straits the present species is much less numerous than the Grey Lag-Goose. In Italy, and particularly in Sicily, the contrary is the case, the Bean-Goose being far the most plentiful of the two.

In its habits, and in the localities it frequents, the present species resembles the preceding one, though it is said often to stray further inland in search of suitable feeding ground. Its food, however, like that of *A. anser*, consists entirely of vegetable matter.

It is powerful on the wing, a good swimmer, and both old and young are good divers, and when moulting and unable to fly, are said to attempt to conceal themselves by diving.

Loche includes *Bernicla brenta*, *B. leucopsis*, and *B. ruficollis*, among the birds of Algeria, as being accidental visitors to that country, and states that he obtained an example of the first mentioned species at the mouth of the Harrach (Expl. Scient. Alg. Ois. ii, p. 362). A male specimen of the Brent-Goose from Lake Fetzara in Algeria is preserved in the Milan Museum, under the Museum Register No. 17,945, and is probably the example referred to by Loche. This author also includes as an accidental visitor to Algeria the Egyptian Goose (*Chenalopex aegyptiaca*).

CYGNUS OLOR (J. F. Gmelin).

MUTE SWAN.

Anas olor, *Gmel. Syst. Nat.* i, p. 501 (1788).

Cygnus olor, *Vieill. Nouv. Dict.* ix, p. 37 (1817); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 35; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 22 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 352 (1867); *Koenig, J. f. O.* 1888, p. 285; *id. J. f. O.* 1893, p. 95.

Description.—**Adult male**, winter, from Italy.

Entire plumage pure white.

Iris brown; greater part of the bill orange-red; bare loreal space, base and edge of the mandibles, nail, nostrils, and a protuberance or tubercle on the forehead black; feet black.

Total length 55 inches, wing 26, culmen 3.60, tarsus 4.

Adult female, similar to the male, but rather smaller, with a more slender neck, and with a smaller frontal tubercle.

Young smoky-grey, with lead coloured bill and feet.

Observation.—Cygnetts in down of domesticated Mute Swans are usually of a grey colour, but not invariably so, and I had a pair of Swans in my garden, which one year produced a brood of four young, two of the ordinary grey colour, the other two of a creamy-white colour. In other years the progeny of this pair of Swans used always to be grey.

In the so-called "Polish Swan" (*C. immutabilis*, Yarrell), now generally considered as a mere variety of the present species, the cygnetts are said to be always white.

Although I have no personal knowledge of the occurrence in Tunisia of either this or the following species of Swan, I include both among the birds of that country, as Wild Swans are undoubtedly to be met with in winter in the Regency, and Loche, when stating that both species are to be found on all the large lakes of Algeria, adds that they are much commoner in Tunisia (*Expl. Scient. Alg. Ois.* ii, p. 356).

According to Loche, besides the individuals of the present species, which are resident (presumably in a semi-domesticated, and not in a feral state), considerable numbers may sometimes be met with on some of the Algerian lakes, during the periods of migration and particularly in very severe winters. Favier states that this Swan

is tolerably numerous and to be seen flying over Tangier in small flights in December, returning in April.

In its wild state the Mute Swan is shy and wary, frequenting, as a rule, lakes and similar open pieces of water, where it cannot easily be approached. Though so graceful and beautiful a bird in the water, it is singularly ungainly and awkward on land. Its flight is rather heavy, though once the bird is on the wing, powerful and capable of being maintained for a considerable length of time. Even tame Swans occasionally fly well, and I had one, which flew off from my garden to a spot some ten miles distant, where it was re-captured and brought back to me. The food of this species consists chiefly of the tender shoots of water plants, grain and seeds, and also, it is said, to a certain extent of insects, snails, molluscs, and small fish. It has a loud, trumpet-like note, uttered chiefly during the breeding season, but, as a rule, is silent save for a peculiar low "whish," repeated two or three times. It also makes a hissing sound when approached too closely, and particularly in spring time when breeding. It is a most devoted parent until its young are nearly a year old, when all its thoughts and attention are turned to its coming brood, and its previous offspring are then driven away by the old birds. Its nest is a large mass of rushes or aquatic herbage, and its eggs, usually four or five in number, are a dull greenish-white, as a rule, and measure about 102×75 mm.

CYGNUS CYGNUS (Linnæus).

WHOOPEE SWAN.

Anas cygnus, Linn. *Syst. Nat.* i, p. 194 (1766).

Cygnus cygnus, Lesson, *Man. d'Orn.* ii, p. 407 (1828).

Olor cygnus, Loche, *Expl. Sci. Alg. Ois.* ii, p. 354 (1867).

Cygnus musicus, Salvadori, *Cat. Birds Brit. Mus.* xxvii, p. 26; Koenig, *J. f. O.* 1888, p. 285; *id.* *J. f. O.* 1893, p. 95.

Description.—**Adult male**, winter, from Italy.

Differs from *C. olor* in lacking the frontal tubercle, and in having the bill yellow at the base and black towards the tip, the bare loreal space also yellow; iris dark brown; feet blackish.

Total length 55 inches, wing 24, culmen 3.50, tarsus 4.

Adult female similar, but rather smaller than the male.

Young like those of *C. olor*, but with the bill dull flesh-colour, with a dark tip, feet dull flesh-colour.

As mentioned in the article on the preceding species, the Whooper appears to have a fair claim to be included in the Tunisian Ornis, and is probably to be found on the lakes of the north of the Regency, if not regularly every winter, at least in severe seasons. A friend of mine, Mr. T. L. Smith, who used to live near Mater, informs me that he has seen Swans passing over his farm situated near that town. Loche states that it is often found on the large lakes of Algeria, though less plentifully than it used to be at one time. In Italy and Sicily the species occurs from time to time, and it is said to have occurred in Malta. In South Spain it also appears to be met with occasionally.

In its habits generally the present species does not seem to differ much from the Mute Swan, though, far from being silent, it may often be heard when passing overhead on migration. Its note is a loud sonorous "*whoop*," whence the bird's English name.

Although Loche does not include Bewick's Swan (*C. bewicki*) among the birds of Algeria, an undoubted example of this species, purporting to have been obtained on Lake Fetzara in Algeria, is to be found in the Milan Museum under the Museum Register No. 17,944. Bewick's Swan, although the rarest of the three species of Swans, is perhaps less uncommon in the Mediterranean than it is generally supposed to be. In Italy it has been obtained on several occasions, and over twenty instances of its capture in the Peninsula are recorded, the most recent being that of a fine adult specimen secured on the royal property of San Rossore near Pisa. This example was presented by H.M. the King of Italy to the University collection in Rome.

TADORNA TADORNA (Linnæus).

COMMON SHELD-DUCK.

Anas tadorna, *Linn. Syst. Nat.* i, p. 195 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 22 (1846).

Tadorna tadorna, *Fleming, Phil. of Zool.* ii, p. 260 (1822).

Tadorna cornuta, *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 171; *Koenig, J. f. O.* 1888, p. 296; *id. J. f. O.* 1893, p. 103; *Whitaker, Ibis*, 1895, p. 104; *Erlanger, J. f. O.* 1900, p. 71.

Tadorna belonii, *Loche, Expl. Sci. Alg. Ois.* ii, p. 367 (1867).

Description.—**Adult male**, winter, from the Lake of Tunis.

Head and upper neck very dark bottle-green; lower neck pure white; mantle and a band round the breast bright orange-chestnut; lower back, rump, and upper tail-coverts pure white; tail pure white, tipped with black; scapulars velvety-black, some of the inner feathers slightly pencilled with grey and white; primaries black; outer secondaries rich metallic dark green on their exterior webs and black on their inner webs, the bases of the feathers white; elongated inner secondaries rich dark chestnut on their outer and white on their inner webs; a broad brownish-black line extending from the chestnut breast-band down the middle of the abdomen; crissum brownish-orange; rest of the underparts pure white.

Iris brown, bill and a large fleshy protuberance at its base deep coral-red; feet rosy flesh-colour.

Total length 25 inches, wing 13.50, culmen 2.10, tarsus 2.

Adult female rather smaller and duller in coloration than the male, and without the knob at the base of the bill.

The Common Sheld-Duck may frequently be met with in Tunisia throughout the winter and spring months, and appears to be partially resident in the Regency, as examples of it are said to be obtained occasionally in summer and early autumn. According to Blanc it breeds on the borders of the lakes near Bizerta and the Djebel Eshkul.

In Algeria the species is abundant on the larger lakes not far from the sea-coast, and, as in Tunisia, is partially resident. Further west, in Marocco, it is apparently less often met with, though, according to Favier, it is to be observed irregularly between the months of November and February. Throughout the greater portion of the Italian Peninsula this Duck is of somewhat irregular appearance and not common, though in some parts it is more abundant, and appears to breed in Sardinia, and occasionally even on the mainland itself,

immature examples having been obtained in summer at Massaciuccoli and at Ostia. Females of this species seem to be more often met with than males in Italy.

It is essentially a marine species, frequenting, as a rule, sandy shores and localities affording suitable nesting-sites. It is gregarious and sociable, sometimes breeding in colonies, though more often in isolated pairs. Its food consists of small molluscs, crustaceans, and marine insects, supplemented to a certain extent by vegetable matter. Its note is said to be a harsh "kor," common to both sexes, but the male also utters a shrill whistle, and the female a "quack" like that of the common Duck. Its flight is rather heavy.

The present species is somewhat peculiar in its nesting, resorting always for that purpose to a hole or burrow in the ground, often a rabbit-burrow, but occasionally that made by some other animal, and more rarely by the bird itself. Here it deposits from seven to twelve eggs of a creamy-white colour and smooth grained, measuring about 70 × 48 mm. In some countries, where this Duck lives in a state of semi-domestication, artificial burrows are made for it by the peasants, who daily collect the eggs laid up to a certain date, after which the birds are allowed to incubate. In addition to the eggs, a certain quantity of the down lining the nest is also taken, and affords a further source of profit, the Sheld-Duck's down being almost as valuable as that of the Eider Duck. Owing to its peculiar nesting habits, this Duck in some parts of England goes by the name of Burrow-Duck.

TADORNA CASARCA (Linnæus).

RUDDY SHELD-DUCK.

Anas casarca, Linn. *Syst. Nat.* iii, App. 224 (1768).

Tadorna casarca, Macgill. *Man. Brit. Orn.* ii, p. 163 (1842).

Casarca rutila, Bonap. *Comp. List. Birds Eur. and N. Amer.* p. 56 (1838); Salvadori, *Cat. Birds Brit. Mus.* xxvii, p. 177; Loche, *Expl. Sci. Alg. Ois.* ii, p. 366 (1867); Koenig, *J. f. O.* 1888, p. 285.

Description.—**Adult male**, spring, from Italy.

General colour of plumage above and below tawny-orange, paler and more cream-coloured on the head, and darker on the back; the neck

encircled by a black ring; rump irregularly marked with black streaks; quills, tail and upper tail-coverts black; secondaries with a purple-green alar bar, the inner secondaries with ash-grey on their inner webs; wing-coverts white.

Iris brown; bill and feet blackish.

Total length 24 inches, wing 14, culmen 1.75, tarsus 2.50.

Adult female differs from the male in having the head whitish, the plumage in general rather paler, and in lacking the black neck collar.

Although perhaps not so often met with as the preceding species, the Ruddy Sheld-Duck is not uncommon in Tunisia, and is also resident in the country, specimens being obtained at all seasons. It has been observed near the town of Tunis, as well as at Porto Farina and Sousa, and Canon Tristram informs me that he found it breeding at Kef-Laks. I have also an immature specimen obtained on the island of Djerba in the month of August. Loche states that the species occurs in Algeria, specimens having been obtained near Boghar, Laghouat, and even in the Sahara, while Salvin records it as being numerous on all the salt lakes of the elevated plains. In Marocco, according to Favier, the species is both resident and migratory. Colonel Irby says he has repeatedly seen examples exposed for sale in Tangier market. In Italy this Duck is rare, and of accidental occurrence, but it has been obtained occasionally, and is also recorded from Malta.

It differs from the preceding species in preferring inland lakes to the sea-coast, and in many of its habits is said to resemble the Geese more than the true Ducks, grazing in corn and grass fields, and walking with ease like the former. Besides feeding on vegetable matter, however, it also eats small molluscs, worms and insects. It has a loud ringing note something like "*kerk*," repeated several times. It nests in holes in cliffs, or among rocks, in hollow trees, and even in the deserted nests of other birds, and lays from eight to sixteen eggs of a creamy-white colour and smooth-grained. They measure about 65 × 45 mm.

ANAS BOSCHAS, Linnæus.

MALLARD.

Anas boschas, *Linn. Syst. Nat.* i, p. 205 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 22 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 370 (1867); *Koenig, J. f. O.* 1888, p. 296; *id. J. f. O.* 1893, p. 103; *Erlanger, J. f. O.* 1900, p. 71.

Anas boscas, *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 189; *Whitaker, Ibis*, 1895, p. 104.

Description.—**Adult male**, spring, from North Tunisia.

Head and neck rich metallic-green, duller on the forehead, and appearing violet in a certain light; a narrow white collar running round the neck, but interrupted at the back; scapulars and sides of the mantle light grey, finely pencilled with brown; centre of mantle light brown, becoming darker on the lower back, and rich glossy bottle-green on the rump and upper tail-coverts; the four middle feathers of the upper tail-coverts curled upwards; tail dark grey, margined with white; primaries light grey-brown, the secondaries with a beautiful metallic-violet alar bar, bordered with white above and below; inner secondaries whitish-grey with chestnut-brown outer webs; lesser upper wing-coverts light grey-brown; breast glossy chestnut-brown; abdomen and crissum whitish-grey, darker on the sides and flanks, and minutely pencilled with dark brown; under tail-coverts bluish-black.

Iris brown; bill greenish-yellow; feet orange.

Total length 20 inches, wing 10.50, culmen 2.25, tarsus 1.70.

Adult female: Head and neck dark brown; plumage in general buff, mottled with dark brown; wing and alar patch as in male, but duller; underparts yellowish-buff, streaked and spotted with brown. Measurements rather less than in the male.

The summer plumage of the Drake, from June to October, resembles that of the adult Duck, but is always rather darker.

The Mallard is abundant in Tunisia during the winter months, and although I know of no well authenticated instance of such being the case, a few individuals of the species may possibly breed in the Regency, as Loche states that it breeds in Algeria, and Favier that it is resident in Marocco. In Southern Italy and Sicily the species is said to breed in limited numbers. The earliest arrivals in Tunisia are to be seen in October, but it is not until about the middle of November that the bulk of the birds reach the country. After that date, and until the following February and March, the species may be found, more or less abundantly, on all the lakes and other pieces of water in the Regency.

The Mallard is shy and wary, flies and swims well, and is sociable and gregarious in its habits, associating with other species of Ducks as well as with its own kind. It feeds almost exclusively during the night, and besides grain, seeds, and other vegetable matter, will eat insects, worms, molluscs, and indeed almost anything that comes in its way. The note of the Drake is a low and subdued croak, that of the Duck a loud and strident quack. Its nest—which is usually placed on the ground, though at times in a tree, the deserted nest of some other bird even being occasionally made use of—is composed principally of rough grasses, well lined with down, and its eggs, eight to twelve in number, are dull greyish-green, and measure about 58×42 mm.

In a wild state the Mallard has been known to interbreed with the Pintail (*D. acuta*) and the Gadwall (*C. streperus*), as well as, it is said, with one or two other species of Duck. In captivity it will interbreed with almost any Duck.

MARMARONETTA ANGUSTIROSTRIS (Ménétriés).

MARbled DUCK.

Anas angustirostris, *Ménètr. Cat. Rais. Cauc.* p. 58 (1832); *Koenig, J. f. O.* 1888, p. 285; *Whitaker, Ibis*, 1895, p. 104; *Erlanger, J. f. O.* 1900, p. 71.

Marmaronetta angustirostris, *Reichenb. Ar. Syst. Nat.* p. ix (1852); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 321; *Loche, Expl. Sci. Alg. Ois.* ii, p. 380 (1867); *Koenig, J. f. O.* 1893, p. 95.

Description.—**Adult male**, spring, from North Tunisia.

General colour light-brown, mottled and marbled with grey; the upper-parts darker, and the underparts lighter; the back with round whitish spots on the tips of the feathers; the breast and sides whitish, barred with light brown.

Iris brown; bill bluish-grey, and blackish on the culmen and tip; feet dusky grey.

Total length 16 inches, wing 8, culmen 1.90, tarsus 1.40.

Adult female similar to the male, but rather duller in coloration.

The Marbled Duck, though not abundant in Tunisia, is to be found there, according to Blanc, in certain numbers throughout the

greater part of the year, and breeds in the marshes near Djebel Eshkul, from whence he has sent me eggs purporting to be of this species. I have also an example of the bird obtained in that neighbourhood in the month of May.

According to Loche this Duck is resident on the Algerian lakes though not so plentiful as it used once to be. It is even found far inland, as Dr. Koenig says he had seen an example obtained near Biskra. Colonel Irby states that it is exceedingly abundant in spring in Marocco, where, at the lakes of Ras-Dowra, in April, he had seen flocks numbering many hundreds, and that examples are frequently to be seen exposed for sale in Tangier market. Favier also states that they arrive during March and April, departing in October, and that after the common Teal they rank as the most common Duck in the country. The species has also been found in Madeira. In Southern Spain the Marbled Duck is not at all uncommon, and breeds in the "marismas" of the Guadalquivir, especially near the Coto del Rey. In the rest of Southern Europe, however, the species can only be considered as of accidental occurrence. Further eastward it is to be found in Palestine, more rarely in Egypt, Persia, and as far as Scinde in India.

In its appearance, flight, and habits, the Marbled Duck resembles the Teal. It is gregarious and frequents marshes and fresh water lakes, flies low and swiftly, and is excessively shy and difficult to approach. It feeds on vegetable substance, worms, and insects, and its note is a low whistle.

The nest is said to be like that of the common Teal, and plentifully lined with down. The eggs are elongate in shape, of a greyish-cream or buff-colour, and measure 45 × 35 mm.

CHAULELASMUS STREPERUS (Linnæus).

GADWALL.

Anas strepera, *Linn. Syst. Nat.* i, p. 200 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 37 (1855); *Erlanger, J. f. O.* 1900, p. 71.

Chaulelasmus streperus, *Bonap. Comp. List Birds Eur. and N. Amer.* p. 56 (1838); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 221; *Loche, Expl. Sci. Alg. Ois.* ii, p. 373 (1867); *Koenig, J. f. O.* 1888, p. 296; *id. J. f. O.* 1893, p. 103; *Whitaker, Ibis*, 1895, p. 104.

Description.—**Adult male**, winter, from North Tunisia.

General colour of upperparts brownish-grey, the feathers of the mantle and back barred and pencilled with narrow wavy white lines; lower back, rump, and upper tail-coverts black; tail brown; primaries brown; darker on their outer webs and tips; secondaries greyish-brown on their inner webs, and pure white on their outer webs, presenting a conspicuous alar patch; greater upper wing-coverts mostly black; median wing-coverts mostly chestnut; lesser coverts grey-brown; an indistinct whitish collar; breast-feathers marked with alternate crescent-shaped lines of dark grey and white, darker above and lighter below; abdomen white, becoming pale grey on the crissum; flanks pencilled with grey and white; under tail-coverts black.

Iris brown, bill dull yellow, blackish on the rib of upper mandible; feet dull orange.

Total length 21 inches, wing 11, culmen 2, tarsus 1.50.

Adult female, general colour above brown, the back mottled with rufous crescent-shaped markings; rump blackish; tail brown, barred and margined with dull white; wing like that of the male, but with the chestnut colouring less pronounced; throat and neck whitish, speckled with brown; breast mottled with rufous-brown, and with crescent-shaped whitish bars and margins to the feathers; abdomen white; flanks and crissum whitish mottled with grey; under tail-coverts whitish.

Soft parts as in male, measurements rather less.

The adult male in summer assumes a plumage resembling that of the adult female, but the alar speculum is always whitish, and its larger size and other differences are distinguishing characters.

The Gadwall is a winter visitor in Tunisia, arriving together with other species of Duck in October and November, and leaving again in February and March. Although not rare, it can hardly be called common in the Regency, and appears to be somewhat irregular in its appearance, being more plentiful in some years than in others. Loche, Salvin and Canon Tristram all record its occurrence in Algeria, and it seems to be fairly abundant on Lake Fetzara and near Constantine; but according to Favier, it is scarce near Tangier, and irregular and uncertain in its appearance. The same may be said regarding the occurrence of the species in Italy, and perhaps generally in the Mediterranean.

This Duck prefers marshes and fresh water lakes to the sea coast, is gregarious and associates with other species of water-fowl, as well as with its own kind. It flies, swims, and dives well, but as a rule remains hidden during the day time, and feeds principally during the early morning and late evening hours. Its food consists of the seeds

and tender shoots of water-plants, grain, small shell-fish and insects. Its note when resting on the water is a low quack, but when on the wing it is said to utter a shriller cry.

SPATULA CLYPEATA (Linnæus).

SHOVELER.

Anas clypeata, *Linn. Syst. Nat.* i, p. 200 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 37 (1855).

Spatula clypeata, *Boie, Isis*, 1822, p. 564; *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 306; *Koenig, J. f. O.* 1888, p. 296; *id. J. f. O.* 1893, p. 104; *Whitaker, Ibis*, 1895, p. 104; *Erlanger, J. f. O.* 1900, p. 71.

Rhynchaspis clypeata, *Loche, Expl. Sci. Alg.* ii, p. 374 (1867).

Description.—**Adult male**, spring, from North Tunisia.

Head and upper neck glossy blackish-green, duller on the forehead, crown and chin, and brighter on the neck; lower neck, sides of the mantle, and scapulars white; rest of upper plumage mostly dark brown, with a glossy greenish tinge; primaries brown; outer secondaries brown on their inner webs, and metallic-green on their outer webs, presenting a distinct alar speculum; the innermost secondaries, which are much elongated, blue on their outer, and white on their inner webs; the entire shoulder grey-blue, a narrow white bar intervening between this and the green speculum; upper breast white; lower breast and underparts generally chestnut-brown; crissum whitish-grey; under tail-coverts blackish-green.

Iris bright yellow; bill, which is very broad at the tip, blackish; feet orange colour.

Total length 20·50 inches, wing 9·50, culmen 2·70, tarsus 1·40.

Adult female, general colour above dull brown with a rufous tinge, most of the feathers of the back with rufous margins, and crescent-shaped bands; underparts lighter, but with the same markings. Soft parts as in male, measurements rather less.

The summer dress of the adult male somewhat resembles that of the adult female, but is darker, while the green speculum and the blue on the wings are always retained.

The Shoveler is common in Tunisia as a winter migrant, arriving in October and November and leaving again in February and March. According to Dr. Koenig (*J. f. O.*, 1893, p. 104) the species has been found breeding in the month of May by Herr Paul Spatz on the small

island of Curiat, off the east coast of the Regency, but there seems to be no other record of its nesting in the country.

In Algeria and Marocco and throughout the Mediterranean basin generally the species is abundant in winter, but there appears to be no recorded instances of its nesting in either of the above-mentioned countries, and probably but few of its breeding in any part of the Mediterranean sub-region.

Though more particularly a fresh-water Duck, this species is frequently to be met with on estuaries and marshes adjoining the sea. It is not so gregarious as most of the other species of *Anatidæ*, and although constantly to be found in flocks, is more often met with in isolated pairs or small parties. It flies swiftly and swims well. As a rule it is a silent bird, but when on the wing, utters a harsh cry, which has been likened to the word "*cruk*." It feeds on water plants, seeds, worms, snails, insects and small crustacea.

The eggs of this species, usually from eight to twelve in number, are of a pale greenish-buff colour and measure about 50×35 mm.

In captivity this Duck has been known to interbreed with the Garganey and with the domestic Duck.

NETTIUM CRECCA (Linnæus).

TEAL.

Anas crecca, *Linn. Syst. Nat.* i, p. 204 (1766); *Erlanger, J. f. O.* 1900 p. 71.

Nettion crecca, *Kaup, Natürl. Syst.* p. 95 (1829); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 243.

Anas (Querquedula) crecca, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 22 (1846).

Querquedula crecca, *Loche, Expl. Sci. Alg. Ois.* ii, p. 378 (1867); *Whitaker, Ibis*, 1895, p. 105.

Description.—**Adult male**, winter, from North Tunisia.

Forehead, crown, centre of nape, cheeks, throat, and sides of neck chestnut-brown; chin blackish; region immediately round the eye and a broad stripe extending backwards to the nape glossy-green, margined with narrow whitish-buff lines, another narrow line of that colour extending from the eye down to the base of the bill; back and greater part of the upper plumage pencilled with black and white; scapulars much elongated, some of them being conspicuously marked with black and white; upper tail-

coverts black, margined with white; tail grey, margined with white; primaries grey; outer secondaries black, tipped with white; inner secondaries bright metallic-green, forming a distinct speculum; upper wing-coverts grey, with a white bar tipped with chestnut above the black and green patches; breast whitish, spotted with blackish; abdomen white; sides of body and crissum pencilled with black and white; under tail-coverts black, fringed with white, and with a buff patch on each side.

Iris brown; bill and feet blackish.

Total length 13 inches, wing 7.25, culmen 1.50, tarsus 1.10.

Adult female, general colour above blackish-brown, mottled with rufous; underparts whitish, speckled with brown and rufous; the wing showing somewhat the same markings as that of the male, but rather duller.

Soft parts as in the male; measurements rather less.

The adult male in summer assumes a plumage resembling that of the adult female, but may always be distinguished by its larger size, darker colour, and other minor differences.

The Teal is abundant in Tunisia in winter and on passage, particularly during the spring migration. There seems, however, to be no record of its breeding in the Regency.

According to Loche the species is plentiful in Algeria during the winter, and Favier states that it is abundant near Tangier, passing north in February and March, and returning in September and October.

Throughout the Mediterranean basin generally the species is more or less plentiful as a winter migrant, and in some parts a few individuals remain and nest, though the true breeding home of this Duck is further north.

The Teal is more especially a fresh-water species, chiefly to be found on marshes, pools, streams and small pieces of water, and rarely on the sea-coast or on large salt-water lakes. During the greater part of the day it remains hidden among reeds and other aquatic plants, and appears to feed principally at night, its food consisting of vegetable-matter, grain, seeds, worms and insects. It is gregarious, and sometimes to be found in large flocks, though oftener in small companies. Besides consorting with others of its own kind, it associates with other species of *Anatidæ*.

Its flight is low and very rapid, and when on the wing, it utters a shrill cry like "*crek-crek-crek*."

The bird's specific name is no doubt derived from its note.

QUERQUEDULA CIRCIA (Linnæus).

GARGANEY TEAL.

Anas circia, *Linn. Syst. Nat.* i, p. 204 (1766).

Querquedula circia, *Steph. Gen. Zool.* xii, 2, p. 143, pl. 51 (1824); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 293; *Koenig, J. f. O.* 1888, p. 296; *id. J. f. O.* 1893, p. 104; *Whitaker, Ibis*, 1895, p. 105.

Anas cyanopterus, *Malherbe, Faune Orn. de l'Alg.* p. 36 (1855).

A. querquedula, *Malherbe, Faune Orn. de l'Alg.* p. 36 (1855).

Pterocyanea circia, *Loche, Expl. Sci. Alg. Ois.* ii, p. 376 (1867).

Description.—**Adult male**, spring, from North Tunisia.

Forehead, crown and nape dark brown, banded on each side with a white stripe extending from the eye backward to the nape; chin blackish; sides of the head and neck chestnut-brown, minutely striated with white; back brown, the feathers edged with grey; rump bluish-black, vermiculated with white bars; tail brown, margined with whitish; scapulars, which are very elongated, black, with a median white stripe to each feather; upper wing-coverts pale French-grey, the greater coverts tipped with white; secondaries with a metallic-green bar tipped with white, forming a speculum; primaries greyish-brown; breast yellowish-brown, finely marked with crescent-shaped blackish bands; abdomen white; flanks and crissum white, finely barred with blackish; under tail-coverts white, spotted with blackish.

Iris brown; bill and feet dark brown.

Total length 13.50 inches, wing 8, culmen 1.80, tarsus 1.20.

Adult female not unlike the female of the common Teal, but differs in its larger size, and in its wider bill.

The adult male in summer assumes a plumage resembling that of the adult female, but may be always distinguished by the alar speculum and brightly coloured upper wing-coverts.

The Garganey, or Summer Teal, appears to be somewhat local in its distribution and more or less irregular in its appearance in many of the countries where it occurs. In Tunisia it is, as a rule, very plentiful during the spring migration, arriving in large flocks in March and April, and according to Blanc, it is also to be found in the Regency in certain numbers in autumn and winter, although never very abundant at those seasons. Blanc is of opinion that the species breeds in that country.

Loche states that this Teal is very common in Algeria, and from what he says of the species often uniting in large flocks in the autumn and remaining together until the spring, it may be inferred that it is to be found in Algeria throughout the winter. According to

Favier, this Teal appears near Tangier only on migration and does not occur every year. It arrives during February and March, on its way to the north, and may be seen returning south in September.

In Spain the species seems to be equally irregular in its appearance. Further east, however, in the Mediterranean, particularly in spring, it is more regular in its appearance, and in Sicily and some parts of Southern Italy it arrives every spring about the same date and in large numbers. Off the south-west coast of Sicily, towards the middle of March, when the passage of these Ducks may be said to be at its height, flock after flock may be seen passing, flying close to the surface of the water, and often resting thereon for some time. During bad weather and when the sea is rough, a good many of these flocks come inland and settle on the marshes, which are to be found along some parts of that coast, and good sport may often be had with these Ducks. In the marshes near Catania the species is plentiful in March, and, according to Doderlein, a few pairs breed and are to be found there throughout the year.

The Garganey is sociable in its habits and not so shy and wary as most Ducks. It flies swiftly, swims well, and feeds on vegetable-substance as well as on small molluscs, worms and water insects. Its note when on migration, is not unlike the word "*ghirri*" repeated once or twice; the bird in fact goes by the name of the "*Ghirri-ghirri*" in some parts of Sicily, other vernacular Sicilian names for it being "*Trizzola*," "*Ridenna*," and "*Marzolina*."

The eggs of this species, usually from eight to twelve in number, are of a creamy-buff colour, and measure about 48 × 34 mm.

DAFILA ACUTA (Linnæus).

PINTAIL.

Anas acuta, *Linn. Syst. Nat.* i, p. 202 (1766).

Dafila acuta, *Eyton, Cat. Brit. Birds*, p. 60 (1836); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 271; *Loche, Expl. Sci. Alg. Ois.* ii, p. 381 (1867); *Koenig, J. f. O.* 1888, p. 296; *id. J. f. O.* 1893, p. 103; *Whitaker, Ibis*, 1895, p. 105; *Erlanger, J. f. O.* 1900, p. 71.

Anas (Dafila) acuta, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 22 (1846).

Description.—**Adult male**, spring, from North Tunisia.

Head and nape umber-brown, darkest on the crown, and glossed on the sides of the nape with metallic-purple reflections; hind neck black, becoming

grey lower down ; a white stripe running down each side of the neck to the breast ; back and rump pencilled with black and white ; scapulars elongated and some of them tipped with black, the remainder being striped with black and whitish lines along the shafts : the two central rectrices, which project considerably beyond the others, black ; the remaining tail-feathers grey, margined on the outside with white ; primaries brownish-grey ; secondaries forming a bronze-purple speculum bordered above by a pale chestnut band and below by black and white bands ; median and lesser wing-coverts brownish-grey ; lower fore-neck and breast pure white, shading into whitish-grey on the abdomen, and pencilled with black and white on the flanks ; crissum and under tail-coverts black, margined externally with white.

Iris brown, bill and feet blackish.

Total length 28 inches, wing 11, culmen 2, tarsus 1.50.

Adult female, general colour of the upperparts dark brown, the feathers bordered and marked with dull whitish-buff ; underparts dull white, striped with brown on the abdomen and flanks ; the median rectrices not much longer than the other tail feathers.

In summer the adult male assumes a dress resembling that of the adult female, but the alar speculum is always retained.

The Pintail is abundant in Tunisia throughout the winter, and one of the commonest Ducks to be found on the lakes and marshes of the north of the Regency. Like most of the other *Anatidæ* it arrives in October and November, and leaves again in February and March, there being no recorded instance of its having nested in that country, or in any part of North-west Africa. Its breeding home is much further north, but apparently the species has been known to nest in South Spain near Seville, and occasionally in the Venetian districts of North Italy.

Like the preceding species the Pintail affects fresh-water lakes and marshes more than it does salt-water, but when on migration, it may frequently be met with on estuaries and shallows near the sea. It is gregarious and of sociable habits, being found in large flocks, and often in the company of other species of Ducks, such as Mallards and Wigeons. It flies rapidly and swims with ease and grace. Though generally a silent bird, the male appears at times to utter a rather loud and shrill whistle repeated twice, and the female a low double quack.

It feeds on the shoots of aquatic plants, seeds, insects, worms, snails and small molluscs.

This handsome Duck thrives in captivity, and is said to interbreed freely with other surface-feeding species of Duck.

MARECA PENELOPE (Linnæus).

WIGEON.

Anas penelops, *Linn. Syst. Nat.* i, p. 202 (1766).

Mareca penelope, *Selby, Brit. Orn.* ii, p. 324 (1833); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 227; *Loche, Expl. Sci. Alg. Ois.* ii, p. 382 (1867); *Koenig, J. f. O.* 1888, p. 296; *id. J. f. O.* 1893, p. 103; *Whitaker, Ibis*, 1895, p. 105.

Anas penelope, *Malherbe, Faune Orn. de l'Alg.* p. 36 (1855); *Erlanger, J. f. O.* 1900, p. 71.

Description.—**Adult male**, spring, from North Tunisia.

Forehead and fore-part of crown creamy-buff; rest of the head and neck chestnut, becoming blackish on the chin and round the eye; back and upper parts generally pencilled with black and white, rather browner on the rump; tail blackish-grey; primaries brown; secondaries showing a glossy-green speculum between blackish bands; breast pale vinous; abdomen white; crissum and under tail-coverts black.

Iris brown; bill blue and black at the tip; feet plumbeous.

Total length 18 inches, wing 10, culmen 1·50, tarsus 1·40.

Adult female, head and neck greyish-buff, striped with black; upper-parts chiefly blackish-brown, with whitish margins to the feathers; under-parts whitish, the breast marked with rufous-brown; no metallic coloured speculum.

Soft parts as in the male, measurements rather less.

The adult male in summer assumes a plumage resembling that of the adult female, but the speculum and bright colouring of the wings are distinctive characters.

The Wigeon is most abundant in North Tunisia during the winter months, arriving, together with other Ducks, in October and November, and leaving again in February and March. It is also to be found occasionally in the south of the Regency, and I have an example from the island of Djerba. There seems to be no recorded instance of the species having nested in Tunisia, although Loche states that it breeds in Algeria. In that country, as well as in Marocco, the bird is plentiful in winter, and according to Favier, the most abundant of all the Ducks near Tangier.

Throughout the Mediterranean generally the species is plentiful as a winter migrant, and in some parts of North Italy a few pairs are said to breed. The true breeding-quarters of this Duck are, however, further north. The Wigeon frequents both fresh and salt-water, and

is more marine than many of the other surface-feeding Ducks. It is chiefly to be found in sheltered bays and estuaries near the sea, as also on mud-flats, when the tide is out, but may occasionally be met with on inland waters far from the coast. It is eminently gregarious, and the numbers in which it may sometimes be met with are enormous. It feeds by night as well as by day, its principal feeding-time being perhaps the early morning and late evening hours. Its food consists largely of seaweeds, but also of fresh-water plants, insects, worms, and molluscs. Its flight is very swift, and it swims well. The call note of the male is a clear whistle like "*chee-you*," which may be heard at a considerable distance, particularly when uttered simultaneously by many hundreds of the birds, and the trivial name of the species in many languages is derived from this cry. The female utters a low croaking note.

The Wigeon has been known to interbreed with other species of Duck, such as the Mallard and the Pintail, even in a wild state.

NETTA RUFINA (Pallas).

RED-CRESTED POCHARD.

Anas rufina, *Pall. Reise*, ii, *App.* p. 713, No. 28 (1773); *Malherbe, Faune Orn. de l'Alg.* p. 37 (1855).

Netta rufina, *Kaup, Natürl. Syst.* p. 102 (1829); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 328.

Callichen rufina, *Loche, Expl. Sci. Alg. Ois.* ii, p. 394 (1867).

Callichen rufa, *Koenig, J. f. O.* 1888, p. 285.

Description.—**Adult male**, spring, from Sicily.

Forehead, crown, occiput and a thick crest pale reddish-bay; line down the middle of the nape, hind-neck, throat, breast and greater portion of the underparts black; sides of the abdomen white; back brown; scapulars paler and more rufous; rump and upper tail-coverts blackish; quills and tail dark grey; secondaries white with a subterminal greyish-brown bar; wing-coverts greyish-brown.

Iris hazel; bill vermilion-red, with a white nail; feet orange-red.

Total length 21 inches, wing 10, culmen 2, tarsus 1.50.

Adult female, general colour above greyish-brown, the head with only a slight crest; underparts greyish-white, tinged with brown on the abdomen.

Observation.—The genus *Netta*, Kaup, of which the present species is the type, differs from *Nyroca* in having sixteen instead of fourteen tail-feathers and a longer bill.

This handsome species is not uncommon in Tunisia in winter and spring, and is probably partially resident in the Regency, as well as in Algeria, where it is abundant in some localities. Loche states that it is resident on the lakes of that country, while Canon Tristram met with the species, not only at Lake Halloula in the north, but also as far south as the Wed-R'hir and at El-Aghonat in the Algerian Sahara. Salvin also found the species in numbers in the marshes of Zana, and writes (*Ibis*, 1859, p. 363) as follows concerning their nesting in that locality: "In the open pools at the upper end of the marsh of Zana I used frequently to see several pairs of the Red-Crested Duck. Two nests only were obtained. The second lot, consisting of seven eggs, were of a most brilliant fresh green-colour when unblown; the contents were no sooner expelled, and the egg dry, than the delicate tints were gone, and their beauty sadly diminished." Canon Tristram writes (*Ibis*, 1860, p. 164), concerning this species and its nesting that at Halloula he "obtained a single egg of the Red-Crested Whistling Duck in the open swamps. My companion shot the bird as it rose from the nest. *Fuligula rufina* breeds sparingly at the lake, but remains there throughout the winter. The males appear to desert the locality as soon as the females sit, and are never seen again until the end of the autumn. I have observed that the female erects her scanty crest in imitation of her mate, and proudly throws back her head, walking with a stately gait. The nest is like that of the Coot, but not so large, better concealed, and without the gangway of rushes built by the other."

Although rare in Northern Europe, this Duck is not uncommon in many parts of the South of the Continent. In Sicily it is fairly common in winter and spring on the east coast of the island, and breeds in the marshes and lakes near Catania and Lentini.

At the Pantano di Catania I have seen the species in pairs during the month of March, and Doderlein (*Avif. Mod. et Sic.* p. 265) states that in May, 1867, he obtained a pair of these birds, together with their young brood, in that neighbourhood.

The Red-Crested Pochard, as a rule, frequents fresh-water lakes and marshes, and is rarely to be met with on the sea-coast. It is

extremely shy and cautious and not easily approached. Though occasionally to be found in large flocks, it is more often met with in small parties of ten or twelve individuals, these being sometimes composed solely of males. It swims and dives well, but its flight is rather heavy. The notes of this Duck are not unlike those of the common Pochard. Its food also resembles that of the preceding species.

The nest of the species, as mentioned by Canon Tristram, is not unlike that of the Coot, and the eggs, seven to ten in number, as a rule, as described by Salvin, are of a brilliant fresh green colour when unblown, but lose their delicate tint when emptied and dry.

An example of this Duck, a young male, is said to have been found in New York market on February 2nd, 1872.

NYROCA FERINA (Linnæus).

POCHARD.

Anas ferina, *Linn. Syst. Nat.* i, p. 203 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 37 (1855).

Nyroca ferina, *Fleming, Phil. of Zool.* ii, p. 260 (1822); *Salvadori, Cat. Birds, Brit. Mus.* xxvii, p. 335.

Aythya ferina, *Loche, Expl. Sci. Alg. Ois.* ii, p. 393 (1867).

Fuligula ferina, *Koenig, J. f. O.* 1888, p. 296; *id. J. f. O.* 1893, p. 104; *Whitaker, Ibis*, 1895, p. 105.

Description.—**Adult male**, spring, from North Tunisia.

Head and upper neck rich velvety-chestnut, becoming black on the lower neck, mantle and breast; back, scapulars, and the greater part of the upper wing-surface pencilled with black and white; rump and upper tail-coverts blackish; tail grey, fringed with white; abdomen white, becoming grey on the crissum, and finely vermiculated with blackish; under tail-coverts blackish.

Iris orange-yellow; bill black with a blue band across the middle; feet slate-colour.

Total length 18 inches, wing 8, culmen 2, tarsus 1.20.

Adult female, head and neck reddish-brown; back as in the male, but darker, breast reddish-brown; abdomen white, crissum and under tail-coverts grey.

The common Pochard is abundant in North Tunisia during the winter months, arriving in October and November, and leaving again in March, being among the last of the winter migrants to depart. There seems to be no recorded instance of the species having bred in the Regency. Loche states that the Pochard is plentiful in winter in Algeria, and it is not uncommon at that season in Marocco, having even been met with there as late as March 30th. Throughout the Mediterranean generally the species is more or less abundant in winter, and in some parts of Italy it is said to have bred.

The Pochard frequents both the sea-coast and inland waters, is essentially gregarious and usually to be found in large flocks, and is not particularly shy or timid, though a wary bird on the whole. It swims and dives remarkably well, and is fairly swift on the wing, though reluctant to take to flight, often, in fact, when approached by a boat, attempting to elude pursuit by swimming in preference to flying. It is a silent bird as a rule, but has a whistling note, as also a low call-note something like the syllable "kurr." The species is not a surface-feeding Duck, and obtains its food chiefly at the bottom of the water. This consists principally of aquatic plants, insects, and crustacea, and also to a certain extent, it is said, of small fish.

NYROCA NYROCA (Güldenstadt.)

FERRUGINOUS DUCK.

Anas nyroca, *Güldenst. Nov. Oomm. Petrop.* xiv, p. 403 (1769).

Nyroca nyroca, *Fleming, Phil. of Zool.* ii, p. 260 (1822).

Nyroca africana, *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 345.

Anas leucophthalmos, *Malherbe, Faune Orn. de l'Alg.* p. 37 (1855).

Nyroca leucophthalma, *Loche, Expl. Sci. Alg. Ois.* ii, p. 391 (1867);
Koenig, J. f. O. 1888, p. 285; *id. J. f. O.* 1893, p. 95.

Nyroca ferruginea, *Whitaker, Ibis*, 1895, p. 105.

Fuligula nyroca, *Erlanger, J. f. O.* 1900, p. 71.

Description.—**Adult male**, spring, from North Tunisia.

Head, neck and breast glossy chestnut, with a white patch on the chin; a blackish-brown collar encircling the neck, and merging into the mantle, which is also of that colour; back and rest of the upper parts blackish; the secondaries glossed with metallic-green and with a white speculum, tipped with black; edge of the wing white; centre of the abdomen white shading into brown on the lower part; crissum and under tail-coverts white.

Iris white ; bill and feet dusky slate-colour.

Adult female, general colour duller and paler than in the male, and lacking the dark collar.

The Ferruginous, or White-eyed Duck, is common in Tunisia during the winter and spring months, and a certain number seem to breed in the Regency, as individuals are constantly met with in summer. Salvin appears to have found the species nesting in the marshes of Zana and Djendeli, and Loche states that it is common in all three provinces of Algeria, and is sedentary on the large lakes, where it breeds among the rushes. According to Colonel Irby it is also very numerous and breeds in Marocco. The species is more or less abundant throughout the Mediterranean in winter, and during the periods of migration, and breeds in some parts. In Sicily it is one of the commonest species of Duck to be met with in winter and spring, and is said to breed in the marshes near Catania.

The Ferruginous Duck frequents fresh-water marshes and ponds bordered with reeds and rushes in preference to the sea-coast and more open waters. It is usually to be found in small parties or isolated pairs, and is rather skulking and secretive in its habits, often hiding in the thick aquatic vegetation. Its flight is not very rapid, and when rising from the water, particularly heavy, but it swims and dives with ease. It feeds chiefly on aquatic plants, but also on small molluscs, worms and insects. Its note is said to be a harsh "*kirr-kerr*," repeated twice.

Its nest, placed, as a rule, among high rushes, is composed of dry flags or similar material, lined with down, and its eggs, seven to twelve in number, are pale buff, and measure about 53 × 39 mm.

FULIGULA MARILA (Linnæus).

SCAUP-DUCK.

Anas marila, *Linn. Syst. Nat.* i, p. 196 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 37 (1855).

Fuligula marila, *Steph. Gen. Zool.* xii, 2, p. 198 (1824); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 355; *Koenig, J. f. O.* 1888, p. 285.

Marila frenata, *Loche, Expl. Sci. Alg. Ois.* ii, p. 389 (1867); *Koenig, J. f. O.* 1893, p. 95.

Description.—**Adult male**, from Europe.

Head, neck and upper breast glossy greenish-black; back finely vermiculated with black and white; quills, rump, upper and under tail-coverts and tail dull black; secondaries with a white speculum, margined with a blackish border; abdomen white.

Iris yellow; bill and feet pale slate-colour.

Total length 19 inches, wing 8.50, culmen 1.80, tarsus 1.40.

Adult female, front of head and chin white; rest of head, neck, back, and breast dark brownish-black, with slight vermiculations on the back; abdomen dull white.

Although there appears to be no recorded instance of the occurrence of the Scaup Duck in Tunisia, the species has been obtained so close to the Tunisian frontier that I have no hesitation in including it among the birds of the Regency. Loche states that he obtained a fine male specimen of this Duck on Lake Halloula, and that the species is to be found in Algeria in autumn and winter. Examples of this species from Algeria are preserved in the Milan Museum, under the numbers 17,962 and 17,963. The Scaup appears to be unrecorded from Marocco, but, according to Colonel Irby, it has been met with occasionally in the Straits of Gibraltar in winter. The species is a winter visitor in the Mediterranean generally, being more abundant in the east than in the west of that basin, but it is somewhat irregular in its appearance, and appears to be far more abundant in some seasons than in others.

Essentially a marine species, this Duck is chiefly to be found on the sea-coast, and rarely on inland waters. It is gregarious and to be met with in large flocks, often in company with other allied species of Ducks. It flies fairly swiftly and swims and dives expertly, being able to remain submerged for a considerable length of time. Its note is said to be a loud and harsh "*scaup*," whence its English name. Its food consists largely of small shell-fish, but marine plants and their seeds are also eaten.

It is not particularly shy, and when engaged in feeding, may be approached fairly closely.

FULIGULA FULIGULA (Linnæus).

TUFTED DUCK.

Anas fuligula, *Lin. Syst. Nat.* i, p. 207 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 37 (1855).

Fuligula fuligula, *Licht. Nomencl. Avium*, p. 102 (1854); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 363.

Fuligula cristata, *Loche, Expl. Sci. Alg. Ois.* ii, p. 388 (1867); *Koenig, J. f. O.* 1888, p. 285; *id. J. f. O.* 1893, p. 95.

Description.—**Adult male**, winter, from North Tunisia.

Head, neck, breast, and upper plumage generally black, the head with a tuft of glossy purplish-black feathers hanging down from the occiput; sides of the head and neck also glossed with purple and green; back very finely marked with minute whitish spots; speculum white tipped with black; secondaries slightly glossed with green; abdomen white, becoming grey lower down, and black on the under tail-coverts.

Iris yellow; bill bluish-slate-colour tipped with black; feet greenish-black.

Total length 16 inches, wing 8, culmen 1·70, tarsus 1·25.

Adult female, general colour of the upperparts blackish-brown, the forehead marked with dull white, crest short, and underparts greyish.

The Tufted Duck is not uncommon in Tunisia during the winter months, and may be met with on all the lakes in the north of the Regency. Salvin found it numerous in March on the Lake of Bizerta. Loche states that the species is very common in Algeria (presumably in winter), and Favier says that it is very abundant in some years near Tangier, arriving in November and leaving in February, though not to be met with in other years. The species is very plentiful in some parts of Italy during the winter months, and according to some authorities, nests there in limited numbers, though conclusive evidence on this point is wanting.

The Tufted Duck frequents both fresh and salt water, and in winter may be found more often perhaps on the sea-coast or near the sea than on inland waters. It is gregarious and consorts with other Ducks as well as with those of its own kind. It flies well, is an expert at swimming and diving, and is able to remain under water for some time. Its call-note is low and guttural. Its food is the same as that of other allied species.

CLANGULA GLAUCION (Linnæus).

GOLDEN-EYE.

Anas glaucion, *Linn. Syst. Nat.* i, p. 201 (1766).

Anas clangula, *Linn. Syst. Nat.* i, p. 201 (1766).

Clangula glaucion, *Brehm, Isis*, 1830, p. 999; *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 376; *Loche, Expl. Sci. Alg. Ois.* ii, p. 396 (1867); *Koenig, J. f. O.* 1888, p. 285; *id. J. f. O.* 1893, p. 95.

Anas clangula (Clangula glaucion), *Malherbe, Cat. Rais. d'Ois. Alg.* p. 23 (1846).

Description.—**Adult male**, winter, from Italy.

Head and upper neck glossy bottle-green, the feathers on the crown somewhat elongated; a large white spot on the cheeks at the base of the bill; back, rump, tail, primaries, lesser wing-coverts and inner scapulars black; remainder of plumage pure white.

Iris yellow; bill blackish; feet orange-yellow.

Total length 20 inches, wing 9, culmen 1·50, tarsus 1·75.

Adult female, head and upper neck brown; remainder of upper plumage greyish-black; underparts white.

Total length 17 inches, wing 7·50, culmen 1·10, tarsus 1·50.

This northern species is said to occur occasionally in the Regency in winter, but is probably merely an accidental visitor in severe seasons. Loche states that it is to be met with occasionally in Algeria on passage in winter, and a male example of the species from that country is preserved in the Milan Museum under the No. 17,968. Malherbe's statement that the species "*est très répandu en Algérie*," is no doubt erroneous. According to Colonel Irby, this Duck occurs but rarely about the Straits of Gibraltar in winter. In some parts of Italy, however, it is not uncommon during the winter months, and has been found in Sicily and Malta.

The Golden-eye is chiefly to be met with on the sea-coast during its winter sojourn in the Mediterranean, and generally in small parties or isolated pairs. It is rather shy and wary, flies rapidly, and swims and dives expertly. When flying, its wings produce a whistling or rattling sound, which may be heard some way off. It feeds on aquatic plants, small crustacea, and insects.

ŒDEmia FUSCA (Linnæus).

VELVET-SCOTER.

Anas fusca, *Linn. Syst. Nat.* i, p. 196 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 23 (1846).

Œdemia fusca, *Bonap. Cat. Met. Ucc. Eur.* p. 73, No. 447 (1842); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 406.

Melanetta fusca, *Loche, Expl. Sci. Alg. Ois.* ii, p. 384 (1867); *Koenig, J. f. O.* 1893, p. 95.

Oidemia fusca, *Koenig, J. f. O.* 1888, p. 285.

Description.—**Adult male**, winter, from Italy.

Entire plumage velvety-black, the underparts rather duller; a small patch immediately below the eye and a large alar speculum white.

Iris brown; bill, which is considerably swollen at the base, has this portion black, the remainder being orange-yellow; feet dull reddish.

Total length 22 inches, wing 11, culmen 1·90, tarsus 1·60.

Adult female, general colour blackish-brown, the feathers of the underparts with pale margins; a whitish patch in front of the eye, and another behind it.

According to Blanc the Velvet-Scoter occurs occasionally in Tunisia in winter, and he informs me that he has obtained an example of it even in spring. The species, however, must be rare in the Regency, and is probably merely an accidental visitor in severe seasons. Loche states that it is to be rarely found on the Algerian coasts in winter.

This northern species, when visiting the Mediterranean in winter, frequents the sea-coast and salt-water estuaries, and is generally found in flocks. Its flight is powerful and swift, and it swims and dives well. It feeds chiefly on shell-fish.

ŒDEmia NIGRA (Linnæus).

COMMON SCOTER.

Anas nigra, *Linn. Syst. Nat.* i, p. 196 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 37 (1855).

Œdemia nigra, *Bonap. Cat. Met. Ucc. Eur.* p. 73, No. 448 (1842); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 401.

Oidemia nigra, *Loche, Expl. Sci. Alg. Ois.* ii, p. 386 (1867); *Koenig, J. f. O.* 1888, p. 285; *id. J. f. O.* 1893, p. 95.

Description.—**Adult male**, winter, from Italy.

Entire plumage above rich glossy black, the head and neck with purple reflections; underparts duller and browner.

Iris brown; bill, which has a conspicuous protuberance or knob at its base, black, except for a line down the middle of the knob and the ridge of the upper mandible which are orange-yellow; feet blackish.

Total length 20 inches, wing 9, culmen 2, tarsus 1.80.

Adult female, dull blackish-brown; chin and upper throat white; middle of abdomen whitish; bill blackish, and with the basal knob only slightly developed.

The Common Scoter is to be met with occasionally in Tunisia in winter, but according to Blanc, is rare, and, like the preceding species, is probably merely an irregular visitor to the Regency. Loche, however, states that the species is common on the Algerian coast in winter, and, according to Favier, "it is found in abundance near Tangier, arriving sometimes as early as August, retiring northwards in April." Favier's statement is confirmed by Mr. Meade-Waldo, who found the Common Scoter in large flocks in Mazagan Bay at the beginning of August (*Ibis*, 1903, p. 214). Colonel Irby also states that he had "found this Duck in some seasons very common about the Straits, especially after rough weather in Gibraltar Bay, but they do not appear except in small lots. The earliest noticed was on November 12th, the latest on March 12th, 1872."

Further east in the Mediterranean the Common Scoter appears to be far less abundant, and in Italy it is by no means common, and more or less irregular in its appearance. In winter this species is chiefly to be found on the sea-coast, and seldom on inland waters; it is gregarious, and to be met with either in large flocks or small parties. It flies, swims, and dives well and feeds chiefly on small shell-fish and marine plants.

ERISMATURA LEUCOCEPHALA (Scopoli).

WHITE-HEADED DUCK.

Anas leucocephalus, Scop. *Ann. i, Hist. Nat.* p. 65 (1769); *Malherbe, Faune Orn. de l'Alg.* p. 37 (1855).

Erismatura leucocephala, Bonap. *Sagg. Distr. Met. Agg. e Corr.* p. 143 (1832); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 442; *Loche, Expl. Sci. Alg. Ois.* ii, p. 398 (1867); *Koenig, J. f. O.* 1888, p. 285; *id. J. f. O.* 1893, p. 95.

Description.—**Adult male**, winter, from North Tunisia.

Head white, with the exception of the crown, which is black; neck brown, darker on the hind part; rest of the upper plumage buff, pencilled with grey, darker on the rump, tail and quills; breast pale yellowish-brown; rest of the underparts whitish-grey.

Iris dark brown; bill blue, much swollen at the base; feet dusky slate-colour.

Total length 18 inches, wing 6·30, culmen 1·90, tarsus 1·30.

Adult female, resembles the male to a great extent, but has less white on the head, and is rather more rufous in colour.

The White-headed Duck is not at all uncommon in Tunisia in winter, and apparently breeds in the Regency. I have specimens of it obtained in the Djebel Eshkul marsh in the month of May. In winter it may sometimes be seen on the Lake of Tunis. Salvin observed the species on this lake, as well as at Zana and Djendeli.

According to Loche the species is fairly abundant and resident in Algeria on all the large lakes. Canon Tristram also met with it in June, 1856, at the Lake of Bou-Guizoum, and in December at Touggourt. According to Favier this Duck occurs near Tangier on passage, some of the spring migrants remaining in the country to breed in June; but though quite common in some seasons, it is not at all regular in its appearance. Throughout the Mediterranean generally this species is not uncommon in winter, and in many localities it nests and may be considered resident.

It seems to be essentially a fresh-water Duck, and avoids the sea-coast as a rule. In its habits it is secretive and rather skulking, often, when pursued, preferring to hide among thick aquatic vegetation instead of taking to flight. It swims and dives well, and feeds on vegetable matter, small molluscs, worms and insects. It places its nest among reeds or rushes, and lays from seven to ten eggs of a dull white colour, very coarse grained, and measuring about 65×50 mm.

MERGUS MERGANSER, Linnæus.

GOOSANDER.

Mergus merganser, *Linn. Syst. Nat.* i, p. 208 (1766); *Koenig, J. f. O.* 1888, p. 286.

