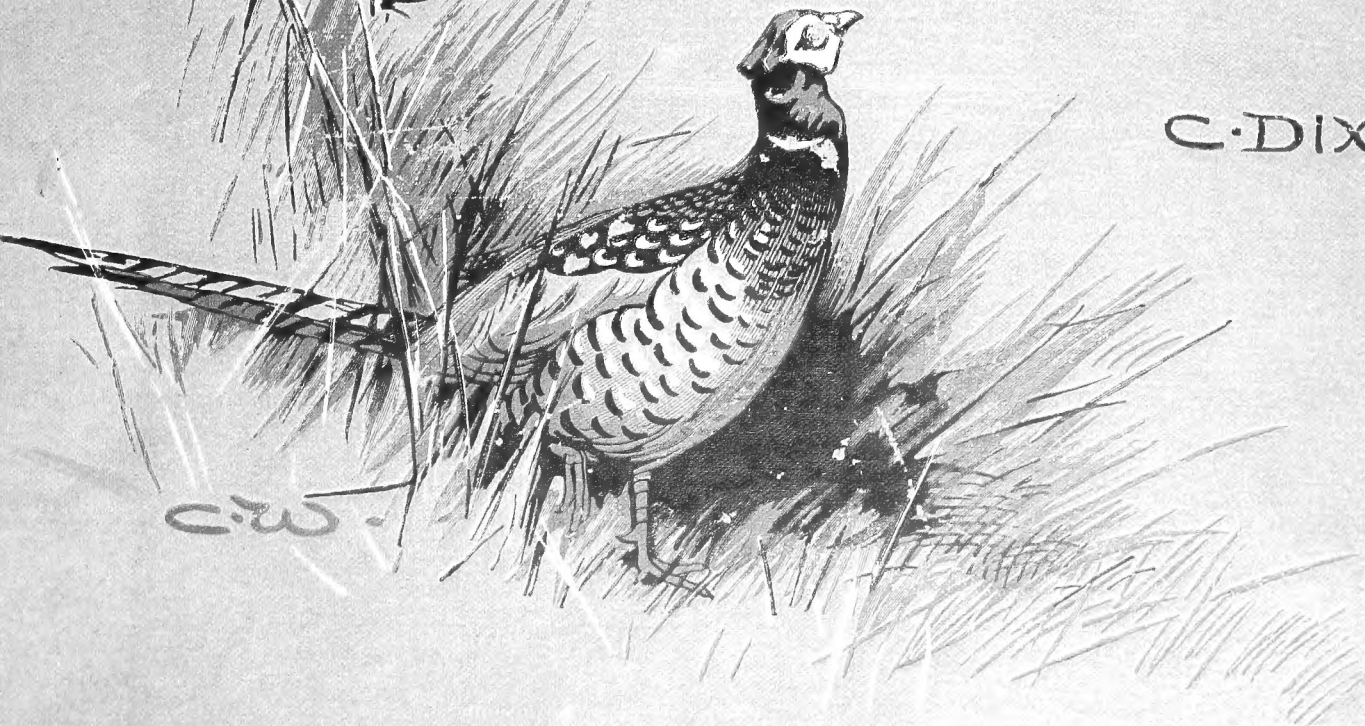
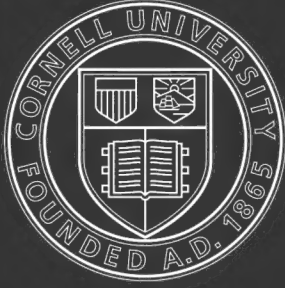


GAME
and BIRDS
WILD FOWL.

C. DIXON -



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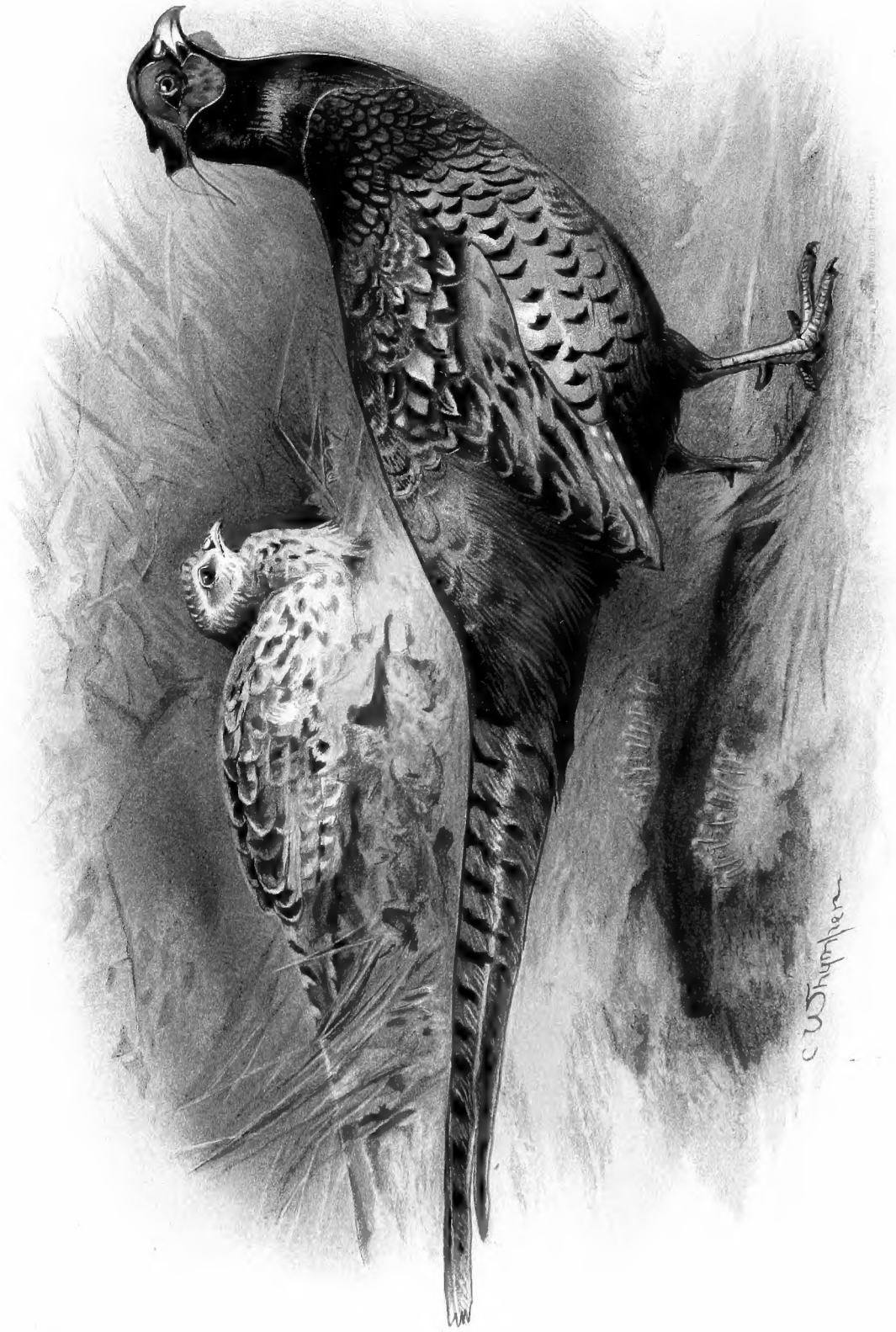
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PHEASANT.
Phasianus colchicus.

The Game Birds and Wild Fowl

OF

The British Islands.

By CHARLES DIXON,

AUTHOR OF

“RURAL BIRD-LIFE,” “EVOLUTION WITHOUT NATURAL SELECTION,” “OUR RARER BIRDS,”
“ANNALS OF BIRD-LIFE,” “STRAY FEATHERS FROM MANY BIRDS,”
“IDLE HOURS WITH NATURE,” “THE BIRDS OF OUR RAMBLES,” “THE MIGRATION OF BIRDS,”
“THE NESTS AND EGGS OF BRITISH BIRDS,” ETC., ETC. ;
PART AUTHOR OF “A HISTORY OF BRITISH BIRDS.”

Second Edition, enlarged, improved and thoroughly revised by the Author.

WITH

41 COLOURED PLATES, representing 56 COLOURED ILLUSTRATIONS drawn specially
for this Edition

By CHARLES WHYMPER.

SHEFFIELD :

PAWSON & BRAILSFORD, PUBLISHERS, HIGH STREET AND MULBERRY STREET.

1900.

44

Preface to the Second Edition.

SINCE the first edition of the present work was published, our knowledge of various species contained therein has been considerably increased. Not only have several new species been added to the British list (abnormal migrants), but much information has been obtained relating to their geographical distribution and their affinities. The completion of the British Museum Catalogue of Birds, and the publication of many important books and memoirs bearing upon the present subject, have also enabled me to give a more complete account of British Game Birds and Wild Fowl than had hitherto been possible.

The present edition has to a very large extent been rewritten: the necessary information has been added to bring the book fairly up to date. The classification remains practically the same; but many generic changes have been made, and a more or less exhaustive account of the various orders and families has been added. The treatment of each species is much the same as in the first edition, but a short synonymy has been appended to each, which may prove of service to the student anxious to consult the literature of the subject. Since the first edition was published I have devoted much time and study to the Migration and Distribution of Birds, with the result that many previously held opinions have been discarded, and the geographical distribution and migration of the various species have been dealt with in accordance with a suggested new law of dispersal. A short introductory chapter on Distribution and Migration has been inserted. The old set of drawings has been entirely replaced by a series of coloured plates, the original designs for which have been specially prepared by my friend, Mr. Charles Whymper; whilst it is equally satisfactory to be able to state that the lithography and letterpress printing, together with every detail connected with the issue of this new edition, are the work of the celebrated Yorkshire firm whose imprint the present volume bears.

My thanks are specially due (among many other friends) to Mr. H. L. Popham, the fortunate finder of the nest and eggs of the Curlew Sandpiper, who most obligingly furnished me with particulars of his discovery; also to Mr. F. H. Waterhouse, who has rendered me much bibliographical assistance whilst the book has been passing through the press.

CHARLES DIXON.

Paignton, S. Devon, February, 1900.

Preface to the First Edition.

EVERY naturalist may not be a sportsman, but there are certainly very few sportsmen that are not, or do not eventually become, ardent naturalists. The habits and economy of birds are specially the naturalist's own province; but then, on the other hand, no sportsman worthy of the name is indifferent to the life-history of the birds and beasts that are the object of his chase. A man who would be a successful sportsman must be familiar with the ways of the creatures that furnish his sport; not only so, the constant chase of bird and beast, in nine cases out of ten, creates a desire for knowledge, and a wish to know something more of their economy.

The present volume has been written with the object of furnishing the naturalist and sportsman with concise yet fairly complete, and I hope accurate, information respecting the Game Birds and Wild Fowl of the British Islands, and their allied races and species in other parts of the world. I have sought to bring this information up to date, not only by including several species new to our avi-fauna, but by dealing with these birds from an evolutionary point of view, and according to modern ideas on and recent discoveries in that particular branch of natural knowledge which is embraced by Darwinian Ornithology. Hence it has been my constant care to discard insular and narrow study, which only too often leads to pedantry and error, and to treat the birds incorporated in the following pages on broad, evolutionary lines, and from a more cosmopolitan point of view. The inevitable result of such treatment has been the recognition of local races, subspecies, or climatic varieties, into which many of our British Game Birds and Wild Fowl have been separated by the endless segregating process of Evolution, working as surely at the present day as it has undoubtedly worked in past ages, and will continue to work in ages yet to come.

Of course, in a work of the present nature, I have had to rely much upon the labours of other naturalists; but in every case where such has been necessary I have sought the highest, the latest, and the most trustworthy authorities for the information required; whilst my own more than twenty years' experience in the study of Ornithology, both from the scientist's and the field naturalist's point of view, has been of incalculable service in assisting me to separate the sound wheat of reliable knowledge from the unstable chaff of ignorance and error. The last twenty years have been eventful ones for Ornithology, fraught with discoveries

and pregnant with importance, not only respecting the economy of British species, but with the past history of all birds, much light having been thrown on their affinities and origin. The classification of birds is still in a most unsatisfactory state, although the great and ever-increasing attention that the subject is receiving must ultimately result in some uniformity of opinion. At present no two recognised authorities agree in their estimation of the taxonomic value of respective characters. Among the latest systems elaborated may be mentioned those of Dr. Sclater, Professor Newton, the late Mr. Forbes, the late Professor Garrod, Dr. Reichenow, Professor Coues, Dr. Stejneger, Mr. Seebohm, and last, and perhaps most important of all, the great work of Professor Fürbinger. I have had an opportunity of studying each of these important avian classifications, and it is quite needless to remark the wide, nay almost hopeless and bewildering divergence of opinion expressed by their talented authors and compilers. Until some sort of uniformity of opinion is arrived at, the arrangement of species in a work like the present appears to me to be a matter of little importance; for the classification of yesterday that you may adopt to-day is out of date and antiquated to-morrow. The whole subject of classification, at present, is in a violent state of eruption; one would think that scientists had "lost their heads." Fortunately the scope of the present volume calls for no elaborate classification, and the species dealt with are units of fairly well-defined groups, about which, as groups, systematists are on the whole pretty well agreed.

The number of species and races of Game Birds and Wild Fowl which may fairly claim to be included in the British avi-fauna is 127. The majority of these do not breed within our limits, but are either regular winter visitors, or accidental stragglers on migration, of varying degrees of rarity, to the United Kingdom. The British and foreign geographical area of each of these has been traced, and the various allied forms noted, with their distribution and distinguishing characteristics. The habits, notes, food, nest, and eggs have been described as fully as space allowed, or as completely as our knowledge extends; whilst the diagnostic characters of each will enable the naturalist or sportsman readily to identify the various British species, and are in my opinion infinitely preferable to long, tedious, detailed descriptions of plumage.

Little need be said of the sport that our British Game Birds and Wild Fowl yield, or of the healthy invigorating recreation derived from the pursuit of that sport. Field and covert shooting is not without its excitements and delights, even in these degenerate days of breech-loaders and battues; but, to my mind, the cream of all gun sport is skimmed by the wildfowler and the shore-shooter. There is a charm about the chase of Wild Fowl which no covert-shooting can excel or equal; for the incomparable skill demanded in punting up to the flocks of wary Ducks and Geese, in stalking the shy Waders on the muds and marshes, or in "getting on" to the fleeting Fowl with deadly effect as they pass like arrows over your cold and lonely ambush during flight time, is very

different from that required for the work of even a warm corner in some highly preserved cover. Then there is the charm of uncertain expectancy which is the shore-shooter's and wildfowler's own—the delicious feeling of never knowing what the next shot may be, as fen and marsh are traversed. Away from the mere pleasure of killing, which, alas, seems inherent in male human nature, there is the greater pleasure of watching the ways of the wary Fowl, of studying their habits and economy. Sportsmen have it in their power to render incalculable service to Natural History, if they are only put in the way of making observations. No better proof of this is furnished than that of the army of Indian sportsmen, who, encouraged and directed by that great ornithologist and sportsman, Allan Hume, have done so much for the Ornithology of our Eastern Empire, and set an example to sportsmen at home which might be followed with inestimable profit to British Ornithology. By their aid the magnificent and unrivalled collection of Indian birds was formed, which now, thanks to the noble generosity of Mr. Hume, forms a part of our National Collection at South Kensington.

Should the present volume be the means of creating a taste for observation among those sportsmen who have hitherto been neglectful of the scientific side of their pursuit, to the advantage of Natural History, or prove of some help to the naturalist in his studies of this important and interesting group of birds, the labour involved in writing it will ever be recalled with pleasure.

I desire also to place on record my great appreciation of the work of my contemporaries, and my sincere thanks for the profit of their experience; also to acknowledge my gratitude to many friends for valued information. My thanks are specially due to my old friend Mr. F. H. Waterhouse, the courteous Librarian to the Zoological Society of London, whose bibliographical assistance from time to time has been invaluable.

CHARLES DIXON.

January, 1893.

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TADORNA CORNUTA.

PLATE XXXV. (*see Errata, p. 457*).
PINTAIL DUCK.
DAFILA ACUTA.

WIGEON.
MARECA PENELOPE.

PLATE XXXVI.
SHOVELER.
SPATULA CLYPEATA.

PLATE XXXVII.
MALLARD.
ANAS BOSCHAS.

PLATE XXXVIII.
TUFTED DUCK.
FULIGULA CRISTATA.

RED-CRESTED POCHARD.
NETTA RUFINA.

PLATE XXXIX.
COMMON EIDER.
SOMATERIA MOLLISSIMA.

KING EIDER.
SOMATERIA SPECTABILIS.

STELLER'S EIDER.
HENICONETTA STELLERI.

PLATE XL.
GOOSANDER.
MERGANSER CASTOR.

HARELEQUIN DUCK.
COSMONETTA HISTRIONICA.

INTRODUCTION.

THE GEOGRAPHICAL DISTRIBUTION AND MIGRATION OF GAME BIRDS AND WILD FOWL.

WE intend to devote the opening pages of the present volume to a brief introductory chapter on the geographical distribution and migration of Game Birds and Wild Fowl. In our opinion the science of avine distribution, or dispersal, is still most imperfectly understood, notwithstanding the vast progress that has already been made during the latter half of the present century. The geographical distribution of Life, if we mistake not, is governed by law, and therefore subservient to certain definite influences, and is not the fortuitous process that naturalists, almost without exception, believe it to be. We have too much evidence to suggest, if we come to study the phenomenon in a critical manner, that the dispersal of life over the globe is not without a plan. The phenomenon of migration (so inseparably associated with geographical distribution) appears also to be as little understood, and we fear that this will remain so as long as naturalists decline to accept this apparently unquestionable conclusion. In certain directions naturalists have much to congratulate themselves upon. With the dawn of the Darwinian epoch the importance of the distribution of living forms began to be recognised as a factor throwing unexpected light upon the evolution of species. With the stimulus given to the new science of geographical dispersal by Dr. Sclater, who sketched out the world into six great faunal regions, guided largely by the avine facies of the Continental areas, great things have been accomplished. Dr. Sclater's scheme was followed a few years later by that of Huxley, in which the earth was separated into four primary regions, the divisions being latitudinal instead of longitudinal. Eight years later still Wallace published his monumental work on the geographical distribution of animals, perhaps best described as a detailed elaboration of Dr. Sclater's scheme. It is unnecessary here to allude to the labours of other naturalists, for beyond slight modifications the general ideas of Dr. Sclater and Huxley have been adopted. Neither can more be said for that branch of the subject concerning the means of dispersal, all writers hitherto regarding these as more or less fortuitous, and in a great measure dependent upon the physical mutations of the earth's surface. These views involve the acceptance of Polar Dispersal, or, in other words, that Life has gradually spread in endless forms from the poles to the equator, influenced from time to time by glacial epochs. It is perhaps unnecessary here to add anything to what I have already written upon the subject of avine

dispersal in my two volumes on the migration of birds. An introductory chapter in a work like the present does not afford the necessary facilities for the discussion of such a complicated question, but I hope shortly to elaborate my views in a special volume devoted to the geographical history of avine life. It is sufficient here to say that, in my opinion, all the available evidence tends to show that Life is of equatorial origin, and that from such a vast centre living forms have drifted in strict accordance to law north and south towards the poles. That law, briefly stated, is that species spread in the direction of the poles and towards points of least resistance in the struggle for existence. Following Huxley to some extent, I have divided the world into three realms. First, an Intertropical or Primogæan realm, with northern and southern limits marked tentatively by the tropics; second, an Arctogæan or Northern realm, which embraces the entire world north of the Tropic of Cancer; third, a Notogæan or Southern realm, which in like manner includes the entire world south of the Tropic of Capricorn. We need scarcely have alluded to this law of dispersal in the present volume, but the reader will find many instances of its application in the geographical ranges of the various species dealt with in the following pages. This is more especially the case when we come to treat with the various species of Waders—birds with extended areas of distribution in both the northern and southern hemispheres. The reader will find that I have endeavoured to deal with many problems of distribution in a manner opposed to the generally accepted views of ornithologists. In many of these cases we are unfortunately without sufficient data to furnish absolute proof of our contention, but we wait with every confidence the exploration of the Antarctic and high Southern regions, and the accumulation of additional facts relating to the habits and movements of certain species in the Southern hemisphere, to support the views we hold on these important questions. We will now proceed to glance in detail at the general features of the geographical distribution of the several orders dealt with in the present volume.

Our first order consists of the Columbiformes or Pigeons. The Pigeons are a widely distributed group, but the four hundred and seventy or so species that compose it are very unequally dispersed, even in those warmer portions of the globe that they chiefly affect. They are by far the least abundant in cold northern latitudes, and perhaps reach their highest degree of development, and certainly their preponderance in numbers, in the Australian region—an area, be it remarked, abounding in islands and offering those facilities for isolation so favourable to the establishment of new species—the number of known species therein nearly equalling those in all other parts of the world combined. The Nearctic and Palæarctic regions are the poorest in species; the Ethiopian region comes next; whilst the Oriental and Neotropical regions, next to the Australian region, are nearly equal in their number of Columbine forms and abundantly represented. The Pigeons belonging to the British genera, *Columba* and *Turtur*,

are the most widely distributed of the Columbiformes, an order which is singularly remarkable for the localness of its genera.

Following the Pigeons we have now to glance at the distribution of the Pedophilini or Sand-Grouse. This very small and very distinct order is exclusively confined to the Old World, becoming most abundantly represented in the arid desert districts of the Ethiopian region and in similar areas in the central Palæarctic region. They are most sparsely represented in the Oriental region and in South Europe. Next in the order of our sequence come the Galliformes or Game Birds. There is perhaps no other group of birds more thoroughly cosmopolitan in their distribution, being represented amidst the snows and the ice of the Arctic regions upon the lofty mountains, in the woodlands and plains and valleys of temperate latitudes, to the jungles and forests of the Tropic zone, and southwards beyond to Temperate regions again. The Game Birds are divisible into several well-defined families, which to a great extent are geographical. Thus the Grouse are confined to the Northern hemisphere, the Partridges and Quails together are separable into groups which are both of them representative of the New World and the Old World respectively, the Pheasants are chiefly Asiatic, the Turkeys are as exclusively American as the Guinea Fowls are African, the Hemipodes are confined to the Eastern hemisphere, the Megapodes are almost exclusively peculiar to the Australian region,¹ and, lastly, the Guans and Curassows are indigenous to the American continents.

Another cosmopolitan group is the Ralliformes or Rails, universally distributed with the exception of the Polar regions, and some of the species remarkable for their enormous areas of dispersal. Here again we have a group singularly rich in island species, some of them having entirely lost the power of flight. It is a most significant fact that some of the genera or families are indigenous to the tropic zone right round the world—a phenomenon of distribution that is utterly opposed to any theory of Polar dispersal. Following these in the arrangement adopted in the present volume we have the Gruiformes, or Cranes and allied birds. The various families that form this somewhat heterogenous group are to a great extent geographical. The true Cranes are by far the most cosmopolitan, and, with the exception of the Neotropical region, are found distributed over all the great land masses of the globe. On the other hand, the Guaraünas (Aramidæ) and the Trumpeters (Psophiidæ) are exclusively Neotropical, whilst the Kagu (Rhinochetidæ), the most local of all, is confined to the island of New Caledonia.

Our next order is the Charadriiformes, which includes all the remaining land birds dealt with in the following pages. This order we have divided into nine fairly well-defined families, four (which has inadvertently been given as five on page 98) of which are represented in the British Islands.

¹ In the account of the Order Galliformes (p. 30) the statement that Game Birds are cosmopolitan with the exception of the Australian region is somewhat ambiguous. It should there have been explained that the Order is represented by the Megapodes only.

First of these come the Bustards (Otididæ). This is another family confined exclusively to the Old World. Bustards are a decidedly Ethiopian type, being most abundant in species in Africa. The typical Bustards range over the Palæarctic, Oriental and Ethiopian regions; whilst the Ruffed Bustards, in addition to these areas, penetrate to the Australian region. The Stone-Curlews (Edicnemidæ), although a family containing few species, have a comparatively wide area of distribution, including the temperate and tropical portions of the Old World and the Neotropical portion of the New World. The Coursers, Pratincoles and allied forms associated in the family Cursoriidæ are another small and exclusively Old World group distributed over the southern portions of the Palæarctic region, throughout the Ethiopian region, the Oriental region and the Australian region. The Plovers, Sandpipers, and Snipes (Charadriidæ) form a much more extensive group, and, moreover, a cosmopolitan one, the range extending almost from one pole to the other. Of the ten subfamilies into which this family may be divided no fewer than seven are represented in the British list. The geographical distribution of this family furnishes us with some of the most significant and remarkable facts in support of the suggested new law of equatorial dispersal. Many of these facts have been pointed out as opportunity presented when the geographical distribution of the various species has been dealt with. These we need not stay to repeat. It will be sufficient here to allude to the significant distribution of the Quail, the Avocet, the Common Sandpiper, Bonaparte's Sandpiper, the Turnstone, some of the Oyster-catchers, the Yellowshank, the Hudsonian Godwit and the Sanderling, to mention but a few instances of species breeding in both the Northern and Southern hemispheres, starting from and returning to an equatorial base, to illustrate the strong confirmation of our hypothesis that no migratory bird normally crosses the Tropics to breed or to winter in either hemisphere. Of the subfamilies with British representatives we have first the Oyster-catchers (Hæmatopodinæ) which are practically cosmopolitan in their distribution. Following these come the typical Plovers (Charadriinæ), another cosmopolitan assemblage of species ranging over the entire earth almost from pole to pole. Many of the genera, however, are confined to certain areas; and the geographical area of many species is considerably more restricted during the breeding season than in winter. The third subfamily in our order of sequence is composed of the Stilts and Avocets (Himantopodinæ), a group of small extent, yet almost cosmopolitan in distribution, with the exception of high northern and southern latitudes. The fourth subfamily consists of the Turnstones (Strepsilinæ), a group although restricted to a couple of species only of practically cosmopolitan distribution, and one with an Intertropical or Primogæan focus. Another remarkably small subfamily, and yet a very distinct one, is that of the Phalaropes (Phalaropinæ). Phalaropes are decidedly Northern hemisphere birds confined to the arctic and temperate portions of the Nearctic and Palæarctic regions, by some authorities linked together under

the term Holarctic region, and conforming somewhat closely to our own Arctogæan realm (*supra*). Our next subfamily consists of the Semi-web-footed Sandpipers or Tatlers (Totaninæ), another widely dispersed group, but most abundantly distributed over the Arctic and Temperate portions of the Northern hemisphere especially during summer. Some of the genera as well as not a few species appear to have a northern and southern dispersal from an equatorial focus, notably in Totanus, Actiturus and Limosa. Some of the genera are strictly geographical—Machetes is confined to the Old World, Bartramia as exclusively to the New World. Our last subfamily contains the Cleft-footed Sandpipers and Snipes (Scolopacinæ). These are birds of almost cosmopolitan distribution, but, as in the preceding subfamily, they are to a great extent dominant in the Arctic regions during summer. We also find some of the genera with a Primogæan focus (as for instance Tringa, Calidris, and Scolopax). Of the British genera, Gallinago and Scolopax are the two most thoroughly cosmopolitan.

The last order with which we have to deal is the Anseriformes, which includes the somewhat heterogeneous assemblage of Screamers, Flamingoes, Swans, Geese, Ducks and Mergansers. Of the three suborders, two are not represented in the present volume, but the third, the Ducks (Anseres), is rich in British species. The non-British suborders may be briefly dismissed. The Screamers (Palamedeæ) are exclusively a New World group, confined to the Neotropical region; whilst the Flamingoes (Phœnicopteri) are much more cosmopolitan, and occupy the tropical areas of Asia (with South Europe), Africa, and America, but are not represented in Australia. The Anseres are all contained in a single family (Anatidæ), divisible into some eleven subfamilies, of which no less than five find British representatives. The Ducks and their allies are absolutely cosmopolitan in their distribution—a fact which may be largely due to their exceptional facilities for dispersal. Reviewing the British subfamilies in their order of sequence, we have first to consider the Swans (Cyg ninæ). The distribution of these birds is somewhat remarkable owing to its being discontinuous. Swans are distributed over the Arctic and Temperate portion of the Northern hemisphere and the Temperate portion of the Southern hemisphere—a fact which seems to suggest a dispersal from the Primogæan realm, north and south, at a sufficiently remote era to have produced generic differences in Australia, the most isolated area. Next in succession we have the Geese (Anserinæ). Of these, the three British genera are exclusively confined to the Northern hemisphere, Chen and Branta being chiefly Arctic in distribution. The typical Geese are northern birds, no species being found south of the equator. Our next subfamily contains the Sheldrakes and Non-diving Ducks (Anatinæ). These may fairly be described as cosmopolites, but many of the genera are significantly geographical. Thus Dendrocygna (non-British) is Tropical, and is found right round the world; Chenalopex ranges over Africa and South America; Tadorna and Casarca (Sheldrakes) are Old World;

Chaulelasmus is confined to the Northern hemisphere; *Pœcilonetta* is common to South America and Africa, south of the Great Desert; *Elasmonetta*, peculiar to New Zealand; *Nesonetta*, to the Auklands; *Malecorhynchus*, to Australia and Tasmania; *Heteronetta* to the Southern portions of South America. The cosmopolitan genera are *Nettion*, *Anas*, and *Spatula*; whilst *Querquedula* is found over the Northern hemisphere and South America, and *Dafila* is a cosmopolite with the exception of Australia and New Zealand. Following these, we have the Diving Ducks and Eiders (*Fuliginæ*). These Ducks are almost exclusively Northern hemisphere birds, with the exception of the genus *Nyroca* which is cosmopolitan; *Metopiana* (one species) which is confined to South America, one of the five species of *Fuligula* which inhabits New Zealand, the Aukland and Chatham Islands, and *Tachyeres* (one species) inhabiting the Strait of Magellan and the Falklands. Many of the species are arctic or sub-arctic in distribution during summer, as details of their geographical area in the present volume will show. Our last British subfamily contains the Mergansers and Smews (*Merginæ*). Of the three genera that compose it, *Lophodytes* (one species) is confined to North America, *Mergus* (one species) is exclusively Palæarctic, whilst *Merganser* (seven species) is of wide distribution, ranging over the Palæarctic and Nearctic regions, and portions of the Neotropical and Oriental regions, together with the Aukland Islands in the South Pacific. Some of the other subfamilies are remarkable for their geographical distribution, such as the *Merganettinæ* with representatives in New Zealand and the Andes.

Now as regards the migrations of the Game Birds and Wild Fowl. Taking the various groups of birds dealt with in the present volume in their sequence, we have first to consider the migrations of the Pigeons. So far as concerns the few British species we have little of exceptional interest to record, although the annual movements of some birds of the Pigeon tribe in other parts of the world are upon such a scale that elevate them to the highest class of migrational phenomena. To illustrate this we have only to allude to the marvellous migrations of the Passenger Pigeon of the New World. Unfortunately the progress of civilization in North America has been synchronous with the almost complete extermination of this interesting bird, which now only manages to survive in the least populated areas, and even there in numbers that can only be described as remnants. This species is an abnormal migrant to the British area, and we have already dwelt at some length upon its migrational movements. The typical Pigeons can scarcely be classed as birds of strong migrational movement, season-flight perhaps reaching its greatest development in the Turtle Dove and allied forms. Migration becomes much more pronounced amongst the Sand-Grouse, and in these birds it is often of a strongly marked nomadic or irruptic character. Two of the species are known as cold season visitors to India, and one or two of the South African Sand Grouse appear to have well-defined migrations.

There is more regular migration among the Game Birds than is perhaps

generally supposed. Much of this migration is of a nomadic character, or is displayed in the form of vertical migration in so many mountain species. Many of these movements are at present little understood, and the data concerning them is of the most meagre character. The migrations of some of the Grouse are exceptionally interesting. Thus the Prairie Hen (*Tympanuchus americanus*) is said by competent observers to migrate as regularly as the Canada Goose. In November and December large flocks of this Grouse come from Northern Iowa and Southern Minnesota to winter in Northern Missouri and Southern Iowa. The return migration is performed in March and April. It is a curious fact that the migratory individuals are said to be females only, but this is possibly not universal, and may be similar to the movements of the Chaffinch. The most typical migrant amongst the Game Birds is the Quail. Its seasonal movements are not only regular, but take place over wide areas of country, often in vast numbers. In the next group, the Rails, we have species of much more pronounced and regular migration (our own Corn Crake furnishes a capital example). Even more strongly of migratory habits are the Cranes, although it may be remarked that the allied Trumpeters and the Kagu are eminently sedentary.

We now come to the most thoroughly typical migrants of all the land birds treated in the present volume, the great cosmopolitan order of the Charadriiformes. It is true that many of the species that compose it are of sedentary habits, but the majority of them are birds of passage. Every kind of migrational movement finds its representative in this order, from the nomadic or vertical migrant to the feathered pilgrim that crosses half the world in its annual passage. The Coursers, Pratincoles and Phalaropes may be classed among the most sedentary species, as the Sandpipers, Turnstones and Plovers rank as the greatest migrants. Little less famous as migrants are the Ducks and their allied forms, the annual movements of so many of these birds being too familiar to require description in detail here. We may remark, however, that if the migrations of birds of the Duck tribe are regular and pronounced, they are not so extended as in the preceding order; whilst there can be little or no doubt that a much greater percentage of the species are sedentary, especially in the tropics and the Southern hemisphere.

We now propose to bring the present chapter to a conclusion by a brief description of the spring and autumn aspects of the migrations of the British species of Game Birds and Wild Fowl as they are presented in our area. So far as our Islands are concerned, migration is very sparsely demonstrated by Game Birds and Pigeons. Some of our Grouse are certainly subject to marked if slight vertical migration, and there appears to be some amount of nomadic movement during winter. The Quail is the sole strictly migratory species. Our Pigeons are all sedentary in the sense of not crossing the seas, but large numbers of Ring Doves and smaller numbers of Stock Doves visit us in autumn and winter from Continental areas. The Turtle Dove is the only migratory species,

and will be again alluded to when we deal with the months of its arrival and departure. It will, perhaps, be most convenient to deal with the migrational phenomena as they occur from month to month. During the depth of winter true migration may be at perfect rest, but at this season there is an immense amount of movement in progress amongst Wild Fowl. This is largely dependent upon the prevailing state of the weather and the vicissitudes of food supply. In February migration may be justly said to commence among Wild Fowl. During that month we have evidence of movement among Geese, Swans, and Ducks, especially of the more boreal species, the first signs of their spring migration northwards from our waters. Migration among wading birds is not, however, so pronounced at this period, although Golden Plovers, Lapwings, Grey Phalaropes, Woodcock, Common and Jack Snipes, Redshanks, and Curlews show unmistakable signs of moving north, north-east, or east. With the advent of March migration reaches a much stronger phase. Ring Doves and Stock Doves are migrating back to Continental districts; almost without exception every species of British Duck, Goose, or Swan is now passing from our islands or coasting over them towards the breeding grounds, a state of things that will continue with increasing frequency for weeks. The Smew closes its passage this month. Greater migrational activity also prevails among Waders. Golden Plovers and Lapwings continue to migrate out of our area; Grey Plovers begin their northern movement, and numbers of this latter species also pass along our coasts; perhaps the greater number of our Snipes migrate north during March. Curlews and Redshanks are still leaving us, and this month the Dunlin begins to move out of the country as well as to pass along the coasts; the Purple Sandpiper also initiates its passage. Towards the end of March the Garganey appears. The migration north of Ducks continues throughout April, as also does the departure of the Ring Dove and Stock Dove. During this month we remark the first appearance of those Waders that have wintered south of our area. Now the Stone Curlew arrives, the first of the Kentish Plovers, and Dotterels, the Red-necked Phalarope, the Ruff, the Common Sandpiper, the Wood and Green Sandpipers, the Greenshank, the Whimbrel, and the Black-tailed Godwit. Ringed Plovers are passing north along our coast, Avocets are seen, and Bar-tailed Godwits are coasting us. Now also appear the first of the Little and Temminck's Stints, the Curlew Sandpiper, and the Knot: Sanderlings are now in strong movement. Towards the end of April, Quails, Corn Crakes, and Spotted Crakes arrive in our Islands to breed, and the Turtle Dove in small numbers makes its appearance. These four latter species are, however, better classed as May migrants. By the end of April the migrations of the Bean and Pink-footed Geese are practically over, but all the other British species of Geese, together with the Swans, prolong their movements into early May, mostly coasting migrants. Among the Ducks, Gadwall, Pochard, Tufted Duck, Long-tailed Duck, and Golden-eye complete their passage practically in April, but the

other species prolong theirs into May. There is a good deal of coasting migration over the British Islands during May amongst Wild Fowl of most species, and in not a few instances this is continued into June, especially with birds that breed in the far north, such as Knots, Grey Plovers, Turnstones, Curlew Sandpipers, Sanderlings, Whimbrels, and Bar-tailed Godwits. Among the Ducks, Brent Geese, Teal, and Wigeon may be instanced as prolonging their passage into June. This month, however, brings to a close the spring migration northwards of our British Wild Fowl. Vertical migration commences fairly early, as soon as the uplands are sufficiently open to furnish food, with the passage of Lapwings in February, the Golden Plover, the Curlew, and the Dunlin, for instance, in March. In our islands this vertical migration ceases in May.

We have scarcely remarked the last departing fowl northwards in spring and early summer before signs of the returning birds begin to be apparent. Among the Ducks we occasionally have indications of a southern migration in July, with such species as Brent Geese, Mallards, and Common Scoters; among Wading birds with such species as Grey Plovers, Golden Plovers, Lapwings, Turnstones, Redshanks, Curlews, Bar-tailed Godwits, Knots, and Sanderlings. In August, the migration of birds of the Duck tribe becomes slightly more apparent by the earliest arrivals of Bernacle Geese, Whoopers, Teals, Wigeons, Scaups, and Velvet Scoters. These individuals, however, are but pioneers of the hosts that are to arrive during the few succeeding months. During August, a few Corn Crakes, Spotted Crakes, and Stone Curlews, leave their British breeding grounds and draw south; the Turtle Dove is also in movement this month; whilst the numbers of Grey Plovers, Golden Plovers, Lapwings, Turnstones, Redshanks, Curlews, Knots, and Sanderlings, perceptibly increase. Migration is also commenced by the Grey Phalarope, the Woodcock, the Common Snipe, the Ruff, and the Dunlin, in August; whilst Whimbrels, Black-tailed Godwits, Greenshanks, Wood and Green Sandpipers, are also leaving us, or in movement coasting south. In September, migration rapidly increases in intensity. To the list of arrivals must now be added (in small numbers) the Pink-footed Goose, the Pintail, the Pochard, the Tufted Duck, and the Golden-eye. Among Waders, we may mention that the Jack Snipe and the Purple Sandpiper begin to return to their British winter haunts. Among the departures of our summer migrants may be instanced the Garganey, the Turtle Dove, and the Quail, the passage of all three species being prolonged into the following month. The Corn Crake, the Spotted Crake, and the Stone Curlew are also migrating strongly now. Coasting migrants perceptibly increase in numbers, especially Plovers, Sandpipers, Whimbrels, Godwits, and the first of the Stints. The Red-necked Phalarope now begins to leave its summer quarters, and the Avocet, and the Green and Wood Sandpipers, complete their autumn passage.

So far as the Duck tribe is concerned, October inaugurates migration on the grandest scale. The migration of every species is strongly marked, birds pouring

into our area from the north and east. This month brings the first of the White-fronted and Bean Geese, Bewick's Swans, and Mute Swans, Gadwalls, Long-tailed Ducks, Goosanders, and Smews. The migration of the Spotted Crake draws to a close this month, also that of the Garganey. Not only are the various species of wild fowl coming into our Islands and seas in vast numbers, but similar multitudes are coasting south. The Dotterel completes its migration in October, as also do the Red-necked Phalarope, the Common Sandpiper (except in a few isolated instances), the Greenshank, the Whimbrel, and the Black-tailed Godwit. November brings the normal autumn migration of Wild Fowl to a close. Geese, Swans, and Ducks continue to arrive in our area or to pass our Islands to still more southern haunts. Ring Doves and Stock Doves are still migrating into this country, a few Corn Crakes, Stone Curlews, and Kentish Plovers are still moving out of it; whilst many Plovers and Sandpipers, Bar-tailed Godwits, Purple Sandpipers, Knots, and Sanderlings, still coast us on their way south. Vertical migration commences in July and August among such species as Lapwings, Golden Plovers, Curlews, Dunlins, Redshanks, and Mallards, and is continued until October, when the uplands are practically cleared of their wading birds of passage.

We have not space here to describe in detail the actual movements of these various species of Wild Fowl. There is something intensely interesting, and at times most impressive, about their seasonal movements, more often than not performed under the cover of darkness. Their wild expressive cries when on passage across the night sky, the rush of their rapidly moving wings in the darkness overhead, their visits to the light-houses when lost and bewildered by adverse atmospheric conditions, are all of exceptional interest, and combine in forming a demonstration of avine migration of a most impressive kind. The reader who might care to pursue this fascinating subject further, may be referred to our two volumes on migration, as well as to Gätke's monumental work on the Birds of Heligoland.

The Game Birds and Wild Fowl

OF

The British Islands.

ORDER COLUMBIFORMES.—THE PIGEONS.

THE Pigeons form a homogeneous, well-defined, and important group of birds, closely allied to the Game Birds (*GALLIFORMES*)—through the Sand-Grouse (*PEDIOPHILI*)—and to the Plovers (*CHARADRIIFORMES*). Their sternum, which varies in shape, generally contains two notches on each side of the posterior margin, the interior pair being small, the exterior pair wide and deep. In the modification of their cranial bones they are schizognathous, whilst their nostrils are schizorhinal. In their pterylosis, myology, and digestive organs they show considerable affinity with the Plovers and the Game Birds.

The external characteristics of the Pigeons are their somewhat Plover-like bill, enlarged at the tip and covered at the base with soft skin, in which are placed the nostrils, partly concealed by an incumbent valve; their small hind toe; and their dense, compact plumage. The oil gland is nude or absent. The contour feathers are without an aftershaft, or only possess a rudimentary one. The primary quills are eleven in number, the fifth secondary is absent; but the rectrices are variable in this respect (from twelve to twenty). The Pigeons are, so far as is known, double-moulted; the young are hatched blind, but clothed with thin, yellowish down.

About 470 species of Pigeons are known. Count Salvadori, the most recent monographer of the Columbiformes, has divided the existing species of Pigeons into five families, of which two only are represented in the British Islands. The Pigeons are cosmopolitan in their distribution with the exception of the Polar regions, but are probably most abundant in the Australian region.

Family COLUMBIDÆ.—The Typical Pigeons.

The birds comprising this division of the order may be distinguished by their somewhat short metatarsus—in most cases less than the middle toe in length—and by the number of their tail feathers, which is twelve. In this group the soles of the feet are of moderate breadth, and the skin on the side of the hind toe only is exceptionally expanded. Count Salvadori, somewhat needlessly, we consider, has divided the present family into no less than three subfamilies, one of them containing but a single species, the Passenger Pigeon.

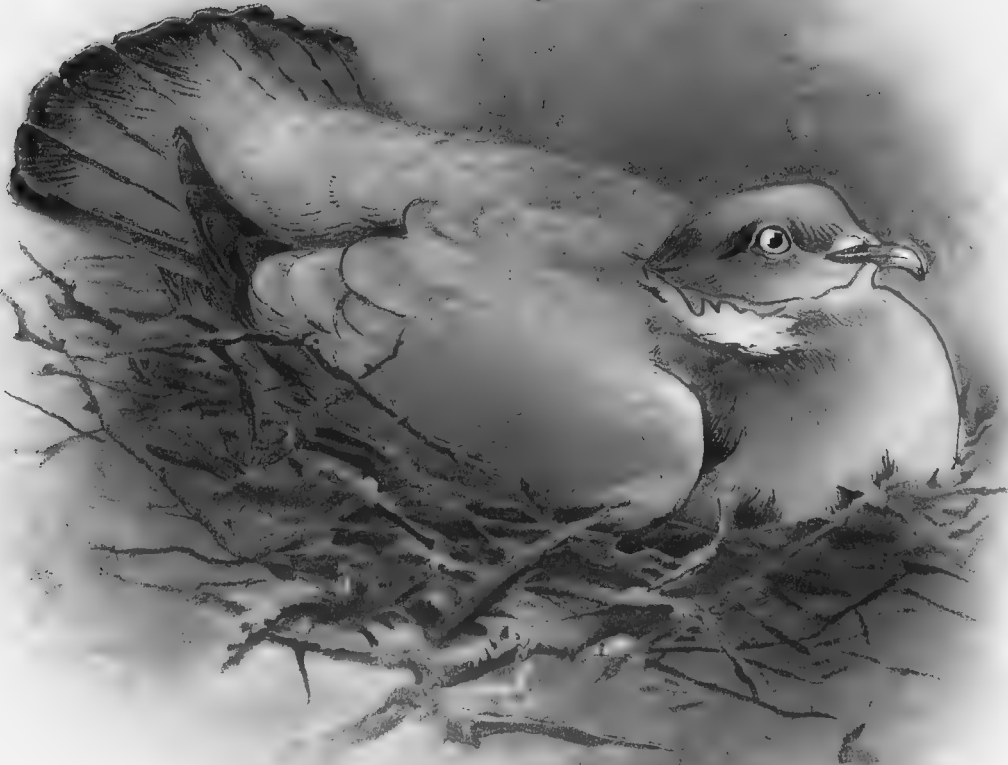
Genus COLUMBA, or Grey Pigeons.

Type, COLUMBA ÆNAS.

Columba, of Linnæus (1766).—The birds comprising the present genus are characterised by their prevailing slate-grey plumage, glossed chiefly on the head, neck, and breast with metallic hues. The wings are long, broad, and rather pointed, the first primary considerably longer than the sixth; the tail, which is shorter (or not longer) than the wing, is composed of twelve feathers, nearly even. The metatarsus is short, scutellated in front, reticulated behind, and feathered on the upper portion, but never more than for half its length. The bill is moderately stout, straight at the base, and compressed. There are three toes in front, cleft to the base; one toe behind.

This genus is composed of about sixty more or less defined species, which are inhabitants of the Palæarctic, Ethiopian, Oriental, Nearctic and Neotropical regions. Three species are resident in the British Islands.

The Grey Pigeons are dwellers on rock-bound coasts, inland precipices, groves, and forests. They are birds of sustained and rapid flight, and progress on the ground by running and walking. Their notes are full and soft, but possess little sweetness or variety. They subsist chiefly upon grain and vegetable substances. Their nests are slight platforms of twigs, placed on rocks or trees; and their eggs, never more than two, are white or creamy-white, and oval. These birds pair for life, and are remarkably prolific. Their flesh is highly and justly esteemed for the table.



Family COLUMBIDÆ.

Genus COLUMBA.

RING DOVE.

COLUMBA PALUMBUS.—*Linnaeus*.

PLATE I.

Columba palumbus, Linn. Syst. Nat. i. p. 282 (1766); Macgill. Brit. B. i. p. 259 (1837); Dresser, B. Eur. vii. p. 3, pl. 456 (1878); Yarrell, Brit. B., ed. 4, iii. p. 1 (1883); Seebohm, Hist. Brit. B. ii, p. 396 (1884); Salvadori, Cat. B. Brit. Mus. xxi. p. 299 (1893); Dixon, Nests and Eggs Brit. B. p. 344 (1893); Lilford, Col. Fig. Brit. B. pt. xxxii. (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 157, pl. 47 (1896); Sharpe, Handb. B. Gt. Brit. iv. p. 242 (1897).

Geographical distribution.—*British*: The Ring Dove is a resident throughout the wooded districts of the British Islands; most abundant in well-cultivated localities. To the Outer Hebrides and to St. Kilda it is only known as an occasional visitor. Its range is steadily increasing with the planting of trees. *Foreign*: Western Palæarctic region. It ranges from Scandinavia east to the Ural Mountains and the Caucasus. It is a resident except in the extreme north, where it breeds as high as lat. $65\frac{1}{2}^{\circ}$ in the west and lat. 60° in the extreme east. It breeds locally throughout the basin of the Mediterranean, but is here best known as a migrant during winter. To the Azores and Faroes it is an abnormal migrant only.

Allied forms.—*Columba casiotis*, an inhabitant of Persia, Turkestan, and Afghanistan as far east as Gilgit, on the frontiers of Cashmere. Differs from the Ring Dove in having the light patches on the neck buff instead of white.

Habits.—The Ring Dove is certainly the best known of its tribe in our islands, and a bird that is almost everywhere on the increase. It is a resident, and frequents the woodland districts, parks and shrubberies, as well as the open fields. It is more or less gregarious throughout the year, and though one of the shyest of birds, soon becomes trustful and tame in districts where it is not molested, as witness the extraordinary confidence of the Ring Doves that of late years especially have taken to frequenting some of the London parks. The flight of the Ring Dove is rapid and powerful, and the white patches on the wings and on the neck are very conspicuous as the bird hurries along. The Ring Dove is a silent bird during winter, but early in spring it regains its note, which is continued more or less freely into the following September, and less frequently into October. This

note is a loud, full *coo-roo-coo*, most frequently repeated when the bird is in the act of paying court to its mate. In autumn vast flights of this bird congregate in chosen localities, migrants from Scandinavia, which fraternise with our indigenous birds, and frequent the open fields during the day, seeking the fir plantations at dusk to roost, where their homeward flight oft affords good sport to the gunner. The Ring Dove drinks frequently, and is very fond of repairing to salt water. It is a most voracious feeder, and in some districts commits great havoc on the crops of beans and grain and the tender shoots of clover. During spring and summer it feeds largely on shoots of herbage, mollusks, and seeds, and, as the autumn advances, grain of all kinds, peas, acorns, beech-mast, fruits, berries, and even nuts are devoured. In winter it has been known to feed on the tender shoots of turnips, and even on pieces of the turnips themselves. At this season it will frequent those places in the game coverts where maize is spread for the pheasants; and here good sport may often be obtained by lying in wait for the gluttonous pilferer. This species does not frequent the coast anything nearly so much as the Stock Dove. Vast numbers of Ring Doves occasionally visit the British Islands in late autumn from continental Europe; although it is interesting to remark that at Heligoland the bird is seldom seen in large flights, but is observed in straggling parties and singly both in spring and autumn.

Nidification.—From what I have observed I am of the opinion that the Ring Dove pairs for life, and yearly nests in the same locality if not disturbed. This species is an early and a prolonged breeder, commencing in March or April and continuing to rear brood after brood until the autumn. The nest is placed in a great variety of situations, both in evergreen and in deciduous trees (the latter often before they are in leaf), and in bushes and amongst ivy on cliffs or tree-trunks. Woods, plantations, odd trees in the hedgerows or trees in the open fields, are selected without choice of situation, and the nest is placed at varying heights. Mr. Witherby has recorded (*Zoologist*, 1895, p. 232) a very interesting and remarkable instance of this bird nesting on the ground amongst heather on a small island in Lough Cong, co. Galway, although suitable trees were available. Two nests were discovered in such a situation; and this fact seems forcibly to illustrate how a species may initiate a change in its nesting habits. It is worthy of remark that these curious nests were on islands, safe from predatory animals; and the habit, therefore, has every chance of becoming a more general and permanent one. Mr. J. J. Armistead (*op. cit.* p. 275) records nests “not a foot from the ground,” in blackthorns, in the south of Scotland. The nest of the Ring Dove is merely a few dead twigs arranged basket-like in a flat and almost a shapeless mass. The eggs are normally two, but exceptionally one or three in number, oval in form, and pure and spotless white. They are on an average 1·6 inch in length by 1·25 in breadth. They are sometimes laid one on each successive day, but often a day is missed between each. Incubation lasts from seventeen to

twenty days. Both parents assist in the task, and in ministering to the wants of the young. It should be remarked that in all the species of this family the *excreta* of the young are never removed, and, caking together, soon form a firm platform with the twigs, on which the heavy nestlings rest secure. The young are brought to maturity by being fed with half-digested food regurgitated from the crop of the old birds. The Ring Dove has been known to breed in confinement, and also to hybridise with the domestic Pigeon.

Diagnostic characters.— [Adult] *Columba*, with a conspicuous white bar on the wings, and white patches on the sides of the neck; [Young] with a white wing bar, neck patches absent. Length, 16 to 17 inches. It might here be remarked that the irides of this bird, as is the case with many other species, change in colour with age. Thus in the young bird they are very dark, nearly black, whilst in the adult they are brilliant yellow.

Family COLUMBIDÆ.

Genus COLUMBA.

STOCK DOVE.COLUMBA ÆNAS.—*Linnaeus*.

PLATE II., Fig. 1.

Columba ænas, Linn. Syst. Nat. i. p. 279 (1766); Macgill. Brit. B. i. p. 287 (1837); Dresser, B. Eur. vii. p. 23, pl. 458 (1876); Yarrell, Brit. B. ed. 4, iii. p. 8 (1883); Seebohm, Hist. Brit. B. ii. p. 401 (1884); Lilford, Col. Fig. Brit. B. pt. xx. (1891); Salvadori, Cat. B. Brit. Mus. xxi. p. 261 (1893); Dixon, Nests and Eggs Brit. B. p. 346 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 158, pl. 47 (1896); Sharpe, Hanb. B. Gt. Brit. iv. p. 244 (1897).

Geographical distribution.—*British*: The Stock Dove is a resident throughout England and Wales both inland and near the coast, but more locally distributed than the Ring Dove. It is very rare and local in Ireland and Scotland, but its range is steadily increasing. *Foreign*: West Palæartic region. It ranges from Scandinavia east to the Ural Mountains, the Caucasus, Asia Minor, Turkestan and Afghanistan. It is a summer visitor only to the northern portions of its range, which extends in the west up to lat. 62° and in the east up to lat. 57°. It breeds throughout Central and Southern Europe and North-west Africa. It is rare in Palestine, and doubtfully recorded from Egypt.

Allied forms.—*Columba eversmanni*, an inhabitant of Central Asia. Differs from the Stock Dove in having a pale rump, a vinous crown, and a black base to the bill, and is slightly smaller. The Stock Dove is represented on the North Atlantic African islands by several allied but quite distinct species.

Habits.—Although so common and widely distributed throughout the year, the Stock Dove is much less known to sportsmen and naturalists than is the preceding species. It is also often confused with the Rock Dove, in spite of the fact that the two species are very different in appearance. Although this species may be met with frequently on the coast (in Tor Bay it is the only Pigeon of the cliffs, but practically deserts these places during winter), and even in quarries and on moors and downs, yet it is most abundant in wooded districts, especially where the timber is aged and hollow. To many sportsmen it is known by the name of "Rockier." It is a shy and wary bird, and rarely allows a near approach unless it considers itself unseen; and will then often remain in trees or on the cliffs until it is well within gun-shot. The Stock Dove flies rapidly and impetuously, having



wonderful command over itself in the air, and is able to dart and twist in and out of the branches, defying all but the quickest shots to bring it down. Like the Ring Dove it frequents the fields and more open country to feed and to dust itself; but when alarmed it hurries to the nearest cover, and always repairs to its accustomed roosting-place in thick plantations or on the ivy-clad cliffs at the approach of dusk. It may frequently be seen running along the horizontal limbs of trees, especially during the pairing season. The note of this bird, persistently kept up all the spring and summer, is much harsher than that of the Ring Dove, and may be aptly expressed as a grunting *coo-oo-up*. At all times of the year the Stock Dove is socially inclined, and in autumn becomes gregarious, the flocks then assuming large size. Many of these birds are migrants from Scandinavia. All through the autumn and winter the flocks frequent the stubbles and fields of newly-sown grain, flying at nightfall to the woods and coppices, where they roost. Ring Doves very often mingle with them. The food of this species largely consists of grain during the time that fare is available; but seeds of weeds, clover, and grasses are often eaten. This bird is also partial to acorns and "mast," and even consumes blackberries. Peas and beans are favourite fare, and in severe weather, when snow is about, it will eat shoots of grain and clover and the leaves and sprouts of turnips. Although it frequents the ocean cliffs it is rarely seen on the beach below, except to drink the salt water, of which it is particularly fond; but searches for its sustenance on the fields near by, or often flies to some distance where favourite fare chances to be plentiful. This bird in some districts is looked upon as a pest by agriculturists, owing to its depredations among the grain and green crops, yet its good offices in ridding the fields of weeds is some recompense for its pilferings.

Nidification.—The Stock Dove pairs for life, and returns yearly to breed in some favourite spot even in spite of much disturbance. What is also remarkable is its sociability, even gregariousness, during this period, numbers of nests often being placed quite close together. This may be in some measure because suitable sites are rare elsewhere. Like its congeners it begins to breed early, and is remarkably prolific, continuing to rear brood after brood from March or April onwards to September and October. I have in November shot young Stock Doves not many days out of the nest, with filaments of down clinging to the head. The nest is placed in a variety of situations, yet always well concealed. A covered site of some kind is always preferred. Holes in trees, the deserted nests of Magpies and Crows, the old dreys of squirrels, amongst ivy on trees and cliffs, even in holes of the latter, and in church steeples—these are all favourite places; whilst in more exposed districts rabbits' burrows are often chosen for the like purpose. I have known this bird nest several yards up a fissure in the ironstone cliffs of a quarry. The nest is slight, and in many instances dispensed with altogether. A few twigs or roots carelessly interlaced, or a handful of straw, are

the sole provision ever made. The two eggs (three have been said to have been found, but never in my own experience) are creamy-white in colour, oval in form, and measure on an average 1·4 inch by 1·2 inch. Incubation lasts from seventeen to eighteen days, and both birds assist in the task, as they also do in rearing the young. These are brought to maturity in a similar manner to those of the preceding species, and are deserted as soon as they can leave the nest.

Diagnostic characters.—*Columba*, with a rudimentary wing bar, no white patches on the sides of the neck, the rump uniform in colour with the back, and the axillaries and under wing coverts grey. Length, 13 inches.



Family COLUMBIDÆ.

Genus COLUMBA.

ROCK DOVE.

COLUMBA LIVIA.—*Bonnat.*

PLATE II., Fig. 2.

Columba livia, Bonnat. Tabl. Encycl. Méthod. i. p. 227 (1790 *ex Brisson*); Macgill. Brit. B. i. p. 268 (1837); Dresser, B. Eur. vii. p. 11, pl. 457 (1879); Yarrell, Brit. B. ed. 4, iii. p. 13 (1883); Seebohm, Hist. Brit. B. ii. p. 405 (1884); Salvadori, Cat. B. Brit. Mus. xxi. p. 252 (1893); Dixon, Nests and Eggs Brit. B. p. 348 (1893); Lilford, Col. Fig. Brit. B. pt. xxx. (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 158, pl. 47 (1896); Sharpe, Handb. B. Gt. Brit. iv. p. 247 (1897).

Geographical distribution.—*British*: The Rock Dove is found throughout the rocky coasts of the British Islands, extending to St. Kilda. Colonies of white-rumped Doves occur in many inland districts on rocks and the sides of quarries, and are unquestionably composed of tame or domestic Doves which have become feral. *Foreign*: Palæarctic region. Wild birds are apparently confined to the coasts; inland colonies are descendants of tame birds. The Rock Dove is a resident on the Faroes, but only one breeding-place is known in Scandinavia, in the Stavanger Fjord. It breeds in the Pyrenees and in the Sierra Nevada, as well as on all the Atlantic Islands, including St. Helena. It is a resident on the rock-bound coasts of the Mediterranean, Black and Red Seas, and on the mountain chains adjacent. Feral Rock Doves, intricately intermingled with tame birds, are found from Egypt, Nubia, and Abyssinia, through Asia Minor and Persia, Beloochistan, Cashmere, and the Altai, across South Siberia to North China and Japan, examples from the latter country being very dark in colour (*Seebohm*).

Allied forms.—*Columba intermedia*, an inhabitant of India and Ceylon. Differs from the Rock Dove in having the rump dark. *C. rupestris*, an inhabitant of the Eastern Palæarctic region, from Turkestan to North China, and from the Altai to the Himalayas. Differs from the Rock Dove in having a broad subterminal white band across the tail. All these Doves interbreed wherever their range impinges.