Merganser castor, *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 472; *Loche, Expl. Sci. Alg. Ois.* ii, p. 400 (1867).

Description.—**Adult male**, winter, from Italy.

Entire head and upper neck deep black glossed with green; lower part of neck and wing-coverts chiefly white; upper back and scapulars black; primaries and some of the secondaries blackish; lower back, rump, and tail dark grey; entire underparts rich rose-tinted white.

Iris, bill and feet, red.

Total length 26 inches, wing 11, culmen 2.50, tarsus 2.

Adult female, crown, nape and neck light rufous-brown; lores and region round the eye dark brown; upper parts and tail grey; quills black; wing-coverts white; underparts white; measurements rather less than in the male.

The Goosander is said to occur occasionally on the coasts of the Regency in very severe winters, and this appears to be the case also in Algeria and Marocco. A male example of the species from Algeria is preserved in the Milan Museum, under the number 17,971. In Marocco, according to Colonel Irby, Favier once obtained the species near Tangier in October, 1862, and Colonel Irby himself saw another example which had been found dead on the shore near that town during the winter of 1869-1870. The species, however, can only be looked upon as an irregular and accidental visitor to North-west Africa.

In the Mediterranean generally it is more or less rare, except perhaps in the Adriatic and Venetian districts, where it is often observed, and probably arrives by crossing the Alps, being met with not unfrequently on the Lake of Garda, and in Lombardy.

In many of its habits, and in its food, the Goosander resembles the more common Red-breasted Merganser, although perhaps less marine than that species, and preferring lakes and inland waters to the sea-coast. Its flight, though rather heavy, is powerful, and capable of being sustained for long distances, while it swims and dives with the greatest ease.

MERGUS SERRATOR, Linnæus.

RED-BREASTED MERGANSER.

Mergus serrator, *Linn. Syst. Nat.* i, p. 208 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 23 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 402 (1867); *Koenig, J. f. O.* 1888, p. 296; *id. J. f. O.* 1893, p. 104; *Erlanger, J. f. O.* 1900, p. 71.

Merganser serrator, *Salvadori, Cat. Birds Brit. Mus.* xxvii, 479.

Description.—**Adult male**, winter from North Tunisia.

Head and upper neck glossy-black with metallic-green reflections on the sides, the feathers of the crown and nape fine and considerably elongated, lower portion of the neck white, with a black line on the hind part; back and scapulars black; rump and upper tail-coverts pencilled with black and white; tail dark grey; primaries dull black; secondaries and coverts white, forming transverse black and white bars; breast pale reddish-brown, streaked with black; rest of the underparts white.

Iris bright vermilion; bill vermilion, darker above and brighter below; feet light vermilion.

Total length 22·50 inches, wing 9·50, culmen 2·30, tarsus 1·90.

Adult female, head and neck reddish-brown; upper-parts generally dark greyish-brown, the feathers with lighter borders; chin and fore-neck whitish, the latter tinged with grey; rest of the underparts white.

The Red-breasted Merganser is not uncommon, as a winter migrant, in Tunisia, and examples of it are obtained from time to time on the northern coasts of the Regency. In Algeria, according to Loche, the species is of accidental occurrence during the periods of passage, young individuals being met with more often than adult birds.

In some parts of the Mediterranean the species is far from uncommon, and in certain years may even be called abundant. I have observed it frequently on the south-west coast of Sicily during the autumn and winter months, and have obtained numerous examples of it, both adult and young birds. I have also received living specimens which I have kept alive in my garden for some time.

In winter this species is generally to be found in small flocks and companies on the sea-coast and salt-water lagoons and shallows. It swims and dives with remarkable facility, and flies well when once well on the wing, though its flight when rising from the water is

rather slow and heavy. On land it is very awkward and walks with difficulty. It is a shy and wary bird, and not easily approached. Its food appears to consist entirely of small fish, molluscs and crustaceans.

MERGUS ALBELLUS, Linnaeus.

SMEW.

Mergus albellus, *Linn. Syst. Nat.* i, p. 209 (1766); *Salvadori, Cat. Birds Brit. Mus.* xxvii, p. 464; *Koenig, J. f. O.* 1888, p. 286.

Mergellus albellus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 404 (1867).

Description.—**Adult male**, winter, from Italy.

Upper-parts white, except the lores, a patch round the eye, a patch on the hind part of the crown, back, most of the quill-feathers, wing-coverts and the tips of the scapulars, which are black, and the rump and tail-feathers which are dark grey; underparts silky-white, with dark grey vermiculations on the flanks; occipital feathers slightly elongated.

Iris bluish-white; bill and feet plumbeous, the nail of the bill lighter.

Total length 18 inches, wing 7.50, culmen 1, tarsus 1.50.

Adult female, has the crown, nape and hind neck rufous-brown; lores blackish, upper-parts brown, the mantle greyish, underparts white; measurements rather less than in the male.

Like the Goosander, the Smew is said to occur occasionally on the Tunisian coasts in very severe winters, but like that bird, can only be looked upon as an irregular and accidental visitor to the shores of North-west Africa. According to Loche, the species is to be met with occasionally in Algeria in severe winters, and two examples of it, a male and a female, from that country, are preserved in the Milan Museum, under the numbers 17,975 and 17,976. In Marocco the species appears to have been met with near Tangier, and according to Colonel Irby, it occurs in some seasons about the Straits of Gibraltar in immature plumage.

Throughout the Mediterranean generally the Smew occurs as a winter migrant, and in some parts is not uncommon. In Northern and Central Italy the species is even sometimes abundant during the winter months, though adult males are much less frequently met with than females and immature examples.

In its habits it resembles the preceding species, and is usually to be found in small companies, either on fresh or salt water. Its food is also the same as that of its congeners. Its flight is fairly swift, but the bird seems to be most at home when on the water, swimming and diving with the greatest ease and dexterity.

Order COLUMBÆ.

Family COLUMBIDÆ.

COLUMBA PALUMBUS, Linnæus.

RING-DOVE.

Columba palumbus, *Linn. Syst. Nat.* i, p. 282 (1766); *Salvadori, Cat. Birds Brit. Mus.* xxi, p. 299; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 18 (1846); *Koenig, J. f. O.* 1896, p. 136; *Whitaker, Ibis*, 1895, p. 86; *id. Ibis*, 1898, p. 126.

Palumbus torquatus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 107 (1867).

Palumba excelsus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 109 (1867).

Columba palumbus excelsus, *Erlanger, J. f. O.* 1900, p. 20.

Description.—**Adult female**, spring, from Djebel Selloum, Central Tunisia.

Head and upper neck blue-grey; sides of neck and nape glossed with metallic-green, becoming rich purple just below the nape; a large white patch on each side of the neck, nearly united at the back; mantle, scapulars and the greater part of the upper wing-coverts ash-grey, the wing-coverts broadly edged with white and forming a conspicuous bar; lower back, rump, and upper tail-coverts blue-grey; tail dark blue-grey, becoming blackish at the tip, and with a black band on the under surface; quills blackish-brown fringed with white; lower throat and breast vinous-purple, becoming paler on the abdomen, and light blue-grey on the crissum and under tail-coverts.

Iris pale yellow; bill orange-red at base, and yellow at the tip; cere whitish; feet coral-red.

Total length 17.50 inches, wing 10.25, culmen 1, tarsus 1.25.

Adult female similar to the male, but smaller and duller in coloration.

The Ring-Dove, or Wood-Pigeon, is not uncommon in the more wooded districts of Northern and Central Tunisia during the periods of migration, and a good many breed in the country. A few also are said to pass the winter in some parts of the Regency. In the months of March and April I have found the species fairly abundant at El-Oubira, as well as on the Djebel Selloum and other wooded mountains in the high plateau region of Central Tunisia, where, according to the Arabs living on the spot, this pigeon nests and passes the

summer, but is never seen in winter. The woods of these mountain ranges are mostly of Aleppo-Pine (*P. halepensis*), and seem to attract the pigeon more than do the oak-forests of the country further north.

The native name for the Wood-Pigeon in Tunisia is "*Arzadi*," and that of the Rock-Dove (*C. livia*) "*Hamman Berri*." The latter name appears to be used in Marocco for the Stock-Dove as well as for the Rock-Dove.

According to Loche the present species is resident in the wooded parts of Algeria, but is more abundant on passage in spring and autumn, when it may often be observed in vast flocks.

Bonaparte's name of *P. excelsus* (Comp. Rend. Acad. Sci. tom. xliii, 1856), was probably based merely on large examples of the present species.

Throughout the wooded districts of Marocco the Wood-Pigeon is plentiful, particularly on migration, though it is also resident to a considerable extent.

In its habits this Pigeon is essentially arboreal, frequenting forests and wooded localities where trees of a certain size are to be found. In Europe the species has of recent years become a denizen of our town parks and gardens, and may be found firmly established and nesting in many large towns both in England and on the Continent. It may even be met with occasionally nesting on houses and other buildings. Under its altered conditions of environment the character of the species seems to have undergone a complete change, and in the place of the shy wary Wood-Pigeon of the country, ready to take to flight on the crackling of a leaf or the slightest intimation of danger, we have a tame semi-domesticated bird, perfectly at home amid the traffic and bustle of crowded thoroughfares, exhibiting no sign of fear, but on the contrary confidently approaching and even taking food from the hands of the passer-by.

This acclimatisation, as it may be termed, of the Wood-Pigeon in towns may be looked upon as one of the most interesting and important ornithological events of recent years, and affords an excellent illustration of the transformation the habits of a bird are capable of undergoing under modified conditions of environment and life.

Though gregarious when on migration and during the greater part of the year, the Wood-Pigeon is strictly monogamous and to be found in pairs during the breeding-season. The male and female of a pair

are then very devoted to each other and to their offspring, and both appear to take an equal share in the incubation of the eggs. Like other Doves the Wood-Pigeon has a large appetite and may be called a voracious feeder. It will eat almost any kind of seed or grain, pulse, acorns, beech-mast, and the tender roots and shoots of plants. It also drinks copiously, and is fond of bathing in water.

Its flight is graceful as well as powerful and capable of being sustained for a long time. When suddenly surprised, it dashes out of a tree with a great clapping of its wings.

Its note is a soft deep "coo-rōō-coo-coo," and is one of the few sounds that enliven the stillness of most forests.

The Wood-Pigeon in Tunisia commences breeding in April and usually rears two broods. Its nest is a slight platform of sticks, loosely put together, and on this frail structure are deposited two pure white eggs, measuring about 40 × 30 mm.

COLUMBA ŒNAS, Linnæus.

STOCK-DOVE.

- Columba œnas**, *Linn. Faun. Succ.* p. 75 (1761); *Salvadori, Cat. Birds Brit. Mus.* xxi, p. 261; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 18 (1846); *Koenig, J. f. O.* 1888, p. 251; *Whitaker, Ibis*, 1898, p. 126.
Palumbœna columbella, *Loche, Expl. Sci. Alg. Ois.* ii, p. 113 (1867).

Description.—**Adult male**, winter, from North Tunisia.

Upper plumage generally bluish-slate, lighter on the head and rump, and browner on the back and scapulars; nape and sides of the neck glossed with metallic-green; quills blackish; two small and somewhat indistinctly formed black bars on the secondaries and upper wing-coverts; tail broadly tipped with black; breast vinous-purple; rest of underparts bluish-grey.

Iris hazel; eyelids bluish-grey; bill red at the base and yellow at the tip; feet coral-red.

Total length 13·50 inches, wing 8·50, culmen ·85, tarsus 1·15.

Adult female similar to the male, but rather smaller and duller in coloration.

The Stock-Dove is not very common in Tunisia, but is to be met with occasionally in winter, and examples of it are sometimes to be found in the Tunis market. It possibly nests in the Regency, as it appears to do so in Algeria and Marocco.

According to Loche the species is abundant in Algeria, particularly in February and October on passage, and is to be met with in the Sahara as well as in the more wooded country further north. Canon Tristram obtained specimens of the bird in the Dayat of Tihbremet, between El-Aghouat and the Mزاب country, in the month of November, but states that this was the only occasion on which he met with the species in the Sahara, though it was very common in all the wooded districts of the Atlas.

Colonel Irby appears to have found the Stock-Dove not uncommon in North Marocco in spring and thinks that the species breeds there, although he did not actually find its nest. According to Mr. Meade-Waldo this Dove is locally common in the Maroccan Atlas, and, judging from the fact of his meeting with it in summer, there can be little doubt that it nests in the country.

In its habits the present species resembles the Wood-Pigeon to a certain extent, but in some ways it is more like the Rock-Dove, and particularly in its movements, both on the wing and on the ground. Its flight is lighter than that of the Wood-Pigeon, and when rising, it does not make the loud clapping with its wings which that species does.

It is sociable and gregarious, except for a short time during the spring and summer when breeding, and like the Wood-Pigeon, the pairs, when mated, are most devoted to each other and to their offspring. Its note is shorter and less distinct than that of the Wood-Pigeon and resembles more that of the domestic Pigeon. It feeds on seeds and grain of any kind, as well as on beech-mast and the tender roots and shoots of various plants.

In its breeding-habits this species differs from the preceding one in placing its nest in a hole, generally that of an old tree, but rabbit-burrows, cliffs, and even buildings are sometimes used for the purpose. The eggs, as a rule, are two in number, white or creamy-white, and measure about 38×27 mm.

COLUMBA LIVIA, Bonnat. *Bonnaterre*.

ROCK-DOVE.

Columba livia, *Bonnat. Encycl. Méthod.* i, p. 227 (1790); *Salvadori, Cat. Birds Brit. Mus.* xxi, p. 252; *Malherbe, Faune Orn. de l'Alg.* p. 25 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 110 (1867); *Koenig, J. f. O.* 1888, p. 251; *id. J. f. O.* 1893, p. 69; *Whitaker, Ibis*, 1894, p. 96; *Erlanger, J. f. O.* 1900, p. 21.

Description.—**Adult male**, spring, from Kasrin, Central Tunisia.

Head bluish-slate, the whole of the neck and nape glossed with metallic-green and purple reflections; back and greater portion of the upper wing-coverts blue-grey; rump white; upper tail-coverts and tail bluish-slate, the latter tipped with black; quills slate, tipped with dull brown; two black bars across the wings; breast slate, glossed with purple; remainder of underparts bluish-slate.

Iris brick-red; bill reddish; cere whitish; feet dark red.

Total length 13.50 inches, wing 9, culmen .85, tarsus 1.10.

Adult female similar to the male, but rather smaller and duller in coloration.

Observations.—My collection from Tunisia contains, besides the ordinary form of this Pigeon, an example with the dark lower back and rump (*C. schimperi*, Bp. ?), as also a very pale specimen, and a very dark one, both the latter with the white rump.

The Rock-Dove is resident and abundant throughout the Regency, being found wherever there are cliffs and rocks sufficient to afford it shelter and convenient nesting sites. Inland localities are frequented as much as the sea-coast, particularly those near water, but should the supply of this fail, as not unfrequently happens in the Saharan region in dry seasons, the birds will, like Sand-Grouse, daily traverse great distances in search of the precious liquid.

I have found the species remarkably plentiful in the neighbourhood of Kasrin, where the country is very broken and high cliffs border the banks of the river of that name. Here the Rock-Dove may be observed in vast numbers, nesting in the holes and crannies of the steep sides, in company with innumerable Kestrels, Unspotted Starlings, and other rock-frequentering birds. I have also met with Rock-Doves in most of the arid mountain ranges further south, and on the semi-desert plains to the west of Gafsa, though in smaller numbers. The species also occurs on the Island of Djerba.

In Algeria and Morocco the Rock-Dove is abundant in suitable localities, both north and south of the Atlas.

Well meriting its name, the present species is essentially a rock-loving bird, and is always to be found among cliffs and crags, and not in wooded localities. It is gregarious and sociable, and nests in colonies, but is strictly monogamous. In its habits and its note it resembles our domestic Pigeon, and is no doubt the stock from which the latter has sprung. In its general movements it is graceful, and shy and timid in its character. When feeding it usually selects some open spot, where it is impossible to approach it without being seen. It flies with great swiftness and frequently close over the ground, the "swish" made by a large flock passing by being very loud. Its food is more or less the same as that of the preceding species, seeds, grain, young shoots and tender roots of plants forming its principal diet.

Its nest, which is placed in the hole or cleft of a cliff, or under a ledge of rock, is a slight structure composed of a few twigs and grasses, on which two pure glossy-white eggs are deposited. Average measurements 37×26 mm. Two broods are usually reared in a season.

Besides the dark-rumped Rock-Dove (*C. schimperi*, Bp. ?) referred to in the above observations as having been obtained in Tunisia, my collection contains a similarly plumaged example from Morocco. This was obtained out of a flock of the ordinary white-rumped birds, one of the latter being killed at the same shot. Bonaparte's name of *C. turricola*, appears also to have been given to a dark-rumped bird, but neither it nor that of *C. schimperi* seem to have much claim to stand, even subspecifically. *C. rupestris* and *C. intermedia* are two other names which have been given to Rock-Doves in Asia, both being considered by some ornithologists merely as synonyms of *C. livia*.

TURTUR TURTUR (Linnæus).

TURTLE-DOVE.

Columba turtur, *Linn. Syst. Nat.* i, p. 284 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 18 (1846).

Turtur turtur, *Sharpe, Ibis*, 1891, p. 111; *Salvadori, Cat. Birds Brit. Mus.* xxi, p. 396; *Erlanger, J. f. O.* 1900, p. 22.

Turtur auritus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 114 (1867).

Turtur vulgaris, *Koenig, J. f. O.* 1888, p. 253; *id. J. f. O.* 1893, p. 70.

Turtur communis, *Whitaker*, 1895, p. 105.

Description.—**Adult male**, spring, from Ghardimaou, North Tunisia.

Head, nape, and neck bluish-grey, the sides of the neck conspicuously marked with four bands of black feathers, tipped with white; mantle and back dull brown, slightly spotted with black; scapulars, inner secondaries, and inner upper wing-coverts bright cinnamon, with black centres to the feathers; outer upper wing-coverts and outer secondaries bluish-grey; primaries brown; rump and upper tail-coverts slate, tinged with brown; the two central rectrices brown, the remainder dark slate, broadly tipped with white, and the outermost feather on each side with its outer web white; throat, sides of neck and breast rosy-vinous; centre of abdomen and under tail-coverts white.

Iris hazel; bill brown; feet coral-red.

Total length 10·50 inches, wing 6·50, culmen ·75, tarsus ·80.

Adult female, similar to the male but rather smaller.

The Turtle-Dove is abundant in Tunisia as a summer migrant, arriving in spring and leaving again in the autumn. A considerable number of the birds breed in the Regency, not only north of the Atlas, but also south of those mountains and in the oases.

The species is equally abundant in Algeria and Marocco as a summer migrant, and I have also examples of it from Tripoli, obtained from inland districts towards the end of May, when presumably the birds were nesting. The Turtle-Dove chiefly frequents wooded localities near cultivated land, where its food is plentiful, this consisting mainly of grain, and seeds of various kinds. The extensive olive-groves, common in many parts of the Regency, are favourite haunts of the species, and when on migration, the bird may be met with in such localities in vast numbers. The same is the case in Sicily, where on certain days in April and May, when the wind is favourable for their passage, considerable numbers of doves are shot by the local "cacciatori" in the olive-groves and among the Carob-trees common in some parts.

The species in spring generally travels either singly or in pairs, but in autumn it may be found in small companies. Its flight is swift and capable of being long sustained, while on the ground it walks with ease. Its note is a low plaintive "coo." The nest of this species is a frail structure of twigs placed in a bush or low tree, and

the eggs, two in number, are glossy white and oval in shape, measuring about 30 × 22 mm.

I do not find any constant difference in coloration or size between examples of the Turtle-Dove from Tunisia and those from South Europe.

TURTUR SENEGALENSIS (Linnæus).

EGYPTIAN TURTLE-DOVE

Columba senegalensis, *Linn. Syst. Nat.* i, p. 283 (1766).

Turtur senegalensis, *Bonap. Cat. met. Ucc. Eur.* p. 52 (1842); *Salvadori, Cat. Birds Brit. Mus.* xxi, p. 448; *Loche, Expl. Sci. Alg. Ois.* ii, p. 116 (1867); *Koenig, J. f. O.* 1888, p. 253; *id. J. f. O.* 1893, p. 70; *Whitaker, Ibis*, 1894, p. 96; *Erlanger, J. f. O.* 1900, p. 23.

Description.—**Adult male**, spring, from South Tunisia.

Head and neck rosy-vinous; nape, back, and scapulars bronze-brown; rump bluish-slate; upper tail-coverts dull brown; the two central rectrices brown, the remaining tail feathers slate at their bases and white at their tips, with a black band between the two; primaries brown; secondaries bluish-ash; upper wing-coverts bluish-grey; throat rosy-vinous; the sides of the neck with a broad collar of black and copper-coloured feathers, extending round the front of the neck, and partly round the hind neck; breast vinous; centre of abdomen and under tail-coverts white.

Iris dark brown; bill dark grey; feet dull coral-red.

Total length 10 inches, wing 5·90, culmen ·70, tarsus ·75.

Adult female, similar to the male but rather smaller.

This handsome little Turtle-Dove is very abundant in most of the palm-oases of South Tunisia, and is not uncommon in some parts of Central Tunisia, but is much rarer north of the Atlas. Occasionally examples may be found exposed for sale in the Tunis market, and I have seen specimens in a small local collection at Bizerta, which were said to have been obtained in the neighbourhood of that town.

In Central Tunisia I have obtained examples of it in the vicinity of Sfax, but the species did not seem to be common in that neighbourhood. In the Gafsa oasis, on the contrary, I have always found it very abundant.

In Algeria I have found this Turtle-Dove most plentiful in the

Biskra oasis, in some parts of which the palm-trees seemed full of these birds. Throughout Southern Algeria the species appears to be as abundant as it is in corresponding localities in Tunisia. It is also to be found in South Marocco, and has been recorded from the Canaries. It appears to occur on the West coast of Africa, in North-east Africa, and generally throughout that continent as far south as Cape Colony. In Asia it is to be found as far east as Central India. North of the Mediterranean it is recorded from Greece and Turkey.

In its habits the present species seems to be strictly sedentary and non-migratory. It is remarkably tame and unsuspecting, evincing a partiality for the neighbourhood of man to such an extent that it may be called semi-domesticated. In most of the countries where it is to be found the bird is indeed unmolested, and affects the immediate vicinity of human dwellings like the ordinary domestic Pigeon, though resorting to trees and bushes for the purpose of nesting and roosting. Palms are the trees most preferred, but olive, orange and other fruit-trees are also much frequented. Its flight is not as swift as that of most Doves, nor is the bird often to be seen taking a long flight, but usually merely passing from one tree to another close by, or fluttering down to, or up from, the ground.

Like other Doves, it feeds chiefly on grain and the seeds of various plants.

Its note is rather peculiar and has been likened by Dr. Koenig to the laughing note of *Turtur risorius*.

Its nest, which is placed in a tree or bush, is a simple light layer of twigs and rootlets, and its eggs, two in number, are white, and measure about 27 × 20 mm. Near Monastir Dr. Koenig obtained nests of this species, which were placed in cactus bushes (*Opuntia ficus Indica*.)

Family PTEROCLIDÆ.

PTEROCLES ARENARIUS (Pallas).

BLACK-BELLIED SAND-GROUSE.

Tetrao arenarius, *Pall. Nov. Com. Petrop.* xix, p. 418, pl. viii (1774).

Pterocles arenarius, *Temm. Man. d'Orn.* p. 299 (1815); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxii, p. 18; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 18 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 227 (1867); *Koenig, J. f. O.* 1888, p. 255; *id. J. f. O.* 1893, p. 73; *Whitaker, Ibis*, 1894, p. 97; *Erlanger, J. f. O.* 1900, p. 29.

Description.—**Adult male**, spring, from Hadj-el-Aioum, Central Tunisia.

Forehead, crown, and nape dove-grey, rather paler round the eye; back, scapulars, lesser wing-coverts, rump, and upper tail-coverts blackish-grey, mottled with yellowish-buff, brightest on the wing-coverts; greater and median wing-coverts bright orange-buff; primaries slate-grey, with black shafts, the outermost primary with a black outer web; most of the secondaries slate-grey on the inner, and orange-buff on the outer webs; tail ash-grey, barred with rufous-brown on the basal portion, and tipped with white; chin and throat rust-colour, with a black patch below, and becoming rufous-orange on the sides of the neck; upper breast pearl-grey; lower breast isabelline-buff, the two colours divided by a black pectoral band; abdomen and sides of body coal-black; under tail-coverts whitish; tarsus feathered down to the toes with pale buff.

Iris almost black; bill and feet grey.

Total length 12.50 inches, wing 9, culmen .50, tarsus 1.

Adult female, spring, from Oglet-Zellès, South Tunisia.

Upper plumage pale sandy-buff with a rufescent tinge; head and nape finely striped with black, the other parts finely barred and vermiculated with black; primaries greyish-brown; throat and cheeks tinged with pale yellow, below which is a black stripe; upper breast pale rufescent-buff, spotted with dark brown; below that a black pectoral band; lower breast pale unspotted buff; abdomen and sides of body black; under tail-coverts white.

Soft parts and measurements as in the male.

Observations.—There is a considerable amount of seasonal variation in the plumage of this species, noticeable in both sexes. The spring plumage in both is purer and brighter than the autumn dress.

This Sand-Grouse is common throughout a considerable portion of the Tunisian Regency, and particularly in the central and southern districts. North of the Atlas it is less abundant, and apparently not to be found throughout the entire year.

The true home of the species is undoubtedly the semi-desert country and vast undulating stony plains south of the Atlas, where the general colouring of the soil and environment harmonise so admirably with its plumage and help to render it inconspicuous. The same may indeed be said of other species of Sand-Grouse, and there are perhaps few better illustrations of Nature's protective colouring than those afforded by the members of this family.

Though distinctly a resident species in Tunisia, *P. arenarius* appears to shift its quarters a good deal and to be in some measure

migratory, for in certain districts it is to be met with in some seasons and not in others. Near the town of Tunis, for instance, according to Blanc, the species is to be found, as a rule, in spring and summer, but not in winter. Lord Lilford, however, appears to have met with it on the plains near Tunis in November and December (Birds of Eur. vii., p. 63).

During the spring months I have found *P. arenarius* most plentiful on all the semi-desert plains lying to the west of Gafsa, particularly those near Oglet-Alima, Oglet-Zellès, and Midès. In some of these districts the species positively swarmed, flock after flock being met with. These were generally composed of from ten to twenty birds, but occasionally larger flocks were encountered, though, on the other hand, small parties of only three or four individuals were not uncommon.

Further north, in Central Tunisia, I have found this species numerous at Ain-Rhorab, near Kairouan, and in the neighbourhood of El Ksob and Madjen-bel-abbés, while I have either specimens from, or notes of the bird's occurrence at Tatahouine and other places in the south.

In Algeria this Sand-Grouse is abundant in districts corresponding to those where it is found in Tunisia, and I met with it in large numbers near Negrine, not far from the Tunisian frontier.

From Marocco I have examples of the species, obtained from districts in the centre and south of the Empire, while it appears to have been met with in Tripoli by Mr. W. T. H. Chambers (*Ibis*, 1867, p. 103). It is also recorded from the Canaries.

North of the Mediterranean *P. arenarius* occurs in some parts of Spain and Portugal, and appears to be resident in suitable localities in those countries. It is said to have occurred as a straggler near Nice, and has twice been recorded from Greece. Canon Tristram met with it in Palestine, and it appears to be found in the Caucasus districts, and eastwards as far as India.

The present species is eminently a denizen of the plains, and more particularly the undulating semi-desert plains, where sandy hillocks, strewn with stones and dotted with patches of Halfa-grass, are a characteristic feature of the country. The tops of these hillocks or mounds are favourite resorts of the birds during the middle of the day for resting, or basking in the sun, and possibly also for roosting at night. In these spots the birds remain quietly the greater part

of the day, and do not leave them except for drinking and feeding purposes. Like other species of Sand-Grouse, *P. arenarius* is chiefly to be seen during the early morning and evening hours, when on its way to or from its drinking and feeding haunts. It is said to drink regularly twice a day, but in Tunisia I never observed the birds drinking except in the morning. To reach water they often travel a great distance, but no doubt do this with the greatest ease, being remarkably strong and swift on the wing. When rising from the ground the rattling noise this species makes, probably with its wings, is most peculiar, and unlike that of any other bird with which I am acquainted. The note it utters when on the wing, and which may be heard at a great distance, is like the word "catarr" repeated several times, whence the bird's Arabic name of "Kdar̄r̄." When disturbed it will travel for a great distance, often completely out of sight, before settling down again, but at its drinking resorts it seems loath to leave the spot until its thirst is quenched.

The species feeds chiefly on the seeds and tender shoots of wild plants, though when in the vicinity of cultivated land it will resort thereto in search of grain. As a bird for the table its flesh is by no means to be despised, and though perhaps rather drier, may be likened to that of Black-Game, the flesh of the breast being both dark and light, as in that bird. Sand-Grouse in general are difficult to skin, their feathers, like those of Pigeons, being loosely attached to the skin; and it requires all the taxidermist's art to produce good museum specimens.

Like its congeners, the present species is monogamous and rather a late breeder, though not as late as stated by most authors, and I have obtained full clutches of eggs by the middle of April. The nesting-season of the species, however, continues throughout that and the following month, and probably also throughout June.

The eggs of *P. arenarius*, which are three in number and elliptical in shape, are deposited in a slight depression in the ground, and are of a glossy-ochreous or pale buff-colour, with a few indistinct lilac-grey shell-spots and pale yellowish-brown surface-blotches. The spots and blotches are occasionally collected together in a zone at one end. Average measurements 45 × 30 mm.

PTEROCLES ALCHATA (Linnæus).

PIN-TAILED SAND-GROUSE.

Tetrao alchata, *Linn. Syst. Nat.* i, p. 276 (1766).

Pterocles alchata, *Temm. Man. d'Orn.* p. 302 (1815); *Koenig, J. f. O.* 1893, p. 74; *Whitaker, Ibis*, 1895, p. 105; *Erlanger, J. f. O.* 1900, p. 34.

Pterocles setarius, *Mallerbe, Cat. Rais d'Ois. Alg.* p. 18 (1846).

Pteroclorus alchata, *Loche, Expl. Sci. Alg. Ois.* ii, p. 232 (1867); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxii, p. 7.

Description.—**Adult male**, spring, from Ain-el-Ksob, Central Tunisia.

Forehead and sides of head dark gamboge-yellow; a narrow black stripe extending from the eye backward; crown greenish-grey; nape dull greenish; back and scapulars brownish green, some of the feathers tipped with large yellow spots; rump and upper tail-coverts yellow, closely barred with black; the two central rectrices, which are much elongated, dark brown, the remainder tipped with white; primaries grey, with black shafts and brown inner webs, except the outermost feather, which is black on the outer web; upper wing-coverts brown on the outer portion and on the shoulder, below which is a large patch of rufous-brown, fringed with narrow lines of black and white, and lower still are some grey and black feathers; inner wing-coverts and secondaries greenish like the scapulars; chin and centre of the throat black, bordered with gamboge-yellow; fore neck dull golden-green; breast light cinnamon, with black pectoral bands above and below; remainder of the underparts white.

Iris almost black; bill and feet grey.

Total length 12.50 inches, wing 8.50, culmen .50, tarsus 1.

Adult female, spring, from Bir-Sliman, South Tunisia.

Forehead, crown and nape yellowish-buff, closely barred with black, and with a black stripe extending from the eye backward; remainder of upper plumage generally yellowish-buff with a rufescent tinge, and closely barred and pencilled with black, brown and pearl blue; quills grey; tail as in the male; chin and centre of throat white; lower throat, sides of head and neck yellowish-buff, with two black collar bands, below which the breast is pale cinnamon, followed by a third black pectoral band; rest of the underparts white.

Soft parts and measurements as in the male.

Observations.—For the remarkable seasonable changes in the male of this species, *cf. Grant, Game Birds*, i, p. 8.

The chief difference between typical *P. alchata*, and the Spanish form *P. a. pyrenaicus* (Briss.) is that in the male the submarginal fringe on the chestnut wing-coverts is *white* in the former and *yellow* in the latter, while in the female these wing-coverts are generally lighter in the former and darker in the latter.

This handsome bird, quite the most beautiful of all the Sand-Grouse, is abundant in Tunisia, and, contrary to what might be expected, appears there in its typical form, and not in the slightly different form of *P. a. pyrenaicus*, found in Spain.

Examples in my collection from Marocco are identical with those from Tunisia, and so are probably also specimens from Algeria, in the southern districts of which the species is common. According to Von Heuglin this Sand-Grouse occurs in Tripoli and Cyrenaica, but apparently it is not to be found in Egypt. It is to be found in Asia Minor, Southern Russia and the Caucasus, and ranges eastward as far as India. In South Spain the species is represented by the form *P. a. pyrenaicus*, while, as a straggler, it appears to have been met with occasionally in Italy, Malta and Greece.

In the Tunisian Regency this Sand-Grouse is not often seen north of the Atlas, but south of those mountains it is sometimes remarkably abundant, and to be observed in immense flocks, far outnumbering those of other species of Sand-Grouse. The species seems to be migratory to a certain extent, and more so perhaps than other members of the family. I have found it plentiful in some years in localities where in other years it was entirely wanting.

In many of its habits the Pin-tailed Sand-Grouse resembles the preceding species, though differing in others. It is, as a rule, found in much larger flocks than *P. arenarius*, and is said never to approach the sea-coast. Like that bird, however, it is very shy and wild and, when disturbed, generally flies for a great distance before settling down again, although should it be the hour for drinking, and its thirst not be yet appeased, it will often make one or two attempts to return to the water before finally leaving the spot.

Such of the *Oueds* as may still have water in them in spring, or even the holes scooped out of the river-beds by the Arabs for the purpose of providing themselves and their flocks with water, are sure to be visited by Sand-Grouse for drinking, and it was once my good fortune to see no less than three different species of these birds frequenting one of these spots at the same time, and to witness flock after flock of each come down to the water during the hour or two the flight lasted. *P. arenarius* and *P. alchata* were well represented on this occasion and about equally numerous, as shown by specimens obtained of both; but a third species was also present, of which I failed to secure an example, but which, judging from its appearance on the wing appeared to be *P. coronatus*.

The morning flight of Sand-Grouse for the purpose of drinking, commences soon after sunrise, and is generally continued for an hour or two, or until the sun is well up, when it entirely ceases. During the time the flight lasts, the spot visited by the birds, particularly should it happen to be one where water is abundant, presents a most animated scene, the air being full of small flocks hurrying to and fro, and the sandy banks and exposed parts of the river-bed being in some places thickly covered by them, while the chorus formed by many hundreds of clamorous bird voices creates quite a babel of sound.

The food of this species, like that of other Sand-Grouse, consists chiefly of the seeds and tender parts of various desert plants. Its note is a ringing "catarr" or "guettarr," whence its name in Arabic and other languages.

In its habits generally and in its mode of breeding, it resembles its congeners. Its eggs, however, differ from those of the preceding species in being rather more richly coloured and marked. They are three in number and generally of a warm ochreous colour, with pale lilac-grey shell-marks, and rufous-brown surface-blotches. Average measurements 45×30 mm.

The present and other species of Sand-Grouse appear to thrive and breed freely in captivity. Hybrids between *P. alchata* and *P. a. pyrenaicus* have been obtained and some were deposited in the gardens of the Zoological Society of London in 1900.

PTEROCLES SENEGALLUS (Linnæus).

SENEGAL SAND-GROUSE.

Tetrao senegallus, *Linn. Mantissa*, p. 526 (1771).

Pterocles senegallus, *Shelley, Birds of Egypt*, p. 220 (1872).

Pteroclorus senegallus, *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxii, p. 14.

Pteroclorus senegalus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 234 (1867);

Koenig, J. f. O. 1888, p. 254; *id. J. f. O.* 1893, p. 73.

Pterocles senegalus, *Whitaker, Ibis*, 1895, p. 105.

Description.—**Adult male**, summer, from Tripoli.

Crown and upperparts generally sandy-buff, the former encircled by a greyish-blue band extending to and round the nape; primaries greyish, with blackish shafts and margins to the inner webs; secondaries blackish, tipped with yellowish-buff; upper wing-coverts madder-brown, tipped with buff;

median rectrices, which extend two or three inches beyond the others, brownish-buff, darker at the tips; the remaining tail-feathers brown at base, then blackish, tipped with white; chin and throat yellow; upper breast bluish-grey, shading into sandy-buff, the middle of the abdomen with an irregular blackish streak running down it as far as the crissum and under tail-coverts, which are whitish.

Iris almost black; bill bluish-grey; feet whitish.

Total length 12 inches, wing 8·25, culmen ·50, tarsus ·90.

Adult female, spring, from Tarfaoui, South Tunisia.

Upper-parts pale sandy-isabelline, striped on the crown and nape, and spotted elsewhere with blackish-brown; the two central rectrices, which project rather more than an inch beyond the others, dark grey; primaries pale brown, becoming darker on the tips; entire throat, cheeks, and sides of the neck yellow; upper breast pale creamy-isabelline, spotted with dark brown; rest of the underparts pale creamy-isabelline, with a broad irregular dark brown stripe running down the middle of the abdomen.

Soft parts and measurements as in the male.

The young bird has the upper plumage sandy-buff marked with irregular wavy dark lines; the throat is dull white, below which are some rather darker feathers with still darker wavy lines; the rest of the underparts are like those of the adult; but the median rectrices do not extend beyond the other tail-feathers.

This species appears to be the least plentiful of the four species of Sand-Grouse found in Tunisia, and its range there seems to be restricted to the more southern inland districts and the Chott region. I have, indeed, never met with the species myself in Tunisia, although I have examples of it, obtained by my collectors at Tarfaoui, a district lying to the north-west of the Chott Djerid, and possibly it is not uncommon in that and other localities in the Chott region.

In Algeria *P. senegallus* is particularly abundant in some parts of the Sahara, and in certain localities is more plentiful than *P. coronatus*, or indeed than any other species of Sand-Grouse. I met with it in large flocks at Sidi-Okbar, near Biskra, and Dr. Koenig appears to have found it equally abundant in other localities in the Algerian Sahara.

Mr. Dodson found this Sand-Grouse remarkably numerous in Tripoli, in the neighbourhood of Oumsinerma, not far from the coast of the Gulf of Syrtes, and obtained several specimens, together with the young and eggs of the species. The range of *P. senegallus* apparently extends throughout North Africa, eastward through Arabia, Persia and Afghanistan, as far as India.

In the localities it frequents and in its habits the present species does not seem to differ appreciably from its congeners. Its food, flight and movements generally also appear to be the same as those of other Sand-Grouse. Its note or cry somewhat resembles that of *P. coronatus*.

It appears to be a late breeder, the clutch of three eggs here described having been taken by Mr. Dodson in Tripoli on July 17th. These eggs are less glossy than those of *P. arenarius*, and of a stone or buff colour, with very faint lilac-grey shell-marks and more distinct yellowish-brown surface-blotches; they measure 41×27 mm.

According to Mr. Dodson, the male of this species, when nesting, brings water to its mate, and both parents give their young drink until they are able to fly.

PTEROCLES CORONATUS, Lichtenstein.

CORONETTED SAND-GROUSE.

Pterocles coronatus, *Licht. Verz. Doubl.* p. 65 (1823); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxii, p. 23; *Loche, Expl. Sci. Alg. Ois.* ii, p. 230 (1867); *Koenig, J. f. O.* 1888, p. 254; *id. J. f. O.* 1893, p. 73; *Whitaker, Ibis*, 1894, p. 97; *Erlanger, J. f. O.* 1900, p. 31.

Description.—**Adult male**, spring, from Oglet-Zellès, South Tunisia.

Middle of the forehead, lores, region round the eye, and sides of the chin creamy-white; sides of the forehead and middle of the chin jet-black; throat, cheeks, and neck yellow; centre of the crown dark isabelline, surrounded almost entirely by a circle of pale blue-grey; rest of upper plumage sandy-isabelline, the scapulars and upper wing-coverts marbled with darker and lighter shades of isabelline; quills brownish-grey; median rectrices, which are only slightly elongated, dark isabelline, the remaining tail-feathers with a narrow black subterminal band, and tipped with white; underparts below the throat uniform pale sandy-isabelline; under tail-coverts white.

Iris almost black; bill and claws bluish-slate; feet whitish.

Total length 11·50 inches, wing 7·90, culmen ·50, tarsus ·90.

Adult female, spring, from Oglet-Zellès, South Tunisia.

Upper plumage generally very pale sandy-isabelline, lightest on the forehead and eye-region, streaked on the crown and nape, and barred elsewhere with vermiculated blackish lines; throat and neck yellow; breast barred with pale brown; rest of the underparts as in the male.

Soft parts and measurements as in the male.

Observations.—Between examples of this species from Tunisia and those

from Tripoli there appears to be some difference in the coloration of the plumage independent of that due to seasonal variation, the former being paler and more uniform, while the latter are darker and more strongly marked. The difference appears to be constant in a large series, and almost sufficient to necessitate subspecific distinction.

As pointed out by me (*Ibis*, 1894, p. 97), this Sand-Grouse is not at all uncommon in Southern Tunisia, and it also occurs in the Algerian Sahara and in Tripoli. Further east the species is to be found in Egypt, Arabia, Syria, Persia and India.

Its range in Tunisia appears to be confined to districts south of the Atlas, where, however, it is in some parts abundant, though perhaps somewhat locally distributed. I found the species most plentiful on the western plains near Oglet-Zellès and Oglet-Alima, and may here repeat what I wrote regarding the bird in the *Ibis*, as above:—

“During my journey I met with it only at one place, viz., at Oglet-Alima, between Gafsa and Tamerza, where it was plentiful, coming in flocks of from ten to fifty birds to drink at the water-holes made by the Arabs in the dry river-beds. I saw it first on March 12th, when the flight commenced about 7 a.m. and lasted till nearly 10 o'clock, after which hour the birds disappeared. During the remainder of the day I only met with an occasional straggler on the plains near Oglet-Alima, and think the bulk of the birds must have gone further south, towards the desert, nor did they return to drink here in the evening. The following morning, however, they were at the water-holes again in full force. They are very strong on the wing, and fly at a considerable height, uttering a loud clucking note all the time, something like that of the Common Fowl. So loud is the note, and so high do the birds fly, that they can often be distinctly heard when scarcely visible to the naked eye. Though very shy and difficult to approach, they do not leave the neighbourhood when disturbed, but return to the water-holes, or their immediate vicinity, till the hour arrives for their departure. As in *P. arenarius*, their feathers lie very closely together, necessitating heavy shot to bring them down. I secured fourteen specimens in all, between males and females. The flesh of this Sand-Grouse is excellent eating, and not at all dry or tasteless, the breast having dark and light meat the same as Black-game. I was unable to ascertain whether this species breeds in the district in which I found it, but think it not unlikely.”

Since writing what precedes I have revisited the districts above spoken of, and had the pleasure of again meeting with *P. coronatus*. I have also observed the species at one or two places somewhat further north, though not north of the Atlas, and I doubt it ever straying beyond that range.

Canon Tristram and Loche both include this species among the birds of the Algerian Sahara, and Dr. Koenig appears to have met with it between Gardaia and Oued N'ça, though he failed to secure a specimen of it. In Tripoli Mr. Dodson found the species in two different localities and obtained several examples.

From Marocco I have no specimens or notes of its occurrence.

P. coronatus frequents the same description of country as its congeners, and like them is shy and wild, but less so perhaps than *P. arenarius* and *P. alchata*. Its flight is swift and powerful, and when going to and from its drinking resorts the bird will traverse great distances. On the ground its walk resembles that of a Pigeon. Its note is very different from that of the two above species, and may be fairly well rendered by the syllable "ka" or "kla," repeated several times. Its Arabic name of "Kleikla" or "Klekla" is no doubt derived from its cry. When coming to drink the birds are very noisy, and their approach is heralded by their cry long before they are near the spot for which they are bound. The Arabs occasionally capture this Sand-Grouse alive, and I have had living examples offered to me.

The food of this species, like that of other Sand-Grouse, consists chiefly, if not entirely, of the seeds and tender parts of desert plants. According to some authors, small insects are also eaten by Sand-Grouse, but in the stomachs of those which I have examined I never found anything but seeds and vegetable matter.

I have never been fortunate enough to discover its eggs, but apparently the species is a late breeder and does not usually lay until the middle of May. The number of eggs in a clutch is said to be three, and their colour, according to Canon Tristram, is ashy-white with a few almost obliterated pale brown markings, while their measurements are given as 1.5 by 1.06 inch.

Loche states that he has taken the eggs of this species, and that they are of a pale greyish-colour, covered with indistinct violet-grey and dull rufous markings, and measure about 44 × 32 mm., but these measurements seem more applicable to eggs of the larger species of Sand-Grouse.

Order GALLINÆ.

Family PHASIANIDÆ.

CACCABIS PETROSA (Gmelin).

BARBARY PARTRIDGE.

Tetrao petrosus, *Gmel. Syst. Nat.* i, p. 758 (1788).

Caccabis petrosa, *Gray, List of Birds*, pt. iii, *Gall.* p. 37 (1844); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxii, p. 120; *Loche, Expl. Sci. Alg. Ois.* ii, p. 236 (1867); *Koenig, J. f. O.* 1888, p. 258; *id. J. f. O.* 1893, p. 77; *Whitaker, Ibis*, 1894, p. 98.

Perdix petrosa, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 18 (1846).

Caccabis petrosa petrosa, *Erlanger, J. f. O.* 1900, p. 25.

Description.—**Adult male**, spring, from Kasrin, Central Tunisia.

Middle of the forehead, crown, and nape chestnut; sides of the forehead and crown, cheeks, and the entire throat bluish-grey; ear-coverts pale chestnut; a bright chestnut collar, spotted with white on the sides, almost completely encircles the neck; back and rest of the upper-plumage generally greyish-brown; some of the scapulars and upper wing-coverts bluish-grey, margined with pale chestnut; median rectrices grey-brown, the remainder with the greater part of the terminal portion bright chestnut; upper breast dull bluish-grey, becoming pale chestnut on the lower breast; centre of abdomen, crissum, and under tail-coverts rufous-buff; flanks conspicuously barred with regular lines of white, black and chestnut, the bases of the feathers dove-blue.

Iris hazel; bill and feet coral-red.

Total length 13 inches, wing 6.50, culmen .75, tarsus 1.75. The tarsi are furnished with knobs or blunt spurs.

Adult female similar in coloration, but rather smaller, and without spurs on the tarsi.

The Barbary Partridge is most abundant in Tunisia, and is the only species of Partridge to be found in the Regency, and throughout North-west Africa generally. It is to be met with in considerable numbers in suitable localities throughout Algeria and Marocco, likewise in Tripoli, and in the Canaries.

The distribution of the species is somewhat peculiar, for, besides being found throughout North-west Africa and the Canaries, it occurs

in the Island of Sardinia and on the Rock of Gibraltar, but apparently not on the Spanish mainland, nor yet in the Island of Sicily, where one might have expected to find it, being so near the African coast. It is probable, however, that the Barbary Partridge was imported to the Canaries and Gibraltar, and possibly also to Sardinia. An attempt was made a few years ago, by a friend of mine to introduce the species into one of the small islands off the South-west coast of Sicily, but without success. *C. saxatilis* is the only species of Partridge found in Sicily.

C. petrosa is recorded by Von der Mühle and Lindermayer as having occurred in Greece, and is also said to have been met with in one or two other localities, but on doubtful authority.

In North Tunisia the "Hadjela," as this bird is called by the Arabs, is extremely plentiful on most of the brush-covered hillsides, which are its favourite resorts, and I have enjoyed many a good day's sport Partridge-shooting in various localities. The French authorities now very wisely enforce the game-laws in the Regency wherever they can, but this is not easy to do in remote districts, and throughout a great portion of the country it is absolutely impossible. Robbing the nests of their eggs is probably the commonest and most destructive form of Arab poaching, and as unfortunately the Partridge's nest is not difficult to find, few escape the sharp eyes of the native poacher in localities situated near towns or villages. Though vastly inferior to that of most other Partridges, the flesh of *C. petrosa* is fairly good eating, and during the season large numbers of the birds find their way to the Tunis market, and are occasionally exported to Europe.

In Central and Southern Tunisia, although less abundant, *C. petrosa* is also generally to be met with wherever there is water and cover. It is even to be found in the arid and barren districts of the far south, provided there is some well or water-hole in the neighbourhood where it can drink, and a few clumps of oleander or tamarisk bushes to shelter it.

The birds found in these desert regions are, as a rule, rather paler in colour than those met with further north, and may be referred to the following subspecies.

Like other members of the family, *C. petrosa*, though essentially monogamous, is to be found in coveys during the greater part of the year. Pairing generally commences towards the end of February or early in March, but I have occasionally met with the birds still in coveys at the end of March and even at the beginning of April.

The species is strictly sedentary in its habits and rarely strays far from the spot where it was hatched. Its flight is similar to that of its congeners, and like them it is a great runner, usually preferring to trust to its legs for safety rather than to its wings. It appears to perch occasionally on low trees and bushes. Its food consists chiefly of grain and the seeds and tender shoots of wild plants, and to a certain extent, of insects. Although a shy bird in its natural state, it becomes very tame in captivity, and is often kept in cages and aviaries.

The call note of this species is a monotonous cry something like the word "*kià*" repeated several times.

Nesting usually commences towards the end of March and continues throughout that and the two following months. The nest is merely a depression in the soil under the shelter of a bush. The number of eggs in a clutch is generally from ten to fifteen, and their colour is pale yellowish-buff, freckled with minute reddish-brown spots and occasionally blotched with larger spots. The eggs are, however, subject to considerable variation in their marking. Average measurements 41×30 mm.

The Francolin (*F. francolinus*) is said to have once existed in Tunisia and other parts of North-west Africa, but I know of no authentic instance of its occurrence anywhere in that region during recent years. Regarding the extinction of the Francolin in Sicily and elsewhere in Southern Europe, articles by the late Lord Lilford and other ornithologists have from time to time appeared in the pages of the *Ibis*, but the following short "requiem" notice of the bird may not perhaps be void of interest, as coming from the pen of the owner of the estate which was the last refuge of the species in Sicily.

Baron Bordonaro, the gentleman in question, and a friend of mine writes to me as follows concerning the species:—

"Regarding the occurrence of the Francolin at one time on my estate of Falconara, I may say that in 1854, when my father purchased the property from the late Prince Radali, the species was still in existence, and examples of it were not unfrequently obtained. Later on, owing to the improved cultivation of the land and the total extirpation of the canes, which formed its chief refuge, the Francolin gradually became rarer, and finally disappeared entirely. This happened about the year 1864, about which time the last bird of the species that I can remember having been obtained at Falconara was

killed by one of my father's "cacciatori," and its skin was prepared and preserved in our house until a few years ago.

"I am unaware of any Francolin having been subsequently obtained on the estate, as recorded by Doderlein, but this is quite possible."

Francolinus bicalcaratus, the Double-spurred Francolin, appears to occur on the west coast of Morocco as far north as Rabat, and is said to be not uncommon in those districts, living examples of the bird being sometimes sent from Mogador to England.

CACCABIS PETROSA SPATZI (Reichenow).

DESERT BARBARY PARTRIDGE.

Caccabis spatzi, *Reichenow, J. f. O.* 1895, p. 110; *Koenig, J. f. O.* 1896, p. 162.

Caccabis petrosa spatzi, *Erlanger, J. f. O.* 1900, p. 27.

Description.—**Adult male**, spring, from Meretba, South Tunisia.

Differs from *C. petrosa* in its paler and more sandy coloration.

Adult female resembles the male, but is rather smaller and has no spurs.

The Barbary Partridge found in the more desert districts south of the Atlas is somewhat paler in coloration than that met with in Northern and North-central Tunisia, and has been distinguished by Prof. Reichenow under the name of *Caccabis spatzi* (*J. f. O.* 1895, p. 110). The difference from what may be considered typically coloured examples is slight, and apparently, variable, but is perhaps just sufficiently marked to call for subspecific separation. The two forms naturally do not differ in their habits, notes, food and nidification.

COTURNIX COTURNIX (Linnæus).

QUAIL.

Tetrao coturnix, *Linn. Syst. Nat.* i, p. 278 (1766).

Coturnix coturnix, *Licht. Nomencl. Avium*, p. 84 (1854); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxii, p. 231; *Erlanger, J. f. O.* 1900, p. 24.

Perdix coturnix, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 18 (1846).

Coturnix communis *Loche, Expl. Sci. Alg. Ois.* ii, p. 239 (1867);
Whitaker, Ibis, 1894, p. 98.

Coturnix dactylisonans, *Koenig, J. f. O.* 1888, p. 257; *id. J. f. O.*
1893, p. 75.

Description.—**Adult male**, spring, from North Tunisia.

Upper plumage generally yellowish-brown, mottled in some parts with dark brown and black, and striped conspicuously with long streaks of bright buff, bordered with black; entire upper wing surface light brown, barred with rufescent-buff; chin and centre of throat black; underparts generally buff, darker on the breast and flanks, and striped in part with white, black and rufous.

Iris hazel; bill and feet flesh-colour.

Total length 6.50 inches, wing 4.25, culmen 0.50, tarsus 1.

Adult female similar to the male, but without any black on the chin and throat, and with the breast more or less spotted.

Observations.—There is considerable individual variation in the colouring and marking of the Quail, apart from abnormal "varieties" or "sports," which are also not unfrequently met with, my collection containing examples of albinism, isabellanism, and melanism. The so-called *Synæcus lodoisiæ*, Verr. & Des Murs (*Rev. et Mag. Zool.* 1862, p. 225, pl. 11), which was captured in Lombardy and is preserved in the Turati collection at Milan, appears to be merely a case of melanism, its coloration greatly resembling the Australian genus *Synæcus*.

The Quail is as abundant in Tunisia as it is in most parts of the Mediterranean, the spring passage of the species commencing about the middle of March and lasting till the end of May, while the return passage takes place throughout the month of September and the early part of October. During the height of the vernal migration, which may be said to be between April 20th and May 10th, the number of Quails which pass is sometimes very large, though of recent years not so great as it used to be. The bulk of the birds merely pass through the Regency, but many pairs remain and breed in the country, and a certain number also winter there.

The return passage in autumn is far less important numerically than the spring one. The contrary seems to be the case in some other Mediterranean countries, where the autumnal migration is more marked. This seems to indicate that either different routes are taken by the birds in the two seasons, or that different localities on the same route are chosen as halting or resting places on the outward and return journey. An argument in favour of the latter theory is

supplied by the two small islands of Favignana and Levanzo off the west coast of Sicily, for in spring the latter, which is the more northerly island, is visited by large numbers of Quails, while the former, the more southerly island, has hardly any; but the reverse is the case in autumn, Favignana abounding with the birds and Levanzo being almost destitute of them. The probable explanation of this is that during their spring passage northwards the Quails on reaching Favignana, see Levanzo just beyond it, and pass on to the latter, but as no land is visible further north, they alight there; in autumn the opposite is the case. A further proof of this appears to be afforded by the fact of the Quails, which used once to be netted in large numbers on Levanzo during the spring migration, being almost invariably found entangled in the meshes on the north side of the nets, showing that the birds, on reaching the northern extremity of the island, and seeing no land before them, had turned back to alight on the island.

In general, sea-coast localities with a northern aspect seem to be visited by Quails in spring more than in autumn, and those with a southern aspect in autumn more than in spring, but there is no doubt that the migration of this, and of other species of birds, is greatly influenced by the direction and velocity of the wind, and localities which abound with Quails on certain days, may have few or even none at all on others.

The migration of Quails appears to be effected entirely during the night and early morning hours, and ceases at daybreak, when the birds settle down for the remainder of the day.

In the immediate vicinity of the town of Tunis good Quail-shooting may often be had during the month of April and early part of May, although as the arrival of the birds is dependent to a great extent on the wind prevailing during the night and early morning, there is always an element of uncertainty — “the glorious uncertainty of chance”—in connection with the sport, and a blank day must often be expected.

In Algeria, Marocco and Tripoli the Quail is as plentiful as it is in Tunisia and most other parts of the Mediterranean, though there can be no doubt that the species has of late years considerably decreased in numbers. In Sicily this diminution is very apparent, and has recently become so marked, that it forms matter for serious consideration. No better proof of the decrease in the annual passage of

Quails in Italy can be had than the fact that the netting of the birds has been discontinued in many localities, where formerly the practice used to be carried on, and was a source of considerable profit. The falling off in the number of Quails is no doubt principally due to netting, and were it possible, by means of international action, to introduce measures to prevent this wholesale process of extermination throughout the Mediterranean generally, it would indeed be a matter for congratulation.

Egypt appears to be the country in which most of this netting is now carried on, and Marseilles the port to which most consignments of Quails are despatched, these sometimes amounting to some hundreds of thousands of birds. In Italy the taking of Quails is prohibited after a certain date, and I have known large consignments confiscated, and the birds distributed among the hospitals.