Habits.—The Rock Dove, the original stock from which the endless varieties of the domestic Pigeon have descended, is a resident in the British Islands; and there is much evidence to prove that its numbers are increased in autumn

by migrants. Indeed, our information is decidedly negative in this respect, for the Rock Doves in the Faroes and in Scandinavia are said to be resident, and their appearance at Heligoland is decidedly irregular and abnormal. The Rock Dove is closely associated with the sea, and dwells on the ocean cliffs and in the country in their immediate vicinity all through the year. There are many inland colonies of Rock Doves—Doves with the rump white and the wings barred, but these unquestionably are descendants of tame Pigeons which have become feral. The true wild Rock Dove is found only on the coast and the country near at hand. This pretty species is readily identified by its white rump, as it dashes from the cliffs. It is ever shy and alert, although unwilling to take wing so long as it thinks itself unseen. Its flight is rapid and powerful, performed by quick beats of the wings, the bird often going long distances to feed. By the inhabitants of St. Kilda it is generally believed that Rock Doves breeding on those rock-bound isles visited the Hebrides, some seventy miles away, daily, for food. The Wild Pigeon of North America, better known to English readers as the Passenger Pigeon, is said in some cases to fly a hundred miles each day for food. All through the year the Rock Dove is gregarious, and during autumn especially gathers into flocks at the feeding grounds. I have often seen very large flocks of this species in the fields near Flamborough and on the farms at North Berwick. This bird has a great antipathy to trees, never alights in them, and when disturbed from the pastures and stubbles either hurries off to the cliffs at once, or takes a more or less extended flight to another part of the fields. Upon the ground it runs about in true Pigeon style, with quick, short steps and bobbing motion of the head. It is ever on the alert, and stops from time to time to scan the surrounding ground, rarely admitting of a close approach. These birds often fly in a very regular manner to and from the caves where they roost, and good sport may be obtained by waiting their return, or by visiting (usually in a boat) the cliffs they frequent. It requires all a man's resource, as he rolls about in a dancing boat, to bring down a Rock Dove going at full speed from the caves. The note of the Rock Dove is a soft and full *coo-roo-coo*, variously modulated when the bird is under sexual excitement. This note commences very early in spring, a week or so before the actual nesting season, and is continued into the autumn. The food of this species consists largely of grain; but seeds of many kinds of weeds, the buds and shoots of herbage, and the roots of the couch-grass are also eaten. The bird is said also to eat great quantities of small land shells. It drinks freely and often, and is fond of sea water. It has been said even to alight on the surface of a river to drink, but I, for one, doubt the statement.

Nidification.—Like its two congeners the Rock Dove is an early breeder, a few pairs commencing to lay in March, but nesting does not become general before April and May. It is also wonderfully prolific, and goes on rearing brood after brood until the following October. The nest is always placed on the rocks,

either in clefts and fissures of the cliffs or in caves, those being preferred which are always inaccessible to man save by the use of a boat. In the latter situations the nest is placed in the clefts and crannies of the rugged roof, or on ledges and prominences of the walls. Numbers of birds breed in company, the size of the colony depending to a great extent on the suitability and resources of the site chosen. The nest is slight enough—a few bits of grass or seaweed, a few roots or twigs, or dry stems of weeds; whilst even green grass has been known to be used. The eggs are two in number, oval in form, and pure white in colour. They measure on an average 1·4 inch in length, and 1·2 inch in breadth. These birds pair for life, use the same nesting-places year after year, and both parents assist in the duties of incubation—which lasts from sixteen to eighteen days—and in the care of the young. These are brought to maturity in a similar manner to their congeners, and are deserted as soon as they leave the nest.

Diagnostic characters.—*Columba*, with two well-defined black wing bars, a pure white rump, and white axillaries and under wing coverts. Length, 11 to 12 inches.

Genus ECTOPISTES, or Passenger Pigeons.

Type, ECTOPISTES MIGRATORIUS.

Ectopistes, of Swainson (1827).—The Passenger Pigeon presents characteristics so widely differing from other members of the Columbidae that Count Salvadori elevates it to sub-family rank in that group. Generic distinction, however, is all that we feel disposed to accord to it. The birds in the present genus are characterised by having the tail longer than the wing, the feathers being narrow and acuminate.

But one species of Passenger Pigeon is known, and this is confined to the Nearctic Region from Hudson's Bay south and west to the Great Plains. Details of its distribution and habits are given in the account of the species.

Family COLUMBIDÆ.

Genus ECTOPISTES.

PASSENGER PIGEON.

ECTOPISTES MIGRATORIUS (*Linnæus*).

Columba migratoria, Linn. Syst. Nat. i. p. 285 (1766); Fleming, Hist. Brit. An. p. 145 (1828); Eyton, Hist. rarer Brit. B. p. 30 (1836).

Ectopistes migratorius (Linn.), Yarrell, Brit. B. ed. 4, iii. p. 28 (1883); Seebohm, Hist. Brit. B. ii. p. 414 (1884); Salvadori, Cat. B. Brit. Mus. xxi. p. 369 (1893); Dixon, Nests and Eggs Non-indig. Brit. B. p. 360 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 160, pl. 47 (1896); Sharpe, Handb. B. Gt. Brit. iv. p. 250 (1897).

Geographical distribution.—*British*: No less than five examples of the Passenger Pigeon are known to have been shot within the British area, but it is impossible to say how many—if indeed any—of these had escaped from confinement, or reached us on abnormal flight. The bird formerly used to be kept commonly in captivity, whilst we know that individuals have actually been imported and turned loose in our islands. On the other hand there is nothing exceptionally remarkable in such a bird of powerful flight reaching our shores unaided; and when we also bear in mind the extraordinary wanderings of this Pigeon in its native country we seem fully justified in giving it the benefit of the doubt, and admitting it into the British list. To say the least, there are several other species retained therein without question, possessing less claim to the distinction. The British occurrences are as follows:—Scotland: Fifeshire (December), Berwickshire (October); England: Yorkshire (October), Cambridgeshire (July); Ireland: Co. Kerry. *Foreign*: Eastern Nearctic region. This Pigeon is now very locally distributed through the deciduous forest regions of eastern North America, from northern Maine west to northern Minnesota, and in the Dakotas and the eastern and middle portions of Canada northwards to Hudson Bay. According to the late Captain Bendire this species still breeds in scattered pairs in the New England States, northern New York, Pennsylvania, Michigan and Wisconsin, and in a few other localities further south. Winter area, south of lat. 36°.

Allied forms.—As previously remarked the present species is the sole surviving member of the genus, and has no allies sufficiently close to demand notice here.

Habits.—A melancholy interest attaches to the present species, for it is threatened with speedy extinction. Years ago, when North America was in the sole occupation of the red man, the Passenger Pigeon (known familiarly in the States as the Wild Pigeon) must have been one of the most numerous of known birds; and many early writers on America, naturalists and others, have testified to its vast abundance. Wilson estimated a flock seen by him to consist of upwards of 2,230 millions! One of the latest writers on this species, the late Captain Bendire, now informs us that “the extermination of the Passenger Pigeon has progressed so rapidly during the past twenty years, that it looks now as if their total extermination might be accomplished within the present century.” The vast colonies of this species that formerly bred in various parts of the country, and which have been so graphically described by Wilson and others, have all disappeared, and scattered pairs are now all that remain. This dispersal may be the means of saving the species from extirpation, provided legal protection be accorded in time to these survivors.

Although the Passenger Pigeon is addicted to much wandering, apparently in an aimless manner, like the Waxwing and the Rose-coloured Pastor, its migrations are normal and regular. Its passage north in spring commences about the middle of March and is continued until the third week in May. The return migration begins about the middle of September and lasts until the first week of October. There can be no doubt that formerly this Pigeon was one of the most gregarious of birds, but its numbers have now so greatly decreased that this characteristic appears almost to have vanished. The few scattered pairs unite into flocks in autumn, and possibly remain gregarious until the following spring, but the vast hordes that once used to roam over the land are things of the past. The favourite haunts of the Passenger Pigeon are open woodlands and districts that are well studded with groves surrounded by more open country, as well as well-timbered valleys. Except when actually breeding this species seems ever to be wandering about the country (of course within certain well-defined limits which constitute its normal area of dispersal) in quest of food; and, it is said, districts that abound with birds one season may be quite deserted the next. Audubon's graphic account of his meeting with this Pigeon in countless hordes, as he was crossing the barrens between Henderson and Louisville, has been questioned for its accuracy, but there can be little doubt of its truth. He tells us (it was in the year 1813) how he observed them flying south-west in larger numbers than he had ever observed before; how he attempted to count them as they passed in successive flocks, but was obliged to give up the task as impossible; and how the light of noonday became dimmed as in an eclipse as the hordes of flying Pigeons obscured the sky. Then he goes on to describe the aerial evolutions of the vast flocks, especially when pressed by a Hawk in quest of prey; how the flocks sped on with a roar suggestive of thunder from the rapid beats of innumerable wings, darting forward or swooping to the earth with marvellous velocity, and rising

again almost perpendicularly in huge columns, wheeling and gyrating in the air like the coils of a vast serpent. These aerial movements were particularly fine as the flocks were about to settle upon ground where food was abundant, the birds passing in circles lower and lower over the woods, and at length alighting, only to rise again immediately as if suddenly alarmed or fearful of some hidden danger. Dr. Brewer writes that "when at last settled upon the ground, they industriously search among the fallen leaves for the acorns and beech mast, the rear flocks continually rising, passing over the main body, and re-alighting. These changes are so frequent that at times the whole collection appears to be in motion. A large extent of ground is thus cleared in a surprisingly short space of time, and cleared with a completeness that is described as incredible. They are usually satiated by the middle of the day, and ascend to the trees to rest and digest their food. On these occasions the Pigeons are destroyed in immense numbers, and their abundance in large extents of the country has been very sensibly reduced." The food of the Passenger Pigeon consists of grain, berries of various kinds, wild fruits, beech mast and acorns, as well as angle worms and hairless caterpillars. The birds' devastations amongst crops used formerly to be very serious. The note of this Pigeon during the breeding season is described as a short *coo-coo*; and its ordinary call note as a treble *kee-kee-kee*, the first louder, and the last softer than the middle one.

Nidification.—The Passenger Pigeon has been known to commence nesting in Wisconsin and Iowa as early as the first week of April, and in Connecticut and Minnesota as late as the first half of June. This species used formerly to breed in vast colonies, but of late years these enormous gatherings have ceased, owing to the wholesale slaughter of the nesting birds. Passenger Pigeons used formerly to arrive from the south in certain districts—the choice often varying from year to year—and to settle down to the business of reproduction. Some of these colonies were of enormous dimensions. Mr. W. Brewster, who has devoted much attention to this species, was informed by Mr. Stevens, a veteran Pigeon netter, that the largest "nesting" of this Pigeon that he ever visited was in 1876 or 1877, in Michigan. He informed him that the Pigeons arrived in two separate flocks, one coming directly from the south over land, the other following the east coast of Wisconsin, and crossing Lake Michigan by way of Manitou Island. He watched the latter flock come in from across the lake about three o'clock in the afternoon—a vast compact mass of Pigeons at least five miles long and one mile wide! The birds began to build whilst the snow was still twelve inches deep in the woods, and the vast colony spread rapidly from the neighbourhood of Petosky in a north-easterly direction for twenty-eight miles, and on an average four or five miles in width. It is said that nesting usually begins in deciduous woods, but the colony rapidly spreads as the birds begin building in rapid succession, and no choice of tree is shown. In this particular "nesting" the first

eight miles was in hard-wood timber, then it crossed a river bottom clothed with arbor-vitæ trees, and for the next twenty miles extended through woods of white pine. Over the whole of this vast tract of wooded country every tree of any size contained nests in varying numbers, and many trees were filled with them. It is said, however, that none were placed less than fifteen feet from the ground. The Passenger Pigeon is described as being very noisy whilst building, the sound of such a multitude of voices resembling the croaking of wood frogs. The nest is merely a slight platform of twigs. Two eggs are frequently laid, but it is said that one is by far the most common number. They are elliptical oval in shape, glossy in texture, and pure white, and measure on an average 1.2 inch in length by .9 inch in breadth. Incubation is performed by both sexes, the males usually in the fore part of the day, the females during the latter part and at night. The sitting bird does not quit the nest until the bill of its incoming mate nearly touches its tail, the eggs thus being constantly covered. Several broods are reared in the season, but a different nesting ground is chosen for each, the old birds moving from twenty to one hundred miles for the purpose. It is said that five weeks are occupied by each "nesting," when the young are driven from the nests by the parents often several days before they can actually fly. There can be little doubt that many pairs of this Pigeon breed solitarily in the woods, not joining the vast colonies for the purpose.

Diagnostic characters.—*Ectopistes*, with the tail longer than the wing, and wedge-shaped. Length, 14 to 16 inches.

Family PERISTERIDÆ.—The Ground Pigeons.

The birds in the present family are characterised by having the tarsus equal to or longer than the middle toe. The number of tail-feathers varies from twelve to twenty. As in the typical Pigeons, the bill is not hooked, and the nostrils are linear and parallel to the tomia of the upper mandible. Count Salvadori divides the present family into no less than seven subfamilies; but it seems to be doubtful whether the characters relied upon for their separation are, in some cases at any rate, of more than generic value.

Subfamily TURTURINÆ.—The Turtle Doves.

The Turtle Doves may be distinguished from the other members of the present family by the absence of hackles from the neck, as well as by the more or less metallic black spot below the ear coverts, which is characteristic of the Zenaidinæ alone. They are further distinguished by the absence of metallic spots from the wings. The tail, which is rather broad, consists of twelve feathers; the metatarsus is naked on the upper portion; and the neck is decorated with a more or less distinct dark collar of scale-like feather patches on either side. This subfamily contains but one genus, although it has been subdivided by Count Salvadori into five tolerably well-marked subgenera.

Genus TURTUR, or Turtle Doves.

Type, TURTUR AURITUS.

Turtur, of Selby (1835).—The birds comprising the present genus are characterised by their prevailing brown and non-metallic plumage, by their more or less conspicuous black collar, comparatively small size, and slender, graceful form. The wings are long and rather pointed; the tail is composed of twelve feathers, and is graduated. The metatarsus is shorter than the middle toe, naked on the upper portion, and scutellated in front. The bill is slender; nostrils basal, and covered with two soft, tumid, bare substances. Three toes in front, cleft to the base, one behind.

This genus is composed of about twenty-eight species, which are confined to the Eastern Hemisphere, being inhabitants of the southern Palæarctic, Ethiopian, and Oriental regions, and the Austro-Malayan division of the Australian region. Two species are British: one a regular summer migrant; the other an abnormal migrant.

The Turtle Doves are dwellers in woodland districts. They are birds of sustained and powerful flight, and progress on the ground by walking or running. Their notes are full and soft, but with little pretension to variety or sweetness. They subsist chiefly on grain and vegetable substances. Their nests are slight platforms of twigs, placed in trees and bushes, and their eggs, never more than two in number, are white or creamy-white, and oval. These birds pair for life.



Family PERISTERIDÆ.
Subfamily *TURTURINÆ*.

Genus *TURTUR*.

TURTLE DOVE.

TURTUR AURITUS.—Gray.

PLATE III.

Columba turtur, Linn. Syst. Nat. i. p. 284 (1766); Macgill. Brit. B. i. p. 291 (1837).

Turtur vulgaris, Eyton; Dresser, B. Eur. vii. p. 39, pl. 462 (1876).

Turtur communis, Selby; Yarrell, Brit. B. ed. 4, iii. p. 21 (1883); Lilford, Col. Fig. Brit. B. pt. xxviii. (1894).

Turtur auritus, Gray; Seebohm, Hist. Brit. B. ii. p. 411 (1884); Dixon, Nests and Eggs Brit. B. p. 350 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 159, pl. 47 (1896).

Turtur turtur (Linn.), Salvad. Cat. B. Brit. Mus. xxi. p. 396 (1893); Sharpe, Handb. B. Gr. Brit. iv. p. 254 (1897).

Geographical distribution.—*British*: The Turtle Dove is generally distributed during summer throughout England and Wales, but becomes rarer in Wales, in the extreme south-west of England, and north of the Humber. It occurs only as a straggler on migration in Scotland, although it passes the Shetlands regularly on passage. It has not been observed in the Outer Hebrides, and only breeds locally in Ireland. *Foreign*: West Palæarctic region during summer. It is found throughout suitable districts in Scandinavia and Russia south of lat. 60°, eastwards to Turkestan, the Altai and Northern Cashmere, southwards through Afganistan, Persia, and Asia Minor, westwards to Central and Southern Europe. It passes through Palestine and North Africa on migration, many remaining behind in spring to breed. To the Canaries it is a common summer visitor, but it is rare in Madeira. Its winter quarters are in Central Africa.

Allied forms.—*Turtur isabellinus*, a summer migrant to North-east Africa. Differs from the Turtle Dove in having the head buffish-brown instead of grey, and in being slightly smaller (length of wing 6 inches, instead of 7 as in the Turtle Dove). *T. ferrago*, inhabiting South-western Turkestan and India. Differs from the Turtle Dove in having the light patches on the neck bluish-grey instead of white, and the breast not so pink. It is also a larger bird. *T. orientalis*, inhabiting India, South-east Siberia, China, and Japan. Differs from the Turtle Dove in having the under tail coverts and the light tips of the tail feathers slate-grey instead of white. These two latter birds appear only to be subspecifically

distinct, intermediate forms occurring in India, where the geographical area of each impinges. *T. ferrago* is not known, however, to cross with the Turtle Dove in Turkestan, where the range of the two species meets. Pale eastern examples of the common Turtle Dove have been described as *Turtur arenicola*.

Habits.—The Turtle Dove is a summer migrant. The usual date of its appearance is the first week in May, a period which marks its entry into Europe at Gibraltar in greatest abundance; but individuals are occasionally seen during the latter part of April. Its return journey is taken in September, although odd birds are met with from time to time at much later dates. The haunts of this species are woods and plantations, as well as parks and fields which are well timbered, or in the vicinity of trees. It is a shy and retiring bird, far more often heard than seen; although when I was in Algeria, on the borders of the Great Desert, in the oasis of Biskra, I found it a most tame and confiding species. Here they frequented the tops of the date palms, hiding amongst the foliage, where they roosted at night. I also observed that they were very regular in visiting the Oued to drink, going in the early morning to quench their thirst and to bathe. Whilst perched in a tree the Turtle Dove will often allow a near approach, but it keeps so quiet that it is almost impossible to detect its whereabouts until it dashes out with almost a whirr, and in erratic flight dodges between the branches and trunks, and soon conceals itself again amongst the foliage. As may readily be inferred, a bird of such extended migrations is a good flyer, and passes rapidly through the air. It is often seen on the ground, in the open fields, where it goes to feed; and here it runs to and fro with Pigeon-like gait, yet always alert and ready to dash off to the trees the moment danger threatens. The arrival of this bird in our English woods is soon persistently proclaimed by its note. This is a gentle, soft, and rich *coo-r-r-coo-r-r-r*, each *coo* more or less gutturally prolonged, as if the bird laboured under quite an effort to produce it. The male bird, as usual, calls the most, and is particularly noisy during the season of courtship. This note is maintained all through the summer, but begins to wane in August, and by the time of the bird's departure for the south is practically suspended. The food of the Turtle Dove is composed of grain of all kinds, the seeds of a great variety of weeds, tender shoots of herbage, fruit, and even snails and insects. In autumn it becomes more or less gregarious again, and in flocks frequents the stubbles, clover-fields, and turnips. It frequently goes long distances to feed on favourite pastures, and is much attached to its roosting-place.

Nidification.—I am of opinion that the Turtle Dove pairs for life; and even in Algeria, before the northern flight was taken, I saw them sitting in pairs on the palm-tops. Soon after its arrival in England the nesting season begins, and the first eggs are generally laid late in May, in more backward seasons the first week in June. The nest is as a rule made much nearer the ground than that

of the Ring Dove; and trees are not so often used as tall bushes. Sometimes a thick hedge is selected; whilst white-thorns, hollies, and laurels are often chosen. It is a flat, basket-like structure made of a few slender dead twigs, through which the eggs are often visible from below. The eggs are two in number, oval, and creamy-white in colour. They are on an average 1·2 inch in length and ·91 inch in breadth. Incubation lasts about sixteen days, and both parents assist in the task as well as in tending the young. Sometimes two broods are reared in the summer, but this is exceptional; and the existence of late broods of this species may often be attributed to the fact that the first nest has been robbed. I have not observed much social tendency during the breeding season in this species.

Diagnostic characters.—*Turtur*, with black tipped with pale lavender (nearly white) patches on the side of the neck, and with the under tail coverts and tips of the rectrices white. In young birds the neck patch is absent, and the feathers are edged with brown. Length, 11 to 12 inches.

Family PERISTERIDÆ.

Genus TURTUR.

Subfamily TURTURINÆ.

EASTERN TURTLE DOVE.TURTUR ORIENTALIS.—(*Latham*).**Columba orientalis**, *Latham*, *Ind. Orn.* ii. 606 (1790).**Turtur orientalis** (*Lath.*), *Salvad. Cat. B. Brit. Mus.* xxi. p. 403 (1893); *Dixon*, *Nests and Eggs Non-indig. Brit. B.* p. 331 (1894); *Seebohm*, *Col. Fig. Eggs Brit. B.* p. 159 (1896); *Sharpe*, *Handb. B. Gr. Brit.* iv. p. 256 (1897).

Geographical distribution.—*British*: A single example of the Eastern Turtle Dove has been obtained in the British Islands in Yorkshire. On the 23rd of October, 1889, an example in the plumage of the first autumn (without the pied patches on the neck) was shot at a small stream running from Oliver's Mount, near Scarborough. The specimen was exhibited at a meeting of the Zoological Society of London. *Conf. Proc. Zool. Soc.* 1890, p. 361. *Foreign*: The Eastern Turtle Dove is almost as great a stranger in Continental Europe, but it has been twice recorded (in immature plumage) from Northern Scandinavia. It inhabits India, from the central provinces northwards to the lower ranges of the Hymalayas (4000 to 6000 feet), from Afghanistan to Sikhim. It is also found in South-east Siberia, and occasionally in Mongolia and Thibet; whilst it ranges through Burma and China, to the Loo-Choo Islands, Japan, and the Kuriles. *Stejneger* has separated examples from the Loo-Choo group under the name of *Turtur stimpsoni*, but the darker colour, upon which the distinction is based, does not appear to be a reliable character.

Allied forms.—See remarks on the allied forms of the Turtle Dove.

Habits.—In its habits the Eastern Turtle Dove does not differ much from its West Palæarctic representative

Nidification.—Of the breeding habits of this species, I have written in my work on the nests and eggs of non-indigenous British birds, as follows: In most parts of its northern area of dispersal the Eastern Turtle Dove is migratory, and even in the south is subject apparently to much local movement during the non-breeding season. *Capt. Hutton* states that it arrived in its summer quarters at Mussoorie in April, leaving again in October. In its habits it is not known to differ in any important respect from the nearly allied European Turtle Dove.

It probably pairs for life, but makes a new nest for each brood. It cannot be regarded as gregarious during the breeding season, but numbers of pairs nest within comparatively small areas of suitable country, and as soon as the young are reared the birds begin to flock. Its favourite haunts are wooded mountain sides, pine forests, groves and clusters of trees. The note in the breeding season is described as a thrice-repeated guttural *coo*, and unlike that of other Doves. The nest is generally placed not far from the extremity of a horizontal branch, and is a circular, flat, mat-like structure of neatly arranged twigs, the cavity in the centre being somewhat deep. Hume states that the nest is rather more substantial than that of many other Turtle Doves. Of the actions of the birds at the nest I find nothing of special interest recorded. The eggs of the Eastern Turtle Dove are two in number, oval in form, glossy, and pure white. They are on an average 1·2 inch in length, by ·92 inch in breadth. Incubation is performed by both sexes, and lasts about sixteen days."

Diagnostic characters.—*Turtur*, with the under tail coverts and the pale tips to the rectrices slate-grey. Length, 12 inches.

ORDER PEDIOPHILI.—THE SAND-GROUSE.

I HAVE adopted Bonaparte's term *PEDIOPHILI* for the present order in preference to that of *PTEROCLETES* suggested by Dr. Scater, not only because, as Professor Newton points out, the latter is based on a grammatical misconception, but because the former possesses the additional claim of priority.

The Sand-Grouse form a remarkably isolated group of birds, showing affinities (especially in the digestive organs) with the Game Birds, and (in their osteological characteristics) with the Pigeons; being, as was pointed out by Huxley thirty years ago, so completely intermediate between these groups that they cannot be included within either of them without destroying its definition, although perfectly definable themselves. Some systematists, as for instance Scater and Stejneger, elevate them to the rank of a separate order; and all things considered this seems to be the wisest course: others, as Reichenow and Fürbringer, regard their characters of only sufficient importance to rank as a sub-order. Some naturalists include them in the great natural order of the *COLUMBIFORMES*; others, with equal authority, include them in the equally distinctive group of *GALLIFORMES*. The Sand-Grouse are one of the few ancient surviving links in the now broken chain of avine descent; and it seems impossible, in the present state of our knowledge, to say to which existing group of birds they are most closely allied. Their double-spotted egg (having underlying as well as surface markings) and precocious nestling, gives the casting vote in favour of placing them in closest proximity to the *GALLIFORMES*, although on the other hand their pterylosis is similar to that of the *COLUMBIFORMES*.

In the Sand-Grouse the sternum contains two notches on each side of the posterior margin, the inner one in some instances being reduced to an aperture or foramen. In the modification of their cranial bones the Sand-Grouse are schizognathous, whilst their nostrils are schizorhinal; although this latter is a variable character and thus apparently of comparatively small taxonomic value. Amongst their external characters may be mentioned the following: oil-gland nude; hallux, small, rudimentary, and sometimes absent; body feathers with well-marked after-shafts; fifth secondary absent. So far as is known the Sand-Grouse moult only in autumn; the young are hatched covered with down, and able to run almost as soon as they break from the shell.

Sixteen species of Sand-Grouse are at present known to science, and these are all contained in a single family. These birds are all confined to the Old World.

Family PTEROCLIDÆ.—The Sand=Grouse.

As this order contains but a single family, the characters that distinguish the latter will be the same as those already given for the former. As supplementary characters, however, may be mentioned the bill of the Sand-Grouse, which resembles that of the Game Birds; the long and pointed wings; and the feet, which are more or less covered with dense short plumes. The family is divisible into two, if not three, fairly-marked genera, only one of which is represented in the British avifauna, and that by a single species as an abnormal visitor.

Genus SYRRHAPTES, or Three-toed Sand=Grouse.

Type, SYRRHAPTES PARADOXUS.

Syrrhaptēs, of Illiger (1811).—The birds comprising the present genus are distinguished by the absence of the hind toe. The wings are very long and pointed, the outermost primary having the shaft terminating in an attenuated filament; the tail is cuneate, and the two central rectrices are much longer than the rest. The metatarsus is very short, and clothed with feathers to the toes. The bill is small and short, decurved from the base to the tip; the nostrils basal and almost hidden by feathers. Three toes in front and covered with feathers; soles of feet rugose.

This genus contains but two species, which are confined to the Eastern Hemisphere, being inhabitants of the plains and deserts of Asia. One of these species is an abnormal and irruptic migrant to Europe and the British Isles.

These Sand-Grouse are dwellers on salt plains and deserts. They are birds of sustained and powerful flight, and progress on the ground by running and walking with short quick steps. They are given to much wandering within their normal areas of dispersal. Their notes are said to be rather melodious. They subsist chiefly on grain, seeds, and vegetable substances. Their nests are mere depressions in the ground, and their eggs, usually three in number, are double spotted and oval in form. Pairing habits unknown.

Family PTEROCLIDÆ.

Genus SYRRHAPTES.

PALLAS'S SAND-GROUSE.SYRRHAPTES PARADOXUS—(*Pallas*).

PLATE IV.

Tetrao paradoxa, Pall. Reis. Russ. Reichs. ii. p. 712, pl. F. (1773).**Syrrhaptes paradoxus** (Pall.), Dresser, B. Eur. vii. p. 75, pl. 468 (1876); Yarrell, Brit. B. ed. 4, iii. p. 31 (1883); Seebohm, Hist. Brit. B. ii. p. 419 (1884); Lilford, Col. Fig. Brit. B. pt. xvii. (1891); Dixon, Nests and Eggs Brit. B. p. 351 (1893); Grant, Cat. B. Brit. Mus. xxii. p. 2 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 160, pl. 47 (1896); Sharpe, Handb. B. Gt. Brit. iv. p. 260 (1897).

Geographical distribution.—*British*: Pallas's Sand-Grouse, like the Waxwing and other species of irregular migrations, appears in our islands at long and uncertain intervals and in varying numbers. It was first noticed as a British bird in 1859, one example each being obtained in Norfolk, Kent, and North Wales. In 1863 it again occurred, when numbers found their way to almost every county of Great Britain, and to the north-west of Ireland, to the Scilly Islands, the Shetlands, and even to the Faroes. A further visitation was remarked in 1872, a flock visiting Northumberland, and a smaller party the south of Scotland (Ayrshire); whilst in 1876 the birds were observed at Winterton, in Norfolk, in May, and in county Wicklow in October. In 1888 there was an invasion of extraordinary proportions, the numbers visiting the British Islands being so great that no exact estimate could be formed. So far as is known the first pioneer of this irruption of Sand-Grouse was remarked on one of the Farne Islands, on the 6th of May, and within a few days almost every part of our area had been invaded. Parties of half a dozen, and flocks of thirty or more individuals, were remarked in districts most suited to their requirements. Nearly all these birds had apparently paired, and in some cases attempts were made to nest. Two nests with eggs were obtained in Yorkshire, and two young birds were caught on the Culbin Sands, in Moray, one in 1888 and another the following year. Although some efforts were made to protect these interesting visitors, all finally disappeared. In the autumn of 1888 flocks of Sand-Grouse were still in existence, but by the following spring most of the birds had been killed, although there is evidence to suggest that survivors still existed in our islands until 1892. *Foreign*: Pallas's Sand-Grouse is just as irregular and uncertain in its visits to continental Europe as to our islands. The first recorded occurrence in Europe was in the winter of 1848, when an example was obtained at Sarepta. In 1859 half a dozen birds were



secured in Europe, of which three were shot in the British Islands. In 1860 another example was procured at Sarepta, and in the autumn of the same year an invasion of the plains of China is recorded; whilst in 1863 a large band invaded the west, and birds were obtained in most parts of Europe, from Scandinavia in the north to Italy in the south. The normal breeding area of this Sand-Grouse is in Central Asia, on the vast steppes and salt plains of North-east Turkestan, Mongolia, and Dauria; whilst in winter it includes West Turkestan, the Kirghiz Steppes, and North China.

Allied forms.—None very closely related, with the exception of *Syrrhaptes tibetanus*, an inhabitant of the tablelands of Thibet, a much larger species (the largest of the order), with no black patch on the abdomen.

Habits.—We may appropriately preface our account of the habits of this species by quoting what we have already written respecting its irruptic movements, in our volume on the migration of birds.* These irruptic movements of birds cannot be classed either as normal migration or as nomadic migration, although many naturalists appear to think that they are nothing but variations of one or other of these habits. Irruptic movements are entirely abnormal movements and only occur at irregular intervals: waves of avine life that burst from certain centres, eventually exhausting themselves, and ultimately ending in dissolution and death. Gätke classes these irruptic movements as phenomena of *migration*, and attributes them to meteorological influences, probably of an exceptional character; but I should be disposed to attribute them to an excess of population flowing from an overcrowded area, taking of course the direction of the normal migration at whichever season the movement may be initiated. As an example of this irruptic movement we have the intensely interesting wanderings of Pallas's Sand-Grouse, from Central Asia, that have from time to time extended to Western Europe with startling suddenness. This species for the past fifty years or so has evidently been in a highly restless and disturbed state, and from time to time great waves of individuals have been thrown out, apparently to relieve a congested area of distribution. Pallas's Sand-Grouse normally is an inhabitant of the vast plains or steppes that stretch continuously from North-east Turkestan and South Siberia to Mongolia. In the north it is a migratory bird, and the winter range base extends into North China in the east, and the Kirghiz Steppes north of the Aral Sea in the west. Until 1859 this species was practically unknown to western ornithologists, although Russian naturalists had met with it from time to time in its far eastern habitat. In that year, however, the first signs of the coming irruptions broke into Europe, and examples of the Sand-Grouse were obtained in Poland, Jutland, Holland, and in the British Islands. It is interesting to note that the evident direction of this avine wave followed a north-westerly course from the Kirghiz Steppes, almost exactly corresponding with the

* The Migration of Birds, pp. 257-260 (*Amended Edition*).

normal north-easterly route. Four years later (in 1863) a much more important irruption took place, this time consisting probably of thousands of individuals, and very much the same route was followed; although, as might be expected in such a great rush of birds, the wave spread wider and further, extending to Italy and the Pyrenees in the south, to Scandinavia and Archangel in the north, and throughout the British Islands to the Faroes. Many birds endeavoured to breed in places that were best adapted to their requirements. In 1888 another and even more important wave of Sand-Grouse spread westward over Europe, the particulars of which will be still fresh in the mind of the reader. This invasion was undoubtedly the most successful of all; and so well did the birds appear to be established, that in our islands a special Act of Parliament was passed (in 1888, but not becoming law until early in the following year) for their protection. Gätke has recorded a vast irruptive wave of Jays (*Garrulus glandarius*) that swept over and past Heligoland during three successive days in October, 1882. This irruption was estimated to number millions, and curiously enough since that year down to the present one solitary Jay only has been seen at the island. As the Jay does not range further east than the Urals and the Volga, where all these birds came from is a question which appears to defy solution. Gätke also records a similar irruptive wave of Mealy Redpoles (*Linota linaria*), which, during the 4th and 5th of November, 1847, had attained such proportions "that the whole island was literally covered with them." Similar irruptive waves of Goldcrests (*Regulus cristatus*) are occasionally remarked. Now nothing can more clearly indicate the abnormal character of these irruptive movements than the fact that they are utterly abortive, either as a means of preserving the individuals undertaking them (for in no case is a corresponding permanent increase of the species remarked in the areas invaded) or as a means of colonising new districts with the surplus population from old ones. To class them either with normal migration or with range expansion is therefore erroneous. We must bear in mind the fact that these waves of avine life are drifting into districts already tenanted with a bird population as large as conditions of life will allow, or into areas where the conditions of existence are quite different from those they have proceeded from. It is a sadly significant fact that these vast bird waves never show any sign of a return ebb. Like leaves scattered by the autumn wind, the birds composing them perish, for Nature's edicts are inexorable: her delicate balance cannot be disregarded with impunity.

This Sand-Grouse appears to be more or less a migratory species, a nomadic migrant, but one whose wanderings normally take place within the usual area of dispersal. They are apparently early birds of passage, for Radde states that they arrived at their breeding grounds before the end of March, during very cold weather, the thermometer falling nearly thirty degrees below zero at night. A month later they were nesting. All through the year this bird appears to be more or less gregarious, and to breed in colonies which are scattered here and there

over the vast plains. In summer they appear to be very fond of basking in the sun in cavities scratched out of the sand, where they lie on their side and dust themselves. Their flight is described as exceedingly rapid, their quickly-beating long wings, which move very regularly and in a Plover-like manner, making a whirring sound as they go. Upon rising they utter what is described as a melodious chuckle; but this note is often heard as they stand upon the ground. Their short legs make them walk and run somewhat clumsily, with little steps, the body swaying from side to side. The food of this bird is composed of seeds and the tender shoots of plants growing on the steppes. After feeding they repair very regularly to certain chosen spots to drink, salt-lakes or wells; but fresh water is said to be taken by preference. They are remarkably wary, and when once flushed, never appear to alight again until they have carefully scrutinised the selected spot by describing a circle over it. They are said to drink quickly, and to fly for very long distances to the water, especially in the morning. In autumn this bird appears to become even more gregarious, and it then forms into vast flocks, which lead a more or less nomadic kind of life until the following spring, apparently going but short distances from their summer quarters unless driven away by snowstorms. During winter flocks of Sand-Grouse occasionally reach Northern China; and here, according to Swinhoe, the natives take them in clap nets baited with small beans.

Nidification.—Whether this bird pairs for life or not is difficult to say, but being so very Pigeon-like in its affinities it may probably do so. It is an early breeder, and the eggs are said by Radde to be laid in April: that naturalist, in fact, took nests in April and saw the chicks by the middle of May. The nest is nothing but a little hollow in the sand, with a few bits of grass or weed arranged round the margin. Even this slight addition is often dispensed with. The eggs are usually three, but sometimes four in number, very oval and Pigeon-like in shape, but olive or brownish-buff in ground-colour, profusely spotted with dark brown and underlying markings of grey. They are, on an average, 1·7 inch in length by 1·1 inch in breadth. The female sits lightly, and soon flies from her nest if threatened by danger, leaving the eggs to the concealment afforded by their protective colour. The hot sun also assists largely in incubation, and as soon as it is sufficiently high above the horizon to dispense its genial warmth the nests are said to be left, and the parent birds to go off in pairs to feed and drink. Incubation lasts a month, and the young, as soon as they are hatched, are able to run and forage a good deal for themselves. Two broods are supposed to be reared in the year.

Diagnostic characters.—*Syrrhaptes*, with the legs and toes feathered to the claws, with no hind toe, with the first primary and the two central rectrices finely pointed, and with a large black patch on the abdomen. The latter characters are not so pronounced in the female or young. Length, 15 to 20 inches.

ORDER GALLIFORMES.—THE GAME BIRDS.

THE Birds comprising the present order, and popularly known as "Game Birds," constitute a large and important group, but somewhat ill-defined on what may be termed the boundaries. The most simple way of showing their possible affinities is to place them in the centre of a circle, round which must be grouped in varying proximity the Pigeons, the Sand-Grouse, the Plovers, Cuckoos, Bustards, Rails, Cranes, Hemipodes, Touracous, and the Hoactzin. Their sternum contains two very deep notches on each side of the posterior margin: the episternal process is perforated to receive the base of the coracoids. In the modification of their cranial bones they are schizognathous, whilst their nostrils are holorhinal. Amongst their external characters may be mentioned the following. The oil-gland is generally tufted (although nude in the Megapodes, and absent in *Argus*); the hallux or hind-toe is always present, varying, however, in size and position; the body feathers have well-marked after-shafts. The bill is always comparatively short and stout, curved and wide at the base, the upper mandible overhanging the lower one. The primaries are ten in number; the wings rounded; rectrices variable in number. The young are hatched covered with down, and able to run and feed almost directly they break from the shell. They begin to develop quills soon after they are hatched, and are able to fly in the juvenile stage of their existence, their wing feathers being changed repeatedly, so that by the time they are fully grown they have had three, four, or even five sets of quills. The Game Birds have one complete moult in autumn. Some species have a partial moult in spring; others change their feathers more or less completely several times during the year, and in some cases a change takes place in the colour or pattern of the feather without a moult at all. Perhaps in no other group is the change of plumage more complicated. In no other order do birds exhibit more diversity in their external characters. The great variety and brilliancy of the wattles, combs, and excrescences that adorn the head; the development of spur, the magnificent colour of the plumage, and the wonderful modification of the tail feathers and coverts, all being of exceptional interest.

Mr. Ogilvie Grant, a high authority on the present order, includes therein about four hundred species and subspecies of Game Birds. The Galliformes are divisible into at least four fairly well-defined families, and these again into three subfamilies. Two of these families are represented in the British Islands. The Game Birds are cosmopolitan in their distribution, with the exception of the Australian region.

Family TETRAONIDÆ.—The Grouse.

The birds in the present family are characterised by having the hallux raised above the level of the front toes; the nostrils entirely and the feet partially or wholly concealed by feathers; the toes are either plumed or naked and pectinate; spurs absent.

Genus LAGOPUS, or Moor Grouse.

Type, LAGOPUS ALBUS.

Lagopus, of Brisson (1760).—The birds comprising the present genus are characterized by their densely feathered metatarsi and toes. The wings are remarkably rounded and short; the tail is composed of sixteen feathers, generally nearly even. The bill is very short; nostrils basal, shielded by an arched membrane, and concealed by feathers. Space above the eye naked. Three toes in front, one behind very short, and only just reaching the ground.

This genus is composed of about half-a-dozen species, which are confined to the Northern Hemisphere, being inhabitants of the Palæarctic and Nearctic regions. Two species are resident in the British Islands.

The Moor Grouse are dwellers on moors, tundras, and mountains. They are birds of rapid flight, which, however, is seldom long sustained, and on the ground they progress by running and walking. Their notes are loud and unmusical. They subsist chiefly on fruits, berries, seeds, grains, shoots of herbage, and insects. Their nests are rudely made, placed on the ground, and their eggs are numerous and single-spotted. These birds pair annually. Their flesh is highly esteemed for the table.

Family TETRAONIDÆ.

Genus LAGOPUS.

PTARMIGAN.

LAGOPUS MUTUS.—*Montin.*

PLATE V.

Tetrao mutus, Montin, Phys. Sölsk. Hand. i. p. 155 (1776-86); Seebohm, Hist. Brit. B. ii. p. 424 (1884); Seebohm, Col. Fig. Eggs Brit. B. p. 271, pl. 59 (1896).

Lagopus cinereus, Macgill, Brit. B. i. p. 187 (1837).

Lagopus mutus (Montin), Dresser, B. Eur. vii. p. 157, pls. 477, 478 (1874); Yarrell, Brit. B. ed. 4, iii. p. 83 (1883); Lilford, Col. Fig. Brit. B. pt. iii. (1888); Dixon, Nests and Eggs, Brit. B. p. 364 (1893); Grant, Cat. B. Brit. Mus. xxii. p. 44 (1893); Sharpe, Handb. B. Gt. Brit. iv. p. 271 (1897).

Geographical distribution.—*British*: The Ptarmigan is an inhabitant of Scotland, principally the Highlands, extending to the Outer Hebrides, and the mountains as far south as Arran, but is absent from the Orkney and Shetland Islands. *Foreign*: Circumpolar. The Ptarmigan, in one of its several forms, inhabits the moors and tundras above the limit of forest growth of Europe, Asia, and America, and is found in certain localities further south at high elevations where a similar climate and conditions prevail. It frequents the Dovre-fjeld, the Pyrenees, the Alps, the Urals, the mountains of South Siberia, Japan, and the Kurile Islands. It also inhabits Iceland, Spitzbergen, and Nova Zembla. On the American Continent it frequents the Rocky Mountains south to lat. 55°.

Allied forms.—*Lagopus leucurus*, an inhabitant of the Rocky Mountains and their western spurs in British Columbia and Washington territory. Differs from the Ptarmigan in having the tail white at all seasons. *L. mutus* var. *hyperboreus*, an inhabitant of Spitzbergen, is perhaps subspecifically distinct, owing to its larger size (length of wing, 8·9 to 8·6 inches, against 7·9 to 7·2 inches in the typical form) and greater amount of white on the basal portion of the tail feathers. The Ptarmigan inhabiting Iceland and the regions north of the Arctic circle in both hemispheres have been called *L. mutus*, var. *rupestris*, in consequence of their wanting the dark breast which characterises examples from more southern latitudes. Professor D. G. Elliot has described a new species of Ptarmigan from Attu Island, one of the Aleutian Chain, under the name of *Lagopus evermanni*, “distinguished from all the Ptarmigans of the western hemisphere by its entire white and black plumage.” He has also described a new subspecies from Kyska

and Adak Islands from the Aleutian archipelago. It is more than probable that all these races of Ptarmigan are nothing more than representative forms or climatic varieties of one polymorphic species.

Habits.—Of all our Game Birds the Ptarmigan is the wildest. It is a resident in our islands, confined to the summits of the mountains, wandering nomadically a little lower during the non-breeding season. Its haunts are barren and wild in the extreme; rough, broken, wind-swept summits, where the surface is either bare and stony, or covered sparsely with ling and heath and ground fruits, strewn with boulders, and for the greater part of the year picked out with spotless snow. Here the plumage of the Ptarmigan is so eminently protective, and the bird itself so skulking in its habits, that the observer often wanders all unconsciously through a pack of birds, never dreaming of their proximity until they rise here, there, and everywhere around him from the ground which often seems too bare to conceal a mouse. Ptarmigan afford one of the best known instances of protective colouration. With each recurring season a different dress is assumed to meet the changing hues of their surroundings. In spring these birds are clothed in a dress of dark brown, mottled with yellowish brown, to assimilate in colour with the mosses and lichens. In autumn they change this dress for one of pale grey, vermiculated with black—or rather they are slowly changing colour all the summer through with the changing aspect of their haunts, the latter tints being emphasized at a time when the mosses and lichens are burnt up and beginning to fade. Then in winter, when the mountain-tops are wreathed in snow, the browns and greys are doffed and plumage of spotless white assumed in their stead. The Ptarmigan is a thorough ground bird, and never uses its wings unless compelled by various circumstances to seek the air. Then, however, it can fly fast and far, and often goes from one mountain-top to another on rapid-beating wings, or skims over brows and shoulders of the hill-tops with pinions held arched and stiff. It is very fond of sitting on rocks and boulders, apparently basking in the sun; whilst on the ground it walks and runs about in true Game Bird style, and is very fond of lying on its side and taking a dust bath. Many of its resorts and movements are similar to those of the Red Grouse, but the note is very different. It is nothing near so loud or distinct, and may be best described as a low croak or grunt. The food of this species is principally composed of the tender green tops of ling and heath, but buds, seeds, and shoots of various mountain plants are eaten; and in autumn, ground fruits, such as bilberries and cloud-berries. A small quantity of grit is invariably contained in the stomach to assist digestion; and according to Macgillivray, the bird eats its fill of food and then goes off to some quiet nook to digest it. Early in autumn, sometimes at the end of July or the beginning of August, Ptarmigan begin to pack, especially if the season be stormy and unsettled, but during very mild and genial weather this operation is somewhat delayed. These flocks keep to the lower summits, and

during winter, birds are scarcer on the highest tops and said to be smaller in size. Although subject to the same disease as the Red Grouse, this is never so virulent, the sterner conditions of existence probably doing much to stamp out its tendency to spread and recur.

Nidification.—The Ptarmigan is monogamous and pairs early in the year, although the eggs are not laid before the beginning or even the end of May, according to the state of the season. The nest is little more than a hollow in the ground, sometimes beneath the shelter of a bush or beside a rock boulder, sparsely lined with twigs of heather, and perhaps a little dead mountain grass and a few bilberry leaves. The eggs are from eight to twelve in number, buffish-white or buff in ground-colour, spotted and blotched with rich liver-brown. They are, on an average, 1·7 inch in length by 1·1 inch in breadth. The hen-bird sits closely, often allowing herself to be nearly trodden upon before rising. The young chicks run soon after they are hatched, and are very well able to take care of themselves, scattering and hiding amongst the stones and vegetation the moment danger threatens or when the watchful mother sounds the note of warning. The hen alone appears to incubate the eggs, sitting about three weeks for the purpose. One brood only is reared each season.

Diagnostic characters.—*Lagopus*, with the primaries white with dark shafts, and the wing less than 8 inches in length. Length, 15 inches.



Family TETRAONIDÆ.

Genus LAGOPUS.

RED GROUSE.

LAGOPUS SCOTICUS—(*Latham*).

PLATE VI.

Tetrao scoticus, Lath. Gen. Syn. Suppl. i. p. 290 (1787 *ex Brisson*); Seebohm, Hist. Brit. B. ii. p. 428 (1884); Seebohm, Col. Fig. Eggs Brit. B. p. 272, pl. 59 (1896).

Lagopus scoticus (Lath.), Macgill. Brit. B. i. p. 169 (1837); Dresser, B. Eur. vii. p. 165, pl. 479 (1873); Yarrell, Brit. B. ed. 4, iii. p. 73 (1883); Lilford, Col. Fig. Brit. B. pt. xviii. (1891); Dixon, Nests and Eggs Brit. B. p. 362 (1893); Grant, Cat. B. Brit. Mus. xxii. p. 35 (1893); Sharpe, Handb. B. Gt. Brit. iv. p. 263 (1897).

Geographical distribution.—*British*: The Red Grouse is confined to the British Islands, where it inhabits the wild moorland districts throughout Great Britain and Ireland, except those counties of England that lie south and east of a line drawn from Bristol to Hull. Although inhabiting the Hebrides and the Orkneys, it is absent from the Shetlands. *Foreign*: No extra-British distribution.

Allied forms.—*Lagopus albus*, the continental representative of the Red Grouse, an inhabitant of the tundras above the pine region in the willow and birch zones of Arctic Europe, Asia and America. Differs from the Red Grouse in having a white winter dress, and in having the primaries and secondaries white at all seasons.

Habits.—British sportsmen may well pride themselves upon the exclusive possession of such a thorough Game Bird and true sport-furnishing species as the Red Grouse or Moor Fowl. It is one of the most sedentary of Game Birds, and never wanders from its native heath except under very exceptional circumstances. The great haunts of the Red Grouse are the vast expanses of heath-clothed waste that stretch in almost one unbroken line from Wales to the Orkneys and Shetlands. This district is wild and romantic enough, and the great diversity of its physical aspect counteracts the impression of monotony that the sameness of the vegetation which clothes them is apt to inspire. Hills and dales, vast plateaux, swamps, lakes, and streams, ridges and peaks break the surface of the moors, and patches of coarse grass, dense fields of rushes and sedges, of bracken and gorse, and clumps of broom and mountain ground fruits relieve the monotony of the otherwise interminable stretches of heath and ling. Here, all the year round, the

Red Grouse is the one dominant bird, cherished and protected everywhere with the greatest solicitude for the unrivalled sport it yields. The Red Grouse is a thorough ground bird, although it may occasionally be seen sitting in the stunted willow, birch, and thorn trees, and is fond of perching on boulders or on the rough, "dry" walls that divide the moors from the highways and upland pastures. In spite of the bird's abundance it does not make itself very conspicuous, and the inexperienced observer may wander over miles of moor without seeing many Grouse. They skulk in the heather, and generally prefer to run out of harm's way instead of taking wing. They are wary enough, too, and are ever on the outlook for approaching danger, craning their heads high above the cover, and looking warily about in all directions. When flushed, however, they will be found to fly well and with great speed, although seldom rising very high. Like the Ptarmigan, they often skim on stiff arched wings for a long distance over a ridge or bank, and if much disturbed will prolong their flight across a wide valley, or along the hillsides for a mile or more. At all times of the year the Red Grouse is socially inclined, and in autumn becomes to a great extent gregarious, "packing" towards the end of August, when it becomes more wary and wild. Previous to stormy weather these packs are found on the highest ground, but when the change arrives they seek the sheltered hillsides. During severe snowstorms the Red Grouse will burrow into the snowdrifts for shelter. The note of the Red Grouse is very loud and highly characteristic, most frequently heard as the bird rises startled from the heather. It may best be expressed as a loud, clear, *go-bac go-bac bac-bac-bac*. Its crow, heard during the pairing season, and especially in the early morning, is slightly modified into a loud and clear *cok-ok-ok*. The cry of the female is little more than a low croak. The food of the Red Grouse is chiefly composed of the green, tender tops of the ling (*Calluna*) and the heather (*Erica*); but various ground fruits are eagerly devoured in autumn (the birds' droppings at this season staining the rocks dark purple) as well as the seeds of weeds; whilst during harvest and severe weather the birds will visit oat stubbles and even stack-yards at some distance from their usual haunts. I have known Red Grouse to be taken in the streets of Sheffield during severe winters, and great numbers to be shot on farms and near dwelling-houses several miles from the moorlands. As some misapprehension may arise respecting this apparent "retreat" of species from adverse conditions, I may here repeat what I have said concerning it in the volume dealing with the migration of British birds. Scores of similar instances might be given; and in some continental districts, where the weather has been far more severe than with us, still more extraordinary cases have occurred of wild birds visiting civilized places to seek for food. Now, in the first place, it may be remarked that however unusual the locality may be in which such species may appear under these exceptional circumstances, it is always within the normal area occupied by that species. A Nutcracker will never come to an English cottage door for food, any more than a Robin will ever appear at the

threshold of a Canadian settler. In the second place, the straying of a species from its accustomed haunts is purely abnormal—a struggle for life, in fact, of an individual, and such an action in the majority of cases would not save the species from extermination if it succeeded in saving that individual. The conditions for successful reproduction, found only in the normal haunts of the species, would be wanting, and the inevitable result would be a more or less rapid extinction throughout the area affected. Little need be said concerning Grouse-shooting. The sport yielded by driven Grouse is certainly not equalled by any other winged game; and the man who can satisfactorily account for his cartridges after shooting for an hour or so from the “butts,” at birds that thunder by like sky-rockets, need not be afraid to boast of his prowess. Very large bags are sometimes made both over dogs and at the butts. The Red Grouse is singularly subject to what may well be termed a mysterious disease, seeing that its causes and nature are but imperfectly understood. This disease (which is said to have been traced to a parasitic worm, *Strongylus pergracilis*, breeding in the throat and rapidly spreading to the other organs), appears specially to attack the liver and the intestines; but whether the worm is the primary cause of the disorder seems by no means certain, for parasites of this character, if not of the same species, are often common in healthy birds. Space forbids discussion of this disease here; but I might remark that in the opinion of an old gamekeeper friend of mine, it is very closely connected with the moulting of the birds. I offer this merely as a hint to investigators. On the other hand, over-stocking of moors, both with birds and with sheep, causes a short food supply, and brings the Grouse low in condition, and makes them less likely to withstand incipient disease. Attempts have been made to introduce the Red Grouse in some of the eastern and southern counties—at Sandringham, Holt, and other places. It is said that of fourteen brace turned out at Sandringham in 1878, enough remained to produce three broods in 1881. The small extent of moorland in these places seems fatal to the success of the efforts.

Nidification.—The Red Grouse is monogamous, and pairs early in the spring. At this period the cock-birds stand on some bit of rising ground and crow defiance to their rivals and invitation to the hens, sometimes accompanying this call by jumping into the air or flapping their wings. Once paired, however, there is no evidence to show that the cock ever mates with more than one hen. The nest is slight enough, always on the ground, either among the ling and heath, under the shelter of a boulder, or even amongst grass and rushes. Sometimes it is made in frequented places, a yard or so from the highway or footpath; whilst favourite nesting-grounds are near the patches of burnt heather—burnt for the purpose of furnishing a supply of young shoots for the Grouse—where doubtless the abundance of food influences the choice. The nest is merely a hollow scratched out in the peaty soil and strewn with a few bits of withered ling, heath,

dry grass, or dead leaves. The Red Grouse is a rather early breeder, birds on sheltered low ground going to nest early in April, but those inhabiting higher and more exposed districts are several weeks later. The state of the season also considerably affects the time of laying; and sometimes a late fall of snow will overtake the brooding or laying birds and cause great mischief. The eggs, too, vary considerably in number in different years. If wet and cold, the clutches vary from five to nine eggs; if warm and dry, twelve or fifteen are frequently found. They are creamy-white in ground-colour, very thickly spotted and blotched with rich reddish-brown, in some cases almost crimson-brown. The colouring matter is easily rubbed from newly-laid eggs, and during wet weather the feet of the sitting bird spoil much of their beauty. They are, on an average, 1·8 inch in length by 1·25 inch in breadth. The Red Grouse is a close sitter, and will remain brooding until almost trodden upon. The female performs the entire duties of incubation, which lasts twenty-four days; but when the young are hatched both parents assist in tending them. The young broods are generally led by their parents to the wettest parts of the moors, doubtless for the sake of some particular kind of food. One brood only is reared in the season, but if the first clutch of eggs be destroyed it is usually replaced by another of smaller number.

Diagnostic characters.—*Lagopus*, with the primaries uniform dark brown. Length, 14 to 16 inches. Hybrids are occasionally found between this Grouse and the Black Cock, and sometimes, it is said, the Ptarmigan; whilst Mr. J. G. Millais has recorded and figured (Game Birds pp. 43-62) a hybrid between the Red Grouse and a Bantam Fowl. More or less perfect albino Red Grouse have been recorded. For one of the most remarkable, conf. *Zoologist*, 1898, p. 126.

NOTE.—The Red Grouse is a species subject to considerable variation in the colour of its plumage. Mr. Ogilvie Grant, who has made a very exhaustive study of the question, states that the male Grouse present three distinct types of plumage—a red form, a black form, and a white spotted form. The first of these is principally confined to the low grounds of Ireland, the West Coast of Scotland, and the Outer Hebrides. The second form appears to have no special locality; whilst the third form is found most emphasised on the high grounds of the North of Scotland. In the female no less than five types are definable—the red, black, white-spotted, buff-spotted, and buff-barred. Of these Mr. Grant states that the first two are the rarest; the white-spotted occurs as in the male; the fourth is the commonest and most usually met with; whilst the fifth is found in the South of Ireland. Another interesting peculiarity of this species is that both male and female have two distinct moults in the year, but in the male they take place in autumn and winter, and in the female in summer and autumn. The males have no distinct summer, and the females no distinct winter, plumage. These changes of plumage have been exhaustively worked out by Mr. Grant. (Conf. *Annals of Scottish Nat. Hist.* 1894, pp. 129-140, pls. v., vi.).

Genus TETRAO, or Wood Grouse.

Type, TETRAO UROGALLUS.

Tetrao, of Linnæus (1766).—The birds comprising the present genus are characterised by their feathered metatarsi and bare toes. The wings are rounded and short; the tail is composed of eighteen feathers, and varies considerably in shape.* The bill is short and stout, and arched from the base to the tip; nostrils basal, shielded by an arched membrane, and almost concealed by feathers. Space above the eye naked. Three toes in front, one behind, the latter short; edges pectinated.

This genus is composed of about half-a-dozen species, which are confined to the Northern Hemisphere, being inhabitants of the Palæarctic region. Two species are resident in the British Islands.

The Wood Grouse are dwellers in forests and on the broken ground near them. They are birds of rapid if somewhat laboured flight, and on the ground they progress by running and walking. Their notes are loud, and, in the males, considerably varied. They subsist chiefly on the buds and leaves of conifers, also on fruit, berries, grain, seeds, and insects. Their nests are rudely made, placed on the ground, and their eggs are numerous and single-spotted. These birds are polygamous, and the female takes sole charge of the eggs and young. Their flesh is highly esteemed for the table.

*Mr. Grant separates the Black Grouse under the generic title of *Lyrurus*, the chief character being the curved outermost tail feathers, but as this distinction applies only to male birds we fail to recognise its generic importance.

Family TETRAONIDÆ.

Genus TETRAO.

CAPERCAILLIE.

TETRAO UROGALLUS.—*Linnaeus*.

PLATE VII.

Tetrao urogallus, Linn, Syst. Nat. i. p. 273 (1766); Macgill. Brit. B. i. p. 138 (1837); Dresser, B. Eur. vii. p. 223, pl. 490 (1873); Yarrell, Brit. B. ed. 4, iii. p. 45 (1883); Seebohm, Hist. Brit. B. ii. p. 440 (1884); Dixon, Nests and Eggs Brit. B. p. 359 (1893); Grant, Cat. B. Brit. Mus. xxii. p. 60 (1893); Lilford, Col. Fig. Brit. B. pt. xxviii. (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 274, pl. 59 (1896); Sharpe, Handb. B. Gt. Brit. iv. p. 276 (1897).

Geographical distribution.—*British*: Bones of the Capercaillie testify to its former residence in the north of England, such having been found in the caves of Teesdale and amongst the Roman remains at Settle, in West Yorkshire. During the latter half of the last century it was exterminated from Scotland and Ireland, Pennant stating that a few were to be found about Thomastown, in Tipperary, about the year 1760, and mentions an example obtained north of Inverness; so that it would seem that the bird became extinct in Scotland and Ireland simultaneously. Its successful introduction into Scotland from Sweden commenced in 1837-38 by Sir Thomas Fowell Buxton, although an attempt had been made some ten years previously at Mar Lodge. From Taymouth, in Perthshire, the centre of its restoration, it has spread during the past fifty years over the greater part of this county and Forfarshire, as well as into Stirlingshire. The extension of its range appears now only to be a matter of time. *Foreign*: Western Palæarctic region. It inhabits the pine forests of Europe and Asia; in Scandinavia as far north as lat. 70°; in Russia and Siberia as far north as lat. 67°. Its eastern limit appears to be the valley of the Yenisei up to Lake Baikal. Returning westwards it is found in South Siberia, in the Altai Mountains, and in North-eastern Turkestan up to an elevation of 10,000 feet. It appears not to inhabit the Caucasus and Southern Russia, but is a dweller in the pine forests of the Carpathians, on the Italian slopes of the Alps, the Spanish slopes of the Pyrenees, and throughout the Cantabrian ranges. It is still found, but in apparently decreasing numbers, in Poland and in Northern and Central Germany.

Allied forms.—A pale subspecies of the Capercaillie has been described from the Urals under the name of *Tetrao uralensis* by Professor Nazarov. *Tetrao parvirostris*, an inhabitant of East Siberia, ranging from the valley of the Yenisei, through Mantchooria, southward into Northern China. Differs from the Caper-



caillie in having the head and neck metallic purple and green, more white on the wing- and upper tail-coverts, but with no white on the tail itself, and in having a longer and more graduated tail. The Capercaillie from Kamtschatka, *T. kamtschaticus*, is said to be intermediate in size, and to have the shoulder feathers so boldly tipped with white as to form a conspicuous band along each side of the back.

Habits.—This magnificent Grouse is one of the rarest and most local of those birds which are classed under the head of Game. Its haunts are chiefly in the forests of spruce fir and larch, although it frequently wanders from these localities into birch and oak woods, and on to the bare expanses of moor, or the open parts of the forest where the broken ground is strewn with bracken and with various kinds of ground fruit. It is most partial to the large pine woods, more especially those that are broken up into swampy ground in places, and where small lakes occur. In these wild districts where the Capercaillie is present it is often very conspicuous, as the massive creature sits poised on some topmost point of a pine tree, his huge form showing out clearly against the sky. Here it is very wary, and seldom allows a near approach, although when sitting amongst the lower branches, where it considers itself well concealed, the observer is often allowed to walk quite closely past it. The Capercaillie is far more of a tree bird during winter than in summer; but it always prefers to roost in a tree, and to retire to a tree to sit and digest its meal. It is everywhere a resident, although it is given much to wandering up and down the country side in an aimless sort of way; females and young males especially so. The flight of the Capercaillie is very powerful, yet the bird seldom flies far, unless it be to cross over a valley from one wood to another; nor is it very loud and whirring, except when he rises almost at your feet, or dashes unexpectedly from the branches where he has been watching you intently. The food of the Capercaillie in summer consists of the leaves and buds of various plants and trees, such as the alder, birch, and hazel, the leaves of the fir and larch, and less frequently of the spruce. To this fare is added all the various ground fruits that flourish in or near the haunts of the bird, as well as acorns: insects, especially ants and their eggs, and beetles, are also sought for, as are also worms. In winter the needles of the pine-trees are almost the exclusive food. At all times of the year the male feeds more on these spines or needles than the female, who spends more of her time on the ground. Consequently the flesh of the latter is more palatable than that of the male, whose carcase is frequently too strongly flavoured with turpentine or resin to be pleasant to the taste. Grain is never eaten in great quantities. It is said that during severe weather this bird will bury itself in a snowdrift for shelter. The statements that the Capercaillie is detrimental to the presence of Black Game and Pheasants by its pugnacity and habit of appropriating their nests, do not appear to be borne out by evidence carefully collected for the purpose

of ascertaining their truth. That it may do considerable damage to small forests where it may chance to be abundant is by no means improbable; the crop of one bird shot in November containing the extraordinary number of two hundred and sixty-six shoots and buds, besides a large handful of leaves, of the Scotch fir! For further information on this important subject, as well as for full particulars concerning the introduction of this species into Scotland, I must refer my readers to Mr. J. A. Harvie-Brown's exhaustive treatise entitled *The Capercaillie in Scotland*, a book that should be on the shelves of every sportsman and naturalist.

Nidification.—The Capercaillie becomes most interesting, perhaps, to the naturalist in the breeding season. It is a polygamous species, and like most of such birds, indulges in various grotesque and interesting habits during that period. This portion of their economy has been most carefully studied and described by Lloyd, and from his important work on Scandinavian Game Birds the following particulars have been obtained. Pairing commences in April and continues through May. The male chooses some point of vantage in his haunts, generally a pine tree in the more open part of the forest, or a huge piece of rock with a level surface. Here he takes his stand in the morning just before sunrise, and again in the evening directly after sunset, and from his perch on a bare or dead branch of the tree, or the summit of the rock, he puffs out his plumage, and with extended neck, drooping wings, and erected tail spread out to the fullest extent, he begins to utter his "spel," or love music. This consists of three very distinct notes, *pellep*, *klickop*, and *hede*, the first and last several times repeated. These antics and notes occupy a period of several minutes, and are often repeated at once, during which time the bird works himself up to such a pitch of amorous excitement as to be utterly oblivious of impending danger. The natives take advantage of this, and by advancing during each "spel" or ecstasy, creep up within gunshot. The females respond to this curious exhibition by uttering a harsh croak, advancing to attract his attention, until he finally descends from his perch and pairs with each in turn. These "laking places" are frequented every spring with great regularity by numerous cocks and still more numerous hens, and are usually all in the same neighbourhood of their haunts. Much fighting takes place, the young and weaker birds being driven out, and not allowed to "spel" or "play." The love notes are often uttered so loudly as to cause the tree on which the bird is sitting sensibly to vibrate to the touch, and may be heard for a long distance through the silent forest. A second "spel" is said to take place towards the end of September or early in October. The female takes all charge of the eggs and young. She makes a scanty nest amongst the bilberry wires and heather in a clearing of the forest, merely a hollow scraped out, and lined with a few dry leaves or scraps of grass. The eggs are from eight to twelve in number, the smaller clutches being the produce of the younger hens. They are brownish-buff in ground-colour, thickly spotted with reddish-brown, and a few larger markings of

the same colour. They measure on an average 2·2 inches in length by 1·6 inch in breadth. One brood only is reared in the year, and incubation lasts from twenty-six to twenty-eight days.

Diagnostic characters.—*Tetrao*, with the tail nearly square, and the wing more than 12 inches in length. Length, 35 inches (male); 25 inches (female). Hybrids are pretty frequent in a wild state between the Black Cock and the female Capercaillie, the latter being much given to wandering from their usual haunts and pairing with Black Game during these peregrinations. Hybrids have also been known between the female Capercaillie and the male Willow Grouse, and the species is said occasionally to cross with the Pheasant.

Family TETRAONIDÆ.

Genus TETRAO.

BLACK GROUSE.TETRAO TETRIX.—*Linnæus*.

PLATE VIII.

Tetrao tetrax, Linn, Syst. Nat. i. p. 274 (1766); Macgill. Brit. B. i. p. 145 (1837); Dresser, B. Eur. vii. p. 205, pl. 487 (1873); Yarrell, Brit. B. ed. 4, iii. p. 60 (1883); Seebohm, Hist. Brit. B. ii. p. 435 (1884); Lilford, Col. Fig. Brit. B. pt. vii. (1888); Dixon, Nests and Eggs Brit. B. p. 360 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 273, pl. 59 (1896).

Lyrurus tetrax (Linn), Grant, Cat. B. Brit. Mus. xxii. p. 53 (1893); Sharpe, Handb. B. Gt. Brit. iv. p. 273 (1897).

Geographical distribution.—*British*: The Black Grouse was formerly widely distributed throughout Great Britain, but it has been exterminated in many localities, in some of which, however, it has been introduced. It is resident locally in all counties south of the Thames, perhaps with the exception of Kent. It is locally distributed in Wales, the Midlands, and in the vicinity of Sandringham, in Norfolk; thence in every county north of Nottingham up to the Border. It is more widely and generally distributed throughout Scotland, including some of the Inner Hebrides, but has not succeeded in establishing itself on the Orkneys or Shetlands. It is not indigenous to Ireland. *Foreign*: Palæarctic region. It inhabits the pine and birch forests of Europe and Asia; in Scandinavia as far north as lat. $69\frac{1}{2}^{\circ}$; in Russia and Siberia as far east as the Yenisei, as far north as lat. 68° , but in the valley of the Lena not beyond lat. 63° . East of the latter valley in North Siberia it has been found as far as the Kolima river, and in the south of that country it ranges eastwards into the Amoor Valley to the Ussuri and Mantchooria. Returning westwards we find it to be an inhabitant of South Siberia and North-eastern Turkestan, onwards throughout Central Europe as far south as the Alps and the Northern Apennines. It is said to occur in the Eastern Pyrenees.

Allied forms.—*Tetrao mlokosiewiczi*, an inhabitant of the Caucasus. Differs from the Black Grouse in having no white in the plumage, in being somewhat smaller, and in having a very differently-shaped tail. The female of this species is greyer than the female Black Grouse, and the vermiculations on the plumage are less coarse.



Habits.—The Black Grouse is a bird of the trees, but not quite as much of a forest species as the Capercaillie. It loves wild, broken country on the border of the moors, in birch and fir plantations, and the romantic hollows below the level plateaux of heath and ling, where the ground is clothed with bracken and bramble, strewn with rocks, and traversed by dancing streams which sometimes widen out into expanses of rush-grown bog and cotton-grass. In our southern counties favourite haunts of this bird are the wild commons and small isolated tracts of moorland, where pine woods are in close proximity, and plenty of underwood and trees are to be found. The Black Grouse is extremely partial to districts where water abounds, either swampy ground or pools and streams. It is a skulking, shy, and wary bird, seldom being seen until it is flushed, either from the ground or the trees; and even when feeding on the bare hillsides, which it often does, some distance from the plantations, it is ever on the alert, and runs and conceals itself the moment it is alarmed. I have seen Black Cocks take refuge in clumps of rushes growing on the hillside, running from one tuft to another until the plantation was reached. The flight of the Black Grouse is powerful and rapid, but the bulk of the bird seems to lend it a laboured character. The Black Cock, except during the moulting season, in July and August, spends much of his time in the trees, and always prefers to roost in a tree; but the Grey Hen is more of a ground bird. I have often remarked the partiality of this species for tall bracken in autumn; and at that season it also wanders from the covers to the stubbles. During long-continued snowstorms it sometimes burrows into the drifts for shelter. The food of the adult Black Grouse is almost exclusively of a vegetable nature. In summer the seeds of rushes and the tender tops and leaves of ling and heath and other plants are the birds' favourite fare; in autumn, grain and wild fruits and berries are partaken of; whilst in winter, willow twigs, birch catkins, alder buds, and leaves of the ling and heath are eaten. Black Game, like Red Grouse, always seem bewildered and stupid during misty weather, and then often allow a much nearer approach as they sit on the half-leafless trees. I might also remark for the benefit of any sportsman unaware of the circumstance, that while Red Grouse always endeavour to fly down wind, Black Game seek to fly up wind. The formation of the tail may have some influence on this. When much shot at, Black Game generally mount up high into the air, and fly right away to some distant cover. This species also appears to have an antipathy to flying uphill, and when flushed on a slope they usually pass to a lower level.

Nidification.—In the matter of its reproduction the Black Grouse very closely resembles the Capercaillie. It is polygamous, and the Black Cocks perform much the same peculiar antics during the pairing season to charm the Grey Hens as we have already described in the preceding chapter. Certain meeting or "laking" places are chosen in their haunts, to which numbers of males resort early in April; and here battles are of frequent occurrence for the females, which are attracted by

the love notes, or "spel," and charmed by the grotesque attitudes assumed by the cocks. The "spel" or song consists of two very distinct notes, one a kind of *coo*, the other a *hiss*, both so loudly uttered that they may be heard for a mile or more across the silent wilderness. During the progress of the "lek" the females creep up to the place with drooping wings, uttering a low note and apparently watching the proceedings with great interest, waiting to pair with the most successful males. A second "spel" is said to take place in autumn, and during this period the cocks keep in companies by themselves. The female takes all charge of the domestic arrangements. About the first week in May the Grey Hen goes to nest. This is always placed on the ground, under a clump of dead bracken or matted bramble and fern, or amongst heather or ling, rushes, or bilberry wires. It is merely a hollow into which is scraped a few bits of dry grass, broken fern-fronds, or dead leaves of the bilberry, and fallen pine-needles. The eggs, from six to ten in number, are brownish-buff, spotted and blotched with reddish-brown of various shades of intensity. They measure on an average 2·0 inches in length, by 1·4 inch in breadth. Occasionally a single nest will contain as many as sixteen eggs, the produce of two hens which sit together amicably enough and bring up the numerous progeny in company. This usually occurs in localities where the Black Grouse are thick upon the ground. The Grey Hen is a close sitter, and her plumage is remarkably inconspicuous amongst the dead fern and undergrowth. Incubation lasts about twenty-six days. One brood only is reared in the season. The young are reared with difficulty, wet seasons being especially fatal to them; and many nests are washed away by being made too near the bank of some mountain stream, which rapidly becomes a torrent and overflows its banks during long-continued rain.

Diagnostic characters.—*Tetrao*, with the tail lyre shaped (male), and the wing 11 inches in length or less. Length, 22 inches (male), 15 inches (female). The Black Cock hybridises with the female Red Grouse occasionally, and has been known to interbreed with Willow Grouse, Hazel Grouse, the hen Capercaillie, and the Pheasant. Mr. J. G. Millais figures an interesting example of a Black Cock which has assumed the dress of the Grey Hen. (*Game Birds and Shooting Sketches.*)

Family PHASIANIDÆ.—The Typical Game Birds.

The birds in the present family are characterised by having the nostrils bare, never concealed by feathers; the metatarsi partially or entirely naked, and in many cases armed with spurs; the toes bare and never pectinate. Attempts have been made to divide this large group into several subfamilies, but with very unsatisfactory results, the characters relied upon being artificial and inconstant. Further research may show how to subdivide the group in a natural manner, but up to the present time no characters of any scientific value have been discovered by which we may so class the 270 or so species and subspecies of which it is composed.

Genus PHASIANUS, or True Pheasant.

Type, PHASIANUS COLCHICUS.

Phasianus, of Linnæus (1766).—The birds comprising the present genus are characterised by the absence of any occipital crest, and by their long wedge-shaped and graduated tail. The wings are short and rounded, the first primary about equal to the eighth and much longer than the tenth; the tail is long and wedge-shaped and composed of eighteen feathers. The metatarsus is moderately long, and armed in the male with a conical, sharp spur. The bill is of medium length, the upper mandible convex, the tip bent downwards; nostrils basal, and shielded by a membrane. Three toes in front, one behind; hind toe articulated upon the metatarsus.

This genus is composed of about eighteen species and several subspecies, which are confined to the Eastern hemisphere, being inhabitants of the south-eastern portions of the Palæarctic region and the northern portions of the Oriental region. One species is resident in the British Islands.

The true Pheasants are dwellers in woodland districts, where plenty of cover affords them shelter. They are birds of rapid flight, and progress on the ground by running and walking. Their notes are harsh and discordant. They subsist chiefly on grain, seeds, fruits, berries, tender shoots, insects, larvæ, and worms. Their nests are slight, and made upon the ground, and their eggs are numerous, unspotted brown or green. They are polygamous. Their flesh is highly esteemed for the table.

Family PHASIANIDÆ.

Genus PHASIANUS.

PHEASANT.PHASIANUS COLCHICUS—*Linnaeus*.

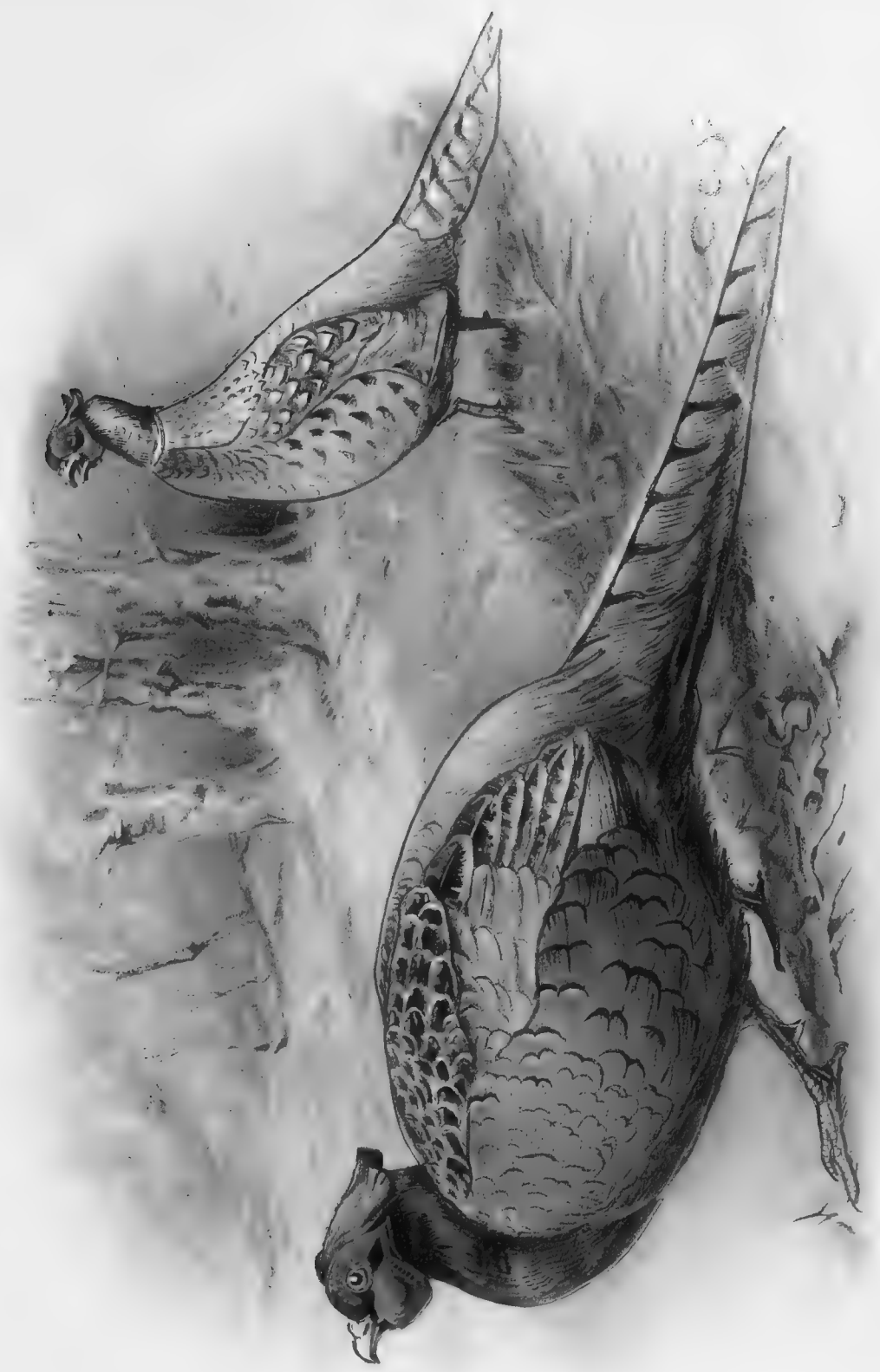
PLATES IX. (Frontispiece) and X.

Phasianus colchicus, Linn. Syst. Nat. i. p. 271 (1766); Macgill. Brit. B. i. p. 114 (1837); Dresser, B. Eur. vii. p. 85, pl. 469 (1879); Yarrell, Brit. B. ed. 4, iii. p. 91 (1883); Seebohm, Hist. Brit. B. ii. p. 445 (1884); Dixon, Nests and Eggs Brit. B. p. 357 (1893); Grant, Cat. B. Brit. Mus. xxii. p. 320 (1893); Lilford, Col. Fig. Brit. B. part xxxiii. (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 275, pl. 59 (1896); Sharpe, Handb. B. Gt. Brit. iv. p. 291 (1897).

Geographical distribution.—*British*: The Pheasant was probably introduced into the British Islands by the Romans. It is a resident throughout all parts of the country where it is preserved, even in some of the wildest districts of the Outer Hebrides, the presence of cover being all that is required in addition to artificial feeding during severe weather. *Foreign*: Although introduced into most parts of Europe (with the exception of Spain and Portugal), and of recent years into North America, the true habitat of this species is in Western Asia, in the western parts of the basin of the Caspian Sea, and the southern and eastern portions of the basin of the Black Sea. It is a resident in the valleys of the Caucasus up to 3,000 feet above sea-level, and inhabits the country along the Caspian, from the Volga in the north to Asterabad on the southern shore; it is found in the northern districts of Asia Minor, south to Ephesus, and is a resident on the island of Corsica.

Allied forms.—The various species and races which are most closely allied to the Pheasant of Western Asia and Europe (the typical English species) are by no means clearly defined, and it is probable that further research may prove that several of these forms are merely the result of interbreeding. A table showing their geographical distribution and points of distinction is inserted at the end of the present chapter.

Habits.—The almost uninterrupted interbreeding which has been going on between the Ring-necked Pheasant from China and the typical Pheasant from Colchis for the past ninety years has so far contaminated the original stock that few, if any, pure-bred birds are to be found in the British Islands. Again, in more recent years, another species (figured with the Ring-necked Pheasant on Plate X.) has been introduced into our islands and has crossed with these two species, viz., the Japanese or Green Pheasant, *Phasianus*



versicolor (Conf. Table, p. 52), the hybrid, which is perfectly fertile, being not only a singularly handsome bird but considerably larger. It is said that these crosses with *P. versicolor* are specially adapted for stocking covers, as they not only show a disinclination to wander from home—a very excellent trait—but are less addicted to running; whilst their power of wing is stronger, which is a most important consideration from the sportsman's point of view. In very few localities in this country does the Pheasant exist in anything approaching a thoroughly wild state. Wherever it is fostered and protected by man, suitable cover being provided, its natural enemies kept in check, and a certain amount of food being supplied during severe weather, there the Pheasant flourishes and multiplies apace. The habits, therefore, of such a semi-domesticated bird need not be dwelt upon at any great length. As previously remarked, cover is one of the Pheasant's chief requirements. The Pheasant is not only a ground bird but a shy one, and is seldom seen far from cover of some kind. It thrives best in places where the woods contain plenty of undergrowth, and where there is feeding accommodation in the shape of fields near by. It is ever shy and wary, and although often seen in the open, hurries off to the nearest cover the moment danger threatens, or crouches close to the ground amongst the friendly herbage until the cause of its alarm has passed. It is capable of running with marvellous speed amongst the herbage and undergrowth, and when flushed rises with a startling whirr, and with rapidly-beating wings mounts above the underwood and threads its way among the trees to safer quarters. As a rule the flight of the Pheasant is not very prolonged, but sometimes the bird will go for several miles before alighting. Like other Game Birds, it is fond of dusting its plumage, and not only drinks often but is fond of bathing, so that water is one of the essentials of a good pheasantry. In spite of the fact that this bird spends most of its time on the ground, it prefers to roost in trees, except occasionally in summer, when it sleeps on the ground; evergreens being favourite situations, especially in winter. It is most active early in the morning and towards sunset, when it leaves the covers and wanders out into the open in quest of food. This consists of a great variety of substances. Grain of all kinds perhaps forms its staple support, but to this must be added many kinds of seeds and berries, acorns, beech-mast, and tender shoots of various kinds. It also feeds largely on worms and insects, especially ants and their larvæ, and consumes great numbers of grubs and wire-worms. In most preserves a great deal of maize and other food is scattered in the woods, either on the bare ground under certain trees, or upon the drives, or placed upon platforms of branches raised several feet from the earth in the woods. Patches of buckwheat and beans are also sown close to the covers in many places for the sole benefit of the Pheasants, the thick growth affording concealment as well as food. The note of the male Pheasant is a short, harsh crow, sounding something like *cor-r-k*. The bird becomes most noisy at nightfall just before retiring to roost, and each successive crow is followed by a flapping of the wings.

Nidification.—Semi-domestication appears to have caused the Pheasant to become monogamous, like domesticated descendants of the Wild Duck. In its native wilds the Pheasant is strictly monogamous, but in this country the male bird generally associates himself with several females, as many as his prowess or his charms can keep or attract, and upon them devolves all care of the eggs and young. Instances, however, are on record where cock Pheasants in our islands have been known to assist, not only in the duties of incubation but in attending to the brood. The Pheasant does not appear to have been polygamous long enough to have certain recognised pairing stations or “laking” places, but towards the end of March the cock-birds begin to crow and fight for the hens, each collecting and maintaining as many as he can. The hens go to nest in April and May. The inherent timidity or shyness of this species causes it to breed in seclusion, and the great nesting grounds are well in the cover of plantations and woods, although many odd birds nest wide amongst growing crops, or in the hedge bottoms. Sometimes the nest is placed, by strange caprice, in an old squirrel’s drey, or on the top of a stack; and I have known it in the centre of a tuft of rushes within a couple of yards of a much-frequented footpath. Each female makes a scanty nest, under the arched shelter of brambles or dead bracken, and often beneath heaps of cut brushwood which has been left upon the ground all winter. It is little more than a hollow, in which a few bits of dry bracken or dead leaves and scraps of grass are collected. The eggs are usually from eight to twelve in number; sometimes as many as twenty are found; and I have known of an instance in which a single hen has brought off twenty-six chicks from as many eggs! They vary from brown through olive-brown to bluish-green in colour, and are unspotted. Some years ago, in Northumberland, accompanied by the late Mr. Seebohm, jun., I took a clutch of the normal colour, amongst which was one of a delicate greenish-blue. They measure on an average 1·8 inch in length by 1·4 inch in breadth. Incubation lasts, on an average, twenty-four days. The Pheasant rears only one brood in a year; but if the first clutch is unfortunate, others are laid, as hens have been known to sit as late as September. When leaving her nest for a short time to feed, the hen carefully covers her eggs with leaves, and flies from her home when she quits it voluntarily, returning in the same manner. The young are seldom fully grown before the end of July.

Diagnostic characters.—*Phasianus*, with no white collar, and with reddish-brown wing coverts, and purplish-red rump (typical *colchicus*). Length: male, 30 to 37 inches, including tail; female, about 24 inches, including tail. The two central rectrices of the cock Pheasant vary considerably in length, according to the age of the bird, old ones being often met with in which these feathers measure upwards of 24 inches. The Pheasant has been known to hybridise not only with several of its allies, but with the Black Grouse, and the

Guinea Fowl, with the Domestic Fowl and the Capercaillie. Old females sometimes assume the plumage of the male, whilst in extremely rare instances the male has been known to assume that of the female. (Conf. *Ibis*, 1897, p. 438). Males subject to considerable variation in colour, ranging from pure white through every intermediate stage to the normal colour. Males moult in June and July; females in July and August.

Phasianus colchicus and Allies.

SPECIES OR RACE.	GEOGRAPHICAL AREA.	POINTS OF DISTINCTION (MALES).
<i>Phasianus colchicus</i> ...	Basin of the Caspian Sea, and southern and eastern portions of basin of Black Sea : Corsica	Wing coverts reddish-brown; rump and upper tail coverts purplish-red; middle of breast and flanks dark purplish-green.
<i>Phasianus colchicus talischensis</i>	Talisch, Mazanderan, southern coast of Caspian	Middle of breast and flanks purplish-carmine; breast feathers with purple margins
<i>Phasianus persicus</i> ...	North-east Persia	Lesser and median wing coverts white; middle of breast and flanks as in preceding.
<i>Phasianus principalis</i> ..	North-west Afghanistan and North-east Persia.	Wing coverts white; rump bronze-red; breast feathers broadly tipped with purplish-bronze.
<i>Phasianus zerafshanicus</i>	Valley of the Zarafshan, Turkestan	No dark greenish-purple margins to the scapulars; margins to breast feathers narrow.
<i>Phasianus shawi</i> ...	Chinese Turkestan	Lesser and median wing coverts white or pale buff; breast feathers margined with dark green; centre of breast and the flanks dark green.
<i>Phasianus tarimensis</i> ...	Tarim Valley, Eastern Turkestan	Lesser and median wing coverts yellowish-brown; breast feathers without marginal bands.
<i>Phasianus chrysomelas</i>	Oxus Valley	Mantle having triangular spots of dark green at the point of each feather; those of the breast and flanks widely tipped with the same colour.

Phasianus colchicus and Allies.—*continued.*

SPECIES OR RACE.	GEOGRAPHICAL AREA.	POINTS OF DISTINCTION (MALES).
<i>Phasianus mongolicus</i>	Basins of Lakes Saisan, Balkash and Issik Kul, Central Asia	Similar to <i>P. persicus</i> but with a broad white neck ring, broken in front.
<i>Phasianus mongolicus semitorquatus</i> ...	Irenkhabirga Mountain district Central Asia	Metallic portions of plumage glossed with dull green instead of purple-carmine as in preceding race.
<i>Phasianus torquatus</i> ...	Valley of Lower Amoor, Mantchooria, China, south to Canton, Corea, Tsu-sima, Eastern Mongolia	Lower back, rump, and upper tail coverts, greenish-slate colour; white ring round the neck.
<i>Phasianus torquatus satscheunensis</i> ...	Sa-tschen, north of Nan-shan Mountains	Pale form of preceding, scapulars margined with sandy-brown instead of brownish-red.
<i>Phasianus torquatus formosanus</i>	Formosa Island	Similar to <i>P. torquatus</i> , but with the ground-colour of the mantle and flanks pale yellow, instead of orange-buff.
<i>Phasianus decollatus</i> ...	Western China	Similar to <i>P. torquatus</i> , but with no white ring or only traces of one (probably the result of inter-breeding); margins to breast feathers dark green instead of purple.
<i>Phasianus strauchi</i> ...	North-western Kansu	Feathers of chest and sides of breast glowing orange-red margined with purplish-green; no white ring.
<i>Phasianus vlangalii</i> ...	Tsaidam north to Koko-nor...	Mantle and scapulars sandy-red; flanks golden-buff; chest dark green; no white ring.
<i>Phasianus versicolor</i> ...	Peculiar to Japan, with the exception of Yezo.	Under-parts unspotted metallic green.
<i>Phasianus elegans</i> ...	South-western China... ..	Similar to preceding, but has the flanks golden-brown barred with black.

NOTE.—In compiling the above Table I have to a great extent followed Mr. Grant's admirable arrangement of the group in the British Museum Catalogue of Birds, in which the Pheasants have been most recently monographed.

Genus PERDIX, or True Partridges.

Type, PERDIX CINEREA.

Perdix, of Brisson (1760).—The birds comprising the present genus are characterised by their bare metatarsi, scutellated in front, reticulated behind, by their short rectrices (sixteen or eighteen in number), and rounded wings, the first primary being intermediate in length between the seventh and eighth, and the fourth the longest. The bill is short and stout, the upper mandible curved from the base to the tip; nostrils basal, shielded by an arched membrane or scale, and bare of feathers. Three toes (long) in front, one behind, small and elevated; spurs absent.

This genus is composed of about half-a-dozen species and varieties, which are confined to the Eastern hemisphere, being inhabitants of the Palæarctic region. One species is resident in the British Islands.

The True Partridges are dwellers in open country, cultivated districts, grain lands and prairies. They are birds of rapid but seldom long-sustained flight, and sedentary in their habits. Their notes are shrill and unmusical. They subsist on grain, seeds, fruits, shoots of herbage, insects and larvæ. Their nests are rudely made, placed upon the ground, often under the shelter of bushes, and their eggs are numerous, whitish or buffish-olive in colour, unspotted in all known instances. These birds, so far as is known, are monogamous. Their flesh is highly esteemed for the table.

Family PHASIANIDÆ.

Genus PERDIX.

PARTRIDGE.

PERDIX CINEREA.—*Latham.*

PLATE XI., Fig. 1.

Tetrao perdix, Linn. Syst. Nat. i. p. 276 (1766).**Perdix cinerea**, Lath. Gen. Syn. Suppl. i. p. 290 (1787); Macgill. Brit. B. i. p. 218 (1837); Dresser, B. Eur. vii. p. 131, pl. 475 (1878); Yarrell, Brit. B. ed. 4, iii. p. 105 (1883); Seebohm, Hist. Brit. B. ii. p. 452 (1884); Lilford, Col. Fig. Brit. B. pt. ix. (1888); Dixon, Nests and Eggs Brit. B. p. 355 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 276, pl. 59 (1896).**Perdix perdix** (Linn.), Grant, Cat. B. Brit. Mus. xxii. p. 185 (1893); Sharpe, Handb. B. Gt. Brit. iv. p. 282 (1897).

Geographical distribution.—*British*: The Partridge is a resident throughout the agricultural districts of the British Islands wherever it is preserved. It is absent from the Outer Hebrides, but has been introduced into the Orkneys. *Foreign*: West Palæartic region. It is local in Scandinavia up to lat. 66°; West Russia, north to lat. 60°; East Russia, north to lat. 58°; West Siberia, north to lat. 57°, in which locality it is a migrant, wintering in North Turkestan. Southwards its range extends into Central Asia, North Persia, and the Caucasus: whilst westwards into Europe it includes North Turkey and Austria, the lowlands of Italy, North Spain, France, Germany, Holland, and Denmark.

Allied forms.—*Perdix cinerea*, var. *robusta*, an inhabitant of the Altai Mountains. Differs from the Common Partridge in being greyer in colour, and larger. *P. daurica*, an inhabitant of East Russian Turkestan, South-east Siberia, East Mongolia, North-east Thibet, and North China. Differs from the Common Partridge in having the horseshoe-shaped mark on the breast black instead of chestnut, and the feathers on the throat elongated; it is also a smaller and paler bird. Two more distantly allied species, possessing eighteen instead of sixteen tail feathers, are *Perdix hodgsoniæ* from Southern Thibet and the extreme north of India, and *Perdix sifanica* from Kansu. *Perdix damascena*, from the mountains of Central Europe, does not appear to us to be even subspecifically distinct from the Common Partridge; further investigation is necessary. A peculiar chestnut variety (obtained alike in England, Scotland, and on the continent) has been described by Brisson as distinct under the name of *Perdix montana*. Another local small form has been described from Galicia by Dr. Seoane under the name of *Perdix cinerea charrela*, and by Dr. Reichenow as *Perdix hispaniensis*, but whether the variations are sufficiently important to warrant such a separation seems doubtful. Possibly they are of subspecific value only. (Conf. *Ibis*. 1894, pp. 575-577).



Habits.—The great strongholds of the Partridge are the well-cultivated districts where the fields are not too large, the hedges dense and affording cover during the breeding season, and where grain is grown in abundance. It may be aptly described as a bird of the farm-lands, although it is by no means rare in many moorland districts, and in some counties is fairly plentiful on commons and rougher ground. It shows no partiality for wooded districts, and is so thoroughly a ground bird that the known instances of its perching in trees are remarkably few. The Partridge lives upon the ground, and at all times shows more or less reluctance to fly. Should danger threaten, it prefers to squat close to the earth or to run with great quickness to the shelter of standing crops or thick hedges, where its movements are so rapid as to enable it to elude pursuit with ease. When flushed, however, it not only rises quickly and suddenly but flies well and with no small speed, its rounded wings as they rapidly beat the air making a loud whirring noise. Sometimes the bird holds its wings stiff and arched and skims along for a short distance before alighting. The Partridge obtains its food on the ground, and is most active in search of it during morning and early evening. In the hottest part of the day it is fond of lying close in cover, and frequently resorts to some bare spot in the fields to dust its plumage and to bask in the sun. Its food consists of shoots and leaves of herbage, insects and their larvæ, snails, grain and seeds, and various wild fruits. From the time the broods are grown until they are thinned down by the sportsman, the Partridge lives in coveys of varying size, which feed and sleep in company. At night each covey has a particular resort to which the birds retire to rest, usually sleeping in a circle on the ground, each with its head turned outwards so that approaching danger is readily observed. The note of the Partridge, which is uttered by both sexes, is a peculiarly shrill *kir-r-rrrick*, most frequently uttered towards evening and in the pairing season. In districts where the birds are not persistently chased by the sportsman the Partridge shows gregarious tendencies during autumn and winter, several coveys joining into a flock. During severe weather the Partridge will visit the rick-yards, and is occasionally met with in very unusual localities, tempted thither by food. When fired at this bird has been known to fly out to sea for a considerable distance, returning to land in a very exhausted condition. Before the introduction of the modern reaping machine and turnip drill, when the weedy stubbles were left long by the sickle, and turnips were sown broadcast, Partridges were shot over pointers and setters; but now, when the straw is shaved off almost flush with the ground, and the stubble ploughed as soon as the crop is harvested (unless sown down with clover), and root crops are grown in rows or “ridges,” dogs are of little service, and driving has been resorted to. This is regretted by some sportsmen of the old school chiefly, but certainly preferred by the more modern gunner; especially so as this method of Partridge shooting serves to prolong the season of sport and to furnish birds in prime condition.

Nidification.—The Partridge is one of the earliest birds to separate into pairs, but although it often does so in February, its nest is seldom found until a couple of months later. It is a monogamous species, and may even probably pair for life, although the old cocks are often very pugnacious and fight freely with the younger birds. The Partridge goes to nest in England about the beginning of May, but in Scotland it is nearly a month later. The female makes a scanty nest in a dry hedge bottom or a ditch, amongst growing corn or clover, or dense herbage on rougher ground, often in places most exposed, and in some instances in unlikely situations. For instance, I have known it bring off a brood from the top of a bean-stack. The nest is simply a hollow, scratched out in the ground and lined with a few bits of withered herbage. The eggs vary, according to the age of the hen, from ten to fifteen or twenty in number, although occasionally much larger clutches are found, which may be the produce of several females. A nest containing thirty-three eggs is on record, twenty-three of which hatched safely, and the chicks got away with their parents. The eggs are uniform pale olive-brown, exactly similar to those of the Pheasant. White and pale green varieties are sometimes met with. They measure on an average 1·4 inch in length by 1·15 inch in breadth. Although the male Partridge keeps close and constant watch over his mate and nest, the female incubates the eggs, which usually take from twenty-one to twenty-four days to hatch. As soon as the brood are out both parents tend them, and are solicitous for their safety, and boldly defend them from predaceous creatures. The female is a close sitter, and covers her eggs when leaving her nest voluntarily. One brood only is reared in the year, and I am of opinion that if the first clutch of eggs be destroyed no others are laid that season. If the birds continue to call into June and July it is a bad omen, and a sure sign that the nests have been unfortunate.

Diagnostic characters.—*Perdix*, with the horse-shoe mark on the belly dark chestnut, and with the wing averaging 6 inches in length; tail with eighteen feathers. Length, 12 to 13 inches. Has been known to hybridise with the Red-legged Partridge. Subject to considerable local variation (especially in the young), and it is said that in some districts (notably in Yorkshire and Oxfordshire), the tendency to develop a white instead of a chestnut horse-shoe on the belly is increasing. Mr. Ogilvie Grant, who has made several most interesting discoveries relating to the plumages of Game Birds, points out that an unfailing distinction in the plumage of the sexes of the Common Partridge is to be found on the lesser and median wing coverts. These in the male are sandy-brown, blotched on the inner web with chestnut, and with only buff shaft streaks; in the female they are brownish-black, with conspicuous buff cross bars. (*Conf. Field*, 21 Nov., 1891, and 9 April, 1892).

Genus CACCABIS, or Rock Partridges.

Type, CACCABIS SAXATILIS.

Caccabis, of Kaup (1829).—The birds comprising the present genus are characterised by their nearly uniform upper plumage, conspicuous gorget, and barred flanks. The wings are rounded and short, the first primary nearly equal to the sixth, the third slightly the longest; the tail is short, and composed of fourteen feathers. The metatarsus is scutellated in front, reticulated behind, and armed in the male with tubercles or spurs. The bill is short and stout, the upper mandible arched from the base to the tip; nostrils basal, shielded with an oblong horny scale, but bare of feathers. Three toes in front; one behind, small and elevated.

This genus is composed of about half-a-dozen species and varieties, which are confined to the Eastern hemisphere, being inhabitants of the Southern Palæarctic region and extreme northern portions of the Oriental region. One species has been introduced into the British Islands, where it is a local resident.

The Rock Partridges are dwellers in bare and mountainous country, scrub-covered hillsides and thickets. They are birds of rapid but never long-sustained flight, and on the ground run and walk with great ease. Their notes are loud and harsh. They subsist chiefly on grain, seeds, fruit, berries, shoots of herbage, and insects. Their nests are rude, and made on the ground; their eggs are numerous, and more or less spotted. Their flesh is of comparatively inferior quality.

Family PHASIANIDÆ.

Genus CACCABIS.

RED-LEGGED PARTRIDGE.

CACCABIS RUF⁶³⁸⁸³A—(*Linnæus*).

PLATE XI., Fig. 2.

Tetrao rufa, Linn.: Syst. Nat. i. p. 276 (1766).**Perdix rubra**, Macgill. Brit. B. i. p. 215 (1837 *ex Brisson*).**Caccabis rufa** (Linn.), Dresser, B. Eur. vii. p. 103, pl. 471, fig. 1 (1875); Lilford, Col. Fig. Brit. B. pt. viii (1888); Dixon, Nests and Eggs Brit. B. p. 354 (1893); Grant, Cat. B. Brit. Mus. xxii. p. 118 (1893); Sharpe, Handb. B. Gt. Brit. iv. p. 280 (1897).**Perdix rufa** (Linn.), Yarrell, Brit. B. ed. 4 iii. p. 115 (1883); Seebohm, Hist. Brit. B. ii. p. 457 (1884); Seebohm, Col. Fig. Eggs Brit. B. p. 276, pl. 59 (1896).

Geographical distribution.—*British*: The Red-legged Partridge was introduced into England in 1770 by the then Marquis of Hertford and Lord Rendlesham, who turned out chicks in Suffolk. It is chiefly distributed over the eastern counties of England: Norfolk, Suffolk, Essex, Kent, and Sussex; only occasionally elsewhere, owing to its partiality for dry, sandy soils; but there is evidence of it increasing its area over the Midlands, Lincolnshire, and the higher grounds north of the Thames Valley. Attempts have been made to introduce this bird into Scotland and Ireland, but with small success, climatic conditions probably being the principal cause of failure. *Foreign*: South-west Europe. It is most commonly distributed in South and Central France, Portugal, Spain, the Balearic Islands, Corsica, Elba, North and Central Italy, Switzerland, and Savoy. It becomes much more local and rare in Northern France, Belgium, and the districts lying round its usual habitat. It has been introduced into Madeira and the Azores, and is found in Gran Canaria.

Allied forms.—*Caccabis petrosa*, an inhabitant of North-west Africa, the Canaries, Gibraltar, and Sardinia. Differs from the Red-legged Partridge in having the nape and collar brown. *C. saxatilis*, with vars. *chukar* and *magna*, range from the Alps to North China. Differs from the Red-legged Partridge in being larger and paler, and in having the throat and lores buff (*chukar*); neck-band double; throat buff, but lores black (*magna*). A darker and more richly coloured form of the Red-legged Partridge, occurring in Spain, has been separated under the name of *Caccabis rufa hispanica*.



Habits.—In many of its habits this handsome Partridge differs considerably from the preceding species. It is much more arboreal in its tastes, and shows a decided preference for rougher ground, such as commons, the open, treeless parts of woods, and strips of heathy land covered with gorse and rush and bramble. Nevertheless, it is met with quite commonly on the fields in haunts affected by its British ally, but is always even more skulking, and ever tries to run and hide amongst the cover rather than use its wings. Another peculiarity sure to be impressed upon the observer is the bird's habit of frequently perching in trees, on corn-stacks, or on hedges and fences; whilst during snowstorms it often quits the open fields entirely, and seeks shelter amongst bushes and brushwood. It is a shy and wary bird, ever on the watch for danger, craning out its neck and peering in all directions at the least alarm, and continuing to do so as it runs quickly towards the cover. It flies well and strongly, with rapidly beating wings which make a loud, whirring noise, whilst on the ground it is capable of running with amazing speed. The note of the Red-legged Partridge is a shrill treble *crik-ik-ik*, which is said to be common to both sexes. Its food is not known to differ in any important respect from that of the Common Partridge, and its habits from the time the broods are reared, onwards through the autumn, are very similar. It lives in coveys, which sometimes join into flocks, but which soon scatter when alarmed, each bird making off to some refuge. In consequence of this peculiarity, the Red-legged Partridge affords poor sport. It will not lie close in the cover until flushed by the gunner, but is ever on the run, so that driving is absolutely necessary to obtain a decent bag.

Nidification.—The Red-legged Partridge pairs early in April, sometimes towards the end of March, and during this period it becomes rather pugnacious, and combats are of frequent occurrence between the cock-birds. The female goes to nest rather earlier than the Common Partridge, the eggs usually being laid towards the end of April, or early in May. The nest is slovenly and slight, placed amongst the dense herbage of a hedge bottom or a dry ditch, or amongst growing grain, clover, or mowing grass. Sometimes it is placed amongst the thatch of a stack, or even in the side, and not unfrequently in a very exposed situation by the side of a footpath or highway. It is merely a hollow into which a few bits of dry herbage and leaves are scraped. Here the hen lays from twelve to eighteen eggs, pale brownish-yellow in ground-colour, spotted and speckled with dark brown. They measure on an average 1·6 inch in length by 1·2 inch in breadth. Very often the hen lays at irregular intervals. Incubation, which is performed by the female, lasts about twenty-four days. As soon as the brood is hatched the male assists his mate in bringing up the chicks. Eggs of the Pheasant and the Common Partridge are occasionally found in the nest of this species. I have known instances where the Red-legged Partridge has destroyed an entire brood of the Common Partridge; and, in spite of oft-repeated statements to the contrary,

I am firmly of opinion that the two birds are better apart. I would not advise the introduction or the encouragement of the Red-legged Partridge in any district where the Common Partridge is already flourishing. There may be, however, many wild districts unsuitable to the latter species where the former might be established with advantage. One brood only is reared in the year.

Diagnostic characters.—*Caccabis*, with the gorget and lores black, the throat white, and the feathers of the upper breast brown, spotted with black. Length, 13 to 14 inches. Hybrids between this species and the Rock Partridge, *C. saxatilis*, have been recorded.

Genus COTURNIX, or Quails.Type, COTURNIX COMMUNIS.

Coturnix, of Bonnaterre (1790).—The birds comprising the present genus are characterised by their long-pointed wings, the first primary being about equal to the third, and the second generally a trifle the longest; axillaries long and white. Rectrices extremely short, less than half the length of the wing, and ten or twelve in number. All the species are birds of small size. The metatarsus is scutellated in front, reticulated posteriorly, and spurless. The bill is short and stout, the upper mandible curved from base to tip; nostrils basal, and semi-closed by a horny membrane. Three toes in front; one behind, short and elevated.

This genus is composed of about six species and doubtful races, which are confined to the Eastern hemisphere, being inhabitants of all the great zoological regions with the exception of Arctic latitudes. One species is a partial resident in the British Islands.

The Quails are ground birds, and dwellers in open country, cultivated districts, grain lands, and plains. They are birds of prolonged and rapid flight, and progress on the ground by running and walking. Their notes are shrill and not quite unmusical. They subsist on grain, seeds, shoots of herbage, and insects. Their nests are rude structures placed on the ground, and their eggs are numerous and spotted. They are both polygamous and monogamous. Their flesh is highly esteemed for the table.

Family PHASIANIDÆ.

Genus COTURNIX.

QUAIL.

COTURNIX COMMUNIS.—*Bonnaterre*.**Tetrao coturnix**, Linn. Syst. Nat. i. p. 278 (1766).**Coturnix dactylisonans**, Meyer; Macgill. Brit. B. i. p. 233 (1837).**Coturnix communis**, Bonnat.; Dresser, B. Eur. vii. p. 143, pl. 476 (1878); Yarrell Brit. B. ed. 4 iii. p. 123 (1883); Seebohm, Hist. Brit. B. ii. p. 462 (1884); Dixon, Nests and Eggs Brit. B. p. 352 (1893); Lilford, Col. Fig. Brit. B. pt. xxviii. (1893) Seebohm, Col. Fig. Eggs Brit. B. p. 277, pl. 59 (1896).**Coturnix coturnix** (Linn.), Grant, Cat. B. Brit. Mus. xxii. p. 231 (1893); Sharpe, Handb. B. Gt. Brit. iv. p. 287 (1897).

Geographical distribution.—*British*: The Quail is a summer visitor to most parts of the British Islands, extending to the Outer Hebrides, the Orkneys, and Shetlands, but appears to be nowhere common. A few winter in the south of England and in Ireland: in the latter country the bird is said to be slowly becoming extinct. *Foreign*: Palæarctic region, from the Atlantic to the Pacific. The Quail is a summer visitor to Europe south of lat. 64°. It occurs throughout North Africa, Palestine, and Asia Minor, but in the basin of the Mediterranean is chiefly known on passage, although a few remain to breed and a few remain to winter in that district, whilst in the Azores and the Canaries it is a resident. The majority of the West Palæarctic birds winter in the African portion of the Intertropical realm. Eastwards the Quail visits Persia, Afghanistan, Turkestan (where a few remain to winter), Siberia, and the north island of Japan in summer, wintering in Arabia, throughout India, Burma, and China, south to the Tropic of Cancer. It has also been recorded from Mayotte and the Grand Comoro Islands in the Indian Ocean.

Allied forms.—The Common Quail is another species presenting considerable variation, but whether these differences are sufficiently constant geographically to warrant specific or even subspecific distinction is by no means clear. Beginning in the West Palæarctic region, Mr. Meade Waldo states (*Ibis*, 1889, p. 517) that in the Canary Islands there are two races of Quail, one coming to the islands to breed, the other wintering there. This latter, he says, is smaller, darker, and more brightly coloured than the migrants, with brilliant yellow legs, those of the former being flesh-coloured. The Quails of South Africa have been described as distinct under the name of *Coturnix capensis*, being somewhat smaller in size, and having the sides of the head, the chin, and the throat, bright

chestnut. This latter form is said to occur in the Canaries, Madeira and Azores, whilst the typical form certainly inhabits South Africa; a fact, bearing in mind the suggested new law of geographical distribution propounded by us, which goes far to prove that these differences are of no specific value whatever. As we suggested in *The Migration of Birds* (amended edition), the Quail is an equatorial species, one set of individuals of this species moving north to breed in the Palæarctic region; another set moving south to breed in South Africa; both sets returning to winter in the Intertropical realm. Returning north again we find that the east Palæarctic Quails have also been described as distinct species of climatic races, under the somewhat misleading name of *Coturnix japonica*, seeing that they are found in Eastern Siberia and North China, as well as in Japan. These individuals have no trace of black on the throat, which is uniform dull brick-red. As this form is said also to occur in South Europe, it seems probable that the differences are not even of subspecific value, but due to age, sex or season. The Quail question is by no means yet finally cleared up.

Habits.—The Quail is a late bird of passage to the British Islands, arriving in May amongst the last of our summer visitors. The passage of this species from Africa across the Mediterranean into Europe is most interesting, and tens of thousands are caught each migration period for food. The return migration is undertaken during September and October. In some localities this species is said to migrate by night during spring, but by day during autumn: whether this is the general order of passage remains to be seen. During its sojourn with us the Quail is one of our most skulking birds, far more often heard than seen, but it is a persistent caller, and its characteristic note of *clik-a-lik* soon proclaims its whereabouts. It is much attached to certain haunts, and appears to return to them each season. Its favourite resorts in this country are the grain and grass fields, and rough, hummocky pasture lands. Here it keeps close amongst the growing herbage, rarely using its wings, spending most of its time in the cover, and running with great quickness out of the way of impending danger. When flushed it flies quickly, but at no great height, with rapidly beating wings, and always seems intent on dropping into the herbage at the first favourable spot. Sometimes it may be seen to skim on motionless wings for a considerable distance over a hedge or a bare bit of ground, just before alighting. It is nevertheless fond of frequenting bare spots in the fields, where it can dust its plumage and bask in the sun. During the hottest part of the day it does not move much, being most active in early morning and towards evening. The food of the Quail consists largely of grain and such small seeds as those of the plantain and chickweed. Insects and small snails are also eaten by the bird in some abundance. The Quail is for the most part solitary in its habits until the time of migration arrives, although the broods and their parents keep close company. The birds that are stationary in our islands never seem to pack, or to fraternise with other species.

Quail shooting is a favourite sport in many districts. Tickell, referring to their abundance in India, says that under certain circumstances shooting them is mere slaughter. He writes: "Where birds get up at every step, dogs or beaters are worse than useless, and where the game is so plentiful, search after a wounded bird is seldom thought worth the trouble. It is usual to be provided with two or three guns (this was in the pre-breech-loader days), to be loaded, as fast as emptied, by a servant. With one gun only it would be necessary to wash out the barrels two or three times in the course of an afternoon, or at all events to wait every now and then for them to cool. A tolerably good shot will bag fifty to sixty brace in about three hours, and knock down many others that are not found. I remember one day getting into a deyra, or island formed by alluvial deposit, in the Ganges, between Patna (Bankipore) and Sonopore, which was sown almost entirely over with grain (*chunna*), and which literally swarmed with Quail. I do not exaggerate when I say they were like locusts in number. Every step that brushed the covert sent off a number of them, so that I had to stand every now and then like a statue and employ my arms only, and that in a stealthy manner, for the purpose of loading and firing. A furtive scratch of the head, or a wipe of the heated brow, dismissed a whole bevy into the next field; and in fact, the *embarras de richesse* was nearly as bad as if there had been no birds at all."

Nidification.—In localities where there is an excess of hens the Quail is decidedly polygamous, but in others where the sexes are about equally dispersed, the male pairs with one female only, and assists her in bringing up the brood. During the pairing season the Quail is most pugnacious, each cock beating off all intruders from his own particular haunt; and about this period the merry note of the male sounds incessantly and defiantly from the cover. The female is late in going to nest, the eggs seldom being laid before June. The nest is scanty, a mere hollow amongst the corn or clover, or the rough grass of the weedy pastures, into which a few bits of dry grass and leaves are scraped. In districts where the cocks run with several hens, the nests are often placed not many yards apart. The eggs vary a good deal in number. I have known nests contain twenty eggs, but from eight to twelve is the usual clutch. They are buffish-white or yellowish-olive in ground-colour, boldly blotched and spotted with various shades of brown, ranging from very pale olive to nearly black. They measure on an average 1·1 inch in length by ·91 inch in breadth. The hen bird alone incubates the eggs, which are hatched in about twenty-one days. The young are soon able to run with their parents and to forage largely for themselves. It is said that the Quail sometimes rears two broods or bevies in the season, but this must be under very exceptional circumstances; my experience is that if the first nests be taken no other attempts are made.

Diagnostic characters.—*Coturnix*, with the outer webs of the primaries irregularly barred with buff, with the general colour of the plumage buff, and the chin and throat nearly black in the male and buff in the female. Length, 7 inches.

ORDER RALLIFORMES.—THE RAILS AND FINFOOTS.

THE Rails and their allies form a comparatively well-defined and somewhat isolated group, the affinities of which are by no means clearly determined. They have been more or less closely associated with other groups, such as the Bustards, the Cranes, the Game Birds, the Sand-Grouse, the Grebes, and so on, according to the importance attached to certain characters by various systematists. Their sternum contains one notch only on each side of the posterior margin; but, unlike the Galliformes, the opisternal process is not perforated to receive the base of the coracoids. In the modification of their cranial bones they are schizognathous, whilst their nostrils are holorhinal. The dorsal vertebræ are heterocœlous. Amongst their external characters may be mentioned the following:—The oil-gland is tufted; the aftershaft is in most cases present; the toes are long and slender, sometimes furnished with webs and scallops, the hallux slightly elevated; the metatarsus is rather short. The bill varies considerably in size and shape. The primaries are ten in number; the rectrices vary from twelve to eighteen in number. So far as is known the young are hatched covered with down, and able to run and swim shortly after leaving the shell; although in the Finfoots (*Heliornithidæ*) the young are reputed to be hatched naked. Nothing definite, however, appears to be known relating to this portion of their economy. Moults variable—in some species once in autumn only; in others in spring and autumn. In the single-moulted species the nuptial plumage is assumed by abrasion and increased brilliancy.

The birds in the present order number upwards of two hundred species and subspecies. These have been divided into two well-marked families by Dr. Sharpe, the most recent monographer of the group: one of these is well represented in the British Islands. It seems probable, however, that the *Mesitidæ* (containing but one species) of Madagascar will have to be included in the present order. These birds are cosmopolitan with the exception of the Polar regions.

Family RALLIDÆ.—The Rails.

The birds comprising this, by far the largest division of the order, may be distinguished, in addition to the characters already given, by their having an after-shaft to the body feathers and twelve rectrices. The present family is divisible into two fairly well-defined subfamilies, both of which are represented in our area.

Subfamily RALLINÆ.—The Plain-toed Rails.

The Plain-toed Rails may be distinguished from other members of the present family by the absence of lobe-like processes from the toes. It includes by far the greater number of species, and has been subdivided by a recent monographer into what we consider to be an unwarrantable number of genera.

Genus CREX, or Crakes.

Type, CREX PRATENSIS.

Crex, of Bechstein (1803).—The birds comprising the present genus are characterised by their short, thick bill, shorter than the head, and by having the forehead covered with feathers to the base of the culmen. The wings are moderately long but rather rounded; the tail is short. The metatarsus is comparatively short, the lower part of the tibia devoid of feathers. The bill is short and compressed; nostrils linear and oblong. Three toes in front, one behind, the former long and slender; claws curved and sharp.

This genus is composed of about twenty species, which are confined to the Eastern hemisphere, being inhabitants of all the great zoological regions with the exception of Arctic latitudes. Four species are either resident in or visitors to the British Islands.

The Crakes are dwellers amongst the dense and humid vegetation of swamps and marshes, but some species are more terrestrial than others. They are birds of somewhat slow and laboured flight, and on the ground progress by running and walking. Their notes are shrill and harsh. They subsist chiefly on insects, seeds, and tender shoots. Their nests are large, and made of aquatic vegetation, and their eggs are numerous and double-spotted. They are monogamous. The flesh of some species is highly esteemed.



Family RALLIDÆ.
Subfamily RALLINÆ.

Genus CREX.

CORN CRAKE.

CREX PRATENSIS.—*Bechstein.*

PLATE XII.

Rallus crex, Linn. Syst. Nat. i. p. 261 (1766).

Crex pratensis, Bechst., Macgill. Brit. B. vi. p. 527 (1852); Dresser, B. Eur. vii. p. 291, pl. 499 (1878); Yarrell, Brit. B. ed. 4 iii. p. 157 (1883); Seebohm, Hist. Brit. B. ii. p. 535 (1884); Lilford, Col. Fig. Brit. B., pt. 14 (1890); Dixon, Nests and Eggs British B. p. 334 (1893; Seebohm, Col. Fig. Eggs Brit. B. p. 83, pl. 22 (1896).

Crex crex (Linn.), Sharpe, Cat. B. Brit. Mus. xxiii. p. 82 (1894); Sharpe, Handb. B. Gt. Brit. iv. p. 220 (1897).

Geographical distribution.—*British*: The Corn Crake is generally distributed during summer throughout the British Islands, extending even to the Outer Hebrides, the Orkneys and Shetlands, and the Channel Islands. It is an occasional visitor to St. Kilda. Its numbers locally vary considerably. *Foreign*: West Palæarctic region, summer; Ethiopian region, winter. It is an occasional summer visitor to the Faroes. It breeds in Scandinavia as far north as the Arctic circle, and has been obtained even three degrees higher. In West Russia it does not appear to range north of Archangel (lat. 64° 32' N.); in East Russia not beyond lat. 60°. Eastwards it is common in the Altai Mountains, and in the valley of the Yenisei ranges as far north as lat. 59½°. Its eastern limit appears to be the valley of the Lena. Although of only accidental occurrence in North-west India, it is common in Afghanistan, and has been found in North Persia. It is a common visitor to Russian Turkestan and the Caucasus; is said to be resident in Palestine and Asia Minor; but is only known on passage in Egypt, and is resident in Algeria. It also breeds throughout Central Europe and Southern Europe, with the exception of the Spanish Peninsula, Southern Italy, and Greece, where it is known on passage only. It winters in Africa in the Intertropical realm, and is occasionally found at that season in the Transvaal and the Cape Colony as an abnormal migrant. The Corn Crake is a great wanderer, and is an accidental visitor to the Canaries, Madeira, and the Azores, and even to the Bermudas, the east coast of the United States, Greenland, Australia (*Records, Aust. Mus.* ii. p. 82) and, it is said, New Zealand.