Quails are taken in other ways besides by stretching nets across their line of passage; one of the most curious of these, if not the most lucrative, being that of torch-light netting at night, which is carried on in many parts of Southern Italy. A sharp-eyed man or boy, armed with a kind of landing net, and with a flaming torch stuck in his hat, walks quietly over some bare plain or other locality where the Quails are known to be in the habit of alighting on their arrival, and on seeing a Quail on the ground he claps his net over it, the poor bird being too dazed by the strong light to attempt to use its wings. I once accompanied one of these Quail-catchers at Sorrento, starting off at the inconvenient hour of 2 a.m.; but the wind had not been favourable for the passage of the birds in that particular district, and I saw few taken, though enough to learn the process.

In its habits the Quail cannot be called gregarious, for although large numbers of the birds, when on migration, may often be found together in the same field or on the same hill-side, they are not in bevs or flocks, but singly or in pairs. It is, however, probably not unusual for the species to migrate in flocks, and I have occasionally, when going out shooting at an exceptionally early hour and before the sun was up, met with as many as twenty or thirty individuals together, these *packs* probably consisting of birds that have just arrived, and not yet dispersed or settled down for the day. If disturbed before they have settled down, the birds are restless, and on rising will fly far; but as the day draws on they become very sluggish and disinclined to move, allowing themselves to be almost

trodden on before taking to flight, and even then, rarely flying more than about one hundred yards. Their flight is straight and swift, and as a rule not more than three or four feet from the surface of the ground. In very rough and hilly country, particularly should a high wind be blowing, the bird's flight becomes more twisting, and affords a better test of the sportsman's skill.

The Quail, as a rule, frequents cornfields and open plains covered with herbage of some sort, but when on migration, may be found in any open spot, on bare mountains and other rocky localities where it can scarcely hide itself, and at times even on the sea-shore. Olive-groves, which are open underneath, are also much resorted to, and dry sandy places are not unfrequently visited by this species, which, like other gallinaceous birds, is fond of "dusting." Like its allies, too, the Quail is a great runner, and often makes use of its legs in preference to its wings. It feeds chiefly on the seeds of various wild plants and on grain, but also to a considerable extent on insects and worms. When kept in captivity, as they are in many large towns for the table, Quails become very fat. The call-note of the male in spring is a loud and clear "*whit-wer-whit*," that of the female being more like "*whiu-whiu*." When suddenly flushed and flying off, a shrill note of alarm is uttered.

The Quail is chiefly monogamous, but appears also to be at times polygamous. During the breeding season the males become very pugnacious, and pitched battles are often fought between them. The species is rather a late breeder, and does not usually commence nesting until May. The nest is merely a depression in the soil, with a few grass-bents or other soft plant-material, while the eggs, six to twelve in number, are as a rule, glossy-yellowish or buff-coloured, strongly marked with olive-brown and blackish blotches, and measure about 28 × 23 mm. The eggs, however, vary a good deal both in size and in marking.

Family TURNICIDÆ.

TURNIX SYLVATICA (Desfontaines).

ANDALUCIAN HEMIPODE.

Tetrao sylvaticus, *Desfontaines, Mém. de l'Acad. Roy. des Sc. Paris*, 1787, p. 500, pl. xiii.

Turnix sylvatica, *Drake, Ibis*, 1867, p. 428; *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxii, p. 537; *Loche, Expl. Sci. Alg. Ois.* ii, p. 242 (1867); *Koenig, J. f. O.* 1888, p. 255; *id. J. f. O.* 1893, p. 74; *Whitaker, Ibis*, 1898, p. 126.

Hemipodius (Turnix) tachydromus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 19 (1846).

Description.—**Adult male**, spring, from North Tunisia.

Upper parts generally vinous-brown, mottled with black and white, the crown with an irregular white streak running down the middle; the greater part of the upper wing-coverts conspicuously marked with white, black and chestnut; chin white, sides of head and superciliary stripes whitish, spotted minutely with black; lower part of throat, neck and upper breast pale ferruginous; sides of neck, breast, and flanks buff white, spotted with black and rufous; abdomen and crissum white; under tail-coverts and thighs pale ferruginous.

Iris pale yellow; bill and feet light brown; no hind toe.

Total length 6 inches, wing 3.25, culmen .50, tarsus .90.

Adult female similar to the male, but rather brighter in coloration and a good deal larger, the wing usually measuring about 3.65.

The young are paler and less richly marked, and with only a slight indication of orange colour on the breast.

This species, also known as the Three-toed Quail, is not at all uncommon in the north of the Tunisian Regency, but so far as I am aware, does not occur south of the Atlas. It seems to be strictly a resident and non-migratory bird, and is, moreover, extremely local in its distribution, apparently requiring a particular description of vegetation and environment for its habitat.

In Algeria and Marocco the species is to be found in suitable localities north of the Atlas. According to von Heuglin it occurs in the vicinity of Benghasi in Cyrenaica, and ranges as far east as Egypt, where it is very rare. A closely allied, though somewhat smaller species, *T. lepurana* (Smith), inhabits Africa further south, and has been obtained in South Arabia.

North of the Mediterranean, *T. sylvatica* is apparently now only to be found in certain districts of Southern Spain, and possibly in Portugal, though it is probably not uncommon in some of the localities where it occurs.

In Sicily, where the species was once plentiful in all the uncultivated parts of the southern and south-western districts, it now seems to be totally extinct, and I have not heard of a single example having been met with in the island for several years.

The following is a copy of a letter I wrote (*Ibis*, 1896, p. 290), less than ten years ago, regarding this species, and I can only express the regret that my fears, there set forth, as to its probable approaching extinction in Sicily have unfortunately been so soon verified:—

“ I regret to say that the Hemipode, once so plentiful in Sicily, must now be looked upon as a *rara avis* here, and I only hope I may be mistaken in thinking that it will, at no distant date, be totally extinct in this island. Professor Doderlein, writing of *Turnix sylvatica* in 1871 (‘Avifauna del Modenese e della Sicilia,’ p. 168), reported the species as plentiful in Sicily at that time, he himself having often killed as many as ten to fifteen of these birds in a day in the southern and south-western districts of the island.

“ I myself remember this bird fairly plentiful in the above districts so recently as the year 1890, its favourite haunts being the so-called ‘sciarre,’ or tracts of uncultivated moorland, which extend for many miles along the south coast of Sicily, running parallel with it, but lying a little way inland. Here, among the clumps of dwarf broom-palm and other scrub vegetation, one might have been sure of meeting with *Turnix sylvatica*, and, with a good dog and decent luck, of making a fair bag. A friend of mine, one day when riding over the moorland near Mazzara, rescued one of these birds from the clutches of a Hawk that had just seized it.

“ In those days one might often have seen the Hemipode in a cage hung on the wall of a peasant’s cottage. During the last fifteen years or so, however, the species has gradually, but steadily, been decreasing in numbers, and I have not seen a single specimen in the flesh since the year 1891, when two or three were sent me from Campobello near Mazzara. Indeed, for the past two years I have been endeavouring to procure another specimen, without success, nor can I hear of any having been obtained during this period anywhere in the island. This leads me to fear that the Hemipode, following in the steps of the

Francolin, will, unfortunately, ere long be a thing of the past in Sicily. The reason for this is probably to be looked for in the fact of the greatly diminished area of country adapted to the requirements of this species, much of the former waste land in Sicily having been reclaimed of late years. The want of efficient protective game-laws may perhaps also be partly to blame, although not, I think, to any great extent, for the *Quaglia tridattile*, or *Quaglia triugni*, as it is called here, has never been held in great esteem by the Sicilians, either as a bird for the table or as affording much sport, and has consequently escaped persecution on the part of the native gunner and fowler."

As a straggler the present species is said to have occurred in two or three other parts of Italy, as well as in France, and even in England, but satisfactory evidence is wanting in most of the cases recorded.

In Tunisia, fortunately, and generally throughout North-west Africa, there is, for the present, no fear of *T. sylvatica* becoming extinct, for although nowhere what can be called plentiful, the species is by no means uncommon in many districts north of the Atlas. It is indeed probably more abundant than it appears to be, for owing to the bird's skulking habits and its reluctance to take to flight, it may easily be passed by, without the aid of a good dog. So loath is it to use its wings, that examples of it are not unfrequently captured alive, either by the hand, or by the sportsman's dog. Specimens may often be seen in the Tunis market, with the throat cut in the orthodox Mahomedan fashion.

As above stated this Quail chiefly frequents uncultivated lands, and evinces a partiality for localities covered with the "palmetto" or dwarf broom-palm (*Chamerops humilis*), and similar low-growing plants, where it can easily hide itself, and from which it is difficult to dislodge, particularly when it has been already flushed. Its flight is not very powerful or prolonged for any distance, but the bird is a great runner.

In its habits it is neither sociable nor gregarious, being found, as a rule, singly, or in pairs during the nesting season. It feeds on the seeds of various wild plants and on insects and worms.

Its usual note is a low "*eru*," repeated two or three times, but according to Loche, the species, at daybreak and sunset, utters a peculiar deep and mournful note, which can only be compared to the subdued cry of a Bittern. Both sexes utter this note, but the male

more frequently than the female. Loche kept these birds in confinement, and consequently had ample opportunity of listening to them and of hearing them utter this strange sound. To this note is due the bird's Spanish name of *Torillo*, which signifies a little bull. When flushed and flying off the species utters a weak and querulous cry of alarm.

Though shy in its wild state, this bird becomes remarkably tame in captivity, and like others of the genus, breeds freely in confinement.

The species appears to be strictly monogamous, and rears two broods in the course of the year, the incubation of the eggs, and the bringing up of the young when hatched being undertaken principally, if not entirely, by the male. The nest, a slight structure composed of grasses, is placed on the ground in the middle of a low bush, and the eggs, of which the complement appears to be four, are of a light buff-colour, closely spotted with violet-grey shell-marks and dark brown surface-marks. Average measurements 25×21 mm.

Order GRALLÆ.

Family RALLIDÆ.

RALLUS AQUATICUS, Linnæus.

WATER-RAIL.

Rallus aquaticus, *Linn. Syst. Nat.* i, p. 262 (1766); *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 20; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 21 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 336 (1867); *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 79; *Whitaker, Ibis*, 1896, p. 98; *Erlanger, J. f. O.* 1900, p. 46.

Description.—**Adult male**, spring, from Source des Trois Palmiers, Central Tunisia.

Upper plnmage generally dark olive-brown, streaked with black, darkest on the quills and tail; sides of head, neck, throat, breast and upper abdomen bluish-slate; lower abdomen and flanks black, barred with white; thighs and under tail-coverts whitish-buff.

Iris red; bill reddish-brown, darker above and lighter below; feet grey-brown.

Total length 9 inches, wing 4, culmen 1.50; tarsus 1.65.

Adult female similar to the male, but rather duller and smaller.

The Water-Rail is common in winter and during the periods of passage in all suitable localities north of the Atlas, and may also be met with, though not so often, south of those mountains. It breeds in the Regency and is to be found in certain numbers throughout the year. The species is abundant and resident in Algeria, and is probably so in Marocco also, although I have no positive knowledge of its nesting there.

The Water-Rail frequents marshy spots and wet localities overgrown with dense aquatic vegetation, where it can easily hide itself, and whence it is with difficulty dislodged. It is solitary and secretive in its habits, and is rarely found otherwise than singly, or in pairs during the breeding-season. Its flight is feeble and seldom prolonged for any distance, but it swims well and is very clever in threading its

way in and out among cane-brakes and tangled growth. When flying short distances this and allied species carry their legs hanging down, but whether they keep the legs in this position when accomplishing long journeys on migration it is difficult to say.

The Water-Rail feeds on worms, insects, snails and the tender shoots and roots of aquatic plants.

Its usual note is a loud and clear "*creek*," and its call note a sharp "*wheet*." During the breeding-season the species is very noisy. Its nest, which is generally placed among reeds or similar vegetation, though not actually on the ground, is composed of dry rushes and leaves, and its eggs, usually from six to eight in number, are of a pale buff-colour, spotted with a few pale lilac shell-marks and dark rufous surface-blotches. Average measurements 35 × 25 mm.

PORZANA PORZANA (Linnæus.)

SPOTTED CRAKE.

Rallus porzana, *Linn. Syst. Nat.* i. p. 262 (1766).

Porzana porzana, *Sharpe's ed. Layard's, Birds S. Africa*, p. 613 (1884); *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 93; *Erlanger, J. f. O.* 1900, p. 45.

Gallinula porzana, *Malherbe, Faune Orn. de l'Alg.* p. 33 (1855).

Porzana maruetta, *Loche, Expl. Sci. Alg. Ois.* ii, p. 338 (1867); *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 79; *Whitaker, Ibis*, 1895, p. 105.

Description.—**Adult male**, spring, from Source des Trois Palmiers, Central Tunisia.

Forehead, and sides of the crown bluish-grey; centre of the crown, and upper plumage generally olive-brown, striped with black, and spotted with white, the scapulars and upper wing surface streaked and barred irregularly with white; throat bluish-grey; fore neck and upper breast greenish-grey, spotted with white; lower breast bluish-grey; centre of the abdomen white; sides and flanks olive-brown, barred with white; crissum and under tail-coverts buff.

Iris reddish-hazel; bill yellowish, and red at the base of the upper mandible; feet greenish.

Total length 8 inches, wing 4·60, culmen ·75, tarsus 1·40.

Adult female similar to the male, but rather smaller, and duller in coloration.

Like the preceding species the Spotted Crake is abundant in winter and during the periods of passage in all suitable localities in North Tunisia, and is also to be met with, though less frequently, in the south of the Regency. It appears also to breed in Tunisia, as Erlanger found the species in the marshes of the Oued Kasrin as late as June 6th. Loche states that the species is resident in Algeria, and it is probably equally so in Marocco.

In its habits the Spotted Crake does not differ appreciably from the Water-Rail, and like that bird frequents marshy localities where aquatic vegetation is plentiful, and is extremely solitary and secretive. Wet ditches covered with a tangled growth of grasses and brambles are its favourite resorts, and when hidden in such spots, it is not easily driven out. At no time does it readily take to flight, but prefers to escape from its pursuers by running, and by creeping off among the thick herbage. Its flight is heavy and feeble, but it runs and swims remarkably well. Its food is similar to that of the Water-Rail. Its call note is a sharp "*whit-whit*," uttered chiefly in the evening. In its nidification it does not differ greatly from the preceding species, building its nest of dry flags and rushes among reeds, but not actually on the ground. Its eggs, from eight to twelve in number, are of an olive-buff colour, flecked and spotted with pale lilac shell-marks and dark rufous surface-blotches. Average measurements 33 × 23 mm.

PORZANA BAILLONI (Vieillot).

BAILLON'S CRAKE.

Rallus bailloni, *Vieill. Nouv. Dict.* xxviii, p. 548 (1819).

Porzana baillonii, *Degl. & Gerbe, Orn. Eur.* ii, p. 258 (1867).

Porzana intermedia, *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 103.

Zapornia pygmæa, *Loche, Expl. Sci. Alg. Ois.* ii, p. 340 (1867).

Gallinula pusilla, *Koenig, J. f. O.* 1888, p. 275; *id. J. f. O.* 1893, p. 88.

Porzana bailloni, *Whitaker, Ibis*, 1895, p. 105.

Description.—**Adult male**, spring, from Sousa, Central Tunisia.

Centre of the crown, nape, and upperparts generally russet-brown, tinged with olivaceous, the crown slightly streaked with black, the centre of the back, rump, and upper wing-coverts flecked with black and white; sides of

the head, throat, breast, and upper part of the abdomen slate-blue; lower part of the abdomen, flanks, and under tail-coverts black, barred with white.

Iris orange; bill green, and darker at the tip; feet greenish.

Total length 7 inches, wing 3·40, culmen ·70, tarsus 1.

Adult female similar to the male, but rather duller in coloration, and with the underparts paler.

This small Crake is not so abundant in the Regency as the two preceding species, but is to be met with during the winter and periods of passage both north and south of the Atlas. It seems also to be resident to a certain extent in North-west Africa, as Salvin found a nest of the species at Zana, and Mr. J. H. Gurney, junr., obtained one at Laghouat in the Algerian Sahara. According to Mr. Tyrwhitt-Drake and Favier, this Crake is rare in Marocco. It occurs, however, far south in Africa.

Like its allies the present species frequents marshy and wet localities, where aquatic vegetation is plentiful and affords a safe retreat. In its habits generally, it does not differ greatly from the two preceding species, being, like them, solitary and retiring, and of feeble flight, but running and swimming with facility.

Its note is said to be not unlike that of the Spotted-Crake, though distinguishable by a practised ear. Its food consists of insects, worms, small molluscs and, to a slight extent, of vegetable matter.

Its nest, which is placed among reeds or rushes, is composed of pieces of dry flags and other leaves, loosely put together, and the eggs, usually seven or eight in number, are of an olivaceous colour, closely spotted all over with olive-brown. Average measurements 24 × 19 mm

PORZANA PARVA (Scopoli).

LITTLE CRAKE.

Rallus parvus, *Scop. Ann.* i, p. 108 (1769).

Porzana parva, *Doderl. Avif. Sicil.* p. 200 (1869); *Whitaker, Ibis*, 1896, p. 98.

Zapornia parva, *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 89.

Zapornia minuta, *Loche, Expl. Sci. Alg. Ois.* ii, p. 341 (1867).

Description.—**Adult male**, spring, from Gafsa, South Tunisia.

Upper-parts generally light olive-brown, darker on the crown, nape and quills, and blackish down the middle of the back, with a few white flecks; sides of head pale blue-slate; chin and throat white; breast and abdomen slate-blue; flanks, thighs and under tail-coverts barred with dark grey and white.

Iris red; bill yellowish-green, and red at the base; feet green.

Total length 8 inches, wing 4·10, culmen ·75, tarsus 1·20.

Adult female differs from the male in having the underparts pale rufescent-buff, instead of slate-blue.

Like the preceding species the Little Crane, though not abundant, is to be found in Tunisia in winter and during the periods of passage, both north and south of the Atlas. It probably also breeds in the Regency in limited numbers, as, according to Loche, it is resident in Algeria. There seems to be no record of its occurrence in Marocco. During the winter and early spring months the species is to be met with not unfrequently in the immediate vicinity of the town of Tunis, and examples of it may occasionally be seen in the market of that town. South of the Atlas I have obtained it in the oasis of Gafsa. In the localities it frequents, in its food, and in its general habits the Little Crane does not differ much, if at all, from its congeners. Its note is a loud and sharp "*kik, kik, kik.*"

Its nest resembles that of Baillon's Crane, and its eggs, generally seven or eight in number, are not unlike those of that bird, though rather larger and paler.

CREX CREX (Linnæus).

LAND-RAIL.

Rallus crex, *Linn. Syst. Nat.* i, p. 261 (1766).

Crex crex, *Sharpe's ed. Layard's Birds S. Africa*, p. 611 (1884); *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 82; *Erlanger, J. f. O.* 1900, p. 46.

Crex pratensis, *Malherbe, Faune Orn. de l'Alg.* p. 33 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 343 (1867); *Koenig, J. f. O.* 1888, p. 265 *id. J. f. O.* 1893, p. 79.

Description.—**Adult male**, spring, from North Tunisia.

Sides of the head pale bluish-grey; rest of the upper-parts yellowish-brown, striped with blackish-brown; quills pale chestnut-brown; upper

wing-coverts bright chestnut; chin white; front and sides of the neck and upper breast bluish-grey; lower breast greyish-buff; centre of the abdomen, and under tail-coverts white; flanks rufous, barred with white.

Iris hazel; bill dark brown; feet flesh-colour.

Total length 10.50 inches, wing 5.50, culmen .75, tarsus 1.30.

Adult female resembles the male, but is rather duller in coloration.

The Land-Rail, or Corn-Crake, is not uncommon in Tunisia during the spring passage in April and May, and a few individuals are to be met with in autumn, on their return passage, and even in winter. It does not appear to have been ascertained whether the species breeds in the Regency, but it may possibly do so, as examples are obtained late in May, with the genital organs much developed. Loche states that a few individuals breed in Algeria on the wet plains.

According to Favier the species is found in Marocco on passage, crossing the Straits as early as February, and returning in the autumn, and is occasionally obtained throughout the winter months. Colonel Irby states that it does not seem to remain in Andalusia during the breeding-season, and this is no doubt generally the case throughout the Mediterranean, although a few pairs may nest in certain localities. It has been said to nest in Sicily, but there does not seem to be any satisfactory evidence of its having done so.

In its habits the Land-Rail resembles the Water-Rail and other Crakes to a certain extent, but differs from them in frequenting open fields and cultivated districts in preference to wet and swampy localities, though it is not to be found, as a rule, in very arid spots. It is particularly fond of clover and rye-grass fields, no doubt because it is able to run about easily in them, for the bird is a great runner and uses its legs in preference to its wings. It only flies, indeed, when hard pressed, and its flight, like that of other Rails, is slow and feeble, and executed with the legs hanging down. When captured alive, as it not unfrequently is, the bird appears often to feign death.

Its food consists of insects of various kinds, as well as of worms and slugs, and to a certain extent, of seeds and the young shoots of certain plants. The flesh of this bird is very tender and delicate.

Its well-known call-note, chiefly uttered in the late evening, and consequently the more noticeable, resembles the monosyllable "*crek*," repeated many times.

The nest of this species, which is placed on the ground among

herbage, often in a corn or clover field, is merely formed of a few grass-bents or other plants. The eggs, from seven to twelve in number, are of a pale buff-colour, spotted with grey shell-marks and dark rufous surface-blotches. Average measurements 36×27 mm.

This bird's Italian name of *Re di Quaglie* (King of Quails), as also its Spanish names of *Rey de los Codornices* and *Guia de los Codornices* (Guide of the Quails), are no doubt due to the fact that the species is often found in the same localities as the Quail, as well as perhaps to a certain resemblance in its plumage to that bird. Quail-shooters in Sicily often meet with the species, and many of them look upon it as a large and fine variety of the Quail!

PORPHYRIO CÆRULEUS (Vandelli).

PURPLE GALLINULE.

Fulica cærulea, Vandelli, *Flor. et Faun. Lusit. Spec. in Mem. Acad. Real. Lisb.* i, p. 37 (1797).

Porphyrio cæruleus, Scater, *Ibis*, 1879, p. 196; Sharpe, *Cat. Birds Brit. Mus.* xxiii, p. 194; Whitaker, *Ibis*, 1898, p. 126.

Porphyrio hyacinthinus, Malherbe, *Cat. Rais. d'Ois. Alg.* p. 21 (1846); Koenig *J. f. O.* 1888, p. 275; *id. J. f. O.* 1893, p. 88.

Porphyrio veterum, Loche, *Expl. Sci. Alg. Ois.* ii, p. 345 (1867).

Porphyrio porphyrio, Erlanger, *J. f. O.* 1900, p. 45.

Description.—**Adult male**, spring, from North Tunisia.

Nearly the entire plumage deep blue, brightest on the cheeks and fore-neck, rather duller on the crown and nape, and becoming dull black on the lower abdomen, and on the inner webs of the quills; under tail-coverts pure white.

Iris carmine; bill and frontal shield dull sealing-wax red; feet rose-red.

Total length 19 inches, wing 10·75, culmen, with shield, 2·8, tarsus 3·7, middle toe, with claw, 4·5.

Adult female similar to the male.

The immature bird is much duller and more dusky in its coloration, and the chick in down is black, with a white bill and shield and rosy flesh-coloured feet.

The range of this handsome species is not extensive and appears to be confined to North-west Africa, Southern Spain and Portugal, the Balearic Isles, Sicily and Sardinia. Accidentally it has been

found in Southern France, Germany and various parts of the Italian Peninsula, and is even said to have occurred in the British Isles. According to Gmelin the species was found by him commonly throughout Persia, but recent travellers in that country do not seem to have met with it. It is also stated to have been found in Southern Russia.

In Tunisia *P. caruleus* is not uncommon in the extensive marshes surrounding the Djebel Eshkul near Bizerta, and it may perhaps be found elsewhere in the Regency, though at present I know of no other locality. I have examples from the above marshes, where it is to be found in certain numbers, and is undoubtedly resident. Loche states that it is sedentary in Algeria on all the lakes, and that he has taken its eggs at Lake Halloula and Lake Fetzara, in the month of March, and met with young birds in the middle of May. Canon Tristram appears to have met with the species at Touggourt in the Algerian Sahara. According to Favier *P. caruleus* is both resident and migratory near Tangier, though chiefly the latter, and is more or less irregular in its appearance. Colonel Irby states that it is also irregular in its appearance on the Spanish side of the Straits, being found in January and February in some years near Gibraltar, in situations where it does not occur at any other time.

In Sicily the Purple Gallinule is to be found on the larger marshes and lakes, and is not uncommon at the Pantano di Catania and the Biviere di Lentini on the east coast, and near Vittoria on the south coast of the island. Formerly it is said to have been found on the river Anapus near Syracuse, but does not appear to occur there at the present day. A few of these birds were turned down some years ago in the marshes near Mazzara, but I cannot hear of their having multiplied, or even of the species being still existent there.

Owing to the recently projected scheme for the drainage of the Pantano di Catania and other large marshes in Sicily, it is to be feared that the area of territory suited to the requirements of this species will be greatly reduced, and the numbers of the birds proportionately diminished, though it is to be hoped a few of their haunts may be allowed to remain yet awhile. Eventually, however, and possibly at no distant date, the Purple Gallinule seems destined to follow in the footsteps of the Francolin and Three-toed Quail, and become a thing of the past in this island.

According to Doderlein (Avif. Mod. et Sic. p. 202), the present species is both resident and migratory in Sicily, its numbers during the spring and summer months being greater than in winter, and examples of the bird being met with during the periods of passage in districts where the species is not usually found at other seasons. Its Italian name is *Pollo sultano* and its Sicilian name *Gaddo fagiano* or *Gaddu fascianu*.

In its habits the Purple Gallinule is extremely secretive and retiring. It frequents the borders of lakes fringed with dense aquatic vegetation, and swampy marshes abounding in high reed-beds, which are all but impenetrable, and where it is almost impossible to catch even a glimpse of one of the birds. In certain marshes, however, like those near Catania, where openings are cut through the reeds, for the purpose of allowing the passage of a boat, one may, by waiting patiently near some piece of open water, be fortunate enough to obtain a view of *P. cæruleus*, and by keeping very still, to observe some of its habits. The bird does not, however, often venture into the open, and as a rule, prefers to keep to the thick cover, where apparently it moves about without difficulty, notwithstanding its seemingly disproportionate and clumsy feet. Though usually found on land and not in the water, the species can, and *does* swim with the greatest ease and facility, and I have seen even chicks only a few days old swimming. The species, however, is rarely to be seen on the wing, and is one of the most difficult birds to flush. When compelled to use its wings, it apparently does so with effort, and its flight is laboured and heavy. So averse is it from taking to flight that, if suddenly surprised, the bird will dive under water and remain there for a considerable length of time, until it thinks all danger has passed. The boatmen and others who are acquainted with this habit of the bird, frequently capture examples alive by carefully watching the spot where it dived, and then catching it with their hands. Should the water be very shallow, the bird will often merely submerge its head, leaving the remainder of its body exposed. In Sicily a good many of the species are captured alive by other means, such as by netting and snaring.

In its wild state the Purple Gallinule appears to feed exclusively on vegetable matter, such as the tender leaves and roots of various water-plants, as well as seeds and grain, mixed with a certain amount of gravel, but it is also said to eat the eggs of other species and to

destroy young birds, which I can readily believe, for it will even eat the eggs of its own kind and has been known to kill young poultry.

In captivity it thrives on Indian-corn and grain of any description, varied with lettuce and other green food, and will eat almost everything that may be given to it. It makes good use of its feet in feeding, seizing a leaf or other substance, and holding it up, as it were with a hand, while it devours it at its leisure.

The notes of the sexes vary considerably from each other; that of the male is low and sonorous, terminating with some hoarse trumpet-like sounds, while that of the female is shrill and ends with a series of cries which may be very fairly rendered by the syllable "*crik*" repeated several times. During the spring months these notes are heard more often than at any other season, and the birds then become very noisy and clamorous.

The Purple Gallinule commences nesting towards the end of March, and the breeding-season may be said to continue until the end of June, during which month I have obtained fresh eggs of the species. The middle of a clump of reeds is generally selected as a site for the nest, this being composed of dry rushes and other leaves loosely put together, after the manner of a Moorhen's nest. Three eggs are undoubtedly the usual complement of a clutch, and between three and four weeks the time employed in their incubation. The eggs are of a warm buff or yellowish stone-colour, with shell-spots and blotches of greyish-violet and surface-markings of reddish-brown. They are generally rather elongate in shape and measure from 55 to 60 mm. in length by 35 to 40 mm. in width.

A few years ago I wrote a paper in the *Ibis* (*Ibis*, 1899, pp. 502-505) on the breeding of the Purple Gallinule in captivity and gave a detailed account of the success which I had had in rearing the young of this species under these conditions. As it is the first, and so far as I am aware, the only recorded instance of such an occurrence (notwithstanding that this bird is easily domesticated and not unfrequently kept in confinement), I think it worth while to give the following extract from the article in question:—

“For some years past I have been in the habit of keeping several of these birds in an enclosure in my garden near Palermo, but until last year no attempt at nesting had taken place among them; and I was beginning to give up all hope of the birds breeding, when one day in April last I discovered a nest with three eggs in it. After a

fortnight's incubation, however, for some reason or other unknown to me, this nest was deserted, and I found but one of the eggs remaining, the other two having probably been destroyed by the birds themselves.

“A second attempt at nesting occurred in the early summer of last year, during my absence from Sicily, and this time with a satisfactory result, three young birds being hatched and successfully brought up. According to my gardener, who had the charge of these birds, incubation in this instance commenced about the beginning of July, and lasted between three and four weeks. The young birds, which are now about eight months old, are scarcely distinguishable from the adults.

“A third case of nidification has but recently occurred in my little colony of Purple Gallinules, and having taken place in midwinter, is for that reason all the more remarkable. As I have myself been able personally to observe and follow the different phases of this case from beginning to end, I think it worth while to describe them in detail, hoping that the interest attaching to the facts may be sufficient justification for my prolixity. Before proceeding further, however, I may mention that the enclosure in which the Porphyrios are kept covers an area of about 40 square yards, and is surrounded and covered in with wire-netting. It adjoins a little lake, and has clumps of bamboo (*Bambusa mitis*) growing in it, which afford ample shade and shelter, and aid in rendering the environment somewhat similar to that of the birds' natural habitat.

“Returning to my starting point, I may say that I first noticed one of the birds sitting on a nest about December 25th last, and a day or two afterwards, availing myself of a moment when the nest was uncovered, I was able to peep into it and saw that it contained two eggs, a number which was increased to three on the following day. Three eggs are undoubtedly the full complement of this species. Notwithstanding the inclemency of the weather, incubation proceeded regularly and uninterruptedly, until January 18th, when the three eggs were hatched, the chicks beginning to run about a little the same day, although the old hen endeavoured to keep them under her wings as much as possible, instinctively fearing, no doubt, that the cold might be too severe for them. The old male bird also was most assiduous in his care of the brood, and both parents would rush at any one approaching the enclosure, clamorously protesting at the intrusion. I would here say that I thought at first that the male

bird took part in the incubation of the eggs, but subsequent observation leads me to think that he does not do so as a rule, although he may occasionally go on to the nest; in fact, I have once or twice seen both the old birds on the nest at the same time! After the first day or two the young chicks began to move about more, and also to peck a little at the food supplied to them, although, as a rule, they seemed to be fed by the parent birds, and this continued until quite recently. Excessively shy at first, the little things would run off and hide themselves immediately anyone appeared in sight, thus demonstrating the natural and hereditary timidity of the species. The only sound I have heard these chicks utter has been an occasional chirp, not unlike that of a young sparrow.

“The plumage of the chick in its first stage consists entirely of a rich velvet-black down, with a few filamentary feathers (*filoplumæ*) on the head and wings, while the bill and frontal shield are white, with a little red round the nostrils and base of the bill. The iris is of a dark slate-colour. The legs and feet are of a rosy flesh-colour, and not white, as erroneously stated by some authors, who perhaps may only have had the opportunity of observing unborn chicks, taken from the egg, the legs of these being in fact white in that stage.

“The *pollex*, or first digit of the wing, in the young of this species is highly developed, and bears a sharp and well-pronounced claw at its extremity. After a month or so the plumage of the young birds, although still in down, assumes a more dingy or smoky-black colour in place of the rich velvet-black, and some whitish down appears on the lower parts and under tail-coverts; the bill becomes black instead of white, and the legs and feet exchange their rosy flesh-colour for a leaden-grey brown; the iris at this period is olive-brown. Up to the time of my writing, the plumage of these young birds, which are now about two months old, shows no blue colour, and this will probably not appear until the contour-feathers are assumed, when the bill and frontal shield, as well as the legs and feet, will no doubt also become red.”

“P.S.—Since this was written, now more than two months ago, some changes have taken place in the plumage and general character of the young Purple Gallinules born in January.

“The first blue contour-feathers appeared soon after the completion of the second month, and about the end of the third month the colour of the soft parts began to turn red.

“At the present time these young birds, which are now about four months old, have the plumage of the upper parts entirely blue, while that of the lower parts is also blue to a great extent, although a few greyish down-feathers still show. The soft parts are now all red, but of rather a duller shade than that of the adult birds. The colour of the iris is now also red.”

Under the name of *Porphyrio chloronatus*, Loche includes the Green-backed Gallinule (*P. smaragdonotus*) among the birds of Algeria, as of rare occurrence in that country. There appears to be no record of this species having been met with in Tunisia.

PORPHYRIOLA ALLENI (Thompson).

ALLEN'S GALLINULE.

Porphyrio alleni, *Thompson, Ann. and Mag. Nat. Hist.* x, p. 204 (1842).

Porphyriola alleni, *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 187.

Description.—**Adult**, winter, from Catania, Sicily.

Entire head black; neck and under-parts, except the under tail-coverts, glossy deep blue; upper-parts below the neck glossy olive-green, lighter on the back, scapulars, and lesser wing-coverts, and darker elsewhere; quills with blackish inner webs and bluish outer webs; under tail-coverts white.

Bill red; frontal shield light green; feet reddish.

Total length 10 inches, wing 6·10, culmen with shield 1·50, tarsus 2.

Adult female, similar to the male, but rather smaller.

The young have the upper-parts brownish, the feathers of the back striped with a darker shade, and the under-parts whitish.

In the early part of 1903 I received a letter from the naturalist Blanc, informing me that a specimen of a small *Porphyrio*, which, from his description of the bird, could only have been *P. alleni*, had been obtained in December, 1902, near Bizerta, in North Tunisia, and had been preserved by him for one of his customers.

About the same time, as stated in a letter I wrote to the *Ibis* (*Ibis*, 1903, p. 431), through the kindness of Mr. Arthur W. Elford, British Vice-Consul at Catania, Sicily, I obtained a fine example of this species, which had been captured on December 4th, 1902, at the Pantano di Catania, an extensive tract of marshy country near the

town of that name. The bird in question was shot by a local sportsman, Signor Vincenzo Auteri, who, fortunately, recognising its rarity, took it to a taxidermist. The sex of the specimen was not ascertained, but judging from the length of its wing (6.10 inches), it appears to be a male. The average length of the wing in a series of examples of this species in my collection, is 6 inches in the case of males, and 5.60 in that of females.

According to Sig. Auteri another of these birds was seen by him about the middle of January, 1903, not far from the Lake of Lentini, also near Catania, but was not secured.

An immature bird of this species is recorded by Mr. J. H. Gurney, as having been obtained off Yarmouth on January 1st, 1902 (*Zoologist*, 1902, p. 18). This appears to be the sixth recorded instance of the occurrence of this tropical species in Europe, and that mentioned above as having occurred at Catania, would be the seventh. Of the five previously recorded captures four appear to have been effected in Italy and one in Spain. Of the four examples obtained in Italy no less than three came from the neighbourhood of Lucca, in Tuscany, the fourth being from the vicinity of Pachino, in Sicily.

As observed by Prof. Giglioli (*Avifauna Italica*, p. 354), it is a singular fact, and one worthy of notice, as being contrary to the generally accepted ideas regarding the laws governing the migration of birds, that the cases recorded of the occurrence in Europe of this tropical species should all have occurred during the autumn or winter months. Whether this points to a northward migration on the part of the species at this season instead of in spring, it is impossible to say, but in any case the individuals found in Europe can only be regarded as birds that have strayed out of their course.

P. alleni ranges throughout a considerable portion of Africa, and is found in many districts both in the east and west of that continent. It also occurs in Madagascar, and has been found in Madeira and the Azores.

In its habits it is stated to resemble the common Moor-hen, more than the preceding species or others of that genus, and though frequenting the same dense vegetation, it appears to be fonder of swimming about in open water, particularly of a morning and evening. It feeds on the tender parts of water-plants and on their seeds, as well as on worms and insects. Its note is described as harsh, though, according to Prof. Barboza de Bocage, it resembles the voice of a human being.

GALLINULA CHLOROPUS (Linnæus.)

MOOR-HEN.

Fulica chloropus, *Linn. Syst. Nat.* i, p. 258 (1766).

Gallinula chloropus, *Lath. Ind. Orn.* ii, p. 773 (1790); *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 169; *Malherbe, Faune Orn. de l'Alg.* p. 33 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 347 (1867); *Koenig, J. f. O.* 1888, p. 275; *id. J. f. O.* 1893, p. 88; *Whitaker, Ibis*, 1895, p. 105; *Erlanger, J. f. O.* 1900, p. 44.

Description.—**Adult male**, spring, from North Tunisia.

Head, nape and mantle, dark brownish-slate; rest of the upper-parts dark olive-brown, the wings bordered externally with a narrow white line; underparts dark slate, becoming greyish on the middle of the abdomen, and striped with white on the flanks; under tail-coverts white, with a central tuft of black feathers.

Iris red; base of bill and frontal shield sealing-wax red; tip of bill yellow; feet green, with a small red band above the tarsal joint.

Total length 12 inches, wing 6·50, culmen, with shield, 1·35, tarsus, 1·80.

Adult female resembles the male.

Immature birds have the upper-parts olive-brown, the throat white, and the remainder of the underparts greyish, while the bill, shield (which is small) and feet are greenish.

The Water-hen, or Moor-hen, is common and resident throughout North Tunisia, and is also to be found in some parts of the south of the Regency, such as the neighbourhood of Tatahouine and Gabès, where it also breeds.

In Algeria and Marocco, and throughout North Africa generally, the species is numerous and resident, while in other parts of that Continent southwards to the Cape of Good Hope, it is equally common either in its typical or in slightly modified forms. It appears also to be resident in the Canaries, Madeira, and the Azores. Throughout the greater part of Europe and Asia the species is generally distributed, closely allied forms being met with in some parts of the latter Continent, as well as in America and Australia.

The Moor-hen frequents ponds, lakes, marshes and streams bordered with reeds or other aquatic plants and although rather secretive and retiring, is fond of resorting to open water. It is an excellent swimmer and diver, and runs with rapidity on land. Its flight, on the other hand, is feeble and heavy, until the bird

gets well under weigh, and when flying it carries its legs hanging down.

It feeds on worms, snails and water insects, as well as on vegetable substances such as the tender parts of various plants, seeds and grain. The call-note heard chiefly of an evening, is a loud and rather harsh and grating "erek, rek, rek." The nest of the Moor-hen is generally placed on a bank among reeds and sedges, often on the branches of trees or bushes overhanging water, and occasionally on floating masses of flags or other water-plants. It is composed of dry rushes and leaves matted together. The eggs, usually seven or eight in number, are light buff in colour, spotted with pale lilac shell-marks and reddish-brown surface-blotches, and measure about 41 × 30 mm. Nesting commences in March and lasts for about three months, two and even three broods being reared by the same pair in a season.

In *The Field* of July 4th, 1903, may be found an interesting account of the chirping of Moor-hen chicks when still within the uncracked egg. According to *The Field's* correspondent, the unhatched birds chirped in response to their parent's cry, when the eggs were held in his hand, and their chirping was so loud as to be plainly heard many yards from the nest.

FULICA ATRA, Linnæus.

COOT.

Fulica atra, *Linn. Syst. Nat.* i, p. 257 (1766); *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 210; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 21 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 351 (1867); *Koenig, J. f. O.* 1888, p. 275; *id. J. f. O.* 1893, p. 88; *Whitaker, Ibis*, 1895, p. 105; *Erlanger, J. f. O.* 1900, p. 43.

Description.—**Adult male**, winter, from North Tunisia.

Head and neck smoke-black; rest of the upper-plumage slate-black; quills dark brown, with a little white on the shoulder and along the outer edge of the wing; underparts slate-colour.

Iris red; bill and frontal shield white; feet grey, with an orange-colored band just above the tarsal joint.

Total length 13.50 inches, wing 8, culmen with shield, 2.10, tarsus 2.20.

Adult female similar to the male.

Immature birds are much duller and paler in plumage than the adult bird, and have the chin whitish.

The Coot, or Bald Coot, as this bird is often called, on account of its white frontal-shield, is very abundant in winter and during the periods of passage in all suitable localities in North Tunisia, and is also to be found in some parts of the south of the Regency.

According to Blanc the species nests in certain numbers near Porto Farina and other localities in North Tunisia. Vast flocks of Coots may be seen throughout the winter months on the lakes of Tunis and Bizerta.

In Algeria it is plentiful in winter and on migration, and is also resident, according to Loche. It is abundant too in Marocco, and Favier states that it nests near Tangier.

It is very generally distributed throughout Europe, Asia, and North Africa, and occurs in winter on the Atlantic Islands. In South Spain and Marocco it meets the Crested Coot (*F. cristata*), by which species it is replaced throughout the greater part of the African Continent.

In its habits the Coot is essentially migratory and gregarious, and in winter and during the periods of passage, it is to be found in enormous flocks. In some parts of the Mediterranean Coots congregate together in such vast numbers that "battues" on a large scale are organised for the purpose of sport, combined with a certain profit. The tactics usually adopted on these occasions are for a number of small boats, each with one or two gunners, to advance in line on the piece of water where the Coots are massed together and force them to rise; the birds do not like to leave a favourite spot, and as they fly back over the boats, afford some "pretty" shooting. In many parts of the Italian Peninsula, and in Sicily, this is a very favourite form of sport, and goes by the name of "la tela alle folaghe."

The Coot may often be found associating with other species of water-fowl, and numbers are killed unintentionally by Duck-shooters.

It frequents open lakes and lagoons, of both fresh and salt water, though it resorts to more sheltered and secluded localities for the breeding-season. In its wild state it is shy and wary, but in captivity it becomes very tame and sociable. It is an expert swimmer and diver, and walks and runs fairly well on land. When

rising from the water its flight is rather heavy, and the bird has a peculiar habit of first fluttering or "scuttling" along the surface for some yards, its feet touching the water, but when once well on the wing, it flies swiftly and powerfully.

It feeds on water plants, as well as on worms, slugs, insects, small fish and molluscs. It is a silent bird as a rule, but has a loud whistling note, uttered chiefly at night.

Its nest is roughly built of flags and pieces of rushes, placed among aquatic vegetation, sometimes floating, though more often on a solid basis. The eggs, usually seven or eight in number, are of a very pale buff-colour, speckled all over with small dark brown spots, and measure about 50 × 37 mm.

FULICA CRISTATA, Gmelin.

CRESTED COOT.

Fulica cristata, *Gmel. Syst. Nat.* i, p. 704 (1788); *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 215; *Malherbe, Faune Orn. de l'Alg.* p. 34 (1855); *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 88.
Lupha cristata, *Loche, Expl. Sci. Alg. Ois.* ii, p. 349 (1867).

Description.—**Adult male**, spring, from Spain.

Resembles *F. atra*, but differs in having two prominent red caruncles on the frontal plate, and in lacking the white tips on the secondary quills.

Adult female resembles the male.

According to Mr. Dresser (*Birds of Eur.* vii, p. 324), the Crested Coot occurs in Tunisia, Lord Lilford having informed him that he "met with it in the Regency of Tunis, where it was pretty common on the lakes and lagoons in the early winter of 1856."

I have no knowledge of the species having been met with in Tunisia of recent years, though it may easily have been overlooked. In both Marocco and Algeria it appears to be not uncommon. In the former country, according to Favier (*vide* Colonel Irby) the species is both resident and migratory near Tangier, associating with *F. atra*, but being much more numerous than that species. Loche states that it is plentiful and breeds on all the large lakes of Algeria. Canon Tristram also found it breeding numerously on Lake Halloula in

Algiers, where he never met with the Common Coot, and believes that each species confines itself to its own nesting-places. Thus on the lakes he visited in Eastern Algeria the following summer, while *F. atra* abounded, *F. cristata* never once came under his notice. It is not unlikely that the present species is somewhat irregular in its appearance in certain localities, and that it may be entirely absent one year in a district where it was abundant the previous year.

The range of the Crested Coot extends throughout the greater part of the African Continent, Southern Spain and Portugal and the Balearic Islands, while it occurs accidentally in Italy, the South of France, and some of the Mediterranean islands. It is said to have bred in Sardinia, where apparently it was formerly more often met with than it is at the present day. In its habits and in its nidification this species resembles the Common Coot, though differing from that bird in some respects.

Family GRUIDÆ.

GRUS GRUS (Linnæus).

CRANE.

Ardea grus, *Linn. Syst. Nat.* i, p. 234 (1766).

Grus grus, *Brusina, Motr., &c. (Orn. Croatia)*, p. 84 (1890); *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 250; *Erlanger, J. f. O.* 1900, p. 47.

Grus cinerea, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 118 (1867); *Koenig, J. f. O.* 1893, p. 85.

Grus cinereus, *Koenig, J. f. O.* 1888, p. 271.

Grus communis, *Whitaker, Ibis*, 1895, p. 105.

Description.—**Adult male**, spring, from North Tunisia.

Forehead and crown almost bare, but covered to a certain extent with black hair-like feathers; a red band across the occiput; nape greyish-black; ear-coverts and sides of neck white; greater part of upper plumage slate-grey; tail dark slate; primaries black; secondaries considerably elongated; chin and throat blackish; rest of under-parts pale slate-grey.

Iris reddish; bill greenish-brown and flesh-colour at the base of the lower mandible; feet blackish-brown.

Total length 45 inches, wing 25, culmen 4·25, tarsus 9·50.

Adult female resembles the male.

The Crane is abundant in Tunisia, both north and south of the Atlas, during the winter months and periods of migration, but does not appear to breed in the Regency.

It is very numerous, and to be found in large flocks on most of the plains and cultivated fields in the immediate vicinity of the town of Tunis and near Carthage, as likewise all along the fertile coast-country of the east of the Regency. Near Gabés and in districts still further south, the species is also to be met with during the winter months.

In Algeria the Crane is not uncommon in winter and on passage, though apparently less plentiful than it is in Tunisia, particularly in the eastern sea-coast districts of the Regency.

According to Favier (*vide* Colonel Irby) the species is common in winter in Marocco, arriving in October and November, and leaving again for the north in February. Mr. Meade-Waldo, however, met with the Crane in flocks on the plain south of the Wad Moorbey on June 9th (*Ibis*, 1903, p. 214), which would lead one to suppose that the species breeds in that country.

In Europe the Crane breeds as far north as Lapland and as far south as Spain, in which latter country, according to Colonel Irby (*Orn. Strs. Gib.*, p. 250), some thirty to forty pairs breed, or used to breed, in the district which extends from Tapatanilla along the Laguna de la Janda to Vejer in Andalucia. The marshes of the Guadalquivir used also to be a nesting haunt of the species.

According to Count Arrigoni, the Crane breeds regularly in the Venetian estuary, and occasionally in some other parts of Italy. The eggs and young of this species are sold in the Venetian Provinces, the price of the latter ranging from 20 to 60 lire the pair, according to their size. The species thrives in captivity, and instances are known of its attaining to a great age in confinement.

The Crane, it is stated on good authority, used formerly to breed in England, but it can now only be looked upon as an irregular and occasional visitor to our country. The bird, however, must once have been not uncommon in England, as its flesh appears to have been in use as an article of food, and had a regular market price attached to it. I have eaten it in Sicily, and found it excellent, being not unlike very tender mutton.

The Crane seems to be essentially gregarious, even, according to some authorities, during the breeding season; not so, however,

if we may judge from Wolley's excellent account of the nidification of this species, to be found in the first volume of the *Ibis*. When migrating the Crane may generally be observed in large flocks, flying at a considerable altitude, and in regular formation, either like an inverted V, or in a semicircle. Though chiefly diurnal in its habits the species seems to migrate by night as well as by day, and during stormy weather, when the passing flocks are forced to descend from the high altitudes at which they usually travel, the loud cries of these birds may often be heard close by, and immediately over the house-tops. I remember, one particularly tempestuous night some years ago in Palermo, listening to the deafening sound created by a large flock of Cranes circling low down over the town, attracted no doubt by the street lights, and seeking shelter from the storm which was raging at the time. The note uttered by this bird is very loud and sonorous, and may be heard at a considerable distance.

The Crane chiefly frequents marshes and wet localities, but may often be found in cultivated fields, to which it resorts for food. Bean-fields in Tunisia and Sicily have a special attraction for it. Its food consists of grain and pulse of different kinds, grass and the tender shoots of various plants, as well as worms, reptiles and insects.

The species nests in marshy localities, generally on slightly raised ground, and builds a simple structure of flags or other aquatic plants. Its eggs, usually two in number, are of an olive-grey or olive-brown colour, with pale brown shell-marks and darker brown surface-blotches. Average measurements 95 × 65 mm.

GRUS VIRGO (Linnæus.)

DEMOISELLE-CRANE.

Ardea virgo, *Linn. Syst. Nat.* i, p. 234 (1766).

Grus virgo, *Pall. Zoogr. Rosso-As.* ii, p. 108 (1811); *Malherbe, Faune Orn. de l'Alg.* p. 30 (1855); *Koenig, J. f. O.* 1888, p. 265.

Anthropoides virgo, *Loche, Expl. Sci. Alg. Ois.* ii, p. 120 (1867); *Koenig, J. f. O.* 1893, p. 79; *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 269.

Description.—**Adult male**, winter, from Spain.

General colour pale bluish-slate; sides of the head, chin, throat, greater part of the neck and long pointed plumes on the upper breast deep black; from behind the eyes white tufts of feathers about four inches long

extend backwards; primaries black; long secondary plumes tipped with blackish; tail slate-colour.

Iris red; bill olive-brown, reddish towards the tip; feet black.

Total length 38 inches, wing (including long secondaries) 28, culmen 3, tarsus 8.50.

Adult female resembles the male.

This particularly graceful species is somewhat rare in Tunisia, but apparently breeds in the Regency, and I have seen a young living example, which was taken from a nest on the celebrated Eufida estate near Sousa. M. Carnot, the owner of the bird, informed me that a pair of these Cranes nested regularly every year in that locality.

According to Blanc, the species is far from common in Tunisia, and he has only seen five or six examples of it during the whole time he has resided in the country.

Salvin appears to have met with this Crane on several occasions towards the eastern extremity of the marsh of Zana, while Canon Tristram, Loche, and Taczanowski all speak of it as occurring in the Algerian Sahara.

The species is to be met with also in Marocco, but is apparently not common, and only to be found there on passage.

In some parts of Southern Spain it seems to be a regular visitor, but does not remain to breed. It is to be met with accidentally in Italy and some other parts of Southern Europe, but its true home and breeding-quarters are in South-eastern Europe and Asia Minor.

In its general habits and in the localities it frequents the Demoiselle-Crane does not differ greatly from the preceding species. It migrates in large flocks, and at high altitudes, descending to feed in cultivated fields. Its food is more or less the same as that of the Common Crane, and its note also is loud and trumpet-like.

In captivity this bird becomes remarkably tame and familiar, and owing to its engaging ways and graceful appearance, makes a charming pet. The bird I saw at Sousa was a general favourite, and was allowed perfect liberty. It seemed to consider itself guardian of the house, and would courageously attack and drive away any stray dog that might venture near the premises.

During the spring, and immediately before the breeding-season, this species is in the habit of assembling in companies, and going through peculiar evolutions and antics, apparently solely for the sake

of amusement. The Common Crane is said to behave in a similar manner, though more rarely.

The Demoiselle-Crane makes little or no nest, but deposits its eggs, usually two in number, in a depression in the ground, surrounding them with small stones. The eggs are not unlike those of the Common Crane, but rather smaller.

Loche includes the Balearic Crane (*Balearia pavonina*) among the birds of Algeria, as an accidental visitor to that country (Expl. Scient. Alg. Ois. ii. p. 123). I know of no instance of its having been met with in Tunisia, although, I may observe, that Blanc has more than once, from a distance, seen Cranes on the small Island of Curiat, off the East Tunisian coast, which seemed to be unlike either the Common or the Demoiselle-Crane.

Order LIMICOLÆ.

Family OTIDIDÆ.

OTIS TARDA, Linnæus.

GREAT BUSTARD.

Otis tarda, *Linn. Syst. Nat.* i, p. 264 (1766); *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 284; *Malherbe, Faune Orn. de l'Alg.* p. 28 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 247 (1867); *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 79; *Whitaker, Ibis*, 1894, p. 99; *id. Ibis*, 1895, p. 91.

Description.—**Adult male**, from Spain.

Head pale bluish-slate; nape, neck and upper breast rufous; upper parts warm rufescent-buff, barred with black; primaries blackish; secondaries and upper wing-coverts chiefly white; underparts below the neck and upper breast white; tufts of stiff greyish plumes about four inches long, projecting from each side of the lower mandible.

Iris brown; bill slate-grey; feet dark slate.

Total length 37 inches, wing 24, culmen 2.50, tarsus 6.30.

Adult female, winter, from Italy.

Resembles the adult male, but lacks the stiff feathers on the sides of the bill and the rufous collar and pectoral band.

Total length 33 inches, wing 20, culmen 2, tarsus 5.

Although I have not actually obtained a specimen of this fine Bustard in Tunisia, I include the species among the birds of the Regency, being almost certain that I saw a pair near Feriana in the spring of 1893. On that occasion I suddenly came upon the birds within thirty yards of me, and could hardly have been mistaken in my identification. Unfortunately I was unprepared for such game, and failed to secure a specimen. Mr. Aplin also, when travelling in South Tunisia, and in the neighbourhood of Bir-Sultane, south-east

of the Chott Djerid, saw a Bustard which he felt sure at the time was *O. tarda*.

According to Loche the Great Bustard occurs accidentally on migration in Algeria, and the same is probably the case in Marocco, where examples have occasionally been obtained. Colonel Irby states that he had seen one or two specimens obtained near Tangier, and Mr. Tyrwhitt-Drake mentions one, which had been shot and skinned by Mr. W. K. Green, British Vice-Consul at Tetuan. A specimen from Tangier is preserved in Mr. J. H. Gurney's collection at Keswick Hall, Norwich.

This fine species is not uncommon in Spain, South-eastern Europe and Asia Minor, its range extending eastward to Central Asia and as far as North-west India, where, however, it appears to be only a rare straggler. As an occasional or accidental visitor it occurs in other parts of Europe, and used formerly to be an inhabitant of England. In some parts of Spain it is most abundant, particularly in the neighbourhood of Seville.

The Great Bustard frequents vast plains and open country bare of trees and high vegetation, where it is approached with difficulty. It is exceedingly wary and always on the alert, and if wounded and unable to use its limbs, is very clever in concealing itself. It walks and runs well, and its flight, though apparently slow and heavy, is fairly swift and powerful. It feeds chiefly on grass and other vegetable-matter, but also on insects, and the young appear to be fed chiefly on the latter. Its eggs, two or three in number, are deposited in a slight depression in the ground, and are olive-brown in colour, blotched with dark brown. They measure about 75×50 mm.

The Arabian Bustard (*Otis arabs*, Linn.) is stated by Loche to have occurred in Algeria, two examples of the species having been obtained in 1855 near the town of Algiers (Expl. Scient. Alg. Ois. ii, p. 257).

This fine Bustard is to be met with in some parts of Marocco. Mr. Tyrwhitt-Drake obtained a specimen of it from Dar-el-beida, on the south coast of Marocco (*Ibis*, 1867, p. 429), and an example from Mogador is preserved in the British Museum collection. Mr. E. G. B. Meade-Waldo also found a dead bird of this species floating in the river Seboo at Mehedia. One of the strongholds of this Bustard in Marocco appears to be the Forest of Marmora, not far from Rabat.