Allied forms.—None very closely related.

Habits.—The migrations of the Land Rail, or Corn Crake, both in spring and autumn, extend over a remarkable length of time. The bird begins its entry into Europe as early as February, and continues to arrive through March and April until nearly the end of May. It arrives in the south of our islands towards the end of April, but in the northern districts it is a week or so later. Odd birds have been known to spend the winter in our area. Its return migration in autumn begins in August and September, and lasts over October. The haunts of the Corn Crake are hay meadows and grain fields, both dry and swampy localities being frequented, the bird showing little or no partiality in this respect. I have, in Devonshire, remarked its partiality for osier-beds, especially such as are clothed with a rank undergrowth of grass and weeds. Soon after its arrival it wanders about a good deal, and then frequently visits less suitable places, or remains in them from necessity until the cover in its more usual haunts is sufficiently dense. No bird is more skulking in its habits or more loth to take wing. It always prefers to hide in the dense cover and remain motionless until the danger has passed, or to run with wonderful speed to a safe nook. The arrival of the Corn Crake is very soon proclaimed by the bird's rasping cry, which sounds from the meadows most persistently, especially during night. This loud, harsh note, which I consider is confined to the male, may be easily imitated by drawing a knife-blade smartly across the teeth of a stout comb. It is usually uttered twice, one after the other, then a pause, and then repeated. It has also been known to call as it flew from one field to another, evidently under sexual excitement, and eager either to meet a female or a rival. The note ceases in August, and for the remainder of its stay the Corn Crake is a silent bird. Soon after arrival this Crake wanders about from farm to farm, especially at night, and seems to be exploring all the country-side in quest of a suitable haunt. When this choice is made, however, the bird rarely wanders more than a field or so from home until it departs southward in autumn. The Corn Crake lives upon the ground, keeping close to the herbage, and only venturing into the open when all is quiet. It is flushed with the greatest difficulty, rarely indeed a second time, and flies in a slow, laboured manner, with legs held drooping down. This bird, when lured by a call, occasionally flies from the grass and perches for a few moments on the top of a hedge. In the late summer, when the grass is cut for hay and the clover crops have been cleared off, the Corn Crake frequently hides itself amongst the standing corn or in the turnip-fields. It may then often be watched upon the bare pastures, where it strays to feed, running from the cover through the hedge on to the grass. Here it walks about in true Rail style, ever and anon raising its head and looking warily around. At the least alarm it runs back into the hedge, where it skulks until all is quiet again, and then comes out once more, and has been known to feign death in an astonishingly realistic manner. The food of this species is composed of worms, snails, and insects, especially small beetles, the tender shoots and ends of herbage, and various small seeds. It feeds the most in the early

morning, or at dusk, and during the night—a period, by the way, which is also selected for its migrations.

Nidification.—The Corn Crake pairs soon after its arrival. Until this event takes place it is a remarkably restless species, but as soon as mating has taken place it becomes much more sedentary. The eggs are laid according to latitude and the state of the season, either at the end of May or during the first half of June. The somewhat elaborate and neatly-formed nest is placed on the ground, usually amongst the mowing grass, less frequently in growing corn. It is made externally of dry grass and withered leaves, and neatly lined with fine grass, often much of it nearly green. Although this species, so far as is known, is strictly monogamous, and not at all gregarious, I have known a couple of nests within a few yards of each other; whilst it is not uncommon to find several nests in the same field. The eggs are from eight to twelve in number, and range from pale buff through cream-white to very pale blue in ground-colour, sparingly spotted and blotched with reddish-brown and violet-grey. A pale blue egg is not unfrequently found in a clutch of the usual colour. They measure on an average 1·4 inch in length by 1·1 inch in breadth. The first egg is often sat upon as soon as laid, and incubation lasts from twenty-one to twenty-four days. This species has been known to remove its eggs when the nest has been left exposed by the mowers. The hen sits closely, and slips quietly off her nest. The young (covered with black down) are ready to follow their parents soon after they are hatched. One brood only is reared in the year, and as soon as the young are grown they appear to be deserted by the old birds; for during all the period of its stay in our islands the Corn Crake is a solitary and unsociable bird.

Diagnostic characters.—*Crex*, with the general colour brownish-buff, spotted with black on the upper parts, and with the axillaries chestnut. Length between 10 and 11 inches.

Family RALLIDÆ.

Genus CREX.

Subfamily RALLINÆ.

SPOTTED CRAKE.CREX PORZANA—(*Linnaeus*).**Rallus porzana**, Linn. Syst. Nat. i. p. 262 (1766).**Crex porzana** (Linn.), Macgill. Brit. B. iv. p. 535 (1852); Seebohm, Ilist. Brit. B. ii. p. 540 (1884); Lilford, Col. Fig. Brit. B., pt. xvii. (1891); Dixon, Nests and Eggs Brit. B. p. 335 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 84, pl. 22 (1896).**Porzana maruetta** (Leach); Dresser, B. Eur. vii. p. 267, pl. 496 (1878); Yarrell, Brit. B. ed. 4 iii. p. 143 (1884).**Porzana porzana** (Linn.), Sharpe, Cat. B. Brit. Mus. xxiii. p. 93 (1894); Sharpe, Handb. B. Gt. Brit. iv. p. 226 (1897).

Geographical distribution.—*British*: The Spotted Crake is fairly distributed in suitable districts in Great Britain, but owing to land reclamation and improvement it has sadly decreased. It is found principally in the eastern counties of England, between the Humber and the Thames, but it becomes more local in the southern counties and in Wales. It is, however, known to breed in Durham, Northumberland and Cumberland. On the east of Scotland it breeds as far north as Elgin, but on the west not north of Dumfriesshire. In Ireland it is principally known on autumn passage, but it has been found breeding in Roscommon and Kerry, and has occurred in the Orkneys and Shetlands. *Foreign*: Western Palearctic region. It breeds in Scandinavia as far north as lat. 65°; in West Russia up to lat. 64°. In the Ural Mountains its range does not extend beyond lat. 58°, whilst in West Siberia it falls still lower to lat. 55°. South of these limits it is found in summer in Turkestan, as far east as Yarkand, and as far north as Gilgit on the frontiers of Cashmere. It is said to be a partial resident in Persia, but to the Caucasus and South Russia it is only a summer migrant. It is a resident in the basin of the Mediterranean, but a summer visitor only to Central and Northern Europe. In winter it is found throughout Northern Africa, as far south as Abyssinia, and may possibly breed in Egypt. During winter it is found throughout India, occasionally wandering into Burmah. Stray birds have been obtained in Greenland, and it is said to be a fairly frequent winter visitor to the Canaries.

Allied forms.—*Crex carolina*, an American species, which, as it has visited the British Islands, is described in the following chapter. *Crex fluminca* an inhabitant of Australia, distinguished by having the axillaries barred with white, and the vent black.

Habits.—The Spotted Crake is another late migrant to our islands, apparently delaying its arrival until the cover it frequents is sufficiently dense to afford it ample concealment. It usually arrives in May and leaves us again in October, but it would appear that odd individuals occasionally remain behind and spend the winter with us. The haunts of the Spotted Crake are fens, marshes, and bogs—places where there is plenty of cover, in the shape of reeds, rushes, flags, and other aquatic vegetation, and sufficient water in stagnant pools. Here, like all its kindred, the Spotted Crake skulks close amongst the cover, only venturing out on to the more open spaces when all is still, especially at night, and hurrying back to its marshy fastnesses the moment it is threatened by danger. Although excessively loth to take wing, it is occasionally compelled to do so, and will then be observed to fly in a slow and laboured manner close to the ground, with legs hanging down, and ready to drop into the first likely spot which affords concealment. When hard pressed, either by man or dog, it will sometimes take refuge in a hedge, or amongst briars, just like the Corn Crake will do. In spite of its abundance in some localities, it is very rarely seen. It sometimes leaves its reedy haunts at dusk, and may then be seen swimming across the open pools of calm water from one thicket to another, or threading its way, shadow-like, through the herbage. It is a very unsociable species. The call-note of the Spotted Crake is a rather liquid *whit*. Its food consists of worms, small snails, and insects, especially beetles, the tender buds and shoots of herbage, and small seeds.

Nidification.—The breeding season of the Spotted Crake commences in May, and the eggs are laid towards the end of that month or during the first half of June. The nest is rather bulky, and placed in the recesses of the reed-beds or in a tuft of rushes, often entirely surrounded by shallow water. The materials consist of bits of reed, rush, and other plants, all in a more or less rotten state, the cup containing the eggs being lined with drier and finer matter. The eggs vary from eight to twelve in number, and range from buff to very pale green in ground-colour, spotted and speckled with pale and dark brown, and underlying markings of grey. The markings are bold, large, and distinctly defined, a character which, in conjunction with their green-tinged interior when held up to the light, is sufficient to distinguish them from the eggs of any other British species. They measure on an average 1·35 inch in length, by ·9 inch in breadth. Incubation, performed principally by the female, lasts twenty-one days. The young follow their parents and take to the water shortly after they are hatched: one brood only appears to be reared in the year.

Diagnostic characters.—*Crex*, with the general colour of the upper parts olive-brown streaked with darker brown, and spotted with white; with the flanks barred white and brown; the centre of the throat grey. Length, 9 inches.

Family RALLIDÆ.
Subfamily RALLINÆ.

Genus CREX.

CAROLINA CRAKE.

CREX CAROLINA.—(*Linnæus*).

Rallus carolina, Linn. Syst. Nat. i. p. 363 (1766).

Crex carolina (Linn.), Seebohm, Hist. Brit. B. ii. p. 541 (1884); Dixon, Nests and Eggs Non-indig. Brit. B. p. 359 (1894).

Porzana carolina (Linn.), Sharpe, Cat. B. Brit. Mus. xxiii. p. 97 (1894); Sharpe, Handb. B. Gt. Brit. iv. p. 230 (1897).

Geographical distribution.—*British*: Naturalists, for some inscrutable reason, decline to admit the Carolina Crake to be an established British species; but the known wandering habits of birds of this family, in addition to the fact of its occurrence in Greenland, seems strong evidence in favour of its having reached our islands voluntarily. An example of this Crake was shot near Newbury, in Berkshire, on the river Kennet, and was exhibited at a meeting of the Zoological Society, on the 14th of February, 1865, by Professor Newton (Conf. Proc. Zool. Soc., 1865, p. 196). *Foreign*: Nearctic and Northern Neotropical regions. The Carolina Crake is a summer migrant to the Northern United States and to Canada, up to lat. 62°; it winters in the Southern States, in Mexico, Central America, the West Indies, and the northern parts of South America.

Allied forms.—None more closely allied than *Crex porzana* and *Crex fluminea*, already mentioned in the preceding chapter.

Habits.—The spring migrations of this Crake appear to last about a month or six weeks, commencing early in April and ending about the third week in May. Professor Cooke, in his interesting, systematic report of bird migration in the Mississippi Valley during the years 1884 and 1885, has recorded in connection with the passage of this Crake that it formerly passed unobserved over the town of Winona, until in the former year an electric light was erected. The result was most marked. On the night of the 21st of May they were the most numerous of the many birds that were killed or wounded by striking the light tower, and were counted in hundreds fluttering round the brilliant lamp. The fall migration begins during the first half of August and is continued until the beginning of October. As in so many other species, its numbers are most marked in autumn. The Carolina Crake is just as secretive in its habits as its British ally, and spends most of its time skulking in reed beds and swamps, rarely presenting itself to view, save when flushed, or when crossing some more open

part of its haunt, or when wandering from the cover for a little way in quest of food. The general habits, actions in the water and on the land, and flight, are all very similar to those of the preceding species. Its food consists of worms, insects, mollusks, the buds, shoots and seeds of marine plants, and especially wild rice, and when specially feeding upon the latter this Crake becomes remarkably fat, its flesh acquiring a delicious flavour, much prized by epicures. Of its habits Dr. Brewer thus writes:—"Early in August, when the reeds have attained their full growth, the Sora Rail resorts to them in great numbers to feed on the seeds, of which it is very fond. This reed (the *Zizania clavulosa* of Michaux) grows up from the soft, muddy shores of the tide water, where the surface is alternately bare and covered with four or five feet of water, and attains a height of ten feet, covering tracts of many acres in extent, the stalks growing so closely together that a boat, except at high water, can hardly make its way through them. The seed of this plant is long and slender, white in colour, sweet to the taste and very nutritious. When the reeds are in fruit the Rails in great numbers take possession of them. At this season a person walking along the banks of the river may hear their cries in every direction. If a stone is thrown among the reeds, there is a general outcry, and a reiterated *kuk-kuk-kuk*, like the scream of a Guinea Fowl. Any sudden noise produces the same effect. None of the birds, however, can be seen except at high water. When the tide is low they keep secreted, and a man may walk where there are hundreds of them without seeing a single one." Rail-shooting in the fall is a sport much sought by American gunners. This sport is followed in a narrow boat, and appears to be sufficiently exciting from one cause or another to attract a large number of guns. The marshes are entered while the tide admits, and considerable skill is required not only in navigating the dense forests of reeds, but in balancing the narrow, lurching boat. This feeling of insecurity giving rise to the expression that "you must part your hair in the middle" to avoid an upset. The best sport is obtained on the first day of the shooting, before the birds have been disturbed and scattered.

Nidification.—The breeding season of the Carolina Crake is in May and June. The nest, a somewhat bulky structure made amongst the reeds and often surrounded by water, is a mere heap of decaying aquatic vegetation, lined with bits of dry reed, rush and coarse grass. The eggs are from seven to twelve (occasionally it is said fourteen) in number, pale buff in ground-colour, spotted and speckled with pale and dark brown, and with underlying markings of grey. They measure on an average 1.25 inch in length by .9 inch in breadth. Incubation lasts about three weeks. But one brood appears to be reared in the season.

Diagnostic characters.—*Crex*, with the general colour of the upper part olive-brown, streaked with darker brown and spotted with white; with the flanks barred white and brown; and with the centre of the throat, fore cheeks and lores black. Length, 8 inches:

Family RALLIDÆ.
Subfamily RALLINÆ.

Genus CREX.

BAILLON'S CRAKE.

CREX BAILLONI—(*Vieillot*).

Rallus bailloni, Vieill. N. Dict. d'Hist. Nat. xxviii. p. 548 (1819).

Crex bailloni (Vieill.), Macgill. Brit. B. iv. p. 539 (1852); Seebohm, Hist. Brit. B. ii. p. 543 (1884); Lilford, Col. Fig. Brit. B. pt. xx. (1891); Dixon, Nests and Eggs Brit. B. p. 337 (1893), Seebohm, Col. Fig. Eggs Brit. B. p. 84, pl. 22 (1896).

Porzana bailloni (Vieill.), Dresser, B. Eur. vii. p. 275, pl. 497 (1878); Yarrell, Brit. B. ed. 4 iii. p. 154 (1883).

Porzana intermedia (Hermann); Sharpe, Cat. B. Brit. Mus. xxiii. p. 103 (1894); Sharpe, Handb. B. Gt. Brit. iv. p. 232 (1897).

Geographical distribution.—*British*: Baillon's Crake is an irregular visitor to our islands, chiefly on spring and autumn migration, most frequently observed in the south. The evidence of its breeding in England appears to rest upon two reputed nests and eggs obtained in Cambridgeshire during June and August, 1858, and two more taken near Hickling, in Norfolk, during June and July, 1866. It has been most frequently observed in Norfolk, but has occurred in Suffolk, Derbyshire, Yorkshire, the Isle of Man, Somerset, and Cornwall. Scotland boasts two instances—one in Sutherlandshire in 1841, and another in Dumfriesshire in 1842. Ireland can also claim but two cases of its occurrence. *Foreign*: Southern Palæarctic region, and Ethiopian region. It is a summer visitor to Central Europe, but does not extend beyond the Baltic; in East Russia it is found breeding as far north as lat. 56°. It breeds in the Spanish Peninsula, the marshes of France, in Northern Italy, Hungary, and the Black Sea basin. In Asia it appears to range as far east as Lake Baikal, but its limits in this direction are imperfectly known. It is a resident throughout Africa and Madagascar, and is a winter visitor to the Canaries and the Persian Gulf.

Allied forms.—*Crex affinis*, an inhabitant of New Zealand and the Chatham Islands, differing only in being paler in colour, and in having a longer bill; *Crex pusilla*, the eastern representative of Baillon's Crake, an inhabitant of East Siberia and Japan, China, India, Burma, the Philippine Islands, and Borneo, distinguished by having a reddish-brown streak along the upper margin of the ear coverts; *Crex palustris*, an inhabitant of Australia, very similar to Baillon's Crake, but decidedly paler in colour, and with the lower throat and abdomen white.

Habits.—Baillon's Crake differs but little from its allies in its habits and economy and in the localities it frequents. It haunts the dense aquatic vegetation on the banks of pools, and is a dweller in marshes and fens. Like all its kindred, it is remarkably shy and retiring in its habits, keeping well concealed amongst the vegetation during most of the day-time, venturing out a short distance from cover during the hours of dusk and darkness. It swims to and fro in the secluded reed-fringed pools, now in and out amongst the rushes and water-forks, then out into the more open water, where, if it be surprised, it dives with remarkable swiftness, and under water hurries to the shelter of the reeds. It is only flushed with the greatest difficulty, and then flies in a slow, laboured manner with legs drooping, and drops into the nearest cover as soon as possible. Even when hard pressed by enemies on land it always seeks to evade them by running only, using its wings as a last resource. The call-note of Baillon's Crake is a shrill but not very loud *kik-ik-ik*. The food of this species consists principally of insects and their larvæ, small snails, and scraps of vegetable substances. It is said that this Crake frequently catches insects as they flit by whilst it floats upon the water, but whether it ever dives for food is not known. Baillon's Crake sometimes flies round and round above its haunt at night, from time to time uttering its shrill note, just as the Water Hen is wont to do.

Nidification.—There can be little doubt that some nests of Baillon's Crake have been overlooked in the British Islands, where it is more than probable it still continues to breed. When we bear in mind its remarkable skulking habits, the nature of the haunts it frequents, and its small size, we cease to wonder how much it is overlooked. In Europe the breeding season of Baillon's Crake appears to begin about the middle of May, and the eggs are laid towards the end of that month or early in June. In India, however, it breeds much later, laying in June and July in Cashmere, and in July and August on the plains of Upper India. In Europe its nest is placed amongst the reeds and sedges, often a floating structure like the Coot's; but in India the rice swamps are its favourite breeding places. The nest is made of bits of aquatic vegetation, loosely yet strongly put together, and rather large for the size of the bird. Hume states that in India the nests are made of rush and weed, and are placed amongst rushes and water-grass very little above the level of the water. The eggs are from five to eight in number, pale olive or rich buff in ground-colour, indistinctly mottled, blotched, and freckled with olive-brown and grey. They measure on an average 1.1 inch in length by .8 inch in breadth. Incubation lasts about three weeks. The female is a close sitter, and leaves her nest quietly when disturbed.

Diagnostic characters.—*Crex*, with the secondaries shorter than the primaries by not as much as the length of the inner toe and claw, with no white spots on the sides of the throat and the breast, with the ear coverts bluish-grey or ashy-grey, with the under tail coverts and flanks black barred with white, and with a white margin to the outer web of the first primary. Length, 7 inches.

Family RALLIDÆ.
Subfamily RALLINÆ.

Genus CREX.

LITTLE CRAKE.

CREX PARVA.—(*Scopoli*).

Rallus parvus, Scop. Ann. I. Hist. Nat. p. 108 (1769).

Crex pusilla, Macgill, Brit. B. iv. p. 541 (1852 *nec Pallas*); Lilford, Col. Fig. Brit. B. pts. xx., xxvii. (1891, 1893).

Porzana parva (Scop.), Dresser, B. Eur. vii. p. 283, pl. 498 (1878); Yarrell, Brit. B. ed. 4 iii. p. 148 (1883).

Crex parva (Scop.), Seebohm, Hist. Brit. B. ii. p. 457 (1884); Dixon, Nests and Eggs Non-indig. Brit. B. p. 330 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 85, pl. 22 (1896).

Zapornia parva (Scop.), Sharpe, Cat. B. Brit. Mus. xxiii. p. 89 (1894); Sharpe, Handb. B. Gt. Brit. iv. p. 223 (1897).

Geographical distribution.—*British*: The Little Crake is a rare visitor to the British Islands on spring and autumn passage. There is no evidence of its having nested in this country, although odd pairs may remain behind in spring to breed, and stray individuals may occasionally stay through the winter. It has been most frequently observed in Norfolk, and recorded from Suffolk, Cambridge, Lincolnshire, Yorkshire, Cumberland, Lancashire, Oxfordshire, Middlesex, Sussex, Hants, Dorset, Somerset, Devon, and Cornwall. Scotland claims one; Banff, March, 1852: Ireland another; Balbriggan, March, 1854. *Foreign*: Western Palæartic region. It breeds in Europe as far north as Holstein, and along the southern coast of the Baltic to Livonia; thence across Russia to Astrakhan and the Caucasus, and eastwards through Persia and Afghanistan to Russian Turkestan. Many Asiatic examples pass down the Indus Valley to winter in Western Scinde and North-east Africa. Westwards, it appears to be a resident in Algeria, an abnormal migrant to the Canaries, to pass through Denmark, Spain and Greece on migration, and to breed in Italy and Sicily, Savoy, the valley of the Rhone, Central France, Southern Germany, Poland, and Austro-Hungary. It is said to have nested in South Sweden.

Allied forms.—None more closely related than Baillon's Crake and its allies already described in the previous chapter.

Habits.—The Little Crake, in many of its habits and in the localities it frequents, somewhat closely resembles the preceding species. It is, however, not quite so shy or skulking, and may be far more frequently observed in the open. It frequents marshes, swamps and reed-beds, and pools of stagnant water; and,

though fond of swimming, is often seen on land. It has the same reluctance to take wing, and always tries to escape danger by running to the nearest cover or by diving. When in Algeria I met with the Little Crake in the beautiful oasis of Biskra, on the northern limits of the Great Desert. It had its haunts among the short reeds that fringed the margin of a small pool. I first of all saw a female floating amongst the reeds a few yards from shore, but as I approached it swam gently towards the vegetation and hid itself in the cover. It floated buoyantly, for such a tiny bird, and every now and then seemed to pick an insect from the stems, and anon buried its head amongst the grass-like weed floating on the surface. As I approached nearer, and walked round the wet mud at the edge of the pool, a cock-bird rose from the reeds in a slow, fluttering manner, with legs hanging down, and flew towards the other side of the pool. As he rose he uttered the usual clicking note of this species, a shrill *kik-ik-ik*, and I shot him as he went. When I dissected this specimen, which an Arab up to his breast in mud and water had fetched from the pool, I found the remains of beetles in its stomach, and a few bits of gravel. Hume states that he found this Crake very common on the "dhunds" in Scinde. He never flushed them from the sedge or reed, but found them everywhere, either running about the water-lily or lotus-leaves, or swimming from leaf to leaf, jerking their tails and nodding their heads like Water Hens. The same observant naturalist remarked that this species is more insectivorous than Baillon's Crake. The food of the Little Crake consists principally of insects and their larvæ, especially beetles. The bird also eats small seeds and scraps of vegetable substances.

Nidification.—The Little Crake begins nest-building about the middle of May, and its eggs are laid at the end of the month. The nest is artfully concealed amongst the aquatic vegetation, and is sometimes placed a foot or more above the surface of the water, occasionally under the shelter of a tuft of sedge. Like that of all the Crakes, the nest is large for the size of the bird, and made of reed and flag, dry grass, and other aquatic herbage. The eggs are seven or eight in number, yellowish-brown in ground-colour, marbled and blotched with olive-brown, and occasionally specked with very dark brown. They measure on an average 1·2 inch in length by ·85 inch in breadth. One brood only is reared in the year, and incubation is said to last from twenty-one to twenty-four days. At the nest the actions of this species are very similar to those of allied species. The young chicks, clothed in glossy greenish-black down, are able to swim and follow their parents shortly after they are hatched.

Diagnostic characters.—*Crex*, with the secondaries shorter than the primaries by as much as the length of the inner toe and claw, the white spots on the upper parts confined to the centre of the back, the flanks slate-grey, the under tail coverts black tipped with white, and no white margin to the outer web of the first primary. Length, 7 inches.

Genus RALLUS, or Typical Rails.

Type, RALLUS AQUATICUS.

Rallus, of Linnæus (1766).—The birds comprising the present genus are characterised by their long, slender bill, longer than the head or the middle toe and claw, and by having the forehead covered with feathers to the base of the culmen. The wings are moderately long, but rather rounded; the tail is short. The legs are rather long, the lower part of the tibia devoid of feathers, the metatarsus shorter than the middle toe and claw. The bill is long, and slightly decurved; nostrils longitudinal, placed in a long groove, and partly shielded by a membrane. Three toes in front, long, cleft to the base; hind toe small and articulated.

This genus is composed of about ten species and nearly twice as many subspecies, which are nearly cosmopolitan, being inhabitants of all the great zoological regions, with the exception of the Australian region and Polar latitudes. One species is a partial resident in the British Islands.

The Rails differ very little from the Crakes in their habits and economy, and in the localities they affect. They are birds of the swamps and marshes, of slow and laboured flight, making bulky nests of aquatic vegetation amongst the herbage of their haunts, and their eggs are numerous and double-spotted. Their notes are shrill and unmusical. They are monogamous. Their food is very similar to that of the Crakes.



Family RALLIDÆ.
Subfamily RALLINÆ.

Genus RALLUS.

WATER RAIL.

RALLUS AQUATICUS.—*Linnæus*.

PLATE XIII.

Rallus aquaticus, Linn. Syst. Nat. i. p. 262 (1766); Macgill. Brit. B. iv. p. 521 (1852); Dresser, B. Eur. vii. p. 257, pl. 495 (1878); Yarrell, Brit. B. ed. 4, iii. p. 159 (1883); Seebohm, Hist. Brit. B. ii. p. 552 (1884); Lilford, Col. Fig. Brit. B. pt. xx (1891); Dixon, Nests and Eggs, Brit. B. p. 338 (1893); Sharpe, Cat. B. Brit. Mus. xxiii. p. 20 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 86, pl. 22 (1896); Sharpe, Handb. B. Gt. Brit. iv. 216 (1897).

Geographical distribution.—*British*: The Water Rail is a partial migrant in our islands, although it may be found at all seasons widely distributed throughout suitable localities, extending even to the Outer Hebrides, the Orkneys, and the Shetlands. It is perhaps most abundant in the Norfolk Broads. In some districts it is most abundant in summer; in others, during winter. *Foreign*: West Palæarctic region. It is a resident in Iceland, and occurs on autumn passage on the Faroes; whilst a single example has been obtained on the island of Jan Mayen (lat 71°), the most northern limit of its recorded range. It is a summer migrant to Scandinavia up to lat 63°, and is said to be resident near Bergen in Norway and to be occasionally observed during winter in the extreme south-west of Sweden. It breeds in West Russia up to Riga, and accidentally strays to St. Petersburg; in East Russia its limits are about the same. Although apparently absent from West Siberia, it breeds in Russian and Chinese Turkestan as far east as Yarkand. It passes Cashmere on migration, and winters in North-west India. Returning westwards, it is chiefly known in Afghanistan, Persia, Asia Minor, Palestine, Greece, and Egypt south to Abyssinia as a winter visitor, but a few remain to breed in many localities. It is a resident in Central and Southern Europe, and also in Tripoli, Tunis, Algeria, and Morocco, but is most abundant in winter in the south and east, and in summer in the north and west.

Allied forms.—*Rallus indicus*, an inhabitant, in summer, of the Lake Baikal district in South-east Siberia, the valley of the Amoor, Japan, and Northern China; and of Southern China, Burma, East and South India, and Ceylon, in winter. Differs from the Water Rail (from which it is probably only subspecifically distinct) in having the slate-grey of the underparts more or less suffused

with brown, black lores, a brown streak below and behind the eye, and the under tail coverts more barred with black. It is also slightly larger than its western representative.

Habits.—The Water Rail is another of those shy and skulking birds which are apt to be looked upon as rarer than they really are, owing to its disinclination to be observed. There are few marshes where the cover is dense that do not conceal Water Rails in summer; but in winter, when much of the aquatic vegetation dies down, its haunts are certainly more restricted. The Water Rail is *par excellence* a bird of the reed-beds, amongst which it spends most of the hours of daylight, shrinking from the view of man and other enemies. It becomes most active towards dusk, and may then be watched timidly straying from the reeds on to the more exposed ground, or swimming out from the aquatic cover into the open water. If surprised in these places it will always try to escape by running on land with marvellous adroitness through the tangled vegetation, or diving with an audible flop under the water, and thence swimming below the surface to a place of concealment. Its flight is heavy and laboured, and the legs are allowed to hang down as if broken. It is unsociable and solitary in its habits, and save during the breeding season almost invariably keeps to itself. The Water Rail also indulges in the singular habit of flying about the air at night, often in circles, occasionally uttering its shrill, harsh note, which Naumann describes as a melodious *kreek*. The call-note during the breeding season is a shrill *whit*, but likened by other observers to a groaning cry, locally known as “sharming,” most frequently uttered at night. The food of the Water Rail consists of insects and their larvæ, snails, worms, the buds and shoots of aquatic vegetation, and small seeds. Like the Corn Crake, this species has been known to alight in the branches of trees.

Nidification.—It is not improbable that the Water Rail mates for life, and each pair of birds appear to keep to a certain spot, from which they wander little during the entire breeding season. This begins early, eggs having been known in the first week of April, although the more usual period is about a month later. The nest is made amongst the aquatic vegetation, on the bank of the pool or under the arching shelter of a tuft of rushes and reeds. It is a difficult nest to find, and is far more often stumbled upon by accident than found by design. It is almost invariably well concealed, and is made of the stems and flat leaves of reeds, and lined with bits of dry rush, and perhaps a few dead leaves. The usual number of eggs is from five to seven, although clutches of nine and eleven have been found. They are pale buff or creamy-white in ground-colour, somewhat sparsely spotted and speckled with reddish-brown and violet-grey. They measure on an average 1·4 inch in length by 1·0 inch in breadth. Incubation lasts about three weeks. The bird sits very closely; but, notwithstanding, she is rarely flushed from the eggs, slipping quietly off them as soon as danger threatens, gliding

through the surrounding herbage, where she remains until all is safe again. The young chicks, clothed in jet-black down, take to the water immediately, and are accompanied by both parents. They may sometimes be seen running over the broad, floating leaves of the water-lily and the "candock." It is probable that this species rears two broods in the year, as fresh eggs are not unfrequently found in July, although, of course, these may be the produce of birds where the earlier clutch has been destroyed.

Diagnostic characters.—*Rallus*, with the wing coverts brown and the breast uniform grey, with no black streak through the eye, with the upper parts olive-brown streaked with darker brown, the under parts slate-grey, shading into black on the abdomen, flanks and axillaries, all of which are barred with white. Length, 11 inches.

Genus GALLINULA, or True Water Hens.

Type, GALLINULA CHLOROPUS.

Gallinula of Brisson (1760).—The birds comprising the present genus are characterised by their long, slender toes, which are free from lobes, but bordered by a very narrow membrane, and by their small, red frontal shield. The wings are nearly four times the length of the metatarsus (the secondaries shorter than the primaries) and armed with a small recumbent spine. The tail is short, and composed of twelve feathers. The legs are long, and the lower part of the tibia devoid of feathers. The bill is short, stout, compressed, slightly swelling towards the tip; the culmen extended, and expanding into an oblong frontal plate; nostrils oval, situated in a groove, pierced in a membrane. Three toes in front, long and slender, cleft to the base; hind toe moderately long; claws sharp.

This genus is composed of about nine species and subspecies, which are distributed over all parts of the world except the Polar latitudes. One species is resident in the British Islands.

The True or typical Water Hens are dwellers on the banks of lakes and rivers, frequenting the reeds and coarse vegetation by the water side. They are shy birds, of slow and laboured flight, making bulky nests amongst the aquatic vegetation, and their eggs are numerous and double-spotted. Their notes are shrill and unmusical. They run and walk with a peculiar jerking movement of the tail. Their food consists of worms, insects, seeds, herbage, grain, and fruits. They are monogamous.

Family RALLIDÆ.

Genus GALLINULA.

Subfamily RALLINÆ.

WATER HEN.

GALLINULA CHLOROPUS—(*Linnæus*).**Fulica chloropus**, Linn. Syst. Nat. i. p. 258 (1766).

Gallinula chloropus (Linn.), Macgill. Brit. B. iv. p. 547 (1852); Dresser, B. Eur. vii. p. 313, pl. 503 (1878); Yarrell, Brit. B. ed. 4 iii. p. 164 (1883); Seebohm, Hist. Brit. B. ii. p. 557 (1884); Lilford, Col. Fig. Brit. B. pt. xix. (1891); Dixon, Nests and Eggs Brit. B. p. 340 (1893); Sharpe, Cat. B. Brit. Mus. xxiii. p. 171 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 87, pl. 22 (1896); Sharpe, Handb. B. Gt. Brit. p. 234 (1897).

Geographical distribution.—*British*: The Water Hen is commonly distributed over all suitable localities throughout the British Islands, extending to the Outer Hebrides and the Orkneys, but only accidentally to the Shetlands. It visits the Channel Islands on migration, a few, perhaps, remaining to breed. *Foreign*: Including allied forms, almost cosmopolitan. It occurs accidentally on the Faroes, and breeds in suitable localities throughout Europe, in Scandinavia up to lat. 63°, in West Russia up to lat. 58°, and in East Russia up to lat. 56°, becoming more sparingly dispersed towards these northern limits. At present it remains unrecorded from West Siberia, but breeds in Turkestan and the Baikal district. It is also a summer visitor to Northern China, the north island of Japan, but a resident in the main island of Japan and in Southern China. It is also a resident in the Philippine Islands, Celebes, Borneo, Java, Sumatra, the Burmese Peninsula, and throughout India, but only of accidental occurrence in Ceylon; whilst it has been recorded from the Seychelles. It also inhabits all suitable parts of South-western Asia, and Africa, including Madagascar, Bourbon, the Seychelles, the Atlantic Islands, and the Azores. In America it is found breeding from the Southern States in the north to South Brazil in the south.

Allied forms.—*Gallinula tenebrosa*, an inhabitant of Australia, distinguished from the Water Hen by having no white stripes on the flanks, and being somewhat larger. The Water Hen varies considerably in length of wing and size of the frontal plate. Typical western Palæarctic examples range from 7 to 6½ inches in length of wing, and the frontal plate barely extends as far back as the eye. In all the other forms this frontal shield frequently extends beyond the eye. Indian and western South African examples are smaller, ranging in

length of wing from $6\frac{1}{2}$ to $5\frac{1}{2}$ inches; American examples (*G. galatea*) are larger, ranging in length of wing from $7\frac{3}{4}$ to $6\frac{1}{2}$ inches. It is said that the Water Hen of Madagascar (*G. pyrrhorhoa*) is a fairly separable form.

Habits.—This common and well-known species is a resident on all lakes and slow running streams, where the banks or shallows are covered with sufficient vegetation to afford it concealment. In a great many localities this species lives in an almost domesticated state, so tame as to pay little attention to the presence of man, and coming to his threshold for food during severe weather when its haunts are sealed by frosts. I have known this species to frequent a small stream by the wayside not four feet across, and repeatedly to wander on the highway in quest of food. The Water Hen is just as much at home on land as in water, and walks about the grass lands and the banks of the pool in a singularly graceful manner, flicking its tail up and down every few moments. It swims with equal grace, with a peculiar nodding motion of the head, and is equally expert at diving and progressing under water for considerable distances. Although by no means shy, it is wary and alert enough, often diving at the flash of a gun and hurrying away under water to the shelter of the reeds or flags, where, with its body submerged and only its bill protruding, it waits until all is safe again before allowing its body to be uncovered. It is equally at home in a tree or a hedge, and I have known it repeatedly to roost amongst evergreens during long continued frosts. Its flight is not very strong, being slow and laboured, and the long legs are allowed to dangle down as if broken and useless. Nevertheless, it often mounts into the air at night and flies about for an hour or more, uttering its shrill cry at intervals. At all times this species seems pugnaciously inclined, and not only fights with its own kind but with other water fowl that may chance to intrude too closely upon its haunt. The note of the Water Hen is a singularly shrill and piercing *kik-ik-ik* often modulated into *ker-r-r-r-k*, and is most frequently uttered at dusk or even during the night. The food of this species consists of worms, snails, insects and their larvæ, buds, shoots and seeds of water plants, grass, grain, and even berries, especially of the wild rose and the hawthorn, to obtain which the bird frequently alights in trees and thickets. When in a semi-domesticated state it will eat almost anything that may be thrown down for water fowl; and it has been known to kill and eat ducklings and pheasant chicks. I have known it try to eat dead mice and rats, and to pick a bone. Although at all times more or less sociably inclined, it is never so gregarious as the Coot, and even in the severest weather seldom visits salt water. When hard pressed for food it will often wander considerable distances from the frozen lakes and ponds, even visiting farmyards and gardens.

Nidification.—The Water Hen, especially when living under semi-domestic conditions, is one of the earliest birds to breed. I have known it to commence nest building in such cases by the beginning of March, long before

the flags were high enough to conceal the nest. The nest, however, is not generally ready for eggs before the middle of April, and in cold, backward seasons, it is often a fortnight later. The nest is placed in a great variety of situations, and, as I believe this bird pairs for life, certain spots are chosen year after year. It is most frequently placed among the rushes, reeds, and flags growing near the side of the water, and is often a floating structure made many yards from shore. Sometimes it is built amongst the exposed roots of trees growing on the bank, or even on a flat drooping branch above the water. Branches of fir trees are frequently selected, sometimes as much as twenty feet from the ground. In such situations the chicks must be carried down in the parents' claws. The nest is a large bulky structure of rotten aquatic vegetation, loosely put together but trampled down into a rather firm mass. The cavity containing the eggs is rather flat and shallow, and is lined with finer and drier material. Some nests are much higher than others, and many are increased in bulk as incubation progresses. I have known nests added to daily to repair damage caused by the incessant lap of the waves. The eggs are from six to ten in number, sometimes as many as twelve. They are buffish-white or pale reddish-buff in ground-colour, spotted and speckled with reddish-brown and grey. Some eggs are much more handsomely marked than others. They measure on an average 1·7 inch in length by 1·2 inch in breadth. The hen sits closely, attended by the cock, the latter taking the smaller share of incubation, which lasts from about twenty to twenty-four days. When the sitting bird leaves the nest, it covers the eggs with bits of vegetation. This statement has recently been questioned (*Zoologist*, December, 1898). It is, however, confirmed by such careful field naturalists and authorities as Bewick, Waterton, Naumann, Stevenson, Seebohm and Stanley—the latter giving a most interesting instance in his well-known *History of Birds*, p. 299. There may, of course, be exceptions to the rule; but even in these cases the bird was possibly surprised and driven from the nest before the eggs could be covered. Although the bird sometimes flies to and from the nest, it usually slips quietly off into the water. Several broods are reared in the year; young chicks have been found as late as the end of August. The young, clothed in jet-black down, take to the water at once with their parents, which often lead them to running streams near. They are well able to take care of themselves in the moment of danger, and hide in holes and corners directly harm threatens them.

Diagnostic characters.—*Gallinula*, with the general colour above olive-brown, below slate-grey, shading into brown on the flanks, which are broadly striped with white. Frontal plate rounded at the top, scarlet; in young, greenish-brown. Base of under mandible, scarlet. Length, nearly 13 inches.

NOTE.—Three species of exotic Gallinule have been recorded as British, but there can be no doubt whatever that in each case the examples obtained were escaped birds. All three are strictly sedentary species. They are the Purple Gallinule, *Porphyrio caruleus*, found in Italy, Spain, and North-west Africa; the Green-backed Gallinule, *Porphyrio smaragdonotus*, found throughout Africa, with the exception of the north-west, where it is replaced by the preceding species; and the Martinique Gallinule, *Porphyrio martinicus*, found in tropical and sub-tropical America. They require no further notice in a work on British birds.

Subfamily FULICINÆ.—The Lobe-toed Rails.

The Lobe-toed Rails may be distinguished from other members of the present family by the scalloped lobe-like membranes on the toes. It does not contain probably more than a dozen species and subspecies, all of which are included in a single genus.

Genus FULICA, or Coots.

Type, FULICA ATRA.

Fulica, of Linnæus (1766).—The birds comprising the present genus are characterised by having the toes united at the base, and furnished with lateral extensions of the membranes which form lobes, or scalloped processes. The wings are moderately long; the tail is short, rounded, and composed of twelve feathers. The legs are long, and the lower portion of the tibia is devoid of feathers. The bill is short, stout and compressed, the culmen extending and expanding into a broad frontal plate; nostrils longitudinal, situated in a groove. Three toes in front, one behind; claws sharp.

This genus is composed of about twelve species, which are distributed in all parts of the world except the Polar latitudes. One species is a resident in the British Islands.

The Coots closely resemble the typical Water Hens in their habits and in the localities they frequent. They are, however, more partial to salt water. They swim and dive with great ease, and walk and run with equal facility. Their flight is rather slow and laboured. They are more or less gregarious. They make bulky nests amongst the aquatic vegetation, and their eggs are numerous and spotted. Their notes are loud and discordant. Their food consists of insects, worms, mollusks, buds, and shoots of plants and seeds. They are monogamous. Their flesh is of indifferent quality.

Family RALLIDÆ.
Subfamily FULICINÆ.

Genus FULICA.

COMMON COOT.

FULICA ATRA.—*Linnæus*.

Fulica atra, Linn. Syst. Nat. i. p. 257 (1766); Macgill. Brit. B. iv. p. 560 (1852); Dresser, B. Eur. vii. p. 327, pl. 504 fig. 2 (1879); Yarrell, Brit. B. ed. 4. iii. p. 171 (1883); Seebohm, Hist. Brit. B. ii. p. 564 (1884); Dixon, Nests and Eggs Brit. B. p. 342 (1893); Sharpe, Cat. B. Brit. Mus. xxxi. p. 211 (1894); Lilford, Col. Fig. Brit. B. pt. xxxi. (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 87, pl. 22 (1896); Sharpe, Handb. B. Gt. Brit. iv. p. 238 (1897).

Geographical distribution.—*British*: The Coot is less common and more locally distributed than the Water Hen, but numerous enough in all suitable localities throughout the British Islands, extending to the Outer Hebrides and the Orkneys. To the Shetlands and the Channel Islands it is an accidental visitor only. Drainage and reclamation of waste, marshy grounds have caused its numbers to decrease in some districts, especially in the eastern counties; although there is considerable evidence of its increase in others. *Foreign*: Including allied forms, almost cosmopolitan. It is generally distributed throughout Europe, breeding in the west as far north as lat. 60° in Scandinavia and West Russia, but in the Ural Mountains up to lat. 57° only; whilst in West Siberia it reaches lat. 55° only. It is a summer migrant to East Siberia, the Baikal country, the valley of the Amoor, East Mongolia, Northern China, and the north island of Japan; but is a resident in the main island of Japan, South China, Formosa, Java, and the Philippines. It is a resident throughout the Burmese Peninsula, India, and Persia; but only a summer migrant to Russian Turkestan, and passes Afghanistan on migration. Tracing its distribution westwards, we find it to be a resident in Asia Minor, Palestine, North Africa, and the Azores. It is known on the Canaries and Madeira on migration, and during winter is found on the African continent as far south as Senegambia in the west, and the Blue Nile in the east. It is also a bird of regular passage over the Faroes, occurs accidentally in Iceland, and has been known once to stray to Greenland. In the southern portions of its range it is more abundant in winter than in summer, owing to the influx of birds from the northern limits. This is especially noticeable in the basin of the Mediterranean and in India.

Allied forms.—*Fulica cristata*, an inhabitant of the whole of Africa and the south of the Spanish Peninsula. Differs from the Common Coot in having no white on the wing, and two crimson caruncles on the frontal shield. *F. americana*, an inhabitant of North America. Differs from the Common Coot in having a large amount of white on the under tail coverts. *F. australis*, an inhabitant of Australia and Tasmania. Distinguished by the absence of white tips to the outer secondaries and by the smooth frontal shield.

Habits.—In many of its habits the Coot somewhat closely resembles the Water Hen, although it is much more partial to salt water, and rarely frequents such small streams and pools as so often content that species. It shows a decided preference for broad open waters and the slow running reaches of the larger rivers. Like its ally, the Water Hen, it lives in many places in a semi-domesticated condition, and is then nothing near so wary as in a wilder state. It is then one of the wariest of birds, and by its excessive watchfulness repeatedly gives the alarm to other wild fowl. As it feeds principally in the daytime, it is on the alert when such species as Geese and Ducks are sleeping; consequently these birds often seek the company of the Coot during the day, as if conscious that they could rest in safety in its vicinity. Although the Coot is graceful enough on land, and can perch in trees with ease, even roosting in them at night, it is far more at home in the water. It swims well, and dives with wonderful skill, disappearing below the surface almost with the rapidity of thought. In swimming it has the same bobbing motion of the head as the Water Hen, and, like that bird, frequently dives and progresses under water to a safe retreat when menaced by danger. Although it is flushed with difficulty, it flies well and quickly, yet in an apparently somewhat laboured manner. Just as it rises, the legs are allowed to hang down as if broken, but if the flight be at all protracted they are drawn up and stretched out behind. At night it frequently rises into the air and flies round and round above its haunts, uttering its loud note at intervals. This note is a clear, far-sounding *kö*. At all seasons the Coot is a remarkably sociable bird, and in autumn and winter frequently gathers into enormous flocks. These congregations of Coots are by far the largest on salt water, and then consist of many birds that have been driven from inland waters by long-continued frosts. It is said that great numbers of Coots also visit our islands from more northern and eastern lands, and swell the ranks of the flocks gathered on our low-lying coasts, taking their departure in March; although it is worthy of remark that the bird is very rarely observed at Heligoland, and Gätke did not know of more than eight examples during the whole course of his wonderful experience. Coots afford considerable sport, and vast numbers are occasionally shot during some grand *battue*. I have known cart-loads of Coots shot in such a manner on the renowned Slapton Ley, in South Devonshire—one of the greatest haunts of this species in our islands. The food

of the Coot consists of meadow grass, buds, shoots, leaves, and seeds of various aquatic plants, grain, insects, snails, worms, and small fish. Much of its food is obtained whilst diving. During severe weather it sometimes wanders from the water to farmyards and shrubberies, and it will then make a meal of hawthorn berries, and the hips of the wild rose. The flesh of this species is by no means unpalatable, if obtained for the table from fresh water and during the time food is plentiful.

Nidification.—The Coot breeds much later than the Water Hen, its eggs seldom being laid before the beginning of May. The nest is a large bulky structure, sometimes placed among reeds, rushes, and flags some distance from the shore, where it floats, moored to the vegetation; at others it is built amongst the aquatic herbage growing on the banks of the pool or stream. Most of the nest is little more than a heap of wet, rotten aquatic vegetation, which often rises some eight or ten inches above the level of the water. At the top of this a shallow cavity, lined with drier and finer materials, is formed for the eggs. These are from six to twelve in number—seven or eight being an average clutch—buffish-white in ground-colour, sprinkled, speckled, and dusted over most of the surface with blackish-brown. They measure on an average 2·1 inches in length by 1·3 inch in breadth. Incubation lasts from twenty-one to twenty-three days. Both parents assist in this duty, and the young are soon able to leave the nest and take to the water with the old birds. They dive well, and seek to elude enemies by hiding in any nook or cranny when pursued. According to Stevenson and other observers, odd eggs of the Water Hen are sometimes found in the nest of this species. Two broods are reared in the season.

Diagnostic characters.—*Fulica*, with the general colour slate-black, a white wing bar caused by pale tips to the outer secondaries, and with a broad white frontal shield. Length, 16 inches.

ORDER GRUIFORMES.—THE CRANES AND THEIR ALLIES.

THE Cranes and their allies constitute a somewhat isolated and heterogeneous group, more or less distantly allied to the *RALLIFORMES*, variously associated by different systematists with the Herons, the Plovers, the Bustards, and so on. Their sternum contains no notch on the posterior margin. In the modification of their cranial bones they are schizognathous, whilst their nostrils are schizorhinal (except in a single family, the *Psophiidæ*, in which the nostrils are holorhinal). The dorsal vertebræ are heterocœlous. Their external characters vary considerably in the various families, with one of which only we are concerned in the present volume, and which will be described in detail below. So far as is known the young are hatched covered with down, and able to run soon after breaking from the shell. As the method of nidification is yet unknown in some of the families, it is impossible to say whether this is general or not. The birds contained in the family represented in our avifauna are double-moulted, but whether this is universal in the order is not yet known.

The birds in the present order number about twenty-seven species. These may be subdivided into four families, viz., the *Gruidæ*, the *Aramidæ*, the *Rhinochetidæ*, and the *Psophiidæ*. But one of these is represented in the British Islands. The birds in this order are almost cosmopolitan continentally; but the *Rhinochetidæ* (with a single species) is restricted to New Caledonia.

Family GRUIDÆ.—The Cranes.

The Cranes form by far the largest and most widely dispersed family in the present order. They are characterised by having the sternum perforated anteriorly to receive the convolutions of the trachea. The rectrices are twelve in number, the wings are long and ample, the inner secondaries (which are rather longer than the primaries) generally composed of drooping plumes which partially conceal the tail. The legs are long, the hallux short, and considerably elevated above the plane of the rest of the toes. The bill is stout, about as long as the head; the nostrils are enclosed by a membrane behind, and the nasal groove extends more than half the length of the upper mandible. Dr. Sharpe (*Cat. B. Brit. Mus.*) has divided the nineteen known species of Cranes into no less than nine genera: a most arbitrary and needless course, when we find that six of these contain but a single species, and two others three each!

Genus GRUS, or Cranes.

Type, GRUS CINEREA.

Grus, of Pallas (1767).—The birds comprising the present genus—and the only one in the family—are separated by the same characteristics as those that define the *GRUIDÆ* from surrounding groups. It is true this small and compact family has been subdivided into numerous genera, but the characters upon which they are based do not appear to me to be of sufficient importance and value. By placing all the known species therefore in one genus, the number of species is the same as that already given in the remarks on the family. Cosmopolitan continentally, with the exception of the Neotropical region. Two species are accidental visitors to the British Islands.

The Cranes are dwellers on large plains and in swamps, and are remarkable for their extended migrations. Their flight is powerful and sustained. Their notes are loud and trumpet-like. They make their nests on the ground in swamps, and their eggs are usually two, but sometimes three in number, and handsomely spotted. Their food consists of grain, seeds, shoots of herbage, lizards, snakes and small animals. They are monogamous.

Family GRUIDÆ.

Genus GRUS.

COMMON CRANE.

GRUS CINEREA.—*Meyer and Wolf*.

PLATE XIV.

Ardea grus, Linn. Syst. Nat. i. p. 234 (1766).**Grus cinerea**, Meyer and Wolf, Taschenb. ii. p. 350 (1810); Macgill. Brit. B. iv. p. 20 (1852); Seebohm, Hist. Brit. B. ii. p. 570 (1884); Seebohm, Col. Fig. Eggs Brit. B. p. 155, pl. 46 (1896).**Grus communis**, Bechstein, Naturg. Deutsch. iii. p. 60 (1793); Dresser, B. Eur. vii. p. 337, pl. 505 (1873); Yarrell, Brit. B. ed. 4. iii. p. 178 (1883); Lilford, Col. Fig. Brit. B. pt. xii. (1890); Dixon, Nests and Eggs Non-indig. Brit. B. p. 212 (1893).**Grus grus** (Linn.), Sharpe, Cat. B. Brit. Mus. xxiii. p. 250 (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 111 (1896).

Geographical distribution.—*British*: For more than three hundred years the Crane has ceased to breed in our islands, and for little less a period has ceased to visit them in winter with its wonted regularity. Its only stronghold in England appeared to be the swamps and fens of the eastern counties. It is now only a rare and accidental wanderer on migration to England, of less frequent appearance on the mainland of Scotland, and of still less in Ireland. It is of frequent occurrence in the Orkneys, and still more in the Shetlands. The year 1869 was remarkable for the visits of this bird to our islands. As regards recent Irish appearances, a male was shot in County Down in May, 1882, and two were seen (one of which was shot) in County Mayo in January, 1884. During the twelfth and fourteenth centuries it is said to have bred commonly in the bogs of the Emerald Isle. *Foreign*: Palæarctic region; parts of the Oriental region in winter. It breeds in localities suited to its requirements throughout Europe and Northern Asia. It is occasionally seen at the Faroes on passage. In Scandinavia and Russia it breeds locally up to lat. 68°; in West Siberia no higher than the Arctic circle; whilst in the valley of the Yenisei it does not appear to have been met with beyond lat. 60°. Although not met with hitherto in Eastern Siberia, it is recorded from Kamtschatka by Pallas, and breeds in Russian Turkestan, the Baikal country, and the Amoor valley. On passage it occurs in Mongolia and North China, but doubtfully in Japan, and is a winter visitor to South China and Northern India. Once more returning to the west we find it wintering in Persia and Palestine, in various parts of South Europe, in Abyssinia, Egypt, Nubia, and Algeria. South of the limits already traced in Europe it breeds in Russia, Turkey, the valley of the Danube, Austro-Hungary, Italy, Andalusia, North Germany, Poland, and the Baltic Provinces.



Allied forms.—None with which it is likely to be confused. Eastern examples of the Crane have been described as a distinct species under the name of *Grus lilfordi*, because of their alleged paler colouration. Whether, however, they are entitled to subspecific rank even appears very doubtful, and for the present, at any rate, it seems the wisest course to keep them united.

Habits.—It is the British ornithologist's misfortune that the habits of this magnificent bird can be studied no longer in these islands, which were once its home. The haunts of the Crane are in extensive swamps, where lakes, and bogs, and rough ground, clothed with scrub, and heath, and rushes abound. Some of these haunts are surrounded by forests, but the Crane shows no partiality for trees, and never appears to alight in them. In my opinion its affinity to the Bustards is manifested in this singular habit. At all times it is an excessively shy bird, detecting danger from afar as it stands in its treeless, open wilderness, and unfolding its broad wings and soaring away long before harm can reach it. At all times of the year it is more or less gregarious, but becomes most so during winter. To Northern Europe the Crane is a bird of regular passage, and performs its migrations in companies, which fly at an enormous height, usually in the shape of a V or W. These flocks appear to migrate by day. Cranes are birds of somewhat early passage, those that have wintered in Africa beginning to return in February and March, reaching their breeding grounds in Central Europe towards the end of that month or early in April, but not arriving in the Arctic regions before May. The return journey is undertaken during October. The flight of this species is powerful and rapid, with slow and regular beat of wing, the long neck extended and the legs held out behind. It walks about the ground in a very graceful manner, and wades in the stagnant waters in quest of its food. This consists of a great variety of substances, but mostly of a vegetable character; grain of all kinds, grass, the buds and shoots of aquatic plants, acorns, insects, lizards, frogs, and, according to Hume, small fish. The same authority states that in India its favourite food is the young pods and yellow pea-like flowers of an arborescent pulse (*Cajanus indicus*), and that it is addicted to water melons, boring into these fruits not only to obtain the pulp and seeds, but also to quench its thirst. When feeding, Cranes are very wary birds, and usually post sentinels to give timely warning of the approach of danger. In India, where this bird is very common during the cold season, and swarms in the rice fields, Hume states that they feed principally in the early morning, but often pay other yet shorter visits to the grounds during the day and night. On returning from their meal they fly round and round above their usual resting-place as if surveying the ground before alighting, all the time calling loudly, and then generally descend in graceful sweeps, with their long legs hanging down some little time before they reach the earth. The Crane sleeps standing on one leg, with the head and neck buried amongst the dorsal plumes. Here, towards

the afternoon, they often congregate in vast flocks. They usually spend the night on a sandbank surrounded by water, where they are comparatively safe from harm. The note of the Crane is a loud trumpet-like cry, which may be heard for an immense distance under favourable conditions. This note is variously modulated during the breeding season. The flesh of the Crane is by no means unpalatable, when the bird is killed under favourable conditions for the table.

Nidification.—The Crane begins to breed rather early in the year, although the actual time varies a good deal with the latitude of the nesting grounds. Thus in Central Europe its eggs are laid about the end of April or the beginning of May, but in Lapland they are about a month later. The nest is usually built in the fastnesses of a swamp, and is sometimes a huge bulky structure from two to five feet across. It is most probable that the Crane pairs for life; indeed, there is direct evidence that the same nest is used annually in many cases. It is made of sedges, rushes, branches of heath, and twigs, and lined with grass. Some nests tower high above the shallow water or swampy ground, others are almost level with the surrounding surface. If the nest is small—as it usually is when made on a dry hummock in the swamps—it is little more than a trampled hollow, lined with bits of dry vegetation. The eggs are generally two in number, but instances are on record where three have been found. They vary from brownish-buff to greenish-buff in ground-colour, blotched and spotted with rich reddish-brown, pale brown, and violet-grey. The shell is rather rough and pitted. They measure on an average 3·9 inches in length by 2·5 inches in breadth. Incubation is said to last a month, and appears to be performed by the female. She is very wary in leaving and returning to her nest, and the male keeps sentinel over the place ready to give the alarm at the approach of danger, and to defend his home against intruders weaker than himself. One brood only is reared in the year, and the young, clothed in brown down, are soon able to follow their parents. They appear to keep together until the migration period arrives, when more gregarious instincts are developed, and for the remainder of the autumn and winter live in flocks of varying size.

Diagnostic characters.—*Grus*, with the general colour of the plumage slate-grey, including the inner secondaries; the throat slate-grey like the cheeks; the sides of the neck white, and the tertials black, developed into elongated, curly, bushy plumes. Occipital region bare of feathers and covered with scarlet warty skin (adult). Length, about 43 inches.

Family GRUIDÆ.

Genus GRUS.

DEMOISELLE CRANE.

GRUS VIRGO—(*Linnaeus*).**Ardea virgo**, Linn. Syst. Nat. i. p. 234 (1766).**Grus virgo** (Linn.), Dresser, B. Eur. vii. p. 353, pl. 506 (1879); Yarrell, Brit. B. ed. 4 iii. p. 192 (1883); Seebohm, Hist. Brit. B. ii. p. 275 (1884); Lilford, Col. Fig. Brit. B. pt. xii. (1890); Dixon, Nests and Eggs Non-indig. Brit. B. p. 214 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 156, pl. 46 (1896).**Anthropoides virgo** (Linn.), Sharpe, Cat. B. Brit. Mus. xxiii. p. 269 (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 114 (1896).

Geographical distribution.—*British*: The Demoiselle Crane is a very rare visitor on migration to the British Islands. Its claim to this distinction rests on one solitary recorded occurrence. On the 14th of May, 1863, a pair were observed, one of which, a male, was shot at Deerness, East Mainland, Orkney. *Foreign*: Palæarctic region, summer; parts of the Oriental and Ethiopian regions, winter. The only known European breeding places are in Southern Spain, on the western shores of the Black Sea, and the steppes of South Russia between lat. 50° and the Caucasus. In Asia it breeds in Turkestan and South-west Siberia as far north as lat. 53°, in Dauria, the Baikal country, Eastern Mongolia, and the north-west of China. Its winter quarters are on the plains of India; it also passes up the Nile valley to winter in Sennar, south to lat. 12°. During its migrations it has accidentally wandered into Scandinavia, Germany (including Heligoland), Spain, Switzerland, Italy, Greece, and Asia Minor.

Allied forms.—None of sufficient propinquity to call for notice.

Habits.—The Demoiselle Crane is just as regular in its migrations to and from its breeding grounds as the preceding species. Like that bird it journeys in large flocks which usually assume an angular formation like the letter V or W. They fly at enormous altitudes, sometimes beyond the range of human vision. In Europe the Demoiselle Crane arrives at its breeding grounds during March and April, whilst further east, where the season is later, it appears at about the same time. It leaves its summer quarters during September and October. Its flight is very similar to that of the Common Crane, rapid, but performed with slow and regular beats of the mighty wings, and the neck and legs are outstretched. The note of this species is a harsh *kurr-kurr-kurr*, and is not at all

trumpet-like. The Demoiselle Crane is a dweller in sandy districts, steppe country, and on vast plains, but it does not appear to frequent swamps during the breeding season. It is always wary and watchful, seldom allowing any one to approach it closely unless by stratagem or under cover of some kind. It walks about the plains and round the edge of the pools in a very graceful manner, and often wades into the water and stands motionless with head to wind. The food of this species is composed principally of vegetable substances, grain and seeds, buds and shoots of herbage, insects, worms, lizards, and snakes, but not apparently any fish. In some parts of India its favourite food appears to be the safflower oil seed (*Carthamus tinctorius*). Whilst in its winter quarters in this country it is described as "by far the most suspicious and un-get-overable bird in existence." Their chief feeding time is in the morning and evening, and when satiated with food they repair to some large sandbank in a river, or the shallow margin of tanks and pools, where, in a dense flock, they rest and preen their plumage. They drink regularly, and usually sleep on a bare open plain ranged in a long single line, over which ever-watchful sentinels keep jealous guard. The flocks of this bird vary considerably in size, almost from day to day. Thus at the roosting places the numbers are often large, but at daybreak they separate into smaller parties to feed. Hume states that the flocks of Demoiselle Cranes are constantly splitting up into smaller ones and reuniting, and that they are somewhat capricious in the choice of a haunt, and rarely remain in a district for many weeks together. When wounded, this Crane will seek to escape by trying to swim, and when brought to bay will fight fiercely, although with nothing near the power of the Common Crane. They are very noisy birds, and the confused uproar that begins when an enormous flock of several thousands of birds has been surprised and fired at, is indescribable; the din of throbbing wings and screaming birds being so loud that it may be heard a couple of miles away! In some parts of Southern India this Crane is held sacred by the Brahmins, and small patches of grain are left in the fields for it to feed upon after its arrival in autumn. This bird is said by Taczanowski to be found near Biskra in the Northern Sahara, but I failed to find it there.

Nidification.—Although so gregarious during the cold season, at the approach of spring the large flocks begin to disperse at the breeding grounds into pairs. The gregarious instincts, however, do not appear to be entirely suspended, for all the summer through it shows social tendencies, and small parties often feed in company. During the pairing season this species indulges in various grotesque antics, which have been described by some observers as "dancing." These dances take place just before nest-building commences, and are thus aptly described by Nordmann. The Demoiselle Cranes "dance and jump towards each other, bowing themselves in a most burlesque manner, bending their necks forward, extending the plumes on the neck, and depressing their wings; others,

again, in the meanwhile, run races, and on arrival at the goal, return striding along gravely and quietly, whilst the rest of the assembly greet them with reiterated cries, inclinations of the head, and other demonstrations." Curious as these antics undoubtedly are, however, we may fairly presume that the worthy professor has allowed his imagination to assist him not a little in penning the above notes. The nest of this Crane is always made on the ground, either amongst grain or grass, or, according to Dybowski, on the rocky banks of a river. It is only a slight affair, a mere hollow trodden in the ground, and lined with a few bits of herbage. The latter naturalist states that the nest is made of small stones fitting close to each other, the surface of the nest being flat, and deepening towards the centre. The two eggs are laid about the end of April, or the first half of May, although Dybowski states that he has seen them in June and until the middle of July. They are pale buff or olive-brown in ground-colour, spotted and blotched with umber-brown and grey. The shell is rather coarse, and full of small pores. They measure on an average 3·5 inches in length by 2·0 inches in breadth. Both male and female are said to assist in the duty of incubation, which lasts about a month. The bird which chances to be off the eggs is usually placed sentinel-like close by the nest, ready to give the alarm and to take part in driving off predaceous birds or animals. The Demoiselle Crane appears to rear one brood only in the year, and the young chicks are soon able to leave the nest and follow their parents.

Diagnostic characters.—*Grus*, with the general colour of the plumage pale slate-grey, the feathers of the throat elongated, the tertials long and pointed, but not curled, and a tuft of long white feathers on each side of the head, which is neither crested nor bare of feathers. Length, 31 to 36 inches.

NOTE.—An example of the Soudan Crane, *Grus pavonia*, has been obtained in the British Islands (Ayrshire, 17th September, 1871), but as it is said to be a sedentary species, and one often kept in confinement, there can be little doubt that the individual in question had escaped from captivity. The date of capture and the area inhabited by the species (Central and West Africa) preclude any possibility of a normal visit to us.

ORDER CHARADRIIFORMES.—THE BUSTARDS, PLOVERS, &c.

THIS somewhat extensive group of birds contains not only the typical Bustards (which form a link with the *RALLIFORMES* on one hand, and through the Stone Curlews with the typical Plovers on the other), Plovers, Sandpipers, and Jacanas (*PARRIDÆ*), but such evidently generalized and ancient forms as the Crab-Plover (*DROMADIDÆ*), the Sheathbills (*CHIONIDIDÆ*), and the somewhat Sand-Grouse-like birds (*THINOCORYTHIDÆ*)—numbering few species, some of them highly localised, and probably indicating the last surviving relics of what were once dominant and widely distributed groups. There can be no doubt that the most nearly surviving relations of the majority of the birds included in the present order are the Gulls, which are associated with them by some systematists. In the *CHARADRIIFORMES* the sternum usually contains two notches on each side of the posterior margin, but in a few species one notch only is found. In the modification of their cranial bones they are schizognathous; whilst their nostrils are almost universally schizorhinal (in the families *THINOCORYTHIDÆ*, *ÆDICNEMIDÆ*, and *OTIDIDÆ*, and the genus *Pluvianus*, the nostrils are holorhinal). Some of the other characters are not common to the order, and these will be alluded to in the account of the several families which are represented in the British avifauna. The primaries are eleven in number; the fifth secondary absent; rectrices variable in number. The oil gland when present is tufted; the body feathers have an aftershaft. The toes are either partially webbed, or have the webs entirely absent; the hallux is absent in most species, present in some, and, if present, always connected with the *flexor longus hallucis*. The young are hatched covered with down, and able to run almost as soon as they break from the shell.

The birds in the present order number nearly three hundred species and subspecies. These may be divided into nine fairly well-marked families (some, however, of very small extent), of which five are represented in the British islands. The birds in this order are practically cosmopolitan in their distribution,

Family OTIDIDÆ.—The Bustards.

The birds in the present family are characterised by having the nostrils holorrhinal, and the dorsal vertebræ hetërocœlous. The episternal process is not perforated, and the oil-gland is absent. There is an aftershaft to the contour feathers. In their pterylosis, myology, and digestive organs the Bustards show close affinity with the Rails and Cranes. Amongst their external characters may be mentioned the short, stout, and somewhat flattened bill, the ovate and pervious nostrils, the feathers of the forehead reaching to their posterior margin; the moderately long, stout legs, the metatarsus longer than the middle toe and claw, and reticulated, and the absence of the hallux. The wings are long and ample, the primaries ten in number and very little longer than the secondaries; the tail is short, the rectrices varying from sixteen to twenty in number. Moults complete in autumn, partial in spring. Young hatched covered with down, and soon able to run and to feed. There are about thirty species in the present family, all confined to the Old World, and most abundant in the Ethiopian region. The present family has been subdivided by Dr. Sharpe, in our opinion quite needlessly, into no less than twelve genera, three of which contain but a single species, and four others but two each! In the present volume two genera only will be recognized, each with a British representative.

Genus OTIS, or Typical Bustards.

Type, OTIS TARDA.

Otis, of Linnæus (1766).—The birds comprising the present genus are distinguished by the various characters that have already been specified in the account of the family; and, in addition, they may be separated from the members of the following genus (*Houbara*) by the absence of any ruff or feather shield on the lower throat and foreneck overhanging the crop.

This genus is composed of some twenty-three species (and, according to some authorities, two subspecies), which are inhabitants of the Palæarctic, Oriental, and Ethiopian regions, and most abundantly represented in the latter.

The Bustards are dwellers on the open plains and steppes. They are birds of powerful and rapid flight, but are most addicted to the ground, where they walk and run with ease. Their notes are neither very loud nor very musical. They make slight nests on the ground, and their eggs are from two to four or five in number, and spotted. Their food consists of grain, seeds, buds and leaves of plants, and insects. The flesh of some is highly esteemed.

Family OTIDIDÆ.

Genus OTIS.

GREAT BUSTARD.OTIS TARDA.—*Linnaeus*.

PLATE XV.

Otis tarda, Linn. Syst. Nat. i. p. 264 (1766); Macgill. Brit. B. iv. p. 30 (1852); Dresser, B. Eur. vii. p. 369, pl. 508 (1872); Yarrell, Brit. B. ed. 4 iii. p. 193 (1884); Seebohm, Hist. Brit. B. ii. p. 581 (1884); Lilford, Col. Fig. Brit. B. pt. xxi. (1892); Dixon, Nests and Eggs non-indig. Brit. B. p. 216 (1894); Sharpe, Cat. B. Brit. Mus. xxiii. p. 284 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 88, pl. 23 (1896); Sharpe, Handb. B. Gt. Brit. iii. p. 116 (1896).

Geographical distribution.—*British*: The Great Bustard was formerly a local resident in Great Britain confined to the steppe or down districts: the Merse of Berwickshire, the wolds of Yorkshire and Lincolnshire, the warrens and heaths of Norfolk, Suffolk, and Cambridgeshire, and the downs of Dorset, Wilts, Hants, and Sussex. For half a century or more it has ceased to breed in this country, and can now only be classed as an irregular winter visitor. It is not known to have visited Ireland. This magnificent bird, although for years gradually dwindling in numbers, managed to retain its place as an indigenous species to the British Islands until the earlier portion of the present century, disappearing at varying times from certain haunts: thus, from Wiltshire, about 1810; Yorkshire and Lincolnshire, about 1826; Suffolk, 1832; Norfolk, about 1838. Their extinction must be attributed to a variety of causes. Of these, probably one of the most important, was the rapid increase of plantations, which covered the birds' steppe-like haunts with a series of ambuscades; and another, the introduction of improved machinery in farming, especially for tilling the open corn lands on which the birds delighted to nest, and the use of which led to the wholesale destruction of its eggs. This species is now but an abnormal migrant to our shores, although we believe there has lately been some steps taken to introduce the bird on the Yorkshire moors—an experiment scarcely likely to succeed. As previously stated the Great Bustard is an irregular visitor to our islands, occurring at intervals in unusual numbers. Such invasions were remarked in the winters of 1870-71, in 1879-80, and again in 1890-91. During the latter winter no less than seven of these birds—all females—were recorded from various parts of the South of England. (Conf. *Field*, 28th February, 1891.) *Foreign*: South Palæarctic region from the Atlantic to the Pacific. It breeds in suitable districts in Denmark, Russia (south of lat. 55°), Germany, Italy, Spain, the steppes of the Danube, and Turkey. It is now very rare in France, Greece,



and North-west Africa, and completely exterminated in Scandinavia. It is also known as an accidental visitor to Asia Minor and North Persia, and as a straggler to North-west India. Eastwards its range includes Turkestan and Northern Afghanistan, but the precise limits are at present undetermined.

Allied forms.—In East Siberia (south of Omsk and the Amoor), Mantchuria, Corea, and Japan, south to the Yangtze Kiang basin (where Mr. Styan records it as common in winter), the Great Bustard is replaced by *Otis dybowskii*, a very nearly allied species, which differs in being smaller in size (total length, 34 inches), with a smaller and more slender bill, paler head and hind neck, and grey lesser wing coverts. The Great Bustard has no other very close allies; and whether this eastern bird deserves specific rank seems somewhat questionable.

Habits.—The haunts of the Great Bustard are the vast plains and steppes which stretch across Europe and Asia, the great grain lands which extend in some parts of Asia for thousands of miles, treeless and bare, where the noble bird can scan a wide horizon and note the approach of enemies. The Great Bustard is a thorough ground bird, and is rarely or never seen near trees. It is a shy and wary creature, ever careful not to allow a close approach, is capable of running quickly, and flies in a somewhat heavy, laboured manner, with slow and regular beats of its ample wings. At all seasons the Great Bustard is a social bird, but in winter it becomes more or less gregarious, and joins into flocks which wander about the plains in quest of food. It is said that during the winter the sexes separate, and that the males live in flocks by themselves. Even during the breeding season several pairs of birds will feed in company, and all the summer the immature and non-breeding birds remain gregarious. It is an early migrant, in such districts where it is a bird of regular passage, reaching its summer haunts in March or April. The food of the Great Bustard is almost entirely composed of vegetable substances, grain, seeds, and the leaves and shoots of herbage; the bird, however, also eats insects, mice, lizards, and frogs. The note of the male is likened by Mr. Seebohm to the syllable *prunt*; and he also states that, when alarmed, both sexes make a kind of hiss, although at other times the female appears to be a remarkably silent bird.

Nidification.—Although the Great Bustard has been said to be polygamous, there appears to be no direct evidence in confirmation of the statement; and Naumann, the great German ornithologist, who had ample opportunities of observing this species, avers that it pairs early in spring. The male, when under sexual excitement, elevates and draws the tail forward over his back, the head and neck at the same time being retracted along the back, the wings are drooped, all the smaller feathers being erected until the tail, head, and neck are almost entirely concealed by the bristling plumage—almost every feather on end—and

the swollen breast. Some males, but not all, of this species have an inflatable gular pouch, which appears to be used either for the utterance of a singular note or for increasing the size of the throat and rendering the covering of feathers more imposing. This display is accompanied by various movements. The nesting season begins in May, and the eggs are laid towards the end of that month. The nest is sometimes made in a bare situation on the open steppe, or in a field of growing corn. It is little more than a slight hollow trampled by the female, which in some cases is lined with a few scraps of dry herbage, and is about eighteen inches across. The eggs are generally two in number, but sometimes three, and vary from olive-green to olive-brown and pale buff in ground-colour, spotted and blotched with reddish-brown and grey. On some specimens a few blackish-brown streaks occur. Like the eggs of the Crane, they are rather coarse in texture, and the shell is full of minute pores. They measure on an average 3·0 inches in length by 2·2 inches in breadth. The female alone appears to incubate the eggs, the time taken ranging from three weeks to a month. At the approach of danger she slips very quietly off the nest, and hurries away for a little distance on foot, especially when the cover is dense, but sometimes she rises from it into the air and flies slowly away. During the breeding season, especially about the pairing period, the males are very pugnacious. One brood only is reared in the year, and the young are soon able to quit the nest and follow their parents. Several instances of the Great Bustard breeding in captivity have been recorded. Details of one of these instances are given in the *Zoologist* for 1880 (p. 254), and were originally published in the *Bull. Soc. Imp. Acclim. Paris*, 1861 (p. 318). A second instance occurred in the Gardens of the Zoological Society of London, in June, 1893. In the former case three eggs were laid, the hen incubated, and one young bird was hatched; in the latter two eggs were laid, and the cock bird was not observed to take any share in the task of incubation (*Ibis*, 1893, p. 476). A female again laid in the Zoological Gardens in the season of 1895. The flesh of the Great Bustard is by no means unpalatable, especially that of the female and the young. An old male will often weigh over thirty pounds.

Diagnostic characters.—*Otis*, with the head grey, and a tuft of white bristly feathers at the base of the bill, the upper parts chestnut-buff barred with black, the wings white, except the primaries, which are blackish-brown, the breast banded with chestnut and grey, the belly white. Length, about 45 inches (male). In the female the bristles and chest bands are absent. Length, about 33 inches. According to Mr. Howard Saunders this bird is incapable of flight when moulting its quills.

Family OTIDIDÆ.

Genus OTIS.

LITTLE BUSTARD.

OTIS TETRAX—*Linnæus*.

Otis tetrax, Linn. Syst. Nat. i. p. 264 (1766); Macgill. Brit. B. iv. p. 35 (1852); Dresser, B. Eur. vii. p. 382, pl. 509 (1872); Yarrell, Brit. B. ed. 4, iii. p. 216 (1883); Seebohm, Hist. Brit. B. iii. p. 587 (1884); Lilford, Col. Fig. Brit. B. pt. xxiv. (1893); Dixon, Nests and Eggs Non-indig. Brit. B. p. 218 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 89, pl. 23 (1896).

Tetrax tetrax (Linn.), Sharpe, Cat. B. Brit. Mus. xxiii. p. 289 (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 120 (1896).

Geographical distribution.—*British*: The Little Bustard is an accidental visitor to the British Islands chiefly in autumn and winter, rarely in breeding plumage, and at no period known to have bred within them. It has most frequently been captured in the eastern and southern counties, especially in Yorkshire, Norfolk, and Cornwall. Four examples have been obtained on the east coast of Scotland, and three in Ireland. This species was exceptionally numerous in our Islands during the winter of 1874-75. *Foreign*: West Palæ-arctic region. To Germany, Denmark, and South Scandinavia, and the country north of the valley of the Danube, the Little Bustard is an accidental straggler only. It breeds in suitable districts in Spain, Portugal, and France, and is common on the steppes of the Danube, Turkey, and Southern Russia. It passes through Italy and Greece on migration, but is resident in Sardinia and Sicily. It breeds in North-west Africa, and winters in the Sahara. It also breeds in Russia, and West Siberia as far north as lat. 55°, and eastwards as far as Lake Saisan. It is a winter visitor to Egypt, occurs in Palestine and Asia Minor, and is a summer resident in North Persia and Russian Turkestan, wintering in the valley of the Indus.

Allied forms.—None of sufficient propinquity to merit allusion.

Habits.—Many Little Bustards winter in the Mediterranean district, but the greater number retire to Africa for the cold season. Vast flocks of these birds return north to their breeding grounds in Europe during April, the southern flight being made in October. In autumn the flocks are much larger than in spring, and in South-eastern Europe they are said to cross the steppes lying south of the Caucasus literally in millions. In its choice of a haunt the Little Bustard resembles its allies, being only found on wide treeless plains and steppes. It is perhaps more easy to approach than the Great Bustard, often remaining

skulking in the cover until it is flushed within easy gunshot. Its flight is straightforward and rapid, and the wings are moved so quickly that a whirring sound is audible as the bird hurries away, often soaring to a vast height. In this respect it is very different from the Great Bustard, as its flight is not so deliberate, and more like that of a Game Bird. Its movements on the ground partake more of those of birds of that order, and it runs quickly, the females being the most difficult to flush. The presence of the Little Bustard is often betrayed by the utterance of its curious note, which resembles the syllable *spurtz* or *prut*. The food of this species is mostly of a vegetable nature, such as grain, seeds, and the tender buds and shoots of herbage, but the bird also devours insects, snails, frogs, and, it is said, even field mice. Although so gregarious just upon its arrival at its breeding grounds, the flocks soon disperse, and as soon as pairing is over there appears to be not even a social tendency until after the young are reared. As this species breeds in its first spring, no flocks of immature non-nesting birds are ever noticed in the summer haunts, as is almost always the case with the Great Bustard.

Nidification.—Although many of the actions of the Little Bustard during the pairing season would seem to prove that this species is polygamous, such is not the case. In the pairing season numbers of birds congregate at certain spots, and the males appear to go through a sort of “lek,” like many Game Birds, showing off their charms in various ways to the apparently admiring females, for which conflicts take place between the rivals. Once paired, however, these gatherings disperse, and each male goes off with his mate to assist in the cares of bringing up the brood. About the middle of May the female makes a rude nest on the ground amongst the herbage; it is little more than a hollow, lined with a few bits of dry grass and weed, and measures seven or eight inches across. The eggs are usually four, sometimes three, and, more rarely, five in number, and vary in ground-colour from olive-brown to olive-green, indistinctly mottled with pale reddish-brown. The shell is glossy and smooth, the pores being very slightly defined. They measure on an average 2·0 inches in length by 1·5 inch in breadth. The female appears to incubate the eggs, but the male is in close and constant attendance upon his mate. In some cases it would appear that two broods are reared in the year, a second clutch being laid about the end of July, although there is no evidence to show that these late nests are not the produce of birds whose earlier efforts may have been unfortunate.

Diagnostic characters.—*Otis*, with the general colour above buffish-brown, *vermiculated* with black in the male in summer, *blotched* with black in the female at both seasons, and in the male in winter, with two black and two white gorgets in the male in summer. Length, 17 inches,

Genus HOUBARA, or Ruffed Bustards.Type, HOUBARA UNDULATA.

Houbara, of Bonaparte (1831).—The birds comprising the present genus are distinguished by the various characters that have already been specified in the account of the family; and, in addition, they may be separated from the members of the preceding genus (*Otis*) by having a ruff or feather shield on the lower throat and fore neck overhanging the crop.

This genus is composed of seven species, which are inhabitants of the Palæarctic, Ethiopian, Oriental, and Australian regions.

The Ruffed Bustards very closely resemble the typical Bustards, both in their general habits and the country they inhabit.

Family OTIDIDÆ.

Genus HOUBARA.

MACQUEEN'S BUSTARD.HOUBARA MACQUEENI—(*Gray and Hardw.*).

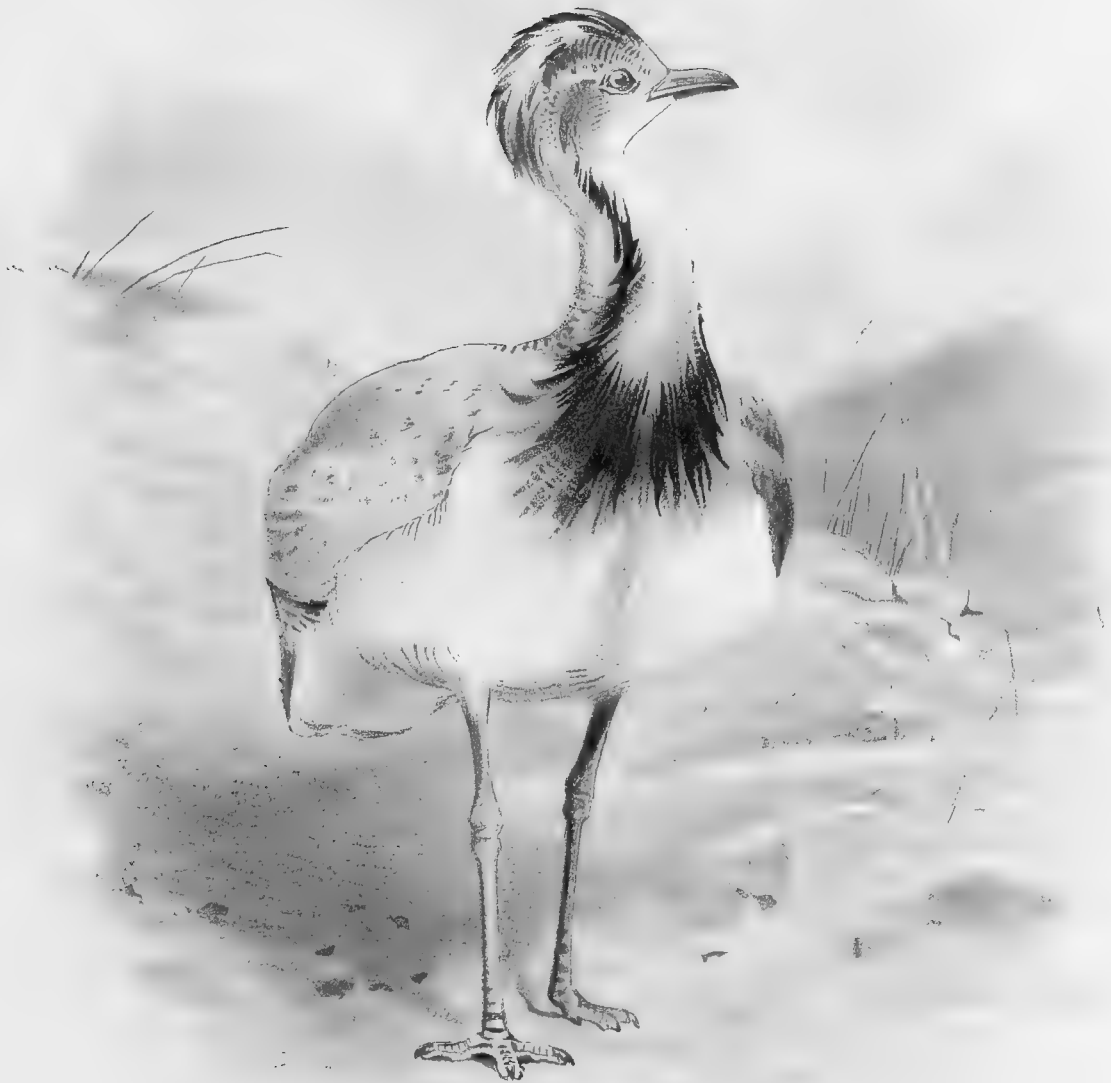
PLATE XVI.

Otis macqueenii, Gray and Hardw. Illustr. Ind. Orn. ii. pl. 47 (1834); Dresser B. Eur. vii. p. 395, pl. 511 (1876); Yarrell, Brit. B., ed. 4, iii. p. 221 (1884); Seebohm, Hist. Brit. B. ii. p. 591 (1884); Dixon, Nests and Eggs Non-indig. Brit. B. p. 219 (1894); Lilford, Col. Fig. Brit. B. pt. xxv. (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 30 pl. 23 (1896).

Houbara macqueenii (Gray and Hardw.), Sharpe, Cat. B. Brit. Mus. xxiii. p. 318 (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 123 (1896).

Geographical distribution.—*British*: Four examples of this Eastern Bustard have been obtained on our Islands. The fact of their visits being made in autumn—all four occurred in October—and that the northern range of this species in Asia is sufficient to bring the birds within the influence of the western stream of migration, which sets in at that time into Europe (where Macqueen's Bustard has from time to time been captured, is strong presumptive evidence of their legitimate occurrence in a wild state in this country. The first example was shot at Kirton-in-Lindsey, in Lincolnshire, on the 7th of October, 1847. It is now preserved in the museum of the Philosophical Society at York. The second was shot near Marske, on the north-east coast of Yorkshire, on the 5th of October, 1892. It was apparently an adult male in beautiful plumage, and is now preserved in the museum at Newcastle-on-Tyne. The third example, a young male, was shot at Easington, near Spurn; on the Yorkshire coast, on the 17th of October, 1896. The fourth, a female, was shot in Aberdeenshire, on the 24th of October, 1898. *Foreign*: South-west Asia. It breeds in Turkestan, South-west Siberia, east to Lake Saisan, southwards into Afghanistan, Persia, and the eastern shores of the Caspian Sea, and winters in South Persia, Baluchistan, the Punjaub, and Scinde. It has occurred accidentally in Germany, Holland, Schleswig, Sweden (Oeland), Poland, Silesia, Finland, Livonia, and Italy.

Allied forms.—*Houbara undulata*, an inhabitant of Armenia, Palestine, and North Africa, westward to the Canaries. Differs from Macqueen's Bustard in having the crest feathers and the elongated feathers of the throat pure white, the long feathers of the lower throat grey instead of white, the upper parts more rufous, and the vermiculations coarser. A form of this Bustard, apparently peculiar to Fuerteventura—an island of the Canary group—has recently been described as distinct under the name of *H. fuerteventura*.



Habits.—The present species is another bird of the wide, vast plains, and resembles in its habits the preceding species. But little is known of the economy of Macqueen's Bustard during its residence in Turkestan and Siberia, whither it retires in summer to breed, but its habits have been carefully studied during its sojourn in India, where it is a common bird during the cold season, arriving in September and leaving in March or April. Here it frequents by preference the slightly undulating sandy and semi-desert plains, which are studded with patches of scrub, amongst which salsolas, lemon grass, and acacia bushes are conspicuous. On these vast plains this Bustard may be observed running about in the morning and evening, resting under the shelter of a bush during the hottest part of the day. It always prefers to run rather than to fly, and is capable of threading its way through the tangled scrub with great speed. Where the cover is short it runs with head and neck held low, but when it reaches the higher bushes it stops and stretches out its neck to look round at its pursuers. Sometimes the bird will then squat close to the ground and remain motionless, where its brown plumage so effectually conceals it from detection that it allows the observer to pass and repass within a very few paces without making a movement. Macqueen's Bustard is often stalked with the aid of a camel, that animal being so familiar to the bird that it takes but little notice of its approach. By riding round the Bustards in ever narrowing circles, the hunter is enabled to get within shot. Sometimes the birds squat to the ground, and remain so until the camel walks almost over them, when they rise in a slow, heavy manner, and afford an easy shot. Sometimes a Bustard, instead of squatting, will hide behind a bush and walk round and round as the hunter does, always contriving to keep the bush between itself and the enemy. Macqueen's Bustard is said to be a very silent species; and Hume never heard it utter a sound under any circumstances whatever. The food of this species is almost entirely of a vegetable character, and Hume states that of hundreds he examined, lizards or snakes were never found in its stomach. In India it feeds largely on the fruit of the ber, the berries of the grewia, and the tender shoots of the lemon grass and other herbs, varying this fare with insects and small snails.

Nidification.—Of the habits of Macqueen's Bustard during the breeding season little or nothing is known, and the nest has never been described. Eggs obtained by collectors employed by Herr Tancre on the Altai Mountains are buffish or olive-brown in ground-colour, blotched and spotted with rich dark brown, pale brown, and dull grey. They measure on an average 2.55 inches in length by 1.75 inch in breadth.

Diagnostic characters.—*Houbara*, with the upper parts buff, finely vermiculated with black, tail crossed with three dark bars, the head crested and the neck ruffed. Length, 28 inches.

Family **ÆDICNEMIDÆ**.—The Stone Curlews.

The birds in the present family are characterised by having the nostrils holorrhinal, as in the Bustards, but the dorsal vertebræ are opisthocæalous, and the basipterygoid processes are absent. The toes are not webbed; the hallux is wanting; and the metatarsus is reticulated both before and behind. The bill is moderately long, in all the species the genys is very pronounced, and with two exceptions the dertrum is well marked. The legs are rather long, but the toes are short and Bustard-like. Moult single, in autumn. This family contains, at present, eleven species and races distributed over the warmer parts of the Palæ-arctic region, throughout the Ethiopian region, the Oriental region, parts of the Australian region, and the northern portions of the Neotropical region. The present family has been subdivided into no less than four genera by Dr. Sharpe, three of them containing but a single species each. Possibly two may be admitted, one of which contains a British representative.

Genus **ÆDICNEMUS**, or Typical Stone Curlews.

Type, **ÆDICNEMUS CREPITANS**.

Ædicnemus, of Temminck (1815).—The birds comprising the present genus are characterised by having the bill shorter than the head, and the angle of the genys rising gradually. The outer rectrices are an inch or more shorter than the central ones. The black tips to all but the central rectrices and the white pattern on the webs of the first three primaries are also characteristic of this group. The wings are moderately long, and the tail of twelve feathers is much graduated.

This genus is composed of nine species and races, which are distributed over various parts of Temperate and Southern Europe, Australia, and Temperate and Tropical Asia and Africa, and Tropical America. One species is a summer visitor to the British Islands.

The Stone Curlews are dwellers in similar country to that frequented by the Bustards, which birds they resemble in their habits. They are more or less nocturnal. Their flight is rapid and well sustained. Their notes are loud and harsh. They subsist chiefly on worms, frogs, small animals, and insects. They make no nest, laying their eggs (two or three in number, and double-spotted) on the bare ground. They are monogamous.

Family ŒDICNEMIDÆ.

Genus ŒDICNEMUS.

STONE CURLEW.

ŒDICNEMUS CREPITANS.—*Temminck*.**Charadrius œdicnemus**, Linn. Syst. Nat. i. p. 255 (1766).**Œdicnemus crepitans**, Temm. ; Macgill. Brit. B. iv. p. 77 (1852) ; Seebohm, Hist. Brit. B. ii. p. 596 (1884) ; Dixon, Nests and Eggs Brit. B. p. 251 (1893) ; Seebohm, Col. Fig. Eggs Brit. B. p. 90, pl. 23 (1896).**Œdicnemus scolopax** (S. G. Gmel.), Dresser, B. Eur. vii. p. 401, pl. 512 (1876) ; Yarrell, Brit. B. ed. 4 iii. p. 225 (1884) ; Lilford, Col. Fig. Brit. B. pt. xxxi. (1895).**Œdicnemus œdicnemus** (Linn.), Sharpe, Cat. B. Brit. Mus. xxiv. p. 4 (1896) ; Sharpe, Handb. B. Gt. Brit. iii. p. 127 (1896).

Geographical distribution.—*British* : The Stone Curlew is a summer visitor to the heaths and wolds of Yorkshire, Lincolnshire, Norfolk, Suffolk, and Cambridgeshire, southwards through Bedfordshire, Hertfordshire, Bucks, Oxfordshire, Berks, Wilts, Dorset, Hants, Sussex, and Kent. Elsewhere it can only be regarded as an accidental visitor chiefly on migration, although it has been known to breed in Worcestershire, Rutland, and Notts, and a few are known to winter in Somerset, Devon, and Cornwall. It has once occurred in Scotland, and once or twice at the mouth of the Tyne, during winter, whilst six or eight examples have been detected in Ireland chiefly at that season. *Foreign* : Western Palæ-arctic region. It breeds south of the Baltic in the west of Europe, and of lat. 50° in the east. It is a resident throughout the basin of the Mediterranean, the Canary Islands, and Madeira, but is only a summer visitor to France, Holland, Belgium, Germany (but according to Hartert it does not breed in East Prussia), and South Russia. It is also a resident throughout North Africa, but much more numerous in winter than in summer. It is a summer migrant to Russian Turkestan and West Siberia as far north as lat. 48°, but a resident in Palestine, Asia Minor, and Persia, and a winter visitor to the Red Sea basin and India.

Allied forms.—*Œdicnemus crepitans indicus*, a resident race inhabiting Beloochistan, India, Ceylon, and Burma. Its specific distinctness is barred by the presence, according to Seebohm, of intermediate forms in Persia, Asia Minor, and throughout North Africa. Differs from the Common Stone Curlew in having a shorter wing (8 inches to 9 inches, against 9 inches to 10 inches in the European race), in having white patches almost invariably on the third primary, and in

having the white on the outer web of the seventh much more developed. These characters, so far as colour is concerned, do not appear to be absolutely constant, but the separation of the two forms certainly seems warranted. *Æ. senegalensis*, a species which ranges across Africa, south of the Great Desert from Senegambia in the west, across the Soudan to Egypt, Nubia, and Abyssinia in the east. Differs from the Common Stone Curlew in having the medium wing coverts uniform grey with dark shaft lines, and in having one bar only (the lower) across the wing.

Habits.—In many of its habits the Stone Curlew resembles the Bustards, although it is somewhat intermediate in this respect between those birds and the Plovers. It is a summer visitor, as previously remarked, to our islands, arriving in its old haunts about the middle of April, retiring south again in October. Its haunts in our islands are heaths and commons, rough untilled country, downs and warrens. Although in no sense an arboreal species, many of its favourite haunts are surrounded by trees. However, like the Bustards, it is a bird of the open, and never found on wooded ground. It runs with great speed, and flies quickly, often at some height in the air above its haunts, especially at night. The Stone Curlew is a decidedly nocturnal bird, and at the approach of dusk becomes particularly lively and noisy as it seeks its favourite feeding grounds. This may be especially remarked during bright moonlight nights. Its note is a loud, clear, but somewhat plaintive cry. The food of the Stone Curlew is chiefly of an animal nature, such as snails, worms, and insects, especially nocturnal beetles, frogs, lizards, and mice. This bird has been accused of devouring the chicks of Game Birds, but I am not aware that there is any positive evidence to confirm the assertion. During the night the Stone Curlew frequently leaves its native heath and seeks the turnip fields and pastures adjoining to search for food. During the summer it appears not to be even social, but towards autumn, when the broods are strong upon the wing, it becomes gregarious, and probably migrates in flocks. Much of its time is spent upon the ground, where, at the approach of danger, it often crouches low and motionless, trusting to the protective colour of its plumage to shield it from observation.

Nidification.—The breeding season of the Stone Curlew begins in May, and the eggs are laid from about the middle of that month onwards to the end, according to the state of the season. This species appears never to make any nest beyond a mere hollow in some part of the heath where the ground is bare of vegetation, and often strewn with stones. Hume, however, states that in India the hollow is sometimes lined with a few scraps of grass. The eggs are two in number in this country, although in India three are sometimes found. They are various shades of pale buffish-brown in ground-colour, blotched and spotted or streaked with light and dark brown, and violet-grey. Some eggs are finely

blotched, others have the colouring matter displayed in nearly black streaks and scratches. They measure on an average 2·1 inches in length by 1·5 inch in breadth. The male assists the female in the duty of incubation, especially during the day. This, according to Naumann, lasts about seventeen days; but other writers state a month. When the nest is approached, the sitting bird quits the eggs at the first alarm, and leaves them to the safety their eminently protective colours ensure, generally running for several yards before taking wing. One brood only is reared in the season, but if the first clutch of eggs comes to grief, another clutch is usually laid. The young chicks are able to run almost directly they are hatched, and soon follow their parents in quest of food.

Diagnostic characters.—*Ædicnemus*, with no vermiculations on the upper parts, with the breast conspicuously streaked, a pale and a dark wing bar across the smaller wing covert, and with the greater wing coverts tipped with white. Length, 16 to 17 inches.

Family CURSORIIDÆ.—The Coursers, Pratincoles, &c.

The birds in the present family are characterised by having schizorhinal nostrils (with the sole exception of the genus *Pluvianus*, containing a single species, in which they are holorhinal, as in the Stone Curlews); the basipterygoid processes are also absent, as in the latter birds. The hallux is wanting in the Coursers, but present in the Pratincoles and Crab Plover; whilst the metatarsus is scutellated in all. The bill is somewhat short and curved, the genys and dertrum not being especially prominent. In the Coursers the legs are long, but in the Pratincoles they are generally comparatively much shorter. Moulting, apparently single, in autumn. This family contains, so far as is at present known, twenty-six species and races, distributed over the southern portions of the Palæarctic region, throughout the Ethiopian region, the Oriental region, and the Australian region. Dr. Sharpe, the most recent monographer of the *CHARADRIIFORMES*, subdivides the present family into eight genera, three of which contain but a single species. The validity of some of these genera seems open to question. The Coursers and the Pratincoles are both represented in the British list.

Genus CURSORIUS, or Typical Coursers.

Type, CURSORIUS GALLICUS.

Cursorius, of Latham (1790).—The birds comprising the present genus are characterised by having no nasal groove, the nostril being situated in a depression no more elongated than the opening. They are further characterised by having the tail unforked, and no hind toe. The wings are rather long and pointed, the primaries reaching to the end of the tail; the tail is rounded. The tarsus is long, the lower portion of the tibia devoid of feathers, the claw on the middle toe is pectinated along the inner margin. The bill is a little shorter than the head, nearly straight to the nasal orifice, then both mandibles arched to the tip.

This genus is composed of six species and subspecies, confined to the Eastern hemisphere, being inhabitants of the Ethiopian, Southern Palæarctic, and Oriental regions. One species is a rare straggler to the British Islands.

The Coursers are dwellers on sandy plains and deserts. Their flight is rapid and well-sustained, but they are birds of skulking habit, and live principally on the ground, where they walk and run with ease. Their notes are harsh. They subsist principally on insects and their larvæ. They make no nest, but deposit their two or three rotund eggs in a depression in the ground; these are spotted. They are monogamous, and more or less social all through the year.

Family CURSORIIDÆ.

Genus CURSORIUS.

CREAM-COLOURED COURSER.CURSORIUS GALLICUS—(*Gmelin*).**Charadrius gallicus**, Gmel. Syst. Nat. i. p. 692 (1788).**Cursorius europæus**, Latham; Macgill. Brit. B. iv. p. 42 (1852); Yarrell, Brit. B. ed. 4, iii. p. 238 (1883).**Cursorius gallicus** (Gmel.), Dresser, B. Eur. vii. p. 425, pl. 544 (1875); Seebohm, Hist. Brit. B. iii. p. 63 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 221 (1894); Lilford, Col. Fig. Brit. B. pt. xxviii. (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 131 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 34 (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 128 pl. 36 (1896).

Geographical distribution.—*British*: The Cream-coloured Courser is a rare straggler on autumn migration to England and Wales. Only one instance of its occurrence in Scotland (in Lanarkshire); none in Ireland. About a score examples have been met with up to the present time, in the following counties: Northumberland, Cumberland, Yorkshire, Lincolnshire, Leicestershire, Norfolk, Suffolk, Middlesex, Kent, Hants, Wilts (one example as recently as October, 1896), Dorset, Somerset, Devon, Cornwall, Cardigan, and in "North Wales." *Foreign*: Southern and Western Palæarctic, and the extreme north-eastern portion of the Ethiopian regions. Of accidental occurrence only in Europe: Holland, Germany, France, Spain, Italy, and South-east Russia. It breeds from the Canary Islands and possibly the Cape Verd in the west, right across the sand plains and plateaux of Northern Africa, southward on to the Sahara, and in Kordofan, and possibly Abyssinia, in the east. Thence northwards it probably breeds throughout Arabia, the Trans-Caucasian steppes, Persia, Afghanistan, Beloochistan, the Punjab, Scinde and Rajputana.

Allied forms.—*Cursorius gallicus bogolubovi*, an inhabitant of the Murgab district on the Persian frontiers of Russian Turkestan. Of doubtful distinctness, but said to be larger than the ordinary form, and to have the under wing coverts of a different colour. *C. somalensis*, known only from a single specimen obtained on Somali Land, the eastern horn of Africa. Differs from the Cream-coloured Courser in being much smaller (length of wing 5·3 inches instead of 6·0 to 6·3 inches). Other important characters are the axillaries and innermost under wing coverts, which are greyish-buff instead of nearly black, and the

sub-terminal black bands on the tail are nearly twice as broad. *C. rufus*, an inhabitant of South Africa, below the Tropic of Capricorn. May be readily distinguished from the Cream-coloured Courser, when adult, by the black on the belly, and at all ages by the grey hinder head and the colour of the middle secondary, which is white, except the basal two-thirds of the outer and the basal third of the inner webs, which are brown.

Habits.—Although I have spent some time in the country districts where Canon Tristram informed me he had met with this species, I never had the good fortune to obtain even a glimpse of the Cream-coloured Courser. It is one of the thoroughly characteristic birds of the desert, frequenting the sand-hills and ridges where scarcely a blade of vegetation struggles for life in the bitter, ungenerous soil. I was informed that its favourite haunts were amongst the sand-dunes, and on the wide, sun-scorched arid plains, and that it rarely or never frequented scrub, but dwelt in the open. It is said to be usually met with in pairs; but after the breeding season is over, broods and their parents keep company, and in winter they become more gregarious, roaming about the desert in flocks of varying size. It is a thorough ground bird, apparently with a great disinclination to take wing, always seeking to evade pursuit by running with great speed and squatting close to the ground, or concealing itself in the shelter of a bush or a stone. Here its buff-coloured plumage harmonises so closely with the colour of the ground, and it remains so still, that discovery is almost impossible. No one who has not witnessed the truly marvellous way in which desert birds can conceal themselves on sand almost as level as a billiard table can have any idea how closely these creatures assimilate with surrounding objects. The Cream-coloured Courser is said usually to run for a little way before taking wing, and seldom to fly very high above the ground, often skimming with extended motionless wings, or twisting and turning in an erratic manner. When in flocks the birds cover a wide area of ground, scattering themselves over the desert in their quest for food. They are then very wild, and very Lapwing-like in their general movements. The note of this bird, at least when in confinement, is said by Favier to resemble the syllables *rererer*; and the same authority states that its alarm note is similar to that of a Plover, which, all things considered, is a very safe if a very unsatisfactory remark. On the other hand, Mr. Whitaker describes the note of the wild bird, uttered on the ground, as a short sharp *weet*, also as *weet-quoi*; whilst Mr. Meade-Waldo says that the cry, when the birds are with their young, is a low *qua-qua*. The food of this species, so far as is known, consists of insects and snails; in confinement birds have been fed, and apparently have thriven, on grasshoppers and the larvæ of beetles.

Nidification.—The pairing habits of the Cream-coloured Courser almost exactly resemble those of the Great Bustard. It is a monogamous species, pairing every season, but as soon as the eggs are laid the males apparently flock

by themselves until the young are hatched, when they rejoin their mates and assist in rearing the offspring. The date of laying varies considerably. In the Canary Islands (where in the spring of 1891 Mr. Meade-Waldo states that about a thousand eggs were taken) young birds are said to have been obtained towards the end of March; in Algeria the breeding season is given by authorities as May and June; in Egypt, Von Heuglin says that it is in March and April; and Hume informs us that in the Punjaub district the bird lays principally in July; but, varying with the state of the rains, eggs may be obtained from March to August. The first authentic eggs of this bird were obtained by Canon Tristram, on the Sahara. In Africa the nest is said to be merely a hollow in the sand, which is either selected ready made or scratched out by the parent bird; but in India it is sometimes made amongst stubble, under a bush, or amongst jungle, and is a small hollow, about five inches across and two inches deep, sometimes lined with a little dry grass. The nests are extremely difficult to find, the birds slipping off at the first alarm and going right away, leaving the eggs to the safety which their decided protective colours ensure. The eggs are two or three in number, according to Hume the former number being the regular clutch. They are pale buff in ground-colour, spotted, blotched, and freckled with buffish-brown and marbled with underlying markings of grey. Those from the Punjaub are much smaller and darker than those from the deserts of North Africa. They measure on an average 1·2 inch in length by 1·0 inch in breadth. The period of incubation and the number of broods are unknown.

Diagnostic characters.—*Cursorius*, with no black patch on the belly, with the axillaries and under-wing coverts nearly black, and the outer web of the secondaries buff. Length, 9 to 10 inches.

Genus **GLAREOLA**, or Typical Pratincoles.

Type, **GLAREOLA PRATINCOLA**.

Glareola, of Brisson (1760).—The birds comprising the present genus are characterised by having no nasal groove, the nostril being situated in a depression no more elongated than the opening. They are further characterised by having a more or less forked tail and a hind toe. The wings are long and pointed, reaching the tip of the tail or even beyond it. The tail is deeply forked, and is composed of twelve feathers. The legs are moderately long and slender, the lower part of the tibia devoid of feathers; the claw on the middle toe is pectinated on the inner margin. The bill is short and curved, compressed towards the point.

This genus is composed of three species, confined to the Eastern hemisphere, being inhabitants of the Ethiopian, southern Palæarctic, Oriental, and eastern Australian regions. One species is an accidental visitor to the British Islands.

The Pratincoles are dwellers on sandy plains, marshes, the banks of rivers, and the shores of lakes and lagoons. They are birds of remarkably powerful and long-sustained flight, and on the ground they progress by running and walking. Their notes are shrill and unmusical. They subsist chiefly on insects, which they capture whilst flying up and down in a Swallow-like manner. No nest is made, and they lay their two or three rotund eggs, which are richly spotted, in a slight depression. These birds are monogamous, and gregarious throughout the year.



Family CURSORIIDÆ.

Genus GLAREOLA.

COMMON PRATINCOLE,

GLAREOLA PRATINCOLA—(*Linnæus*).

PLATE XVII.

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

Glareola pratincola (Linn.), Macgill. Brit. B. iv. p. 49 (1852); Dresser, B. Eur. vii. p. 411, pl. 513, fig. 1 (1874); Yarrell, Brit. B. ed. 4, iii. p. 231 (1883); Seebohm, Hist. Brit. B. iii. p. 69 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 223 (1894); Lilford, Col. Fig. Brit. B. pt. xxviii. (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 133 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 53 (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 128, pl. 36 (1896).

Geographical distribution.—*British*: The Common Pratincole is a rare visitor in spring and autumn—individuals, doubtless, that have overshot the mark in spring whilst on their way to their breeding grounds in Spain or the Balearic Islands, or in autumn that have wandered westwards with the tide of migrants from the east. It was first noticed by ornithologists in 1807, when examples were obtained almost simultaneously in Lancashire and Cumberland. Since this date it has been captured in the following counties: Yorkshire (three examples), Lincolnshire, Cambridgeshire, Norfolk (four examples), Wilts, Hants, Surrey, Dorset, Somerset, Devon, and Cornwall. A Pratincole was observed, but not obtained, in Breconshire; another was shot, but not preserved, half a century ago, in Co. Cork, so that it is impossible to say whether the bird was rightly identified. A solitary example hails from Scotland, killed on Unst, one of the Shetland group. *Foreign*: Southern and western Palæarctic region in summer; Ethiopian region, summer and winter; and accidentally in parts of Oriental region in winter. It breeds in the basin of the Mediterranean, and in Spain and France, as also in the lower valley of the Danube. North of these limits, in the extreme north of France, Belgium, Holland, Denmark, and Germany, it is as accidental as in the British Islands. Eastwards it is a summer visitor to the basins of the Black, Caspian, and Aral Seas, the salt lakes of Russian Turkestan as far as Ala-Kul, on the frontiers of Mongolia, and, southwards, to Persia and Palestine. The birds that breed in Europe and North Africa winter in the Intertropical portion of the Ethiopian region, and there is evidence to suggest that other individuals of this species migrate from this area south to breed in Cape Colony, Natal and elsewhere. We have elsewhere sug-

gested that this species, as well as all other migrants, never normally crosses the Tropics either to breed or to winter. Those breeding further east winter in Nubia and Abyssinia, whilst abnormal migrants even penetrate (probably stragglers from the birds breeding in the Thian-Shan range) to Scinde and Northern India.

Allied forms.—*Glareola melanoptera*, an inhabitant in summer of South-eastern Europe, especially the Kirghiz steppes, north to lat. 55° in West Siberia, and east to Ala-Kul. Passes through Persia, Armenia, Asia Minor, Turkey, Egypt, and Nubia on migration, and winters in the Intertropical portion of Africa. We shall most probably find that in this case again a second set of individuals migrate south from the equator to breed in South Africa. It is easily distinguished from the Common Pratincole by its black axillaries and deeply forked tail. *G. orientalis*, an inhabitant of India and Ceylon, the Burmese Peninsula, East Mongolia, Dauria, China, Sumatra, Java, the Malay Archipelago, the Philippines, and North Australia. Has been recorded from Japan. Resident in the south, migratory in the north. Distinguished from the Common Pratincole by its combining the following characters: chestnut axillaries, white basal half of outer web of tail feathers, absence of white tips to the secondaries, and only slightly forked tail.

Habits.—The Pratincole is a bird of somewhat early passage, arriving at its breeding grounds in North Africa and South Europe in April, and its haunts are in marshes, on bare plateaux and sandy plains, sometimes in cultivated districts, lagoons, and low, flat islands. Unlike other Plovers, it is much more of an aerial bird than a ground one, although it is capable of running with great speed, and not unfrequently wades in the shallow waters of its haunts. The most characteristic feature of the Pratincole's economy is the bird's curious and prolonged flight. It spends much of its time in the air, flying to and fro in quest of food, skimming along just above the ground or water, turning and twisting here and there in its busy quest. This singular habit probably had great influence with Linnæus when he placed the Pratincole in his genus *Hirundo*, and may well serve as an excuse for the great naturalist's curious error. The food of the Pratincole, which is principally secured whilst the bird is on the wing, consists of insects, especially beetles, grasshoppers, and locusts; and the bird is said to be most assiduous in obtaining it towards evening, a time when such creatures are abroad in greatest abundance. The note of this species is described as a rattling *kr* or *kia*, rapidly and persistently repeated. When on the ground the Pratincole often elevates its wings and runs a little distance both before and after flight. It returns to its African winter haunts in autumn, when the young are all safely reared, and then becomes more gregarious, although at all times it is more or less sociable, and usually breeds in scattered colonies.

Nidification.—The breeding season of the Pratincole commences in May, and fresh eggs may be found almost throughout that month. An island seems to be preferred to the mainland, where choice is possible, and the bare, dry mud is selected rather than ground covered with herbage. Colonies of these birds, visited by Seebohm in Greece and Asia Minor, were established on low islets in the lagoons, and the eggs were deposited on the dry mud, amongst no other herbage but straggling plants of *Salsola*. Nest there is none, the eggs being laid generally on the bare ground, without even a hollow to hold them. They are two or three in number, in rare instances as many as four, very fragile, and oval in shape. They vary from buff to grey in ground-colour, spotted, blotched, and streaked over most of the surface with blackish-brown, and marbled with underlying markings of greyish-brown. They measure on an average 1·2 inch in length by ·9 inch in breadth. The period of incubation is unknown, but one brood only is reared in the year. When their breeding grounds are invaded by man the Pratincoles become very restless and noisy, and often indulge in various antics, even shamming death, or broken limbs, to lure intruders away. Even before the eggs are laid the Pratincole is addicted to these strange antics. Many nests may be found within a comparatively small area, although the birds can scarcely be regarded as universally gregarious at the breeding grounds. In some localities they nest in solitary pairs, but in others in large colonies.

Diagnostic characters.—*Glareola*, with the axillaries chestnut, the secondaries broadly tipped with white, and the tail deeply forked. Length, 9 to 10 inches.

Family CHARADRIIDÆ.—The Plovers, Sandpipers and Snipes.

The birds in the present family are characterised by having the nostrils schizorhinal, the basipterygoid processes present, and the dorsal vertebræ opisthocelous. In their pterylosis they show much affinity with the *LARIFORMES*. The chief external characteristics of the Plovers and their allied forms are the almost universally prevailing long pointed wings adapted in most cases for prolonged migrations, comparatively short tail and long legs; their webbed, or semi-webbed, or lobed feet; the hind toe is small, in some cases wanting, and elevated above the plane of the rest. Primaries ten in number; rectrices very variable in this respect. Moults double in most (if not in all) species. The autumn or winter plumage in a great many species is much less gaudy than that of summer, whilst differences in sexual colour are as a rule not very marked. The young in first plumage more or less closely resemble adults in summer plumage. These young birds, however, do not retain the bright colours of their first plumage long, but proceed to change at the beginning of autumn into a dress which closely resembles the winter plumage of their parents—not by a moult, but by an actual change in the hue of the feather, the most worn, abraded, or “dead” feathers only being replaced. During the following spring these immature birds moult into summer plumage, resembling that of adults, only the wing coverts retain their rich summer hue all the winter until the next autumn moult, when they are changed for the greyer ones of winter. The wing coverts of adults seem only to be moulted once, in autumn, and this portion of their plumage is always the same colour after the bird reaches the adult stage of its existence. Young hatched covered with down, and able to run shortly after they leave the shell. There are about two hundred species and races in the present family, which is practically a cosmopolitan one. For the sake of convenience the *CHARADRIIDÆ* may be subdivided into ten subfamilies, no less than seven of which have representatives in the British list.

Subfamily HÆMATOPODINÆ.—The Oyster-catchers.

The Oyster-catchers may be distinguished from other members of the *CHARADRIIDÆ* by the peculiarities of the bill, which exhibits no dertrum or swelling near the tips of the mandibles, and the genys or angle of the lower mandible is situated near the base. The bill in this subfamily is further characterised by being greatly compressed, and the nasal groove, as in all the typical Plovers, does not extend beyond half the length of the culmen. A further character is the reticulated metatarsus. This subfamily contains but a single genus.

Genus HÆMATOPUS, or Oyster-catchers.

Type, HÆMATOPUS OSTRALEGUS.

Hæmatopus, of Linnæus (1766).—The birds comprising the present genus are characterised by their combining a finely reticulated metatarsus with a nearly straight bill, which is longer than it. The wings are long and pointed, the tail is nearly square. The metatarsus is rather short, and the lower portion of the tibia is devoid of feathers. Three toes in front, all directed forward; hind toe absent. The bill is straight, strong, and compressed at the point, forming a wedge; truncate at the tip, clumsy, and very variable in outline; nostrils basal, linear, and situated in a groove.

This genus is composed of twelve species and subspecies, which are distributed throughout the world. One species is a common resident in the British Islands.

The Oyster-catchers are dwellers on the coasts of seas and on the banks of rivers and lakes. Their flight is rapid and well-sustained; they are able to swim; and run and walk with ease. Their notes are loud and piercing, and they subsist on mollusks, marine worms, and insects, small fish, and littoral plants. Mere hollows in the sand or shingle serve for nests, and their eggs, three or four in number, are double-spotted. They are monogamous, are more or less social throughout the year, but always excessively wary and shy.

Family CHARADRIIDÆ.

Genus HÆMATOPUS.

Subfamily HÆMATOPODINÆ.

COMMON OYSTER-CATCHER.HÆMATOPUS OSTRALEGUS.—*Linnaeus*.

PLATE XVIII.

Hæmatopus ostralegus, Linn. Syst. Nat. i. p. 257 (1766); Macgill. Brit. B. iv. p. 152 (1852); Dresser, B. Eur. vii. p. 567, pl. 533 (1877); Yarrell, Brit. B. ed. 4, iii. p. 294 (1883); Seebohm, Hist. Brit. B. iii. p. 4 (1885); Lilford, Col. Fig. Brit. B. pt. xii. (1890); Dixon, Nests and Eggs Brit. B. p. 262 (1893); Sharpe, Handb. B. Gt. Brit. iii. p. 181 (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 119, pl. 38 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 107 (1896).

Geographical distribution.—*British*: The Oyster-catcher breeds on the Scilly Islands and in all suitable localities north of Yorkshire and Lancashire, round the entire coast-line of Scotland and the adjacent islands, even extending to St. Kilda, where I have taken its eggs. It is equally widely dispersed round the Irish coasts, as well as on some of the inland loughs, and it also breeds on the shores of the inland lochs and on the banks of large rivers in Scotland. During winter it is widely dispersed on all our coasts, except in the extreme northern districts, where it is only a bird of summer. *Foreign*: West Palæarctic region. Chiefly a coast bird in the west, but east of E. long. 40° it breeds only on the shores of lakes and the banks of rivers. It breeds on the coasts of North-western Europe, round to the White Sea; thence it becomes an inland species, frequenting the rivers Volga, Kama, Petchora, and Obb. To the shores of the Baltic it is a summer visitor only, but a resident on the coasts of Germany and France. In East Prussia, however, it is very rare on passage. On migration it passes the Mediterranean basin, but some remain to breed, and a few remain to winter in the Rhone delta and along the Adriatic coast. It is a resident in the Caucasus, but only a summer visitor to the Don, the Volga, the waters of West Siberia and Turkestan, and it winters in Southern Arabia, on the Mekran coast, the west coast of India, south to Ceylon, and on both coasts of Africa, to the Intertropical realm.

Allied forms.—*Hæmatopus osculans*, an inhabitant of the coasts of North China, Japan, the mouth of the Amoor, and thence round the shores of the Sea of Okhotsk to Kamtschatka in summer; in winter, of the coasts of South China, accidentally wandering across country to Burma. Of doubtful specific rank; but appears constantly to differ from the Common Oyster-catcher in having much less white on the quills, the white on the outer web of the primaries beginning



on the sixth feather instead of on the third, and on the inner web commencing on the second feather instead of on the first; more variable characters are, in adults, the upper tail coverts tipped with black, and slightly longer bill. The young of the Common Oyster-catcher have the longest upper tail coverts tipped with black and buff. This race should be looked for, especially in autumn, on the British coasts. *H. longirostris*, an inhabitant of the coasts of New Zealand, Tasmania, Australia, and the southern shores of New Guinea. Distinguished by its white rump and absence of white from the primaries.