In the large tract of woodland forming this forest, Mr. Meade-Waldo, in the spring of 1902, found Bustards, presumably of this species, fairly common, and has given some highly interesting notes regarding the birds and their habits (*Ibis*, 1905, pp. 161-165). Owing to its insecurity this district appears to have been rarely, if ever, visited before by Europeans, and probably a considerable portion of the forest still remains unexplored by the naturalist. According to Mr. Meade-Waldo, the Forest of Marmora and the adjoining districts, though not particularly rich in species of birds, are frequented by the Guinea-Fowl (*Numida meleagris*), the Two-spurred Francolin (*Francolinus bicalcaratus*), and the Bald Ibis (*Comatibis eremita*), as well as the Large Bustard mentioned above.

Mr. Edward Dodson, when collecting for me in Marocco in 1897, on quitting the river Seboo, travelled in a south-easterly direction to Fez, and then turning westward, and taking Mequinez on the way, reached the coast at Rabat. He appears thus to have skirted round the east and south sides of this wooded region, which, judging from Mr. Meade-Waldo's description, must be one of the most interesting in all Marocco to the ornithologist.

OTIS TETRAX, Linnæus.

LITTLE BUSTARD.

Otis tetrax, *Linn. Syst. Nat.* i, p. 264 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 19 (1846); *Koenig, J. f. O.* 1888, p. 267; *id. J. f. O.* 1893, p. 81; *Whitaker, Ibis*, 1894, p. 99.

Tetrax tetrax, *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 287; *Erlanger, J. f. O.* 1900, p. 51.

Tetrax campestris, *Loche, Expl. Sci. Alg. Ois.* ii, p. 251 (1867).

Description.—**Adult male**, spring, from North Tunisia.

Forehead and a stripe over the eye, buff streaked with black; crown sandy-brown, mottled with black; throat, sides of head and nape bluish-slate, this colour extending down the middle of the fore-neck to a point; below this a narrow white collar encircles the neck; lower part of the neck black; the remainder of the upper-plumage sandy-brown, pencilled and vermiculated with black; outer tail-coverts and tail-feathers white, marked with black; primaries dark brown, and white at the base; secondaries white; on the breast below the black neck-collar is a broad white pectoral

band, followed by another black pectoral band; sides of the upper breast sandy-brown pencilled with dark brown; rest of underparts pure white.

Iris hazel; bill brown, blackish at the tip; feet yellowish.

Total length 20 inches, wing 10, culmen 1, tarsus 2.40.

Adult female, spring, from Central Tunisia.

General colour of the upper plumage sandy-buff, mottled and barred with black; wings and tail more or less as in the male; chin white; throat and neck buff, striped with black; breast buff, barred with black; rest of the underparts white, the flanks and under tail-coverts with a few large black spots.

Soft parts the same as in the male; measurements rather less.

The Lesser Bustard, or "Poule de Carthage," as the bird is commonly called in Tunis, is abundant north of the Atlas, particularly during the spring migration, when large flocks of the birds may often be seen. The species is resident in the Regency throughout the year, but its numbers increase considerably during the periods of passage.

In North Tunisia I have met with it near Mater and Bizerta, and in Central Tunisia on the vast plains between Kasrin and El Oubira. Further south I have only come across an occasional straggler on the "Halfa" plains, but never met with the bird in the semi-desert districts of South Tunisia. The species appears to be common in Algeria and Marocco. Its range in Europe and Asia seems to be more or less the same as that of the Great Bustard. It is, however, resident in some parts of Southern Italy, Sicily and Sardinia. In Sicily the species used to be more plentiful a few years ago than it is now, and was far from uncommon in some of the less cultivated districts on the south and south-west of the island.

The Lesser Bustard frequents plains destitute of trees, cultivated fields and undulating open country, and like the preceding species, is extremely wary and shy. During the heat of the day it is, however, less on the alert, and may then be more easily approached.

In autumn, and on migration, the birds congregate in large packs, but in the late spring and summer they are usually to be found in pairs. Mr. Clive Phillipps-Wolley ("Sport in the Crimea and Caucasus," p. 295) thus graphically describes a passage of this species, which it was his good fortune to witness:—

"These magnificent birds were in millions all over the steppe. The ground was grey with them, the air full of their cries, the sky alive with the movement of their wings. With them were a few

small flocks of another bird, which I thought I recognised as the Golden Plover, but of this I am by no means sure. So much struck was I by the strange sight which this enormous passage presented, that I stayed the greater part of the day to watch it; and when at last I left, the almost inconceivable flood of winged creatures was still rolling on over the steppe from west to east in undiminished numbers. . . . Judging by what I killed, I should say the birds were only just starting from their summer haunts in the Crimea and the Caucasus for their winter quarters in the east. Had it not been so, they would hardly have been so deliciously plump as we found them."

The flesh of the Lesser Bustard is certainly excellent eating, and at certain seasons the "Poule de Carthage" forms an important item in the "menu" of the hotels at Tunis and other towns in the neighbourhood, where the species is common. Its food consists chiefly of grain, seeds, and the tender shoots of certain plants, varied by insects, worms and snails. It walks and runs with ease, and its flight is swift and powerful. When rising it claps its wings together most audibly, making a peculiar rattling noise. During the nesting-season the male utters a harsh cry, but the species is, on the whole, a silent one. It nests in April and May among "Halfa"-grass, or other herbage, depositing its eggs, usually three in number, in a depression in the ground. The eggs are generally of a glossy green, or olive-green colour, faintly marked or clouded with pale brown, but I have some eggs in my collection of a greenish-brown colour. Their average measurements are 50 × 40 mm.

OTIS UNDULATA (Jacquin).

HOUBARA BUSTARD.

Psophia undulata, *Jacq. Beytr. Gesch. Vög.* p. 24, pl. 9 (1784).

Otis undulata, *Dresser, Birds of Europe*, vii, p. 391, pl. 510 (1876).

Otis houbara, *Matherbe, Faune Orn. de l'Alg.* p. 29 (1855); *Koenig, J. f. O.* 1893, p. 81; *Whitaker, Ibis*, 1898, p. 126.

Houbara undulata, *Loche, Expl. Sci. Alg. Ois.* ii, p. 254 (1867); *Sharpe, Cat. Birds Brit. Mus.* xxiii, p. 320.

Houbara houbara, *Erlanger, J. f. O.* 1900, p. 48.

Description.—**Adult male**, spring, from Kairouan, Central Tunisia.

Crown sandy-brown, barred with black, and ornamented with a crest of white feathers, some of which are tinged with sand-brown at the tip; chin white; lores, superciliary stripes, and the sides of the head and neck greyish-white; a conspicuous tuft of long black feathers on each side of the lower neck, with a similar tuft of white feathers adjoining it; back and upperparts generally rufescent-buff, barred and pencilled with black; upper wing-coverts rather greyer; outer quills white at the base and dark on the terminal portion; inner quills black, slightly tipped with white; tail pale rufous, slightly pencilled with black, and broadly barred with four bluish bands; under parts below the neck white.

Iris yellow; bill brown; feet dusky grey.

Total length 30 inches, wing 15, culmen 1.50, tarsus 4.

Adult female is similar to the male, but has the crest and neck-ruff less developed, and is rather smaller.

This Bustard, the Houbara, as it is usually called, is not uncommon in Central and Southern Tunisia, and has been met with occasionally, though rarely, in the north of the Regency. Its true home, however, is undoubtedly south of the Atlas, where vast tracts of semi-desert country and stony plains covered with patches of "Halfa"-grass and other scrub-vegetation extend southwards to the great Sahara desert.

I have frequently observed the species on the plains between Feriana and Gafsa, and on those lying to the west and south of the latter town.

In Algeria the Houbara is not uncommon south of the Atlas in districts corresponding to those where it is found in Tunisia. It also occurs in Morocco, and Colonel Irby (Orn. Strs. Gib., p. 153) states that he had seen a specimen which had been obtained near Tangier. On the islands of Fuerteventura and Lanzarote, two of the Canary group, this, or a closely allied species of Bustard, is to be found, which has been distinguished under the name of *Otis houbara fuerteventura* (Rothsch. and Hart.).

North of the Mediterranean the Honbara is of merely accidental occurrence, but it inhabits North-east Africa, and is to be found as far east as Armenia. Still further eastward it is replaced by *O. macqueenii*, an allied but distinct species.

In its habits the present species resembles other Bustards, and is one of the most shy and wary of birds, rarely allowing itself to be

approached except by stratagem. A favourite way of getting within gunshot of these birds, when met with singly or in pairs, is by riding round them in gradually diminishing circles. When they are in flocks, however, this is not possible, and "driving" has to be resorted to in order to obtain a shot. The Houbara is a favourite quarry with the Arabs who still practise falconry, and affords good sport.

In spring, when my visits to the Regency have taken place, I have found this species nearly always in pairs, but it appears to be met with in winter in small flocks. On one occasion, when travelling by rail from Gafsa to Metlaoui, in the month of April, I saw three of these Bustards together. The birds rose from the ground within a short distance of the line, and, far from appearing afraid of the moving train, accompanied it for two or three hundred yards, affording me a capital view of them, as they mounted into the air. It was a particularly fine sight, for the birds, as they ascended fairly high in the air, turned and swerved about a good deal, their flight being more rapid and dashing than it usually is when they are flushed from afar and fly leisurely away within a few feet of the ground. When walking their gait is stately and dignified.

The species feeds on grain, seeds, and other vegetable-substances as well as on snails, insects and small reptiles.

It is a very silent bird, and I never heard it utter any cry.

The Houbara appears to be entirely monogamous, and in April and May deposits its eggs, three in number, on the bare ground, without even making any depression in the soil. The eggs are of a deep olive-green colour, splashed and blotched with greyish shell-marks and brown surface-spots. They measure about 62×42 mm.

The Arabs sometimes snare this Bustard by building up a little wall of small stones round its eggs, and leaving an opening on one side for the bird to walk through, a noose being fixed at this aperture. One of these birds, which had been thus snared, was brought to me by some Arabs near Ain-Moularès, together with its eggs.

Family ÆDICNEMIDÆ.

ÆDICNEMUS ÆDICNEMUS (Linnæus).

STONE-CURLEW.

Charadrius œdicnemus, *Linn. Syst. Nat.* i, p. 255 (1766).

Ædicnemus œdicnemus, *Brusina, Motr. &c. (Orn. Croatia)*, p. 86 (1890);
Sharpe, Cat. Birds Brit. Mus. xxiv, p. 4.

Ædicnemus crepitans, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 19 (1846);
Loche, Expl. Sci. Alg. Ois. ii, p. 258 (1867); *Koenig, J. f. O.* 1888,
p. 268; *id. J. f. O.* 1893, p. 82; *Whitaker, Ibis*, 1894, p. 99.

Description.—**Adult male**, spring, from Khangat-Sloughi, Central Tunisia.

Upper plumage generally sandy-buff, greyer in some parts and more rufescent in others, the whole streaked with dark brown; superciliary stripes and stripes below the eyes whitish-buff; quills black, the two outer primaries with large white patches towards the tips; upper wing-coverts barred with white; median rectrices grey, mottled with dark brown, the remainder white, barred and tipped with black; chin and throat whitish; breast pale buff, striped with dark brown; abdomen and crissum white; under tail-coverts rufescent-buff.

Iris, which is very large, bright yellow; bill black at the tip, greenish-yellow at the base; feet yellow.

Total length 15 inches, wing 9.50, culmen 1.50, tarsus 3.

Adult female, similar to the male.

The Stone-Curlew is resident, and to some extent migratory in Tunisia, and is to be met with in suitable localities throughout the Regency generally. In Algeria and Marocco it is also not at all uncommon, and it has been recorded from the Canaries, Madeira, and the Azores. In North-east Africa it is plentiful in Egypt and Nubia, and is to be found in South Arabia, and on the shores of the Red Sea. In Europe the species occurs chiefly as a visitor, north of the Alps, but is, to a great extent, resident south of those mountains. Eastwards its range extends throughout a considerable part of Asia, and as far as India.

The Stone-Curlew frequents open stony plains and uncultivated localities bare of trees and high bushes. Here it passes the greater part of the day in retirement, coming forth of an evening to feed, for the species is chiefly crepuscular and nocturnal in its habits, and its cry may constantly be heard at night, particularly when there is a

bright moon. The note it utters is loud and wailing, and not unlike that of the Curlew.

The species is usually to be found in pairs, and is only met with in flocks when on migration. It is shy and wary, and runs swiftly, but its flight is rather slow and heavy. It feeds on insects, worms and snails, and is also known to eat small mammals and reptiles. The bird makes no nest, but deposits its eggs, generally two in number, in a hollow on the ground. The colour of the eggs is light-buff, richly marked with greyish underlying spots, and blackish-brown surface-blotches. The average measurements are 50 × 35 mm.

ÆDICNEMUS ÆDICNEMUS SAHARÆ (Reichenow).

DESERT STONE-CURLEW.

Ædicnemus ædicnemus saharæ, *Reichenow, J. f. O.* 1894, p. 101.

Ædicnemus crepitans saharæ, *Koenig, J. f. O.* 1896, p. 173; *Erlanger, J. f. O.* 1900, p. 52.

Description.—**Adult male**, spring, from El Madjen-bel-Abbès, Central Tunisia.

Differs from *Æ. ædicnemus* in its paler and more rufescent coloration.

Adult female resembles the male.

The Stone-Curlew resident in the more desert districts south of the Atlas, is somewhat paler and more rufescent in colour than that met with in Northern and North-central Tunisia, and has been distinguished by Professor Reichenow under the name of *Æ. ædicnemus saharæ* (*J. f. O.* 1894, p. 101). As in the case of the pale Barbary Partridge, the difference between the present form and what may be regarded as typically coloured examples of the Stone-Curlew, is slight, and apparently variable, though perhaps just sufficiently marked to call for subspecific separation.

It is, however, more out of deference to the opinion of so good an ornithologist as Professor Reichenow that I admit the distinction of these two desert forms, as I should hardly have ventured to separate them on my own responsibility. The present form appears to occur in the Algerian Sahara and in Marocco, from the latter of which countries I have an example of it, although from the north

of the Empire I have a very dark coloured specimen, darker even than most European examples.

In its habits, as well as in its note, food, and nidification, this desert form does not differ from *Æ. œdicnemus*.

Family GLAREOLIDÆ.

GLAREOLA PRATINCOLA, Linnæus.

PRATINCOLE.

Hirundo pratincola, *Linn. Syst. Nat.* i, p. 345 (1766).

Glareola pratincola, *Leach, Trans. Linn. Soc.* xiii, p. 131 (1820);
Sharpe, Cat. Birds Brit. Mus. xxiv, p. 53; *Loche, Expl. Sci. Alg. Ois.*
ii, p. 278 (1867); *Koenig, J. f. O.* 1888, p. 266; *id. J. f. O.* 1893, p. 79;
Erlanger, J. f. O. 1900, p. 55.

Glareola torquata, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 19 (1846).

Description.—**Adult male**, spring, from Djerba, South Tunisia.

Upper plumage dull greyish-brown, the sides of the head and the nape tinged with yellowish; rump and upper tail-coverts white; tail, which is much forked, white at the base and black at the tip; primaries blackish; secondaries tipped with white; chin and throat pale buff; lores and a narrow stripe passing below the eyes and encircling the throat, black; breast pale greyish-brown; abdomen and under tail-coverts white; under wing-coverts and axillaries rufous-chestnut.

Iris dark hazel; bill black; the base of the lower and the edge of the upper mandible red; feet dark brown.

Total length 10 inches, wing 7·50, culmen ·65, tarsus 1·25.

Adult female similar to the male.

According to Blanc, the Pratincole is very abundant in North Tunisia in spring, and breeds in the country. The Arabs, he says, bring him large numbers of these birds obtained in the vicinity of the town of Tunis. The species is common on the east coast of the Regency, near Sousa and Monastir, and is probably to be found more or less abundantly as a summer migrant throughout the coast districts, and also on some of the inland lakes and Sebkas of the country.

In Algeria and Marocco the species is most plentiful in spring and apparently breeds in both countries. I have specimens of it from

Casa Blanca and other parts of Marocco. Colonel Irby found it in "countless thousands" on the dried mud at the lakes south of Larache, and says that the eggs of the species are deposited in such localities about the second week in May (Orn. Strs. Gib. p. 154). Mr. Meade-Waldo met with the Pratincole breeding in large numbers between Rabat and Fedulla, and describes its mode of nesting as similar to that of the Peewit, the birds being found in odd pairs and not in actual colonies, and usually selecting the fallow fields as nesting sites (*Ibis*, 1903, p. 198).

In its habits the present species is said to resemble the Plovers to a certain extent, but in many ways it is more like some of the Terns. It is sociable and congregates in large numbers, particularly on migration. Its flight, though light and graceful, is at the same time rapid and powerful, and it can run swiftly. At times it is not at all shy, and will circle round one without any signs of fear, and even feed in one's presence, but at other times it is wild and unapproachable. It utters a shrill cry or scream, and, should its nest be approached, is very clamorous. Its food appears to be composed chiefly of insects, and more particularly of coleoptera, which are often swallowed whole.

The eggs are deposited on dry mud or other bare ground, and are two or three in number. Their colour is generally greyish-buff, marbled with grey shell-marks and blotched and streaked with dark brown surface-spots. Average measurements 28 × 23 mm.

GLAREOLA MELANOPTERA, Nordmann.

NORDMANN'S PRATINCOLE.

Glareola melanoptera, Nordmann, *Bull. Soc. Imp. des Nat. Moscou*, ii, p. 314, pl. ii (1842); Sharpe, *Cat. Birds Brit. Mus.* xxiv, p. 57.

Description.—**Adult male**, spring, from Marsala, Sicily.

Differs from *G. pratincola* in having the axillaries and under wing-coverts black instead of rufous, the upper parts generally rather darker, particularly on the crown, forehead and lores; the breast is also slightly darker, and the secondaries are without white tips.

Adult female similar to the male.

Blanc informs me that this species occurs occasionally in Tunisia, and that he has received two or three examples of it within the last ten years.

The species, though undoubtedly a "rara avis" in Western Europe and North-western Africa, probably occurs there more frequently than is generally supposed, but is overlooked on account of its resemblance to the common Pratincole. Examples of this bird have been obtained of recent years on three occasions in England, viz., twice in Kent and once in Sussex (Bull. B. O. C., xiii, p. 78, et xiv, p. 17). In Italy the species is recorded by Count Arrigoni as having been obtained on May 5th, 1892, at Bagnolo, near Vicenza (Atl. Orn. p. 362), and by myself as having been procured on April 27th, 1904, at Marsala, Sicily (*Ibis*, 1904, p. 478).

Nordmann's Pratincole is common in Southern Russia and to the east of the Black Sea. It is also found in Asia, at least as far as India, and in Africa as far south as the Cape of Good Hope.

In the localities it frequents, and in its life and general habits, the present species resembles *G. pratincola*.

In South Africa, where the bird appears in vast multitudes, it is of great service to the farmer in combating the invasions of locusts, so frequent in that country, and is consequently highly valued and unmolested. In some parts of the country it goes by the name of the "locust-bird."

Family CHARADRIIDÆ.

CURSORIUS GALLICUS (Gmelin).

CREAM-COLOURED COURSER.

Charadrius gallicus, *Gmel. Syst. Nat.* i, p. 692 (1788).

Cursorius gallicus, *Gray, List Grallæ Brit. Mus.* p. 60 (1840); *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 34; *Loche, Expl. Sci. Alg. Ois.* ii, p. 274 (1867); *Whitaker, Ibis*, 1896, p. 98; *Erlanger, J. f. O.* 1900, p. 54.

Cursorius isabellinus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 19 (1846); *Koenig, J. f. O.* 1888, p. 266; *id. J. f. O.* 1893, p. 80.

Description.—**Adult male**, spring, from El Ksob, Central Tunisia.

Forehead and fore-part of the crown rufous isabelline; hind part of the crown bluish-grey; a white stripe above each eye extending backwards to

the nape, and bordered below with black; upper-parts rufescent-isabelline; primaries and primary-coverts black; secondaries black on the inner webs and tips; middle tail-feathers rufescent-isabelline, the remainder with a black subterminal band and white tip; underparts pale isabelline, but whitish on the throat, lower abdomen and crissum; axillaries and under wing-surface black.

Iris very dark brown; bill dark brown; feet white.

Total length 10 inches, wing 6.30, culmen 1, tarsus 2.20.

Adult female similar to the male.

The young bird has the upper-plumage marked with crescent-shaped dark lines, the crown entirely rufous-isabelline, and without the black and white bands encircling the nape.

This graceful and delicately-plumaged species is not uncommon in spring and summer in South Tunisia and in the more sandy and sterile districts of Central Tunisia. It is also to be met with in certain numbers in summer in the north of the Regency, and during the months of July and August may not unfrequently be found in the immediate vicinity of the town of Tunis.

The species is apparently more migratory than resident in Tunisia, even in the southern parts of the Regency, though in some districts it is probably to be found in limited numbers throughout the year. This is no doubt the case throughout North-west Africa generally.

In the Algerian Sahara the species appears to be abundant in spring and summer, but, according to Canon Tristram, is only to be found in small numbers during the winter. Dr. Koenig met with the species in spring, not only in the Algerian Sahara, but also in the cultivated country near Batna, north of the Atlas.

From Marocco I have examples obtained in spring and summer in the central and southern districts, while in the north of the Empire the species seems to occur in certain numbers during the summer months. It is also to be found on most, if not on all, the Canary Islands, and on some of them appears to be numerous, and from not being molested, is tamer than the bird usually is in other countries.

Eastward the species is to be found in Tripoli, Cyrenaica and North-east Africa, and still further east through Arabia and Persia, as far as Northern India. From Tripoli and Cyrenaica I have numerous examples of the species, including young birds.

As a straggler the Cream-coloured Courser has occurred from time to time in various countries north of the Mediterranean, and in our

own country it has been met with on several occasions. On the Continent it has been obtained less frequently, and in the east of Europe but rarely. In Sicily and the south of the Italian Peninsula the species has, however, not unfrequently been met with, and the Palermo Museum contains examples obtained near that town and Girgenti.

The present species is generally to be found in semi-desert country scantily clothed with vegetation, and on arid undulating plains abounding in hillocks of blown-sand, dotted over with tufts of graminaceous plants. It is chiefly to be met with in small parties of from six to nine individuals, or in pairs, and, as a rule, is shy and wary.

Though its flight is fairly powerful and rapid, the bird prefers trusting to its feet and powers of concealment for its safety, and on the approach of danger immediately runs off swiftly and hides among the patches of herbage.

According to Mr. Aplin, the species, when on the ground, utters a short and sharp note like "*wut*," and "*wut-quoi*," but at certain seasons the bird is apparently silent, for Mr. Dodson says he never heard it utter any note on the ground in July and August. On the wing its note is a short whistle like the word "*whip*," and the bird is sometimes very noisy, and attracts attention by its cry.

The food of this species is composed of insects and their larvæ, grain, and the seeds of various plants.

The bird makes no nest, but deposits its eggs, two or three in number, in a depression in the soil. The colour of the eggs is light buff, thickly covered and clouded with greyish shell-marks and brownish surface-spots and streaks. Average measurements 36×27 mm. The eggs are rather rough and without any gloss.

CHARADRIUS PLUVIALIS, Linnaeus.

GOLDEN PLOVER.

Charadrius pluvialis, *Linn. Syst. Nat.* i, p. 254 (1766); *Sharpe, Cat.*

Birds Brit. Mus. xxiv. p. 191; *Koenig, J. f. O.* 1888, p. 270; *id.*

J. f. O. 1893, p. 83; *Erlanger, J. f. O.* 1900, p. 57.

Pluvialis apricarius, *Loche, Expl. Sci. Alg. Ois.* ii, p. 262 (1867).

Description.—**Adult male**, autumn, from Djerba, South Tunisia.

Upper plumage black, streaked, spotted, and barred with golden-yellow, lightest on the nape; forehead, sides of the head and upper throat white, tinged slightly with yellow, and streaked with greyish-brown; lower throat and breast whitish, tinged with yellow and spotted with greyish-brown; lower abdomen, under tail-coverts and axillaries white.

Iris brown; bill black; feet slate-colour.

Total length 11 inches, wing 7·40, culmen 1, tarsus 1·50.

Adult female resembles the male, but has the breast browner.

In spring the underparts of the male are almost entirely black, and a white stripe runs from the forehead over the eye and down the sides of the neck and body.

The Golden Plover is abundant in Tunisia during the winter months, arriving in autumn and leaving again in spring. In the immediate neighbourhood of the town of Tunis the species may often be seen, and numbers are sold in the Tunis market. It is also plentiful near Maharès and other places on the east coast of the Regency.

The species occurs abundantly in some parts of Algeria and Marocco in winter, and has also been recorded from Madeira and the Azores. It breeds in Northern Europe and in some parts of Central Europe, and is to be found on migration throughout the south of our Continent. In Africa it is to be met with as far south as the Cape of Good Hope, and in Asia as far east as the Yenesei river and India. In Eastern Asia it is replaced by the Eastern or Lesser Golden Plover (*C. dominicus*, P. L. S. Müller).

The Golden Plover frequents open country, marshes, moors and the sea-shore, and during the periods of passage is to be found in large flocks. It is usually very shy and difficult to approach. Its flight is swift and powerful, and it also runs well. It feeds on worms, insects and small molluscs, and also to a certain extent, on seeds. Its note is a clear and rather plaintive whistle, which may often be heard at night, for the species migrates by night as well as by day.

Under the name of *Pluvialis longipes*, Loche includes the Eastern Golden Plover (*C. dominicus*) among the birds of Algeria, an example of this species having been obtained once in that country near Koubra (Expl. Sci. Alg. Ois. ii., p. 264). Colonel Irby records an example of this Asiatic species as having been obtained near Malaga in 1878. This specimen is in the late Lord Lilford's collection, now in my possession. From Malta *C. dominicus* appears to have been recorded no less than three times.

SQUATAROLA HELVETICA (Linnæus).

GREY PLOVER.

Tringa helvetica, *Linn. Syst. Nat.* i, p. 250 (1766).

Squatarola helvetica, *Brehm, Vög. Deutschl.* p. 554 (1831); *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 182; *Loche, Expl. Sci. Alg. Ois.* ii, p. 260 (1867); *Koenig, J. f. O.* 1888, p. 270; *id. J. f. O.* 1893, p. 83; *Whitaker, Ibis*, 1896, p. 98; *Erlanger, J. f. O.* 1900, p. 57.

Vanellus (Squatarola) melanogaster, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846).

Description.—**Adult male**, summer, from South Tunisia.

Forehead, superciliaries, sides of the neck and sides of the breast white; centre of the crown, back, scapulars and upper wing-coverts blackish-brown, most of the feathers fringed with white; rump and upper tail-coverts white; tail white barred with blackish-brown; quills blackish-brown, with some white on the inner webs; entire throat, middle of the breast and upper abdomen blackish-brown; lower abdomen, crissum and under tail-coverts white; axillaries blackish-brown.

Iris dark brown; bill black; feet blackish.

Total length 12 inches, wing 7·60, culmen 1·20, tarsus 1·90.

Adult female similar to the male.

In winter the upperparts are greyer and the underparts white, the throat striped, and the breast and sides of the body mottled with greyish-brown.

The Grey Plover, though not as abundant as the preceding species, is to be found in Tunisia in certain numbers throughout the winter months and during the periods of migration. Near the towns of Tunis and Bizerta it may frequently be seen, and is probably not uncommon all along the east coast of the Regency. Von Erlanger met with the species on the small island of Knais, between Sfax and Gabès. Blanc informs me that he has found this Plover in summer on the island of Djerba in South Tunisia, but there is no record of the species nesting so far south, its usual breeding home being in northern countries. The range of the Grey Plover is most wide-spreading, and apparently extends to almost every part of the globe.

The bird is essentially a shore-frequenting species, and is generally to be met with on the sea-coast or in localities not far inland, although in spring it appears to resort to grass fields and dry spots. It is chiefly to be found in small flocks, is very swift on the wing, and runs about with facility, resembling the Golden Plover in many of its

movements and habits. It is shy and wary and not easy to approach. Its note is a sharp whistle. It feeds chiefly on marine insects, worms, small molluscs and, to a certain extent, on vegetable matter.

ÆGIALITIS ALEXANDRINA (Linnæus).

KENTISH PLOVER.

Charadrius alexandrinus, *Linn. Syst. Nat.* i, p. 258 (1766).

Ægialitis alexandrinus, *Blyth, Cat. Mamm. and Birds, Burma*, p. 154 (1875).

Charadrius cantianus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846);
Loche, Expl. Sci. Alg. Ois. ii, p. 270 (1867).

Ægialites cantianus, *Koenig, J. f. O.* 1888, p. 271; *id. J. f. O.* 1893, p. 84.

Ægialitis alexandrina, *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 275;
Erlanger J. f. O. 1900, p. 58.

Ægialitis cantiana, *Whitaker, Ibis*, 1895, p. 106.

Description.—**Adult male**, spring, from South Tunisia.

Forehead and a streak over and behind the eye white; a band across the forehead, lores, a patch behind the eye, and a large patch on each side of the breast black; crown and rest of upper plumage pale greyish-brown, becoming darker on the quills and tail; entire underparts white.

Iris dark brown; bill dark brown; feet slate-grey.

Total length 7 inches, wing 4.40, culmen .70, tarsus 1.10.

Adult female differs from the male in lacking the black on the forehead and sides of the breast, and in being rather smaller.

Of the three members of the group found in Tunisia, the present species is the commonest, being met with all the year round throughout the Regency generally. It appears to be equally abundant and generally distributed in Algeria and Marocco, and I have an example of the species from Tripoli, obtained in the month of July.

The Kentish Plover frequents the sea-shore, particularly stretches of sand and shingle, lake-sides, and the mouths of rivers, and is to be found on the inland Chotts and Sebkas of North-west Africa. Salvin met with the species breeding on most of the salt lakes of the interior, and Mr. Gurney and Canon Tristram both record it as occurring in the Algerian Sahara, the latter writing (*Ibis*, 1860, p. 78) as follows: "One of the most universally distributed denizens of the

Sahara, this species is to be found running rapidly along the sand by all the Chotts and Sebkas in parties of from two to eight. It breeds everywhere, but unlike our Ring Plover, appears to lay only three eggs, which are placed on the level sand, without the precaution of even selecting the impress of a camel's foot."

In its habits the present species is active and sprightly, at times not very shy, and when approached, often merely running off a few yards, without taking to flight. During the breeding season, however, I have found it very shy and wary. It feeds chiefly on worms, small shell-fish and marine insects. Its notes vary a good deal, but are mostly soft and rather plaintive. That most often heard is very fairly rendered by the syllables "*tirri-tirri*," repeated constantly by the bird on the wing. In spring the species is to be found in pairs, but during the remainder of the year generally in small parties. It deposits its eggs, three in number, in little round hollows on the bare ground, either on sand or mud, and sometimes among shingle, where they are not easily detected, owing to their appearance harmonising with the surroundings. The eggs are generally of a yellowish-buff colour, spotted and scrolled with blackish, and measure about 30×23 mm., but they vary a good deal. In Sicily I have found the Kentish Plover breeding among the salt-pans numerous in the neighbourhood of Trapani and Marsala. The nests were usually placed on the footpaths or divisions separating the pans, and in full view of anyone passing by. In some cases the nests were surrounded by the *débris* of small shells.

ÆGIALITIS DUBIA (Scopoli).

LESSER RINGED PLOVER.

Charadrius dubius, Scop. *Del. Flor. et Faun. Insubr.* ii, p. 93 (1786).

Ægialitis dubius, Swinhoe, *P. Z. S.* 1871, p. 404.

Charadrius curonicus, Loche, *Expl. Sei. Alg. Ois.* ii, p. 268 (1867).

Ægialitēs minor, Koenig, *J. f. O.* 1888, p. 270; *id. J. f. O.* 1893, p. 83.

Ægialitis dubia, Sharpe, *Cat. Birds Brit. Mus.* xxiv, p. 263; Erlanger, *J. f. O.* 1900, p. 60.

Ægialitis curonica, Whitaker, *Ibis*, 1895, p. 106.

Description.—**Adult male**, spring, from Gafsa, South Tunisia.

A narrow frontal line, lores, region round and behind the eye, broad band passing over the fore-crown and broad pectoral band, becoming narrower at the back, black; large patch on the forehead, narrow band across the crown, nape, entire throat and rest of underparts pure white; crown and upper-plumage generally pale greyish-brown, rather darker on the quills and tail-feathers, which latter, with the exception of the median rectrices, are tipped with white; shafts of the primary quills brown with the exception of that of the outermost feather on each side, which is white.

Iris dark brown; bill black, and yellow at base of lower mandible; feet yellowish.

Total length 6.50, wing 4.50, culmen .60, tarsus 1.

Adult female resembles the male, but is duller in coloration, and has little or no black in its plumage.

The Lesser Ringed Plover is the least common of this group in Tunisia, but is fairly abundant in the Regency, in the interior as well as on the coast, and appears to be resident throughout the year. Salvin met with the species in the neighbourhood of the marsh of Zana during the breeding season. I have notes of its occurrence in the vicinity of Tatahouine, Gabès and Gafsa, as well as in various localities in the north of the Regency.

In Algeria the species is not uncommon, and, according to Loche, some pairs remain and breed. It is also fairly abundant in Marocco, and I have an example from Zarkten in the Atlas, about 5,000 feet above sea-level, obtained on May 23rd, when the species was presumably breeding. Mr. Meade-Waldo also found it nesting in suitable places throughout the country, and up to a considerable elevation in the Atlas (*Ibis*, 1903, p. 214).

In the localities it frequents and in its general habits the Lesser Ringed Plover does not differ greatly from the preceding species, though it is said to prefer the neighbourhood of inland waters to the sea-shore. It is also perhaps less gregarious than that species and more shy and wary. Its principal food consists of worms and water-insects. Its notes differ slightly from those of its congeners. The localities to which this species resorts for breeding purposes, vary considerably in their character, being sometimes flat expanses of sand and shingle on river banks, at others high stony spots and dry mountain-torrent beds. The eggs, four in number, are of a light buff colour, with pale lilac shell-marks and minute dark brown surface-spots and streaks. Average measurements 27×22 mm.

ÆGIALITIS HIATICOLA (Linnæus).

RINGED PLOVER.

Charadrius hiaticula, *Linn. Syst. Nat.* i, p. 253 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 266 (1867).

Ægialitis hiaticula, *Boie, Isis*, 1822, p. 558; *Whitaker, Ibis*, 1895, p. 106; *Erlanger, J. f. O.* 1900, p. 59.

Ægialites hiaticula, *Koenig, J. f. O.* 1888, p. 270; *id. J. f. O.* 1893, p. 84.

Ægialitis hiaticola, *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 256.

Description.—**Adult male**, spring, from North Tunisia.

Differs from *Æ. dubia* in its larger size, and slightly darker coloration, and in having the shafts of all the primary quills white in the middle.

Iris dark brown; bill black at the tip, and orange-yellow at the base; feet orange-yellow.

Total length 7 inches, wing 5, culmen .70, tarsus 1.10.

Adult female resembles the male, but is duller in colouring, and has little or no black in its plumage.

The Ringed Plover is abundant in Tunisia in winter, and during the periods of migration, and, according to Blanc, is also resident and breeds in the Regency. It is to be met with in winter in the southern districts as well as further north, and on some of the lakes, as well as on the sea-coast. According to Loche, it is fairly common in Algeria, particularly on migration, and breeds in limited numbers in that country. The species is to be met with in Marocco during the winter and on passage.

The Ringed Plover chiefly frequents the sea-coast, but may occasionally be found some distance inland. It is generally to be found in small flocks, and in pairs during the breeding season. It is sociable and gregarious, and will often, when on the ground, consort with other species of waders. Like its congeners it is very bright and active, and runs with amazing swiftness. On the wing the species is also very swift, and often goes through a series of aerial evolutions, most interesting to watch. Its food consists chiefly of small marine animals and insects, and a certain quantity of fine gravel appears to be swallowed by the bird, presumably to assist digestion. Its notes are varied, being softer and more plaintive in spring, and harsher in winter.

The locality selected by this species for breeding is generally on or near the sea-coast, or on the borders of inland waters, and its eggs are deposited on ground usually covered with shingle and the *débris* of shells. The eggs, four in number, are of a yellowish-buff-colour, with dark grey shell-marks and black surface-spots. Average measurements 35 × 25 mm.

EUDROMIAS MORINELLUS (Linnæus).

DOTTEREL.

Charadrius morinellus, *Linn. Syst. Nat.* i, p. 254 (1766).

Eudromias morinella, *Brehm, Vöog. Deutschl.* p. 545 (1831).

Eudromias morinellus, *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 234; *Koenig, J. f. O.* 1888, p. 270; *id. J. f. O.* 1893, p. 83; *Whitaker, Ibis*, 1894, p. 99; *Erlanger, J. f. O.* 1900, p. 58.

Morinellus sibiricus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 265 (1867).

Description.—**Adult male**, winter, from North Tunisia.

Upper plumage generally greyish-brown, the nape rufescent-buff, streaked with grey; a broad whitish line passing over the eye and encircling the nape; chin white; sides of the head and throat whitish, streaked with grey; breast buff, washed with grey; abdomen warm buff; lower abdomen and crissum white.

Iris brown; bill and feet blackish.

Total length 9 inches, wing 5·75, culmen ·75, tarsus 1·50.

Adult female similar to the male.

In spring this species has the crown nearly black, with a broad white line running round the nape from over the eyes; upper parts ash-brown; chin and throat dull white; upper breast and flanks rufous; lower breast and upper abdomen black.

The Dotterel is not uncommon in Tunisia in winter and during the periods of migration, arriving in September and October, and leaving again in March. It appears to be most abundant during the autumn months, and may frequently be found in large numbers at that season all along the east coast of the Regency, as well as on the high plateaux of the interior. I have also met with the species in the latter districts in the month of March.

Lord Lilford writes ("Birds of Northamptonshire," ii., p. 9):

"I found this species in great abundance on the plains near Tunis, in the late autumn of 1856, consorting with Sand-grouse, Peewits, Golden Plover, Little Bustards and Cranes, and shot a good many from horse, donkey and camel; on foot I found it impossible to get within shot, unless I had the luck to fall in with the Dotterels away from any of the above-mentioned associates, though I have frequently seen them and the Golden Plovers running fearlessly about within a few feet of the Arab ploughmen."

According to Loche, the Dotterel is to be found in Algeria in the high plateaux districts, as well as on the sea-coast, and Dr. Koenig met with it in the Sahara.

The species occurs in Marocco, though apparently more sparingly than it does further east. As a straggler it seems to have been found in the Canary Islands.

The summer quarters of this bird are in Northern Europe and Northern Asia. It breeds in considerable numbers in Scandinavia, and has been found nesting in Nova Zembla. A limited number of the species apparently also nest in the higher districts of Eastern-central Europe, but throughout the greater part of Central Europe and in the south of our Continent it is merely a migrant.

The Dotterel chiefly frequents open uncultivated highlands and moorlands, and is usually to be found in small flocks. It is so remarkably tame and confiding at times that it has gained a reputation for stupidity, and hence the uncomplimentary names, both scientific and trivial, which have been bestowed upon it.

Its flight is swift and powerful, and it runs with facility. The food of the species consists chiefly of worms, snails, and insects of various kinds.

VANELLUS VANELLUS (Linnæus).

LAPWING.

Tringa vanellus, *Linn. Syst. Nat.* i, p. 248 (1766).

Vanellus vanellus, *Licht. Nomencl. Av. Mus. Berol.* p. 95 (1854); *Sharpe, Cat. Birds, Brit. Mus.* xxiv, p. 166; *Erlanger, J. f. O.* 1900, p. 56.

Vanellus cristatus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 271 (1867); *Koenig, J. f. O.* 1888, p. 271; *id. J. f. O.* 1893, p. 85; *Whitaker, Ibis*, 1894, p. 99.

Description.—**Adult male**, winter, from North Tunisia.

Forehead, crown, and long nuchal crest dull greenish-black; stripe over and below the eye, and patch on the cheeks dull black; the rest of the sides of the head and nape whitish-buff; mantle grey; back, scapulars, elongated inner secondaries and rump metallic-green, glossed with purple on the scapulars and slightly fringed with buff; upper wing-coverts dark metallic-green, glossed with violet; primaries black, the three outer feathers subterminally barred with whitish; upper tail-coverts bright chestnut; tail white on basal half, and black on the terminal half with a slight white fringe, and with the outer feathers on each side pure white; chin and throat white; breast black; remainder of the underparts white, excepting the under tail-coverts, which are pale chestnut.

Iris dark brown; bill black; feet lilac-brown.

Total length 12.50 inches, wing 9.25, culmen 1.10; tarsus 1.80.

Adult female duller in coloration than the male, with a much shorter crest, slightly longer bill, and much narrower and less rounded wings. Mr. F. W. Frohawk appears to have been the first to point out the great difference between the wings of the male and female of this species. Some interesting particulars regarding this, together with drawings illustrating the difference, are to be found in the *Ibis* (*Ibis*, 1904, pp. 446-451).

In spring the entire throat is black, and the plumage generally is purer, and lacks the whitish-buff margins to the feathers. The black throat is apparently acquired early in the year, for I have a specimen from Marocco, obtained on February 24th, which has this part almost entirely black.

The Lapwing, or Peewit, is abundant in Tunisia during the winter months and on passage, the bulk of the birds arriving in October and leaving again in March. This species is more often to be seen in the north of the Regency, where low-lying meadows and marshy fields are plentiful, but is not uncommon in some of the central and southern districts. In the neighbourhood of Kairouan and near Kasrin I have found it abundant in the early spring.

I have no knowledge of the species breeding in any part of the Regency, nor yet in Algeria, where it is not uncommon in winter. In Marocco, however, according to Colonel Irby, the Lapwing breeds at the northern end of the lakes of Ras-Dowra, where he observed three or four pairs of the species nesting towards the end of April (*Orn. Strs. Gib.*, p. 159). Though its principal breeding quarters are further north, the Lapwing nests in limited numbers in Southern Spain, and occasionally, though rarely, in some parts of Northern Italy.

The species occurs in winter in the Canaries, Madeira and the Azores, though apparently it is rare in the latter islands.

The Lapwing frequents marshy plains and moist localities, as a rule, but may also often be found in fallow-fields and cultivated districts. During the winter and on passage it may be observed in vast flocks, which break up on the approach of the breeding season, though even at that period the bird is gregarious to a certain extent.

It is shy and wary, and in the open localities it frequents is not easily approached. Its flight is slow and measured, but graceful and particularly light and buoyant. Its well-known call-note is fairly rendered by the syllables "pee-wit, pee-wit."

Its food consists of worms, slugs and insects. Large numbers of this bird are sold in the markets of many towns, but its flesh cannot be compared for flavour or delicacy with that of the Golden Plover. Its eggs, however, are highly esteemed and form quite an important article of commerce in countries where they are obtainable. In Holland a large trade is carried on in Plover's eggs, and a considerable number are annually exported thence to England. Fortunately for the preservation of the species there is a "close time" in Holland.

STREPSILAS INTERPRES (Linnæus).

TURNSTONE.

Tringa interpres, *Linn. Syst. Nat.* i, p. 248 (1766).

Strepsilas interpres, *Illiger, Prodr.* p. 263 (1811); *Loche, Expl. Sci. Alg. Ois.* ii, p. 281 (1867); *Koenig, J. f. O.* 1888, p. 271; *id. J. f. O.* 1893, p. 85.

Arenaria interpres, *Vieill. Nouv. Dict. d'Hist. Nat.* xxxiv, p. 345 (1819); *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 92; *Erlanger, J. f. O.* 1900, p. 61.

Description.—**Adult male**, spring, from Marocco.

Lores, and a band above the forehead, extending backwards over and behind the eyes and round the nape, whitish; a black band across the forehead extending downwards in front of the eyes and meeting the black bands on each side of the throat; crown and part of the neck striped with blackish-brown; back and scapulars black, variegated with chestnut; rump white; upper tail-coverts blackish above, and white below; median rectrices white at the base, and blackish on the terminal portion, the remaining rectrices the same, but tipped with white; quills blackish, with white

shafts; upper wing-coverts greyish brown, crossed by a white bar; breast black; rest of the underparts white.

Iris brown; bill blackish; feet reddish-orange.

Total length 8.50 inches, wing 6.10, culmen 1, tarsus 1.

Adult female, June, from Djerba, South Tunisia.

Head and nape whitish, mottled and striped with grey and brown mantle, scapulars, and upper wing-coverts blackish, variegated with whitish and pale rufous; rump, upper tail-coverts, tail and quills as in the male breast and sides of the neck and throat dark greyish-brown, with a paler yellowish patch on each side; throat, middle of the breast and rest of the underparts white.

Soft parts as in the male; measurements rather less.

The Turnstone is not uncommon in Tunisia during the periods of migration, and according to Blanc, is partially resident and to be met with in the Regency throughout the year. He informs me that he has found the species during the summer months on the south-east coast, and has sent me a female example, obtained in June, on the Island of Djerba. This is the specimen I have described above.

According to Loche the Turnstone is to be found in Algeria only during the periods of passage.

The species is not uncommon in Marocco, and I have several examples of it obtained in the vicinity of Rabat in the month of April. It occurs in the Canaries, Madeira and the Azores. The species is abundant in spring, in Spain, and in the Lilford collection there are several examples in full breeding-dress, obtained during the month of May, but these birds probably do not breed there.

The Turnstone is one of the most widely distributed birds, being found, at one season or another, in almost every part of the globe.

The species frequents the sea-coast, particularly rocky shores, and is usually to be observed in small parties or in pairs. Its flight is powerful and graceful, while on foot the bird is swift and nimble. Its note is rather loud and whistling. Its food consists chiefly of small molluscs, marine insects and worms, in its search for which the bird is in the habit of turning over pebbles and stones, whence its trivial name in most languages.

HÆMATOPUS OSTRALEGUS, Linnæus.

OYSTER-CATCHER.

Hæmatopus ostralegus, *Linn. Syst. Nat.* i, p. 257 (1766); *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 107; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 283 (1867); *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 79; *Whitaker, Ibis*, 1895, p. 106; *Erlanger, J. f. O.* 1900, p. 61.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Entire head, nape and a collar round the neck black; upper back, scapulars, inner secondaries, median and lesser wing-coverts brownish-black; greater wing-coverts and some of the secondaries white; primaries brownish-black, the inner webs margined with white; rump, upper tail-coverts and the base of tail-feathers white; terminal portion of tail-feathers black; a small patch immediately below the eye, a narrow throat-band and all the under parts below the neck-collar pure white.

Iris reddish; bill orange-yellow; feet livid flesh-colour.

Total length 18 inches, wing 9, culmen 3·20, tarsus 2·10.

Adult female similar to the male.

The Oyster-catcher, or "Sea-Pie," as it is often called, is not uncommon in Tunisia during the colder months, arriving in the autumn and leaving again in spring. It may frequently be met with on the east coast of the Regency, and on the small islands off that coast.

The species occurs on passage in Algeria, Marocco and Tripoli, but there appears to be no record of its breeding on the southern shores of the Mediterranean.

The Oyster-catcher is to be found throughout almost the whole of the Palæarctic Region, but breeds chiefly in the more northern and eastern parts. It has, however, been found nesting in some localities further south, among others in the neighbourhood of Venice, though instances of its nidification in this district appear to be much rarer now than formerly.

The species is essentially a shore-bird, and frequents more particularly rocky localities and uninhabited islets, rarely venturing inland. It is remarkably shy and wary, and appears to be always on the alert, and ready to fly off on the slightest sign of danger. Its note or cry, when disturbed, is a clear loud whistle. Its flight is swift and powerful, and the bird is a good swimmer. Its food seems to consist

mainly of shell-fish of various kinds, chiefly univalves, and to a certain extent, of marine plants. Oysters and the larger bivalves are apparently not often eaten by the bird.

Family SCOLOPACIDÆ.

RECURVIROSTRA AVOCETTA, Linnæus.

AVOCET.

Recurvirostra avocetta, *Linn. Syst. Nat.* i, p. 256 (1766); *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 326; *Malherbe, Cat. Rais. d'Ois. Alg.* p. 20 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 287 (1867); *Koenig, J. f. O.* 1888, p. 283; *id. J. f. O.* 1893, p. 94; *Erlanger, J. f. O.* 1900, p. 61.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Crown, nape, upper neck, inner scapulars, inner secondaries, primaries, and lesser and median wing-coverts black; remainder of the plumage above and below white; bill long, very slender and curved upwards.

Iris reddish-brown; bill black; feet pale blue.

Total length 18 inches, wing 9, culmen 3·50, tarsus 3·70.

Adult female resembles the male.

In winter the white upper parts are tinged with grey.

Although rather irregular in its occurrence, this graceful species is not uncommon locally in Tunisia, and is apparently to be met with in certain numbers throughout the entire year. It may be observed sometimes on the shores of the Lake of Tunis, and examples of it may frequently be found in the market of that town.

Salvin states that he saw the species at Zana and Djendeli and found it most numerous at Chott Saboun, the eastern extremity of the marsh of Zana (*Ibis*, 1859, p. 359).

According to Loche, the species is not numerous in Algeria, though fairly generally distributed. It also occurs in Morocco, but does not appear to have been met with except on passage.

The Avocet is to be found in most parts of Central and Southern Europe, as also, though less abundantly, in some parts of Northern Europe, where it breeds in certain numbers. In the basin of the Mediterranean it is partially resident, and in Southern Russia it is

extremely abundant. Eastward the species ranges across Asia as far as China. In Africa it ranges southward to Cape Colony.

The present species frequents the sea-shore, as also inland lakes, and in Tunisia appears to be partial to the sebkas and salt marshes. Essentially a gregarious and sociable bird, it is nearly always to be found in parties and flocks, usually composed of merely a few individuals, but occasionally of a hundred or more. Even during the breeding season several pairs may be found together. It is rather shy and wary and rarely allows itself to be approached. Its flight is light and buoyant, and its movements both on land and in the water are easy and graceful. Its usual note is a soft flute-like "*kluit*." It feeds principally on worms and marine insects, which it obtains, as a rule, in shallow water, and with a peculiar sideways scooping movement of its bill.

The species makes little or no true nest, but generally deposits its eggs, three or four in number, on the bare ground. The eggs are of a buff-colour, with blackish spots and blotches. Average measurements 50 × 37 mm.

HIMANTOPUS HIMANTOPUS (Linnæus).

BLACK-WINGED STILT.

Charadrius himantopus, *Linn. Syst. Nat.* i, p. 255 (1766).

Himantopus himantopus, *Sharpe, Ibis*, 1891, p. 114; *id. Cat. Birds Brit. Mus.* xxiv, p. 310; *Erlanger, J. f. O.* 1900, p. 62.

Himantopus melanopterus, *Malherbe, Faune Orn. de l'Alg.* p. 32 (1855).

Himantopus candidus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 285 (1867).

Himantopus rufipes, *Koenig, J. f. O.* 1888, p. 282; *id. J. f. O.* 1893, p. 94.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Hind part of the crown, nape, and an irregular line down the upper neck black; wings, scapulars and back black, with metallic-green reflections; rump white; tail pale dove-grey; entire under parts white, with a pale vinous tinge on the breast and abdomen.

Iris red; bill black; feet pink.

Total length 15 inches, wing 9·70, culmen 2·80, tarsus 4·75.

Adult female resembles the male, but has the dark parts paler and duller, and is slightly smaller.

Like the preceding species, the Black-winged Stilt, though chiefly migratory, is to be met with in Tunisia throughout the year, and is not uncommon in some localities. Blanc says he has frequently received examples of the bird, which have been obtained by the Arabs in the vicinity of the town of Tunis, and I have notes of its occurrence at several places on the east coast of the Regency. Salvin found it breeding in Eastern Algeria, and gives the following interesting particulars regarding the bird and its habits (*Ibis*, 1859, p. 361). This species is "abundant at Zana, a few pairs occurring at Djendeli and Guerah el Tharf. Over the whole of the lower end of the marsh of Zana and Chott Saboun the Stilt breeds in great abundance amongst the wet grass, choosing for the position of its nest a small tuft, so as just to keep the eggs out of the water. Sometimes, however, this object is not attained, as we occasionally found nests in which the eggs were half immersed. The bird uses its long legs with much greater ease than might be expected, and its long deliberate strides, as it stalks about in search of food, are far from being ungraceful. The only time they seem to be in its way is at the moment of taking flight, when they hang awkwardly down till the bird, being fairly started, stretches them out, extending them far beyond the tail. We used to search for the nests of this bird on horseback, and on observing one sitting, to ride up without taking our eyes off the place. The bird would remain quiet till we were within thirty yards of the nest, when it would walk slowly away till, aware of our purpose, it would rise and fly, wheeling and screaming overhead. The young Stilt is able to walk almost immediately on leaving the egg; one we found was capable of moving about while the other three were struggling to free themselves from the shell. The nest is composed of a few bits of dead reed or grass. The complement of eggs laid by one bird is four."

Canon Tristram states (*Ibis*, 1860, p. 79), that this species breeds at Laghouat, but more abundantly in the Northern Sahara. Mr. J. H. Gurney, however, writing some years later (*Ibis*, 1871, p. 299), remarks that the species was then exceedingly rare at Laghouat and appeared to have nearly forsaken that place.

From Marocco I have several examples of this Stilt, obtained on the west coast in the month of April. Colonel Irby states (*Orn. Strs. Gib.* 2nd ed. p. 275), that it is one of the most common of the marsh-birds, in spring, on both sides of the Straits, and that at Meshree-el-

Haddar, in Marocco, and in the marisma of the Guadalquivir, their numbers were perfectly marvellous.

The species inhabits Southern Europe, occurring irregularly in Central and Northern Europe. In Asia it is to be found in the more temperate and warmer regions, and throughout the greater part of Africa.

The Black-winged Stilt frequents the borders of lakes and marshes as well as shallows on the sea-shore, where the water is not too deep. It is usually to be found in small parties or in pairs, and is far from shy or wary. Its flight is fairly swift and buoyant, and when walking or running, its movements are light and graceful. Its usual note in spring is not unlike the syllable "guip," repeated three times. It apparently feeds chiefly on aquatic insects, picking the winged ones off the surface of the water with great dexterity. As stated by Salvin, this species nests among wet grass or other herbage, often choosing a tuft as a site for the nest, and lays four eggs. The colour of these is a warm buff, blotched and streaked with black. Average measurements 43×31 mm.

PHALAROPUS HYPERBOREUS (Linnæus).

RED-NECKED PHALAROPE.

Tringa hyperborea, *Linn. Syst. Nat.* i, p. 249 (1766).

Phalaropus hyperboreus, *Tunst. Orn. Brit.* p. 3 (1771); *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 698; *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 94; *Whitaker, Ibis*, 1895, p. 106.

Lobipes hyperboreus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 289 (1867).

Description.—**Adult male**, winter, from Tunis, North Tunisia.

Forehead white; crown, nape, hind-neck and a patch round and behind the eye dull black; back and scapulars black, with buff margins to the feathers; wings dull black, the coverts tipped with white; tail blackish; entire under parts white.

Iris dark brown; bill blackish; feet slate-colour, with the toes lobed.

Total length 7 inches, wing 3.35, culmen 1, tarsus .80,

Adult female is similar in plumage, but rather larger than the male.

The summer plumage of both male and female is brighter and richer, and on each side of the neck there is a conspicuous rufous patch, which disappears in autumn.

This northern species is to be met with occasionally in Tunisia during the autumn and winter months, but cannot be looked upon as otherwise than rare, and of irregular occurrence in the Regency. I have two examples of it in my collection, one obtained in the vicinity of Tunis, the other on a small island near Bizerta. Blanc informs me that he has only obtained three or four examples of the species during the past ten years.

According to Loche, the species is to be met with occasionally in Algeria as an accidental visitor, after stormy weather. There seems to be no record of its occurrence in Morocco.

The Red-necked Phalarope inhabits the northern portions of Europe, Asia and America, its migration in winter in Europe extending as far as the southern shores of the Mediterranean.

In its habits and in its flight the present species resembles some of the Sandpipers. It is generally to be found on the sea-coast and seldom on inland waters. It is gregarious, and usually to be met with in small parties. It is remarkably tame and unsuspecting, and appears to be totally devoid of fear. It flies, swims, and dives with ease, and feeds chiefly on aquatic insects, worms and small crustaceans. Its note is a low "tweet."

There appears to be no record of the occurrence of the Grey Phalarope (*P. fulicarius*) in Tunisia or Algeria, though the species seems to have been met with on more than one occasion in Morocco. Mr. Drake states that he obtained an example of it in that country in the month of January (*Ibis*, 1867, p. 429), while, according to Colonel Irby, Favier obtained two specimens of the bird near Tangier in December, 1858 (*Orn. Strs. Gib.* 2nd ed. p. 275).

SCOLOPAX RUSTICULA Linnæus.

WOODCOCK.

Scolopax rusticola, *Linn. Syst. Nat.* i, p. 243 (1766); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 21 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 291 (1867); *Koenig, J. f. O.* 1888, p. 276.