Habits.—Although the Oyster-catcher is met with on the banks of inland waters, and even breeds in such localities, its true home is the sea-shore. Here it prefers a rocky coast, which is varied here and there with long reaches of sand and shingle, and broken with quiet bays and creeks and lochs where a considerable amount of beach is uncovered at low water. It is also partial to low, rocky islands and headlands where there is a beach. It is one of the wariest birds of the shore, seldom allowing a near approach, unless stalked with scrupulous care and patience. As it is regular in its flights to certain feeding grounds, which are visited as soon as the rocks and beach begin to be exposed by the receding tide, it may be waited for with advantage by the gunner stationed in a suitable spot. During high water, especially in localities where there is little beach, it spends the time between the tides on small islands, and even on rocks surrounded by the sea. Even during summer the Oyster-catcher is somewhat sociably inclined; but in winter, when many of the birds draw southwards, it often forms into flocks, which roam the coasts for miles in quest of food. In autumn its numbers are increased by migrants from Continental Europe, and it is often caught in the flight nets on the Wash during October. The Oyster-catcher may be watched running and walking very daintily about the sands and over the seaweed-covered rocks, sometimes wading through the shallows, but it never appears to swim unless wounded. The long, chisel-shaped beak is thrust into the crevices of the rocks or probed into the sand in quest of prey, and the limpets, tightly as they cling to the rocks, are wrenched off with ease. The Oyster-catcher is much attached to its mate, and I have seen it fly round and round above a fallen companion in a touching manner. The flight of this bird is rapid and powerful, full of impetuous dash, performed by quick and regular strokes of the long wings, but sometimes before alighting the bird skims along for a few yards on stiff and motionless pinions. Its actions in the air are often erratic, the flight being full of sudden turns and twists. The note of the Oyster-catcher is characteristic, and cannot readily be confused with that of any other species on the coast. It is a loud, shrill *heep-heep heep*, usually uttered by the bird during flight, often as it rises in haste from the beach, and alarming all other fowl within hearing. I have often had a long, patient stalk after Curlew, spoiled, just when success seemed certain, by the warning pipe

of the Oyster-catcher. The food of this bird is principally mussels, whelks, limpets, annelids, crustaceans, and small fish, but the tender buds and shoots of various marine plants are also eaten. Its flesh, as I can testify, is not at all unpalatable, especially to a hungry sportsman amidst the wilds of the Outer Hebrides.

Nidification.—The flocks of Oyster-catchers begin to disband in March, early in April the birds are paired, and by the beginning of May eggs may be found, although laying does not become general until towards the end of that month or early in June. Its breeding places are shingly beaches, low islands, and rock-stacks. The nest, when on the beach, is just above high-water mark, often in the line of drifted rubbish cast up by unusually high tides. Several nests are often made by the bird before it is satisfied. I have seen as many as half a dozen of these mock nests within a few yards of the one that contained the eggs. The nest scarcely deserves the name, as it is only a little hollow in the shingle, in which small pebbles and bits of broken shells are smoothed into a bed for the eggs. Sometimes the eggs are found deposited on a heap of drifted, dry sea-weed. Various curious sites, however, have been recorded, they having been found in a deserted nest of a Herring Gull, in a meadow far from the sea, and in a cavity at the top of a felled pine tree. I have seen them at the top of rock-stacks fifty feet above the water, also amongst boulders in a little bay, and in the cliffs which could only be reached with a boat. The eggs are usually three in number, sometimes four, and exceptionally only two. They are pale buff in ground-colour, blotched, spotted, and streaked with blackish-brown, and underlying markings of grey. They measure on an average 2·2 inches in length by 1·5 inch in breadth. Both parents attend the young, but the female incubates the eggs, the period being from twenty-three to twenty-four days. One brood only is reared in the season, but if the first eggs are taken another clutch will be laid. The male gives warning to the female of the approach of danger, and she leaves her eggs at once to the safety ensured by their protective colour. The old birds become noisy when their breeding grounds are invaded, especially if the young are hatched, and no one who has not heard a dozen or more Oyster-catchers screaming together overhead can imagine the din these birds can make. The broods and their parents seem to keep much together through the autumn and winter.

Diagnostic characters.—*Hamatopus*, with the lower back, rump, and upper tail coverts white, and the white pattern on the primaries well developed on the outer webs of the fourth and fifth. Length, 16 to 17 inches.

Subfamily CHARADRIINÆ.—The Typical Plovers.

The Typical Plovers may be distinguished from other members of the *CHARADRIIDÆ* by their combining a well-marked dertrum to the bill with a reticulated metatarsus. The nasal groove does not extend beyond half the length of the culmen. Dr. Sharpe, the most recent monographer of the present order, divides the present subfamily into no less than twenty-four genera—a multiplication of names which assuredly the majority of ornithologists must regret, especially as they are founded in many cases upon characters of a very trivial nature.

Genus ÆGIALITIS, or Typical Ringed Plovers.

Type, ÆGIALITIS HIATICULA.

Ægialitis, of F. Boie (1822).—The birds comprising the present genus are characterised by the absence of a hind toe. The wings are long and pointed, the first primary the longest; the tail is somewhat rounded and short, not exceeding half the length of the wing, and consists of twelve feathers. The metatarsus (longer than the middle toe and claw) is reticulated, the lower portion of the tibia devoid of feathers. The bill is much shorter than the head, and less than the middle toe and claw, slender, and nearly straight to the end of the nasal groove, then slightly raised and arched to the tip; nostrils small and linear. Toes three in number, pointed forward, the outer and middle toe with little or no web at the base.

This genus is composed of about twenty species and subspecies, which are nearly cosmopolitan. Four species and one subspecies are included as British.

The Typical Ringed Plovers are dwellers principally on the banks of rivers and lakes, although some species also affect the coast. They are birds of rapid and sustained flight, and progress on the ground by running and walking with great facility. Their notes are shrill and monotonous. They subsist on insects, crustaceans, worms, etc. They make no nest, but deposit their pyriform eggs in a cavity in the bare ground. These are four in number, and spotted. They are monogamous and gregarious, especially in autumn and winter.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus ÆGIALITIS.

LITTLE RINGED PLOVER.

ÆGIALITIS MINOR—(*Wolf and Meyer*).

PLATE XIX.

Charadrius dubius, Scop. Del. Flor. et Faun. Insubr. ii. p. 93 (1786).

Charadrius minor (Wolf and Meyer), Macgill. Brit. B. iv. p. 128 (1850); Seebohm, Hist. Brit. B. iii. p. 16 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 120, pl. 40 (1896).

Ægialitis curonicus (Gmel.), Dresser, B. Eur. vii. p. 491, pl. 524 (1876); Yarrell, Brit. B. ed. 4, iii. p. 262 (1883); Lilford, Col. Fig. Brit. B. pt. xxx. (1895).

Ægialitis minor (Wolf and Meyer), Dixon, Nests and Eggs Non-indig. Brit. B. p. 229 (1894).

Ægialitis dubia (Scop.), Sharpe, Handb. B. Gr. Brit. iii. p. 162 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 263 (1896).

Geographical distribution.—*British*: The Little Ringed Plover is an accidental wanderer to England; not known to have visited Scotland or Ireland. It has been obtained in Sussex (two examples), Middlesex (two examples), Hants (one example), and Scilly Isles (one example). *Foreign*: Palæarctic region from Atlantic to Pacific. It breeds throughout Europe and Palæarctic Asia south of lat. 60°. It is a resident throughout the basin of the Mediterranean, as far south as the Great Desert, but a migrant north of that basin and throughout its breeding area in Asia, wintering south of the Sahara in Africa in the Intertropical realm, and in Asia in most parts of the Oriental region; Asia south of the Himalayas, and the Malay Archipelago as far east as Borneo. In the Australian region it has occurred in Celebes and New Guinea, and it is also an abnormal migrant to North America. North of lat. 60°, up to the Arctic circle, it is an accidental visitor only.

Allied forms.—*Ægialitis minor jerdoni*, an inhabitant of Ceylon, India, Burma, and Cochin China. Differs from the Little Ringed Plover in having the basal half of the lower mandible yellow and the orbits corrugated. It is also a smaller bird. *Æ. placidus*, an inhabitant of Mantchooria, Corea, Japan, the valley



of the Yangtse and Nepal. Differs from the Little Ringed Plover in being much larger (length of wing $5\frac{1}{2}$ inches), and in having a more graduated tail (outer tail feather $\cdot 5$ inch instead of less than $\cdot 25$ inch shorter than the middle ones).

Habits.—The Little Ringed Plover is not nearly as much a marine species as the Ringed Plover, and its haunts are chiefly the banks of rivers and inland lakes and pools. It often wanders up rivers great distances inland, and shows a special preference for those in which numerous sandbanks occur and where the shores are pebble-strewn. Water, however, does not always seem essential to this species: it is sometimes met with on dry fallows and desert plains some distance from that element. It is a thorough ground bird, and spends most of its time running about the gravel and the sand in quest of food. From time to time it indulges in short flights, just above the ground or water, which are moderately quick, and performed by rapid and regular beats of the long and somewhat arched wings. It is said to be more shy than its larger congener, but certainly this is not my experience. I met with these charming little birds in the rapidly drying-up Oued, at Biskra, on the confines of the Great Desert. It was in May, and all were in pairs, apparently for the breeding season. They frequented the pebble-strewn dry bed of the river as well as the strips of sand in mid-stream, and I repeatedly saw them soaring above scrub-clothed ground at some little distance from the actual bed of the stream. The note of the Little Ringed Plover is a loud, clear, and somewhat plaintive *pee*, rendered by Naumann as *deä*, rapidly repeated when the bird is alarmed. In spring, during the pairing season, the male also utters a by no means unmusical trill as it soars up like a Lark, and gradually descends again. The males I noticed at Biskra kept the air for some little time, careering about after they reached the zenith of their flight just as the Sky Lark so frequently does. The food of this species is composed largely of insects, especially beetles, grubs, and worms. Even during winter this bird is never as gregarious as the Ringed Plover, and as often as not is met with alone, although others are usually in the immediate neighbourhood.

Nidification.—The Little Ringed Plover arrives at its European breeding grounds in April, but the eggs are seldom laid before the middle or end of May, and sometimes not until the beginning of June. The eggs are laid in a little hollow in the sand or shingle, which the parent bird scratches out for their reception, and no lining ever appears to be inserted. Mr. Abel Chapman states that he frequently found the eggs deposited in a slight hollow, scraped in dry cattle-droppings. They are four in number, very pyriform, buff in ground-colour, speckled and streaked with various shades of brown and ink-grey, most numerous on the larger end of the egg. They measure on an average $1\cdot 15$ inch in length by $\cdot 85$ inch in breadth. As the watchful, wary parent bird is careful to leave them when danger approaches the eggs are difficult to find, bearing, as they do,

such a close resemblance to the ground on which they rest. The young soon after they are hatched follow their parents in quest of food. If the chicks are menaced by danger the old birds often become very demonstrative, and keep up an incessant chorus of shrill notes as they fly about the air above the head of the intruder until he leaves them in peace. One brood only is reared in the year, and the young and their parents keep together for some time after the former can fly.

Diagnostic characters.—*Ægialitis*, with the outer tail feather less than a quarter of an inch shorter than the central ones, the scapulars the same colour as the back, and the shaft only of the first primary white. Length, 6·5 inches.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus ÆGIALITIS.

GREATER RINGED PLOVER.

ÆGIALITIS MAJOR—(*Tristram*).

Charadrius hiaticula, Linn. Syst. Nat. i. p. 253 (1766 *partim.*) ; Macgill. Brit. B. iv. p. 116 (1850 *partim.*).

Charadrius major, Tristram, *vide* Gray, Hand-l. B. iii. p. 15 (1871) ; Seebohm, Hist. Brit. B. iii. p. 20 (1885).

Ægialitis hiaticula (Linn.), Dresser, B. Eur. p. 467, pl. 525 (1876 *partim.*) ; Yarrell, Brit. B. ed. 4, iii. p. 257 (1883 *partim.*) ; Lilford, Col. Fig. Brit. B. pt. xx. (1891 *partim.*).

Ægialitis hiaticula major (Tristram), Dixon, Nests and Eggs Brit. B. p. 260 (1894) ; Seebohm, Col. Fig. Eggs Brit. B. p. 121, pl. 40 (1896).

Ægialitis hiaticola (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 158 (1896 *partim.*) ; Sharpe, Cat. B. Brit. Mus. xxiv. p. 256 (1896 *partim.*).

Geographical distribution.—*British* : The Greater Ringed Plover is widely distributed and resident throughout the British Islands, in many inland districts as well as on the sandy portions of the coast. It extends to the Outer Hebrides (but not to St. Kilda, as no part of the coast there is suited to its needs), the Orkneys, Shetlands, and the Channel Islands. *Foreign* : The extra-British range of this form of Ringed Plover appears to be very restricted so far as can at present be determined, the bird being confined to the adjoining coasts of France and Holland. Further research may probably show it to be an inhabitant of all the coasts of the North Sea.

Allied forms.—*Ægialitis hiaticula*, the small race, which will be treated of in the following chapter. The Greater Ringed Plover is, in its typical form, a much more robust bird, and has the upper parts paler in colour. The wings on an average are longer (5·5 to 5·0 inches instead of 5·2 to 4·8 inches). As may be remarked from these figures, the two races completely intergrade. *Ægialeus semipalmatus*, an inhabitant in summer of Arctic and Subarctic America, from Greenland to Alaska, and the north-eastern coasts of Asia, and in winter of tropical America. As this bird is found at least as far south as Patagonia, it may prove another example of a species with an equatorial winter base migrating north and south to breed in the temperate and polar regions of the Northern and Southern hemispheres. Although the bird is generically distinct from both races of the Ringed Plover because of the web between the outer and middle toes extending to the second joint, its great resemblance in every other external

aspect to its old-world allies should make examination of the feet of all Ringed Plovers killed on our coasts imperative, as it is more than probable that the Semipalmated Plover occasionally visits the British Islands, especially in autumn.

Habits.—The most usual haunts of the Greater Ringed Plover are the sandy coasts, although exceptionally it frequents, especially during the breeding season, the shores of some inland lakes, as well as warrens and dunes at some considerable distance from the sea. It is, however, a bird of the sand and a bird of the coast. It is especially attached to the low coasts, not the mud-flats, but the long broad reaches of sand and shingle, and to these haunts it keeps throughout the year. This active little bird is incessantly in motion, but, provided due care be exercised, will admit of a sufficiently close approach to observe its every action with ease. It runs with great speed across the wet sands just out of the reach of the waves, picking here and picking there, now pausing a moment, then darting forward to probe into the soft brown sand in quest of prey. It follows the retreating waves, and searches the wet foam-flecked sand, and again runs shorewards as each succeeding wave breaks upon the beach. It is most attached to its feeding grounds; and in autumn and winter, when the birds have taken up their residence on some particular stretch of sand, they may be fired at repeatedly, always flying out to sea for a little way, and returning inshore to another part of the sand. As they fly in a more or less compact bunch a chorus of double notes is uttered, and the moment they alight they begin searching for food as if they had never been disturbed. Sometimes in inland localities this bird may be seen running along the tops of walls, or even on weirs and sluices. The flight of this Plover is rapid, and performed by quick and regular beats of the wings. It usually flies along at no great distance from the ground or water, but when seriously alarmed often mounts up to a good height. Sometimes a flock will perform various graceful evolutions in the air, turning and twisting with as much precision as though moved by a common impulse. When just about to alight, the wings are frequently held stiff and arched, the bird skims along for a little way, and often the pinions are held open for a short time after it has alighted. I have often marked the reluctance of this bird to take wing, as it ran before me until absolutely compelled to rise. The alarm note of the Ringed Plover is a loud shrill *too-it*, quickly repeated, but the call-note is a rather harsh *turr*. During the pairing season this double note as the bird rises and falls in the air is often repeated so quickly as to become a not unmusical trill. This bird feeds principally upon small sand-worms, shrimps, sand-hoppers, and the inhabitants of tiny shells. It also eats many insects, and I have taken the remains of vegetable substances from its stomach. Throughout the year the Ringed Plover is decidedly social, and in autumn and winter congregates into flocks of varying size. It frequently associates during the latter periods with Sanderlings and Dunlins, and I have also remarked that during high water the flock

often visits the higher banks of shingle, and remains almost stationary until the tide begins to ebb. Young and old flock together during autumn and winter.

Nidification.—Early in April the flocks of Ringed Plovers begin to disband and disperse over the breeding grounds, although the eggs are not laid until May or early June. Many pairs may often be found breeding in one locality. The majority of the birds stick to the sandy stretches of coast during the summer, but others retire to the banks of inland waters, and sometimes the nest is made at a considerable distance away from water. The nest is nothing but a little hollow in the sand, and very often even that slight provision is dispensed with, and the eggs rest upon the flat surface. They are always laid well above high water mark, and, as a rule, on the fine sand rather than on the coarser shingle. Several nests may be found quite close to each other. The eggs are four in number, pale buff in ground-colour, spotted with blackish-brown and ink-grey. The markings are generally very small and evenly distributed, although sometimes most numerous and largest on the big end of the egg. They measure on an average 1·4 inch in length by 1·0 inch in breadth, and are pyriform in shape and smooth in texture. One brood only is reared in the year, but if the first clutch be removed others will be laid. I have taken the eggs of this species towards the end of June: other naturalists have found them as late as the beginning of August. The bird sits little during the day, especially if the sun be shining brightly; and when the breeding grounds are invaded by man the parent Plovers manifest little concern, as if fully conscious that the highly protective colours of the eggs will shield them from harm. Incubation lasts from twenty-one to twenty-three or even twenty-four days. When the young are hatched, however, the old birds become much more anxious, and strive by various artifices to lure an intruder away from their helpless offspring. The broods frequent the shingle more than the sand, and are adept at hiding themselves when threatened by danger. We may here call attention to a statement made in some recent works on ornithology claiming the authority of personal observation, to the effect that Plovers of various species frequently indulge in alluring actions to draw a human intruder from the vicinity of their eggs. So far as our experience extends they rarely, if ever, do this, but leave their eggs to that protection which their harmony of colour with surrounding objects affords, and reserve their feigned lameness and other wiles to divert attention from their helpless young. Certain Sandpipers, however, unquestionably seek to lure an intruder from their eggs by these artifices.

Diagnostic characters.—*Ægialitis*, with the underparts white, except the lores, and a dark breast band (black in adult male, brown in female and young), with the central half of the outer webs of the innermost primaries white, and the base of both mandibles orange yellow. Length of wing, 5·7 to 5·0 inches. Total length, 8 inches.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus ÆGIALITIS.

RINGED PLOVER.

ÆGIALITIS HIATICULA—(*Linnæus*).

Charadrius hiaticula, Linn. Syst. Nat. i. p. 253 (1766 *partim*); Macgill. Brit. B. iv. p. 116 (1850 *partim*); Seebohm, Hist. Brit. B. iii. p. 20 (1885).

Ægialitis hiaticula (Linn.), Dresser, B. Eur. p. 467, pl. 525 (1876 *partim*); Yarrell, Brit. B. ed. 4, iii. p. 257 (1883 *partim*); Lilford, Col. Fig. Brit. B. pt. xx (1891 *partim*); Dixon, Nests and Eggs Non-indig. Brit. B. p. 227 (1894).

Ægialitis hiaticula (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 158 (1896 *partim*); Sharpe, Cat. B. Brit. Mus. xxiv. p. 256 (1896 *partim*).

Geographical distribution.—*British*: The small, dark race of the Ringed Plover appears only to pass the British Islands on migration, although there is some confirmatory evidence that a few pairs remain to breed on the coasts of Kent and Sussex. During passage in spring (May and June) and autumn (August, September, and October) it frequents most parts of the British coasts suited to its requirements, and often follows the course of rivers for considerable distances inland, and visits sheets of water far from the coast. *Foreign*: Western Palæarctic region and North-eastern portion of Nearctic region. It breeds in Cumberland Bay, on the American coast of Davis Strait; on the coasts of Greenland up to lat. 79°; in Iceland, Spitzbergen, Nova Zembla, and probably Franz Joseph Land. In summer it is found in suitable districts throughout Europe north of the Alps, and breeds in Madeira, the Canaries (although Mr. Meade Waldo records it as passing on migration only), and North Africa; whilst in winter it is found almost everywhere in the latter continent: although in the south of that continent the explanation of this may be that a second set of individuals migrate south from the tropics to breed, and are not northern individuals at all. In Asia it is found in summer as far east as the Taimur Peninsula* in the north, and Lake Baikal in the south, and breeds in Turkestan and Western Siberia. The Asiatic birds pass south-west, by routes hitherto undiscovered, to the basin of

* By some authorities this species is said to range east to Behring Straits, but the evidence is not satisfactory. *Ægialeus semipalmatus* probably being mistaken for it. There can also be little doubt that the Ringed Plover breeding in the extreme south of Greenland is *Ægialeus semipalmatus*. The Nearctic breeding range of the Ringed Plover requires much more careful definition. Possibly the bird may be a Circumpolar one during summer, and confined to the Old World during winter.

the Mediterranean and Africa to winter. Von Heuglin is of opinion that the Ringed Plover breeds on the coasts of the Red Sea ; Gould says that he received an example from Australia ; and some writers have asserted that the bird occasionally visits Northern India. All these statements require confirmation.

Allied forms.—*Ægialitis major*, and *Ægialeus semipalmatus*. For particulars of which see preceding chapter.

Habits.—The habits of the small race of the Ringed Plover are not known to differ in any important respect from those of its larger ally. It is a rather late migrant, probably because it spends the summer in the Arctic regions, where the season is later than in more southern latitudes. It is said to leave its winter quarters in Africa during April and May, and to pass along our coasts during May and the beginning of June. Many birds cross Continental Europe and Western Asia, following the great river valleys to and from the Arctic haunts. In the valley of the Petchora Messrs. Seebohm and Harvie-Brown noted the arrival of the Ringed Plover at Ust Zylma on the 26th of May, about a week after the ice on the great river began to break up and midsummer had suddenly displaced midwinter. Further east, in the valley of the Yenisei, the bird appears to be a little later, and Mr. Seebohm did not observe it until the 8th of June. Nearly ten degrees further north it is probably later still in its arrival. This race is said to migrate in flocks which do not mix with the larger form. It frequents the banks of rivers, sandbanks, and the margins of lakes, as well as the flat, sandy coasts. It is not known to differ from the larger race in the manner of its flight, its food, or its notes. The southern migration commences at the end of August, and lasts until October.

Nidification.—The small race of Ringed Plover is not known to differ in any respect from its larger ally in the matter of its nesting arrangements. Of course, this may be owing to the neglect of observers, who, having the means of studying this portion of its economy, have confused the two races. It is a rather remarkable fact that Colonel Feilden found a nest of this race lined with the green, fleshy leaves and stems of *Atriplex littoralis*, a fact which suggests, if it does not actually prove, a difference of habit. It may be that in the high north some sort of lining is added to the sandy nest for the purposes of warmth. The eggs of this race are four in number, and although they do not differ in colour they are constantly and very perceptibly smaller. One brood only, it appears, is reared in the year, and as soon as the young can fly the short, hot Arctic summer is well-nigh waning, and the southern migration begins.

Diagnostic characters.—*Ægialitis*, with the upper parts slightly darker than those of the preceding race, otherwise the characters (excepting the following) are the same :—length of wing, 5·2 to 4·8 inches ; total length, 7 inches.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus ÆGIALITIS.

KENTISH PLOVER.

ÆGIALITIS CANTIANUS—(Latham).

? *Charadrius alexandrinus*, Linn. Syst. Nat. i. p. 258 (1766).

Charadrius cantianus (Latham), Macgill. Brit. B. iv. p. 125 (1852); Seebohm, Hist. Brit. B. iii. p. 25 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 122, pl. 40 (1896).

Ægialitis cantianus (Latham), Dresser, B. Eur. vii. p. 483, pl. 523 (1876); Yarrell, Brit. B. ed. 4, iii. p. 267 (1883); Dixon, Nests and Eggs Brit. B. p. 259 (1893); Lilford, Col. Fig. Brit. B. pt. xxx. (1895).

Ægialitis alexandrina (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 166 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 275 (1896).

Geographical distribution.—*British*: The Kentish Plover is one of the most local of British birds, its only known breeding places being upon the sandy portions of the coasts of Kent and Sussex. Even here the greed of collectors is rapidly exterminating it as a nesting species. It is a summer visitor to the British Islands, and has occurred accidentally only in all districts except the two above mentioned. It has been observed on the east coast of England as far north as Flamborough, and on the south coast as far west as Cornwall. It is unknown in Scotland, and of very rare occurrence in Ireland. It breeds freely upon the Channel Islands. *Foreign*: The Kentish Plover breeds only upon the coasts and salt lakes of the Palæarctic region; Ethiopian and parts of the Oriental regions in winter. It is a summer visitor to the coasts of Western Europe from the south of Sweden to France, but rare on the Baltic coasts. It is a resident on the coasts and lagoons of the Spanish Peninsula, the Azores, Canaries, Madeira, and both the north and south coasts of the Mediterranean. Eastwards it visits in summer the salt marshes of South Russia, the shores of the Black, Caspian, and Aral Seas, the salt lakes of Turkestan, South Dauria, and Mongolia. The migratory European individuals winter on the coasts of Africa, south to the Intertropical realm; whilst the migratory Asiatic individuals winter on the Mekran coast, in India, Ceylon, Burma, the Malay Peninsula, China, and Japan.

Allied forms.—*Ægialitis minutus*, an inhabitant, so far as is at present known, of the southern shores of the Red Sea and Ceylon. Differs from

the Kentish Plover in being smaller, and in having paler legs. Length of wing 4·2 to 3·7 inches, instead of 4·5 to 4·1 inches. *Æ. dealbatus*, a resident on the coast of South China, Hainan, and Formosa. Differs from the Kentish Plover in being a little larger, and in having pale instead of black legs, although the latter is said not to be a constant character. Both these races more or less intergrade, and can only be regarded as subspecifically distinct from the Kentish Plover. *Æ. nivosus*, resident on the shores of Great Salt Lake and the adjoining coast of California (from about lat. 40°), southwards along the Pacific coasts to Chili. Differs from the Kentish Plover in having pale legs and white lores. It is also on an average a smaller bird (wing 4·4 to 4·0 inches).

Habits.—The Kentish Plover is even more attached to the sand than the Ringed Plover, and is rarely, if ever, found far from salt water, either on the shores of the sea or estuaries, or on the banks of salt lakes at considerable distance inland. The few birds of this species that breed on our islands arrive in their accustomed haunts towards the end of April or the beginning of May, and although odd birds have been picked up during winter, the main number begin to retire again south in August, the migration lasting into the first half of September. Its haunts in our islands are certain favoured sandy beaches, where the fine sand is varied with patches of coarser shingle and strewn with pebbles. In its habits it does not differ in any remarkable manner from the Ringed Plover, and searches for its food on the margin of the waves, running quickly about the wet sands, and occasionally wading for a little way into the receding waves in chase of a crustacean or sand-hopper. Even during the summer it is by no means unsociable, and gathers into small parties to feed. It is also by no means a shy bird during the breeding season, and permits a close approach, especially when its eggs are laid. Its flight is rapid, and very similar to that of the Ringed Plover. It also possesses the same habit of gliding along before alighting, with wings held arched and rigid, and, like that species, frequently elevates its wings as it runs, both before and after flight. Its alarm note is a shrill, harsh *ptirr*; but the usual call-note is a sharp, clear *whit*, which during the pairing season is uttered by the male so quickly as to form a trill as the bird soars and flies round and round above his mate. The food of the Kentish Plover consists of sand-worms, crustaceans, mollusks, and insects. Much of this is sought amongst the drift near high-water mark as well as near the ebbing or flowing tide.

Nidification.—Soon after its arrival at its breeding grounds the Kentish Plover begins nesting, and the eggs are laid by the end of May, or, at latest, the beginning of June. This species makes no nest beyond merely scraping a little hollow in the sand or shingle, although it is said the eggs are sometimes laid on dry, drifted seaweed, above the usual high-water mark. Numbers of nests may be found quite close together, especially in places where the bird is common.

The eggs are usually three, but in some cases four, in number, various shades of buff in ground-colour, spotted, scratched, and blotched with blackish-brown and slate-grey. The scratchy character of the markings on the eggs of this species is noteworthy. The eggs measure on an average 1·2 inch in length by ·9 inch in breadth. The sitting bird usually receives timely notice of the advance of an enemy, and slips quietly off the nest, leaving the eggs to the protection their colours ensure, for they resemble most closely the ground on which they rest. When the young are hatched the parents become more demonstrative, and seek by various antics to lure an intruder away. It is said that the eggs are sometimes nearly buried in the sand, but whether for warmth or concealment it is difficult to say. Dr. Sharpe, who has had an enviable experience of this rare bird, thus writes respecting the young :—"I have, however, captured several nestlings by resting my head on the shingle, when the little creatures become distinctly visible against the sky-line as they run along with wonderful swiftness for such tiny objects. I could never bring myself to kill any of these fluffy little balls of down, with their great dark eyes and abnormally long legs ; and, later in the autumn, I have been rewarded by seeing flocks of Kentish Sand Plovers feeding on the green herbage which skirts the harbours after the tide has receded. I once saw, from behind my shelter of a mud-bank, more than forty of these pretty birds feeding on the green moss near Romney Hoy, and a more interesting sight can scarcely be imagined." As will be seen from the foregoing particulars, the Kentish Plover becomes gregarious in autumn, as so many other kindred species do. One brood only is reared in the year, and young and old keep in company until the time of departure south.

Diagnostic characters.—*Ægialitis*, with the nuchal collar white, a dark patch on the sides of the breast, but not extending round the neck, and with a white patch on the central portion of the shaft of the third primary. Legs black. Length, 6 to 7 inches.

Genus OXYECHUS, or Wedge-tailed Ringed Plovers.

Type, OXYECHUS VOCIFERUS.

Oxyechus, of Reichenbach (1852).—The birds comprising the present genus are characterised by having two dark bands separated by a white one across the breast, an exceptionally long and wedge-shaped tail, more than half the length of the wing—and the inner web of the two outermost tail feathers crossed with one or more dark bands. The hind toe is absent; the metatarsus is moderate in length, never exceeding twice the length of the culmen. The wings are long and pointed.

This genus contains four species, confined to the Ethiopian region and the Nearctic and Neotropical regions. Three of these are residents in the former, and one other is distributed over the two latter. The New World species is a very rare abnormal migrant to the British Islands.

The Wedge-tailed Ringed Plovers are dwellers on the banks of inland rivers and lakes, salt swamps, and inland tidal flats, rather than on coasts, although they appear on the latter to some extent. They resemble the Ringed Plovers in their habits, food, flight and general movements, and are in fact very closely allied to those birds. Three of the species are sedentary, but the fourth—the New World representative of the genus—is migratory. Their nests are little more than hollows in the ground, and their eggs are double-spotted. So far as is known they are monogamous and gregarious, especially during the non-breeding season.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus OXYECHUS.

KILLDEER PLOVER.

OXYECHUS VOCIFERUS—(*Linnæus*).

PLATE XIX.

Charadrius vociferus, Linn. Syst. Nat. i. p. 253 (1766); Seebohm, Hist. Brit. B. iii. p. 28 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 123, pl. 39 (1896).

Ægialitis vocifera (Linn.), Yarrell, Brit. B. ed. 4, iii. p. 266 (1883); Lilford, Col. Fig. Brit. B. pt. xxv (1893); Dixon, Nests and Eggs Non-indig. Brit. B. p. 226 (1894).

Oxyechus vociferus (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 155 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 242 (1896).

Geographical distribution.—*British*: Two instances of the occurrence of the Killdeer Plover have been recorded, one of which must be viewed with the greatest doubt. This latter concerns an example which was said to have been killed in April, 1857, near Christchurch, in Hampshire (Sclater, *Ibis*, 1862, p. 275). A second example appears to be genuinely British. It was shot by Mr. Jenkinson on the 15th of January, 1885, at Tresco, in the Scilly Islands, and was identified by Mr. Howard Saunders (*Zoologist*, 1885, p. 113.) Incidentally we may remark that on the 7th of September, 1898, we flushed an example of the Killdeer Plover on Paignton Sands. The bird rose at our very feet, and we had ample opportunity of fully identifying this characteristically marked species. It was not obtained, and its record, of course, is worthless from a strictly scientific point of view. *Foreign*: Nearctic region, and parts of the Neotropical region in winter. It breeds throughout the United States, north to South Canada, and on the plains of the Saskatchewan. It is a resident in the Southern States and California, but migratory in the north, passing the Bermudas on abnormal migration, and wintering in the West Indies, Mexico (where a few remain to breed), Central America, and South America, as far south as the Intertropical realm (Colombia and Peru).

Allied forms.—None of sufficient propinquity to require notice, the three other species all being inhabitants of Africa.

Habits.—In many parts of its range the Killdeer Plover is sedentary, but in the colder portions it is more or less migratory, although it often lingers even in them until late in the autumn, and appears again very early in the following

spring. It differs very considerably, however, from the Ringed Plover in the choice of a haunt, shunning the sea coasts almost entirely, and, like the Dotterel, living in inland districts, on the banks of lakes, pools, and rivers, and in swamps. It may be sometimes met with near brackish back-waters and lagoons; but the open sandy coasts appear to have no attraction. The flight of this species is rapid, performed by regular and quick beats of the wings; but sometimes the bird holds its pinions arched and stiff and skims for some distance. It also frequently keeps them elevated for a second or so after it has alighted, and sometimes unfolds them when in the act of running. It is said to frequent fallows and grass lands in search of food, and not unfrequently to wade into the water for a little distance when running quickly round the margin with bobbing head and flicking tail. The food of the Killdeer Plover consists of insects, worms, and crustaceans, and the bird may sometimes be noticed following the plough and searching the newly-turned earth for these creatures. Its note is a loud, clear, whistling *tüt-tüt-tüt*, which probably becomes a trill during the pairing season, and is drawn out into *too-it*, something like that of our Ringed Plover, when the bird is alarmed. This latter has been likened to the syllables *kill-dee* (the *dee* often repeated singly several times in succession), whence the English name of the bird has been derived by American sportsmen, who are apt to dislike the Killdeer because its shrill note often disturbs more important game. It is said to be a very noisy bird, especially if much disturbed or threatened by danger. In autumn the Killdeer Plover becomes more gregarious, migrates in companies, it is said generally at night and often at a great altitude, and spends the winter in flocks of varying size, just as our own Ringed Plovers do.

Nidification.—The breeding season of the Killdeer Plover varies a good deal, according to the latitude of the nesting grounds. In southern haunts the beginning of April appears to be the time; in the central portion of its distribution not until May; whilst at the northern limits of its summer range breeding does not commence until June. The nest is merely a hollow in the ground, lined with a few bits of dry grass or other herbage, but in many cases even this slight provision is omitted. The eggs are four in number, pale buff in ground-colour, blotched and spotted with blackish-brown, and underlying markings of brownish-grey. They measure on an average 1·6 inch in length by 1·1 inch in breadth. Both parents assist in hatching the eggs, and become demonstrative when the young are hatched, feigning lameness, and trying to lure the intruder away by cunning devices. One brood only appears to be reared in the year.

Diagnostic characters.—*Oxyechus*, with the lower back, rump, and upper tail coverts chestnut-buff. Length, 9 to 10 inches.

Genus OCHTHODROMUS, or Red-breasted Ringed Plovers.

Type, OCHTHODROMUS WILSONI.

Ochthodromus, of Reichenbach (1852).—The birds comprising the present genus are characterised by having a chestnut band across the breast, mixed with black in *O. wilsoni*, and the culmen about equal in length to the middle toe and claw. The hind toe is absent. The wings are long and pointed. The birds forming this genus are obviously closely allied to the typical Ringed Plovers, but they are all larger, and have a much stouter bill.

This genus contains eight species and races, distributed over most parts of the world with the exception of Western Europe, Western Africa, the southern limits of South America, and the Pacific Islands. One species is a very rare abnormal migrant to the British Islands.

The Red-breasted Ringed Plovers are dwellers on sandy plains, grassy uplands, the banks of rivers, salt lakes and inland seas, and the coasts of oceans. They are birds of rapid and sustained flight, and run and walk with ease. Their notes are shrill and monotonous, and they subsist upon insects, crustaceans, sand-worms, &c. Their nests are slight, mere depressions in the ground, and the eggs, pyriform in shape and three or four in number, are double spotted. They are monogamous and gregarious, especially during the non-breeding season.



Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus OCHTHODROMUS.

CASPIAN PLOVER.

OCHTHODROMUS ASIATICUS—(*Pallas*).

PLATE XX.

Charadrius asiaticus, Pallas, Reis. Russ. Reichs. ii. p. 715 (1773).; Seebohm, Col. Fig. Eggs Brit. B. p. 122 (1896).

Ægialitis asiatica (Pall.), Dresser, B. Eur. vii. p. 479, pls. 520, fig. 1, 522 (1878); Butler, Ibis, 1890, p. 463; Southwell, Proc. Zool. Soc. 1890, p. 461; Lilford, Col. Fig. Brit. B. pt. xxi. (1892).

Ægialophilus asiaticus (Pall.), Dixon, Nests and Eggs Non-indig. Brit. B. p. 231 (1894).

Ochthodromus asiaticus (Pall.), Sharpe, Handb. B. Gt. Brit. iii. p. 150 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 230 (1896).

Geographical distribution.—*British*: At a meeting of the Zoological Society on June 17th, 1890, the secretary, Dr. P. L. Sclater, exhibited on behalf of Mr. T. Southwell a mounted specimen of the Caspian Plover, the first and only example known to have been killed in the British Islands. Mr. Southwell's communication was as follows:—"On the evening of the 23rd May I received from Mr. Lowne, of Yarmouth, the fresh skin of a handsome full-plumaged male of *Ægialitis asiatica*, sent me for identification. Subsequently I learned the following particulars with regard to this interesting occurrence. During the morning of the 23rd of May two strange birds were seen in a large market garden bordering on the North Denes, at Yarmouth, which attracted the attention of the occupier of the gardens, but he had no opportunity of a shot till about 5.30 p.m., when they were on the golf ground which forms a portion of the Denes. He tried to get both birds in a line for a double shot; that being unsuccessful he selected the brighter of the two, its companion being at the time about six yards distant from it. When he fired, the paler bird, presumably the female, flew off in a westerly direction and was no more seen. Very shortly after the bird was purchased of the shooter by Mr. H. C. Knights, by whom it was taken the next morning to Mr. Lowne for preservation, who, as before stated, forwarded the skin to me for identification. The weather at the time was very warm, and Mr. Lowne, seeing that it was a valuable bird, would not risk sending it to me in the flesh; hence it was that I saw only the skin, but I may mention that it had all the appearance of having been very recently removed, and

that there were still many living parasites remaining on the feathers. The sternum Mr. Lowne sent to Professor Newton. The total length of the bird in the flesh was 8 inches and its weight $2\frac{1}{4}$ oz. Mr. Knights was good enough to give me the first offer of the bird, and through the liberality of some friends of the Norwich Museum I was enabled to purchase this latest addition to the many local rarities for that institution." (Sclater, *Proc. Zool. Soc.* 1890, p. 461.) *Foreign* : South central Palæarctic region ; Ethiopian region in winter. The range of this Plover is remarkably restricted, the bird in the breeding season being apparently confined to the basins of the Caspian and Aral Seas. It passes Arabia and the Upper Nile Valley on migration, and winters in Africa in the Intertropical realm. There can be little doubt that this is another species which migrates north and south from an equatorial base. That it breeds in South Africa seems to be suggested by the fact that examples in full breeding dress—dated from November to February—have been obtained there, and are now in the National Collection. It is also a rare visitor to Western India, and is also a straggler to Heligoland and Italy ; whilst an immature bird was taken six hundred miles from land in the Indian Ocean.

Allied forms.—None with which it is likely to be confused.

Habits.—But little is known of the habits of this Plover ; and from the few fragments recorded in the *Ibis* and elsewhere I do not find anything of special interest.

Nidification.—A reputed egg of this species taken on the Kirghiz Steppes is described by Mr. Dresser (*B. of Europe*) as oval and tapering, warm buff, with a faint tinge of green in ground-colour, and the spots nearly black. This description appears to be a doubtful one. Von Middendorff figures an egg of this bird in his *Reise in Nord. und Ost. Sibiriens*, ii., pl. xix., fig. 4. It measures 1·25 inch in length by 1·07 inch in breadth.

Diagnostic characters.—*Ochthodromus*, with no black markings on the head and neck, with the lores white, and the legs and feet pale brown. Length, 7·5 inches.

Genus EUDROMIAS, or Dotterels.

Type, EUDROMIAS MORINELLUS.

Eudromias, of Brehm (1831).—Although very closely allied to the birds in the preceding genus, the Dotterel presents certain characteristics which to some extent warrant its generic exclusion. The single species in the present genus is characterised by having the tibia almost entirely feathered, and the culmen less than the combined length of the middle toe and claw. The hind toe is wanting and the wings are long and pointed.

This genus contains but a single species which is confined to the Palæarctic region in summer, and in winter is found also in the Ethiopian portion of the Intertropical realm. It is a summer visitor to the British Islands, and passes them on spring and autumn migration.

The Dotterel is an inland species rather than a dweller on the coasts, and in its habits and economy closely resembles its allies. Full particulars will be given in the following chapter.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus EUDROMIAS.

DOTTEREL.

EUDROMIAS MORINELLUS—(*Linnæus*).

PLATE XXI.

Charadrius morinellus, Linn. Syst. Nat. i. p. 254 (1766); Seebohm, Hist. Brit. B. iii. p. 30 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 123, pl. 39 (1896).

Pluvialis morinellus (Linn.), Macgill. Brit. B. iv. p. 104 (1850).

Eudromias morinellus (Linn.), Dresser, B. Eur. vii. p. 507, pl. 526 (1875); Yarrell, Brit. B. ed. 4, iii. p. 246 (1883); Dixon, Nests and Eggs Brit. B. p. 257 (1893); Sharpe, Handb. B. Gt. Brit. iii. p. 152 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 234 (1896); Lilford, Col. Fig. Brit. B. pt. xxxiv. (1897).

Geographical distribution.—*British*: In England the Dotterel is chiefly met with on spring and autumn passage, more frequently in the eastern counties than in the western. A few perhaps may still breed in the Lake District and on the Cheviot Hills. Probably it may have formerly bred on some of the chalk ranges in the south, but if so it has long ceased to do so. It is of very rare occurrence in Wales, but this may probably be owing in a great measure to insufficient observation. It is rarer in Ireland than in England, and is not known to have nested there. Scotland is its headquarters in the British Islands, and there it is said to breed on the hills of Dumfriesshire, on the Grampians in North Perthshire, on the borders of Inverness-shire and in Ross and Banffshire. It has been found nesting on the Orkneys, but only passes the Shetlands on migration. In the west of Scotland it is rare, and has not hitherto been noticed in any of the Outer Hebrides. *Foreign*: Palæarctic region during the breeding season; western Palæarctic region and Ethiopian region in winter only. It breeds on the tundras above forest growth across Europe (including Nova Zembla) and Asia; passes Central Europe (where a few remain to breed on the Alps, in Bohemia, in Transylvania, and further north on the mountains of Scandinavia), West Siberia, Turkestan, and Persia on migration, and winters in Palestine, Egypt, and North-west Africa, although a few remain during that season on the northern shores of the Mediterranean. It is an occasional visitor to the Canaries, and has been recorded from Japan.

Allied forms.—*Ochthodromus veredus*, a somewhat distantly related and generically distinct species, which breeds in Mongolia, and winters from Java to



Australia. Differs from the Dotterel, amongst other characters, in having a white belly in summer plumage, and in its small foot (middle toe without claw shorter than bill, and less than half the tarsus.—*Seebohm.*)

Habits.—The migrations of the Dotterel are by no means the least interesting portion of the bird's economy. The story of its journeying from North Africa to Arctic Europe in the space of a single night is unquestionably the wildest of romance. This extraordinary story seems to receive confirmation by the fact that during spring, of the tens of thousands of Dotterels that leave Africa for the Arctic tundras, comparatively few birds are seen in the intervening country, in Central and Southern Europe, but this is unquestionably because Dotterels (as well as most, if not all other migrants) are far less prone to alight *en route* in spring, travel quicker, and often at a much greater altitude than they do in autumn.* The Dotterel is a late migrant, not reaching our islands until the end of April or beginning of May, and the Arctic regions a month or more later. The passage south in autumn is undertaken much more slowly, beginning in September and lasting in the extreme south of Europe through October into November; indeed, an example has been shot in the British Islands as late as the 23rd of the latter month. The Dotterel is in no sense a coast bird, but loves to haunt the upland fallows, and the bare downs and mountains, and rough, barren pastures. In the Arctic region it frequents the tundra—a district very similar to our own moorlands, treeless, but covered with a great variety of herbs and heaths, shrubs and flowers. All through the summer the Dotterel is more or less gregarious, and in autumn and winter becomes especially so. Upon its arrival it is one of the tamest of birds, and admits of a very close approach, but persecution soon teaches it wariness. Its remarkable trustfulness has gained for it the name of “foolish” Dotterel—the latter word in olden times being the equivalent for a “foolish, dull person.” The Dotterel spends most of its time on the ground, running hither and thither about the rough, hummocky wastes, or over the newly-ploughed fields and bare downs. Its rather short neck and plump body is apt to lend it the appearance of sluggishness, but when flushed it flies rapidly enough, in true Plover style, with quick, regular beats of the long wings. Its call-note is a prolonged and plaintive *düt*, varied sometimes into *drr*, the two occasionally being uttered together as *drr-düt*. This note in the pairing season becomes a trill, but whether uttered by the male or female, or by both, remains to be ascertained. The food of the Dotterel consists of insects, worms, and grubs, and the tender buds and shoots of plants. In Palestine, Canon Tristram observed this species feeding on various species of small white snails. During winter the Dotterel often congregates into very large flocks, which frequent the various southern steppes and plains, and here they are described as being just as tame as in the breeding-places.

*!(Conf. *The Migration of Birds* and *The Migration of British Birds.*)

Nidification.—From the nature of the country it frequents the Dotterel is a rather late breeder, and even in our islands the eggs are seldom laid before the end of May or the first week in June. In higher latitudes they are, of course, later still. There is much of interest attached to the nesting of the Dotterel. In the first place the hen is larger and more handsomely coloured than the cock,* and, as is usual in such very exceptional cases, the male bird not only performs the greater part of the duty of incubation, but takes the largest share in the task of bringing up the young. The nest is merely a slight hollow amongst the moss and lichen or grass near the mountain-tops, or on the open tundra. The eggs are invariably three in number, and very handsome objects, varying from yellowish-olive to pale buff in ground-colour, richly blotched and spotted with dark brown, and, much more sparingly, with slate-grey. They measure on an average 1·6 inch in length by 1·1 inch in breadth. Incubation lasts from eighteen to twenty-one days. At the nest the old birds are very wary, if somewhat tame, and run about or fly from place to place, tiring all but the most patient watcher, and only returning to the eggs when the intruder is considered by the watchful owners to be at a sufficiently safe distance. When the young are discovered the parent often feigns lameness, and seeks to lure an intruder away by various cunning artifices. One brood only is reared in the year. Fresh eggs of this species have been found on the Cumberland hills as late as July, probably the produce of birds that had lost their first clutch.

Diagnostic characters.—*Eudromias*, with the axillaries grey, and the bill shorter than the middle toe without the claw. In breeding plumage this species is easily recognised by its rich chestnut breast and flanks and black belly. Length, 9 inches.

* This has recently been denied by Dr. Sharpe, who states that the series of skins in the British Museum does not confirm the suggestion. Equally good authorities, however, maintain the contrary.

Genus CHARADRIUS, or Golden Plovers.Type, CHARADRIUS PLUVIALIS.

Charadrius, of Linnæus (1766).—The birds comprising the present genus are characterised by having the innermost secondaries very long and pointed, and the under parts black in breeding plumage. The upper parts are spotted with golden yellow at all seasons. The hind toe is absent. The bill is shorter than the head, and rather slender; the nostrils are sub-basal and linear. The lower portion of the tibia is naked.

This genus is composed of three species, and is almost cosmopolitan, but the species are most abundant in the high north in summer. One species is a common resident in the British Islands, whilst the remaining two are abnormal migrants to them.

The Golden Plovers are dwellers on mountains, tundras, and plains, as well as on the sea coast. They are birds of rapid and prolonged flight, and progress on the ground by walking and running. Their notes are loud, and not unmusical. They subsist on insects, worms, mollusks, small seeds, mountain fruits, and shoots of herbage. Slight nests are made on the ground, and their eggs, pyriform in shape and four in number, are richly spotted. They are monogamous; social in summer, gregarious in winter.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus CHARADRIUS.

GOLDEN PLOVER.

CHARADRIUS PLUVIALIS.—*Linnaeus*.

PLATE XXII.

Charadrius pluvialis, Linn. Syst. Nat. i. p. 254 (1766); Dresser, B. Eur. vii. p. 435, pl. 515, fig. 1 (1871); Yarrell, Brit. B. ed. 4, iii. p. 271 (1883); Seebohm, Hist. Brit. B. iii. p. 35 (1885); Lilford, Col. Fig. Brit. B. pt. xiii. (1891); Dixon, Nests and Eggs Brit. B. p. 255 (1893); Sharpe, Handb. B. Gt. Brit. iii. p. 143 (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 124, pl. 39 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 191 (1896.)

Pluvialis aurea (P. L. S. Müller), Macgill. Brit. B. iv. p. 94 (1852).

Geographical distribution.—*British*: The Golden Plover breeds locally in England south of Derbyshire, and in Wales, in fact it follows the mountains. A few breed in Devon and Somerset; and on the heights of Breconshire, amongst other localities, in the Welsh area. From the moors of North Derbyshire and South Yorkshire it becomes more plentiful, and from thence is pretty generally distributed in all suitable localities northwards throughout Scotland, including the Hebrides, the Orkneys, and Shetlands. It occasionally visits St. Kilda. During the winter it is widely dispersed along most of our coast-line and in many inland districts. In Ireland it is widely distributed, breeding on the moors, and frequenting the coasts in winter. *Foreign*: It breeds on the Faroes and in Iceland, and has occurred on Jan Mayen and Nova Zembla, but is erroneously recorded as from Greenland. The principal breeding grounds are the Norwegian fells, and the tundras of Northern Russia and Siberia, as far east as the valley of the Lena; and it breeds in smaller numbers on the moors of Holland, Belgium, and Germany, but to the rest of Central and Southern Europe it is known on passage only, a few remaining in these districts to winter. The birds that breed on the Siberian tundras pass through Turkestan and Baluchistan on migration, a few remaining to winter in the latter country, but the majority passing on to spend that season in Africa in the basin of the Mediterranean, the grand winter home of this species. It is a regular winter visitor to the Canaries, a straggler to Madeira, and occasionally wanders in Africa as far south as Cape Colony and Natal.



Allied forms.—None more closely allied than *Charadrius fulvus*, and its American representative, *C. dominicus*, treated fully in the two following chapters.

Habits.—The Golden Plover, like many other birds, is a species that changes its haunts according to season. In summer it is an inhabitant of the moors and mountain heaths, the rough upland pastures and the tundras; in winter it quits these places and takes up its residence on the lowland marshes, the pastures and rough saltings near the sea, and the low flat coasts and mud banks. For the greater part of the year it is a social bird: even in the breeding season I have seen parties of half-a-dozen or so: but towards autumn it becomes much more gregarious, and lives in flocks of varying size throughout the winter. The flight of this species is rapid and steady, especially during migration, or when the bird is passing from place to place, performed by regular and quick beats of the wings. This Plover also frequently indulges in various aerial evolutions, and flocks often assume the shape of a V or a W during flight. Most of its food is obtained during winter on the mud-flats and saltings, and it very often retires to some inland spot between the tides to sleep, or to rest and wait until the muds are exposed again. Vast flights of Golden Plover—the Plover of the coast—make their appearance on our low-lying coasts in autumn, many of which continue along our shores and cross the sea again to winter further south, but others remain with us for that season. In no part of the British Islands can the migration of this species be better remarked than in the neighbourhood of the Wash. For days and nights, about the end of October and early in November, this Plover has been known to fly over from continental Europe in almost one incessant stream, the flocks succeeding each other so quickly as to form a nearly unbroken throng. This Plover may frequently be noticed in company with Dunlins, Lapwings, and Curlews, and occasionally a few Grey Plovers mix with them. As its flesh is very palatable great numbers are shot in the autumn and winter. It has been repeatedly noticed that just before stormy weather the Golden Plover becomes restless and unsettled, and often leaves a district entirely before the change arrives. Much of its food is obtained during the night, especially if there be a moon, but I do not think it moves much on very dark nights. The food of the Golden Plover varies a good deal according to season. In winter it consists of beetles, small mollusks, sand-worms, hoppers, and, occasionally, small seeds; but in summer, insects and grubs, as well as earth-worms, and towards autumn various kinds of ground fruits. In summer this species has been known to feed upon the maggots (presumably the larvæ of the common blue-bottle) infesting a dead sheep. Various vegetable fragments and gravel are also found in its stomach. The alarm note of the Golden Plover is a plaintive *kö*, but the call-note is double, and sounds something like *klee-wee*, sometimes prolonged into three syllables, *klee-ee-wee*. These notes are uttered both on the ground and whilst the bird is in the air. During the pairing season the male utters a rather

musical trill, a variation of the double or treble call-note. The whistle of this Plover is one of the most characteristic sounds of the mud-flats or the moors, and on a calm still day may be heard for a very long distance.

Nidification.—The Golden Plovers begin to retire to their inland breeding grounds early in April, and by the end of that month or early in May the eggs are deposited. Although the vast flocks soon break up, either before the moors are reached or shortly after arrival, the bird continues more or less sociable, and many nests may be found within a comparatively small area on suitable ground. This species is very conspicuous on the bare moors, and is remarkably fond of proclaiming its presence either by standing perched on the top of a little hillock, or rising into the air, uttering its piping note the moment its solitudes are invaded by man. It is in Spring much more tame than in winter, and often flies up to the observer and wheels above his head, or stands quietly watching his approach. Before the flocks finally disperse, however, this bird is almost as wary as when on the coast. The well-known note sounds near and far, as it is uttered by answering birds all over the wilderness, and here, there, and everywhere the showy Plovers in their brazen spotted upper plumage and black underparts rise and fall in airy grace. The Golden Plover appears to pair annually, and the nest is very slight, a mere hollow, scantily lined with a few bits of withered herbage peculiar to the moor. It is generally made on a tuft of herbage, or beneath the shelter of a clump of cotton-grass, more rarely in barer situations, amongst short wiry grass and heath. The eggs are four in number, pyriform, buff of various shades in ground-colour, boldly and richly spotted and blotched with purplish-brown and brownish-black, and more sparingly with grey. Most of the colouring is generally distributed on the larger end of the egg. They measure on an average 2·0 inches in length by 1·4 inch in breadth. Both parents assist in the duty of incubation, which lasts sixteen to twenty days. The birds are remarkably watchful at the breeding grounds, and the sentinel bird quickly conveys the signal of alarm to its mate, which slips quietly off the eggs, and often both rise into the air and wheel round and round above them. Sometimes they run anxiously to and fro about the moor, occasionally uttering a mournful note; and as soon as the nearly hatched eggs are discovered they commence a series of antics to draw all attention upon themselves. When the young are hatched these actions are even more demonstrative. The young chicks, clothed in yellow down, spotted and blotched with black, are quick to conceal themselves at the approach of danger, and remain crouching to the ground, which so closely resembles their own protective dress, until all is still and safe again. One brood only is reared in the year.

Diagnostic characters.—*Charadrius*, with all the rectrices barred and the axillaries white. Length, 10 to 11 inches.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus CHARADRIUS.

ASIATIC GOLDEN PLOVER.

CHARADRIUS FULVUS.—*Gmelin*.

Charadrius fulvus, Gmelin, Syst. Nat. i. p. 687 (1788); Dresser, B. Eur. vii. p. 443, pls. 516, 517, figs 2, 3 (1871); Yarrell, Brit. B. ed. 4, iii. p. 276 (1883); Seebohm, Hist. Brit. B. iii. p. 40 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 234 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 125, pl. 39 (1896).

Charadrius dominicus, (P. L. S. Müller), Sharpe, Handb. B. Gt. Brit. iii. p. 147 (1896 *partim*); Sharpe, Cat. B. Brit. Mus. xxiv. p. 195 (1896 *partim*).

Geographical distribution.—*British*: At least two examples of the typical Asiatic Golden Plover have been known to occur in the British Islands, but one of these is doubtful from the fact of having been obtained in Leadenhall Market, a centre to which many Continental examples of waders find their way during the season. This—the first reputed British example—was said to have been sent with a number of Golden Plovers from Norfolk in December, 1874 (Dresser, *Ibis*, 1875, p. 513). However probable this may be, it was always open to the doubt of having been sent from the Continent, and accidentally mixed with the Norfolk batch of Plovers. It sufficed, however, to put British naturalists on the look-out, and thirteen years later (November 26th, 1887) an example was obtained at Stennis, in Orkney, round which no doubt of any kind appears to dwell (J. G. Millais, *Field*, 1887). *Foreign*: Eastern Palæartic region and North-western Nearctic region in summer, Oriental and Australian regions in winter. Of accidental occurrence only in Europe and South-west Asia: on Heligoland and Malta, in Malaga, Poland, and on the Mekran coast. It breeds on the tundras of East Siberia from the valley of the Yenisei to the Pacific coast, and in Alaska, where Dr. Stejneger says it occupies the whole shore line of Behring Sea. It passes through South Siberia, Mongolia, Behring Island, and Japan, on migration, to winter in India, Burma Peninsula, China, the Malay Archipelago, Australia, New Zealand,* and the Polynesia, but there can be little doubt that the individuals visiting the temperate latitudes of the southern hemisphere do so to breed, or are abnormal migrants far south of their usual limits. †

* The Asiatic Golden Plover was discovered breeding on Portland Island, off New Zealand, by Mr. Robson, in January, 1883. This is a most interesting and important fact, supporting our suggested new Law of dispersal.

† Conf. *Migration of Birds*, p. 218.

Allied forms.—*Charadrius pluvialis* and *C. dominicus*, treated in the preceding and following chapters.

Habits.—The habits of the Asiatic Golden Plover are not known to differ much from those of its European ally. During summer it is a bird of the tundras, the vast expanses of Arctic moors above the limits of forest growth; but in winter it migrates for thousands of miles to the south, and spends that season principally on the flat, mud-bound coasts and rough lands near the sea. In China, however, Swinhoe observed it frequenting the dry rice fields and sweet potato gardens as well as the sea shore; whilst at its winter quarters in Borneo it is said to haunt the places where buffaloes wallow, probably for the purpose of catching insects and worms. It is equally gregarious and sociable, especially during winter, and then consorts with other wading birds; and in Ceylon is said to be generally in the company of the Mongolian Red-breasted Ringed Plover. Many of its gatherings during winter are of very large dimensions, which frequent the muds, whilst smaller parties are said to haunt the bare fields. Captain Legge states that in Ceylon, where it is very common during winter, it has a habit of running a little distance when approached, then pausing for a moment, with its body turned away from the observer and its head twisted on one side. If it be still pursued it spreads its wings and runs for a little way, then takes flight. A flock when disturbed will frequently fly swiftly towards the ground, then rise again. It walks and runs about the ground, and flies in a similar manner to the Golden Plover. The note of the Asiatic Golden Plover is described by Seebohm as a plaintive *kö*; the double note is a whistling *kl-ēē*, which is sometimes prolonged into three syllables, *kl-ēē-kö*. The food of this species consists of various small marine animals, such as mollusks, crustaceans, and the like, worms, snails and insects, and probably various ground fruits of the tundra.