Scolopax rusticola, *Bodd. Tabl. Pl. Enl.* p. 53 (1783); *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 671; *Koenig, J. f. O.* 1893, p. 89; *Erlanger, J. f. O.* 1900, p. 70.

Description.—**Adult male**, winter, from North Tunisia.

General colour of plumage above russet-brown, richly pencilled and marked with black, the forehead and neck greyer, and the back, rump and wings more rufous; under parts pale buff, finely barred and vermiculated throughout with dusky-brown.

Iris dark olive-brown; bill flesh colour, becoming black at the tip; feet pale brown.

Total length 14 inches, wing 7·50, culmen 3, tarsus 1·35.

Adult female resembles the male.

The Woodcock winters in Tunisia, and is not uncommon in the wooded districts north of the Atlas, between the months of November and March. Though I never heard of very large "bags" being made, the bird must be fairly plentiful in the neighbourhood of Tunis, as the market of that town is more or less abundantly supplied with Woodcocks throughout a considerable portion of the winter.

South of the Atlas, where woods are scarce, the species is not often seen, though it is to be met with occasionally. Von Erlanger obtained an example on a rocky islet near the island of Knais, off the south-east coast of the Regency (J. f. O. 1900, p. 70).

The Woodcock occurs in Algeria and Marocco during the winter, and is apparently fairly abundant in some parts.

In the Canaries, Madeira, and the Azores it is resident, and breeds in the wooded mountains.

North of the Mediterranean the species occurs generally throughout Europe, breeding in the northern and central parts, even as far south as Central Italy, and wintering in the south of the Continent. Its range extends through a considerable portion of Asia, as far east as Japan, while southwards it extends to Ceylon.

In its habits the present species is solitary and nocturnal. It is usually to be found singly, or in pairs during the breeding-season. Its favourite haunts are thick woods, and well-bushed hill-sides, in the neighbourhood of, or not far from, wet or moist localities, to which it resorts after sundown in search of food. This consists chiefly of earth-worms, slugs and insects of various kinds, which it obtains by probing with its long bill in the mud or soft soil. Vegetable matter is also eaten by the bird, and in Scotland it is said sometimes to feed on the tender shoots of heather.

During the daytime the Woodcock remains hidden in woods and other thick cover, selecting some secluded spot for its retreat; this

being often on a bank, or at the foot of a bush. The bird evinces a partiality for particular localities, and special woods, and certain spots in those woods are sure "finds" for "cock." Moreover, should the occupant of any particular spot be killed, its place is almost certain to be shortly filled by another bird.

The species migrates almost exclusively by night, though at times, when driven out of its course by tempestuous weather and forced to make a longer journey than it would otherwise have done, it may be observed arriving from the sea during the day-time. This has been noticed by Doderlein on the small island of Ustica, off the north coast of Sicily (*Avif. Mod. et Sic.*, p. 193).

An idea is popular that moonlight nights are chosen by this species for its journeyings, but the probability is that migration is effected equally on dark nights, and that it is regulated by the wind which may happen to be prevailing at the time of passage.

The Woodcock's flight, when on migration and well under weigh, is probably much swifter than it is when the bird is flushed in a wood, or during its morning and evening "flights" to or from its feeding places. On such occasions its flight is not particularly rapid, though in a thick wood, rather puzzling to the sportsman, in consequence of the turns and twists made by the bird in and out among the trees.

The Woodcock is silent, as a rule, but when suddenly flushed, sometimes utters a note resembling that of the Snipe. During the breeding-season it utters other notes, among them the well known whistle followed by two croaks.

GALLINAGO MAJOR (Gmelin).

DOUBLE SNIPE.

Scolopax major, *Gmel. Syst. Nat.* i, p. 661 (1788).

Gallinago major, *Koch, Syst. baier. Zool.* p. 313 (1816); *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 626; *Loche, Expl. Sci. Alg. Ois.* ii, p. 294 (1867); *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 79; *Whitaker, Ibis*, 1895, p. 106.

Ascolopax major, *Malherbe, Faune Orn. de l'Alg.* p. 33 (1855).

Description.—**Adult male**, winter, from Italy.

Forehead and sides of head pale buff, speckled with dark brown; crown and nape black, with a median pale buff stripe; upper parts blackish-brown striped with pale buff and rufous; median tail-feathers blackish at the base, the remaining portion black variegated with rufous, the other tail-feathers broadly tipped with white; quills dark brown; chin, throat and upper breast pale buff, marked with dark brown; rest of under parts white.

Iris dark brown; bill flesh-colour at the base and black at the tip; feet light brown.

Total length 11 inches, wing 5.50, culmen 2.40, tarsus 1.40.

Adult female similar to the male.

The Great, or Double Snipe, as it is often called, is not common in Tunisia, but is to be met with occasionally and examples of the species may be found from time to time among the numbers of the Common Snipe brought to the Tunis market for sale.

It is to be met with also in Algeria and Marocco, though it seems to be somewhat rare in the latter country, as it apparently is in Spain and Western Europe generally. The breeding-quarters of this species are in Northern Europe, more particularly in North-eastern Europe and further eastward in Asia, in some parts of which continent the present species is more abundant than the Common Snipe. It winters in Southern Europe, some parts of Asia, and in Africa as far south as Cape Colony.

The Great Snipe frequents the same localities as the Common Snipe, but differs from that species in its general habits. It is apparently never found in "wisps," but singly, or at most, in pairs. Owing to its unsociable, or non-gregarious habits, the bird is often called the "Solitary Snipe," but this name is also borne by an Asiatic species, *Gallinago solitaria*, Hodgson.

The flight of the Great Snipe differs from that of the Common Snipe, in being heavier and straighter. Its food is the same as that of its allies, and the bird feeds chiefly at night, being more or less nocturnal in its habits. During the breeding-season it utters some notes, but appears to be silent at other seasons.

GALLINAGO GALLINAGO (Linnæus).

COMMON SNIPE.

Scolopax gallinago, *Linn. Syst. Nat.* i, p. 244 (1766).

Gallinago gallinago, *Licht. Nomencl. Av. Mus. Berol.* p. 93 (1854);
Sharpe, Cat. Birds Brit. Mus. xxiv, p. 633.

Ascalopax gallinago, *Malherbe, Faune Orn. de l'Alg.* p. 33 (1855).

Gallinago scolopacinus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 296 (1867).

Gallinago gallinaria, *Koenig, J. f. O.* 1888, p. 277; *id. J. f. O.* 1893,
p. 89.

Gallinago cœlestis, *Whitaker, Ibis*, 1894, p. 100.

Description. **Adult male**, winter, from North Tunisia.

Crown blackish-brown, with a median and two lateral light buff stripes; upper parts black, varied with rufescent buff and grey; quills blackish; wing-coverts tipped with white; middle tail-feathers black, tipped with rufous, the remainder bright rufous, barred with black and tipped with white; chin, throat and breast buff, marked with greyish-brown; abdomen white; flanks barred with dark brown; under tail-coverts buff, barred with brown.

Iris dark olive-brown; bill the same, and darker at the tip; feet dull greenish.

Total length 11 inches, wing 5·20, culmen 2·75, tarsus 1·25.

Adult female similar to the male.

The Common Snipe is abundant in Tunisia between the months of October and March, and may be found in all suitable localities both north and south of the Atlas. A few Snipe may occasionally be met with after the month of March, and on the occasion of my last visit to Gafsa, in the south of the Regency, I found several of the birds in a marshy spot not far from that town as late as April 8th. In the neighbourhood of the Djebel Eshkul, in North Tunisia, Snipe are very plentiful at times, and I have enjoyed some good sport on the marshes lying between that mountain and the small town of Mater.

In Algeria and Marocco the species is as abundant as it is in Tunisia, and it is also to be found in Tripoli in certain numbers. I do not know of any authenticated instance of the Common Snipe having bred anywhere in North-west Africa.

The species inhabits Europe generally, ranging as far north as Iceland and Greenland; it is also to be found throughout a con-

siderable portion of Asia, in North Africa, and in the Atlantic Islands.

The Common Snipe frequents marshes and wet and swampy localities generally, and is usually to be found singly, though not unfrequently in "wisps" or parties consisting of many individuals, when it is difficult to approach. It is always more or less shy and wary, though apparently less so on fine warm days than at other times. In its habits it is somewhat nocturnal or crepuscular, and its chief feeding-hours appear to be those of the early morning and late evening. It also migrates by night.

Its food consists of worms, snails, and insects of various kinds. Its flight is very swift, and for several yards after rising, very twisting. On flying off, it utters a note like the word "*scape*." The peculiar "drumming," or "bleating" sound, produced by the Snipe when on the wing during the spring, is attributed by some ornithologists to the action of the wings, assisted by the expanded tail-feathers, but by others solely to the latter.

The so-called Sabine's Snipe, which is now generally admitted to be merely a melanic form of the Common Snipe, appears to be rarely met with out of the British Islands. Its coloration is like that of the dark variety of Sky-lark, found in the Roman Campagna, and the restriction of these two forms to more or less circumscribed areas is an interesting fact, and one which, if carefully studied, might possibly afford a clue to the explanation of this curious phase of colour variation.

(GALLINAGO GALLINULA (Linnæus.)

JACK-SNIPE.

Scolopax gallinula, *Linn. Syst. Nat.* i, p. 244 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 33 (1855).

Gallinago gallinula, *Bonap. Comp. List Birds Eur. and N. Amer.* p. 52 (1838); *Koenig, J. f. O.* 1888, p. 277; *id. J. f. O.* 1893, p. 90; *Whitaker, Ibis*, 1894, p. 100.

Lymnocyptes gallinula, *Loche, Expl. Sci. Alg. Ois.* ii, p. 298 (1867).

Limnocyptes gallinula, *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 665.

Description.—**Adult male**, winter, from North Tunisia.

General colour of upper plumage black, varied with rufous-buff and grey,

and with metallic reflections; tail black, margined with rufous, the median feathers elongate; chin and upper throat white; breast and sides of body greyish-buff; remainder of the under parts white.

Iris dark olive-brown; bill flesh colour, black toward the tip; feet dull greenish-grey.

Total length 6.50 inches, wing 4.25, culmen 1.60, tarsus .90.

Adult female similar to the male.

Observations.—This species has only *twelve* tail-feathers, for which reason it has been generically distinguished by some ornithologists under the name of *Limnocryptes*.

Like the preceding species, the Jack-Snipe is to be found in Tunisia throughout the winter, and, though less numerous, is fairly abundant in suitable localities. It is also not uncommon in winter in Algeria and Marocco, but does not appear to be recorded from the south of the Sahara, nor from the Atlantic Islands.

The summer quarters of the species are far north in Europe and Asia, and the bird seems to be irregularly distributed during the breeding season throughout the Arctic Region from the Atlantic to the Pacific. In winter it is to be found throughout a considerable portion of the European and Asiatic Continents and in North Africa.

Like other Snipe the present species frequents marshes and similar localities, but is more local and capricious in its tastes, and may be abundant in one spot, and entirely wanting in another, which apparently offers the same attractions in the way of food and environment. It is also perhaps more often found on the sea-coast than the Common Snipe. It is less shy than that bird, and lies closer, generally, indeed, getting up at one's feet, and, when rising rarely, if ever, utters any sound. Its flight, though equally twisting, is less rapid than that of the Common Snipe, and not prolonged for any great distance. Its food appears to be the same as that of other Snipe.

A melanic example of the Jack-Snipe, similar in coloration to the so-called Sabine's Snipe, was obtained near Udine, in Italy, in January, 1897, and is preserved in Count Arrigoni's collection at Monselice, near Padua (Man. Orn. Ital., p. 627).

TRINGA ALPINA, Linnæus.

DUNLIN.

Tringa alpina, Linn. *Syst. Nat.* i, p. 249 (1766); Whitaker, *Ibis*, 1895, p. 106.

Tringa variabilis, Malherbe, *Cat. Rais. d'Ois. Alg.* p. 21 (1846).

Pelidna cinclus, Loche, *Expl. Sci. Alg. Ois.* ii, p. 310 (1867).

Pelidna schinzi, Loche, *Expl. Sci. Alg. Ois.* ii, p. 312 (1867).

Pelidna alpina, Koenig, *J. f. O.* 1888, p. 277; *id.* *J. f. O.* 1893, p. 90; Sharpe, *Cat. Birds Brit. Mus.* xxiv, p. 602; Erlanger, *J. f. O.* 1900, p. 65.

Pelidna schinzii, Erlanger, *J. f. O.* 1900, p. 64.

Description.—**Adult male**, summer, from Djerba, South Tunisia. Crown, nape and hind-neck grey, streaked with black and buff; a whitish line extends from the base of the bill over and behind the eye; back and scapulars black, most of the feathers of these parts broadly fringed with rufous; rump and upper tail-coverts dark grey, streaked with blackish; median rectrices dark grey, the remainder of the tail feathers lighter grey; quills blackish, with lighter inner webs and white shafts; chin and throat white, slightly streaked with dark brown; feathers of the upper breast white, striped with blackish-brown; abdomen with a large blackish patch; flanks, crissum and under tail-coverts white.

Iris brown; bill and feet blackish.

Total length 7 inches, wing 4.50, culmen 1.40, tarsus 1.

Adult female resembles the male, but is generally rather larger.

In winter the plumage is much greyer, the under parts white, and the blackish patch entirely wanting.

Observations.—This species varies considerably in size, length of bill and coloration. The name of *T. schinzi* was given by Brehm to the smaller and more brightly coloured form, which is often met with, and which by some ornithologists is considered to constitute a distinct race.

The Dunlin is to be found in Tunisia chiefly during the winter and the periods of migration. It arrives early in the autumn and leaves late in the spring, and as some of these birds are apparently to be met with even in the summer months, the species is perhaps never entirely absent from the Regency. The few individuals of this, and allied species, which remain in the country throughout the summer, are probably young birds of the preceding year, which would not breed their first season. Whether it be the rule, or the exception, among the *Charadriidæ* and some other allied families,

not to breed until the second year, it is difficult to say. The examples I have obtained in summer from Tunisia were procured on the Island of Djerba in the South of the Regency during the months of June and July, and are in breeding plumage. According to Count Arrigoni (Man. Orn. Ital. p. 618), the Dunlin has been found breeding in the Venetian marshes in North Italy, and Mr. Abel Chapman shot a bird of this species from its eggs in the extreme south of Spain.

The species is common in winter and on passage in the vicinity of the town of Tunis, and probably all along the coast of the Regency, as well as on the inland salt lakes and Sebkas. The fine salt-water lake of El Bahira between Tunis and Goletta is a favourite place for this and similar birds, and its shores at times present a most animated and attractive sight from the number and variety of the species found congregated there.

In Algeria and Marocco the Dunlin appears to be numerous in winter and on passage, and it has been recorded from Madeira, the Canaries, and the Azores.

The winter range of the species in Africa extends down the east coast as far as Zanzibar, while its principal summer quarters are the more northern parts of Europe, Asia and America, though, as above mentioned, it has been found nesting in Europe as far south as North Italy, and once even in South Spain.

The Dunlin frequents the open sea-shore, particularly sandy beaches and mud-flats, and it may also be found on the borders of inland lakes and rivers. In Sicily it is very fond of frequenting the salt-pans, which are numerous in some parts of that island, and in such localities it is to be found in large numbers throughout the winter months. In its habits it is gregarious, and generally to be met with in flocks, either large or small, and often in company with allied species. It is shy and wary, and when approached, darts off with amazing rapidity, uttering its alarm note. Besides being very swift on the wing, it is also very nimble and quick-footed, and runs with great facility.

Its food consists chiefly of marine insects, worms and small crustaceans. Its call-note is a clear whistle, but in autumn it utters a *purring* note, which has given rise to the bird's local name of "*Purre*."

TRINGA MINUTA, Leisler.

LITTLE STINT.

Tringa minuta, *Leisl. Nachtr. zu Bechst. Naturg. Deutschl.* i, p. 74 (1812); *Whitaker, Ibis*, 1896, p. 98.

Limonites minuta, *Malherbe, Faune Orn. de l'Alg.* p. 32 (1855); *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 538; *Erlanger, J. f. O.* 1900, p. 64.

Actodromus minutus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 313 (1867).

Actodromas minuta, *Koenig, J. f. O.* 1888, p. 278; *id. J. f. O.* 1893, p. 91.

Description.—**Adult male**, spring, from Ghardimaou, North Tunisia.

Above rust-colour, most of the feathers with black centres, those of the lower back with white margins; under parts white, slightly marked on the breast with grey; outer tail-feathers ash-grey.

Iris hazel; bill and feet black.

Total length 5·70, wing 3·75, culmen ·70, tarsus ·75.

Adult female resembles the male, but is, as a rule, slightly larger.

In winter the plumage is much greyer, and lacks the rufous colour.

Like the Dunlin, the Little Stint is to be found in Tunisia throughout a considerable portion of the year, and is not uncommon in winter and on passage on all the sandy shores of the sea-coast, as well as on some of the inland lakes, rivers and salt-marshes. Dr. Koenig, who frequently met with this species in Tunisia, observes (*J. f. O.* 1893, p. 91) that all the individuals seen by him, even in May, were in winter dress, and believes that these latter were probably young birds, which would not migrate northwards that year, but remain in the Regency throughout the summer. Specimens however, obtained by me in May are in breeding plumage.

The Little Stint is to be found in Algeria and Marocco as a winter migrant, and its range at that season appears to extend to South Africa. Its breeding quarters are in the more northern parts of Europe and Asia, and although examples in full breeding plumage have been obtained in summer in Southern Russia and the Mediterranean, there is no evidence of the species having ever nested so far south. I have myself obtained examples in full breeding plumage in Sicily between the middle and end of June. Messrs. Seeböhm and Harvie-Brown were the first to obtain the eggs of this Sandpiper in Europe, having discovered it breeding in 1875 on the Petchora River in North Russia, and to the former of these

gentlemen we are indebted for some highly interesting and detailed particulars regarding the nesting habits of the species.

The Little Stint affects the same localities as the Dunlin, and, like it, is to be found in flocks, both large and small, and often consorting with other species of waders. When in large flocks it is wild and almost unapproachable, but when met with singly or in pairs it is remarkably tame and confiding. On the wing it is very swift, and it also runs with great rapidity. Its note, uttered by the bird chiefly on the wing, is rather shrill and piping.

Its food consists of insects and their larvæ, worms, small crustaceans, and the seeds of certain plants.

TRINGA TEMMINCKI, Leisler.

TEMMINCK'S STINT.

Tringa temminckii, *Leisl. Nachtr. zu Bechst. Naturg. Deutschl.* i, p. 64 (1812); *Malherbe, Faune Orn. de l'Alg.* p. 32 (1855).

Actodromus temminckii, *Loche, Expl. Sci. Alg. Ois.* ii, p. 314 (1867).

Pelidna temminckii, *Koenig, J. f. O.* 1888, p. 278; *id. J. f. O.* 1893, p. 91.

Limonites temmincki, *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 555; *Erlanger, J. f. O.* 1900, p. 63.

Description.—**Adult male**, spring, from Italy.

Upper parts greyish-brown, the feathers with blackish centres, and margined with greyish-rufous; quills blackish-brown, the shaft of only the outer primary white, the other shafts being dusky; middle tail-feathers dark brown, the remainder chiefly white and the two outer pairs completely white; throat and breast brownish-grey, with darker streaks; rest of under parts white.

Iris brown; bill blackish; feet greenish-grey.

Total length 5.70, wing 3.75, culmen .70, tarsus .65.

Adult female resembles the male.

In winter the plumage is greyer.

Although not rare, Temminck's Stint does not seem to be common in the Regency, or so universally distributed as the preceding species. Von Erlanger, however, appears to have found it not uncommon in the month of January at the mouth of the Oued Gabès in South

Tunisia, and Dr. Koenig met with it near the town of Tunis. The species is probably rather local and somewhat irregular in its occurrence, being more abundant in the Regency in some years than in others.

Loche states that it is fairly common in winter in Algeria, and Canon Tristram met with it in the Sahara, while according to Colonel Irby it occurs in Marocco.

Temminck's Stint breeds in Northern Europe and Asia, migrating in winter to the southern portions of both these regions and North Africa.

The species resembles the Little Stint in many of its habits, but is less exclusively a marine bird, and evinces a partiality for inland waters. It is, however, constantly to be found on the sea-shore, particularly in the colder months, and is usually in small parties, and less often in large flocks. It seems to be rather more confiding than most of the Sandpipers, though when in any numbers it is wild and shy. Its flight is swift as a rule, but during the breeding season is said to be rather hovering, and like that of a butterfly. Its note somewhat resembles that of the Little Stint, but is easily distinguishable.

The species feeds on small insects, worms, and to a certain extent on vegetable matter.

TRINGA SUBARQUATA (Güldenstadt).

CURLEW-SANDPIPER.

Scolopax subarquata, *Güldenst. Nov. Comm. Petrop.* xix, p. 471, *Tab.* xviii (1775).

Tringa subarquata, *Temm. Man. d'Orn.* p. 393 (1815); *Whitaker, Ibis*, 1895, p. 106.

Tringa (Schoeniclus) subarquata, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 21 (1846).

Ancylocheilus subarquatus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 308 (1867).

Pelidna subarquata, *Koenig, J. f. O.* 1888, p. 277; *id. J. f. O.* 1893, p. 90.

Ancylochilus subarquatus, *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 586; *Erlanger, J. f. O.* 1900, p. 65.

Description.—**Adult male**, spring, from Ghardimaou, North Tunisia.

Above rust-colour, streaked with black; upper tail-coverts white, barred with black; tail grey, with narrow white margins to the feathers; underparts rich chestnut, with very narrow white fringes to the feathers; sides of body white; crissum and under tail-coverts white, slightly barred with black.

Iris brown; bill and feet blackish.

Total length 7·75, wing 5·15, culmen 1·50, tarsus 1·15.

Adult female similar to the male.

In winter the rust-colour is absent, the upper parts being greyish, with indistinct darker stripes and the under parts white.

The Curlew-Sandpiper, also called the Pygmy-Curlew, is far from uncommon in Tunisia as a winter migrant, and remains in the Regency till a late date. Mr. Aplin met with it, in summer dress, on May 18th near Ghardimaou in North Tunisia. Like some other northern-breeding birds, this Sandpiper is evidently a loiterer, and individuals of the species are to be met with from time to time in summer in countries far south of their usual breeding haunts. In Italy, for instance, it is occasionally to be found in summer in the Venetian districts, and similar suitable localities, but none of these stragglers ever appear to nest.

According to Loche the Curlew-Sandpiper is common in winter on all the shores and lakes of Algeria, and I have specimens of it from Marocco, obtained in April. The species apparently occurs in winter along the African coasts, on both sides, down to the Cape, and is widely distributed, at some season or other, generally throughout Europe, Asia and Africa, besides being met with occasionally in America.

In its habits it resembles some of the other Sandpipers, and may frequently be found consorting with Dunlins, Little Stints and Sanderlings. It is usually met with in small flocks, though sometimes in large ones, and often singly or in pairs, when it may easily be approached, as it is not so shy as some of its congeners. It frequents sandy shores, mud-flats, salt-marshes and the mouths of rivers, and feeds by night as well as by day. Its food consists of worms, small crustaceans, insects and, to a certain extent, of vegetable matter.

Its flight is swift and powerful, and its note is said to bear a certain resemblance to that of the Dunlin, but is easily distinguishable.

TRINGA CANUTUS, Linnæus.

KNOT.

Tringa canutus, *Linn. Syst. Nat.* i, p. 251 (1766); *Loche, Expl. Sci. Alg. Ois.* ii, p. 306 (1867); *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 92; *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 593.
Tringa cinerea, *Malherbe, Faune Orn. de l'Alg.* p. 32 (1855).

Description.—**Adult**, winter, from North Tunisia.

Upper parts grey, the crown streaked with dark brown, and the scapulars and wing-coverts fringed with dark brown and white; rump and upper tail-coverts white, barred with dark brown; tail grey, narrowly fringed with white; under parts white, the breast and sides slightly striped and barred with dark grey.

Iris brown; bill and feet blackish.

Total length 10 inches, wing 6·70, culmen 1·25, tarsus 1·25.

The sexes are alike.

In spring the upper plumage is rust-red and white, striped with black, and the under parts pale chestnut.

The Knot is far from common in Tunisia, and may indeed almost be said to be rare in that country. Examples, however, are occasionally to be met with in winter, and a few may even be found at times in the Tunis market, together with other Sandpipers, which have been shot by the Arabs on the shores of El Bahira.

Loche states that the species occurs on passage in Algeria, and that he obtained specimens, both in summer and winter plumage, on the border of Lake Halloula.

In Marocco it is, apparently, also to be found, though the only notice we have of the occurrence of the species in that country is Favier's statement (*vide* Colonel Irby) that it passes near Tangier in June. Colonel Irby remarks that the Knot is somewhat irregular in its occurrence in the vicinity of Gibraltar, the few he met with having been observed in April and May. Lord Lilford, however, found this species in countless myriads during the first fortnight of May, 1872, on the great mud-flats near the mouth of the Guadalquivir. The birds killed on that occasion (and of which several are preserved in the Lilford collection) were without exception, in full summer dress, and were no doubt on their way to their breeding-grounds in the far north. These are supposed to be chiefly in North Greenland and Arctic America, but comparatively little is known at

present regarding the nesting of the Knot; it is only recently that full clutches of its eggs have been obtained, although nestlings had previously been captured in latitudes between $81^{\circ} 44'$ and $82^{\circ} 33'$ N. During the winter season the Knot ranges far south and has been recorded from South Africa, New Zealand and Brazil.

The Knot is usually to be found in winter, in larger or smaller flocks, frequenting the sea-shore, particularly stretches of mud or sand, and the mouths of rivers. When actually on migration, the species congregates in enormous flocks, those observed in South Spain, according to Lord Lilford, far outnumbering all other kinds of waders. The bird is not shy, as a rule, until it has been disturbed and made more wary and suspicious. It flies and runs with ease, and like some of its congeners, is fond of performing aerial evolutions. Its note, which apparently is uttered at all seasons, and on the ground as well as on the wing, is a short low whistle.

Its food consists of insects, worms, small bivalves and the buds of certain plants. In autumn the bird becomes very plump, and its flesh is then very delicate. The Knot used once to be held in high esteem for the table and was netted in considerable numbers expressly for the market.

MACHETES PUGNAX (Linnæus).

RUFF.

Tringa pugnax, *Linn. Syst. Nat.* i, p. 247 (1766).

Machetes pugnax, *Cuv. Règne Anim.* i, p. 490 (1817); *Malherbe, Faune Orn. de l'Alg.* p. 32 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 299 (1867); *Koenig, J. f. O.* 1888, p. 279; *id. J. f. O.* 1893, p. 92; *Whitaker, Ibis*, 1895, p. 106.

Pavoncella pugnax, *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 500; *Erlanger, J. f. O.* 1900, p. 66.

Description.—**Adult male**, winter, from North Tunisia.

Upper plumage grey-brown, the feathers with blackish centres; throat, fore-neck and breast very pale greyish-brown; rest of the under parts white.

Iris brown, bill dark brown, yellowish at the base of lower mandible, feet yellowish-brown.

Total length 12 inches, wing 7, culmen 1.60, tarsus 2.

Adult female in winter resembles the male in plumage and in the colours of the soft parts, but is much smaller.

Total length 9.50, wing 5.90, culmen 1.30, tarsus 1.65.

In spring, when the male assumes its full breeding plumage, the feathers of the face are exchanged for warty excrescences, the sides of the head being then adorned with peculiar curled tufts of feathers, and a conspicuous frill or ruff being developed round the neck. In colour this ruff varies greatly, purplish-black, pure white, and different shades of grey and chestnut being all met with. The same colour is regained annually by each bird.

This species, the only one of its genus, and one of the most remarkable and peculiar of birds, is not uncommon in the Regency during the winter and periods of passage. It is often to be found in the immediate vicinity of the town of Tunis, and I have met with it in spring on the banks of pools and marshy spots in the inland districts of Central and Southern Tunisia. None of the examples I obtained were in very advanced breeding dress.

In Algeria and Marocco the species appears to be fairly abundant in winter and on passage, and Dr. Koenig seems to have met with it in Tripoli. It is also recorded from the Canaries, Madeira, and the Azores.

The range of this bird extends over the greater part of Europe, and a considerable portion of Asia, while in Africa it extends down both sides of the continent to Cape Colony. The species has also been found occasionally in North-east America, and once or twice in South America.

In England, where the male and female of this bird are differently designated by the names of Ruff and Reeve, the species used formerly to be far more abundant than it is now, and considerable numbers used to breed in our fen districts. As an article of food the flesh of the bird was in high repute, and large quantities used to be netted or snared and fattened for the table, commanding a high price in the market.

The practice of netting Ruffs and Reeves appears to be still continued to a certain extent in Holland and some other countries.

The present species chiefly frequents fresh-water pools and marshy localities, and seems to be less partial to the sea-coast. It is essentially gregarious in winter and usually to be found in flocks, either large or small, often in the company or in the close vicinity of allied species. Those which I met with in Tunisia were generally in small parties of about a dozen individuals, feeding near similar flocks of *Totanus fuscus*, or others of that genus. They were not particularly

shy, and I experienced no difficulty in approaching well within gunshot of the birds.

If not shot at on being first put up, a flock will wheel round and return to the same spot after a short while. The flight of the species is fairly swift and powerful. Its food consists mainly of worms, insects and their larvæ. The bird is a silent one, as a rule, but when on the wing, and particularly on migration, it utters a low soft note.

The Ruff is polygamous, and its habits during courtship are singularly interesting. One of the most vivid descriptions of these, and of the breeding habits generally of this remarkable bird, is to be found in a communication by Wolley to Hewitson (*Eggs of Brit. Birds*, Ed. III. p. 346). In Montagu's "*Ornithological Dictionary*" (1813) most interesting and exhaustive details are also to be found regarding the habits of the Ruff, and especially concerning the former netting of the bird in England.

CALIDRIS ARENARIA (Linnæus.)

SANDERLING.

Tringa arenaria, Linn. *Syst. Nat.* i, p. 251 (1766).

Calidris arenaria, Illiger, *Prodromus*, p. 249 (1811); Loche, *Expl. Sci. Alg. Ois.* ii, p. 303 (1867); Koenig, *J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 91; Whitaker, *Ibis*, 1896, p. 98; Sharpe, *Cat. Birds Brit. Mus.* xxiv, p. 526; Erlanger, *J. f. O.* 1900, p. 63.

Description.—**Adult**, autumn, from North Tunisia.

Upper plumage whitish-grey, the feathers of the crown and back with blackish centres; quills dark brown, with white shafts; under parts white, the sides of the breast slightly marked with grey and brown; hind-toe wanting.

Iris brown; bill and feet blackish.

Total length 7 inches, wing 4.80, culmen 1, tarsus 1.

Sexes alike.

In summer the adult has the upper plumage rufous, with black centres to the feathers, and the breast pale rufous.

The Sanderling, like the Ruff, is the only species of its genus, and seems to form a connecting link between the closely allied genera

Tringa and *Totanus*, though readily distinguishable from both by the absence of the hind-toe.

The species is apparently not uncommon in the north of the Regency during the winter months and on passage, and, according to Blanc, may sometimes be met with even in summer. In winter it is to be seen on the shores of the Lake of Tunis, and examples may not unfrequently be found in the market of that town.

Loche states that it is merely an accidental visitor to Algeria, but in Marocco it does not appear to be uncommon, for Colonel Irby says he saw large flights of Sanderlings early in April between Tetuan and Ceuta, and, according to Favier, this bird is abundant on migration near Tangier, and is known to the Moors by the name of "*Medrouan*." The species has been recorded from some of the Atlantic islands, while its range in Africa extends to Cape Colony. It is circumpolar in its breeding range, probably nesting on all the Arctic coasts, both in the Old and New World, and migrating far southwards for the winter.

The Sanderling is essentially a shore-bird, being usually found on stretches of sand, and less often on mud-flats. It is seldom found far from the sea-shore, or on inland waters. It is generally to be met with in small parties, and is more tame and confiding than most of its allies, though constantly associating with them. It flies and runs with facility, and is an active bright little bird. Its note is a sharp "*wick*." Its food is composed chiefly of insects, worms and small crustaceans.

TOTANUS HYPOLEUCUS (Linnæus).

COMMON SANDPIPER.

Tringa hypoleucos, *Linn. Syst. Nat.* i, p. 250 (1766).

Totanus hypoleucos, *Temm. Man. d'Orn.* p. 424 (1815).

Tringoides hypoleucos, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 21 (1846).

Actitis hypoleucos, *Loche, Expl. Sci. Alg. Ois.* ii, p. 326 (1867); *Koenig, J. f. O.* 1888, p. 279; *id. J. f. O.* 1893, p. 92.

Tringoides hypoleucos, *Sharpe, Cat. Birds Brit. Mus.* xxiv. p. 456
Erlanger, J. f. O. 1900, p. 66.

Description.—**Adult male**, spring, from Merethba, South Tunisia.

Upper plumage olive-brown, with a bronze gloss, the crown, neck and

back slightly streaked, and the wings, scapulars and upper tail-coverts barred with dark brown; wings margined externally with white; throat and breast whitish, slightly streaked with olive-grey; rest of the under parts white.

Iris dark brown; bill and feet greenish-grey.

Total length 7 inches, wing 4.30, culmen 1.10, tarsus .90.

Adult female resembles the male, but is slightly larger.

Observations.—The metallic gloss varies from bronze to greenish. Individuals differ a good deal in this respect, as also in size, and the wing-measurement may be said to vary from 4 to 4.75 inches.

This small Sandpiper is abundant throughout Tunisia during the greater part of the year, and is to be met with in all suitable localities.

In Algeria and Marocco it is also plentiful in winter and on passage, and according to Favier, is the commonest of all the Sandpipers around Tangier.

The species has a most extensive range, and is to be met with throughout Europe, and the greater part of the Asiatic and African Continents, as well as in Australia. It breeds in suitable localities throughout Europe, as far south as the basin of the Mediterranean and, apparently, in the Canaries. In Asia it has been met with at an elevation of 17,000 feet and breeds in the Himalaya.

The present species is chiefly to be found on the banks of rivers, ponds and inland waters, and less often on the sea-coast. Sandy and gravelly banks are specially dear to it, as are also slow-running streams. It is usually to be met with in pairs or in small parties and often singly. It flies swiftly, skimming low over the surface of the ground or water and often swerving from side to side a good deal in its flight. On shore it is most active, and runs with celerity. Its note is rather shrill and piping. Its food consists chiefly of worms, insects and their larvæ.

TOTANUS OCHROPUS (Linnæus).

GREEN SANDPIPER.

Tringa ochropus, *Linn. Syst. Nat.* i, p. 250 (1766).

Totanus ochropus, *Tenn. Man. d'Orn.* p. 420 (1815); *Malherbe, Faune Orn. de l'Alg.* p. 32 (1855); *Koenig, J. f. O.* 1888, p. 282; *id. J. f. O.* 1893, p. 93; *Whitaker, Ibis*, 1894, p. 100.

Helodromus ochropus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 323 (1867).

Helodromas ochropus, *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 437.

Description.—**Adult male**, spring, from Gafsa, South Tunisia.

Upper plumage chiefly greenish-brown, with metallic reflections, streaked with white on the crown and neck, and spotted with white elsewhere; quills dark brown; rump and upper tail-coverts white; base of the tail and outermost tail-feathers white; the remainder barred broadly with greenish-brown; under parts white, the throat and upper-breast striped with greenish-brown; axillaries dark brown, narrowly barred with white.

Iris brown; bill and feet greenish-black.

Total length 9.50 inches, wing 5.50, culmen 1.50, tarsus 1.50.

Adult female resembles the male.

The Green Sandpiper is not uncommon in Tunisia during the winter and periods of migration, though more abundant in spring than at any other season. I have met with it in March and April in various localities, and frequently in desolate spots far inland, where some pool of water may still be found in an arid mountain gorge, or in the sandy bed of a water-course.

The species is to be met with in suitable localities in winter in Algeria, Marocco and Tripoli, in the latter of which countries Dr. Koenig found it abundant at the end of March.

Its range, like that of the preceding species, is very extensive, for it inhabits Europe generally, as far north as the Arctic circle, migrating southwards in winter, through Africa, as far as Cape Colony, while it occurs throughout a considerable portion of Asia, and in North America appears to have been met with occasionally in Nova Scotia.

The Green Sandpiper is generally to be found on inland waters, its favourite haunts being secluded ponds and the banks of quiet streams, and it is seldom to be met with on the sea shore, even when migrating. It is solitary and unsociable in its disposition, being chiefly found singly or in pairs, and is very shy and wary, taking wing on the slightest indication of danger. Its flight is swift and powerful, and it utters a shrill cry of alarm. Its food is composed mainly of worms, insects and their larvæ.

TOTANUS GLAREOLA (Linnæus).

WOOD-SANDPIPER.

Tringa ocropus β . **glareola**, *Linn. Syst. Nat.* i, p. 250, (1766).

Totanus glareola, *Temm. Man. d'Orn.* p. 421 (1815); *Koenig, J. f. O.* 1888, p. 282; *id. J. f. O.* 1893, p. 93.

Rhynchophilus glareola, *Loche, Expl. Sci. Alg. Ois.* ii, p. 325 (1867).

Rhyacophilus glareola, *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 491; *Erlanger, J. f. O.* 1900, p. 67.

Description.—**Adult male**, spring, from Djilma, Central Tunisia.

Upper plumage dark olive-brown, the crown and neck striped with white, the back, scapulars, and upper wing-coverts having the feathers fringed and barred with white, presenting a very spotted appearance; quills dark brown, the outermost primary with a white shaft; lower rump and upper tail-coverts white; tail white, barred with dark olive-brown; chin, throat, and fore neck dull white, striped with greyish-brown; breast and sides of the body whitish, barred with dull brown; abdomen white; under tail-coverts white, barred with dull brown; axillaries white, with a few obscure brownish bars.

Iris brown; bill and feet greenish-black.

Total length 8 inches, wing 4.85, culmen 1.20, tarsus 1.40.

Adult female resembles the male.

The Wood-Sandpiper, like the preceding species, is not uncommon in the Regency during the winter and on passage, though more abundant in spring than at other seasons, and it may frequently be met with both north and south of the Atlas. Examples of it may also sometimes be seen in the Tunis market.

The species is not uncommon in Algeria, Marocco and Tripoli, and, apparently occurs, in winter, all along the West African coast down to the Cape. It seems to be found throughout the entire Palæartic Region, breeding chiefly in the more northern parts, but, in Europe, even as far south as the valley of the Danube, and North Italy, and, according to Mr. Howard Saunders, apparently in Central Spain.

The Wood-Sandpiper frequents inland waters and marshy localities in preference to the sea-coast, and is usually to be met with in small parties, or in pairs. In Central Tunisia I came across two or three ideal spots for this and allied species of Sandpipers, where small pools of water in the midst of grass-land, fringed with low-growing reeds and high bushes, were to be found at intervals in the otherwise somewhat dreary and monotonous country. In these localities,

far from any human habitation, the present, and some other species of Sandpiper, were fairly plentiful during the month of April. I also met with the Wood-Sandpiper in that month on the banks of the river Melah near Gafsa, further to the south.

The bird is of active habits, and very swift on the wing, darting off on the approach of danger, uttering its clear note of alarm. At times, however, it is far from shy, and may be easily approached. It perches on trees and bushes, often at a considerable height from the ground.

Its food consists chiefly of worms, insects, and small molluscs.

TOTANUS STAGNATILIS, Bechstein.

MARSII-SANDPIPER.

Totanus stagnatilis, *Bechst. Orn. Taschenb.* ii, p. 292 (1803); *Loche, Expl. Sci. Alg. Ois.* ii, p. 317 (1867); *Koenig, J. f. O.* 1888, p. 281; *id. J. f. O.* 1893, p. 93; *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 422; *Whitaker, Ibis*, 1895, p. 106.

Description.—**Adult**, from North Tunisia.

Upper plumage grey, tinged with buff, the crown and neck striped, and the back and scapulars spotted and barred with black; upper wing-coverts dull brown; primaries dull blackish; inner elongated secondaries barred obliquely with black; lower back and rump pure white; upper tail-coverts white, barred with black; median rectrices greyish-buff, barred obliquely with dark brown; the remaining tail-feathers mostly white, but those near the middle slightly barred with brown; under parts white, the sides of the neck and breast slightly spotted with brown.

Iris brown; bill and feet greenish-black.

Total length 9·25 inches, wing 5·20, culmen 1·65, tarsus 2.

Sexes alike.

According to Blanc the Marsh-Sandpiper, which has not inaptly been described as a miniature Greenshank, is to be found in Tunisia throughout the entire year, though it is more abundant in spring than at other seasons. It cannot be common, however, and I have only one specimen, obtained in the neighbourhood of Tunis.

Loche states that the Marsh-Sandpiper is to be found on migration in Algeria, but there does not seem to be any record of its occurrence

in Marocco or the west coast of Africa. The species, however, is to be found all over North-east Africa; and its southern line of migration apparently extends down the east side of that continent, for examples of it have been obtained from Natal and Cape Colony.

In Western Europe this Sandpiper is only to be met with as an occasional straggler, but it is not uncommon in some parts of South-eastern Europe, and its range extends over a considerable portion of Asia, and to Australia.

The Marsh-Sandpiper is to be found, as a rule, on the sides of lakes and marshes as well as on the banks of streams and ponds, and may often be met with in considerable numbers, though at other times singly or in pairs. It is not at all shy and may be approached with ease. It flies well, and is very active and quick-footed, as well as an expert swimmer. It is rather a silent bird, and its notes are not often heard.

TOTANUS CALIDRIS (Linnæus).

COMMON REDSHANK.

Tringa calidris, *Linm. Syst. Nat.* i, p. 252 (1766).

Totanus calidris, *Bechst. Orn. Taschenb.* ii, p. 284 (1803); *Malherbe, Faune Orn. de l'Alg.* p. 32 (1855); *Koenig, J. f. O.* 1888, p. 279; *id. J. f. O.* 1893, p. 92; *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 414; *Erlanger, J. f. O.* 1900, p. 68.

Gambetta calidris, *Loche, Expl. Sci. Alg. Ois.* ii, p. 321 (1867).

Description.—**Adult male**, spring, from Djerba, South Tunisia.

Upper parts greyish-brown, the crown, neck and back striped, and the scapulars and long secondary plumes barred with blackish; short secondaries white, forming an alar bar; primaries blackish, the outermost with a white shaft; lesser wing-coverts brown; larger wing-coverts brown, tipped with white; lower back and rump white; upper tail-coverts and tail white, barred with blackish, the median rectrices greyish-buff, barred with dark brown; under parts white, the throat, neck, breast and flanks heavily striped with blackish.

Iris brown; bill red and blackish towards the tip; feet red.

Total length 11 inches, wing 6, culmen 1·75, tarsus 1·90.

Adult female resembles the male.

In winter the plumage is duller and browner, and the underparts are almost entirely without stripes.

The Redshank is very common on the Tunisian coasts during the winter months and on passage, and, according to Blanc, also breeds in the Regency, and may be met with there throughout the entire year. I have several examples of the bird obtained in the neighbourhood of Djerba between June 15th and 20th. On the shores of the Lake of Tunis and in the immediate vicinity of that town the species is sometimes to be found in large numbers, and Blanc informs me that some years ago the Arabs used constantly to bring him from fifty to one hundred birds a day. Of late years, however, this traffic in Redshanks appears to have fallen off, owing no doubt to the unremunerative prices obtained for the birds.

In Algeria the species is abundant, though, according to Loche, only to be seen on passage. In Marocco, however, according to Colonel Irby and Favier, it is not only abundant in winter and on passage, but also breeds in the Empire.

The Redshank is to be found generally throughout Europe, and breeds in suitable localities, migrating in winter as far south as Cape Colony and Natal. It occurs throughout a considerable portion of the Asiatic Continent and as far east as Japan.

It is essentially a shore-bird, and throughout the greater part of the year is to be found on the sea-coast, and on salt-water lagoons and salt-pans, in some countries retiring inland for the breeding season. In winter and when migrating, it is very gregarious, and often to be observed in large flocks, in the company of other species of Waders.

It flies swiftly, and runs and swims well. It is extremely wary, and not easily approached, and when disturbed, flies off uttering its shrill and loud cry of alarm. Its call-note is a clear whistle like "*whiu*," "*whiu*." During the breeding-season it is very noisy, and particularly so when its nest is approached.

The eggs of this species, usually four in number, are placed in a slight depression in the ground, and often concealed by blades of grass or similar herbage. They are of a buff colour, with lilac-brown shell-marks, and darker brown surface-spots and blotches, and measure about 44×30 mm.

The food of the species consists of worms, marine insects, molluscs and crustaceans.

TOTANUS FUSCUS (Linnæus).

SPOTTED REDSHANK.

Scolopax fusca, *Linn. Syst. Nat.* i, p. 243 (1766).

Totanus fuscus, *Bechst. Orn. Taschenb.* ii, p. 286 (1803); *Malherbe, Faune Orn. de l'Alg.* p. 32 (1855); *Koenig, J. f. O.* 1888, p. 279; *id. J. f. O.* 1893, p. 92; *Whitaker, Ibis*, 1895, p. 106; *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 409.

Erythroscelus fuscus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 319 (1867).

Description.—**Adult male**, spring, from Djilma, Central Tunisia.

Upper and under parts dusky blackish-brown, most of the feathers fringed with white, producing a spotted appearance; quills dark brown, the shaft of the outermost quill white, those of the others light brown; rump pure white; upper tail-coverts and tail white, barred with blackish-brown; the median rectrices grey, barred with blackish-brown and margined with white; under tail-coverts white, barred with blackish-brown; axillaries pure white.

Iris brown; bill blackish, and red at the base of the lower mandible; feet dusky red.

Total length 12·75 inches, wing 6·70, culmen 2·50, tarsus 2.

Adult female resembles the male.

In winter the upper plumage is chiefly light greyish-brown, the upper wing-coverts only being fringed with white; a white streak passing from the base of the bill over the eye, which also has a white patch below it; under parts white, the throat, neck, breast and flanks streaked with grey; base of bill and feet yellowish.

The Spotted, or Dusky Redshank, is not uncommon in Tunisia throughout a considerable portion of the year, and is to be found on the sea-coast, as well as on inland waters, both north and south of the Atlas. When travelling in the Regency in spring I used frequently to meet with it on the small fresh-water pools of the interior, which form a centre of attraction for many of the Waders.

In Algeria and Marocco this Redshank is to be found, as in Tunisia, in winter and on passage.

The range of the species extends throughout the whole of Europe and a considerable portion of both the African and Asiatic Continents.

The Spotted Redshank is not nearly so marine a species as the Common Redshank, and though found on the sea-coast on migration, is more partial to inland waters. In many of its habits, however, it resembles the preceding species, and like it, is shy and wary. It

flies swiftly and is very fond of wading in water. Its alarm note is rather a loud whistle. Its food consists chiefly of worms, insects and small molluscs.

TOTANUS CANESCENS (Gmelin).

GREENSHANK.

Scolopax canescens, *Gmel. Syst. Nat.* i, p. 668 (1788).

Totanus canescens, *Finsch. und Hartl. Vög. Ost-Afr.* p. 745 (1870).

Totanus glottis, *Malherbe, Faune Orn. de l'Alg.* p. 32 (1855); *Koenig, J. f. O.* 1888, p. 279; *id. J. f. O.* 1893, p. 92.

Glottis canescens, *Loche, Expl. Sci. Alg. Ois.* ii, p. 316 (1867).

Glottis nebularius, *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 481.

Description.—**Adult female**, spring, from North Tunisia.

Head and neck greyish-white, striped with dark brown; back, scapulars and elongate secondaries brownish-black, fringed with white; lower back and rump pure white; quills dull black, the outermost primary with a white shaft; upper wing-coverts dark brown; upper tail-coverts white, barred with blackish-brown, median rectrices grey, barred with blackish-brown, the rest white, irregularly barred with blackish-brown; under parts white, the throat and neck streaked, and the breast and flanks slightly spotted with blackish.

Iris brown; bill, which curves upwards at the tip, blackish; feet greenish-brown.

Total length 14·50 inches, wing 7·30, culmen 2·30, tarsus 2·30.

Adult male resembles the female.

In winter the upper plumage is greyer and the under parts entirely white.

The Greenshank, although not very numerous, is to be found in the Regency in certain numbers during the winter and on passage, and may frequently be observed on the margins of pools and in marshy localities by the sides of the Lake of Tunis and in the vicinity of Goletta.

In Algeria and Marocco it also occurs as a winter visitor. The summer range of the species apparently extends throughout the northern portion of the Palæarctic Region, while in winter the bird migrates southwards as far as South Africa and Australia. It has also been met with accidentally in America.

The Greenshank is generally to be found in pairs or small parties and not infrequently singly. Occasionally it associates with other species of Waders, but it is not very gregarious or sociable. It affects fresh-water pools, the mouths of rivers and small pieces of water in preference to the sea-shore and large lakes, and is excessively shy and wary. Its flight is rapid and graceful, and before settling down, the bird is fond of wheeling round the spot where it means to alight. It seems also to be fond of wading in shallow water. Its note is a clear loud whistle, and at times it is particularly noisy, alarming all other birds in its vicinity. It feeds chiefly on insects and their larvæ, worms, amphibians and crustaceans. Its flesh is said to be very good eating.

LIMOSA LIMOSA (Linnaeus).

BLACK-TAILED GODWIT.

Scolopax limosa, *Linnaeus, Syst. Nat.* i, p. 246 (1766).

Limosa limosa, *Ridgway, Proc. U. S. Nat. Mus.* viii, p. 356 (1885);
Sharpe, Cat. Birds Brit. Mus. xxiv, p. 381.

Limosa ugocephala, *Loche, Expl. Sci. Alg. Ois.* ii, p. 328 (1867).

Limosa melanura, *Koenig, J. f. O.* 1888, p. 276; *id. J. f. O.* 1893,
p. 89.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Head, neck and breast yellowish-rufous, the crown and nape striped with black; upper parts barred with black and rufous; rump white; tail-feathers black, with white bases; abdomen and sides white, barred with brown; axillaries and under wing-coverts white.

Iris brown; bill blackish at the tip and orange at the base; feet blackish. Total length 16.50 inches, wing 8.25, culmen 3.70, tarsus 2.70.

Adult female similar to the male, but larger, its measurements being as follows:—

Total length 18.50 inches, wing 8.80, culmen 4.70, tarsus 3.25.

In winter the general colour of the plumage is ash-brown above, paler on the forehead, nape and neck, and darker on the crown, back and wings, the under parts being pale ash-brown, and white on crissum.

The Black-tailed Godwit is not uncommon in Tunisia in winter and spring, and examples of it may occasionally be seen in the markets of Tunis and other towns in the Regency.

It occurs as a winter migrant in Algeria and Marocco, and appears to be abundant in the latter country during the spring migration. According to Colonel Irby, the species is most plentiful in South Spain in February and March, appearing in bands of several hundred individuals and frequenting the grassy marshes, or inundated ground, and the marismas. It is recorded from the Canaries, Madeira and the Azores. The species has an extensive range, both in Europe and Asia. It breeds in Iceland and the more northern parts of our Continent, migrating southwards in winter to the Mediterranean and Africa, its winter migration in Asia extending through the Indian region to Ceylon.

The Black-tailed Godwit frequents marshy localities as a rule, but in winter it is frequently to be found on the sea coast. It is eminently gregarious, and may sometimes be found associating with other species of Waders. Though perhaps not naturally so timid as most of these, being in the company of such birds as Curlews and Redshanks, renders it shy and wary, and difficult to approach. It flies well, and runs swiftly.

Its call note is loud and clear, and its alarm cry rather harsh. It feeds principally on worms, insects and crustaceans. The flesh of this species is considered excellent eating.

LIMOSA LAPPONICA (Linnæus).

BAR-TAILED GODWIT.

Scolopax lapponica, *Linn. Syst. Nat.* i, p. 246 (1766).

Limosa lapponica, *Gray, List. Grall. Brit. Mus.* p. 96 (1844); *Loche, Expl. Sci. Alg. Ois.* ii, p. 330 (1867); *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 373; *Koenig, J. f. O.* 1893, p. 79.

Limosa rufa, *Matherbe, Faune Orn. de l'Alg.* p. 31 (1855); *Koenig, J. f. O.* 1888, p. 265.

Description.—**Adult male**, spring, from Spain.

Head, neck and entire underparts rusty-red, the crown and nape striped with blackish; back and scapulars also rusty-red, but more heavily striped with blackish; rump white, with a few dark stripes, upper tail-coverts white, washed with rufous and sparingly striped with blackish; tail white, barred with blackish, the median rectrices washed with rufous; quills blackish; secondaries dark grey, fringed with white; axillaries and under wing-coverts white, with a few dark streaks.

Iris brown; bill orange-yellow at the base, blackish at the tip; feet black.

Total length 16 inches, wing 8·40, culmen 3, tarsus 2.

Adult female less rufous, and larger than the male.

In winter the upper plumage is brownish-grey, and the lower parts are whitish, washed with brown on the neck and breast.

According to Blanc the Bar-tailed Godwit is to be found in Tunisia occasionally, specimens having been obtained by him in the autumn of 1901. The species is, however, probably somewhat rare in the Regency, as it is in Malta, Sicily and Southern Italy. Loche states that it is fairly common in Algeria in winter, and examples obtained by him from that country are preserved in the Milan Museum. According to Favier (*vide* Colonel Irby), the Bar-tailed Godwit is abundant on passage near Tangier, migrating northwards during the months of February and March, and returning in August and September. Favier further asserts that the species occasionally remains to breed in Marocco, but there seems to be no positive proof of this being the case. In Spain this Godwit lingers till a late date, and the specimen above described, which is in full breeding-plumage, was obtained by Lord Lilford in Santander harbour on May 20th, 1876. Writing about this species (Birds of Northamptonshire, p. 100), Lord Lilford states that "it was not abundant on the great plains of the Guadalquivir at the same season of 1872, where summer-plumaged Knots were in countless thousands, and other northern breeders also in very great numbers."

The Bar-tailed Godwit is found throughout Europe generally, breeding chiefly in the extreme north-eastern parts, and wintering in the south of our Continent and in Africa. In Asia it occurs as far north as Kamtchatka, and ranges eastwards to India, or even further.

In its habits the present species does not differ greatly from the Black-tailed Godwit. It frequents inland marshy localities, but also the sea-coast in winter and when on passage, and may often be found associating with other Waders. Its notes and food also are not very different from those of its congener.

NUMENIUS ARQUATA (Linnæus).

COMMON CURLEW.

Scolopax arquata, *Linn. Syst. Nat.* i, p. 242 (1766).

Numenius arquata, *Bodd. Tabl. Pl. Enl.* p. 50 (1783); *Loche, Expl. Sci. Alg. Ois.* ii, p. 331 (1867).

Numenius arquatus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 21 (1846); *Koenig, J. f. O.* 1888, p. 276; *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 341; *Erlanger, J. f. O.* 1900, p. 69.

Numenius arcuatus, *Koenig, J. f. O.* 1893, p. 88.

Description.—**Adult male**, winter, from North Tunisia.

Upper-parts pale greyish-brown, tinged with buff, and thickly striped with blackish-brown; quills blackish-brown, rump white; upper tail-coverts white, spotted and barred with blackish-brown; median rectrices pale grey-brown, barred with dark brown, the remaining tail-feathers white, barred with blackish-brown; lores, superciliaries and chin white; throat, fore-neck, breast and sides of body buffy-white, striped with brown; abdomen and under tail-coverts pure white; axillaries mottled and barred with brown.

Iris brown; bill dark brown, and dull flesh-colour at the base; feet dark grey.

Total length 25·50 inches, wing 12·70, culmen 6·75, tarsus 3·25.

Adult female similar to the male in plumage, but larger.

The Curlew is common in Tunisia, and, according to Blanc, to be found there throughout the entire year. There seems, however, to be no recorded instance of the species having bred in the Regency, and the examples met with in summer are possibly either early or late migrants, or, what is still more probable, young birds of the preceding year, which would not breed during their first season. Dr. Koenig seems to have met with the Curlew in Tunisia late in May, and is of this latter opinion.

According to Count Arrigoni (*Man. Orn. Ital.* p. 574) flocks of Curlews may be found during the summer months in the Venetian Estuary, but do not breed. The same appears also to be the case in South Spain, according to Colonel Irby (*Orn. Strs. Gib.* p. 178).

Loche states that a few pairs breed in Algeria, and the same is said to be the case in Marocco, but no well authenticated instance of the species breeding in North-west Africa is on record.

The Curlew has a wide range, being met with throughout Europe generally, nearly as far north as the Arctic Circle, throughout a considerable part of Asia, and in Africa as far south as Cape Colony.