Nidification.—By far the best account of the breeding habits of the Asiatic Golden Plover is that given by Seebohm, who met with this species and obtained its eggs and downy young on the Siberian tundras in the valley of the Yenisei. These eggs and nestlings are perhaps the only authentic ones known to science, with the exception of the eggs obtained by Mr. H. L. Popham in the same area. The earliest examples of this species arrived in the Arctic regions during the first week in June, in lat. $66\frac{1}{2}^{\circ}$, and it was observed on the Koorayika during its passage north to the tundras. It was not again observed until the open tundra was reached in lat. $69\frac{1}{2}^{\circ}$, just beyond the limits of the growth of trees. Here the pine trees had disappeared, and the birch trees had become nothing more than stunted bushes about a foot high; but the alders and the willows still grew luxuriantly on the banks of the great river. The tundra here was hilly, full of lakes and swamps, covered with mosses and lichens, here and there varied with

bare patches of pebble-strewn ground, and little plains where gay flowers and the various fruits of the tundra flourished. A pair of Plovers soon made their appearance during an excursion on the 14th of July, and after much fruitless watching one of them, the male, was shot. The nest was found shortly afterwards amongst the moss and lichen, containing the full complement of eggs. At Golcheeka this Plover is very common, but unfortunately Seebohm was too late for eggs (20th of July), and here obtained a nestling only. The nest was merely a slight depression lined with broken stalks of reindeer moss. The eggs are almost precisely similar to those of the European Golden Plover, but are slightly smaller and paler in ground-colour. Those obtained by Seebohm varied from 1·92 to 1·85 inch in length by 1·32 to 1·27 inch in breadth. In the same valley Mr. H. L. Popham found this species more numerous than the Golden Plover, and remarked the difference in the note of the two birds, which rendered their identification an easy task. The eggs obtained by Mr. Popham varied in length from 2·04 to 1·96 inch, and were 1·33 inch in breadth. One brood only is reared in the year, and both parents appear to assist in domestic duties.

Diagnostic characters.—*Charadrius*, with the rectrices barred, and the axillaries smoke-grey. Length of wing, 6·0 to 6·7 inches. Total length, 9 inches.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus CHARADRIUS.

AMERICAN GOLDEN PLOVER.

CHARADRIUS DOMINICUS.—*P. L. S. Müller.*

Charadrius dominicus, *P. L. S. Müller*, *Syst. Nat. Anhang*, p. 116 (1776); *Sharpe*, *Handb. B. Gt. Brit.* iii. p. 147 (1896 *partim*); *Sharpe*, *Cat. B. Brit. Mus.* xxiv. p. 195 (1896 *partim*).

Charadrius virginicus (*Licht.*), *Gurney*, *Ibis*, 1883, p. 198; *Seebohm*, *Hist. Brit. B.* iii. p. 41 (1885); *Seebohm*, *Col. Fig. Eggs Brit. B.* p. 125, pl. 39 (1896).

Charadrius fulvus americanus (*Schlegel*), *Dixon*, *Nests and Eggs Non-indig. Brit. B.* p. 236 (1894).

Geographical distribution.—*British*: Two examples of the American Golden Plover have been obtained in the British Islands, although, unfortunately, the same remarks apply to one of them as to one of the examples of the Asiatic species, viz., that it was obtained in Leadenhall Market (10th of November, 1882); whence actually obtained, a mystery (*Gurney*, *Ibis*, 1883, p. 198). Fortunately a second example is much more satisfactory, *Mr. J. G. Millais* recording (*Zoologist*, 1886, p. 26) a specimen obtained in Perthshire on the 3rd of August, 1883. There can be little doubt that eventually others will be obtained, now that the attention of naturalists and sportsmen is specially drawn to the subject. *Foreign*: Northern Nearctic region and Southern Neotropical region in summer; Intertropical realm in winter. Of accidental occurrence only in Europe; Heligoland (*Seebohm*, *Ibis*, 1877, p. 165). It breeds in the Arctic regions of North America, above the limits of forest growth on the tundras from Alaska to Greenland; passes Canada, the States, Bermudas (abnormally), West Indies, and, in smaller numbers, California, on migration, and winters in the Neotropical portion of the Intertropical realm. The breeding area of this species in temperate South America is not yet determined, but there can be little doubt that the bird migrates southward to nest.*

Allied forms.—*Charadrius pluvialis*, and *C. fulvus*, already treated of in the two preceding chapters.

Habits.—The habits of the American Golden Plover somewhat closely resemble those of its Asiatic ally. *Mr. E. W. Nelson* writes as follows respecting the present species during its summer sojourn in Alaska: "The males are conspicuous objects as they stand like silhouettes, their black and white breasts and sides of neck presenting a sharp, clear-cut outline on the brown and grey

* *Conf. The Migration of Birds*, p. 218.

background. At intervals, their clear, mellow, and melancholly note rises for a moment, and then the bird apparently sinks into a day-dream, and remains motionless for some time, until he is prompted to assure his partner of his presence by another call. The male at this season has a brighter plumage than the female, and in places little frequented by man he becomes very unsuspecting: near villages, however, he is always on the look-out, and is difficult to approach even when he is found by his nest. Towards the end of May and during the first weeks of June the males utter a clear, rich song, which is frequently heard during the twilight of the short Arctic nights. When I was camping at the Yukon mouth during the last of May and the first part of June, 1879, these birds were scattered all about in the vicinity of the tent, and frequently during the middle of the night the song was heard close by, and was exceedingly sweet and musical. One night in particular I remember lying awake, listening to the usual continuous faint clicking among the disintegrating ice in the river, which seemed to make the silence still more marked, when, suddenly, just at the back of the tent, arose the clear, plaintive note of the Golden Plover, which may be represented by the syllables *too-lee-e*. Soon after, in the same sweet, musical tone, was uttered a marvellously harmonious succession of notes, which I wrote down at the time, listening to the song as it was repeated again and again, and ascertaining the exact number of syllables. These, I find, are only imperfectly represented as follows: *Tēē-lēē-lēē, tū-lēē-lee, wīt, wīt, wīt, wēē-ū wīt, chē lēē-ū tōō lēē-ē*. The last three syllables are the ones most commonly uttered, serving as a call-note; but the song in full is only repeated on special occasions, as before remarked, being oftener heard during the still hours of the night than during the day, if, indeed, it can be called night when the sun disappears below the horizon for little over an hour." The American Golden Plover occurs on migration throughout the Mississippi Valley and Manitoba as well as along the coasts, on its way to and from its breeding grounds in the Arctic regions. Its northward migration appears to begin in March, and to be continued until the first week in May. The southward migration commences as early as the middle of July in some years and lasts until the close of October or early in November. Further south, Colonel Feilden records some very interesting particulars relating to the migrations of the American Golden Plover on the island of Barbadoes. He writes,* "Stragglers arrive as early as July and the beginning of August, but the main flights come with the first heavy weather after the 27th of August, and long experience and observation proves that this date is kept year after year with wonderful accuracy. The course of all the migratory Charadriidæ across Barbadoes in the autumn is from the north-west to south-east, and if the wind blows from south-east the birds are brought down to the island, for it appears to be a well-established observation that birds prefer migrating with a 'beam' wind. A shift of wind from the north-east, with squally weather to the

* *Ibis*, 1889, pp. 490, 491.

south-east, is ardently longed for by the Barbadoes sportsmen towards the end of August, as this forces the migratory hosts to alight instead of passing over at a great height, as they are seen to do when the wind is from the north-east. The first arrivals of this species are invariably black-breasted birds, showing that the old birds precede the young, and the first comers are nearly all males. The young birds without black on the breast appear about the 12th of September, and continue to pass till the end of October; sometimes stragglers are as late as November." It is not known that the food of this species differs in any important respect from that of the preceding species; whilst the localities it frequents are similar, and are inland as well as maritime.

Nidification.—The American Golden Plover reaches its nesting places on the "barren grounds" of Arctic America at the end of May or early in June. Its nesting habits very closely resemble those of the Asiatic species. MacFarlane describes the nest as a mere hollow in the moss or lichen-clothed ground, carelessly lined with a few scraps of herbage; whilst Mr. Nelson says it is a slight structure lined with dry grass and dead leaves of the dwarf willow. The eggs are four in number; although MacFarlane has recorded an instance in which five were found. They so closely resemble those of the Asiatic species that a detailed description of them is unnecessary. MacFarlane writes of the breeding habits of this Plover as follows* :—"This beautiful species is very numerous in the barren grounds, from the outskirts of the forest to the shores of the Polar Sea. The nests were precisely similar to those of *C. squatarola*. They were also as difficult to detect, and for the same reason, a harmonizing resemblance of the egg markings to the surrounding soil and a timeous departure of the female bird from her nest. In a very few instances where she happened to be surprised by a close approach, she would pretend lameness, and flutter away from our very feet. On one occasion our party spent half an hour in a close but fruitless search, during which the female resorted to various manoeuvres to hide the nest; but on our withdrawal to a short distance she at last revealed it by settling down upon her eggs. I find one hundred and seventy nests recorded among my notes. Except when there was reason to believe that the full number had not been deposited, four eggs were always met with. In one instance, however, there was as many as five, and in another but one, the contents of which were found in a well-developed condition. Foxes also destroy many eggs and young of this and other species during the season of nidification. The frequently varying but sweetly clear and melodious notes of this Plover are almost constantly heard whilst traversing their usual breeding grounds." One brood only is reared in the year.

Diagnostic characters.—*Charadrius*, with the rectrices barred and the axillaries smoke-grey. Length of wing, 6·8 to 7·5 inches. Total length, 9 to 10 inches.

* *Proceedings U. S. Nat. Museum*, xiv., pp. 429, 430 (1891).

Genus SQUATAROLA, or Grey Plovers.

Type, SQUATAROLA HELVETICA.

Squatarola, of Leach (1816).—The birds comprising the present genus are characterised by having the innermost secondaries very long and pointed, and the under parts black in breeding plumage. The upper parts are spotted with black and white at the same season. The most characteristic feature is the presence of a hind toe. The bill is shorter than the head and rather slender; the nostrils are sub-basal and linear. The lower portion of the tibia is naked.

This genus is composed of a single species, the range of which is almost cosmopolitan, from the Intertropical realm northwards to the Arctic regions. It is a well known visitor on spring and autumn migration to the British Islands, and some numbers remain to winter.

The Grey Plovers are dwellers on the open moors, tundras, and barren grounds of the high north during summer; frequenters of the sea coast during winter. They are birds of rapid and prolonged flight; upon the ground they progress by walking and running. Their notes are loud and musical. Their food consists of insects, worms, mollusks, small seeds, mountain fruits, and shoots of herbage. Slight nests are made upon the ground, and their richly-marked, double-spotted eggs are four in number. They are monogamous; sociable in summer, gregarious in winter.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus SQUATAROLA.

GREY PLOVER.

SQUATAROLA HELVETICA.—(*Linnæus*).

PLATE XXII.

Tringa helvetica, Linn. Syst. Nat. i. p. 250 (1766).

Pluvialis squatarola (Linn.), Macgill. Brit. B. iv. p. 86 (1852).

Squatarola helvetica (Linn.), Dresser, B. Eur. vii. p. 455, pls. 515, fig 2, 517, fig. 2, 518, fig. 2 (1871); Yarrell, Brit. B. ed. 4, iii. p. 278 (1883); Sharpe, Handb. B. Gt. Brit. iii. p. 138 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 182 (1896).

Charadrius helveticus (Linn.), Seebohm, Hist. Brit. B. iii. p. 44 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 232 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 126, pl. 39 (1896).

Squatarola cinerea Fleming; Lilford, Col. Fig. Brit. B. pt. xviii. (1891).

Geographical distribution.—*British*: The Grey Plover is most abundant on autumn passage along the coasts of the British Islands, but numbers remain to winter; and in spring a considerable stream of migrants, returning north to breed, pass over our shores. It is most abundant on our eastern coasts, but small numbers regularly visit the west of Scotland. In Ireland it is less numerous than in England, and becomes rare on the Outer Hebrides. *Foreign*: Circumpolar in summer; Palæarctic, Nearctic (?), Neotropical, Oriental, and Australian regions in winter. The only known breeding grounds of the Grey Plover are situated on Kolguev Island, in the lower valleys of the Petchora and Yenisei, on the Taimur Peninsula, and the delta of the Lena, in Alaska, on the banks of the Anderson River, and on Melville Peninsula, all districts of the tundra above the limits of forest growth. It passes Central and Southern Europe, the Canaries, South Siberia, Turkestan, Mongolia, Behring Island, and Japan on migration, and winters in the basin of the Mediterranean, in Arabia, Africa, India, South China, the Malay Archipelago, Australia, New Guinea, and the Solomon group and adjacent isles. In the New World it passes the Bermudas on abnormal migration, and winters in the West Indies and in South America as far south as Peru and Brazil. It has been recorded from Aruba Island, off the north coast of Venezuela as late as the 24th of June; whilst in the Old World it is recorded from Reunion, Mauritius, and the Seychelles. There is no evidence to suggest that this species normally extends in winter beyond the limits of the Intertropical realm in either hemisphere. I note that odd individuals

are observed practically resident in Tasmania ; but the reader may consult what I have already written on the subject of "lost birds" (*The Migration of Birds*, pp. 184, 185).

Allied forms.—None more nearly related than *Charadrius pluvialis* and *C. fulvus*, with allied races (generically distinct), all of which have been treated of in the preceding chapters.

Habits.—The Grey Plover is a well-known bird on the British coasts between the months of October and May, and although many of the individuals that arrive in autumn pass on to more southern lands, a great number remain with us for the winter. The young birds mostly are the first to make their appearance, sometimes arriving on our coasts with bits of down still adhering to their plumage. In August they begin to arrive, and continue to do so into September, only a few old birds in their company. During October and November it is said the great bulk of the old birds arrive. The return migration begins in May, and by the end of that month the majority have passed north, although a few linger into June, and odd immature non-breeding birds are sometimes met with in July. During its sojourn in our islands the Grey Plover is almost exclusively confined to the low-lying coasts and salt marshes. It is especially fond of the wide expanses of mud at the mouths of rivers. During winter it does not appear to gather into such large flocks as the Golden Plover, and may often be met with in odd pairs, or in small parties, whilst now and then stray individuals attach themselves to flocks of Dunlins, Knots, or other Waders. In its actions and flight it very closely resembles its congeners. It feeds much at night, especially during moonlight. The food varies according to season, and consists of various marine animals found on the shore, and worms, insects, and grubs, and probably ground fruits during summer on the tundras. Seebohm describes the usual alarm note of the Grey Plover as a long-drawn, plaintive, whistling *köp* ; the call-note, common to both sexes, is a *kl-ee* or *kleep*. The bird has also a treble note which appears to be a combination of the call and alarm note, sounding like *kl-ee-köp*.

Nidification.—Previous to 1875 the breeding habits of the Grey Plover were but little known, and the bird's eggs were very rare in collections. The first authentic eggs of this species were obtained by the Russian naturalist and traveller, Von Middendorff, in 1843, on the Taimur Peninsula. In 1864 MacFarlane obtained eggs on the tundras near the Arctic Ocean in North America ; whilst in 1875 Messrs. Seebohm and Harvie-Brown discovered the breeding grounds of this bird in Europe on the tundras above the limit of forest growth, in the valley of the Petchora in North-east Russia. Between June the 22nd and July the 12th these two naturalists took no less than ten nests of the Grey Plover, and carefully identified the parents of each. The nest of the Grey Plover is merely a slight

hollow in the moss or lichen-covered ground, into which is placed by way of lining a few twigs, scraps of reindeer moss, and other vegetable refuse. The hollow of the nest is described as perfectly round and rather deep. The eggs are four in number, and intermediate in colour between those of the Golden Plover and the Lapwing, being neither quite as olive as the latter nor as buff as the former in ground-colour, but the markings are similar in every respect. They measure on an average 2·0 inches in length by 1·4 in. in breadth. For nesting duties the part of the tundra most favoured by the Grey Plover is the flat bog, intersected with tussocky ridges. The birds were observed to indulge in rather curious flights as they rose from their nests, tossing their wings in the air somewhat like the action of a Tumbler Pigeon. After being driven from their home the female was generally the first to return, but she invariably came less conspicuously than the male. She generally made her appearance on a distant ridge of the tundra, then, after looking round her for a short time, she would run quickly to the next ridge, and again look round, calling at intervals to her mate with a single note. To this, however, the male was observed seldom to reply, but when he did so it was with a double note. After the female had run about thus for some time the male began to move, but he generally joined his mate by boldly flying up to her. On the other hand the female rarely took to her wings. She was very cautious, and passed and repassed her nest several times, until she finally settled upon it. All the time that the nest was being watched the female was restless and ran about a good deal, but the male generally remained stationary on a hillock or a ridge, apparently watching the movements of his mate. When the young are hatched the old birds perform various alluring antics to try and draw an intruder away. Seebohm gives a very remarkable instance of a female Grey Plover dropping as if dead after being fired at, but when he was about to pick her up she flew away, apparently uninjured. One brood only is reared in the season. Since 1875 the eggs of the Grey Plover have been taken on the island of Kolguev, in 1895, by the Messrs. Pearson, who obtained seven clutches. They remarked that the birds did not nest in close company, each pair appearing to take possession of about a mile of country. During the same summer Mr. H. L. Popham made the very interesting discovery that the Grey Plover bred in the valley of the Yenisei, and he obtained four nests near Golchika.

Diagnostic characters.—*Squatarola*, with the axillaries black, and a small hind toe. Length, 11 to 12 inches.

Genus VANELLUS, or Typical Lapwings.Type, VANELLUS CRISTATUS.

Vanellus, of Brisson (1760).—The birds comprising the present genus are characterised by having the innermost secondaries broad and rounded at the tips, and the rectrices with broad white bases succeeded by a black subterminal band, broken on the outermost feathers. The hind toe is present. The tail is moderately long and nearly square. The bill is typical in shape; nostrils placed in a deep groove.

This genus is composed of two species, confined to the Palæartic and Oriental regions, and the north-eastern portion of the Ethiopian region. Both species are British, one a common resident in and the other a very rare straggler to our Islands.

The Lapwings are dwellers on the open plains, birds of the moors and commons, fields and downs, but are more maritime during winter. They are birds of somewhat slow and irregular flight, and progress on the ground by running or walking. They are somewhat nocturnal in their habits. Their notes are shrill and plaintive. They subsist on worms, mollusks, insects, larvæ, &c. They make scanty nests on the ground, and their eggs, pyriform in shape and four in number, are richly spotted. They are monogamous; and more or less gregarious, and sociable always.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus VANELLUS.

LAPWING.

VANELLUS CRISTATUS.—*Wolf and Meyer.*

PLATE XXIII.

Tringa vanellus, Linn. Syst. Nat. i. p. 248 (1766).

Vanellus cristatus Wolf and Meyer, Macgill. Brit. B. iv. p. 133 (1852); Seebohm, Hist. Brit. B. iii. p. 57 (1885); Dixon, Nests and Eggs Brit. B. p. 253 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 126 pl. 40 (1896).

Vanellus vulgaris Bechstein, Dresser, B. Eur. vii. p. 545, pl. 531 (1875); Yarrell, Brit. B. ed. 4, iii. p. 283 (1883); Lilford, Col. Fig. Brit. B. pt. xix. (1891).

Vanellus vanellus (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 170 (1896); Sharp, Cat. B. Brit. Mus. xxiv. p. 166 (1896).

Geographical distribution.—*British*: The Lapwing is widely and generally distributed throughout the British Islands, in all suitable districts including the Hebrides, the Orkneys, and the Shetlands. It is commonest in Scotland and Ireland, and more widely spread in winter than in summer, during the former season visiting the Channel Islands. *Foreign*: Palæarctic region, encroaching on the Nearctic region in the extreme west and east; parts of the Oriental region in winter. It is an accidental visitor to Greenland and Jan Mayen, a summer visitor to Iceland and the Faroes. It breeds in localities suited to its requirements throughout Europe, south of the Arctic circle, and in small numbers in North Africa as far south as Egypt. It is a resident in Europe south of the Baltic; but the birds that breed further north are migratory, and winter in Asia Minor, the basin of the Mediterranean (including Africa north of the Great Desert), the Canaries, Madeira, and the Azores, whilst it has been known to stray as far as Barbadoes (*vide* Col. Feilden). In Asia it does not appear to range further north than lat. 55° (although, according to Bogdanow, it reaches ten degrees further north: a circumstance which seems probable, as it is an occasional wanderer to Alaska), but it is a common summer migrant to South Siberia, Turkestan, Mongolia (including the Thian-Shan range up to 11,000 feet), and may probably breed in the north island of Japan. The Asiatic birds winter in Persia, North India (south to 25° N. lat.), China, and Japan.



Allied forms.—None of sufficient propinquity to require notice.

Habits.—The Lapwing is by far the best known and most widely distributed of the Plovers frequenting the British Islands. It is a resident, but changes its ground a good deal with the season, and in autumn its numbers are largely increased by the arrival of migrants from Continental Europe. The haunts of the Lapwing are rough, unenclosed lands, moors, pastures and fallows, commons and heaths, marshes, broads, and saltings. At all seasons it is a shy, wary species, but becomes much tamer than usual during the nesting season, when its great solicitude for its young causes it to suspend its habitual caution. The most characteristic feature of the Lapwing is its singularly erratic and prolonged flight. The wings are broad and rounded, and move in a slow, deliberate, and regular manner. I cannot express this bird's movements more aptly now than I did eighteen years ago in my *Rural Bird Life*. The moment an intruder appears in their haunts the watchful Lapwings rise one by one, and with ever flapping pinions begin to sail about high overhead. Now the birds soar seemingly without effort, then on flapping wings they wheel round and round. Anon they dart rapidly down, as if hurling themselves to the ground, and then, mounting the air again with easy grace, they fly in ever-changing course, darting, wheeling, tumbling, and reeling, as though beating time with their pinions to their wailing and expressive cries. As the cause of their alarm retreats the birds soon settle again, each bird generally keeping its long wings expanded and elevated for a moment before gracefully folding them. The Lapwing both runs and walks well, but it rarely wades. All through the year the Lapwing is to a certain extent gregarious, and usually breeds in more or less scattered colonies. In winter, however, its gatherings are the largest, and during this season immense flocks may often be seen retreating before a coming storm, or shifting their ground from one district to another from a variety of causes. This bird is also very nocturnal, even in summer, and all night long its peculiar notes may be heard in its haunts. It often becomes particularly noisy and active just after dusk. Flocks of flying Lapwings usually pass through the air in a scattered throng, but as a rule the advance guard present a very even line. The note of this Plover is a peculiar mewling or nasal *pee-weet*, variously modulated into *weet-a-weet pee-weet-weet*; whilst during the pairing season the male still further modulates this note into several distinct cries. In autumn the Lapwing becomes more gregarious, and most of the summer stations on high exposed ground are deserted for the winter. The bird then often becomes remarkably numerous in littoral districts, on the wild saltings and rough marshes where an abundant supply of food can be obtained in almost all weathers. Great numbers of these Plovers are killed at this season for the table, but they do not command either the higher price or the ready sale of the Golden Plover, and their flesh is not only dark but often accompanied by an unpleasant taste. Shot during early autumn,

however, they are far from unpalatable. The food of the Lapwing consists of worms, snails, grubs, insects, seeds, and tender shoots and various ground fruits growing in the bird's more upland haunts.

Nidification.—The Lapwing is an early breeder. As a rule, if the season be fairly forward, the first eggs are laid at the end of March, but fresh eggs may be found in greatest abundance throughout April, less frequently in May, and occasionally in the beginning of June. Birds breeding in warm, sheltered southern localities are of course much earlier than those living in more exposed and northern districts. The nest is either made on the moors, near the shelter or even in the centre of a tuft of rushes, on the top of a mole-hill, on the bare ploughed land, or on the grass. It is merely a hollow, into which a few scraps of dry herbage are collected, and in many cases no provision whatever is made. The eggs are normally four in number, but I have been reliably informed of a clutch of five. At least two other similar instances have been recorded. They vary from buff to olive in ground-colour (in rare instances very pale blue), blotched and spotted with blackish-brown and grey. They measure on an average 1·9 inch in length by 1·3 inch in breadth. Both parents assist in the task of incubation, which lasts from twenty-five to twenty-six days. The hens will continue laying from time to time after their eggs are taken, but one brood only is reared in the year. The eggs of this Plover are a highly-prized table delicacy, and are much sought after for the markets, the earliest of the season often commanding as much as twelve shillings a dozen retail. Numbers are sent to this country from the continent, and the eggs of other species are not unfrequently passed off for them by unscrupulous dealers. The Lapwing as a rule does not manifest much concern for the safety of its eggs, apparently well aware that their protective colour will shield them from discovery; but when the young are hatched the old birds often become very demonstrative, and will reel and tumble along the ground, or sweep round an intruder's head, all the time uttering wailing notes of alarm.

Diagnostic characters.—*Vanellus*, with a long crest, the upper plumage loricated with metallic tints, with no white on the wing coverts, and with the upper and under tail coverts chestnut. Length, 13 inches.

Family CHARADRIIDÆ.
Subfamily CHARADRIINÆ.

Genus VANELLUS.

SOCIABLE LAPWING.

VANELLUS GREGARIUS—(*Pallas*).

PLATE XVII.

Charadrius gregarius, Pall. Reis. Russ. Reichs. i. p. 456 (1771).

Chettusia gregaria (Pall.), Dresser, B. Eur. vii. p. 527, pl. 528 (1875).

Vanellus gregarius (Pall.), Dixon, Nests and Eggs Non-indig. Brit. B. p. 225 (1894);
Seebohm, Col. Fig. Eggs Brit. B. p. 127 (1896).

Chætusia gregaria (Pall.), Sharpe, Handb. B. Gt. Brit. iii. p. 173 (1896); Sharpe,
Cat. B. Brit. Mus. xxiv. p. 174 (1896).

Geographical distribution.—*British*: One example only of the Sociable Lapwing has been recorded as British, which, through an error of identification, was overlooked for nearly thirty years. It appears to have been shot from a flock of Lapwings near St. Michael's-on-Wyre, in Lancashire, in the autumn of 1860, where it remained in a case with other birds as a Cream-coloured Courser, even being recorded as such (*Yarr. Brit. B.*, ed. 4, iii. p. 241). It subsequently changed owners, and eventually was correctly identified, and exhibited at a meeting of the Zoological Society by Seebohm on November 20th, 1888. *Foreign*: South-central Palæarctic region. It is of accidental occurrence only in Western Europe; in Italy (four examples), Spain (one, probably), Poland (two, seen and identified by Professor Taczanowski). It breeds on the steppes of South-eastern Russia, from the Crimea, north to Sarepta (*Seebohm*), and to lat. 53° (*Bogdanow*), and south to Astrakhan and the Caucasus; on the plains of South-west Siberia and Turkestan, as far east as the Lake Saisan basin in the province of Semipolatsinsk, and Western Mongolia. It winters in Arabia, Egypt, Nubia, and Abyssinia, and on the plains of India, abnormally wandering south to Ceylon.

Allied forms.—*Euhyas leucura*, an inhabitant in summer of the steppes of Western Turkestan, and in winter of North-east Africa and North India. Accidental in Europe: South-east Russia, Malta, south of France. Differs from the Sociable Lapwing not only generically, but amongst other important characters, in having a white tail.

Habits.—The habits of the Sociable Lapwing during its summer sojourn on the steppes of Central Asia are imperfectly known; but of the bird's life-history during its winter residence in India we are fortunately much better acquainted, thanks to the observations of Hume, Butler, Irby and others. It is said to be a dweller on the sand plains, especially common in Oudh and Kumaon, and is always observed in parties or large flocks. Hume states that in Scinde its favourite haunts are waste uplands near to cultivated districts, and that it keeps together in flocks of from twenty to a hundred. It is by no means a shy bird, but very fearless until repeatedly fired at. On the ground, Irby remarks that it looks very similar to a Golden Plover, but on the wing it resembles more closely allied birds, and flies near to the ground, unlike the typical Plovers. Colonel E. A. Butler says that it frequents open sandy and grass maidans and bare or uncultivated ground. Its food is said to be of an insectivorous nature—grasshoppers, locusts, spiders, beetles and larvæ. Its note is described as a peculiar cry, which is not uttered frequently.

Nidification.—Of the habits of the Sociable Lapwing during the nesting season nothing whatever is known. It is said to frequent the steppes and plains for breeding purposes, but its nest has never been described. All that is known respecting its eggs is contained in Dresser's *Birds of Europe*. That naturalist writes:—"A single egg sent to me by Mr. Möschler, who informs me that it was obtained by his Sarepta collector, with the birds, closely resembles eggs of the Common Lapwing (*Vanellus cristatus*), but is, if anything, rather paler in ground-colour, and a trifle more sparingly marked with spots and blotches."

Diagnostic characters.—*Vanellus*, with no crest, with the greater wing coverts white, with brown bases, and with the tail coverts white. Length, 12 inches.

Subfamily HIMANTOPODINÆ.—The Stilts and Avocets.

The Stilts and Avocets may be distinguished from other members of the *CHARADRIIDÆ* by the absence of a dertrum from the bill, which is long, slender, and either straight or curved upwards. The bill is further peculiar in having the nasal orifice situated in the basal fourth, as measured from the frontal feathers. The metatarsus is finely reticulated, and never less in length than twice that of the middle toe. This subfamily contains three well-marked genera.

Genus HIMANTOPUS, or Stilts.

Type, HIMANTOPUS MELANOPTERUS.

Himantopus, of Brisson (1760).—The birds comprising the present genus are characterised by having a long, slender, nearly straight bill, only slightly webbed feet, and no hind toe. The wings are long and pointed, the first primary being the longest; the tail is rounded. The metatarsus is long, more than twice that of the middle toe and claw; a great portion of the tibia is devoid of feathers. The bill is long, slightly recurved at the point; nostrils lateral, linear, and elongated.

This genus is composed of seven species, one of which (*H. Picatus*) appears to be of doubtful distinctness, locally distributed in the Australian, Neotropical, Ethiopian, southern Palæarctic and Nearctic, and Oriental regions. One species is an accidental visitor to the British Islands.

The Stilts are dwellers in salt marshes, on low-lying coasts, and on the banks of lakes. Their flight is rapid, graceful and sustained, and on the ground they walk and run with elegant ease. Their notes are clear and loud. They subsist principally on insects and small univalves. They make scanty nests near the water on the ground, and their eggs are usually four in number, and spotted. They are monogamous, and at all times of the year are more or less gregarious, usually breeding in colonies.

Family CHARADRIIDÆ.

Genus HIMANTOPUS.

Subfamily HIMANTOPODINÆ.

COMMON STILT.

HIMANTOPUS MELANOPTERUS.—*Meyer*.

PLATE XXIV.

Charadrius himantopus, Linn. Syst. Nat. i. p. 255 (1766).**Himantopus melanopterus** Meyer; Macgill. Brit. B. iv. p. 312 (1852); Seebohm, Hist. Brit. B. iii. p. 79 (1885); Lilford, Col. Fig. Brit. B. pt. xiii. (1890); Dixon, Nests and Eggs Non-indig. Brit. B. p. 237 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 129, pl. 38 (1896).**Himantopus candidus** Bonn.; Dresser, B. Eur. vii. p. 587, pls. 535, 536 (1877); Yarrell, Brit. B. ed. 4 iii. p. 305 (1883).**Himantopus himantopus** (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 188 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 310 (1896).

Geographical distribution.—*British*: The Common Stilt is an occasional straggler on migration to the British Islands, chiefly individuals that have overshot the mark on their way to their European breeding grounds in spring, but occasionally stray birds that have joined the western stream of migration in autumn. It has been known as an accidental visitor to our shores for upwards of two hundred years. It is most frequently observed on the south and east coasts of England, especially in Norfolk (twelve examples); but occasionally met with inland, in Notts, Oxford, Somerset, etc. It is very rare in Scotland, where, however, it has been met with as far north as the Orkney and Shetland Islands. In Ireland about half-a-dozen examples are on record. *Foreign*: Southern and Western Palæarctic region, Oriental and Ethiopian regions. It is a summer visitor to the marshes of Southern Spain and Portugal, the delta of the Rhone, Sicily, the Danube valley (Neusiedler See, near Vienna), and the lagoons of the Black Sea. Elsewhere in Europe it is only an accidental straggler on migration, visiting Northern France, Holland, Denmark, and Germany. It is a resident in many parts of Africa, where it has been found breeding as far south as the Berg river, and is said to do so on the coasts of Madagascar. It is most abundant in the Ethiopian region during winter, its numbers being then increased by migrants from the northern shores of the Mediterranean: but it is said to be a resident in Algeria, and is an abnormal migrant to the Canaries. Eastwards it is a summer visitor to the Kirghiz and Kalmuk Steppes, Asia Minor, Palestine, North Persia, Turkestan, and Afghanistan, the birds breeding in this area wintering in Africa,



India, and Burmah; whilst stragglers at that season have been known to wander into North China, Cochin China, Timor, the Philippines, Borneo, and New Zealand. The most extensive breeding grounds appear to be in India and Ceylon, where the bird is a resident, although, as previously stated, its numbers are increased during the cold season.

Allied forms.—*Himantopus leucocephalus*, breeding in Australia and wintering in the Malay Archipelago, Borneo, New Guinea, etc. Differs from the Common Stilt in having the entire head white and the back of the neck black, separated from the black of the back by a white collar. The New Zealand Pied Stilt has been separated from the foregoing under the name of *H. picatus*, and is apparently an intermediate form, the result of interbreeding between *H. leucocephalus* and *H. melas*, the Black Stilt of New Zealand. The representative species in the Nearctic and Neotropical regions are: *H. mexicanus*, breeding in the southern half of South America, wintering in the northern half of that continent; resident in the central districts. Distinguished by having the black on the back of the neck extending over the crown and joining the black on the mantle. *H. brasiliensis*, breeding in the Chilian subregion, many wintering in Southern Brazil. Distinguished by having the black on the back of the neck separated from that of the mantle by a white collar, and extending underneath the eye, but not on to the crown.

Habits.—The passage of the Common Stilt into Europe begins at the end of March and lasts till the middle of April. It migrates in small flocks, probably the birds of a breeding colony journeying in company. Its stay in Europe is seldom prolonged after the middle of November. The colonies of these birds which breed in India are much more extensive than those in Europe. Its principal haunts are salt marshes, especially lagoons, and low, muddy islands. There are few such graceful birds as the Common Stilt: its every movement, either on land or in air, is easy and elegant in the extreme. It may often be watched walking about the mud-banks or standing in the shallow water, tripping lightly over the slimy, treacherous ooze, or sitting with long legs folded beneath it on some dry spot, as if basking in the hot sunshine. They are by no means shy birds, yet if too closely pursued they soon take to the air, often running a little way with wings open before rising. Their flight is slow and straight, the neck outstretched, and the long legs pressed close to the body under the tail, beyond which they project for some distance. The wings are beaten with slow and regular motion, and during flight the bird from time to time droops its legs as if about to alight, although high above the ground. They are said to be tame and rather quiet birds, but when their breeding places are invaded they soon become noisy in their anxiety for their eggs and young. The usual call-note is a clear *kee-kee-kee*, and the alarm notes may be syllabled as *kit-kit-kit* and a rattling *peur-r-ree*. The food of the Common Stilt consists of mollusks, and such aquatic insects as beetles, gnats, dragon-flies, etc.

Nidification.—The date of the breeding season of the Common Stilt varies a good deal according to locality. In Spain, Stilts commence laying by the end of April or first few days of May. In the valley of the Danube, near the Black Sea, they are more than a month later; whilst in India the greater number of eggs are laid in June, but the birds begin to lay about the same time as those that breed in Spain. This bird breeds in colonies of varying size, some consisting of a few pairs only, others of several hundreds. The nest is made in a great variety of situations, and varies considerably in size and materials. If the ground be wet the nest is more bulky than when made in drier situations. Some nests are quite in the water, amidst heaps of dead reeds and other aquatic vegetation, rising from two to three inches above the water-level: others are made on the mud, and are smaller. A great breeding station of this bird is situated at some salt works near Delhi, in Upper India. These works consist of many acres of shallow pools lined with lime, and divided from each other by strips of ground from one to six feet in breadth. On these narrow strips, and in the shallowest of the pools, the birds make their nests. These are remarkably curious structures—little platforms made of pieces of lime, raised about three inches high and from seven to twelve inches across, on which is strewn a small quantity of dry grass as a bed for the eggs. Many nests are made close together, and the birds are remarkably tame, allowing the workmen to pass them closely as they sit on their eggs. When disturbed at the colony the birds rise from their eggs, or run from them with elevated wings before taking flight. The eggs are four in number, pyriform, and pale buffish-brown in ground-colour, streaked, spotted, and blotched with blackish-brown, and with underlying markings of grey. They measure on an average 1·7 inch in length by 1·2 inch in breadth. But one brood is reared in the year.

Diagnostic characters.—*Himantopus*, with the head and neck white (adult). - Immature birds have the back of the neck and the crown black. In first plumage the dark parts are brown, mottled with buff. Length, 13 to 14 inches.

Genus RECURVIROSTRA, or Avocets.Type, RECURVIROSTRA AVOCETTA.

Recurvirostra, of Linnæus (1766).—The birds comprising the present genus are characterised by combining a long, slender, deeply recurved bill with webbed feet and a hind toe. The wings are long and pointed, the first primary being the longest; the tail is rounded. The metatarsus is long, but not more than twice that of the middle toe and claw; a great portion of the tibia is devoid of feathers. The bill is long, weak, and flexible, and recurved for its entire length; nostrils linear and elongated.

This genus is composed of four species, which are locally distributed in the Australian, southern Nearctic, Palæarctic, Ethiopian, and Neotropical regions; Oriental region in winter. One species formerly bred in, but is now a rare straggler to, the British Islands.

The Avocets are dwellers on flat, sandy coasts, marshes, lagoons, and mud-banks. Their flight is airy, graceful, and well-sustained, and on the ground they walk and run with elegant ease. They swim and wade. Their notes are shrill and monotonous. They subsist principally on worms, crustaceans, and aquatic insects. They make scanty nests on the ground, and their eggs, three or four in number, are spotted. They are monogamous, sociable, and gregarious.

Family CHARADRIIDÆ.

Genus RECURVIROSTRA.

Subfamily HIMANTOPODINÆ.

COMMON AVOCET.RECURVIROSTRA AVOCETTA.—*Linnaeus*.

PLATE XXIV.

Recurvirostra avocetta, Linn. Syst. Nat. i. p. 256 (1766); Macgill. Brit. B. iv. p. 306 (1852); Dresser, B. Eur. vii. p. 577, pl. 534 (1875); Yarrell, Brit. B. ed. 4 iii. p. 299 (1883); Lilford, Col. Fig. Brit. B. pt. xiii. (1890); Dixon, Nests and Eggs Non-indig. Brit. B. p. 239 (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 185 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 326 (1896).

Himantopus avocetta (Linn.), Seebohm, Hist. Brit. B. iii. p. 74 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 129, pl. 38 (1896).

Geographical distribution.—*British*: The Avocet is now an irregular straggler on migration to England, still more accidental elsewhere. A melancholy interest attaches to the Avocet, inasmuch that this curious bird once bred regularly in the British Islands, but has long been exterminated as a nesting species by the destruction of its favourite haunts and the persecution of man. For nearly seventy years the Avocet has ceased to breed in this country. It formerly bred in the marshes and on those parts of the coast suited to its requirements, in Lincolnshire, Norfolk, Suffolk, Kent, and Sussex; and it is to these old haunts the occasional visitors seem most attracted, usually making their appearance in spring, as was once their regular practice; less frequently in autumn. Still earlier records show that it frequented the Severn district and Staffordshire. The last colony of Avocets of which we have any evidence was near Salthouse, in the fens (1822—25). This was destroyed by the taking of the eggs for puddings, and the birds for their plumage to make artificial flies for fishermen! The bird appears to have been an accidental visitor only elsewhere, especially in the north and west. About half-a-dozen examples only have been recorded from Scotland, where it has been met with, however, as far north as the Orkneys and Shetlands, and even in the Outer Hebrides. It is of only accidental occurrence in Ireland, chiefly in the south, though once recorded from the estuary of the Moy in the north-west. *Foreign*: Southern Palearctic and Ethiopian regions, Oriental region in winter. It breeds in Europe on some of the islands off the Dutch and Danish coasts, on the marshes at the delta of the Rhone, in the marismas of Southern Spain, the valley of the Danube, notably, it is said, in the

Neusiedler See, near Vienna, and in the lagoons of the Black Sea. To the remainder of the continent, as far north as Southern Scandinavia, it is only an abnormal visitor on migration. South of the Mediterranean it is supposed to breed in suitable localities throughout the African continent, and in Madagascar, where it probably may do so. Eastwards it is a bird of passage across Asia Minor, a few remaining to winter, and a resident in Palestine and Persia, but a summer visitor only to Northern Turkestan, South-west Siberia, South-east Mongolia, and South Dauria, wintering in India (sometimes in Ceylon) and China, including the islands of Formosa and Hainan. Blakiston and Pryer include the Avocet in their list of the birds of Japan, whilst Temminck and Schlegel had long previously included it in their list in the *Fauna Japonica*, but until an example has been obtained and identified by competent authorities it seems probable that the American Avocet may be the species that occasionally visits these islands.

Allied forms.—*Recurvirostra americana*, an inhabitant of North America, from Great Slave Lake in the north to Texas in the south, the more northern birds wintering in the West Indies and Central America. Differs from the Common Avocet in having the secondaries white, the major part of the outer web brown; and in breeding plumage in having the head and neck dull chestnut. *R. rubricollis* (*R. novæ hollandiæ*, of many authors) an inhabitant of Australia, occasionally occurring in Tasmania, New Zealand, Norfolk Island, and New Guinea. Differs from the Common Avocet in having a chestnut head and neck during the breeding season, and in having the combination of the secondaries white on both webs, much white on the scapulars, but none on the tertials.

Habits.—The habits of the Avocet resemble very closely those of the Common Stilt. Like that species it is a migratory bird, arriving at its European breeding places in April and May, and leaving them again in September. Its haunts are low, sandy coasts, salt marshes, lagoons, and muddy islands. In these places it frequents the waterside, and not only wades in the shallows but swims well and lightly whenever it has occasion to do so. It runs quickly over the treacherous muds, and walks with graceful steps hither and thither in quest of food. Although conspicuous enough on the bare muds and sands, or on the short turf of the salt marshes, it is said not to be very shy, but it is careful to keep well out of harm's way notwithstanding. Its flight is similar to that of the Stilt, the neck and legs being outstretched, and in the air the bird's strongly contrasted black and white plumage gives it a very singular appearance. Like the Stilt it is also more or less gregarious, especially in winter, when the flocks are sometimes very large; and it also possesses the habit of running for a little way either just before or after flight. This species frequently alights upon the sea, but although it swims well it is not known to dive. The food of the Avocet is composed of small worms, crustaceans, and various kinds of aquatic insects and

their larvæ. Much of this food is obtained as the bird scoops or draws its long, slender, upturned bill from side to side across the surface of the soft mud or sand. The bill is never probed into the surface. Occasionally an insect is caught as it sits upon the water or flits slowly by. The Avocet often feeds whilst wading in the shallows, and sometimes its head is actually pushed under the surface. When food is captured the bird generally swallows it by tossing up the head. The note of this bird is a somewhat low yet clear *tii-it, tü-it*, most persistently uttered when its breeding grounds are invaded.

Nidification.—The breeding season of the Avocet commences early in May in Jutland; but in the valley of the Danube, where all birds for some unknown reason (possibly influenced by the annual inundations of the great river) nest later, the eggs are not laid until the beginning of June. This bird breeds in colonies of varying size, and all through the nesting season is most sociable. The nests are either placed on the bare sand or mud or on the short herbage of the marshes, and are little more than hollows into which a few scraps of withered herbage are collected. The eggs are generally three or four in number, but in rare cases five are said to have been found. They are pyriform in shape, and pale buff in ground-colour, spotted and blotched with blackish-brown, and with underlying markings of grey. They measure on an average 1·95 inch in length by 1·4 inch in breadth. Both parents assist in the duty of incubation, which according to Naumann lasts from seventeen to eighteen days. One brood only is reared in the year, after which event the birds become even more gregarious. The exact manner in which the old birds, with their long, recurved beaks, convey food to the young is still undetermined. Even in the nestling stage of its existence the bill of the Avocet is distinctly recurved.

Diagnostic characters.—*Recurvirostra*, with the forehead, crown, and hind neck black, and the innermost secondaries white (adult); brown in young in first plumage, the secondaries barred with white. Length, 18 inches.

Subfamily STREPSILINÆ.—The Turnstones.

The Turnstones may be distinguished from other members of the *CHARADRIIDÆ* by the absence of a dertrum from the bill, and by having the nasal orifice extending beyond the basal fourth of the bill. The metatarsus is scutellated in front on the lower half; the remainder reticulated both before and behind. The toes are cleft to the base. In some respects the Turnstones form a connecting link between the Plovers and the Sandpipers. This subfamily contains but a single genus.

Genus STREPSILAS, or Turnstones.

Type, STREPSILAS INTERPRES.

Strepsilas, of Illiger (1811).—The birds comprising the present genus are characterised by having the toes cleft to the base, and the nasal orifice reaching beyond the basal fourth of the bill. The wings are long and pointed, the first primary the longest; tail rather short and nearly even, composed of twelve feathers. The metatarsus is scutellated in front, reticulated behind; the tibia just above the tarsal joint devoid of feathers. The bill is short, thick at the base, tapering to the point, somewhat conical; nostrils basal, lateral, partially shielded by a membrane. Toes, three in front, one behind short and elevated.

This genus is composed of two species, and is practically cosmopolitan. One species is a common visitor to the British Islands on passage, rarer during winter.

The Turnstones are dwellers on the sea-coast, rocky coasts by preference. They are birds of powerful and sustained flight, performing extended migrations; and they walk and run with equal facility. Their notes are clear and shrill, some not unmusical. They subsist principally on small crustaceans, sand-worms, the animals in small shells, etc. They make scanty nests on the ground, and the four pyriform eggs are spotted. They are monogamous, and more or less gregarious and sociable, even during the breeding season.

Family CHARADRIIDÆ.
Subfamily *STREPSILINÆ*.

Genus *STREPSILAS*.

TURNSTONE.

STREPSILAS INTERPRES—(*Linnæus*).

Tringa interpres, Linn. Syst. Nat. i. p. 248 (1766).

Strepsilas interpres (Linn.), Macgill. Brit. B. iv. p. 143 (1852); Dresser, B. Eur. vii. p. 555, pl. 532 (1875); Yarrell, Brit. B. ed. 4 iii. p. 289 (1883); Lilford, Col. Fig. Brit. B. pt. xiv. (1890); Dixon, Nests and Eggs Non-indig. Brit. B. p. 259 (1894).

Charadrius interpres (Linn.), Seebohm, Hist. Brit. B. iii. p. 12 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 119, pl. 38 (1896).

Arenaria interpres (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 176 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 92 (1896).

Geographical distribution.—*British*: The Turnstone is most abundant on the British coasts during spring and autumn passage, a few only remaining to winter. It is commonest on the Scotch and Irish coasts, and probably breeds on the Hebrides and the Orkney and Shetland groups. *Foreign*: Circumpolar region, and widely dispersed, breeding as far north as land extends, but in the Northern hemisphere, apparently in Europe, not south of the Baltic, although there is some evidence to suggest that it may do so in the Canaries and the Azores; and Heuglin seems to have discovered it breeding on the shores of the Red Sea. In winter it is practically cosmopolitan south of the Arctic circle, and a visitor to the coasts of both hemispheres down to the Intertropical realm. The Turnstone is another species with an equatorial base, migrating north and south to breed, although its nesting places are fewer and much less known in the Southern than in the Northern hemisphere. It has been met with inland, amongst other places on the highlands of Yarkand in Central Asia, and on the shores of Lake Nyassa in Central Africa.

Allied forms.—*Strepsilas melanocephalus*, an inhabitant of the coasts of Western America from Alaska to Mexico. Differs from the Common Turnstone in having the chestnut replaced by black, and in the absence of white on the head and neck.

Habits.—Although occasionally met with inland on migration the Turnstone is eminently a coast bird, and at all times of the year lives either on the shore or in the immediate vicinity of the sea. It is best known on passage in our Islands, although a few odd birds occasionally remain with us during the winter, and it would appear that immature non-breeding individuals occasionally stay behind in the winter quarters during summer, or at a considerable distance south of the nesting grounds, although we are convinced that in many cases this is by no means the correct explanation of the phenomenon. Young Turnstones begin to make their appearance on our coasts at the end of July, and the migration continues through August and September, by which latter date most of the birds have passed south. They arrive on their northern passage in our Islands at the end of April, and the spring flight lasts about a month; even in the high north they appear early in June. The Turnstone prefers a rocky or shingly beach to a mud one, and during autumn and winter usually lives in flocks of varying size. Many odd birds, however, may be met with at these seasons, sometimes consorting with other Waders. Most of its time is spent upon the beach in restless quest of food. It is ever running about amongst the pebbles and drifted rubbish on the shore. It indulges in the peculiar habit of turning over shells, pebbles, or other small objects on the beach—hence its trivial name—in search of the small marine animals that often lurk under them; and it is said occasionally to use its breast as well as its singularly shaped beak for the purpose. It not only runs about the dry shore, but frequently wades, and Hume states that he has seen it swimming on the sea just outside the breakers, rising from time to time and flying a little way, then settling on the water again. Its flight is not particularly rapid, and as it generally flies straight and not very far from the ground it is a somewhat easy bird to shoot. It is also fond of sitting on an elevated spot, and Swinhoe states that in China he has seen numbers of this bird perched on stakes and on the ropes suspended between them. The note of the Turnstone is a shrill whistle, resembling the syllable *keet*; the bird also utters a double note, which some authorities syllable as *kitter*, and sometimes the two are uttered in succession, making a treble note. During the love season these notes are uttered so quickly by the male as to form a somewhat musical trill. The food of this species consists of sand-worms, mollusks, crustaceans, and other small marine animals. An example I dissected during the autumn of 1893 had its stomach crammed with dozens of minute shells. It is said that this bird is easily tamed, and according to Dr. Finch is kept in confinement on Pleasant Island (one of the Gilbert group) for fighting purposes.

Nidification.—The Turnstone breeds in June; and although not gregarious during the nesting season, several pairs not unfrequently hatch their eggs in the same immediate neighbourhood. Its breeding grounds are close to the sea, often on low rocky islands. The nest is usually placed amongst the scanty

herbage of the coast, amongst tufts of grass or bushes, and is simply a hollow, often under the shelter of a plant or bush, lined with a few scraps of vegetable refuse. The eggs are four in number, glossy in texture, and vary from pale olive-green to pale buff in ground-colour, boldly blotched, spotted, and clouded with olive-brown and dark reddish-brown and with underlying markings of violet-grey. They are rather pyriform, and measure on an average 1·6 inch in length by 1·1 inch in breadth. Both parents assist in the duty of incubation and one brood only is reared in the year. As soon as the chicks are hatched the broods and their parents repair to the shore, and very soon afterwards the migration south begins. In the high north the entire breeding season lasts about a couple of months only.

Diagnostic characters.—*Strepsilas*, with the chin and throat white. The mottled black, white and chestnut plumage of this species is very characteristic. Length, 9 inches.

Subfamily PHALAROPINÆ.—The Phalaropes.

The Phalaropes may be distinguished from other members of the CHARADRIIDÆ by having the toes furnished with scalloped webs or lateral lobes, and the planta tarsi serrated, as in the Grebes, a peculiarity, we believe, first pointed out by Dr. Sharpe. The toes are united by a web at the base; whilst the metatarsus is scutellated before and behind. The nasal groove extends along the greater part of the upper mandible. This subfamily contains but a single genus, although some recent authorities have sought needlessly to split up the three known species into as many genera.

Genus PHALAROPUS, or Phalaropes.

Type, PHALAROPUS FULICARIUS.

Phalaropus, of Brisson (1760).—The birds comprising the present genus are characterised by having lateral lobes to the toes, and laterally compressed metatarsi. The wings are long and pointed, the first quill the longest; the tail is short and somewhat rounded. The metatarsus is scutellated posteriorly and anteriorly; the tibia just above the tarsal joint devoid of feathers. The bill is moderately long and straight, depressed and weak. Nostrils basal, oval with an elevated border. Toes three in front, one behind articulated.

This genus is composed of three species confined to the northern and temperate portions of the Palæarctic and Nearctic regions. Two species are British, one of which is a local summer visitor, and the other a nomadic migrant to the British Islands.

The Phalaropes are dwellers on the sea coasts and more inland lakes and tarns. They are the most aquatic of the CHARADRIIDÆ, and swim well and lightly, often going hundreds of miles out to sea. They are birds of powerful and well-sustained flight, and walk and run with equal facility. Their notes are shrill and piercing. They subsist principally on insects, crustaceans, and worms. They make scanty nests on the ground, and their pyriform eggs are four in number and double-spotted. They are monogamous; but the males perform the duties of incubation. They are more or less gregarious and social, and often build in scattered colonies.

Family CHARADRIIDÆ.
Subfamily PHALAROPINÆ.

Genus PHALAROPUS.

GREY PHALAROPE.

PHALAROPUS FULICARIUS—(*Linnæus*).

PLATE XXV.

Tringa fulicaria, Linn. Syst. Nat. i. p. 249 (1766).

Phalaropus lobatus (nec Linn.), Macgill. Brit. B. iv. p. 284 (1852).

Phalaropus fulicarius (Linn.), Dresser, B. Eur. vii. p. 606, pl. 538 (1874); Yarrell, Brit. B. ed. 4, iii. p. 310 (1883); Seebohm, Hist. Brit. B. iii. p. 85 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 243 (1894); Lilford, Col. Fig. Brit. B. pt. xxx. (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 130, pl. 38 (1896).

Crymophilus fulicarius (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 193 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 693 (1896).

Geographical distribution.—*British*: The Grey Phalarope is a rare and irregular visitor, chiefly in autumn and winter, and is generally met with sparingly almost every year, occasionally appearing in great “rushes,” or “visitations,” after the manner of the nomadic migrants, in which class it must be placed. It has been most frequently observed on the southern coasts of England; on the eastern coasts least frequently north of the Wash. In Scotland it appears to have been met with from Berwick to the Orkneys, and has been obtained in the Outer Hebrides. It has occurred in Wales, but is altogether rarer on our western coast-line; whilst in Ireland it is of very infrequent appearance, although several were captured in the south during the exceptional visitation of 1886. The last exceptional visitation appears to have been in 1891. By far the most extensive visitation took place in the autumn of 1866, when it has been estimated that upwards of five hundred birds were taken, nearly half of this vast number in Sussex! Twenty years previously, in the autumn of 1846, another irruption took place, which curiously enough again favoured Sussex in a remarkable degree. By a noteworthy coincidence, twenty years later than the great visitation, namely, in the autumn of 1886, another and smaller one occurred; whilst in 1869 it is said an irruption took place of some importance, both of which were almost confined to the south. Many of these visitors wandered from the coast to inland districts. *Foreign*: Circumpolar region, but not known to breed on any part of Continental Europe. Like the Knot, the Curlew Sandpiper, and some few other Arctic birds, it appears to be very local during the breeding



PLATE 100

season, and may possibly, like the Waxwing and Rose-coloured Pastor, change its breeding places periodically. There are certain spots favoured by this species on the islands as well as on the mainland of the coasts of Arctic Asia and America, extending to at least as far north as lat. $82\frac{1}{2}^{\circ}$, and probably to all existing land suited to its requirements in the Polar basin. Among these may be instanced Greenland, Iceland, Spitzbergen, Golcheeka near the mouth of the Yenisei, the Taimur Peninsula, the delta of the Lena, the Tchuski Land north of Kamtschatka,* Alaska, the Parry Islands, and Grinnell Land. To the mainland of Europe it is an accidental straggler only, and is of still less frequent occurrence in North Africa. Although its normal routes across Asia are yet untraced, it appears to cross that continent on migration, many, perhaps, by way of the Pamir, where Severtzow, the Russian ornithologist, says it is a rare visitor, and to winter on the Mekran coast and in Scinde. A straggler has been met with even as far to the south-east as Calcutta. In the far east, Kamtschatka and the Kurile Islands appear to be winter resorts of this species. It has been obtained in Japan (Owari Hondu), as recorded by Dr. Stejneger; whilst it has been known to wander as far as New Zealand. In the New World its wanderings are much the same as in the Old World, and it has been met with on both the eastern and western coasts of America as far south as lat. 40° ; and inland, Audubon speaks of a flock of about a hundred birds on the banks of the Ohio, in lat. 38° ; whilst more recently the late Mr. Salvin and Dr. Sclater have each recorded it from Chili!

Allied forms.—*Phalaropus hyperboreus*, also a British species, and fully treated of in the following chapter. *P. wilsoni*, an inhabitant of America: in the Nearctic region, breeding on the shores of the lakes as far north as Winnipeg, and south to Great Salt Lake and Lake Michigan; in the Neotropical region, ranging from Mexico in the north to Patagonia in the south, although its nesting area is not yet traced. Readily identified from the only two other Phalaropes known by the long, slender bill, which is more than an inch in length. This latter species has been recorded as British from Leicestershire, but the evidence is not sufficiently conclusive to merit its inclusion in the British avifauna.—See *Proc. Zool. Soc.* 1886, p. 297.

Habits.—The migrations of the Grey Phalarope are, as a rule, neither very extended nor very regular. When the birds' northern haunts are disturbed by unusually severe tempests, or long-continued frosts, it draws southwards, often in considerable numbers, but such movements are not made every year, and the Grey Phalarope must be classed as a bird that winters as far north as it possibly can with safety. Except during the breeding season, this bird is not seen much on land, but spends the greater part of its time on the sea, where it is

* Dr. Stejneger met with a flock of Phalaropes, which he identified as the present species, several miles at sea near Behring Island, off the coast of Kamtschatka, on the 21st of August, 1882. No examples, however, were obtained.

frequently met with hundreds of miles from shore, even following in the wake of whales for the sake of catching the various marine animals that are disturbed each time those mighty creatures "blow." This singular habit has acquired for the Grey Phalarope the name of "Whale Bird." Sabine states that he has seen this species swimming about amongst icebergs, miles from shore. It is most expert at swimming, floating very lightly on the water, with a peculiar bobbing motion of the head, but it is not known to dive. At all times it appears to prefer to swim out of danger rather than to fly. It is also remarkably social, and during winter gathers into flocks, sometimes of very large size. Mr. Nelson, writing of this species in Alaska, in June, before the flocks had dispersed to the breeding places, says:—"A little later in the day, as their hunger became satisfied, they began to unite into parties, until fifteen or twenty birds would rise and pursue an erratic course over the flat. As they passed swiftly along, stray individuals and pairs might be seen to spring up and join the flock. Other flocks would rise and the smaller coalesce with the larger until from two hundred to three or even four hundred birds were gathered in a single flock. As the size of the flock increased, its movements became more and more irregular. At one moment they would glide straight along the ground, then change to a wayward flight, back and forth, twisting about with such rapidity that it was difficult to follow them with the eye. Suddenly their course would change, and the compact flock, as if animated by a single impulse, would rise high over head, and after a series of graceful and swift evolutions, come sweeping down with a loud rushing sound to resume their playful course near the ground. During all their motions the entire flock moved in such unison that the alternate flashing of the under side of their wings and the dark colour of their back, like the play of light and shade, made a beautiful spectacle. When wearied of their sport the flock disbanded and the birds again resumed their feeding." The call-note of the Grey Phalarope is a shrill *weet*, and the alarm note, uttered chiefly during flight, has been described as a rapidly repeated *bick-a bick-a*. The Grey Phalaropes that have from time to time visited our Islands were very tame and confiding, doubtless because they had had little experience of man; but Hume states that in Scinde they were wary enough, and the flocks rose simultaneously as soon as a boat approached them. The food of this species consists principally of insects, but crustaceans, small worms, and scraps of vegetable substances are also eaten.

Nidification.—The Grey Phalarope is a late breeder. It resorts to the breeding grounds in May, pairs towards the end of that month, and the eggs are usually laid during the first half of June. They make their nests on the swampy margins of the Arctic pools and lakes, in much the same sort of places as those selected by the Red-necked Phalarope. The nest is merely a hollow in the moss or lichen-covered ground, but sometimes a few dry leaves are added as a lining. The eggs are four in number, pale buff with an olive tinge in ground-

colour, heavily blotched and spotted with rich dark brown, and a few underlying markings of pale brown. They measure on an average 1·25 inch in length by ·87 inch in breadth. In this species the female bird is the more brilliant in colour, and she not only conducts the courtship, but leaves the male to incubate the eggs. The young are hatched early in July, and about a month or six weeks after this event the breeding places are deserted, and the birds repair to the open sea, forming into flocks for the winter.