In winter and on migration the species frequents sea-coast districts, particularly mud-flats and similar open localities, where food is abundant, and where it cannot easily be approached. At such times it is usually to be found in large flocks, and when thus united is one of the wildest and most wary birds. Its flight is fairly rapid, but less so than that of the Whimbrel, and it is fond of wading in shallow water in search of food. Its well-known note, or alarm cry, is loud and clear and is fairly rendered by the syllables forming the bird's English name. The species feeds on crustaceans, small fish, worms, insects, and to a certain extent on vegetable substance.

NUMENIUS PHÆOPUS (Linnæus).

WHIMBREL.

Scolopax phæopus, *Linn. Syst. Nat.* i, p. 243 (1766).

Numenius phæopus, *Lath. Gen. Syn. Suppl.* i, p. 291 (1787); *Malherbe, Cat. Rais. d'Ois. Alg.* p. 21 (1846); *Loche, Expl. Sci. Alg. Ois.* ii, p. 333 (1867); *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 89; *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 355; *Erlanger, J. f. O.* 1900, p. 68.

Description.—**Adult male**, winter, from Marocco.

Upper parts greyish-brown, darker on the crown and back, and lighter on the nape, crown with whitish median and side stripes; rump and upper tail-coverts white, barred with greyish-brown; primaries blackish-brown, barred on the inner webs with white; tail dusky grey, barred with dark brown, and fringed with white; chin white; breast whitish, streaked with brown; sides of body and flanks barred with triangular brown spots; centre of abdomen and crissum white.

Iris brown; bill dark brown; feet grey.

Total length 15 inches, wing 9·30, culmen 3, tarsus 2·40.

Adult female similar to the male.

Although the least abundant of the three members of the genus found in Tunisia, the Whimbrel is to be met with not unfrequently on the coasts of the Regency during the periods of migration and in winter. It may sometimes be observed in the immediate vicinity of the town of Tunis, and examples are occasionally to be seen in

the market of that town. Von Erlanger records having met with it in autumn near Gabès, and on the small island of Knais.

The Whimbrel occurs in Algeria and Marocco as a winter visitor, and seems to be plentiful in the latter country during the periods of passage.

Its range is very extensive, and appears to embrace the whole or greater part of Europe, Asia, Africa and Australia. In America it is replaced by *N. hudsonicus*.

In its habits this species resembles the Curlew, and like that bird, is to be found, as a rule, in flocks, frequenting the sea-coast, specially open expanses and mud-flats, during the colder months and on passage. Its migration, like that of its allies, appears to be effected chiefly during the night. On arrival the birds are not very shy, differing in this respect from the Curlew, but should they be much disturbed, they soon become wary.

The flight of this species is quicker than that of its larger congener, and usually much closer to the ground; but when actually on passage, the bird flies at a considerable altitude. Its note is a clear loud whistle, repeated several times, not unlike that of the Curlew, but uttered in a higher key.

Its food consists largely of crustaceans, as well as of insects and their larvæ, worms, and to a certain extent also of vegetable matter.

NUMENIUS TENUIROSTRIS, Vieillot.

SLENDER-BILLED CURLEW.

Numenius tenuirostris, Vieill. *Nouv. Dict.* viii, p. 302 (1817); *Malherbe, Faune Orn. de l'Alg.* p. 31 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 335 (1867); *Koenig, J. f. O.* 1888, p. 265; *id. J. f. O.* 1893, p. 79; *Sharpe, Cat. Birds Brit. Mus.* xxiv, p. 348.

Description.—**Adult male**, winter, from North Tunisia.

Above pale greyish-brown, thickly striped with blackish-brown; rump and upper tail-coverts white, with a few blackish drop spots; tail white, barred with blackish-brown; lores, superciliaries and chin white; throat, neck and upper breast whitish, faintly tinged with buff, and striped with brown; lower breast, upper abdomen and flanks pure white, with blackish drop spots; rest of the under parts and axillaries pure white.

Iris brown; bill dark brown, and flesh-colour at the base of the lower mandible; feet dark grey.

Total length 15 inches, wing 9·40, culmen 2·70, tarsus 2·50.

Adult female similar to the male in plumage, but larger.

This Curlew is probably the commonest of the three members of the genus found in Tunisia. According to Blanc it is abundant in the Regency in winter and during the periods of migration, but he does not allude to its breeding in the country, nor have I any information on this point from any other source.

Canon Tristram appears to have found the species very abundant in Tunisia in winter, and even as late as June, the bird being always in flocks and very wild. Salvin also met with this Curlew on more than one occasion, and obtained a specimen near El Djem in Central Tunisia. On the last occasion I visited Kasrin in Central Tunisia, towards the end of April, I found considerable numbers of a small Curlew, which seemed to me to belong to the present species, frequenting some marshy land in the neighbourhood, but the birds were so wild and unapproachable, that I could not get within gunshot of them.

According to Loche the Slender-billed Curlew is not uncommon in Algeria, and is to be found both north and south of the Atlas. It is also probably to be found in Marocco, as it occurs in South Spain and about the Straits of Gibraltar.

The range of the species is, however, not an extensive one and is, more or less, confined to the Mediterranean, extending eastward through Southern Russia as far as the Transcaspian districts. The bird may be met with occasionally in Central Europe, and is recorded as having been captured in Holland and on the island of Sylt off the Danish coast.

In its habits the present species resembles its allies, though it more often frequents inland localities than either of the two preceding species, and may be more frequently found on the Sebkas and Chotts of the interior than on the sea-coast. As mentioned above, it is very wild and difficult to approach. Its flight resembles that of the Whimbrel, and it is fond of wading in shallow water, in search of its food, which consists chiefly of worms, insects and small crustaceans.

Order GAVIÆ.

Family LARIDÆ.

STERNA HIRUNDO, Linnæus.

COMMON TERN.

Sterna hirundo, *Linn. Syst. Nat.* i, p. 227 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 34 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 201 (1867); *Koenig, J. f. O.* 1888, p. 287; *id. J. f. O.* 1893, p. 98.

Sterna fluviatilis, *Saunders, Cat. Birds Brit. Mus.* xxv, p. 54; *Whitaker, Ibis*, 1896, p. 98.

Description.—**Adult male**, spring, from Djerba, South Tunisia.

Forehead, crown and nape jet-black; mantle, back, scapulars, secondaries and upper wing-coverts pearl-grey; edge of wings round the carpal joint white; primaries with the white margins of the inner webs not extending to the tips of the feathers; the outermost primary with the outer web blackish; rump and upper tail-coverts white; tail white with light grey on the outer webs of the feathers, the outer feathers on each side projecting only slightly beyond the others; chin, throat and fore-neck white; breast and abdomen pearl-grey; crissum and under tail-coverts white.

Iris dark brown; bill coral-red, and blackish at the tip; feet coral-red.

Total length 13·50, wing 10·60, culmen 1·50, tarsus ·80.

Adult female similar to the male.

In winter the forehead, crown and nape are white mottled with black.

The Common Tern is to be found abundantly on the South-east coast of Tunisia during the spring and summer months, but apparently does not winter in the Regency. It breeds on most of the small islands off the above coast, one of its chief nesting haunts being the neighbourhood of the Island of Djerba, where the species may be found in considerable numbers between the months of April and September, after which date it disappears entirely.

Loche states that the Common Tern is abundant on the Algerian coasts, and, according to Favier, it is to be found in large flights during the autumn migration near Tangier.

The summer range of this species extends over the whole, or the greater part, of Europe, North Africa, the Atlantic Islands, the temperate portion of Asia, and North America from Labrador to Texas. In winter it migrates to South Africa, in Asia to India, Ceylon and the Malay Peninsula, and in America to Bahia and Brazil.

Specially fitted for an aerial life, the present species, like other Terns, is seen to most advantage on the wing, its flight, though not very rapid, being particularly graceful and buoyant, and its movements and actions in the air singularly attractive and interesting. The name of Sea-swallows has been applied to the Terns, and in some ways perhaps not inappropriately, though the Tern's flight can hardly be said to resemble greatly that of the Swallow, being far less rapid and dashing, but more hovering and wavering. The Common Tern swims with ease, and often plunges into the water from a height when in pursuit of its prey, which it always seizes with its bill. Owing to its short feet, its movements on land are rather awkward, and the bird merely resorts to *terra firma* to rest, or during the breeding season, to attend to its nesting duties.

Its food consists chiefly of small fish and crustaceans. The ordinary call-note of the species is a long-drawn cry, which may be fairly rendered by the syllable "*krēē*," but its alarm-note is more like "*quiēē, quiēē*." On its nest being approached the bird becomes very noisy, and keeps up an incessant cry, hovering over the head of the intruder till left in peace. On fine days, when the sun is shining brightly, Terns probably leave their eggs uncovered for a considerable length of time, particularly during the hotter hours, without any ill resulting therefrom.

Like its allies, the present species breeds in colonies, and generally on the bare ground. In Tunisia the smaller islands off the south-east coast are its chief breeding places, and I am unaware of its resorting to any of the inland lakes or salt-marshes for the purpose of nidification. In some countries where the species breeds in inland districts, it often has to fly long distances to obtain food in salt-water.

The eggs, which are deposited in a slight hollow in the ground, without any attempt at concealment, are two or three in number, never more. In colour they vary from yellowish-ochre to greenish-buff, with grey shell-marks and dark brown surface-blotches, sparingly distributed over the entire surface of the shell in some cases, but

collected in a band at the larger end in others. The average measurements of the eggs are 42×30 mm. The breeding season in Tunisia extends from about the middle of May to the end of June or middle of July.

According to Loche the Arctic Tern (*S. macrura*) has been met with accidentally in Algeria, and it may also occur, as a wanderer, in Tunisia, though so far it appears to be unrecorded from the Regency.

STERNA DOUGALLI, Montagu.

ROSEATE TERN.

Sterna dougalli, *Mont. Orn. Dict. Supp.* (1813); *Saunders, Cat. Birds Brit. Mus.* xxv, p. 70; *Whitaker, Ibis*, 1896, p. 99.

Description.—**Adult male**, spring, from Djerba, South Tunisia.

Forehead, crown and nape jet black; mantle, back, scapulars, secondaries and upper wing-coverts pale pearl-grey, edge of wings round the carpal joint white; primaries silvery grey, with the white margins of the inner webs extending to the very tips of the feathers, the outermost primary with the outer web blackish; rump and upper tail-coverts very pale pearl-grey; tail white, the outer rectrices projecting far beyond the others and beyond the wing-tips; under parts white, the breast tinged with a delicate rose-colour.

Iris dark brown; bill black, and reddish at the base; feet red.

Total length 16 inches, wing 9.25, culmen 1.75, tarsus .80.

Adult female similar to the male.

In winter the forehead is white, the crown and nape black and white, the rose tint is missing on the under parts, and the bill is nearly entirely black.

Observations.—A beautiful male specimen in my collection from Tunisia is entirely white, except for the jet black crown and nape, and pale silvery grey primaries. When fresh it had a most pronounced rose tint on its underparts, but this is now much faded. I may, however, here observe that I have seen a pair of skins of *S. dougalli* in Mr. J. H. Gurney's collection, which show the rose blush most distinctly, though they are probably over forty years old.

This, the most beautiful of all the Terns, is, or was up to a few years ago, abundant on the south-east coast of Tunisia during the

spring and summer months, breeding there regularly in considerable numbers, and leaving again on the approach of autumn.

During the last two or three years, however, the species appears to have diminished sensibly in numbers, in consequence, it is said, of the ruthless persecution to which it, in common with other Terns, is subjected by the Arabs who take the eggs. This robbery seems to be carried out in a wholesale and systematic way, men, women and children joining together in parties and walking in line carefully over the ground where a colony of Terns may have established their breeding quarters, and taking every egg they may find, apparently merely for food.

Some of the small low-lying islets in the neighbourhood of the larger island of Djerba, which, according to Blanc, used formerly to be the favourite breeding haunts of several colonies of the Roseate Tern, are now deserted by the species, and a collector, whom I sent, together with Blanc, in the month of June of the present year (1905), to that part of the Regency, failed to meet with this Tern. Unfortunately time did not permit of a very extended tour being made, or of some other islands and likely breeding ground of this species on the South-east Tunisian coast, being visited.

According to Blanc the Roseate Tern is not usually to be found in any part of North Tunisia, but among the examples of the species sent me by him there is one labelled as having been obtained near the town of Tunis in the autumn of 1896, and it appears, therefore, that the bird occasionally wanders to the north of the Regency, though it may not occur there as a regular visitor. There seems to be no instance, however, of the species breeding anywhere in Tunisia except on the south-east coast, nor of its wintering in any part of the Regency.

The geographical distribution of the Roseate Tern is somewhat peculiar. In Europe the species has been found breeding on the coasts of the British Isles and on the west coast of France, as also, apparently, on the west coast of Denmark. It has also been met with, presumably on passage, on Lake Lemman in Switzerland. It occurs in the Azores and Madeira, thence ranging across the Atlantic to the Bermudas and America, where it breeds on the east coast from Massachusetts to the West Indies, and as far south as Venezuela, though it does not seem to be recorded from the Pacific side. In Africa, besides being met with in Tunisia, the species occurs in Cape

Colony, its range thence extending, by way of Madagascar, to Ceylon, the Strait Settlements, eastward to the Loo-Choo Islands and Japan, and southwards to Australia.

As stated by Mr. Howard Saunders, two very important gaps in the distribution of the species are to be observed, one being that on the West African side, between Madeira and the Cape of Good Hope, the other between the Mediterranean and the Indian Seas. Knowing, however, as we do now, that this Tern is to be found breeding in Tunisia, Mr. Saunders is no doubt quite justified in thinking it not improbable that the line of continuity should be sought eastward, along the North African coast, and southward, down the Red Sea, to the Indian Ocean. The birds that breed in Southern Tunisia, as we know, disappear in autumn, and it seems more probable, considering how oceanic the species is, that they should take the eastern route along the sea-coast rather than migrate inland and traverse the Great Sahara in a southerly direction, or, as an alternative, go northward round Tunisia, and then westward and southward. It is quite possible, and indeed not unlikely, that *S. dougalli* may be found breeding on the coasts of Tripoli and Cyrenaica, as it does in South Tunisia, but our knowledge of the ornithology of those districts is at present extremely limited, and we can only hope that further research may shortly throw some light on this interesting question.

In its habits the Roseate Tern, according to Blanc, is far from shy, and is of a pacific and yielding nature. Though breeding in the vicinity of other Terns, it apparently keeps more or less apart from them and even deserts its favourite quarters should these be invaded by allied species. This has been proved by Dr. Bureau on the west coast of France, and it seems also to have been the case on our English coasts.

The species appears to be essentially a sea-coast bird, and does not occur on inland waters. It is very graceful in its movements, though its flight is said to be less rapid than that of some other Terns. Blanc says it has three different notes, the call-note, the pleasure-note and the alarm-cry. In its food and in its mode of fishing, it does not seem to differ from its allies.

The Roseate Tern breeds in colonies on small uninhabited islands, and not far from the water's edge, but unlike most of the Terns, instead of leaving its nest exposed, it endeavours to hide it as carefully

as possible under any herbage or long grass it may find available, sometimes making a tunnel-like passage or approach to the nest under the plants. The nest itself is merely a depression in the ground, sometimes bare, at others lined with a few grass-bents. Blanc says he never found more than one egg in a nest, but the usual complement appears to be two or three. The eggs are usually elongate, and of a buff-colour, varying in shade from yellowish to light brown, with grey shell-marks and dark brown surface-spots and blotches. Average measurements 45 × 30 mm.

STERNA MINUTA, Linnaeus.

LITTLE TERN.

Sterna minuta, *Linn. Syst. Nat.* i, p. 228 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 35 (1855); *Koenig, J. f. O.* 1888, p. 287; *id. J. f. O.* 1893, p. 98; *Saunders, Cat. Birds Brit. Mus.* xxv, p. 116.

Sternula minuta, *Loche, Expl. Sci. Alg. Ois.* ii, p. 204 (1867).

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Forehead white; lores, crown and nape jet black; mantle, back, scapulars, secondaries and upper wing-coverts pearl-grey; edge of wing white; primaries grey, with white margins to the inner webs, the outermost primary blackish, with a whitish margin to the inner web; shafts dark; rump and upper tail-coverts white, washed with light grey; tail pure white and slightly forked; under parts pure white.

Iris dark brown; bill yellow, tipped with black; feet orange.

Total length 10 inches, wing 6·85, culmen 1·20, tarsus ·60.

Adult female similar to the male.

Young, forehead, lores and crown pale greyish-brown, the latter streaked with black; nape and a broad stripe extending from the eye backward blackish; neck, rump, upper tail-coverts and entire underparts white; back and most of the upper wing-coverts pale greyish-brown, with blackish margins to the feathers; primary quills with dark shafts, and slate-grey outer webs, that of the outermost rather darker than the others, the inner webs with the half adjoining the shafts blackish, the other half white.

The Little Tern is abundant in Tunisia during the spring and summer, and breeds both in the north and south of the Regency. It leaves, however, in autumn, and does not winter in the country.

According to Blanc, the species, though still numerous on all the Tunisian shores in summer, and particularly on the small islands off the south-east coast, is not nearly as plentiful as it used to be formerly, owing to the persistent persecution referred to in the preceding article.

As in Tunisia, the Little Tern is a common summer visitor to Algeria and Marocco.

The range of the species is not as extensive as that of some of its allies. It, however, extends in summer throughout Europe, as far north as Southern Sweden, through North Africa, and in Asia as far east as Northern India. In winter the bird migrates southwards as far as Cape Colony in Africa, and in Asia to Southern India, the Moluccas and Java.

In its habits this pretty little Tern most resembles *S. fluviatilis*, and, like it, may at times be met with on inland waters as well as on the sea-coasts, though in Tunisia it seems to be chiefly, if not exclusively, found in the latter localities. It is very sociable and congregates in small colonies, frequenting sandy beaches or stretches of shingle and drift sea-weed in preference to rocky shores.

Its flight is remarkably light and buoyant, and is performed, as a rule, with regular and measured beats of the wings, though, in a high wind, it is sometimes rather swerving and erratic, and when the bird swoops down on its prey, it will drop almost perpendicularly like a stone. It swims well, but on land walks with apparent difficulty.

Its call-note somewhat resembles that of the Common Tern, and its alarm-note, or cry of distress, uttered on its eggs or young being approached, is not unlike the syllable "*whēēk*," repeated two or three times. Its food consists chiefly of small fish and crustaceans, which are always seized by the bird with its bill.

The Little Tern commences nesting soon after its arrival in spring, and the breeding season may be said to extend throughout May and June and into July. Sandy beaches are usually resorted to, and the low flat islets, numerous in the neighbourhood of Djerba and other parts of the south-east coast of Tunisia, form ideal breeding sites.

Somewhat similar localities are to be found off the south-west coast of Sicily, and quite recently I had the pleasure of meeting with a small breeding colony of *Sterna minuta* in one of these spots. The

colony consisted of about a dozen pairs, and the twelve nests I found were irregularly distributed over a level sandy beach separated from the sea by a bank of drift sea-weed. The nests, if such they can be called, placed a few yards apart from one another, were merely little shallow hollows in the bare sand, some of them surrounded with the *débris* of small sea-shells. Most of the nests contained three eggs, a few only two, and one had two freshly hatched young, and an unhatched egg. The young birds, fluffy little things of a sandy-buff colour, striped with black, when touched with the hand, uttered a distinct chirping note. On their breeding-ground being approached the old birds became very excited and clamorous, flying backwards and forwards and circling round overhead, repeatedly uttering their cries of distress or protest, till finally left in peace. On the same beach where the Little Terns were breeding, and close to their nests, was a clutch of three undoubted eggs of the Kentish Plover.

The eggs of the Little Tern vary considerably in their ground-colour, but less so in marking, shape and size. The majority are of a yellowish-buff shade, sparingly blotched with grey and dark brown, but eggs with a greenish tint are not uncommon, and occasionally greenish-white eggs may be found. One of these latter I found in a clutch with two other eggs of the usual buff-colour. The average measurements of the eggs are 30×22 mm. They are fairly oval in shape and not pyriform.

STERNA CASPIA, Pallas.

CASPIAN TERN.

Sterna caspia, *Pall. Nov. Comm. Petrop.* xiv, p. 582, *tab. xxii*, fig. 2 (1770); *Koenig, J. f. O.* 1888, p. 286; *id. J. f. O.* 1893, p. 96; *Erlanger, J. f. O.* 1900, p. 72.

Sylochelidon caspia, *Loche, Expl. Sci. Alg. Ois.* ii, p. 196 (1867).

Hydroprogne caspia, *Saunders, Cat. Birds Brit. Mus.* xxv, p. 32.

Description.—**Adult male**, spring, from Djerba, South Tunisia.

Forehead, crown and nape jet black; neck white; the greater part of the upper plumage pale pearl-grey, becoming almost white on the rump and tail; quills silvery-grey, the margins of the inner webs slate-grey; the outermost primary almost entirely dark grey; underparts white.

Iris blue-black ; bill coral-red ; feet black.

Total length 23 inches, wing 17, culmen 3, tarsus 1.80.

Adult female similar to the male, but rather smaller.

In winter the crown and nape are white, striped with black, and the general colour of the plumage is rather greyer.

This fine Tern is resident and to be found on all the Tunisian sea-coasts. During the spring and summer months it is abundant in some localities, particularly in the south of the Regency, and, though less plentiful, it may also frequently be met with on the northern coast. Examples are sometimes obtained in the neighbourhood of the towns of Tunis and Bizerta, but the small islands off the south-east coast of the Regency appear to be the most favourite breeding-grounds of the species.

In Algeria and Marocco the species seems to be less plentiful than in Tunisia, and in the latter country it is apparently rare.

The geographical range of the Caspian Tern is very wide-spreading, and extends to both hemispheres. The species is generally distributed throughout the Mediterranean, as well as the Black and Caspian Seas, from the latter of which it was first recorded by Pallas. Northwards the species occurs in Finland, Sweden, Denmark and Holland, and appears irregularly in the British Islands. It is resident in North Africa, and ranges down both sides of the African Continent as far as Cape Colony. It occurs throughout a considerable portion of Asia, as far east as China, and is resident in Australia and New Zealand.

In the Nearctic Region it occurs as far north as Alaska and Labrador, and southwards in California, Mexico and Florida. In tropical and subtropical America it is replaced by *Sterna maxima*, a smaller and distinct species, which is also to be found on the West African coast and as far north as the Straits of Gibraltar.

There is an adult example of this Tern, in winter plumage, from the Straits, in the Lilford collection. This specimen was obtained by Favier previous to 1867, and was acquired by Colonel Irby from Favier's successor. Two other examples of *S. maxima*, shot near Tangier in December, 1882, are in Mr. J. J. Dalgleish's collection (Orn. Strs. Gib. 2nd ed. p. 294).

The Caspian Tern is gregarious, and may sometimes be found in large flocks, particularly during the breeding-season, though it is

also frequently to be met with in pairs. It frequents the sea-coast, as a rule, or salt-water lagoons not far from the sea. Its flight, though rather heavier than that of most Terns, is powerful and untiring, the bird, like others of its kind, spending its life chiefly in the air. Like them too, when scanning the water in search of food it carries its bill pointing downwards, almost at a right angle to its body. It lives principally on fish, but is said also to prey on the eggs and young of other sea-birds.

Its note is a harsh "*quāā, quāā.*"

When its breeding-grounds are approached, the bird becomes very noisy, and will boldly come within easy gunshot of the intruder, crying out lustily.

It breeds in communities and in isolated pairs, generally on small unpopulated islands, where it is less likely to be disturbed. Its eggs, two or three in number, and placed in a slight depression in the bare ground, occasionally surrounded with a few shells, or pieces of seaweed, are buff-colour, sometimes yellower, at others greener or whiter, rather sparingly marked with underlying pale grey blotches and brown surface-spots. The markings are generally distributed over the whole surface, but occasionally collected at the larger end of the egg. Average measurements 63 × 45 mm.

STERNA MEDIA, Horsfield.

ALLIED TERN.

Sterna media, *Horsf. Trans. Linn. Soc.* xiii, p. 199 (1820); *Koenig, J. f. O.* 1893, p. 97; *Saunders, Cat. Birds Brit. Mus.* xxv, p. 86.

Sterna affinis, *Malherbe, Faune Orn. de l'Alg.* p. 34 (1855).

Thalasseus affinis, *Loche, Expl. Sci. Alg. Ois.* ii, p. 200 (1867); *Koenig, J. f. O.* 1888, p. 284.

Description.—**Adult male**, summer, from Djerba, South Tunisia.

Forehead, crown and nape jet black; neck and mantle white; remainder of the upper plumage pearl-grey; primaries with dark grey stripes on their inner webs, adjoining the shafts, which are white; entire underparts white.

Iris dark brown; bill yellow; feet black.

Total length 15 inches, wing 11·50, culmen 2·50, tarsus 1·10.

Adult female similar to the male.

This Tern appears to be somewhat uncommon, and more or less irregular in its occurrence in Tunisia. I have but one example of it from the Regency, obtained at Djerba in the month of July. According to Blanc, however, the species, though never abundant, is fairly plentiful in some years, and breeds in the south of the Regency, together with other Terns. It is also to be found in the north near Bizerta and Tunis, and generally in company with the Sandwich Tern.

Loche states that the species is of accidental occurrence in Algeria, and Colonel Irby records it from Tarifa and Tangier. According to Favier the species is one of the least common of the Terns near Tangier, though more frequently seen further south in Marocco, near Larache.

The range of the Allied Tern extends along the North African coast from Marocco to Egypt, down the east coast of Africa as far as Madagascar, to the Persian Gulf, the Indian Ocean, and through the Malay Archipelago to North Australia. It is only a rare straggler to Europe, but has twice been captured in Sicily, once near Syracuse and once near Messina.

In its habits the present species most nearly resembles the Sandwich Tern (*S. cantiaca*), and is often to be found associating with that species. It is very gregarious, and in countries where it is plentiful, as in India and some other parts of the Asiatic Continent, collects together in vast numbers.

In its flight, notes and food it does not seem to differ from the above species, which it also resembles in its nesting habits. Its eggs, two or three in number, are deposited in a slight depression in the ground, and are generally of a pale buff-colour, with underlying light grey marks and dark brown surface-spots and blotches. The eggs measure about 55×35 mm.

STERNA ANGLICA, Montagu.

GULL-BILLED TERN.

Sterna anglica, *Mont. Orn. Dict. Suppl.* fig. (1813); *Koenig, J. f. O.* 1888, p. 286; *id. J. f. O.* 1893, p. 97; *Whitaker, Ibis*, 1895, p. 106.

Gelochelidon anglica, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 22 (1846); *Saunders, Cat. Birds Brit. Mus.* xxv, p. 25; *Erlanger, J. f. O.* 1900, p. 73.

Gelochelidon meridionalis, *Loche, Expl. Sci. Alg. Ois.* ii, p. 198 (1867).

Description.—**Adult male**, spring, from Djerba, South Tunisia.

Forehead, crown and nape jet-black, the feathers of the nape much elongated; upper plumage pearl-grey, becoming almost white on the shoulders and tail; primaries dark grey, lighter in the middle; underparts white.

Iris dark brown; bill black; feet dark brown.

Total length 14 inches, wing 12·25, culmen 1·75, tarsus 1·25.

Adult female similar to the male, but slightly smaller.

In winter the forehead is white, and the crown and nape white, striped with black.

The Gull-billed Tern is common in Tunisia in spring and autumn, and breeds in the Regency. It may often be met with in inland districts, as well as on the coast, and has been found even in the middle of the desert.

Loche states that it is abundant on the coasts and lakes of Algeria, and that it breeds on Lake Fezzara.

Canon Tristram records it from the Algerian Sahara, and found it breeding at Zana.

Colonel Irby met with it in great numbers about the lakes of Ras Doura in Marocco towards the end of April, and gathered from the Arabs that the species bred in that neighbourhood a little later than that date.

The range of the Gull-billed Tern extends throughout Southern Europe and North Africa, eastward through Asia to China, and southward to Australia. It appears to be a summer visitor to Denmark, but can only be looked upon as a straggler throughout the greater part of Northern and Central Europe. In America it nests along the Atlantic coast from Massachusetts to Mexico and the West Indies, and ranges as far south as Patagonia. Its only occurrence on the

Pacific coast appears to be that recorded by Salvin from Guatemala, but as the isthmus is very narrow at this point, it is probable the specimen obtained had strayed across from the other side.

The present species is less exclusively a coast frequenting species than are most of the Terns, and is far more often to be found in inland localities than others of the genus. It is fond of salt-water, however, and has a partiality for lagoons and deltas sheltered from the open sea, though also to be met with frequently on fresh-water lakes and large rivers. The Tunisian Sebkas are often visited by the bird on passage, and the species probably breeds on the larger of them, as it does at Zana.

S. anglica is generally to be found in small flocks, though occasionally in large numbers.

Its flight is very graceful, and fairly swift and powerful. Its notes, which have been rendered by the syllables "ef-ef" and "af-af," are rather Gull-like.

In its diet this species differs from most other Terns in being particularly fond of insects, Orthoptera, Lepidoptera and Coleoptera being all greedily eaten by it. In countries like Tunisia and Algeria, where locusts are a plague, these provide the bird with an abundance of food. It also feeds on fish, crustaceans, frogs, &c., and may almost be called omnivorous.

The species breeds in colonies, and deposits its eggs, two or three in number, in a depression in the bare ground. The colour of the eggs varies from a very pale buff to a darker or sometimes a greenish-buff, the underlying spots being pale grey, and the surface-spots brown. Average measurements 50 × 35 mm.

STERNA CANTIACA, Gmelin.

SANDWICH TERN.

Sterna cantiaca, Gmel. *Syst. Nat.* i, p. 606 (1766); Malherbe, *Cat. Rais. d'Ois. Alg.* p. 22 (1846); Koenig, *J. f. O.* 1888, p. 286; *id.* *J. f. O.* 1893, p. 97; Saunders, *Cat. Birds Brit. Mus.* xxv, p. 75; Erlanger, *J. f. O.* 1900, p. 72.

Thalasseus cantiacus, Loche, *Expl. Sci. Alg. Ois.* ii, p. 199 (1867).

Description.—**Adult male**, spring, from Djerba, South Tunisia.

Forehead, crown and nape jet-black; neck, mantle, rump, tail and wing-

shoulders white; remainder of upper plumage pearl-grey; primaries with dark grey running along the shafts; underparts white.

Iris dark brown; bill black and yellow at the tip; feet black.

Total length 15 inches, wing 11·50, culmen 2·25, tarsus 1·10.

Adult female similar to the male.

In winter the forehead is white, and the crown and nape white, striped with black.

The Sandwich Tern is resident and abundant in Tunisia, particularly during the spring passage, when large flocks of the species may often be observed on the coasts of the Regency. In winter it is not uncommon in the neighbourhood of Bizerta, Porto Farina, Tunis, and other seaport towns, and probably occurs at that season all along the east coast as far as Tripoli, from the shores of which the species is also recorded.

In summer it is to be found on the islands off the south-east coast of the Regency, where it breeds.

According to Loche the species is abundant on the Algerian coasts, but rarely strays inland. Favier says it is plentiful near Tangier from November to February, and it breeds on the Canary Islands.

The range of the Sandwich Tern extends throughout the temperate portion of Europe, the Mediterranean, Black and Caspian Seas, the Arabian and Persian coasts, as far east as Sind. In North Europe it is not common, though it nests on some of the coasts and islands of the North Sea. It occurs throughout North Africa, and down the west coast of that continent to Cape Colony, being also found at Natal. In America it is found along the Atlantic coasts, down to the West Indies and Brazil, and has also occurred on both sides of Guatemala.

The present species is essentially marine in its tastes and habits, and is seldom to be found far from the sea, though it has occasionally been known to breed on inland fresh-water lakes. It lives, as a rule, in large companies and, like other Terns, is very sociable. Its flight is swift and powerful, and its cry rather harsh and grating, being fairly rendered by the syllables "*kirhitt, kirhitt.*" It feeds chiefly on small fish.

It breeds in colonies, and places its eggs, two or three in number, in a slight hollow in the sand, though in some countries it is said to make a rough nest of bents or other similar material. The colour of the eggs varies from brownish-buff to creamy-white, with grey shell-

marks and dark brown surface-spots, and occasionally blackish streaks. Average measurements 50 × 35 mm.

STERNA FULIGINOSA, Gmelin.

SOOTY TERN.

Sterna fuliginosa, Gmel. *Syst. Nat.* i, p. 605 (1788); Saunders, *Cat. Birds Brit. Mus.* xxv, p. 106.

Description.—**Adult male**, from Island of Ascension.

Upper parts, with the exception of the forehead, black, the crown and nape darker and more glossy, the other parts with a brownish tinge; tail black, except the outermost feather on each side, which is white, with the terminal portion of the inner web dark grey; forehead, sides of head and neck, and entire under parts white.

Iris brown; bill and feet black.

Total length 16 inches, wing 11.50, culmen 2, tarsus 1.

Adult female similar to the male.

The Sooty Tern appears to have been met with occasionally on the south coast of Tunisia, but is probably of rare and merely accidental occurrence in the Regency.

Mr. Paul W. H. Spatz kindly informs me that he obtained an example of the species on June 30th, 1894, at the southern extremity of the small Island of Djerba. This specimen, a female, is now preserved in Dr. Koenig's fine collection of Tunisian birds at Bonn.

M. Blanc also informs me that he met with two or three individuals of this Tern some fifteen or sixteen years ago in the same locality on the Island of Djerba, but considers the species very rare in the Regency.

So far as I am aware, there is no record of the occurrence of *S. fuliginosa* on the coasts of Algeria or Marocco, and the species is an extremely rare wanderer to Europe. It is recorded as having occurred three or four times in the British Islands, once in France, once in Germany, and once in Italy.

In Africa the Sooty Tern is to be met with on both the east and west coasts, and is abundant in some parts, especially on the Island of Ascension, where it is to be found breeding in countless thousands. It appears to occur in the Red Sea, the Persian Gulf, eastwards as far

as Japan, and southwards as far as Australia. In America it is found in the Southern United States, and is generally distributed throughout the West Indies, though rarer on the Pacific coasts of America.

In its habits the Sooty Tern is eminently sociable and gregarious, breeding in immense colonies, densely packed together, on small rocky islands, and laying its single egg on the bare ground, or, as on Ascension, on an arid cinder-bed.

The species would seem to be far from shy or wary, though when wounded and seized by the hand, capable of defending itself and of inflicting a severe bite. Its usual note is loud and shrill, but at times, and particularly when its breeding quarters are approached, the bird utters a plaintive cry. It feeds principally on fish, but, like some other sea-birds, will hover near vessels and pick up scraps of food or any morsels that may be thrown overboard.

The closely allied species, *Sterna anæsthera* of Scopoli, which differs from *S. fuliginosa* in its smaller size, lighter colouring and less fully webbed feet, is said to have occurred once in England, but the evidence in support of this statement is not quite satisfactory.

HYDROCHELIDON HYBRIDA (Pallas).

WHISKERED TERN.

Sterna hybrida, Pallas, *Zoogr. Rosso-As.* ii, p. 338 (1811).

Hydrochelidon hybrida, Bonap. *Cat. Ucc. Eur.* p. 77 (1842); Loche, *Expl. Sci. Alg. Ois.* ii, p. 208 (1867); Koenig, *J. f. O.* 1888, p. 288; *id.* *J. f. O.* 1893, p. 99; Saunders, *Cat. Birds Brit. Mus.* xxv, p. 10; Whitaker, *Ibis*, 1895, p. 106.

Sterna leucopareia, Malh. *Faune Orn. de l'Alg.* p. 34 (1855).

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Forehead, crown and nape jet-black; remainder of upper plumage grey, darkest on the mantle; primaries with dark grey lines bordering the shafts; shoulders edged with white; chin and cheeks white, rest of the under parts grey, darkest on the abdomen; under tail-coverts white; under wing-coverts white; toes only slightly webbed.

Iris dark brown; bill and feet dark red.

Total length 10·25 inches, wing 9·50, culmen 1·35, tarsus ·90.

Adult female similar to the male.

In winter the forehead is white and the crown and nape white marked with black.

The Whiskered Tern is not uncommon in Tunisia during the periods of passage, and particularly in spring. It is also to be found more sparingly in winter, and a certain number breed in the north of the Regency.

According to Loche, the species is common in Algeria, and, apparently, it used to be particularly abundant on Lake Halloula, before that lake was drained.

In Marocco, according to Favier, it is scarce near Tangier on passage, but to be found breeding in immense colonies on the lakes of Ras Doura.

The range of the species extends throughout Southern Europe, but in the north of our continent the bird only occurs occasionally as a straggler. It is plentiful throughout North Africa, and is found as far south as the Cape of Good Hope. In Asia it ranges from the Mediterranean to India and China, and through the Malayan region down to Australia.

Like its allies, the Whiskered Tern chiefly frequents marshes and inland waters, though during the seasons of migration it is to be met with on the sea-coast and localities adjoining it.

The name of Marsh-Terns, by which this group has been distinguished from other Terns, is not inappropriate.

Its flight is graceful and buoyant, though not very rapid. It feeds on small fish, insects and their larvæ.

The species nests in colonies, and, as a rule, on the banks of marshes, its nest being often a mass of weeds or aquatic herbage floating on the surface of the water. The eggs, three or four in number, are very pear-shaped and of a dull olive-green, or sometimes a bluish-green, with greyish shell-marks and brown surface-spots. Average measurements 40×29 mm.

HYDROCHELIDON LEUCOPTERA (Schinz).

WHITE-WINGED BLACK TERN.

Sterna leucoptera, Schinz, in *Meisner & Schinz Vög. Schweiz*, p. 264 (1815); *Malherbe, Faune Orn. de l'Alg.* p. 34 (1855).

Hydrochelidon leucoptera, Boie, *Isis*, 1822, p. 563; Koenig, *J. f. O.* 1888, p. 288; *id. J. f. O.* 1893, p. 98; Saunders, *Cat. Birds Brit. Mus.* xxv, p. 6; Whitaker, *Ibis*, 1895, p. 106.

Hydrochelidon nigra, Loche, *Expl. Sci. Alg. Ois.* ii, p. 207 (1867).

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Almost the whole of the plumage above and below black, the rump, tail, edge of the wing and lesser upper wing-coverts white; the remaining upper wing-coverts and the secondaries grey; primaries dark grey, with whitish margins on their inner webs; crissum and under tail-coverts white; under wing-coverts and axillaries black; toes only slightly webbed.

Iris dark brown; bill violet-brown; feet coral-red.

Total length 9·50 inches, wing 8·40, culmen 1·10, tarsus ·70.

Adult female similar to the male, but rather smaller.

This small Tern is the least common of the three members of the genus, but may be met with not unfrequently in Tunisia during the periods of passage. On the shores of the Lake of Tunis and similar localities on or near the east coast it may often be observed, but there appears to be no instance of its breeding in the Regency.

According to Loche it is common in Algeria, both on the coast, and on the great lakes, where it breeds, but in Marocco it is, apparently, by no means abundant, and Colonel Irby states that the only instance he knew of its occurrence was that of a single specimen shot in May, 1869, at Sharf el Akab, near Tangier.

The species is no doubt less numerous in the west of the Mediterranean basin than in the east; in North-east Africa it is fairly plentiful and breeds, migrating in winter to South Africa. In Europe it is abundant in the south-eastern and central parts, but only occurs as a wanderer in the more northern regions. In Asia it ranges from the Caspian eastward to China, and has been met with in Ceylon, Australia and New Zealand. It has also been recorded from America.

The present species is very gregarious, and may often be found consorting with allied species, as well as with its own kind, and even breeding among colonies of the Black Tern. It is chiefly an inland species, frequenting marshes and fresh-water pools, though, when on passage, it is found quite as often on the sea-coast and localities adjoining the sea.

Though not quite so tame and confiding as the Black Tern, the present species may at times be easily approached, and appears to have but little fear of the native labourers who may be working in the vicinity of its feeding-grounds. Its flight is very swift, and the bird seems to be more agile and active than its congeners. In its notes and food, however, it more or less resembles them.

HYDROCHELIDON NIGRA (Linnæus).

BLACK TERN.

Sterna nigra, *Linn. Syst. Nat.* i, p. 227 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 34 (1855).

Hydrochelidon nigra, *Boie, Isis*, 1822, p. 563; *Koenig, J. f. O.* 1888, p. 287; *id. J. f. O.* 1893, p. 98; *Saunders, Cat. Birds Brit. Mus.* xxv, p. 17; *Whitaker, Ibis*, 1896, p. 99.

Hydrochelidon fissipes, *Loche, Expl. Sci. Alg. Ois.* ii, p. 205 (1867).

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Forehead, crown, nape and neck black; remainder of the upper plumage slate-grey, the primaries with darker grey lines along the shafts; wings with a slight white edging; sides of the head, throat and under parts black; crissum and under tail-coverts white; under wing-coverts pale grey; toes only slightly webbed.

Iris dark brown; bill and feet violet-brown.

Total length 9·75 inches, wing 8·75, culmen 1·25, tarsus ·65.

Adult female similar to the male, but rather smaller.

According to Blanc the Black Tern is abundant in Tunisia on passage in spring, but is still commoner towards the end of summer and early autumn, when vast numbers may be observed. He says the species commences to arrive on the Tunisian coasts soon after the middle of July, in small flocks at first, coming apparently from the east, but by the end of July and in August it is to be found distributed throughout the country generally, both north and south, and in large flocks of many thousands of individuals.

Though so plentiful on passage, the species apparently does not breed in the Regency.

In Algeria and Marocco it is also numerous during the periods of migration, but there does not seem to be any positive evidence of its breeding in either country.

The species inhabits Europe generally, ranging as far north as 60° N. lat., Asia, as far east as Turkestan, and Africa, as far south as Abyssinia on the east and Loango on the west. In America it is represented by the closely allied form *H. surinamensis*.

In its habits this small Tern is singularly tame and confiding, appearing to be totally fearless of man, and at times flying within arm's length of a person. Owing to the facility with which it is

obtainable, large numbers of the bird are unfortunately destroyed in Tunis, as in many other places, for purposes of millinery.

Essentially gregarious, it congregates together, as above mentioned, in vast multitudes on migration, when it may be found on the sea-shore as well as on the borders of lakes and marshes. Its flight and movements are extremely light and graceful. Its note is rather a shrill "*krik, krik.*" It feeds chiefly on small fish, water-insects and their larvæ, as well as on worms and tadpoles.

Subfamily LARINÆ.

LARUS RIDIBUNDUS, Linnæus.

BLACK-HEADED GULL.

Larus ridibundus, *Linn. Syst. Nat.* i, p. 225 (1766); *Malherbe, Cat. Rais.*

d'Ois. Alg. p. 22 (1846); *Whitaker, Ibis*, 1895, p. 106; *Saunders, Cat.*

Birds Brit. Mus. xxv, p. 207; *Erlanger, J. f. O.* 1900, p. 74.

Gavia capistrata, *Loche, Expl. Sci. Alg. Ois.* ii, p. 193 (1867).

Xema ridibunda, *Koenig, J. f. O.* 1888, p. 290; *id. J. f. O.* 1893, p. 101.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Entire head coffee-brown; a narrow line above and behind the eye white; nape and neck white, shading into pearl-grey on the mantle, back, scapulars, secondaries and most of the upper wing-coverts; primaries white, tipped, and on the inner webs broadly margined with black, the outermost primary with the outer web almost entirely black; rump, upper tail-coverts and tail white; under parts below the throat white.

Iris hazel; edge of eyelid, bill and feet red.

Total length 15.50 inches, wing 12.75, culmen 1.80, tarsus 1.80.

Adult female similar to the male, but rather smaller.

In winter the adult has the head and throat white, with a small dark patch in front of the eye, and a larger patch behind it, otherwise the plumage is as in spring.

The dark hood, as a rule, begins to appear at the end of February or beginning of March, and is completely assumed by the middle or end of April. Occasionally, however, it is assumed much earlier, even in mid-winter.

Young birds vary considerably in plumage according to age. The principal signs of immaturity are, however, to be found in the white or whitish head, the brownish marking of the upper parts, the brown quills and the brown band at the tip of the tail.

This species, misleadingly called the Black-headed instead of Brown-headed Gull, is very plentiful in Tunisia, particularly in the north, throughout the winter months and periods of passage. According to Blanc the species may also occasionally be observed in summer off the south-east coast of the Regency, not near the shore as a rule, but flying out at sea, or in the neighbourhood of the small islands off that coast. Most of the individuals observed at that season appear to be young birds. The bulk of the winter visitors arrive in November and leave again in March, and during the period between those months may be found in considerable numbers on all the shores and lagoons of North Tunisia.

The species is abundant in Algeria and Marocco in winter and on passage.

Its range appears to extend throughout Europe, a considerable portion of Asia, and Northern Africa. Its nesting-grounds are chiefly in the north, but it has been known to breed as far south as the island of Sardinia and in Asia Minor.

Large numbers of the species are to be found throughout a considerable portion of the year on some of the Swiss lakes, and according to good authorities a few nest in Switzerland.

This Gull is far less a marine species than most of its congeners, and may frequently be found on the borders of lakes, rivers and other inland waters, and occasionally even in localities far distant from the sea. For its breeding quarters it usually selects marshy spots and fresh-water localities in preference to the sea-coast. It may constantly be observed on cultivated fields, and is fond of following the plough in search of food, exhibiting no fear of the ploughman and other labourers in its vicinity. The numbers of noxious insects and grubs destroyed by the vast assemblages of these Gulls is enormous, and of great benefit to the farmer. In the vicinity of Syracuse I have seen the fields *white* with these birds.

Like other Gulls, the present species is voracious and almost omnivorous, for besides feeding on all sorts of insects, worms and larvæ it preys on small fish and crustaceans, and, in captivity, will eat anything that may be given to it in the way of "scraps." Some of these Gulls have lived for years in my garden on a mixed diet of fish and maccaroni.

On Lake Lemman in Switzerland large flocks of this species accompany the steamers plying from place to place, and feed

on the bread thrown to them by passengers, often adroitly catching the pieces in mid-air. So general is the feeding of the Gulls, that all the scraps on board the steamers are carefully collected, and "pain pour les Mouettes" served out to all who may apply for it.

In its flight and movements generally this Gull is exceedingly graceful, whether on land, in the water, or in the air. It will perch on posts, or on a railing by the water's edge, and even on trees and bushes, particularly during the breeding-season.

Its notes or cries are varied and not unpleasing, those most often heard being like the syllables "kri" and "kra," repeated several times, but it also utters a cackling or chuckling note, which has doubtless given rise to the bird's name of "Laughing Gull" in various countries. In spring-time these Gulls become very noisy and clamorous.

LARUS MELANOCEPHALUS, Natterer.

MEDITERRANEAN BLACK-HEADED GULL.

Larus melanocephalus, Natterer, *Isis*, 1818, p. 816; Malherbe, *Faune Orn. de l'Alg.* p. 35 (1855); Koenig, *J. f. O.* 1888, p. 285; *id.* *J. f. O.* 1893, p. 101; Saunders, *Cat. Birds Brit. Mus.* xxv, p. 180.

Gavia melanocephala, Loche, *Expl. Sci. Alg. Ois.* ii, p. 191 (1867).

Description.—**Adult male**, spring, from Sicily.

Entire head, nape and throat jet-black, with a few small white feathers above and below the eyes; primaries white, with a black stripe along the outer web of the outermost feather; remainder of plumage as in *L. ridibundus*.

Iris brown; orbital ring, bill and feet rich coral-red, the bill, which is stouter and deeper than in *L. ridibundus*, with a black band near the tip.

Total length 15 inches, wing 12, culmen 1.60, tarsus 1.90.

Adult female similar to the male, but rather smaller.

In winter the black hood is lost, and the head and nape are white, slightly striated with black. The robust bill of this species easily distinguishes it from the preceding one at all seasons. The dark hood is generally assumed a little earlier than is the case in *L. ridibundus*, commencing to appear about the middle of February and being completed by the end of March or early in April.

As in the case of the preceding species, young birds vary considerably in plumage according to age. The principal signs of immaturity are, however,

observable in the white head more or less striped with dark brown, the mottled brown upper parts, the dark brown quills and the dark brown band at the tip of the tail.

This Gull, though not nearly so numerous as the preceding species, is not uncommon in Tunisia, in winter and on passage, arriving and departing together with that bird. It may be met with not unfrequently in the neighbourhood of the town of Tunis, as also near Sousa and Monastir, and probably all along the coast of the Regency, though not inland.

According to Loche the species is fairly common on all the Algerian coast. Colonel Irby states that it occurs occasionally in the Straits of Gibraltar in winter, but that he never obtained an example with the black head.

The range of this Gull appears to be confined to the Mediterranean and Black Seas, Spain, Portugal and France. It has once or twice been obtained as far north as England, and winters as far south as Nubia. Its chief breeding-grounds seem to be on the coasts of Asia Minor, but it has been found nesting in Hungary.

Though resembling the preceding species in many respects, the Mediterranean Black-headed Gull differs in being essentially a marine bird, frequenting the sea-coast, and rarely visiting inland localities. Its cry is also different from that of *L. ridibundus*, being rather deeper and harsher, and more like that of *L. cachinnans*.

In its flight and general movements, as well as in its food, the present species does not differ appreciably from *L. ridibundus*, and when kept together in captivity, the two species associate amicably, though each naturally prefers the company of its own kind. Both species become very tame in confinement and appear to be perfectly happy under such conditions. Numbers of this Gull, as well as of *L. ridibundus* and *L. cachinnans*, are caught by the Sicilian fishermen in the Bay of Palermo.

LARUS MINUTUS, Pallas.

LITTLE GULL.

Larus minutus, Pallas, *Reise Russ. Reichs*, iii, p. 702 (1776); Malherbe, *Faune Orn. de l'Alg.* p. 35 (1855); Saunders, *Cat. Birds Brit. Mus.* xxv, p. 173.

Hydrocolœus minutus, Loche, *Expl. Sci. Alg. Ois.* ii, p. 194 (1867).

Xema minutum, Koenig, *J. f. O.* 1888, p. 291; *id. J. f. O.* 1893, p. 101.

Description.—**Adult male**, winter, from Tunis, North Tunisia.

Forehead white; crown and nape smoke-grey; greater part of upper plumage pearl-grey; rump, upper tail-coverts and tail white; primaries with dark grey margins on the inner webs; under parts white; under wing-coverts grey.

Iris dark brown; bill blackish; feet orange-red.

Total length 11 inches, wing 9, culmen 1, tarsus 1.

Adult female similar to the male, but rather smaller.

In spring the entire head is jet-black, and the bill reddish at the base.

Young birds have the upper plumage brownish, varied with black and grey, darkest on the nape, ear-coverts and back; rump white; tail tipped with blackish; quills blackish, tipped with white; underparts whitish.

The Little Gull is a winter visitor to the Regency, but is somewhat irregular in its occurrence, being usually more or less uncommon, though in some years most abundant.

Blanc says he has observed three or four large immigrations of the species during the twenty years or so that he has resided in Tunis. It was probably in one of these "years of plenty" that Canon Tristram found the Little Gull abundant on all the shallow lagoons of the North African coast, particularly between Tunis and Carthage.

Loche states that it is by no means common in Algeria, only occurring in winter, and then but rarely and accidentally. In Marocco it seems also to be far from common, and Favier only once obtained the bird near Tangier. In the Straits of Gibraltar Colonel Irby has met with it occasionally in winter, and Mr. Saunders seems to have found it not uncommon in winter and spring at Malaga. Though the species ranges to Western Europe, it is more particularly an inhabitant of the east of our continent, and breeds chiefly in the north-eastern portion.

In Asia it ranges eastwards to the Sea of Okhotsk, and has once been obtained in India. It has also occurred as a straggler in America, on Long Island.

This small Gull frequents the sea-coast chiefly, but may frequently be found on lakes and other inland waters. It is remarkably tame and confiding, and, like its allies, very graceful in its flight and general movements. It feeds principally on small fish and insects. Its note is short and plaintive.

LARUS CANUS, Linnæus.

COMMON GULL.

Larus canus, *Linn. Syst. Nat.* i, p. 224 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 35 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 184 (1867); *Koenig, J. f. O.* 1888, p. 290; *id. J. f. O.* 1893, p. 100; *Saunders, Cat. Birds Brit. Mus.* xxv, p. 277; *Erlanger, J. f. O.* 1900, p. 74.

Description.—**Adult male**, winter, from Tunis, North Tunisia.

Head, neck, rump, tail and entire under parts white, the head and nape striped with brown; remainder of upper parts pearl-grey; primaries black, with white spots at the tips.

Iris hazel; bill greenish-yellow; feet greyish.

Total length 18 inches, wing 14·75, culmen 1·60, tarsus 2.

Adult female similar to the male.

In summer the head and nape of the adult are pure white.

The young have the head and neck thickly striped with brown, upper parts generally mottled with brown, quills almost entirely brown; tail with a broad brown band at the tip.

Observation.—Apparently this species takes three years to acquire its fully adult plumage.

The Common Gull is to be found on the Tunisian coasts throughout the winter months, and is fairly abundant at times, particularly during stormy, tempestuous weather, when it is driven inland.

According to Loche it is very common in winter on the Algerian coasts, and may also be found on some of the lakes and other inland waters. Canon Tristram and Taczanowski also record the species as abundant on the Algerian shores. It appears to be unrecorded from the Canaries and Madeira, though, according to Colonel Irby, it is not uncommon in the Straits of Gibraltar. The species inhabits Europe generally to about 53° N. lat., breeding in the more northern

parts. It occurs throughout a considerable portion of Asia, as far north as Kamchatka, and winters in China and Japan. In Africa it seems only to occur on the northern shores. In America it has once been obtained in Labrador. Two allied species, however, represent our Common Gull in America, one a slightly smaller bird, *L. brachyrhynchus*, which is found in the north, the other a rather larger bird, *L. delawarensis*, which occurs throughout the rest of that continent.

The Common Gull frequents inland localities as well as the sea, and breeds indifferently on the coast or on the borders of a lake. In winter, and particularly on migration, however, it is more often to be found on, or near the sea. It is gregarious, and often to be met with in large flocks, though also frequently singly or in pairs. Its flight is slow, but light and graceful, as that of all its kind. Its note is rather harsh. It feeds on fish, crustaceans and offal, and when inland, may be found following the plough in search of insects, grubs and worms. Mr. Ogilvie Grant informs me that the Common Gull may frequently be seen hawking flies and other insects, which it captures on the wing, and that he has observed it of an evening flying round and round the tops of trees in search of moths and similar prey.

LARUS GELASTES, Thienemann.

SLENDER-BILLED GULL.

Larus gelastes, *Thienem. Fortpflanz. Vög. Eur.* pt. v, p. 22 (1838),
ex Licht.; *Koenig, J. f. O.* 1888, p. 290; *Saunders, Cat. Birds Brit.*
Mus. xxv, p. 230; *Whitaker, Ibis*, 1895, p. 106.

Gelastes lambruschinii, *Loche, Expl. Sci. Alg. Ois.* ii, p. 187 (1867).

Gavia gelastes, *Koenig, J. f. O.* 1893, p. 100.

Description.—**Adult male**, spring, from Djerba, South Tunisia.

Entire head, throat, neck and mantle white, shading into pale pearl-grey on the back, scapulars, secondaries and upper wing-coverts; upper tail-coverts and tail white; primaries white, with black tips and black margins to the inner webs, the outer web of the outermost quill being also black; under parts white, tinged with rose.

Iris very pale yellow, bare skin round the eye, bill and feet coral-red.

Total length 17 inches, wing 12.50, culmen 2, tarsus 2.15.

Adult female similar to the male, but smaller, the wing measuring about an inch less.

The young have the crown and nape marked with grey, the upper parts with ashy-brown; the primaries blacker; the tail banded with black, and the rosy tint on the under parts absent.

Observations.—Examples obtained in December differ merely in having the white of the upper parts slightly tinged with pale grey, while the rose hue on the under parts, contrary to what one would expect, is much more pronounced, and extends even to the white parts of the upper plumage; bill and feet yellow instead of coral-red.

A pair which I have had in my possession about ten years, still preserve the beautiful rose tint to a certain extent, though it is far less marked than it was when I received the birds freshly killed.

The Slender-billed Gull is not at all uncommon in Tunisia during the winter months and on passage, and is apparently to be found in the Regency throughout the entire year. I have a specimen obtained at Djerba in July, and, according to Blanc, the species is frequently to be met with on the small islands of South Tunisia during the summer months, and probably breeds there.

This Gull is not uncommon on the coasts of Algeria, but seems to be rarer in Marocco, though it has been met with near Tangier, and has apparently been found on the West African coast as far south as Senegal. In some parts of South Spain it is not uncommon, and has been found breeding in the marismas of the Guadalquivir.

The range of this species extends throughout Southern Europe and North Africa, further southward, as just stated, to Senegal on the West African coast, and in North-east Africa to Keneh on the Upper Nile. It is found on the coasts of Asia Minor, the Black and Caspian Seas, the Persian Gulf, and as far east as India.

In its habits this Gull is essentially marine, and is rarely to be found far from the sea-coast. It is very gregarious and sociable, and may be met with at times in vast flocks. It is not particularly shy and may be approached without difficulty. Its note is said to resemble the call of a Rook; but is more prolonged and less harsh. It feeds on small fish and insects.

Nests of this species, obtained by Mr. Dresser in the marismas of the Guadalquivir, were placed on the dry mud of an island in the lagoon, and were rather loosely built of sticks and a few Flamingo feathers, the number of eggs in a clutch being two or three. These had the ground colour white, tinged with a faint rosy blush when

fresh, with pale inky-grey shell-markings, and black or blackish-brown surface-spots.

LARUS AUDOUINI, Payraudeau.

AUDOUIN'S GULL.

Larus audouini, *Payraudeau, Ann. Sci. Nat.* viii, p. 462 (1826); *Malherbe, Faune Orn. de l'Alg.* p. 35 (1855); *Koenig, J. f. O.* 1888, p. 284; *Saunders, Cat. Birds Brit. Mus.* xxv, p. 271.

Gavina audouini, *Loche, Expl. Sci. Alg. Ois.* ii, p. 182 (1867).

Gavia audouini, *Koenig, J. f. O.* 1893, p. 99.

Description.—**Adult male**, spring, from Kamars, North Tunisia.

Head, neck, upper tail-coverts, tail and entire under parts white; mantle, back, rump, scapulars, secondaries and upper wing-coverts pearl-grey; outermost primary black, with a white spot on the inner web about an inch from the tip, the other primaries less black and more grey as they approach the secondaries, but all with white tips.

Iris hazel; bare skin round the eye coral-red; bill coral-red, with a black band towards the tip; feet very dark grey.

Total length 19·50 inches, wing 15·30, culmen 2, tarsus 2·20.

Adult female similar to the male.

An immature example in my collection from Tunis has a small grey patch just behind the eye, the upper wing-coverts slightly mottled with brown, and the primaries entirely black, without any white spots or white tips. The bill has the black subapical band broader.

Some of the specimens in the Lilford collection are labelled as having the feet of a dark olive-green colour.

This handsome Gull is not common in Tunisia, but occurs on some parts of the north coast, and on the adjacent small islands. I have three examples of it from the Regency, obtained in spring by Blanc, according to whom the species probably breeds on the small island of Zembra, near Cape Bon. It is said to be found also on the Island of Galita, off the North Tunisian coast.

Loche states that the species is found on the shores of Algeria, where it breeds, but gives no particulars. From Morocco there seems to be no record of its occurrence.

The range of this Gull is very limited, being apparently confined to the Mediterranean, and more particularly to some of the islands of



hæris audeum

that sea. It is recorded by Natterer as having been once obtained near Tarifa in Spain, and is said to have occurred on the Mediterranean coast of France, the coasts of Majorca in the Balearic Isles, and in Malta. Lord Lilford records an example obtained near Corfu, and according to Erhard, it winters in the Cyclades. The headquarters, however, of this Gull are undoubtedly the Italian islands, on several of which the species is not uncommon and resident. It may thus be met with on Sardinia, Corsica and Elba, as well as on the smaller islands of Toro, Vacca, Caprera, Mal di Ventre, Cavoli and Columbretes. It has also been obtained on the coasts of Sicily, and examples have actually been secured in the harbour of Palermo, but there seems to be no instance of its nesting in that island. On the Italian mainland it has been obtained near Piombino, Albenga and one or two other localities on the Ligurian coast, as also on the Calabrian coast.

There is a fine series of specimens from the small islands off the Sardinian coasts in the Lilford collection.

Audouin's Gull is essentially a deep-sea species, frequenting chiefly rocky islands, and seldom met with on level expanses of coast or in shallow waters. It lives in small colonies, as a rule, apart from other Gulls, though it may sometimes be found in the neighbourhood of the Mediterranean Herring-Gull, but when breeding, its nesting quarters are entirely apart from those of that species.

To Lord Lilford we are indebted for some excellent notes regarding this Gull, which appears to be excessively shy and wary, and, when once disturbed, rarely approaches within gunshot, even near its nesting-sites. Its general appearance on the wing resembles that of *L. cachinnans*, but when not too far off the difference between the two is easily discernible, and its cry is less harsh than that of the latter.

According to Count Arrigoni (Man. Orn. Ital., p. 823) the present species breeds at the end of May, laying from two to three eggs of a fulvous or slightly olivaceous colour, spotted and blotched with underlying marks of blackish-grey and with blackish-brown surface-spots. Measurements 62×43 mm.

LARUS CACHINNANS, Pallas.

YELLOW-LEGGED HERRING-GULL.

Larus cachinnans, Pallas, *Zoogr. Rosso-As.* ii, p. 318 (1811); Saunders, *Cat. Birds Brit. Mus.* xxv, p. 266; Whitaker, *Ibis*, 1895, p. 106.

Larus argentatus, Malherbe, *Cat. Rais. d'Ois. Alg.* p. 22 (1846).

Laroides argentatus, Loche, *Expl. Sci. Alg. Ois.* ii, p. 179 (1867).

Larus leucophæus, Koenig, *J. f. O.* 1888, p. 288; *id.* *J. f. O.* 1893, p. 99; Erlanger, *J. f. O.* 1900, p. 75.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Head, neck, rump, tail and under parts white; mantle, back, scapulars, secondaries and upper wing-coverts pearl-grey, the larger coverts and secondaries fringed with white; outermost primary black, becoming white towards the tip, and with the subapical portion black; the next two primaries rather less black, and with a smaller white patch towards the tip, the remaining quills greyer, slightly tipped with white.

Iris straw-yellow; bare skin round the eye bright red; bill yellow, with a red spot at the angle of the lower mandible; feet rich yellow, claws black.

Total length 24 inches, wing 17.50, culmen 3, tarsus 3.

Adult female similar to the male.

In winter the head and neck are slightly striped with brown. The species takes three if not four years to acquire its fully adult plumage, and is subject to considerable variation in size, some examples being larger and others smaller. According to Blanc specimens from South Tunisia are larger than those from the north of the Regency.

The colour of the soft parts varies a good deal according to age.

The Yellow-legged Herring-Gull is abundant and resident along the whole Tunisian coast from north to south. It is also not uncommon on the Algerian shores, but apparently becomes rarer further west, and according to Favier (*vide* Colonel Irby), it is not very common near Tangier, *L. argentatus* being far more plentiful.

Mr. E. Cavendish Taylor found the present species fairly abundant at Algiers, but comparatively rare at Oran, and he failed to meet with it at Tangier.

According to Mr. Saunders this Gull frequents the coasts of Europe from the Gulf of Gascony southward, the Azores, Madeira, the Canaries and North-west Africa, the entire basin of the Mediterranean, the Black Sea, the Caspian-Aral region, and extends eastward to Lake Baikal (breeding); while in winter it ranges southwards to Angola, and visits the Red Sea, the Persian waters, and the Bay of Bengal.

An example of the species has once been obtained in England.

In its habits this Gull resembles its near ally *L. argentatus*. It frequents both rocky localities and open expanses of seashore, and may be met with far out at sea, often accompanying steamers for a considerable distance, on the chance of picking up refuse food. On such occasions its powers of flight may be seen to the greatest advantage, as the bird follows in the wake of a vessel with the utmost ease, darting down from time to time and snatching some morsel of food from the surface of the water, and then quickly regaining its former position. When seen near land, its flight is usually much slower, though always graceful and full of power.

Clever and wary to a degree, this Gull is not easily approached or outwitted, though in countries where it is unmolested it becomes tame and confiding. At Constantinople it will allow a boat to pass within a few yards of it without taking flight, and Mr. Meade-Waldo (*Ibis*, 1890, p. 436) relates how at Papagayo, a small village near Fuerteventura, the species is absolutely tame, walking about among the children and pecking at food held in their hands, and sitting on the tops of the houses.

The species may be said to be omnivorous, for it will devour almost anything, from fish of all kinds to insects, worms, grain, eggs, and young birds, offal and other garbage.

Its call note is a laughing "ha, ha, ha," and its alarm cry a harsh guttural "kyawk."

This Gull breeds, in May and June, on most of the small islands off the Tunisian coast, as also probably in some of the more secluded and quiet parts of the mainland, such as the neighbourhood of Cape Bon and similar localities. I have eggs of the species from the Island of Djerba and notes of its breeding on the islands of Zembra and Curiat. Apparently it is more or less indifferent as to the actual site of its breeding-quarters, provided the spot be a quiet one, where it is not likely to be disturbed. According to Blanc the species is to be found nesting in South Tunisia on the low-lying islets almost on a level with the water's edge, whereas in the north of the Regency its nests may be met with on rugged cliffs and rocks twenty to thirty metres above the level of the sea. The nest itself is generally rather a bulky structure composed of dry twigs and grasses, but not unfrequently the eggs are deposited in a mere depression on the bare ground. The number of eggs laid is usually two or three, and their

colour olivaceous, with lilac-grey underlying marks, and brown surface-blotches. Their average measurements are 73 × 50 mm.

As in the case of some other sea-birds in these southern countries, the eggs of this species seem to be left uncovered during a considerable portion of the day, the progress of their incubation being doubtless unarrested owing to the warmth of the sun's rays.

LARUS FUSCUS, Linnæus.

LESSER BLACK-BACKED GULL.

Larus fuscus, *Linn. Syst. Nat.* i, p. 225 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 35 (1855); *Koenig, J. f. O.* 1888, p. 289; *id. J. f. O.* 1893, p. 100; *Saunders, Cat. Birds Brit. Mus.* xxv, p. 250.

Clupearus fuscus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 181 (1867).

Larus fuscescens, *Koenig, J. f. O.* 1896, p. 189; *Erlanger J. f. O.* 1900, p. 75.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Entire head, neck, mantle, rump, tail and under parts pure white; back, scapulars, secondaries and upper wing-coverts slate-black, the larger coverts and secondaries tipped with white; edge of wing white; outermost primary black, with a white patch towards the tip, the remaining primaries black, slightly tipped with white.

Iris pale yellow; bare skin round the eye vermilion; bill yellow, with a red patch on the edge of the lower mandible; feet yellow.

Total length 21 inches, wing 16·50, culmen 2·30, tarsus 2·20.

Adult female similar to the male.

Observations.—Apparently this species takes four years to acquire its fully adult plumage.

The Lesser Black-backed Gull is not uncommon in Tunisia during the winter months and on passage, but does not appear to breed anywhere in the Regency. According to Blanc, although usually keeping out at sea, the species may occasionally be observed on the Lake of Tunis, and is to be met with in winter all along the coast. I have obtained examples at Sfax, and Dr. Koenig states that the species is abundant at Gabès, and is to be found also at Tripoli.

On the coasts of Algeria and Marocco, particularly the latter, this

Gull is plentiful in winter, and far more numerous than the preceding species. According to Mr. E. Cavendish Taylor it absolutely swarms at Tangier and Gibraltar.

In summer *L. fuscus* is to be found throughout Northern Europe, as far north as the Færoes and Scandinavia and eastwards as far as the Dvina; in winter in the Mediterranean, the Atlantic islands, Africa, as far south as Bonny on the west coast, and eastwards in the Red Sea, where it is said to be resident. It also occurs in the Caspian Sea and Persian Gulf.

In its habits the present species does not differ greatly from the Herring-Gull, which it resembles also in being almost omnivorous in its food and very predatory, preying on the eggs and young of other birds. It is nearly always to be found in flocks, either large or small, and is not as a rule particularly shy or wary. Its notes are not unlike those of *L. cachinnans*, particularly the laughing or cackling cry which, like that bird, it often utters.

LARUS MARINUS, Linnæus.

GREATER BLACK-BACKED GULL.

Larus marinus, *Linn. Syst. Nat.* i, p. 225 (1766); *Koenig, J. f. O.* 1888, p. 285; *Saunders, Cat. Birds Brit. Mus.* xxv, p. 241.

Dominicanus marinus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 177 (1867); *Koenig J. f. O.* 1893, p. 94.

Description—**Adult male**, spring, from Europe.

Head, neck, tail and under parts white; back, scapulars and upper wing-coverts slate-black; primaries slate-black, tipped with white, and with subapical white spots, secondaries and greater wing-coverts slate-black, tipped with white.

Iris hazel, orbital ring vermilion; bill yellow, with a reddish patch at the angle of the lower mandible; feet flesh colour.

Total length 27·50 inches, wing 18·50, culmen 2·75, tarsus 3.

Adult female similar to the male.

In winter the head and neck are slightly streaked with brown.

The young are mottled all over with white and brown.

I include this large Gull among the birds of Tunisia on the authority of Blanc, according to whom the species has occasionally

been met with on the coasts of the Regency in winter. It is, however, probably very rare and merely an accidental straggler to Tunisia, and in most parts of the Mediterranean.

Loche includes the species among the birds of Algeria, and a specimen from that country is preserved in the Milan Museum under the Register No. 17796.

According to Favier this Gull is found about the Straits of Gibraltar in small numbers from January to March, immature birds only having been seen by him, and Colonel Irby states that Favier's observations agree with his own.

The Great Black-backed Gull inhabits Iceland and the Færoes, ranging across Northern Europe eastward to the Petchora River, and southward along the west coast of France, where it breeds, as far as the Mediterranean, where it is more or less rare, and to the Canaries, on some of which islands it is said to be common. Across the Atlantic it is found in Danish Greenland, and along the east coast of North America, ranging southwards to Florida in winter.

In its habits this species appears to be more unsociable than most other Gulls, and extremely wary and suspicious. All authors agree in calling it very predatory and a great robber of other birds' eggs and young, so much so that it is looked upon as a great pest, and in some countries is taxed as a bird of prey.

RISSA TRIDACTYLA (Linnæus).

KITTIWAKE.

Larus rissa, *Linn. Syst. Nat.* i, p. 224 (1766).

Larus tridactylus, *Linn. Syst. Nat.* i, p. 224 (1766); *Malherbe, Faune Orn. de l'Alg.* p. 35 (1855).

Rissa tridactyla, *Bonap. Comp. List Birds Eur. and N. Amer.* p. 62 (1838); *Loche, Expl. Sci. Alg. Ois.* ii, p. 185 (1867); *Koenig, J. f. O.* 1888, p. 284; *id. J. f. O.* 1893, p. 95; *Saunders, Cat. Birds Brit. Mus.* xxv, p. 305.

Description.—**Adult male**, winter, from Tunis, North Tunisia.

Head, nape, rump, tail and under parts white; a grey patch on each side of the head behind the eye; rest of the upper parts French-grey, rather whiter across the mantle; primaries pearl-grey, becoming black at the tips, and some of them with small white spots at the tips.

Iris hazel; bill greenish-yellow; feet dark brown; hind-toe almost obsolete.

Total length 15 inches, wing 11·30, culmen 1·25, tarsus 1·25.

Adult female similar to the male.

Young birds have a blackish band on the hind neck, the lesser wing-coverts blackish, and the tail tipped with black.

The Kittiwake is a winter visitor to the shores of Tunisia, but occurs very irregularly, and is, as a rule, not common in the Regency. Occasionally, however, it may be met with in certain abundance, and this appears to be the case on the North-west African coast generally, as also in some other parts of the Mediterranean. It occurs irregularly on the Algerian coast, and is sometimes very abundant on the coasts of Marocco. In the Bay of Gibraltar, according to Colonel Irby, it is to be seen at times in great abundance during the winter, but at other times hardly any are to be found, the presence or absence of the birds depending on the state of the weather. In Sicily, during the past ten years, I have only once known this species what might be called plentiful.

The habitat of this Gull is in the Arctic and Sub-arctic regions of both the Old and New Worlds, but it nests in Europe as far south as the north-west coast of France. In winter it migrates to the Caspian and Mediterranean Seas, and as far south as the Canaries, and West African coast. Across the Atlantic it migrates southwards to the Bermudas and Lower California.

The present species is essentially a bird of the ocean or deep sea, frequenting rocky localities and high cliffs during the breeding season, and the open sea in winter. It is seldom found inland, and only when driven there by stress of weather. Its flight, though light and buoyant, is powerful and capable of being sustained for a considerable length of time, as shown by the fact of its accompanying vessels out at sea for immense distances without resting. It swims and dives with ease. It feeds principally on small fish, but will also eat refuse food which it may find floating on the surface of the water. In certain localities where this bird is found in vast communities its flesh is highly esteemed as an article of food, and numbers are shot for the table.

In captivity this Gull is very tame and confiding, but I never succeeded in keeping one alive for long. The name "Kittiwake" is derived from the bird's note or cry.

Family STERCORARIIDÆ.

STERCORARIUS CREPIDATUS (Banks).

ARCTIC OR RICHARDSON'S SKUA.

Larus crepidatus, *Banks, in Cook's Voy., Hawkesworth's Ed. ii, p. 15* (1773).

Stercorarius crepidatus, *Vieill. Nouv. Dict. d'Hist. Nat. xxxii, p. 155* (1815); *Saunders, Cat. Birds Brit. Mus. xxv, p. 327*; *Whitaker, Ibis, 1898, p. 126.*

Description.—**Adult male**, autumn, from Island of Galita, North Tunisia.

Upper parts blackish-brown, with the exception of the back and sides of the neck, which are whitish, washed with pale yellow; under parts whitish, mottled and irregularly barred with brown, chiefly on the breast; under tail-coverts, flanks, under wing-coverts and axillaries whitish, broadly barred with brown; median rectrices tapering to a point and projecting about two and a half inches beyond the rest; shafts of the four outer primaries white.

Iris dark brown; bill and feet blackish.

Total length 18 inches, wing 13, culmen 1.40, tarsus 1.85.

Adult female similar to the male.

Young.—Forehead and crown ochreous, thickly striped with dark brown, neck and least wing-coverts brighter and less striped with brown; remainder of the upper plumage dark brown; under parts whitish, thickly striped throughout with light brown; under tail-coverts, flanks, under wing-coverts and axillaries rufescent, broadly barred with brown.

Observation.—The present species is subject to considerable individual variation in plumage, but in addition to this there would appear to be two fairly distinct varieties or races, one being of a uniform dark sooty colour, the other having light under parts.

This is the only member of the genus I have met with in Tunisia, though both *S. parasiticus* and *S. pomatorhinus* are probably also to be found there occasionally, and possibly even *S. catarrhactes*, as all three species occur (more or less rarely) in the Mediterranean, and Favier (*vide* Colonel Irby) records them all, as well as *S. crepidatus*, from the neighbourhood of Tangier.

Of the present species I have obtained examples, in winter, in the neighbourhood of Tunis and at Tabarka, on the north coast of the Regency. In the vicinity of the latter small island these Skuas were not uncommon in December.

The Arctic Skua is circumpolar in its range, breeding in the more northern parts of the Old and New Worlds, migrating in winter to the Mediterranean and southward as far as Cape Colony, India, Australia, Tasmania, and New Zealand. In America it ranges as far south as Brazil.

Like its congeners the Arctic Skua lives almost entirely on the sea and in the vicinity of rocky islands, and is bold and predatory in its habits, attacking Gulls and other sea-fowl and robbing them of their prey. It also creates great havoc among the breeding colonies of other sea-birds, devouring their eggs and young. In summer-time it also feeds to a certain extent on coleoptera and other insects, as well as on worms. The species is gregarious, and at times congregates in large numbers, though it is often to be found singly. Its powers of flight are remarkable, and even in the most stormy weather the bird appears to be perfectly at its ease, defying, as it were, the elements. It sits on the water like a Gull, and swims well, but does not dive or plunge.

It utters a somewhat plaintive mewing note, as a rule, but has also a hissing or croaking note, usually heard in the breeding season, when its nest is approached.

Order TUBINARES.

Family PROCELLARIIDÆ.

PROCELLARIA PELAGICA Linnæus.

STORM-PETREL.

Procellaria pelagica, *Linn. Syst. Nat.* i, p. 212 (1766); *Salvin, Cat. Birds Brit. Mus.* xxv, p. 343; *Loche, Expl. Sci. Alg. Ois.* ii, p. 171 (1867); *Koenig, J. f. O.* 1888, p. 285; *id. J. f. O.* 1893, p. 95.
Thalassidroma pelagica, *Malherbe, Faune Orn. de l'Alg.* p. 36 (1855).

Description.—**Adult male**, spring, from Sicily.

Plumage above and below sooty-black, the under parts rather paler and browner; median wing-coverts with pale tips; bases of upper tail-coverts and of the tail, sides of the crissum, and under tail-coverts white.

Iris dark brown, bill and feet black.

Total length 5.50 inches, wing 4.60, culmen .55, tarsus .90.

Adult female similar to the male.

Observations.—Examples appear to have been found on the Spanish coasts of a uniform sooty-black, without any white on the rump or wings.

Thalassidroma melitensis, Schembri, from Malta, seems to be undistinguishable from *P. pelagica*.

The Storm-Petrel is not uncommon on the coast of Tunisia, and apparently breeds on the small rocky islands, both in the north and south of the Regency. According to Blanc the species may frequently be seen on the east coast in the month of June, and he has met with it at that season near Sousa and in the Gulf of Gabès. In stormy weather in winter it sometimes enters the Lake of Tunis.

Loche states that the Storm-Petrel is resident and breeds on various rocky islands on the coast of Algeria, and that he has found its eggs from the beginning of May till September, and young birds from the end of May to the early part of October.

The species has a fairly extensive range in the Atlantic and breeds

on the Færoes, the British Isles, the north-west coast of France, and in some parts of the Mediterranean. It also visits Iceland, Scandinavia, South Greenland, Newfoundland, the Azores, Canaries, Madeira, and the west coast of Africa as far as Cape Town. This hardy little bird, our smallest web-footed species, is essentially oceanic in its habits, and, except during the breeding season, or very bad weather, is rarely seen on or very near land. Its names, both scientific and trivial, are aptly given, for few birds seem so perfectly at home in stormy weather, or so capable of resisting the fury of the elements. Its powers of flight must indeed be extraordinary, for it will follow vessels far out at sea for miles without resting, and apparently without the least effort, skimming over the waves on outstretched wings, within a foot or two of the surface of the water, and from time to time, when picking up some morsel of food, touching the water with its feet.

Its principal food no doubt consists of small fish, but it appears to be very fond of any fatty matter, and will eat all sorts of scraps thrown from vessels. In captivity the bird has been kept alive on oil for three weeks.

The species is crepuscular and nocturnal as well as diurnal in its habits, and during the breeding-season is said to remain quietly on its nest in the daytime and issue forth chiefly at night. According to Malherbe, the bird is sometimes caught at night by the Sicilian fishermen, being attracted by the lights carried at the bows of their boats.

The Storm-Petrel breeds in crevices and holes in rocks, making a slight nest of grasses on which it lays a single very oval white egg, occasionally somewhat spotted with rufous. Average measurements 29×21 mm.

Among sailors this species is best known by the name of "Mother Carey's Chicken."

According to Favier, Leach's Fork-tailed Petrel (*Oceanodroma leucorhoa*) has been obtained occasionally on the Marocco coast of the Straits of Gibraltar, specimens having been picked up dead on the shore after storms. It is also recorded by Loche from Algeria and appears to have been obtained once at Syracuse in Sicily.

PUFFINUS KUHLI (Boie).

MEDITERRANEAN SHEARWATER.

Procellaria kuhlii, Boie, *Isis*, 1835, p. 257.

Puffinus kuhlii, Bonap. *Consp. Avium*, ii, p. 202 (1856); Koenig, *J. f. O.* 1888, p. 291.

Puffinus kuhli, Salvin, *Cat. Birds Brit. Mus.* xxv, p. 375; Koenig, *J. f. O.* 1893, p. 101; Whitaker, *Ibis*, 1895, p. 106.

Puffinus cinereus, Malherbe, *Faune Orn. de l'Alg.* p. 35 (1855); Loche, *Expl. Sci. Alg. Ois.* ii, p. 174 (1867).

Description.—**Adult male**, winter, from Goletta, North Tunisia.

Upper plumage ashy-brown, becoming darker on the upper wing-coverts, scapulars and secondaries, and blackish on the primaries and tail; cheeks and sides of the neck grey; under parts white.

Iris dark hazel; bill pale dull yellow, blackish at the tip; feet pinkish-lake or livid colour.

Total length 19 inches, wing 13·75, culmen 2·50, tarsus 2.

Adult female similar to the male.

The Mediterranean Shearwater is resident and abundant on the Tunisian coast, as it probably is on all the Mediterranean shores of North-west Africa. According to Blanc the species is to be met with both in the north and south of the Regency, and breeds on most of the rocky islands off the coast.

The range of *P. kuhli* appears to be confined to the Mediterranean, and the Atlantic Ocean from the Massachusetts coast to the Azores, Madeira and the Canaries. It seems to occur also on Kerguelen Island.

The species is oceanic, and, except during the breeding-season, is generally to be met with out at sea. Its flight is powerful and very rapid, and the bird is usually to be seen gliding swiftly over the surface of the water. It also swims with ease. It is chiefly nocturnal in its habits, and gregarious, being generally found in small parties. It feeds on small fish, crustaceans and any animal matter which it may find floating on the water, as also, apparently, on the *Inula crithmoides*, one of the few plants which grow on rocky islands. The bird does not stand confinement well and I have never succeeded in keeping one alive for more than a few weeks, and generally for not more than a few days.

The note or cry of the species is weird and melancholy, and is chiefly to be heard at night. Lord Lilford, when yachting off the coast of Sardinia and at anchor in the Bay of Teulada, during the night heard "strange moaning sounds," which he afterwards ascertained were uttered by these Shearwaters.

The species breeds in the holes and clefts of cliffs and rocky islands, depositing a single white egg on the bare ground. The average measurements of eggs are 66 × 43 mm. The sitting birds allow themselves to be captured on the nest, but are capable of inflicting a severe bite if handled incautiously.

PUFFINUS ANGLORUM YELKOUAN (Acerbi).

LEVANTINE SHEARWATER.

Procellaria yelkouan, *Acerbi, Bibl. Ital.* cxl. p. 294 (1827)

Puffinus yelkouan, *Bonap. Consp. Avium*, ii, p. 205 (1856); *Loche, Expl. Sci. Alg. Ois.* ii, p. 176 (1867).

Puffinus anglorum, *Koenig, J. f. O.* 1893, p. 102.

Puffinus yelkouanus, *Salvin, Cat. Birds Brit. Mus.* xxv, p. 379; *Erlanger, J. f. O.* 1900, p. 77.

Description.—**Adult male**, winter, from Tunis, North Tunisia.

Upper plumage dull smoke-black, with a faint brown tinge, and slightly paler on the hindpart of the neck; under parts pure white, with the exception of the under tail-coverts, flanks, and axillaries, which have the feathers tipped with greyish-brown.

Iris dark brown; bill blackish; feet livid flesh-colour, the outer toes darker.

Total length 14.50 inches; wing 9.20; culmen 1.60; tarsus 1.80.

Adult female similar to the male.

Observations.—Examples of this Shearwater from Tunisia are not nearly so dusky on the under parts as specimens from some other parts of the Mediterranean, and approximate more to typical *P. anglorum*. They are, however, identical with specimens from Sicily and Crete. Examples from Malaga, and some other parts, are very different, being much browner on the upper parts and far more dusky below, besides being rather larger in size. Lord Lilford appears to have noticed this difference (*Ibis*, 1887, p. 262), and should further study and a more complete examination of material prove it to be constant, it will be necessary to separate the two forms.

This Shearwater, the representative in the Mediterranean and Black Seas of *P. anglorum*, is not uncommon on the coast of Tunisia, though apparently less abundant than the preceding species, and less frequently observed, owing to its usually keeping more out at sea. Though I have no positive knowledge of the fact, the species probably breeds on the small uninhabited islands off the Tunisian coast. It is to be met with and is probably resident on the coasts of Algeria and Marocco.

The range of this Shearwater is confined to the Mediterranean and Black Seas, but, accidentally, the bird has been met with on three or four occasions on the British coasts. In the Bosphorus and Dardanelles it is remarkably plentiful, and is commonly known by the name of "*âmè damnée*," probably on account of its restless and untiring flight, as well as its somewhat ominous appearance, as it glides swiftly and silently over the surface of the water in all sorts of weather and at all hours.

Like its congeners this Shearwater is strictly oceanic, and seldom approaches land except during the breeding season, when it chiefly resorts to small rocky islands. Its flight is swift and powerful, and the bird also swims and dives with facility. It is crepuscular and nocturnal to a certain extent, as well as diurnal, particularly during the breeding-season. It feeds on small fish, crustaceans, and any fatty matter it may find on the water, as perhaps also on certain plants. The species breeds in holes and clefts in rocks and cliffs, as well as in burrows which it excavates, and which vary in depth from one to two feet. At times a few blades of dry grass or other similiar materials form the nest, but as often as not the single egg is laid on the bare soil. The egg is pure white, and measures about 60×40 mm. Sitting birds are easily captured on the nest.

Order ALCÆ.

Family ALCIDÆ.

ALCA TORDA, Linnæus.

RAZORBILL.

Alca torda, *Linn. Syst. Nat.* i, p. 210 (1766); *Loche, Expl. Sci. Alg. Ois.* ii, p. 210 (1867); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxvi, p. 565; *Koenig, J. f. O.* 1888, p. 297; *id. J. f. O.* 1893, p. 105.

Description.—**Adult male**, spring, from Porto Farina, North Tunisia.

Upper plumage black, the short secondaries tipped with white, forming a narrow alar bar; sides of head and throat white, with a few blackish feathers here and there; remainder of underparts pure white.

Iris, bill and feet black, the bill with a narrow white line or groove on each side of the mandibles.

Total length 18 inches, wing 7·50, culmen 1·80, tarsus 1·25.

Adult female resembles the male.

The bill in young birds is straighter and smoother than that of the adult and is without the white lines on the sides.

The Razorbill is not uncommon in winter on the northern coast of Tunisia, and in some years is even abundant. It is, however, more or less irregular in its occurrence, its visits being probably in a great measure dependent on the state of the weather. The species may be met with along the north coast from Tabarka to Goletta, and in stormy weather is even to be found occasionally on the Lake of Tunis, but I have no note of its occurrence on any of the southern shores of the Regency.

It occurs in winter on the coasts of Algeria and Marocco, and, according to Colonel Irby, is in some winters to be found in very large numbers in the Straits of Gibraltar. The species inhabits the North Atlantic as far as about 73° N., ranging southward to the Mediterranean, the Canaries and the Azores, and on the American coasts to Southern New England. There is no authentic record of the occurrence of this Auk in the Pacific.

In the Mediterranean it apparently only ranges as far as the Adriatic and Ionian Seas, and though generally more or less irregular in its occurrence, is probably less rare in some parts than it is usually supposed to be. In Sicily, for instance, the species is in some years tolerably abundant.

The Razorbill is essentially a deep-sea bird, and in the breeding season frequents rocky coasts and steep cliffs which afford suitable nesting sites. It is very sociable and gregarious, and breeds in vast colonies, often in company with, or in the immediate neighbourhood of Gulls, and other sea-fowl. It flies, swims and dives well, but is quite out of its element on land, and shuns the flat, level shore, resorting only to cliff-ledges and other rocky localities, from whence it can easily take wing. It feeds principally on small fish, which it captures chiefly by diving; herring-fry seems to form an important item in its diet, and if deprived of that and other natural prey, the bird will occasionally leave the sea and visit inland waters in search of food.

FRATERCULA ARCTICA (Linnæus).

PUFFIN.

Alca arctica, Linn. *Syst. Nat.* i, p. 211 (1766).

Fratercula arctica, Leach, *Syst. Cat.* p. 42 (1816); Ogilvie-Grant, *Cat. Birds Brit. Mus.* xxvi, p. 616.

Mormon arctica, Loche, *Expl. Sci. Alg. Ois.* ii, p. 212 (1867).

Mormon fratercula, Koenig, *J. f. O.* 1888, p. 298; *id.*, *J. f. O.* 1893, p. 105.

Description.—**Male**, spring, from Porto Farina, North Tunisia.

Forehead and crown blackish; lores, region round the base of the bill and round the eyes greyish-brown, shading into grey on the elin and throat, and round the neck to the nape, where it joins the dark feathers extending from the crown; a band on the fore-neck and the remainder of the upper plumage black, with metallic reflections; underparts below the neck pure white, with tufts of brown feathers on the thighs.

Iris greyish-brown, a fleshy patch above and below the eye slate-blue; bill orange on the forepart and bluish-grey on the basal part, barred with peculiar horny ridges which are shed separately in autumn; fleshy part round the gape orange; feet orange.

Total length 11.25 inches, wing (incomplete), culmen 1.60, height of bill at base 1.25, tarsus 1.10.

Adult female resembles the male, but is rather smaller.

Like the preceding species, the Puffin visits the northern shores of Tunisia in winter, but is somewhat irregular in its occurrence, and is more abundant in some years than in others. Occasionally the species is fairly numerous on the Lakes of Bizerta and Porto Farina, and it probably ranges further south along the east coast of the Regency, though perhaps not as far as the Tripoli frontier.

According to Loche, the species occurs on the Algerian coast in winter, and Favier states that it is to be found near Tangier from November to March, and sometimes even lingers as late as April and May.

The Puffin inhabits Northern Europe and the east coast of North America, breeding abundantly north, as well as south, of the Arctic circle. In Europe it breeds as far south as the west coast of France and Portugal, migrating in winter to the Western Mediterranean, and as far south as the Canaries. Its range does not appear to extend to the Eastern Mediterranean, but the bird is not uncommon in some winters on the coasts of Sicily.

This grotesque bird, the "Sea-Parrot," as it is called vernacularly in various languages, is a true ocean species, living chiefly out at sea, except during the breeding-season, when it resorts, in immense numbers, to its favourite nesting localities. These are situated among steep and rugged cliffs, or on their turf-covered summits, and the actual sites of the nests are in clefts in the rocks, or in burrows excavated by the birds themselves in the ground. The species is one of the most gregarious of birds, its breeding-colonies in some places numbering many thousands of individuals, and the ground occupied by them being so honeycombed with burrows as to form veritable bird-hives. On some of the British coasts large numbers of Puffins are annually killed during the breeding-season, and on the island of St. Kilda the flesh of this bird forms the chief article of food consumed by the inhabitants during the summer months. Being remarkably tame and confiding, the bird is easily captured.

Its flight is fairly rapid, and the species both swims and dives with the greatest ease. On land it appears awkward, and when nesting maintains an upright position seated on the whole length of its tarsus and toes.

Its food consists of small fish and the fry of the herring and similar species, as well as of crustaceans and marine insects.

Order PYGPODES.

Family COLYMBIDÆ.

COLYMBUS SEPTENTRIONALIS, Linnæus.

RED-THROATED DIVER.

Colymbus septentrionalis, *Linn. Syst. Nat.* i, p. 220 (1766); *Loche, Expl. Sci. Alg. Ois.* ii, p. 217 (1867); *Koenig, J. f. O.* 1888, p. 297; *id. J. f. O.* 1893, p. 104; *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxvi, p. 487.

Description.—**Adult female**, spring, from Italy.

Forehead, forepart of crown, chin, sides of the head and neck bluish-grey; hindpart of crown and nape black, striated with white; remainder of upper-parts dark brown; middle of throat with a long triangular patch rusty-red; remainder of underparts silky white, striped on the flanks with greyish-black.

Iris hazel; bill blackish above and reddish below; feet blackish on the outer part and grey on the inner part.

Total length 23 inches, wing 10·75, culmen 2·25, tarsus 3.

Sexes alike.

Although there appears to be no actual record of the occurrence of this species in Tunisia, there can be little doubt that it occasionally wanders to the coasts of the Regency in winter, as it does to the Algerian shores and other adjacent parts of the Mediterranean. On the Italian coasts it is not uncommon in some winters, and it has been obtained, or observed, on the islands of Malta and Gozo. Examples from Algeria are preserved in the Paris and Milan Museums.

During the summer this Diver is generally distributed throughout the northern portions of Europe, Asia and America, and in winter it migrates southward to North Africa, the Caspian and Black Seas, Japan and China in the Palæarctic region, and to Maryland in America.

Like others of the genus the present species lives almost entirely in the water, frequenting lakes, rivers and the seashore, and swim-

ming and diving with the greatest facility. It is not usually met with far out at sea, but keeps near the coast, though rarely found actually on shore, except during the nesting-season. It flies well and swiftly, but is reluctant to take wing. It has a harsh and rather weird cry. Its food consists chiefly of fish.

It is possible that both *C. glacialis* and *C. arcticus* may also occur accidentally on the Tunisian coast. The former is recorded from Algeria, and two examples of it from that country, obtained by Loche, are preserved in the Milan Museum.

Family PODICIPEDIDÆ.

PODICIPES CRISTATUS (Linnæus).

GREAT CRESTED GREBE.

Colymbus cristatus, *Linn. Syst. Nat.* i, p. 222 (1766).

Podiceps cristatus, *Malherbe, Faune Orn. de l'Alg.* p. 34 (1855); *Loche, Expl. Sci. Alg. Ois.* ii, p. 219 (1867); *Koenig, J. f. O.* 1888, p. 297; *id. J. f. O.* 1893, p. 104; *Whitaker, Ibis*, 1895, p. 106.

Podicipes cristatus, *Salvadori, Ucc. Ital.* p. 300 (1887); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxvi, p. 544.

Description.—**Adult male**, spring, from Tunis, North Tunisia.

Forehead, crown, crest and collar round the neck dark brown; lores, eye-region, cheeks and chin white; a frill behind the cheeks and passing under the chin rich chestnut-colour, becoming dark brown at its junction with the neck collar; upper-parts chiefly dark brown; edge of wing and short secondaries white; sides of the breast and flanks chestnut-brown; underparts below the throat silvery-white.

Iris red; bill blackish and yellow at the base; feet greenish-black.

Total length 21 inches, wing 6·70, culmen 2, tarsus 2·25.

Adult female rather smaller and duller in plumage, with the crest and ruff less developed.

The Great Crested Grebe is not uncommon in North Tunisia during the winter months and periods of passage, and a few pairs probably breed on some of the larger lakes of the Regency, for according to Blanc, the species may sometimes be met with there in summer. In South Tunisia it is less frequently observed. The

autumn migration of this Grebe in Tunisia commences as early as the end of September, and between that date and the end of March considerable numbers may be found on all the lakes and inland bays of the northern sea-coast. On the Lake of Tunis it may often be seen, and an example from El Bahira, obtained by Salvin, is preserved in the British Museum collection.

According to Loche the species is abundant in Algeria, and used to breed on Lakes Halloula and Fezzara. It has been met with by Canon Tristram at Touggourt in the Algerian Sahara.

According to Favier and Colonel Irby it is very plentiful and breeds on the lakes of Ras-Dowra in North Marocco, its numbers being sometimes perfectly marvellous.

The Great Crested Grebe has an extensive range, for although only a straggler to the extreme north of Europe, it breeds in our continent from South Sweden down to the Mediterranean, throughout Africa down to the Cape, and in Asia from Mongolia to India. It also appears to be resident in Australia, Tasmania and New Zealand, but is unrecorded from America.

The present species frequents both fresh and salt-water lakes, as also, particularly in winter and on migration, inland sheltered bays and shallows on the sea-coast. It swims well, and is remarkably expert in diving, often seeking to elude pursuit by these means instead of by taking wing, although its flight, notwithstanding its short wings, is fairly rapid when once the bird has risen from the water and got well under weigh.

It feeds on small fishes, aquatic insects and vegetable matter, and like *P. griseigena* and other Grebes, swallows downy feathers, which it plucks from its own body, the object of this peculiar habit, it is said, being to facilitate digestion, although this explanation does not seem quite satisfactory.

The notes of the species are rather loud and deep, and are chiefly to be heard during the breeding-season.

The beautiful silky feathers of the underparts of this bird are the cause of its being much persecuted in localities where the species is plentiful, and large numbers are annually shot for the sake of their skins, which are in great request for ladies' attire.

The nest of this Grebe is usually a mass of floating flags or other plants, and its eggs, three or four in number, are of a chalky-white colour, often much stained. They measure about 55 × 36 mm.

PODICIPES GRISEIGENA (Boddært).

RED-NECKED GREBE.

Colymbus grisegena, *Bodd. Tabl. Pl. Enl.* p. 55 (1788).

Podiceps subcristatus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 221 (1867).

Podiceps rubricollis, *Koenig, J. f. O.* 1833, p. 297; *id. J. f. O.* 1893, p. 105.

Podicipes grisegena, *Salvadori, Ucc. Ital.* p. 301 (1887); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxvi, p. 539.

Description.—**Adult male**, spring, from Italy.

Forehead, crown, which is furnished with ear-tufts, nape and hindpart of neck black; remainder of upper-parts blackish-brown, with a white speculum on the secondary quills; chin, upper throat and cheeks pale grey, bordered with white; front and sides of the neck, and the breast rich chestnut-red; remainder of underparts silky white, with grey streaks on the flanks.

Iris red; bill blackish, yellow at the base; feet blackish.

Total length 16 inches, wing 7, culmen 1.50, tarsus 2.

Adult female similar to the male, but a little smaller.

The Red-necked Grebe is a winter visitor to Tunisia, and is sometimes fairly abundant on the Lake of Tunis and other lakes in the north of the Regency, as well as on the more sheltered parts of the sea-coast.

According to Loche the species is very rare in winter in Algeria, but it seems to be fairly abundant in Marocco, and Favier states that it breeds in that country. This statement is supported by Colonel Irby, who writes: "I have seen specimens of the Red-necked Grebe obtained in Marocco by Favier so young that they must have been bred in the country; and although I was unable to procure a specimen for identification, I am confident I saw several of this species at Ras-Dowra in April. I have no record of its occurrence on the Spanish side" (*Orn. Strs. Gib.* p. 220).

This Grebe inhabits the temperate portions of Northern Europe, Asia and America, migrating in winter as far as North Africa, Japan and Pennsylvania. In the Eastern Mediterranean it is rarely to be met with, and throughout a considerable part of that basin it can only be looked upon as of accidental occurrence.

In its habits and in the localities it affects the present species

resembles the Great Crested Grebe. During the winter months and on passage it is to be found chiefly on the sea-coast and on lagoons adjoining the coast, where it lives, as a rule, in small parties, and is very shy and difficult to approach. Like its congeners it swims and dives remarkably well, but is awkward on land. Its flight is perhaps lighter and more rapid than that of *P. cristatus*, and it takes wing more readily than that bird. Its food consists chiefly of small fish, aquatic insects and the tender shoots of certain plants, and it is said to swallow feathers like the preceding species.

PODICIPES AURITUS (Linnaeus).

SCLAVONIAN GREBE.

Colymbus auritus, *Linn. Syst. Nat.* i, p. 222 (1766).

Podiceps sclavus, *Loche, Expl. Sci. Alg. Ois.* ii, p. 222 (1867); *Koenig, J. f. O.* 1888, p. 297; *id. J. f. O.* 1893, p. 105.

Podicipes auritus, *Dixon, Ibis*, 1887, p. 460; *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxvi, p. 527.

Description.—**Adult male**, summer (*vide* Dresser).

Crown and forehead black; lores and a broad band of feathers passing through the eye, forming an elongated tuft on each side of the head, ochreous-chestnut; chin and ruff brownish-black; upper-parts brownish-black, tinged with grey; short secondaries chiefly white; neck in front rich chestnut-red; flanks dull chestnut; rest of underparts silvery-white; bill dark horn, the base and tip pink; legs dull greyish-black; a narrow ring encircling the pupil of the eye white, the outer ring crimson.

Culmen 1·1, wing 5·7, tarsus 1·8 inch.

Female similar but duller, with the ruff less developed.

In winter the crown, hind-neck and upper-parts are deep sooty-brown, some of the dorsal feathers edged with slaty-grey; chin, sides of head, throat and underparts silvery-grey, the flanks tinged with brownish-grey.

Observations.—This species is often confused with *P. nigricollis*, but may readily be distinguished from that bird by its straight bill and rather larger size.

This northern species apparently wanders occasionally to the shores of North-west Africa, for an adult male example from Tunis, obtained by Salvin, is preserved in the British Museum collection.

This is the only specimen I have seen from the Regency, and the species is probably rare and of merely accidental occurrence in winter on the North-west African coast, as elsewhere in the Mediterranean.

The bird recorded by Loche under this name as common and breeding in Algeria must undoubtedly be the Eared Grebe.

According to Colonel Irby, though unrecorded by Favier from Marocco, the species is occasionally to be observed in the Straits of Gibraltar, and he mentions having seen a specimen obtained there in October, 1867 (*Orn. Strs. Gib.* p. 220).

The range of this species extends further north than that of the Eared Grebe, and the bird breeds in the Arctic and Subarctic regions of both hemispheres. In winter it migrates in Europe as far south as the Mediterranean, in Asia to about lat. 24° N., and in America to the more northern portions of the United States, occasionally wandering further south and even to the Bermudas.

In its habits the present species is said not to differ appreciably from its ally the Eared Grebe, though it is scarcely so shy as that bird. It frequents both fresh-water lakes and the sea-coast, dives and swims expertly, and is apparently less awkward on land than the larger Grebes. The species has been observed by Proctor both swimming and diving, with its young held under its wings, the heads of the young birds being towards the tail, and their bills resting on the back of the parent bird.

The food of this Grebe is similar to that of its congeners, and, according to Mr. Robert Gray (*B. of W. of Scot.* p. 407), feathers and sand are also swallowed by it, together with vegetable substances.

PODICIPES NIGRICOLLIS (C. L. Brehm).

EARED GREBE.

Podiceps nigricollis, *Brehm, Vög. Deutschl.* p. 963 (1831); *Loche, Expl. Sci. Alg. Ois.* ii, p. 224 (1867); *Whitaker, Ibis*, 1895, p. 106.

Podiceps auritus, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 22 (1846); *Koenig, J. f. O.* 1888, p. 297; *id. J. f. O.* 1893, p. 105.

Podicipes nigricollis, *Salvadori, Ucc. Ital.* p. 302 (1887); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxvi, p. 532.

Description.—**Adult male**, spring, from Tunis.

Entire head, neck and upper-parts black, with tufts extending from the

eye backwards of a burnished golden-yellow colour; wings with a slight white alar bar; underparts silky-white, the sides and flanks dark chestnut.

Iris red; bill blackish; feet dull greenish-black.

Total length 13 inches, wing 5, culmen 1, tarsus 1.50.

Adult female similar, but rather smaller.

In winter the adult has the crown, hind-neck and upper-parts dull brownish-black, the golden-yellow tufts wanting; chin and sides of the head dull white; fore-neck dull brownish-grey; breast and abdomen silvery-white; flanks and crissum washed with grey.

This species is the most common of the Grebes in Tunisia, and is to be found in considerable numbers in winter and on passage. Although I have no actual knowledge of the fact, the species probably breeds on the larger lakes of the north of the Regency, as it does commonly in the north of Algeria and Marocco.

Throughout the colder months this Grebe may be met with, in smaller or larger flocks, on all the northern coasts of Tunisia, and on the lakes and lagoons adjoining the sea-coast. In the south of the Regency it seems to be less abundant.

The geographical distribution of *P. nigricollis* differs considerably from that of the preceding species, for its range in Europe does not extend further north than the British Isles, Sweden and Finland, while it breeds generally throughout the greater part of the European Continent, including Denmark, and is still more abundant in North Africa, ranging southward, and breeding, even as far as the Cape. According to Mr. Gurney (*Ibis*, 1868, p. 263) specimens from South Africa differ from the ordinary European bird in being rather smaller in size, and in having a shorter bill and paler ear-tufts. In Asia, *P. nigricollis* ranges across the temperate region as far east as Japan, and southward to India. In America it is replaced by the closely allied *P. californicus*.

In its general habits, and in the localities it frequents, the present species does not differ greatly from other Grebes, and like them, is shy, swims well, and is particularly addicted to diving. It is perhaps more given to diving than any of its congeners, and almost invariably has recourse to this when seeking to elude pursuit or escape from danger. It flies well and rapidly, however, and on land is less clumsy than most other Grebes.

Its food consists chiefly of small fish, insects and vegetable matter. In spring and summer it utters a low and soft whistling note, but it is a silent bird as a rule.

Canon Tristram found this Grebe breeding on Lake Halloula in Algeria, "in societies more densely crowded than any rookery"; the nests being "raised on artificial islets, frequently almost touching each other, and sometimes piled on stout foundations, rising from more than a yard under water." The species appears often to nest in the company of other marsh-breeding birds, and von Homeyer found many of its nests on Lake Halloula amongst those of the Whiskered Tern. The eggs are usually four or five in number, and of a yellowish-white colour when freshly laid, though turning brownish with stains and soiling; they measure about 40 × 29 mm. On leaving its nest the parent bird is in the habit of covering the eggs with leaves or other plant material that may be near at hand.

PODICIPES FLUVIATILIS (Tunstall).

LITTLE GREBE.

Colymbus fluviatilis, *Tunst. Orn. Brit.* p. 3 (1771).

Podiceps minor, *Malherbe, Cat. Rais. d'Ois. Alg.* p. 22 (1846); *Koenig, J. f. O.* 1888, p. 297; *id. J. f. O.* 1893, p. 105.

Tachybaptus minor, *Loche, Expl. Sci. Alg. Ois.* ii, p. 225 (1867).

Podiceps fluviatilis, *Saunders, Man. Brit. Birds*, p. 709 (1889); *Ogilvie-Grant, Cat. Birds Brit. Mus.* xxvi, p. 507.

Podiceps fluviatilis, *Erlanger, J. f. O.* 1900, p. 78.

Description.—**Adult male**, winter, from Tunis, North Tunisia.

Upper-parts generally dull brown, darker on the wings; chin dull white; throat, fore-neck and breast pale rufous-brown; abdomen silvery-white, tinged with grey on the flanks; crissum and under tail-coverts dark grey.

Iris hazel; bill dark brown; feet dark green.

Total length 8·50 inches, wing 3·65, culmen ·75, tarsus 1·40.

Adult female similar to the male, but slightly smaller.

In summer the plumage is much darker and clearer generally, the crown, nape, hind-neck, chin and lores being blackish-brown, and the sides of the head and neck, as well as the entire throat, rich chestnut-red.

The Little Grebe, or Dabchick, as it is commonly called in England, is resident and not uncommon in the north of Tunisia, and is also to be met with occasionally in the south of the Regency. It may be found throughout the year on most of the reed-fringed pools and

streams, as well as on the borders of the larger lakes in the neighbourhood of Bizerta and Tunis, and is to be met with in the oasis of Gabès, where, as in some other South Tunisian oases, it is probably resident.

According to Loche the species is sedentary and to be found on all the lakes of Algeria, being particularly numerous on Lakes Halloula and Fezzara. In Marocco, according to Favier, it is resident near Tangier, and to a great extent migratory, passing north during April and reappearing from October to December. It is resident and especially numerous at the lakes of Ras-Dowra.

The little Grebe is to be found, in suitable localities, throughout Europe generally from Scandinavia down to the Mediterranean, in Africa from the north down to the Cape, and in temperate Asia as far east as Japan.

The species frequents fresh-water localities as a rule, and may be found on small pools, ponds and river-sides, as well as on the borders of lakes and large expanses of water. It is excessively shy, and when approached, immediately dives, disappearing under water like a flash, not reappearing on the surface until it has placed many yards between itself and the apprehended danger. Though most reluctant to take wing, it flies well and fairly swiftly. It is very silent as a rule, but at times, and particularly during the nesting season, utters a low soft note. Its food consists chiefly of small fish, molluscs insects and vegetable substance, and it is said to swallow feathers.

The Dabchick's nest is a voluminous mass of aquatic herbage, generally placed among reeds, and sometimes floating on the water, but attached to some plant. The eggs, four to six in number, are creamy-white when fresh, but become darker with age and soiling; they measure about 38×25 mm.

Like other Grebes, the present species, on leaving its eggs, carefully covers them with weeds or other plant material, plucked with its bill, from the side of the nest. The parent birds also carry their young on their backs until the chicks can shift for themselves, which they are generally able to do when about a week old.

INDEX.

- Acanthis cannabina*, i. 218.
Accentor modularis, i. 130.
Accipiter uisus, ii. 116.
accipitrinus, *Asio*, ii. 69.
Acrocephalus aquaticus, i. 116.
 — *arundinaccus*, i. 114.
 — *palustris*, i. 113.
 — *schænobænus*, i. 117.
 — *streperus*, i. 112.
acuta, *Dafila*, ii. 208.
Ædon luscinia, i. 72.
Ægialitis alexandrina, ii. 296.
 — *dubia*, ii. 297.
 — *hiaticola*, ii. 299.
ægyptius isabellinus, *Caprimulgus*,
 ii., 36.
æsalon, *Falco*, ii. 143.
æruinosus, *Circus*, ii. 91.
affinis galilejensis, *Cypselus*, ii. 28.
 African Buzzard, ii. 98.
Agrobates galactodes, i. 74.
Alæmon alaudipes, i. 241.
Aldauda arborea, i. 273.
 — *arvensis*, i. 269.
 — — *cantarella*, i. 272.
 — — *harterti*, i. 271.
alaudipes, *Alæmon*, i. 241.
alba, *Ardea*, ii. 164.
 —, *Motacilla*, i. 144.
albellus, *Mergus*, ii. 224.
albicans, *Aquila rapax*, ii. 103.
albicilla, *Haliaëtus*, ii. 112.
Alca torda, ii. 385.
Alcedo ispida, ii. 49.
alchata, *Pterocles*, ii. 238.
alexandrina, *Ægialitis*, ii. 296.
 Algerian Black-headed Jay, ii. 9.
 — Bush-Babbler, i. 128.
 — Chaffinch, i. 214.
 — Coal-Titmouse, i. 137.
 — Desert Lark, i. 274.
 — Greater Pied Woodpecker, ii. 40.
 Algerian Green Woodpecker, ii. 45.
 — Grey Shrike, i. 166.
algeriensis, *Ammomanes deserti*, i. 274.
 —, *Lanius*, i. 166.
alleni, *Porphyriola*, ii. 269.
 Allen's Gallinule, ii. 269.
 Allied Tern, ii. 352.
alpestris, *Turdus torquatus*, i. 13.
alpina, *Tringa*, ii. 317.
 Alpine Ring-Ouzel, i. 13.
 — Swift, ii. 31.
aluco, *Syrnium*, ii. 70.
Ammomanes cinctura arenicolor, i.
 277.
 — *deserti algeriensis*, i. 274.
Anas boschas, ii. 200.
 Andaluçian Hemipode, ii. 253.
anglica, *Sterna*, ii. 354.
anglorum yellkouan, *Puffinus*, ii. 383.
angustirostris, *Marmaronetta*, ii. 201.
Anorthura troglodytes, i. 143.
Anser anser, ii. 191.
 — *fabalis*, ii. 192.
Anthus campestris, i. 159.
 — *cervinus*, i. 156.
 — *pratensis*, i. 155.
 — *spipoletta*, i. 161.
 — *trivialis*, i. 158.
apiaster, *Merops*, ii. 52.
apivorus, *Pernis*, ii. 125.
apus, *Cypselus*, ii. 24.
 Aquatic Warbler, i. 116.
aquaticus, *Acrocephalus*, i. 116.
 —, *Rallus*, ii. 257.
Aquila chrysaëtus, ii. 106.
 — *maculata*, ii. 102.
 — *rapax albicans*, ii. 103.
arborea, *Aldauda*, i. 273.
arctica, *Fratercula*, ii. 386.
 Arctic Skua, ii. 378.
Ardea alba, ii. 164.
 — *cinerea*, ii. 161.

- Ardea garzetta*, ii. 166.
 ——— *lucida*, ii. 168.
 ——— *purpurca*, ii. 163.
 ——— *ralloides*, ii. 171.
Ardcola minuta, ii. 172.
arenaria, *Calidris*, ii. 326.
arenarius, *Pterocles*, ii. 234.
arenicola, *Galcrida cristata*, i. 257.
arenicolor, *Ammomanes cinctura*, i. 277.
Argya fulva, i. 128.
arquata, *Numenius*, ii. 339.
arundinaceus, *Acrocephalus*, i. 114.
arvensis cantarella, *Alauda*, i. 272.
 ———, *Alauda*, i. 269.
 ——— *harterti*, *Alauda*, i. 271.
ascalaphus, *Bubo*, ii. 77.
 ——— *desertorum*, *Bubo*, ii. 80.
Asio accipitrinus, ii. 69.
 ——— *otus*, ii. 67.
Astur palumbarius, ii. 115.
atra, *Fulica*, ii. 272.
atricapilla, *Muscicapa*, i. 179.
 ———, *Sylvia*, i. 90.
 Audouin's Gull, ii. 370.
audouini, *Larus*, ii. 370.
aurantiiventris, *Ligurinus chloris*, i. 198.
auritus, *Podiceps*, ii. 392.
 Avocet, ii. 306.
avocetta, *Recurvirostra*, ii. 306.
 Babbler, Algerian Bush-, i. 128.
bailloni, *Porzana*, ii. 259.
 Baillon's Crake, ii. 259.
barbarus, *Falco*, ii. 132.
 Barbary Falcon, ii. 132.
 ——— Partridge, ii. 245.
 ——— ———, Desert, ii. 248.
barbatus, *Gypaëtus*, ii. 88.
 ———, *Pycnonotus*, i. 162.
 Barn-Owl, ii. 65.
 Bar-tailed Godwit, ii. 337.
bassana, *Sula*, ii. 157.
 Bean-Goose, ii. 192.
 Bearded Vulture, ii. 88.
 Bee-eater, ii. 52.
 ———, Blue-cheeked, ii. 56.
biarmicus feldeggi, *Falco*, ii. 135.
Biblis rupestris, i. 189.
 Bifasciated Lark, i. 241.
bilopha, *Otocorys*, i. 291.
 Bittern, ii. 175.
 ———, Little, ii. 172.
 Black-backed Gull, Greater, ii. 375.
 ——— ——— ——— Lesser, ii. 374.
 ——— -bellied Sand-Grouse, ii. 234.
 Blackbird, i. 9.
 ———, Moorish, i. 11.
 Blackcap, i. 90.
 Black Chat, i. 56.
 ——— -eared Chat, Western, i. 28.
 ——— ——— Wheatear, i. 25.
 ——— -headed Gull, ii. 362.
 ——— ——— ———, Mediterranean, ii. 364.
 ——— ——— Wagtail, i. 153.
 ——— ——— Jay, Algerian, ii. 9.
 ——— Kite, ii. 121.
 ——— Redstart, i. 66.
 ——— Stork, ii. 179.
 ——— -tailed Godwit, ii. 336.
 ——— Tern, ii. 361.
 ——— ———, white-winged, ii. 359.
 ——— -throated Chat, Eastern, i. 38.
 ——— ——— ———, Western, i. 35.
 ——— -winged Kite, ii. 123.
 ——— ——— Stilt, ii. 307.
 Blue-cheeked Bee-eater, ii. 56.
 ——— -headed Wagtail, i. 147.
 ——— Rock-Thrush, i. 18.
 ——— -throat, Orange-spotted, i. 68.
 ——— ———, White-spotted, i. 69.
 Booted Eagle, ii. 110.
bonelli, *Phylloscopus*, i. 106.
 Bonelli's Eagle, ii. 108.
 ——— Warbler, i. 106.
borealis, *Motacilla*, i. 152.
boschas, *Anas*, ii. 200.
Botaurus stellaris, ii. 175.
brachydactyla, *Calandrella*, i. 280.
 ——— ——— *itala*, *Calandrella*, i. 281.
 ——— ———, *Certhia familiaris*, i. 141.
 Brambling, i. 217.
 Brown-necked Raven, ii. 22.
Bubo ascalaphus, ii. 77.
 ——— ——— *desertorum*, ii. 80.
 Buff-backed Heron, ii. 168.
 Bulbul, Dusky, i. 162.
 Bullfinch, i. 223.
 ———, Desert, i. 220.
 Bunting, Cirl, i. 234.
 ———, Corn-, i. 231.
 ———, House-, i. 228.
 ———, Little, i. 237.
 ———, Meadow-, i. 238.

- Bunting, Reed-, i. 240.
 —, Thick-billed Reed-, i. 240.
 —, Yellow, i. 233.
 Bush-babbler, Algerian, i. 128.
 Bustard, Great, ii. 280.
 —, Houbara, ii. 284.
 —, Little, ii. 282.
Buteo buteo, ii. 96.
 — *desertorum*, ii. 98.
 — *ferox*, ii. 100.
 Buzzard, African, ii., 98.
 —, Common, ii. 96.
 —, Honey-, ii. 125.
 —, Long-legged, ii. 100.
Caccabis petrosa, ii. 245.
 ————— *spatzi*, ii. 248.
cachinnans, *Larus*, ii. 372.
cæruleus, *Elanus*, ii. 123.
 —, *Porphyrio*, ii. 263.
 Calandra Lark, i. 285.
calandra, *Melanocorypha*, i. 285.
Calandrella brachydactyla, i. 280.
 ————— *itala*, i. 281.
 — *minor*, i. 283.
Calidris arenaria, ii. 326.
calidris, *Totanus*, ii. 332.
campestris, *Anthus*, i. 159.
canescens, *Totanus*, ii. 335.
cannabina, *Acanthis*, i. 218.
canorus, *Cuculus*, ii. 59.
cantarella, *Alauda arvensis*, i. 272.
cantiaca, *Sterna*, ii. 355.
canus, *Larus*, ii. 367.
canutus, *Tringa*, ii. 323.
carbo, *Phalacrocorax*, ii. 153.
Carduelis carduelis, i. 191.
Caprimulgus ægyptius isabellinus, ii. 36.
 ————— *europæus*, ii. 33.
 ————— *ruficollis desertorum*, ii. 38.
Carine noctua glaux, ii. 73.
carolinæ, *Galerida thekla*, i. 268.
casarca, *Tadorna*, ii. 198.
caspia, *Sterna*, ii. 350.
 Caspian Tern, ii. 350.
caterinæ, *Saxicola*, i. 28.
Certhia familiaris brachydactyla, i.
 141.
cervicalis, *Garrulus*, ii. 9.
cervinus, *Anthus*, i. 156.
Cettia cettii, i. 121.
 Cetti's Warbler, i. 121.
 Chaffinch, i. 212.
 —————, Algerian, i. 214.
 Chat, Black, i. 56.
 —, Desert, i. 39.
 —, Eastern Black throated, i. 38.
 —, Isabelline, i. 24.
 —, Stone-, i. 60.
 —, Tristram's, i. 42.
 —, Western Black eared, i. 28.
 —, ——— Black-throated, i. 35.
 —, ——— Pied, i. 48.
 —, Whin-, i. 58.
 —, White-rumped, i. 52.
Charadrius pluvialis, ii. 293.
Chaulelasmus streperus, ii. 202.
Chelidon urbica, i. 186.
Chersophilus duponti, i. 245.
 ————— *margaritæ*, i. 249.
 Chiffchaff, i. 102.
chloris, *Ligurinus*, i. 197.
 — *aurantiiventris*, *Ligurinus*, i. 198.
chloropus, *Gallinula*, ii. 271.
 Chough, ii. 7.
chrysaëtus, *Aquila*, ii. 106.
Chrysomitris citrinella, i. 194.
 — *spinus*, i. 193.
cia, *Emberiza*, i. 238.
Ciconia ciconia, ii. 177.
 — *nigra*, ii. 179.
Cinclus melanogaster, i. 132.
cinctura arenicolor, *Ammomanes*, i. 277.
cinerea, *Ardea*, ii. 161.
 —, *Sylvia*, i. 77.
cinereocapilla, *Motacilla*, i. 151.
Circæus gallicus, ii. 113.
circia, *Querquedula*, ii. 207.
Circus æruginosus, ii. 91.
 — *cyaneus*, ii. 94.
 — *macrurus*, ii. 95.
 — *pygargus*, ii. 93.
 Cirl Bunting, i. 234.
cirlus, *Emberiza*, i. 234.
Cisticola cisticola, i. 123.
 ————— *mauritanica*, i. 124.
 Citril Finch, i. 194.
citrinella, *Chrysomitris*, i. 194.
 —, *Emberiza*, i. 233.
Clangula glaucion, ii. 218.
clot-bey, *Ramphocorys*, i. 287.
clypeata, *Spatula*, ii. 204.
 Coal-Titmouse, Algerian, i. 137.
Coccothraustes coccothraustes, i. 200.
Coccystes glandarius, ii. 62.
cælebs, *Fringilla*, i. 212.
collaris, *Muscicapa*, i. 181.
Columba livia, ii. p. 230.

- Columba aenas*, ii. 228.
 ——— *palumbus*, ii. 226.
Colymbus septentrionalis, ii. 388.
 Common Buzzard, ii. 96.
 ——— Curlew, ii. 339.
 ——— Gull, ii. 367.
 ——— Heron, ii. 161.
 ——— Redshank, ii. 332.
 ——— Sandpiper, ii. 327.
 ——— Scoter, ii. 219.
 ——— Sheld-Duck, ii. 197.
 ——— Snipe, ii. 314.
 ——— Starling, ii. 1.
 ——— Tern, ii. 343.
 ——— Wheatear, i. 20.
conspicillata, *Sylvia*, i. 82.
 Coot, ii. 272.
 ———, Crested, ii. 274.
Coracias garrulus, ii. 51.
corax tingitanus, *Corvus*, ii. 17.
 Cormorant, ii. 153.
 ———, Pygmy, ii. 156.
 Corn Bunting, i. 231.
cornix, *Corvus*, ii. 15.
coronatus, *Pterocles*, ii. 242.
 Coronetted Sand-Grouse, ii. 242.
Corvus corax tingitanus, ii. 17.
 ——— *cornix*, ii. 15.
 ——— *monedula*, ii. 13.
 ——— *umbrinus*, ii. 22.
Cotile riparia, i. 188.
Coturnix coturnix, ii. 248.
 Courser, Cream-coloured, ii. 291.
 Crag-Martin, i. 189.
 Crane, Baillon's, ii. 259.
 ———, Little, ii. 260.
 ———, Spotted, ii. 258.
 Crane, ii. 275.
 ———, Demoiselle-, ii. 277.
 Cream-coloured Courser, ii. 291.
crecca, *Nettion*, ii. 205.
 Creeper, Tree-, i. 141.
crepidatus, *Stercorarius*, ii. 378.
 Crested Coot, ii. 274.
 ——— Lark, Greater Small-billed, i. 259.
 ——— ———, Isabelline Small-billed, i. 266.
 ——— ———, Pale Long-billed, i. 257.
 ——— ———, ——— Small-billed, i. 264.
 ——— ———, Rufous Small-billed, i. 268.
Crex crex, ii. 261.
 Crimson-winged Finch, i. 222.
cristata arenicola, *Galerida*, i. 257.
cristata, *Fulica*, ii. 274.
 ——— *macrorhyncha*, *Galerida*, i. 254.
cristatus, *Podiceps*, ii. 389.
 ———, *Regulus*, i. 100.
 Crossbill, Tunisian, i. 224.
 Crow, Grey, ii. 15.
 Cuckoo, ii. 59.
 ———, Great Spotted, ii. 62.
cucullatus, *Telephonus*, i. 176.
Cuculus canorus, ii. 59.
 Curlew, Common, ii. 339.
 ———, Desert Stone-, ii. 288.
 ——— -Sandpiper, ii. 321.
 ———, Slender-billed, ii. 341.
 ———, Stone-, ii. 287.
curruca, *Sylvia*, i. 78.
Cursorius gallicus, ii. 291.
curvirostra poliogyna, *Loxia*, i. 224.
Cyanocula suecica, i. 68.
 ——— *wolfi*, i. 69.
cyaneus, *Circus*, ii. 94.
cyanus, *Monticola*, i. 18.
Cygnus cygnus, ii. 195.
 ——— *olor*, ii. 194.
Cypselus affinis galilejensis, ii. 28.
 ——— *apus*, ii. 24.
 ——— *mclba*, ii. 31.
 ——— *murinus*, ii. 27.
Dafila acuta, ii. 208.
 Dartford Warbler, i. 93.
deichleri, *Galerida theklae*, i. 266.
 Demoiselle-Crane, ii. 277.
Dendrocopos minor, ii. 43.
 ——— *numidicus*, ii. 40.
 Desert Barbary Partridge, ii. 248.
 ——— Bullfinch, i. 220.
 ——— Chat, i. 39.
 ——— Eagle-Owl, ii. 80.
 ——— Horned Lark, i. 291.
 ——— Lark, Algerian, i. 274.
 ——— ———, Pale Lesser, i. 277.
 ——— -Nightjar, Isabelline, ii. 36.
 ——— -Sparrow, i. 208.
 ——— Stone-Curlew, ii. 288.
 ——— Warbler, Western, i. 83.
 ——— Wren-Warbler, i. 125.
deserti algeriensis, *Ammomanes*, i. 271.
 ———, *Saxicola*, i. 39.
 ———, *Sylvia nana*, i. 83.
deserticolus, *Melizophilus*, i. 96.
desertorum, *Butco*, ii. 98.
 ———, *Bubo ascalaphus*, ii. 80.
 ———, *Caprimulgus ruficollis*, ii. 38.

- Diplootocus moussieri*, i. 61.
 Dipper, i. 132.
 Diver, Red-throated, ii. 388.
domesticus, *Passer*, i. 202.
 Dotterel, ii. 300.
 Double Snipe, ii. 312.
dougalli, *Sterna*, ii. 345.
 Dove, Egyptian Turtle-, ii. 233.
 —, Ring-, ii. 226.
 —, Rock-, ii. 230.
 —, Stock-, ii. 228.
 —, Turtle-, ii. 231.
 Duck, Ferruginous, ii. 214.
 —, Marbled, ii. 201.
 —, Scaup-, ii. 215.
 —, Tufted, ii. 217.
 —, White-headed, ii. 220.
dubia, *Ægialitis*, ii. 297.
 Dunlin, ii. 317.
duponti, *Chersophilus*, i. 245.
 — *margaritæ*, *Chersophilus*, i. 249.
 Dupont's Lark, i. 245.
 —, Rufous, i. 249.
 Dusky Bulbul, i. 162.
 Eagle, Bonelli's, ii. 108.
 —, Booted, ii. 110.
 — - Owl, Desert, ii. 80.
 — - - - - , Egyptian, ii. 77.
 —, Golden, ii. 106.
 —, Great Spotted, ii. 102.
 —, Pale Tawny, ii. 103.
 —, Sea-, ii. 112.
 —, Short-toed, ii. 113.
 Eared Grebe, ii. 393.
 Eastern Black-throated Chat, i. 38.
 Egret, Great White, ii. 164.
 —, Little, ii. 166.
 Egyptian Eagle-Owl, ii. 77.
 — Turtle-Dove, ii. 233.
 — Vulture, ii. 86.
Elanus cæruleus, ii. 123.
elegans, *Lanius*, i. 171.
eleonoræ, *Falco*, ii. 138.
 Eleonoran Falcon, ii. 138.
Emberiza cia, i. 238.
 — *cirlus*, i. 234.
 — *citrinella*, i. 233.
 — *hortulana*, i. 236.
 — *miliaria*, i. 231.
 — *pusilla*, i. 237.
 — *schæniclus*, i. 240.
 — — — — — *pyrrhuloides*, i. 241.
epops, *Upupa*, ii. 57.
eremita, *Ibis*, ii. 182.
Erismatura leucocephala, ii. 220.
Erythacus rubecula, i. 70.
Erythrospiza githaginea, i. 220.
 — — — — — *sanguinea*, i. 222.
Eudromias morinellus, ii. 300.
europæa, *Pyrrhula*, i. 223.
europæus, *Caprimulgus*, ii. 33.
excelsus, *Parus major*, i. 134.
fabalis, *Anser*, ii. 192.
falcinellus, *Plegadis*, ii. 185.
Falco æsalon, ii. 143.
 — *barbarus*, ii. 132.
 — *biarmicus feldeggi*, ii. 135.
 — *eleonoræ*, ii. 138.
 — *naumanni*, ii. 148.
 — *peregrinus*, ii. 127.
 — *punicus*, ii. 129.
 — *subbuteo*, ii. 141.
 — *tinnunculus*, ii. 146.
 — *vespertinus*, ii. 144.
 Falcon, Barbary, ii. 132.
 —, Eleonoran, ii. 138.
 —, Lesser Peregrine, ii. 129.
 —, Peregrine, ii. 127.
 —, Red-footed, ii. 144.
familiaris brachydaetyla, *Certhia*, i. 141.
 Fantail-Warbler, i. 123.
 — — — — —, Moorish, i. 124.
fasciatus, *Nisaëtus*, ii. 108.
feldeggi, *Falco biarmicus*, ii. 135.
ferina, *Nyroca*, ii. 213.
ferox, *Buteo*, ii. 100.
 Ferruginous Duck, ii. 214.
 Fieldfare, i. 8.
 Finch, Citril, i. 194.
 —, Crimson-winged, i. 222.
 —, Serin-, i. 195.
 Fire-crested Wren, i. 101.
 Flamingo, ii. 186.
flammea, *Strix*, ii. 65.
flava, *Motacilla*, i. 147.
fluviatilis, *Podiceps*, ii. 395.
 Flycatcher, Pied, i. 179.
 —, Spotted, i. 178.
 —, White-collared, i. 181.
Fratereula arctica, ii. 386.
Fringilla cælebs, i. 212.
 — *montifringilla*, i. 217.
 — *spodiogenys*, i. 214.
Fringillaria saharæ, i. 228.
Fulica atra, ii. 272.
 — *cristata*, ii. 274.
fuliginosa, *Sterna*, ii. 357.

- Fuligula fuligula*, ii. 217.
 ———— *marila*, ii. 215.
fulva, *Argya*, i. 128.
fulvus, *Gyps*, ii. 82.
fusca, *Ædemia*, ii. 219.
fuscus, *Larus*, ii. 374.
 ———, *Totanus*, ii. 334.
- Gadwall, ii. 202.
galactodes, *Agrobates*, i. 74.
gallula, *Oriolus*, i. 164.
Galerida cristata arenicola, i. 257.
 ———— *macrorhyncha*, i. 254.
 ———— *thekla carolinæ*, i. 268.
 ———— *deichleri*, i. 266.
 ———— *major*, i. 259.
 ———— *superflua*, i. 264.
gallicus, *Circaëtus*, ii. 113.
 ———, *Cursorius*, ii. 291.
Gallinago gallinago, ii. 314.
 ——— *gallinula*, ii. 315.
 ——— *major*, ii. 312.
 Gallinule, Allen's, ii. 269.
 ————, Purple, ii. 263.
Gallinula chloropus, ii. 271.
gallinula, *Gallinago*, ii. 315.
 Gannet, ii. 157.
 Garden-Warbler, i. 92.
 Gargancy Teal, ii. 207.
Garrulus cervicalis, ii. 9.
garrulus, *Coracias*, ii. 51.
garzetta, *Ardea*, ii. 166.
Gecinus vaillanti, ii. 45.
gelastes, *Larus*, ii. 368.
githaginea, *Erythrospiza*, i. 220.
giu, *Scops*, ii. 72.
glandarius, *Coccytes*, ii. 62.
Glareola melanoptera, ii. 290.
 ———— *pratincola*, ii. 289.
glareola, *Totanus*, ii. 330.
glaucion, *Clangula*, ii. 218.
glaux, *Carine noctua*, ii. 73.
 Glossy Ibis, ii. 185.
 Godwit, Bar-tailed, ii. 337.
 ———, Black-tailed, ii. 336.
 Golden-crested Wren, i. 100.
 ——— Eagle, ii. 106.
 ——— -eye, ii. 218.
 ——— Oriole, i. 164.
 ——— Plover, ii. 293.
 Goldfinch, i. 191.
 Goosander, ii. 222.
 Goose, Bean-, ii. 192.
 ———, Grey Lag-, ii. 191.
 Goshawk, ii. 115.
- graculus*, *Phalacrocorax*, ii. 155.
 ———, *Pyrrhocorax*, ii. 7.
 Grasshopper-Warbler, i. 118.
 Great Bustard, ii. 280.
 ——— Crested Grebe, ii. 389.
 ——— Reed-Warbler, i. 114.
 ——— Spotted Cuckoo, ii. 62.
 ——— Titmouse, Mediterranean, i. 134.
 ——— White Egret, ii. 164.
 Greater Black-backed Gull, ii. 375.
 ——— Small-billed Crested Lark, i. 259.
 ——— Spotted Eagle, ii. 102.
 Grebe, Eared, ii. 393.
 ———, Great Crested, ii. 389.
 ———, Little, ii. 395.
 ———, Red-necked, ii. 391.
 ———, Slavonian, ii. 392.
 Greenfinch, i. 197.
 ————, North African, i. 198.
 Green Sandpiper, ii. 328.
 Greenshank, ii. 335.
 Green Woodpecker, Algerian, ii. 45.
 Grey Crow, ii. 15.
 ——— -headed Wagtail, i. 151.
 ——— Lag-Goose, ii. 191.
 ——— Plover, ii. 295.
 ——— Shrike, Algerian, i. 166.
 ——— Wagtail, i. 146.
 Griffon-Vulture, ii. 82.
griseigena, *Podicipes*, ii. 391.
griseus, *Nycticorax*, ii. 174.
grisola, *Muscicapa*, i. 178.
Grus grus, ii. 275.
 ——— *virgo*, ii. 277.
 Gull, Audouin's, ii. 370.
 ———, Black-headed, ii. 362.
 ——— -billed Tern, ii. 354.
 ———, Common, ii. 367.
 ———, Greater Black-backed, ii. 375.
 ———, Lesser Black-backed, ii. 374.
 ———, Little, ii. 366.
 ———, Mediterranean Black-headed, ii. 364.
 ———, Slender-billed, ii. 368.
 ———, Yellow-legged Herring-, ii. 372
Gypæctus barbatus, ii. 88.
Gyps fulvus, ii. 82.
- Hæmatopus ostralegus*, ii. 305.
Haliaëtus albicilla, ii. 112.
haliaëtus, *Pandion*, ii. 150.
halophila, *Saxicola*, i. 48.
 Harrier, Hen-, ii. 94.
 ———, Marsh-, ii. 91.

- Harrier, Montagu's, ii. 93.
 —, Pallid, ii. 95.
harterti, *Alauda arvensis*, i. 271.
 Hawfinch, i. 200.
 Hawk, Sparrow-, ii. 116.
 Hedge-Sparrow, i. 130.
helvetica, *Squatarola*, ii. 295.
 Hemipode, Andalucian, ii. 253.
 Hen-Harrier, ii. 94.
 Heron, Buff-backed, ii. 168.
 —, Common, ii. 161.
 —, Night-, ii. 174.
 —, Purple, ii. 163.
 —, Squacco, ii. 171.
 Herring-Gull, Yellow-legged, ii. 372.
hiaticola, *Ægialitis*, ii. 299.
Himantopus himantopus, ii. 307.
Hirundo rufula, i. 185.
 — *rustica*, i. 182.
hirundo, *Sterna*, ii. 343.
hispaniolensis, *Passer*, i. 205.
 Hobby, ii. 141.
 Honey-Buzzard, ii. 125.
 Hooded Shrike, i. 176.
 Hoopoe, ii. 57.
 Horned Lark, Desert, i. 291.
hortensis, *Sylvia*, i. 92.
hortulana, *Emberiza*, i. 236.
 Houbara Bustard, ii. 284.
 House-Bunting, i. 228.
 — -Martin, i. 186.
 — -Sparrow, i. 202.
hybrida, *Hydrochelidon*, ii. 358.
Hydrochelidon hybrida, ii. 358.
 — *leucoptera*, ii. 359.
 — *nigra*, ii. 361.
hyperboreus, *Phalaropus*, ii. 309.
Hypolais icterina, i. 109.
 — *pallida opaca*, i. 111.
 — *polyglotta*, i. 108.
hypoleucus, *Totanus*, ii. 327.

Ibis cremita, ii. 182.
 Ibis, Glossy, ii. 185.
 —, Red-cheeked, ii. 182.
icterina, *Hypolais*, i. 109.
 Icterine Warbler, i. 109.
ignicapillus, *Regulus*, i. 101.
iliacus, *Turdus*, i. 6.
interprex, *Strepsilas*, ii. 303.
 Irby's Raven, ii. 17.
isabellina, *Saxicola*, i. 24.
 Isabelline Chat, i. 24.
 ——— Desert-Nightjar, ii. 36.

 Isabelline Small-billed Crested Lark,
 i. 266.
isabellinus, *Caprimulgus ægyptius*, ii.
 36.
ispida, *Alcedo*, ii. 49.
itala, *Calandrella brachydactyla*, i.
 281.
italica, *Passer*, i. 205.
 Italian Sparrow, i. 205.
Ijnx torquilla, ii. 47.

 Jackdaw, ii. 13.
 Jack-Snipe, ii. 315.
 Jay, Algerian Black-headed, ii. 9.

 Kentish Plover, ii. 296.
 Kestrel, ii. 146.
 —, Lesser, ii. 148.
 Kingfisher, ii. 49.
 Kite, ii. 119.
 —, Black, ii. 121.
 —, — -winged, ii. 123.
 Knot, ii. 323.
kuhli, *Puffinus*, ii. 332.

 Land-Rail, ii. 261.
Lanius algeriensis, i. 166.
 — *elegans*, i. 171.
 — *pomeranus*, i. 174.
 Lanner, ii. 135.
lapponica, *Limosa*, ii. 337.
 Lapwing, ii. 301.
 Lark, Algerian Desert, i. 274.
 —, Bifasciated, i. 241.
 —, Calandra, i. 285.
 —, Desert Horned, i. 291.
 —, Dupont's, i. 245.
 —, Greater Small-billed Crested, i.
 259.
 —, Isabelline Small-billed Crested,
 i. 266.
 —, Lesser Short-toed, i. 283.
 —, Mealy Sky-, i. 272.
 —, Pale Lesser Desert, i. 277.
 —, — Long-billed Crested, i. 257.
 —, — Small-billed Crested, i.
 264.
 —, Rufous Dupont's, i. 249.
 —, — -headed Short-toed, i. 281.
 —, — Small-billed Crested, i.
 268.
 —, Short-toed, i. 280.
 —, Sky-, i. 269.
 —, Thick-billed, i. 287.
 —, Tristram's, i. 254.

- Lark, Tunisian Sky-, i. 271.
 —, Wood-, i. 273.
Larus audouini, ii. 370.
 — *cachinnans*, ii. 372.
 — *canus*, ii. 367.
 — *fuscus*, ii. 374.
 — *gelastes*, ii. 368.
 — *marinus*, ii. 375.
 — *melanocephalus*, ii. 364.
 — *minutus*, ii. 366.
 — *ridibundus*, ii. 362.
ledouci, *Parus*, i. 137.
 Lesser Black-backed Gull, ii. 374.
 — Desert Lark, Pale, i. 277.
 — Kestrel, ii. 148.
 — Peregrine Falcon, ii. 129.
 — Pied Woodpecker, ii. 43.
 — Ringed Plover, ii. 297.
 — Short-toed Lark, i. 283.
 — Whitethroat, i. 78.
leucocephala, *Erismatura*, ii. 220.
leucoptera, *Hydrochelidon*, ii. 359.
leucopyga, *Saxicola*, i. 52.
leucorodia, *Platulea*, ii. 181.
leucura, *Saxicola*, i. 56.
 Levantine Shearwater, ii. 383.
Ligurinus chloris, i. 197.
 ——— *aurantiventris*, i. 198.
Limosa lapponica, ii. 337.
 — *limosa*, ii. 336.
 Linnet, i. 218.
 Little Bittern, ii. 172.
 — Bunting, i. 237.
 — Bustard, ii. 282.
 — Crake, ii. 260.
 — Egret, ii. 166.
 — Grebe, ii. 395.
 — Gull, ii. 366.
 — Owl, Southern, ii. 73.
 — Stint, ii. 319.
 — Tern, ii. 348.
livia, *Columba*, ii. 230.
Locustella luscinioides, i. 119.
 ——— *navia*, i. 118.
 Long-billed Crested Lark, Pale, i. 257.
 — eared Owl, ii. 67.
 — legged Buzzard, ii. 100.
Loxia curvirostra poliogyna, i. 224.
lucida, *Ardea*, ii. 168.
lusciniia, *Aëdon*, i. 72.
luscinioides, *Locustella*, i. 119.
Machetes pugnax, ii. 324.
macrorhyncha, *Galerida cristata*, i. 254.
macrurus, *Circus*, ii. 95.
maculata, *Aquila*, ii. 102.
 Magpie, Moorish, ii. 11.
major excelsus, *Parus*, i. 134.
 —, *Galerida theklae*, i. 259.
 —, *Gallinago*, ii. 312.
 Mallard, ii. 200.
 Marbled Duck, ii. 201.
Mareca penelope, ii. 210.
margaritæ, *Chersophilus duponti*, i. 249.
marila, *Fuligula*, ii. 215.
marinus, *Larus*, ii. 375.
Marmaronetta angustirostris, ii. 281.
 Marmora's Warbler, i. 95.
 Marsh-Harrier, ii. 91.
 — Sandpiper, ii. 331.
 — Warbler, i. 113.
 Martin, Crag-, i. 189.
 —, House-, i. 186.
 —, Sand-, i. 188.
mauritanica, *Cisticola cisticola*, i. 124.
 —, *Pica*, ii. 11.
 —, *Turdus merula*, i. 11.
 Meadow-Bunting, i. 238.
 — Pipit, i. 155.
 Mealy Sky-Lark, i. 272.
media, *Sterna*, ii. 352.
 Mediterranean Black-headed Gull, ii. 364.
 — Great Titmouse, i. 134.
 — Shearwater, ii. 382.
melanocephala, *Sylvia*, i. 86.
 ———, *Motacilla*, i. 153.
melanocephalus, *Larus*, ii. 364.
Melanocorypha calandra, i. 285.
melanogaster, *Cinclus*, i. 132.
melanoleuca, *Saxicola*, i. 38.
melanope, *Motacilla*, i. 146.
melanoptera, *Glareola*, ii. 290.
melba, *Cypselus*, ii. 31.
Melizophilus deserticolus, i. 96.
 ——— *sardus*, i. 95.
 ——— *undatus*, i. 93.
 Melodious Warbler, i. 108.
merganser, *Mergus*, ii. 222.
 Merganser, Red-breasted, ii. 223.
Mergus albellus, ii. 224.
 — *merganser*, ii. 222.
 — *serrator*, ii. 223.
 Merlin, ii. 143.
Merops apiaster, ii. 52.
 — *persicus*, ii. 56.
merula mauritanica, *Turdus*, i. 11.
 —, *Turdus*, i. 9.

- migrans*, *Milvus*, ii. 121.
miliaria, *Emberiza*, i. 231.
Milvus migrans, ii. 121.
 ——— *milvus*, ii. 119.
minor, *Calandrella*, i. 283.
 ———, *Dendrocopus*, ii. 43.
minuta, *Ardeola*, ii. 172.
 ———, *Sterna*, ii. 348.
 ———, *Tringa*, ii. 319.
minutus, *Larus*, ii. 366.
 Mistle-Thrush, i. 1.
modularis, *Accentor*, i. 130.
mœsta, *Saxicola*, i. 42.
monedula, *Corvus*, ii. 13.
 Montagu's Harrier, ii. 93.
montanus, *Passer*, i. 207.
Monticola cyanus, i. 18.
 ——— *saxatilis*, i. 16.
montifringilla, *Fringilla*, i. 217.
 Moor-hen, ii. 271.
 Moorish Blackbird, i. 11.
 ——— Fantail-Warbler, i. 124.
 ——— Magpie, ii. 11.
morinellus, *Eudromias*, ii. 300.
Motacilla alba, i. 144.
 ——— *borealis*, i. 152.
 ——— *cinereocapilla*, i. 151.
 ——— *flava*, i. 147.
 ——— *melanocephala*, i. 153.
 ——— *melanope*, i. 146.
 ——— *rayi*, i. 154.
moussieri, *Diplootocus*, i. 61.
 Moussier's Redstart, i. 61.
murinus, *Cypselus*, ii. 27.
Muscicapa atricapilla, i. 179.
 ——— *collaris*, i. 181.
 ——— *grisola*, i. 178.
musicus, *Turdus*, i. 4.
 Mute Swan, ii. 194.

nevata, *Locustella*, i. 118.
nana deserti, *Sylvia*, i. 83.
naumanni, *Falco*, ii. 148.
Neophron percnopterus, ii. 86.
Netta rufina, ii. 211.
Nettion crecca, ii. 205.
 Night-Heron, ii. 174.
 Nightingale, i. 72.
 Nightjar, ii. 33.
 ———, Isabelline Desert, ii. 36.
 ———, Pale Rufous-naped, ii. 38.
nigra, *Ciconia*, ii. 179.
 ———, *Hydrochelidon*, ii. 361.
 ———, *Eidemia*, ii. 219.
nigricollis, *Podiceps*, ii. 393.

Nisaetus fasciatus, ii. 108
 ——— *pennatus*, ii. 110.
nisus, *Accipiter*, ii. 116.
noctua glauc, *Carine*, ii. 73.
 Nordmann's Pratincole, ii. 290.
 North African Greenfinch, i. 198.
Numenius arquata, ii. 339.
 ——— *phaeopus*, ii. 340.
 ——— *tenuirostris*, ii. 341.
numidicus, *Dendrocopus*, ii. 40.
Nycticorax griseus, ii. 174.
Nyroca ferina, ii. 213.
 ——— *uroca*, ii. 214.

occidentalis, *Saxicola*, i. 35.
ochropus, *Totanus*, ii. 328.
Oedemia fusca, ii. 219.
 ——— *nigra*, ii. 219.
Oedienemus oedienemus, ii. 287.
 ——— ———, *saharae*, ii. 288.
oenanthe, *Saxicola*, i. 20.
oenas, *Columba*, ii. 228.
 Olivaceous Warbler, Western, i. 111.
olor, *Cygnus*, ii. 194.
onocrotalus, *Pelecanus*, ii. 159.
opaca, *Hypobais pallida*, i. 111.
 Orange-spotted Bluethroat, i. 68.
 Oriole, Golden, i. 164.
Oriolus galbula, i. 164.
orphea, *Sylvia*, i. 88.
 Orphean Warbler, i. 88.
 Ortolan, i. 236.
 Osprey, ii. 150.
ostralegus, *Hæmatopus*, ii. 305.
Otis tarda, ii. 280.
 ——— *tetrax*, ii. 282.
 ——— *undulata*, ii. 284.
Otocorys bilopha, i. 291.
otus, *Asio*, ii. 67.
 Ouzel, Alpine Ring-, i. 13.
 ———, Ring-, i. 12.
 Owl, Barn, ii. 65.
 ———, Desert Eagle-, ii. 80.
 ———, Egyptian Eagle-, ii. 77.
 ———, Long-eared, ii. 67.
 ———, Scops-, ii. 22.
 ———, Short-eared, ii. 69.
 ———, Southern Little, ii. 73.
 ———, Tawny, ii. 70.
 Oyster-catcher, ii. 305.

 Pale Lesser Desert Lark, i. 277.
 ——— Long-billed Crested Lark, i. 257.
 ——— Rufous-naped Nightjar, ii. 38.
 ——— Small-billed Crested Lark, i. 268.

- Pale Tawny Eagle, ii. 103.
 ——— White-rumped Swift, ii. 28.
 Pallid Harrier, ii. 95.
 ——— Shrike, i. 171.
 ——— Swift, ii. 27.
pallida opaca, *Hypolais*, i. 111.
palumbarius, *Astur*, ii. 115.
palumbus, *Columba*, ii. 226.
palustris, *Acrocephalus*, i. 113.
Pandion haliaëtus, ii. 150.
 Partridge, Barbary, ii. 245.
 ———, Desert Barbary, ii. 248.
Parus ledouci, i. 137.
 ——— *major excelsus*, i. 134.
 ——— *ultramarinus*, i. 139.
parva, *Porzana*, ii. 260.
Passer domesticus, i. 202.
 ——— *hispaniolensis*, i. 205.
 ——— *italica*, i. 205.
 ——— *montanus*, i. 207.
 ——— *simplex*, i. 208.
 Pastor, Rose-coloured, ii. 5.
Pastor roseus, ii. 5.
pelagica, *Procellaria*, ii. 380.
 Pelican, Roseate, ii. 159.
penelope, *Mareca*, ii. 210.
pennatus, *Nisaëtus*, ii. 110.
 Peregrine Falcon, ii. 127.
 ——— ———, Lesser, ii. 129.
peregrinus, *Falco*, ii. 127.
perenopterus, *Neophron*, ii. 86.
Pernis apivorus, ii. 125.
persicus, *Merops*, ii. 56.
 Petrel, Storm-, ii. 380.
Petronia petronia, i. 211.
petrosa, *Caccabis*, ii. 245.
 ——— *spatzi*, *Caccabis*, ii. 248.
Phalacrocorax carbo, ii. 153.
 ——— ——— *graculus*, ii. 155.
 ——— ——— *pygmaeus*, ii. 156.
 Phalarope, Red-necked, ii. 309.
Phalaropus hyperboreus, ii. 309.
Phaenicopterus roseus, ii. 186.
phæopus, *Numenius*, ii. 340.
phænicurus, *Ruticilla*, i. 65.
Phylloscopus bonelli, i. 106.
 ——— *rufus*, i. 102.
 ——— *sibilatrix*, i. 105.
 ——— *trochilus*, i. 103.
Pica mauritanica, ii. 11.
 Pied Chat, Western, i. 48.
 ——— Flycatcher, i. 179.
 ——— Woodpecker, Algerian Greater,
 ii. 40.
 Pied Woodpecker, Lesser, ii. 43.
pilaris, *Turdus*, i. 8.
 Pintail, ii. 208.
 Pin-tailed Sand-Grouse, ii. 238.
 Pipit, Meadow-, i. 155.
 ———, Red-throated, i. 156.
 ———, Tawny, i. 159.
 ———, Tree-, i. 158.
 ———, Water-, i. 161.
Platalea leucorodia, ii. 181.
Plegadis falcinellus, ii. 185.
 Plover, Golden, ii. 293.
 ———, Grey, ii. 295.
 ———, Kentish, ii. 296.
 ———, Lesser Ringed, ii. 297.
 ———, Ringed, ii. 299.
pluvialis, *Charadrius*, ii. 293.
 Pochard, ii. 213.
 ———, Red-crested, ii. 211.
Podiceps auritus, ii. 392.
 ——— *cristatus*, ii. 389.
 ——— *fluvialis*, ii. 395.
 ——— *griseigena*, ii. 391.
 ——— *nigricollis*, ii. 393.
poliogyna, *Loxia curvirostra*, i. 224.
polyglotta, *Hypolais*, i. 108.
pomeranus, *Lanius*, i. 174.
Porphyrio cæruleus, ii. 263.
Porphyriola alleni, ii. 269.
Porzana bailloni, ii. 259.
 ——— *parva*, ii. 260.
 ——— *porzana*, ii. 258.
pratensis, *Anthus*, i. 155.
pratinctola, *Glaucola*, ii. 289.
Pratincola rubetra, i. 58.
 ——— ——— *rubicola*, i. 60.
 Pratincole, ii. 289.
 ——— ———, Nordmann's, ii. 290.
Procellaria pelagica, ii. 380.
Pterocles alchata, ii. 238.
 ——— *arenarius*, ii. 234.
 ——— *coronatus*, ii. 242.
 ——— *senegallus*, ii. 240.
 Puffin, ii. 386.
Puffinus anglorum yelkouan, ii. 383.
 ——— *kuhli*, ii. 382.
pugnax, *Machetes*, ii. 324.
punicus, *Falco*, ii. 129.
 Purple Gallinule, ii. 263.
 ——— Heron, ii. 163.
purpurea, *Ardea*, ii. 163.
pusilla, *Emberiza*, i. 237.
Pycnonotus barbatus, i. 162.
pygargus, *Circus*, ii. 93.
pygmæus, *Phalacrocorax*, ii. 156.

- Pygmy Cormorant, ii. 156.
Pyrrhocorax graculus, ii. 7.
Pyrrhula europæa, i. 223.
pyrrhuloides Emberiza schœniclus, i. 241.
- Quail, ii. 248.
Querquedula circia, ii. 207.
- Rail, Land-, ii. 261.
 —, Water-, ii. 257.
ralloides, Ardea, ii. 171.
Rallus aquaticus, ii. 257.
raptor albicans, Aquila, ii. 103.
 Raven, Brown-necked, ii. 22.
 —, Irby's, ii. 17.
rayi, Motacilla, i. 154.
 Razorbill, ii. 385.
Recurvirostra avocetta, ii. 306.
 Red-breasted Merganser, ii. 223.
 — -cheeked Ibis, ii. 182.
 — -crested Pochard, ii. 211.
 — -footed Falcon, ii. 144.
 — -necked Grebe, ii. 391.
 — — Phalarope, ii. 309.
 — -rumped Swallow, i. 185.
 Redshank, Common, ii. 332.
 —, Spotted, ii. 334.
 Redstart, i. 65.
 —, Black, i. 66.
 —, Moussier's, i. 61.
 Red-throated Diver, ii. 388.
 — — Pipit, i. 156.
 Redwing, i. 6.
 Reed-Bunting, i. 240.
 — — —, Thick-billed, i. 241.
 — -Warbler, i. 112.
 — — —, Great, i. 114.
Regulus cristatus, i. 100.
 — *ignicapillus*, i. 101.
Rhamphocorys clot-bey, i. 287.
 Richardson's Skua, ii. 378.
ridibundus, Larus, ii. 362.
 Ring-Dove, ii. 226.
 — -Ouzel, ii. 12.
 — - —, Alpine, i. 13.
 Ringed Plover, ii. 299.
 — — —, Lesser, ii. 297.
riparia, Cotile, i. 188.
Rissa tridactyla, ii. 376.
 Robin, i. 70.
 Rock-Dove, ii. 230.
 — -Sparrow, i. 211.
 — -Thrush, i. 16.
 — — —, Blue, i. 18.
- Roller, ii. 51.
 Roseate Pelican, ii. 159.
 — — — Tern, ii. 345.
 Rose-coloured Pastor, ii. 5.
roscus, Pastor, ii. 5.
 —, *Phœnicopterus*, ii. 186.
rubecula, Erithacus, i. 70.
rubetra, Pratincola, i. 58.
rubicola, Pratincola, i. 60.
 Ruddy Sheld-Duck, ii. 198.
 Ruff, ii. 324.
ruficollis desertorum, Caprimulgus, ii. 38.
rufina, Netta, ii. 211.
 Rufous Dupont's Lark, i. 249.
 — -headed Short-toed Lark, i. 281.
 — -naped Nightjar, Pale, ii. 38.
 — — Small-billed Crested Lark, ii. 268.
 — Warbler, i. 74.
rufula, Hirundo, i. 185.
rufus, Phylloscopus, i. 102.
rupestris, Biblis, i. 189.
rustica, Hirundo, i. 182.
rusticula, Scolopax, ii. 310.
Ruticilla phœnicurus, i. 65.
 — *titys*, i. 66.
- saharæ, Fringillaria*, i. 228.
 —, *Ædicnemus œdicnemus*, ii. 288.
 —, *Scotocerca*, i. 125.
 Sanderling, ii. 326.
 Sand-Grouse, Black-bellied, ii. 234.
 — - —, Coronetted, ii. 242.
 — - —, Pin-tailed, ii. 238.
 — - —, Senegal, ii. 240.
 — -Martin, i. 188.
 Sandpiper, Common, ii. 327.
 —, Curlew-, ii. 321.
 —, Green, ii. 328.
 —, Marsh-, ii. 331.
 —, Wood-, ii. 330.
 Sandwich Tern, ii. 355.
sanguinea, Erythrospiza, i. 222.
 Sardinian Starling, ii. 3.
 — — — Warbler, i. 86.
sardus, Melizophilus, i. 95.
 Savi's Warbler, i. 119.
saxatilis, Monticola, i. 16.
Saxicola caterinæ, i. 28.
 — *deserti*, i. 39.
 — *halophila*, i. 48.
 — *isabellina*, i. 24.
 — *leucopyga*, i. 52.
 — *leucura*, i. 56.

- Saxicola melanoleuca*, i. 38.
 ——— *mæsta*, i. 42.
 ——— *occidentalis*, i. 35.
 ——— *ananthe*, i. 20.
 ——— *stapazina*, i. 25.
 Scaup-Duck, ii. 215.
 Selavonian Grebe, ii. 392.
schœniclus, *Emberiza*, i. 240.
 ——— *pyrrhuloides*, *Emberiza*, i. 241.
schœnobænus, *Acrocephalus*, i. 117.
Scolopax rusticula, ii. 310.
Scops giu, ii. 72.
 Scops Owl, ii. 72.
 Scoter, Common, ii. 219.
 ———, Velvet-, ii. 219.
Scotocerca sahara, i. 125.
 Sea-Eagle, ii. 112.
 Sedge-Warbler, i. 117.
 Senegal Sand-Grouse, ii. 240.
senegalensis, *Turtur*, ii. 233.
senegallus, *Pterocles*, ii. 240.
septentrionalis, *Colymbus*, ii. 388.
 Serin-Finch, i. 195.
Serinus serinus, i. 195.
serrator, *Mergus*, ii. 223.
 Shag, ii. 155.
 Shearwater, Levantine, ii. 383.
 ———, Mediterranean, ii. 382.
 Sheld-Duck, Common, ii. 197.
 ———, Ruddy, ii. 198.
 Short-eared Owl, ii. 69.
 ——— -toed Eagle, ii. 113.
 ——— -—— Lark, i. 280.
 ——— -——, Lesser, i. 283.
 ——— -——, Rufous-headed, i. 281.
 Shoveler, ii. 204.
 Shrike, Algerian Grey, i. 166.
 ———, Hooded, i. 176.
 ———, Pallid, i. 171.
 ———, Woodchat-, i. 174.
sibilatrix, *Phylloscopus*, i. 105.
simplex, *Passer*, i. 208.
 Siskin, i. 193.
 Skua, Arctic, ii. 378.
 ———, Richardson's, ii. 378.
 Sky-Lark, i. 269.
 ———, Mealy, i. 272.
 ———, Tunisian, i. 271.
 Slate-headed Wagtail, i. 152.
 Slender-billed Curlew, ii. 341.
 ——— Gull, ii. 368.
 Small-billed Crested Lark, Greater, i. 259.
 Small-billed Crested Lark, Isabelline, i. 266.
 ——— -——, Pale, i. 264.
 ——— -——, Rufous, i. 268.
 Smew, ii. 224.
 Snipe, Common, ii. 314.
 ———, Double-, ii. 312.
 ———, Jack-, ii. 315.
 Song-Thrush, i. 4.
 Sooty Tern, ii. 357.
 Southern Little Owl, ii. 73.
 Spanish Sparrow, i. 205.
 Sparrow, Desert-, i. 208.
 ——— -Hawk, ii. 116.
 ———, Hedge-, i. 130.
 ———, House-, i. 202.
 ———, Italian, i. 205.
 ———, Rock-, i. 211.
 ———, Spanish, i. 205.
 ———, Tree-, i. 207.
Spatula clypeata, ii. 204.
spatzi, *Caccabis petrosa*, ii. 248.
 Spectacled Warbler, i. 82.
spinus, *Chrysomitris*, i. 193.
spipoletta, *Anthus*, i. 161.
spodiogenys, *Fringilla*, i. 214.
 Spoonbill, ii. 181.
 Spotted Crane, ii. 258.
 ——— Cuckoo, Great, ii. 62.
 ——— Eagle, Greater, ii. 102.
 ——— Flycatcher, i. 178.
 ——— Redshank, ii. 334.
 Squacco Heron, ii. 171.
Squatarola helvetica, ii. 295.
stagnatilis, *Totanus*, ii. 331.
stapazina, *Saxicola*, i. 25.
 Starling, Common, ii. 1.
 ———, Sardinian, ii. 3.
stellaris, *Botaurus*, ii. 175.
Stercorarius crepidatus, ii. 378.
Sterna anglica, ii. 354.
 ——— *cantiaca*, ii. 355.
 ——— *caspia*, ii. 350.
 ——— *dougalli*, ii. 345.
 ——— *fuliginosa*, ii. 357.
 ——— *hirundo*, ii. 343.
 ——— *media*, ii. 352.
 ——— *minuta*, ii. 348.
 Stilt, Black-winged, ii. 307.
 Stint, Little, ii. 319.
 ———, Temminck's, ii. 320.
 Stock-Dove, ii. 228.
 Stone-Chat, i. 60.
 ——— -Curlew, ii. 287.
 ———, Desert, ii. 288.

- Stork, Black, ii. 179.
 —, White, ii. 177.
 Storm-Petrel, ii. 380.
streperus, *Acrocephalus*, i. 112.
 ———, *Chaulclasmus*, ii. 202.
Strepsilas interpres, ii. 303.
Strix flammea, ii. 65.
Sturnus unicolor, ii. 3.
 — *vulgaris*, ii. 1.
subalpina, *Sylvia*, i. 79.
 Subalpine Warbler, i. 79.
subarquata, *Tringa*, ii. 321.
subbutco, *Falco*, ii. 141.
suecica, *Cyanecula*, i. 68.
Sula bassana, ii. 157.
superflua, *Galerida thekla*, i. 264.
 Swallow, i. 182.
 —, Red-rumped, i. 185.
 Swan, Mute, ii. 194.
 —, Whooper, ii. 195.
 Swift, ii. 24.
 —, Alpine, ii. 31.
 —, Pale White-rumped, ii. 28.
 —, Pallid, ii. 27.
sylvatica, *Turnix*, ii. 253.
Sylvia atricapilla, i. 90.
 — *cinerea*, i. 77.
 — *conspicillata*, i. 82.
 — *curruca*, i. 78.
 — *hortensis*, i. 92.
 — *melanocephala*, i. 86.
 — *nana deserti*, i. 83.
 — *orphea*, i. 88.
 — *subalpina*, i. 79.
Syrnium aluco, ii. 70.

Tadorna casarca, ii. 198.
 — *tadorna*, ii. 197.
tarda, *Otis*, ii. 280.
 Tawny Eagle, Pale, ii. 103.
 — Owl, ii. 70.
 — Pipit, i. 159.
 Teal, ii. 205.
 —, Garganey, ii. 207.
Telephonus cucullatus, i. 176.
temmincki, *Tringa*, ii. 320.
 Temminck's Stint, ii. 320.
tenuirostris, *Numenius*, ii. 341.
 Tern, Allied, ii. 352.
 —, Black, ii. 361.
 —, Caspian, ii. 350.
 —, Common, ii. 343.
 —, Gull-billed, ii. 354.
 —, Little, ii. 348.
 —, Roseate, ii. 345.

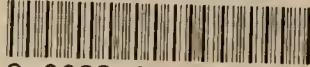
 Tern, Sandwich, ii. 355.
 —, Sooty, ii. 357.
 —, Whiskered, ii. 358.
 —, White-winged Black, ii. 359.
tetrax, *Otis*, ii. 282.
thekla carolinæ, *Galerida*, i. 268.
 — *deichleri*, *Galerida*, i. 266.
 — *major*, *Galerida*, i. 259.
 — *superflua*, *Galerida*, i. 264.
 Thick-billed Lark, i. 287.
 — — Reed-bunting, i. 241.
 Thrush, Blue Rock-, i. 18.
 —, Mistle-, i. 1.
 —, Rock-, i. 16.
 —, Song-, i. 4.
tingitanus, *Corvus corax*, ii. 17.
tinnunculus, *Falco*, ii. 146.
 Titmouse, Algerian Coal-, i. 137.
 —, Mediterranean Great, i. 134.
 —, Ultramarine, i. 139.
titys, *Ruticilla*, i. 66.
torda, *Alca*, ii. 385.
torquatus, *Turdus alpestris*, i. 13.
 — —, *Turdus*, i. 12.
torquilla, *Ijnx*, ii. 47.
Totanus calidris, ii. 332.
 — *canescens*, ii. 335.
 — *fuscus*, ii. 334.
 — *glareola*, ii. 330.
 — *hypoleucus*, ii. 327.
 — *ochropus*, ii. 328.
 — *stagnatilis*, ii. 331.
 Tree-Creeper, i. 141.
 — Pipit, i. 158.
 — Sparrow, i. 207.
tridactyla, *Rissa*, ii. 376.
Tringa alpina, ii. 317.
 — *canutus*, ii. 323.
 — *minuta*, ii. 319.
 — *subarquata*, ii. 321.
 — *temmincki*, ii. 320.
 Tristram's Chat, i. 42.
 — Lark, i. 254.
 — Warbler, i. 96.
trivialis, *Anthus*, i. 158.
trochilus, *Phylloscopus*, i. 103.
trogodytes, *Anorthura*, i. 143.
 Tufted Duck, ii. 217.
 Tunisian Crossbill, i. 224.
 — Sky-Lark, i. 271.
Turdus iliacus, i. 6.
 — *merula*, i. 9.
 — — *mauritanica*, i. 11.
 — *musieus*, i. 4.
 — *pilaris*, i. 8.

- Turdus torquatus*, i. 12.
 ———— *alpestris*, i. 13.
 ———— *viscivorus*, i. 1.
Turnix sylvatica, ii. 253.
Turnstone, ii. 303.
 Turtle-Dove, ii. 231.
 ————, Egyptian, ii. 233.
Turtur senegalensis, ii. 233.
 ———— *turtur*, ii. 231.
- Ultramarine Titmouse, i. 139.
ultramarinus, *Parus*, i. 139.
umbrinus, *Corvus*, ii. 22.
undatus, *Melizophilus*, i. 93.
undulata, *Otis*, ii. 284.
unicolor, *Sturnus*, ii. 3.
Upupa epops, ii. 57.
urbica, *Chelidon*, i. 186.
- vaillanti*, *Gecinus*, ii. 45.
Vanellus vanellus, ii. 301.
 Velvet-Scoter, ii. 219.
vespertinus, *Falco*, ii. 144.
virgo, *Grus*, ii. 277.
viscivorus, *Turdus*, i. 1.
vulgaris, *Sturnus*, ii. 1.
 Vulture, Egyptian, ii. 86.
 ————, Griffon-, ii. 82.
- Wagtail, Black-headed, i. 153.
 ————, Blue-headed, i. 147.
 ————, Grey, i. 146.
 ————, ———— -headed, i. 151.
 ————, Slate-headed, i. 152.
 ————, White, i. 144.
 ————, Yellow, i. 154.
- Warbler, Aquatic, i. 116.
 ————, Bonelli's, i. 106.
 ————, Cetti's, i. 121.
 ————, Dartford, i. 93.
 ————, Desert Wren-, i. 125.
 ————, Fantail-, i. 123.
 ————, Garden-, i. 92.
 ————, Grasshopper-, i. 118.
 ————, Great Reed-, i. 114.
 ————, Icterine, i. 109.
 ————, Marmora's, i. 95.
 ————, Marsh-, i. 113.
 ————, Melodious, i. 108.
 ————, Moorish Fantail-, i. 124.
 ————, Orphean, i. 88.
 ————, Reed-, i. 112.
 ————, Rufous, i. 74.
 ————, Sardinian, i. 86.
 ————, Savi's, i. 119.
- Warbler, Sedge-, i. 117.
 ————, Spectacled, i. 82.
 ————, Subalpine, i. 79.
 ————, Tristram's, i. 96.
 ————, Western Desert-, i. 83.
 ————, ———— Olivaceous, i. 111.
- Water-Pipit, i. 161.
 ———— -Rail, ii. 257.
- Western Black-eared Chat, i. 28.
 ———— -throated Chat, i. 35.
 ———— Desert-Warbler, i. 83.
 ———— Olivaceous Warbler, i. 111.
 ———— Pied Chat, i. 48.
- Wheatear, Black-eared, i. 25.
 ————, Common, i. 20.
- Whimbrel, ii. 340.
- Whin-chat, i. 58.
- Whiskered Tern, ii. 358.
- White-collared Flycatcher, i. 181.
 ———— Egret, Great, ii. 164.
 ———— -headed Duck, ii. 220.
 ———— -rumped Chat, i. 52.
 ———— ———— Swift, Pale, ii. 28.
 ———— -spotted Bluethroat, i. 69.
 ———— Stork, ii. 177.
- Whitethroat, i. 77.
 ———— Lesser, i. 78.
- White Wagtail, i. 144.
 ———— -winged Black Tern, ii. 359.
- Whooper Swan, ii. 195.
- Wigeon, ii. 210.
- Willow-Wren, i. 103.
- wolfi*, *Cyanecula*, i. 69.
- Woodchat-Shrike, i. 174.
- Woodcock, ii. 310.
- Woodlark, i. 273.
- Woodpecker, Algerian Greater Pied,
 ii. 40.
 ————, ———— Green, ii. 45.
 ————, ———— Lesser Pied, ii. 43.
- Wood-Sandpiper, ii. 330.
 ———— -Wren, i. 105.
- Wren, i. 143.
 ————, Fire-crested, i. 101.
 ————, Golden-crested, i. 100.
 ———— -Warbler, Desert, i. 125.
 ————, Willow-, i. 103.
 ————, Wood-, i. 105.
- Wryneck, ii. 47.
- yelkouan*, *Puffinus anglorum*, ii. 383.
- Yellow Bunting, i. 233.
 ———— -legged Herring-Gull, ii. 372.
 ———— Wagtail, i. 154.



LONDON :
PRINTED BY JOHN BALE, SONS AND DANIELSSON, LTD.
OXFORD HOUSE, GREAT FITCHFIELD STREET, W.

SMITHSONIAN INSTITUTION LIBRARIES



3 9088 00074 4078