Diagnostic characters.—*Phalaropus*, with the bill short and wide (the culmen equal to the metatarsus in length), and the central rectrices more than half an inch longer than the outermost ones. In breeding plumage the entire underparts are rich chestnut. Length, 8 inches.

Family CHARADRIIDÆ.
Subfamily PHALAROPINÆ.

Genus PHALAROPUS.

RED-NECKED PHALAROPE.

PHALAROPUS HYPERBOREUS—(*Linnaeus*).

PLATE XXV.

Tringa hyperborea, Linn. Syst. Nat. i. p. 249 (1766).

Lobipes hyperboreus (Linn.), Macgill. Brit. B. iv. p. 291 (1852).

Phalaropus hyperboreus (Linn.), Dresser, B. Eur. vii. p. 597, pls. 537, 539, fig. 2 (1874); Yarrell, Brit. B. ed. 4, iii. p. 315 (1883); Seebohm, Hist. Brit. B. iii. p. 89 (1885); Dixon, Nests and Eggs Brit. B. p. 276 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 131, pl. 38 (1896); Sharpe, Handb. B. Gt. Brit. iii. p. 197 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 698 (1896).

Geographical distribution.—*British*: The Red-necked Phalarope is now only known to breed in a few favoured spots in the Shetlands, the Orkneys, and the Outer Hebrides (North and South Uist, Benbecula, etc.) It formerly bred in Sutherlandshire, Inverness-shire, and Perthshire. To the mainland of Scotland and England, and other island localities, it is now only known as a rare visitor on migration, chiefly in autumn. It is rare on the eastern coast of Scotland, and perhaps most frequent in Norfolk. It has been observed once in Ireland—in November, 1891. *Foreign*: Circumpolar region above the limits of forest growth; Oriental and Southern Palæarctic and Nearctic regions in winter. It is a summer visitor to Southern Greenland, the Faroes, Iceland, Northern Scandinavia, and to the tundras of the Dovrefjeld in lat. 62°, Nova Zembla, and eastwards across Siberia as far north as land extends, but rarely south of the Arctic circle, except in the far east, where Middendorff observed it breeding on the west coast of the Sea of Okhotsk as far south as lat. 55°; whilst Stejneger records it as one of the commonest breeding summer birds on Behring Island, off the east coast of Kamtschatka. South of these limits in the Old World it is a winter visitor to the coasts of Europe, becoming rare in the Mediterranean basin; being absent altogether, apparently, from North-east Africa, Asia Minor, and Palestine. It passes across Asia on most of the known internal routes of migration, and winters in Persia, on the Mekran coast, and, perhaps, less frequently in Northern India. It is also known on the Japanese coasts on migration, and winters in China and the Malay Archipelago southwards to New Guinea. The New World individuals pass south to winter in the United States, Mexico, and Central America, and occasionally wander as far to the east as the Bermudas.

Allied forms.—*Phalaropus fulicarius*, already treated of in the preceding chapter, and *P. wilsoni* also mentioned in the allies of that species (see p. 181).

Habits.—Although the migrations of the Red-necked Phalarope are not very extended in the western Palæartic region, they are much more so in other parts of the world, as may be gathered from the remarks on the geographical distribution of this bird. It is a bird of the sea, and though it does not appear to wander so far from shore as the Grey Phalarope, it does not visit the land much except during the breeding season. It is a tame and confiding little bird, as I have often remarked, especially when on the pools and lakes where it nests; and at all times it is extremely social. Parties of Red-necked Phalaropes may be seen all the summer through swimming in company. This bird swims remarkably well and buoyantly, scarcely raising a ripple, nodding its head as it progresses, usually in a zigzag direction, across the pool, and picking insects from the water, or snapping at them as they flit by as it goes. It also runs daintily about the swampy margins of the water, and I have seen it walk lightly over floating masses of weed. The Red-necked Phalarope spends most of its time on the water, rarely taking wing, although it can fly both rapidly and well. The note of this species is a rather low but shrill *weet*. Its food consists largely of insects and their larvæ; but worms, crustaceans, and other small marine animals are also eaten.

Nidification.—The breeding season of this species commences in May in Scotland, but in more Arctic latitudes it is several weeks later. Its breeding grounds are returned to each season. These are usually situated on marshy moors, generally in the neighbourhood of pools and not far from the sea. In the valley of the Petchora, Messrs. Seebohm and Harvie-Brown found the nest amongst long grass in the centre of a thick tuft a foot or more from the ground; but in Scotland it is usually made on the ground. This nest is sometimes very slight—merely a hollow lined with a few bits of dry grass and rush; but at other times more substantial and neatly made. The eggs are four in number, buff of various shades or pale olive in ground-colour, blotched and spotted with umber-brown, blackish-brown and pale brown, and underlying markings of grey. They measure on an average 1·1 inch in length by ·82 inch in breadth. The male, as in the preceding species, performs the duties of incubation, and takes the greatest share in bringing up the brood: the female (the most brilliantly-coloured) taking the initiative in the courtship, and, as Mr. Nelson remarks, possessing “all the rights demanded by the most radical reformers.” Messrs. Pearson and Bidwell have recorded (*Ibis*, 1894, p. 234) some remarkable facts respecting the breeding habits of this Phalarope. They say: “In most instances where we saw this species there were three birds—two males and one female. Twice we saw parties of three birds each on the sea, feeding just behind the breakers; repeatedly we

noticed three birds together on the wing; and, nearly every time we came upon them in the small lakes of the tundra, the party consisted of two males and one female. Can this species be *polyandrous*?" When the breeding place is invaded the birds leave their nests and settle on the adjoining pools, displaying little concern for their safety. As soon as the young are reared the birds of a colony (for many nests are often made within a small area) betake themselves to the sea, and as autumn advances the southern movements are commenced. One brood only is reared in the season.

Diagnostic characters.—*Phalaropus*, with the bill tapering from the base to the tip and less than one inch in length. Length, 7 inches.

**Subfamily TOTANINÆ.—The Semi-web-footed
Sandpipers, or Tatlers.**

The Semi-web-footed Sandpipers may be distinguished from other members of the CHARADRIIDÆ by having the middle and outermost toes connected by a web at the base, and a similar but smaller web connecting the inner and middle toes. The nasal groove extends along the greater part of the upper mandible, but the nasal orifice is situated within the basal fourth of it. The metatarsus is scutellated in front, and in the majority of species behind as well. This subfamily has been recently subdivided into no less than seventeen genera by Dr. Sharpe, but probably not more than a third of these are worthy of distinction.

**Genus NUMENIUS, or Curlews,
Type, NUMENIUS ARQUATUS.**

Numenius, of Brisson (1760).—The birds comprising the present genus are characterised by having the metatarsus scutellated in front and reticulated behind, and the bill sufficiently arched for the point to be considerably lower than the plane of the gape.* The wings are long and pointed; tail nearly square. The metatarsus is rather long and slender, the lower portion of the tibia devoid of feathers. The bill is long, slender, and decurved; nostrils lateral, linear, and situated within the basal fourth part of the bill.

This genus is composed of ten species and subspecies confined to the Palæarctic and Nearctic regions during summer, but more cosmopolitan during winter. Three species are included as British, one a very rare abnormal migrant, one a common resident, and one best known on passage and in winter.

The Curlews are dwellers on moors, marshes, and upland wastes in summer, of sea coasts during winter. They are birds of rapid and well sustained flight, and walk and run with ease. Their notes are clear, loud, and not unmusical. They subsist on worms, mollusks, insects, and fruit. They make slight nests on the ground, and their pyriform eggs are four in number and double-spotted. They are monogamous; during winter they are gregarious, and even in summer somewhat sociable. They are shy and wary, and their flesh is not unpalatable.

* Not having had access to a very large series of specimens of *Numenius*, I cannot speak with absolute certainty, but probably the plane of the gape does not extend beyond the basal half of the upper mandible.

Family CHARADRIIDÆ.

Genus NUMENIUS.

Subfamily *TOTANINÆ*.**COMMON CURLEW.**NUMENIUS ARQUATA.—(*Linnæus*).***Scolopax arquata***, Linn. Syst. Nat. i. p. 242 (1766).

Numenius arquatus (Linn.), Macgill. Brit. B. iv. p. 243 (1852); Dresser, B. Eur. viii. p. 243, pl. 578 (1873); Yarrell, Brit. B. ed. 4, iii. p. 499 (1883); Seebohm, Hist. Brit. B. iii. p. 94 (1885); Lilford, Col. Fig. Brit. B. pt. xix. (1891); Dixon, Nests and Eggs Brit. B. p. 272 (1893); Sharpe, Handb. B. Gt. Brit. iii. p. 317 (1896; Seebohm, Col. Fig. Eggs Brit. B. p. 132, pl. 45 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 341 (1896).

Geographical distribution.—*British*: The Curlew breeds on most of the moors and mountains of the British Islands, and on some of the heaths and wild lands in less romantic districts, as for instance in Wilts, Hants, Lincolnshire, and the Isle of Man. Its breeding grounds extend from the highlands of Cornwall to the “moors” of Devon, and the hills of Somerset and Dorset; thence northwards over the Welsh mountains and adjoining uplands, through the Peak and the entire Pennine chain to the Cheviots. North of the Border suitable districts increase, and it becomes even more widely distributed, extending to the Outer Hebrides, the Orkneys, and the Shetlands. The same remarks apply to Ireland, where it is equally generally dispersed. In winter it seeks the coasts, and is then widely distributed on all parts of the sea-board suited to its needs, including the Channel Islands. *Foreign*: Western Palæarctic region, Ethiopian region in winter. It is an accidental visitor to Iceland and the Faroes; a summer resident in Scandinavia, and breeds in Russia as far north as Riga in the west, and the Volga basin in the east. Southwards it breeds in Poland, North Germany, Denmark, and Holland, and is said to do so in Flanders and Brittany; whilst in the east it does so on the Kirghiz and Caucasian Steppes. It passes Europe south of these limits, Asia Minor, and Persia on migration, and winters in Arabia and Africa. If this species visits temperate South Africa normally, there can be little doubt that it breeds there, migrating from a winter base in the Ethiopian portion of the Intertropical or Primogæan realm. It is an occasional wanderer to the Azores, and the Canaries: and has been recorded from the Seychelles and Aldabra Island, as well as from Réunion, Rodriguez, Amirantes, and Providence Bank.

Allied Forms.—*Numenius arquatus lineatus*, an inhabitant in summer of Siberia, in the west as far north as the Arctic circle; but in the east only as far as Dauria and the southern valleys of the Amoor, passing through Turkestan on migration and wintering in India, Ceylon, Burmah, and the Malay Archipelago, abnormally wandering to the eastern coast of Africa. It is the eastern form of the Common Curlew, only subspecifically distinct; none of the diagnostic characters being constant, and with intermediate forms very frequent. Typical examples differ from the Common Curlew in having the lower back uniform white without spots, the axillaries uniform white, the margins of the scapulars white, and the bill seven to eight inches in length. *N. cyanopus*, an inhabitant in summer of East Siberia, passing the Amoor Valley and the coasts of China and Japan on migration, and wintering in Australia. Another set of individuals of this species appear to migrate south from a base in the Intertropical realm, to breed in South Australia and Tasmania, although the nest has not yet been discovered in these latter areas. *N. longirostris*, an inhabitant in summer of temperate North America; and of Mexico, Central America, and the West Indies in winter, though resident in some of the central districts. Both these Curlews differ from the Common Curlew in having the rump uniform in colour with the rest of the upper parts. The former bird in addition is characterised by its nearly white axillaries, barred and streaked with brown. The latter in addition is characterised by its uniform rich buff axillaries, and nearly uniform buff underparts.

Habits.—The haunts of the Curlew vary considerably with the change of season. This species is a resident in our Islands, although its numbers are increased during the colder periods of the year by migrants from more northern latitudes. In summer, however, it frequents inland moors and wild, rough uplands; in winter it descends to the coast, and is then widely distributed on all parts of the shore where sand, mud, and broken rocks are to be found at low water. During high water in many localities the birds retire inland to moors and pastures, returning with remarkable punctuality as soon as the tide begins to ebb. In other districts they visit shingle-banks and low islands to pass the time between the tides. All the year round many parts of the coast are never deserted altogether by Curlews, the young non-breeding birds it is said not visiting the breeding grounds, but remaining behind in the usual winter haunts. Curlews are the very essence of wariness, the shyest and the easiest alarmed birds upon the coast, and perhaps the most difficult to stalk. On bare ground it is simply impossible to get near them, and the only way to make a successful shot is to station oneself on their usual line of flight, and take one's chance as they fly over on their way to and from their feeding grounds. Sometimes odd birds may be successfully stalked whilst feeding amongst the rocks at low water, but the process is a rough and tedious one, and the gunner may well be proud of

his bird *if* he be fortunate or skilful enough to creep up and make a lucky shot. When feeding, the birds are seldom still, but run and walk about searching for their food in the sand and rocks close to the waves, and all the time sentinels seem ever on the watch to sound the warning note, which sends the big speckled birds hurrying away to safer haunts. If fired at, the flock often rises to a good height and flies about in a restless manner, the birds calling to each other all the time. When on regular flight, a flock of these birds usually assumes the shape of the letter V, and as they pass along at great speed the leading bird from time to time drops out of position, and its place is taken by another in turn. During moonlight nights when the state of the tide admits, the Curlew is as active as by day, and feeds on the flats and saltings; and even during summer on the inland moors their wild, mournful notes may be heard through every hour of darkness. The flight of this bird is rapid and strong, the neck is outstretched, and the long legs are pressed close to the body and extend beyond the tail. The long wings are beaten with great speed and regularity, but very often just before the bird alights they are held stiff and expanded. I have often noticed that this species runs a little way with wings half open before rising into the air. It is frequently seen to wade in the shallows, but never, I think, swims unless wounded, whilst it has been known to perch in trees. The usual note of the Curlew is very characteristic—a shrill, far-sounding *curlee, curlee*; and during the breeding season the bird also utters a very peculiar rippling note, almost like bubbling water, which may be expressed as *wiw-i-wiw-i-wiw*, rapidly repeated. For the greater part of the year the Curlew is more or less gregarious, and also associates with many other shore birds; but during the breeding season, although many pairs often nest on the same moor or upland waste, they are not very social. The food of the Curlew varies a good deal according to season. In summer, worms, insects and their larvæ, and various ground fruits and berries are eaten; in winter, sandworms, crustaceans, and mollusks are the principal fare, and various vegetable fragments have been found in the birds' stomach during the latter period. Although a resident with us, the Curlew is a regular bird of passage in many Continental districts, coming to its summer quarters in April and May, and returning during September and October.

Nidification.—In March the Curlew begins to return to its inland breeding places, and the eggs are laid during April and May. Its great breeding grounds are the wild, swampy moors at a considerable elevation above sea-level; but many birds nest on the rough fallows near the moors, and I have known their eggs to be broken during spring tilling. The nest is generally made on some dry patch of the moor, often under the shelter of a little bush or tuft of cotton-grass or rush, or yet again on the bare earth of the fallows, sometimes in a footprint of a horse or cow. This nest is very slight, merely a hollow about ten inches in diameter and two inches in depth, sparingly lined with a few scraps

of dead herbage or dry leaves; in some cases no nest whatever is made. The eggs are four in number, pyriform in shape, and various shades of olive-green or buff in ground-colour, spotted and blotched with olive-brown and pale grey. Sometimes a few streaky scratches of blackish-brown occur. They measure on an average 2·7 inches in length by 1·85 inch in breadth. Both parents assist in the task of incubation, which lasts about a month. When its breeding grounds are invaded by man, the Curlew becomes very noisy, usually flying into the air long before the spot where the nest is situated is reached. One bird is usually on the look-out and conveys the warning to its mate; the cry is taken up by other birds, and soon the whole moor is in a state of commotion. One brood only is reared in the year.

Diagnostic characters.—*Numenius*, with no pale mesial line, with the lower back and rump white, and with the metatarsus more than three inches in length. Length, 21 to 26 inches.

Family CHARADRIIDÆ.
Subfamily *TOTANINÆ*,

Genus NUMENIUS.

COMMON WHIMBREL.

NUMENIUS PHÆOPUS—(*Linnæus*).

Scolopax phæopus, Linn. Syst. Nat. i. p. 243 (1766).

Numenius phæopus (Linn.), Macgill. Brit. B. iv. p. 253 (1852); Dresser, B. Eur. viii. p. 227, pl. 576 (1873); Yarrell, Brit. B. ed. 4 iii. p. 507 (1883); Seebohm, Hist. Brit. B. iii. p. 100 (1885); Dixon, Nests and Eggs Brit. B. p. 274 (1893); Sharpe, Handb. B. Gt. Brit. iii. p. 322 (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 133, pl. 45 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 355 (1896); Lilford, Col. Fig. Brit. B. pt. xxxii. (1896).

Geographical distribution.—*British*: The Common Whimbrel is known only to breed on the Orkneys and Shetlands, most numerous on the latter, and on North Ronay in the Hebrides. Elsewhere in the British Islands it occurs on migration, and during the spring and autumn flights is pretty generally distributed along the coasts. Comparatively few remain with us through the winter, whilst immature and non-breeding birds may be seen in still smaller numbers during the summer. I have met with them on St. Kilda during June. *Foreign*: Northern and western Palæarctic region in summer; Ethiopian region in winter. It breeds in the Faroes and Iceland, and occurs accidentally in Greenland. It is a summer visitor to Scandinavia, breeding on the fells and moors above forest growth; thence it appears to be locally distributed at this season through Lapland and the remainder of North Russia, and is said by Sabanaeff to be common on the Ural Steppes. It passes along the entire coast-line of Europe during migration, as well as by some of the inland routes, and also occurs on passage in Northern Africa, wintering in Arabia, the Azores, Canaries (where it is observed all the year round), Madeira, and on the coasts of tropical Africa, as well as in some few interior districts. It is said that a few young non-breeding birds are found in their African winter quarters during the northern summer, but the southern limits of the Whimbrel are by no means accurately determined, and possibly the bird visits these remote antipodean areas to breed from a winter base in the Primogæan realm.

Allied forms.—*Numenius phæopus variegatus*: Eastern Palæarctic region in summer; Oriental and Australian regions in winter. Breeding range not very definitely known, but probably extends from the valleys of the Obb and the

Yenisei in Western Siberia, eastwards to Kamtschatka, whilst the bird has been known to occur on Behring Island, east of the latter country. This Whimbrel probably passes through Turkestan on migration, although it appears not to have yet been observed there, for it is known to winter in India and Ceylon. Birds breeding further east pass through Dauria, China, and Japan on migration, and winter in Burmah, the Malay Archipelago, and Australia. It is probably examples of this race that have been recorded from various islands in the Indian Ocean Amirante, Aldabra, Madagascar, Réunion, Mauritius, Rodriguez, Seychelles, Providence Bank, Gloriosa, Assumption, and Grand Comoro). It is the eastern form of the Common Whimbrel, only subspecifically distinct, a complete intergradation existing between eastern and western examples of each race. Typical examples differ from the Common Whimbrel in having the rump streaked with dark brown, a peculiarity only observed, and even then not to such a marked extent, in the young of the latter. *N. hudsonicus*, the American representative, breeding in the Arctic portion of the Nearctic region and in undiscovered areas in the far south of the Neotropical region (Patagonia, and possibly still further south), wintering in the American portion of the Intertropical or Primogæan realm. It differs from the Common Whimbrel in having the axillaries and under wing coverts pale chestnut, and the rump uniform in colour with the back. *N. tahitiensis* (most closely allied to the preceding), an inhabitant of Alaska during the breeding season, wintering in the Pacific Islands, on some of which it is supposed to breed. It differs from the Common Whimbrel in having the rump uniform in colour with the back, the axillaries and under wing coverts pale chestnut, and in having hair-like plumes extending beyond the feathers on the thighs.

Habits.—Although the Whimbrel is a much more northern bird, and is best known in our Islands on passage, its habits very closely resemble those of the Curlew. Owing to the remarkable regularity of appearance of this species in spring it is known in many districts of England as the “May bird,” usually arriving on our coasts during the last days of April and the beginning of May. It is observed crossing the Mediterranean from its winter quarters in Africa during April. The return migration begins at the end of July in our Islands and the flight is continued through August and September, the Mediterranean again being crossed during September and October. In autumn, however, the birds fly much higher past our coasts and do not alight in such numbers as in spring. The migrations of the Whimbrel are one of the most impressive known to me, the birds being not only remarkably regular, but very noisy as they hurry across the night sky. A few birds, it should be stated, remain on our coasts all the summer, non-breeding individuals that stop short of the breeding grounds, whilst others lag behind the rest in autumn and spend the winter with us. The Whimbrel migrates in flocks, and these generally pass our coasts at night, often

at an immense altitude, only their faintly-sounding call-notes informing us of their presence overhead. During their stay with us they frequent much the same localities as the Curlew, mud-banks, salt marshes, and flat, low-lying coasts. At first they are by no means shy, as is usual with birds breeding in the Arctic regions, where they are seldom or never molested by man, but the gunners of the coast soon teach them wariness. Their actions on the coast are very similar to those of their larger congener. Their flight is equally rapid and well-sustained, and they possess the same habit of flying about the air, uttering repeated cries when alarmed. Perhaps they do not feed so much on the actual beach as the Curlew, being more partial to the swampy salt marshes, full of streams and pools left by the tide. They wade repeatedly, and are said even to swim occasionally; and they have been observed to be very fond of bathing, throwing the water over themselves as they stood breast-deep in the sea. In autumn and winter the Whimbrel appears to be just as gregarious as the Curlew, but does not associate with other wild fowl to the same extent. The notes of this bird are very similar to those of the Curlew. The bird also possesses the same rippling or bubbling cry—a shrill *tet-ty tet-ty tet-ty tet*, which is heard repeatedly in the air, and has gained for the Whimbrel the local name of “Titteral.” During summer the Whimbrel occasionally perches in trees. The food of this species consists of insects, worms, snails, various ground fruits, and berries in summer, and of crustaceans, sand-worms, and other small marine animals during winter.

Nidification.—The breeding season of the Whimbrel begins about the middle of May, and the eggs are laid from the end of that month until the end of June. Its breeding grounds are the elevated moorlands in the vicinity of the sea. The nest is merely a hollow in the ground amongst heath or other rough herbage, usually in a dry part of the moor, lined with a few bits of dead grass and dry leaves. The eggs are four in number, olive-green of various shades or pale buff in ground-colour, spotted and blotched with olive-brown and reddish-brown, and with underlying markings of pale grey. They measure on an average 2·3 inches in length by 1·6 inch in breadth. At its breeding grounds the Whimbrel is both courageous and pugnacious, and drives off such intruding birds as Gulls and Skuas with a chorus of angry cries. One brood only is reared in the year.

Diagnostic characters.—*Numenius*, with a pale stripe down the centre of the dark crown, and with the lower back much paler than the mantle (white in adult birds, streaked with brown in immature examples). Length, 16 to 18 inches.

Family CHARADRIIDÆ.
Subfamily *TOTANINÆ*.

Genus NUMENIUS.

ESKIMO WHIMBREL.

NUMENIUS BOREALIS—(*J. R. Forster*).

Scolopax borealis, Forst. Phil. Trans. lxii. pp. 411, 431 (1772).

Numenius borealis (Forst.), Lath. Ind. Orn. ii. p. 712 (1790); Dresser, B. Eur. viii. p. 221, pl. 575 (1873); Yarrell, Brit. B. ed. 4, iii. p. 512 (1883); Seebohm, Hist. Brit. B. iii. p. 104 (1885); Lilford, Col. Fig. Brit. B. pt. xxi. (1892); Dixon, Nests and Eggs Non-indig. Brit. B. p. 241 (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 326 (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 133, pl. 45 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 368 (1896).

Geographical distribution.—*British*: The Eskimo Whimbrel is a very rare straggler to the British Islands, on autumn migration. The following occurrences are on record:—England: Suffolk (two examples), November, 1852; Scilly Isles (one example), September, 1887. Scotland: Kincardineshire (two examples), September, 1855 and 1880; Aberdeenshire (one example), September, 1879. Ireland: Sligo (one example), October, 1870. *Foreign*: Northern Nearctic and Southern Neotropical region in summer; American portion of the Primogæan realm in winter. It breeds on the tundras, above the limits of forest growth, from Alaska to the shores of Hudson Bay and Davis Strait. On the west it is said occasionally to wander across Behring Strait to the north-eastern coast of Asia, whilst in the east it appears accidentally to stray to Greenland. Its remote southern breeding grounds in Patagonia and the Falkland Islands are not yet discovered; but there can be no doubt, if the species visits the southern temperate latitudes normally, that it nests in them. It crosses the United States, east of the Rockies, on migration; visits the Bermudas abnormally, and winters in South America.

Allied forms.—*Mesoscolopax minutus*, an inhabitant during summer of Eastern Siberia, passing through Dauria, Japan, and China on migration, and wintering in the Malay Archipelago and Australia; but how far south normally remains to be determined. It closely resembles the Eskimo Whimbrel in general appearance, but is generically distinct, having the back of the metatarsus scutellated like the front—covered before and behind with narrow transverse plates instead of hexagonal scales.

Habits.—Like its congener, the Common Whimbrel, the present species is a migratory bird and a northern one. Its migrations are also performed about

the same time. It passes across the United States in flocks with great regularity during May, appearing at the beginning of that month sometimes before the snow has all melted, and frequenting the inland plains as well as the salt marshes and mud-flats on the coast. A few birds begin to return about the end of July, and the autumn migration extends from that date to the end of October. It has been remarked by observers that this Whimbrel shows more preference for the sea coasts than inland districts in autumn and winter, probably because the supply of food is more regular and constant. Like its allies it is a shy, wary bird, and seldom admits of a close approach unless carefully stalked. In autumn and winter, up to the arrival on the breeding grounds in the following spring, the Eskimo Whimbrel is gregarious, but there is no evidence to show that it is any more social than its allies during the nesting season. The flight of this bird is rapid, and during migration especially is made at a considerable altitude. The bird also possesses the characteristic habit of gliding on motionless pinions before alighting, and elevating them for a moment before they are folded close to the body. Its note is described by Dr. Coues as a soft, mellow whistle, oft repeated; as a chattering cry when on flight; and, when wounded, as a harsh scream. The Eskimo Whimbrel is much attached to certain haunts where its favourite food chances to be abundant, often continuing to frequent the place after being repeatedly shot at. Its food in summer consists of insects, worms, and various kinds of berries and ground fruits, whilst on the coast it is chiefly composed of small mollusks, crustaceans, and other marine creatures.

Nidification.—The breeding grounds of the Eskimo Whimbrel are situated on the barren grounds or tundras of the Arctic regions beyond the limits of forest growth. Like all other Arctic Waders it breeds late, not being able to do so until the ground is free from snow towards the end of June. The nest is placed on the ground of the tundra, and is a mere hollow lined with a few scraps of dry herbage and withered leaves. The eggs are normally four in number. They range from brownish or greyish-buff to greenish-olive in ground-colour, blotched and spotted with brown of various shades, and with pale underlying markings of greyish-brown. They are pyriform, and measure on an average 2·0 inches in length by 1·4 inch in breadth. Although MacFarlane, Richardson, and others have had ample opportunity of observing the breeding habits of the Eskimo Whimbrel, there are many points still unknown. How long the period of incubation lasts, whether both sexes sit, or male or female alone, whether more than one brood is reared, all remain to be determined. MacFarlane states that the hen bird, as a rule, glided from the nest whilst he was still at some distance, so that the eggs were discovered with great difficulty, as they closely resemble surrounding objects in colour.

Diagnostic characters.—*Numenius*, with a pale mesial stripe, and with the primaries unbarred. Length, 14 inches.

Genus LIMOSA, or Godwits.

Type, LIMOSA MELANURA.

Limosa, of Brisson (1760).—The birds comprising the present genus are closely allied to the typical Totani, but appear to differ in the formation of the sternum. In the Godwits the apex of the profile of the keel retreats from the furculum, whilst in the Totani, as in the Snipes, it advances towards it. They are further characterised by having the metatarsus scutellated in front, the bill long, exceeding the tail in length, slightly recurved, expanded and hard and smooth at the tip; and the frontal feathers not extending beyond the gape. The wings are long and pointed, the first quill the longest; the tail is short and nearly even, and composed of twelve feathers. The metatarsus is long and slender, the lower portion of the tibia devoid of feathers. Toes, three in front, one behind articulated.

This genus is composed of six species and subspecies. In the Northern hemisphere they are distributed over the Arctic and temperate portions of the Palæarctic and Nearctic regions during summer, but more cosmopolitan in winter; in the Southern hemisphere the distribution of the genus is not only misunderstood but comparatively little known. That certain species migrate south from the Intertropical realm to breed seems to be unquestionable. Two species are visitors to the British Islands.

The Godwits are dwellers on the moors and tundras and marshes during summer, the sea-coasts during migration time and winter. They are birds of powerful and rapid flight, run and walk with ease, and habitually wade. Their notes are loud and expressive. They subsist on worms, insects, mollusks, etc. Their nests are slight and made on the ground, and their eggs are four in number and double-spotted. They are monogamous, and more or less sociable and gregarious during winter.

Family CHARADRIIDÆ.
Subfamily *TOTANINÆ*.

Genus LIMOSA.

BAR-TAILED GODWIT.

LIMOSA RUFÆ—(*Linnæus*).

PLATE XXVI.

Scolopax lapponica, Linn. Syst. Nat. i. p. 246 (1766).

Limosa rufa, Briss; Macgill. Brit. B. iv. p. 260 (1852); Dixon, Nests and Eggs Non-indig. Brit. B. p. 256 (1894).

Limosa lapponica (Linn.), Dresser, B. Eur. viii. p. 203, pl. 573, fig. 1 pl. 574, fig. 2 (1872); Yarrell, Brit. B. ed. 4, iii. p. 494 (1883); Lilford, Col. Fig. Brit. B. pt. xxii. (1892); Sharpe, Handb. B. Gt. Brit. iii. p. 309 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 373 (1896).

Totanus rufus (Briss.), Seebohm, Hist. Brit. B. iii. p. 156 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 142, pl. 42 (1896).

Geographical distribution.—*British*: The Bar-tailed Godwit is a well-known visitor on spring and autumn migration, most numerous during the vernal flights on the coasts of the eastern counties of England south of the Humber. It is most abundant and widely distributed in autumn, and commonest on the eastern coast line. It passes the Orkneys and Shetlands, the Outer Hebrides, and the Channel Islands on migration; but is commonest in Ireland during autumn and winter, especially on the west coast. By far the greater number of birds that visit us in autumn pass south, but a few remain to winter on our coasts, especially in the east of England; upon the sole authority of Mr. Abel Chapman they are said to occur in thousands even during the hardest winters on the coasts of Northumberland, which is contrary to my own experience on the Lincolnshire coast, as well as to that of most other competent observers. Perhaps some other species has been mistaken for them. *Foreign*: Northern and western Palæarctic region in summer; small part of Oriental region in winter. It breeds on the tundras above the limits of forest growth from Lapland in the west across Northern Europe and Siberia, probably as far east as the valley of the Yenisei. It is an accidental wanderer to the Faroes, and passes the western coasts of Europe on migration to winter in the basin of the Mediterranean, principally in Northern Africa, and occasionally straying to the Canaries. Gambia on the west, and the Somali Country on the east appear to be the southern limits. The birds breeding in West Siberia appear to migrate down the valleys of the Tobol and



the Ural into the Caspian basin, thence across country to the Mekran coast to North-east Africa, and occasionally to the extreme north-west of India, the great mountain chains of Central Asia apparently turning the tide of migrants westwards from the Yenisei Valley into this area.

Allied forms.—*Limosa rufa uropygialis*, northern and eastern Palæarctic region in summer; Australian region during antipodean summer. It breeds on the tundras of Northern Siberia above forest growth, probably from the Taimur Peninsula eastwards to the sea of Okhotsk and across Behring Strait into Alaska. It passes Japan, Mantchooria, and China on migration, and winters in the islands of the Malay Archipelago and Australia. In the present state of our knowledge it is impossible to say whether this race of Godwit furnishes another instance of a species breeding in the Northern and Southern hemispheres and having an Intertropical base. This Godwit is known to visit Norfolk Island, New Zealand, parts of Southern Australia and Tasmania during summer in those regions; but, possibly, its appearance may be abnormal. On the other hand, future research may show that the bird breeds in those latitudes. This is the eastern form of the Bar-tailed Godwit, only subspecifically distinct, and completely intergrading with its western representative. Typical examples differ from the Bar-tailed Godwit in having the prevailing colour of the rump browner, caused by the dark centres of the feathers being larger and more numerous. This form should be looked for on the British coasts, especially during the autumn flights. *L. fedoa*, the America representative of the Bar-tailed Godwit, breeding as far north as Lake Winnipeg, and wintering as far south as the coast of Peru. Distinguished from the Bar-tailed Godwit by having the axillaries and under wing coverts chestnut.

Habits.—The Bar-tailed Godwit begins to leave its winter quarters in North Africa in February, and the stream of migrants slowly percolates into Europe from that date until the end of April. This stream of migrating Godwits breaks upon our coasts towards the end of April and during the first half of May, but does not appear to extend north of Spurn Point, whence the German Ocean is crossed, and the Arctic breeding grounds are reached towards the end of that month or early in June. Birds on the return journey—mostly young—are observed on the British coasts at the end of August, and the autumn flight continues from that date to the end of October or the first week in November. Hume states that in India the earliest occurrence of this species known to him in autumn was the 29th of September, and the latest in spring on the 23rd of March. The birds that pass our coasts in spring are mostly adults on their way north to breed, and excessively wary; but in autumn the flocks are largely composed of young birds which are just as remarkably tame. I have often been allowed to approach within a few feet of single birds on the mud-flats of the

Wash, without their showing the least alarm—only greeting me with what I should say were expressions of astonishment. Probably I was the first human being they had ever seen. During their sojourn on our coasts these birds confine themselves principally to low coasts, where a considerable area of mud is exposed at low tide. They are very fond of frequenting the little creeks and dykes that intersect salt marshes, and during high water often repair short distances inland to wait for the ebb. The Bar-tailed Godwit during autumn and winter is generally a gregarious species, and sometimes unites into very large flocks at the feeding grounds; but these gatherings are easily dispersed, and the birds divide into parties and often fly off in various directions. Hume records similar habits in the winter quarters of this species in Kurrachee Harbour. This Godwit usually walks about the soft muds and marshes, but can, when occasion requires, run with considerable swiftness. Its flight is rapid and often rather unsteady at first, and, like most Waders, the bird frequently skims for a short distance before it alights. When reposing on some mud-bank the long neck is usually drawn in close to the body, and one leg is often held up. It moves about a good deal at night, and is often taken in the flight nets of the Wash at that time. It wades frequently; but never attempts to swim or dive unless wounded. The food of the Bar-tailed Godwit during autumn and winter consists of insects, crustaceans, snails, and sand-worms. Hume remarks that birds shot in India which he dissected had been feeding on what appeared to be minute *acephalæ* or jellyfish. In summer the bird subsists largely on insects and their larvæ, worms, and possibly ground fruits and berries. The flesh of this species is not very palatable, especially when the birds are shot in winter, or after long residence on the coast. A young bird, shot soon after its arrival in our islands in autumn, is in the best condition for the table. The note of this Godwit resembles the syllables *kyä-kyä-kyä*, often very persistently uttered as the birds fly up and down the mud-flats. During the pairing season the male utters a trill.

Nidification.—No thoroughly trustworthy observations of the breeding habits of the Bar-tailed Godwit have been recorded until Mr. H. L. Popham published his Yenisei experiences of this species in the *Ibis* last year (1897). Its breeding grounds are on the swampy moors of the Arctic regions, and apparently very local. Eggs of this bird were obtained by Wolley in Finland on the 29th of May, and he states that it breeds in marshes, and that the nests are hard to find. Mr. Popham met with this Godwit in fair numbers between lat. 69° and 72° in the valley of the Yenisei. He states that never more than one pair occupies the same district when nesting. Like Wolley he experienced great difficulty in finding the nests, which he describes as a slight hollow on the high-lying tundra. These were met with on the 27th of June and the 3rd of July, in each case being in the vicinity of a nest belonging to Buffon's Skua. Both birds take part in the incubation of the eggs. The one upon the nest keeps very close, seldom leaving

it until almost touched by the hand, whilst its mate flies out to meet an intruder at least a mile from the spot, screaming all the time, both in the air and upon the ground, and never leaving him until he is clear of the sacred neighbourhood. The call-note of this Godwit at the nest is described by Mr. Popham as *koo-wak*. The eggs are four in number, olive-green of various shades in ground-colour, spotted and blotched with darker brown, and with underlying markings of grey. They measure on an average 2·1 inches in length by 1·45 inch in breadth. It is impossible to distinguish them from eggs of the Black-tailed Godwit. Probably this species rears one brood only in the season.

Diagnostic characters.—*Limosa*, with the lower back, rump, under wing coverts, and axillaries white, obscurely marked with brown, the tail barred with black and white. Length, 15 to 16 inches.

Family CHARADRIIDÆ.
Subfamily *TOTANINÆ*.

Genus LIMOSA.

BLACK-TAILED GODWIT.

LIMOSA MELANURA—*Leisler*.

Scolopax limosa, Linn. Syst. Nat. i. p. 246 (1766).

Limosa ægocephala (Linn.), *apud*: Macgill. Brit. B. iv. p. 269 (1852); Dresser, B. Eur. viii. p. 211, pl. 574 (1872); Yarrell, Brit. B. ed. 4, iii. p. 488 (1883); Lilford, Col. Fig. Brit. B. pt. xxviii. (1893).

Totanus melanurus (Leisler); Seebohm, Hist. Brit. B. iii. p. 162 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 143, pl. 42 (1896).

Limosa melanura, Leisler; Dixon, Nests and Eggs Non-indig. Brit. B. p. 254 (1894).

Limosa limosa (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 313 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 381 (1896).

Geographical distribution.—*British*: Although the Black-tailed Godwit formerly bred in the eastern counties of England, it is now much rarer than the preceding species. It is half a century ago since the last eggs were taken in Norfolk. It occurs sparingly, but fairly regularly, on spring and autumn passage, on the low-lying coasts of the east of England, south of the Humber; much less frequently elsewhere, although it is said to visit the coast of Lancashire every autumn. It is very much rarer in Scotland, even on the eastern coasts; but it has been observed as far north as the Shetlands; on the west coast it is only accidental. It is of rare occurrence in Ireland, chiefly in autumn. It occasionally strays inland to large sheets of water, and a few laggards are sometimes met with in winter. *Foreign*: Western Palæarctic region; Oriental region occasionally in winter. It breeds in Iceland and the Faroes. On Continental Europe it breeds in Belgium, Holland, Denmark, Scandinavia (occasionally up to the Arctic circle), Poland, North Germany, and Central and Southern Russia. In Asia it breeds in Western Turkestan and South-western Siberia up to lat. 60°, and as far east as the western tributaries of the Obb. It passes Western Europe both by way of the coasts and across inland districts on migration, and winters on the Spanish littoral and in the basin of the Mediterranean, occasionally wandering to the Canaries and Madeira, and down the Red Sea to Abyssinia. The birds breeding in the east appear to pass West Turkestan on migration to winter in the basin of the Caspian, in the Persian Gulf, and in India and Ceylon, those visiting the latter country crossing the Himalayas on passage.

Allied forms.—*Limosa melanura melanuroides*, an inhabitant of the eastern Palæarctic region ; Oriental and northern Australian regions in winter. It breeds from the eastern tributaries of the Yenisei, through the Altai Mountains and the Baikal basin to the valley of the Amoor, apparently not occurring north of lat. 55° in East Siberia. It passes Mongolia and Japan on migration, and winters in China, Burmah, the Malay Archipelago, Northern Australia, and many of the Pacific Islands. This is the eastern form of the Black-tailed Godwit, only subspecifically distinct. In spite of the fact that the area of distribution during the breeding season appears to be discontinuous, the eastern and western forms completely intergrade, a fact owing probably to the winter quarters of each impinging. As may be seen, this is exactly reversed in the Bar-tailed Godwit, in which the breeding area of the two forms overlaps, but the winter area is discontinuous. Typical examples differ from the Black-tailed Godwit only in size, measuring in length of wing from 7·0 to 8·0 inches, instead of from 8·0 to 9·0 inches as in the western race, and in length of tarsus from 2·25 to 3·0 inches, instead of from 3·0 to 3·75 inches. This form should be looked for on the British coasts, especially in autumn. *L. hudsonica*, the American representative of the Black-tailed Godwit, breeding on the tundras of Arctic America from Alaska to Baffin Bay, and probably in Patagonia and the Falkland Islands, wintering in the American portion of the Intertropical realm. It is distinguished from the Black-tailed Godwit by having the axillaries and under wing coverts dark brown instead of white.

Habits.—Flocks of Black-tailed Godwits begin to leave their winter quarters south of the Mediterranean in February, and continue to do so until the middle of March. These birds do not appear to be in any great hurry to reach their breeding grounds, as they pass slowly up the coasts of Western Europe, not reaching our Islands before April and May, which is also the date of their arrival in Denmark. The return migration begins in Denmark and the British Islands in August, and lasts into September; in France it begins in September and continues into October. In Upper India this species does not arrive in any great numbers before the end of October, and most of the birds have departed again by the end of March; but Hodgson states that in Nepal it arrives in September, stays a month before passing south, and returns in March and April. This bird not only frequents the mud-flats and saltings, but more inland marshes and the wet, boggy parts of moors. At its winter quarters in India it is found inland near broads and swamps, usually in the vicinity of rice fields and on the banks of the larger rivers; but in more littoral districts it affects the mud-flats of estuaries by preference. This Godwit usually walks with rather slow, deliberate steps, but it is capable of running very quickly, and often wades in the shallows. Sometimes it sleeps while standing in water up to the breast, with the long neck and bill nestled in the dorsal plumage. In India they are said to be much more easily

approached when in flocks than when in pairs or alone; but curiously enough the reverse is often the case on our coasts. It may frequently be seen in marshy meadows, and occasionally frequents long grass almost as tall as itself. This Godwit, whilst on passage, is remarkably restless, and shifts its ground a good deal, but when once fairly settled in its winter quarters it continues to visit certain feeding grounds for many weeks in succession. Hume states that in India although they have certain spots, especially rice stubbles and fields and patches of wild rice, to which they resort for several hours during the day to feed, they also feed at other times in places to which they resort for the remainder of the day. The food of the Black-tailed Godwit consists of worms, insects and their larvæ, crustaceans, sand-worms, and snails. In summer this food is varied with shoots and roots of aquatic plants; and in winter, according to Hume, rice, whenever available, both cultivated and wild, is this Godwit's favourite food, in addition to which it eats great quantities of millet seed, and the seeds of grass and sedges. Its kind of food, this writer informs us, depends a good deal on what may chance to be to hand, and its gizzard is usually crammed with one variety alone. The call-note of the Black-tailed Godwit resembles the syllables *tyü-it*, but its alarm note is a loud and clear *tyü, tyü*, most persistently uttered when the breeding grounds are invaded by man.

Nidification.—The breeding season of the Black-tailed Godwit commences at the end of April or in May, in Poland and Jutland, a little later in higher latitudes, and the young may be seen fully fledged towards the end of June. Although not strictly gregarious during this period, numbers of nests may be found within a small area of the marshes and swampy meadows on which this species breeds. The nest, found with difficulty, is usually well concealed amongst the herbage, and is often placed in a tussock of sedgy grass, the wettest ground generally being preferred. It is merely a hollow about three inches deep, sometimes but not always rather neatly lined with dry grass and other vegetable refuse. The eggs are four in number, various shades of olive-brown in ground-colour, spotted and blotched with darker olive-brown, and with underlying markings of pale brown and grey. They are pyriform, and measure on an average 2·15 inches in length by 1·5 inch in breadth. As soon as the breeding haunts are invaded the Godwits rise and fly to and fro with noisy clamour, rarely if ever remaining on their nests until approached; and when the young are hatched they become more bold, and venture within a few feet of the intruder's head. They are said to be very pugnacious at this period, and will even attack cattle that chance to stray on to their haunts, and pursue with great fierceness any wandering Crow or Hawk that invades their quarters. One brood only is reared in the year, and as soon as the young can fly the move southwards begins.

Diagnostic characters.—*Limosa*, with the retrices black with white bases, and the axillaries white, sometimes obscurely barred with brown. Length, 16 inches.

Genus MACRORHAMPHUS, or Snipe-billed Sandpipers.Type, MACRORHAMPHUS GRISEUS.

Macrorhamphus, of Leach (1816).—The birds comprising the present genus are characterised by having a long Snipe-like bill, nearly straight, expanded near the tip which is covered by a soft pore-studded skin ; whilst the groove on the lower mandible reaches nearly to the tip, whereas in the Godwits it does not extend beyond half the length. They form a somewhat isolated group, presenting characters similar to those of the Cleft-footed Sandpipers and Snipes (in the bill) and to the Totani in the structure of the foot, which is partially webbed at the base of the toes. The wings are long and pointed. The metatarsus is long ; the tibia for some considerable distance bare of feathers. The nostrils are lateral and basal ; the toes, three in front, one behind somewhat elevated.

This genus is composed of three species and races distributed over the Eastern Palæarctic and the Nearctic regions in summer and the Neotropical and Oriental regions in winter. One species is a rare straggler to the British Islands.

The Snipe-billed Sandpipers do not differ in their general habits and the localities they frequent from their near allies. Their eggs and mode of nidification are also normal Totaninæ.

Family CHARADRIIDÆ.
Subfamily *TOTANINÆ*.

Genus MACRORHAMPHUS.

RED-BREASTED SNIPE.

MACRORHAMPHUS GRISEUS—(*Gmelin*).

Scolopax grisea, Gmelin, Syst. Nat. i. p. 658 (1788).

Macrorhamphus griseus (Gmel.), Macgill. Brit. B. iv. p. 275 (1852); Dresser, B. Eur. viii. p. 187, pl. 571 (1878); Yarrell, Brit. B. ed. 4, iii. p. 357 (1883); Lillford, Col. Fig. Brit. B. pt. xxviii. (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 306 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 394 (1896).

Ereunetes griseus (Gmel.), Seebohm, Hist. Brit. B. iii. p. 168 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 257 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 143, pl. 41 (1896).

Geographical distribution.—*British*: The recorded occurrences on which the claim of the Red-breasted Snipe to rank as “British” is based are as follows:—England: Devonshire (three examples), October, 1801, 1837, and “previous to 1857”; Cumberland (one example), September, 1835; Norfolk (three examples), October, 1836, October, 1840, October, 1845; Middlesex (two examples), one “previous to 1866”; Scilly Isles (one example), October, 1857; Lincolnshire (one example), August, 1882; Lancashire (one example). Scotland: Fifeshire (one example), September, 1867; Lanarkshire (one example), “previous to 1870.” Ireland: Queen’s Co. (one example), November, 1893; Tipperary (one example), November, 1893. It is by no means improbable that some of these examples may belong to the nearly allied Asiatic species about to be mentioned; it is also impossible to say, without examining each specimen, whether all or part belong to the eastern or western form of the American species. It is said, however, that the two Irish examples did actually belong to the western race. *Foreign*: Nearctic region except extreme north-west; Northern Neotropical region in winter. It occurs accidentally in Greenland and in Continental Europe. It breeds throughout the Arctic regions of North America from the Rockies in the west to Baffin Bay in the east, and south to Hudson Bay, and probably the Great Lakes in about lat. 44°. It passes by inland routes, as well as along the Atlantic coasts, and abnormally over the Bermudas on migration, and winters in the West Indies, Central America, and South America, as far south as Bahia in Brazil.

Allied forms.—*Macrorhamphus griseus scolopaceus*, an inhabitant of the North-western Nearctic region; Northern Neotropical region in winter. Probably breeds from the valley of the Saskatchewan, northwards through the lake region and the Mackenzie Valley to Banks Land, and westwards to Alaska and the extreme north-east of Asia, in the Tchuski Land and Kamtschatka. It passes down the Pacific coasts, and inland almost in a line with the Rocky Mountains, and winters in Central America. It occasionally wanders to the Atlantic coasts; has been recorded inland in Asia as far east as the valley of the Lena; and occurs accidentally in Japan. This is the western form of the Red-breasted Snipe, only subspecifically distinct, and completely intergrading with its more eastern representative. Typical examples differ from the Red-breasted Snipe in being less spotted on the underparts in breeding plumage, and in having the lower back less spotted in summer and winter alike. It is also said to be on an average a slightly larger bird. *M. taczanowskii*, an inhabitant, probably, of the valley of the Lena in Siberia during summer, passing through Dauria and Mongolia on migration, and wintering in China, Borneo, Burmah, and India. It differs from both forms of the Red-breasted Snipe in having the middle toe united at the base by a web to both the adjoining toes, and the bill more than three inches in length.

Habits.—The Red-breasted Snipe is a rather late migrant, passing the northern United States from the latter half of April to about the middle of May, and arriving at its Arctic breeding grounds towards the end of that month. As is the case with most Waders in which the young birds do not breed in their first spring, many individuals pass the summer considerably south of the breeding grounds, or even do not migrate north at all in spring, but remain during the summer in their winter quarters. The return migration commences to a great extent with the young birds that leave their birth-place almost as soon as they can fly. These reach even such southern localities as the West Indies by the end of July. During August and September the great bulk of birds pass south, and then this species literally swarms in districts suited to its requirements. As is usual, the autumn passage is made much more leisurely than the spring one, and the migrating parties of a dozen or more individuals often remain for several weeks in a district where food is abundant before passing on again. They are said to be very tame birds whilst on passage, probably because most of them are young and ignorant of man's persecutions. During autumn and winter the Red-breasted Snipe principally frequents the low, flat, muddy coasts, where abundant food can be obtained, but less frequently it is found near inland swamps and marshes. On the muds it runs about in the usual Sandpiper style, occasionally wading through the shallows, and even swimming when it chances to get out of its depth. When alarmed, the flock rises *en masse*, and settles again in the same manner. The flight of this bird is quick and well-sustained, but is not characterised

by the unsteady, wavering movements that are so remarkable a feature in that of the true Snipes. The usual note of the Red-breasted Snipe is said to be a whistle, easily imitated by the sportsman, who often thus lures the bird to its doom. The alarm note is described by Coues as a soft *weet*, uttered as the bird is about to take flight; whilst in the love season the male utters a musical trill, usually whilst hovering above his mate on quivering wings. The food of this bird consists principally of worms and insects, but seeds and various ground fruits are eaten. On the shore it obtains crustaceans, mollusks, and other small marine animals.

Nidification.—The breeding season of the Red-breasted Snipe begins in June, and fresh eggs may be obtained throughout that month. The nesting grounds of this species are situated on the Arctic tundras, the marshy portions of these interminable northern moors, or “barren grounds,” as the Americans term them, where pools are frequent. Sometimes its breeding grounds are close to the sea, at others considerable distances inland. The nest is made upon the ground, often in a tuft of marsh grass, or amongst the short vegetation on the shores of the moorland lakes. It is merely a hollow, scantily lined with a few dead leaves or bits of withered herbage. The eggs are four in number, and vary in ground-colour from pale greenish-brown to pale buffish-brown, blotched and spotted with dark reddish-brown, and with underlying markings of pale greyish-brown. Sometimes a few very dark streaks occur. They are pyriform, and measure on an average 1·7 inch in length by 1·15 inch in breadth. One brood only is reared in the year, and as soon as the young can fly they begin to draw southwards with their parents on their way to their winter quarters.

Diagnostic characters.—*Macrorhamphus*, with no web between the middle and inner toes, and with the lower back much whiter than the mantle. Length, 10 to 11 inches.

Genus BARTRAMIA, or Long-tailed Sandpipers.Type, BARTRAMIA LONGICAUDA.

Bartramia, of Lesson (1831).—The birds comprising the present genus are characterised by having the tail much graduated, the outermost feathers less than the central ones by as much as the length of the hind toe and claw. The metatarsus is very long, being twice the length of the innermost toe and claw. The bill is short, and slightly swollen near the tip. The tibia is bare of feathers for a considerable distance. The wings are long and pointed; toes, three in front, and one behind somewhat elevated.

This genus is composed of a single species, which is distributed over the Nearctic and Neotropical regions, and is an abnormal migrant to the British Islands.

Unlike so many of the Totani, the Long-tailed Sandpiper is a dweller on plains and uplands, and appears rarely to be seen near water, and to pass the coasts on migration only. Its food, habits, mode of nesting, migrations, etc., are described in the account of this species.

Family CHARADRIIDÆ.
Subfamily, *TOTANINÆ*.

Genus BARTRAMIA.

BARTRAM'S SANDPIPER.

BARTRAMIA LONGICAUDA—(*Bechst.*).

PLATE XXVII.

Tringa longicauda, Bechstein, Kurze Uebersicht, p. 453 (1811).

Bartramia longicauda (Bechst.), Yarrell, Brit. B. ed. 4, iii. p. 440 (1884); Lilford, Col. Fig. Brit. B. pt. xxix. (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 267 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 509 (1896).

Totanus bartrami (Wilson), Seebohm, Hist. Brit. B. iii. p. 110 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 245 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 134, pl. 44 (1896).

Geographical distribution.—*British*: Bartram's Sandpiper is a very rare straggler to the British Islands on autumn migration. The following occurrences are on record:—England: Warwickshire (one example), October, 1851; Cambridgeshire (one example), December, 1855; Somerset (one example), no date recorded, some forty-five years ago; Cornwall (two examples), November, 1865, October, 1883; Northumberland (one example), November, 1879; Lincolnshire (one example), October, 1880. Ireland (one doubtful occurrence), autumn, 1855. *Foreign*: Central Nearctic region, Neotropical region. In North America Bartram's Sandpiper breeds in Alaska, Ruperts Land, and the northern United States, from Pennsylvania westwards to the foot of the Rockies, but appears to be very rare on the Pacific coast. It passes along the inland routes of migration as well as down the Atlantic coasts, and abnormally over the Bermudas, and winters in the Southern States, Mexico, the West Indies, and throughout the South American portion of the Intertropical realm. In the Southern hemisphere the breeding grounds of this Sandpiper are not yet defined. It is found in summer—from September to May—in the Argentine, and appears undoubtedly to breed on the plains of that region, and possibly further south in Patagonia. It has been known to wander to Australia, and there are several instances on record of its occurrence in Europe outside of the British Islands: Italy, Malta, Holland, Germany.

Allied forms.—None of sufficient propinquity to need mention.

Habits.—Bartram's Sandpiper is a well-known and very regular bird of passage across the eastern United States. The "Prairie Pigeon," as this species is locally named, crosses the boundless prairies which extend from the Mississippi



to the Rocky Mountains, in countless hosts, on its way north to breed, returning in greater numbers to its winter quarters when the duties of reproduction are over. Great numbers also pass along the coast. The migration north commences in April and lasts into May, by the end of the latter month all the birds breeding in higher latitudes having sped away, only those remaining that breed on the more northern prairies of the States. The return migration commences in August, and by the end of September the most northerly breeding grounds are deserted. When on actual passage this species is said to migrate by night. It is a bird of rapid, powerful flight, and during the breeding season alights on trees and posts, where, with wings elevated, it utters a prolonged note, like the whistling or sighing of the wind. The usual note of Bartram's Sandpiper is described as a mellow whistle; and, when disturbed from the nest, the sitting bird utters an oft-repeated harsh scream. The prolonged whistling note is said often to be heard at night. Bartram's Sandpiper, for the greater part of the year, is a very gregarious bird; and, even in the breeding season, numbers of pairs nest close together. The food of this species consists principally of insects, such as grasshoppers and beetles; but worms and snails are also eaten. In summer and autumn the bird also eats various kinds of ground fruits and berries, seeds, and the buds and shoots of certain plants growing on the prairies. Its flesh is highly esteemed for the table, especially in early autumn, when it is very fat and in good condition.

Nidification.—The breeding season of Bartram's Sandpiper begins towards the end of May or early in June, and, even in northern localities, the eggs are usually laid by the middle of that month. The nest is made upon the ground, amongst the grass of the prairies and uplands, sometimes near the margin of a small pool, or in an open swampy spot near a wood. It is merely a hollow, into which a few bits of dry grass or dead leaves are collected as a lining. The eggs are four in number, varying from pale greyish-buff to pale buffish-brown in ground-colour, spotted and blotched with reddish-brown, paler brown, and underlying markings of grey. They measure on an average 1·8 inch in length by 1·3 inch in breadth. Several nests may often be found quite close to each other, so that as soon as the birds belonging to one are disturbed the others breeding in the vicinity become alarmed, and general confusion prevails. The female incubates the eggs; but the period taken up by this is still unrecorded by American naturalists. She sits closely, and is said to indulge in various alluring antics when scared from the nest. As soon as the broods are grown, Bartram's Sandpiper again begins to join into large flocks, which roam about the uplands in quest of suitable feeding places, until the period of departure for the south or (in the Southern hemisphere) north. But one brood is reared in the season.

Diagnostic characters.—*Bartramia*, with the inner webs of the primaries conspicuously barred, and the tail wedge-shaped. Length, 12 inches.

Genus MACHETES, or Ruffs.

Type, MACHETES PUGNAX.

Machetes, of Cuvier (1817).—The birds comprising the present genus are characterised by having the tail much graduated. The metatarsus is very long, exceeding the bill in length, and the bare part of the tibia is about equal to the metatarsus in length. The bill is short; the wings long and pointed; toes three in front, one behind, elevated. The sternum contains one notch only on the posterior margin. In the male, during the breeding season, the face is bare of feathers and warty, and the body is decorated with a large breast shield and ruff.

This genus is composed of a single species, which is distributed over the Palæarctic region in summer and the Ethiopian and Oriental regions in winter. It is a rare visitor to the British Islands in summer, but fairly common during the two seasons of passage.

The Ruff does not differ in its general habits or in the localities it frequents from allied birds. Its eggs and mode of nidification are also normal Totanina; but there are several features connected with its reproduction of exceptional interest, and which will be described in the account of the species.

Family CHARADRIIDÆ.
Subfamily TOTANINÆ.

Genus MACHETES.

RUFF.

MACHETES PUGNAX—(*Linnæus*).

Tringa pugnax, Linn. Syst. Nat. i. p. 247 (1766).

Machetes pugnax (Linn.), Macgill. Brit. B. iv. p. 171 (1852); Dresser, B. Eur. viii. p. 87, pls. 557, 558 (1878); Yarrell, Brit. B. ed. 4, iii. p. 426 (1883); Lilford, Col. Fig. Brit. B. pt. xvii. (1891).

Totanus pugnax (Linn.), Seebohm, Hist. Brit. B. iii. p. 113 (1885); Dixon, Nests and Eggs Brit. B. p. 264 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 135, pl. 42 (1896).

Pavoncella pugnax (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 270 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 500 (1896).

Geographical distribution.—*British*: The Ruff formerly bred in many of the English marshes; a few pairs still continue to do so in Norfolk and Lincolnshire, although Professor Newton says that there is but one locality left. It is most abundant on spring and autumn passage, but of less frequent occurrence on the west coasts than on the east. It occurs on the Orkneys, and Shetlands, and the Outer Hebrides. It is of regular appearance in Ireland on migration. *Foreign*: Northern Palæarctic region, Ethiopian and Oriental regions in winter. It breeds from the highest known land across Europe and Asia as far east as the Taimur Peninsula, south to Belgium, Germany, and the valley of the Danube in Europe; and south to the Kirghiz Steppes, Western Dauria, and perhaps the valley of the Amoor in Asia. It passes through the basins of the Mediterranean, Black, Caspian, and Aral seas on migration, and winters in the African portion of the Intertropical realm, in Northern India, and in Burmah. Whether the Ruff breeds in South Africa is not yet known, but it is significant that Captain Shelley records a male and female from Nyasaland in August. Abnormal migrants of this species have occurred in Ceylon, Borneo, Japan, Kamtschatka, Behring Island, Canada, the Eastern United States, Spanish Guiana, the Faroes, and Iceland.

Allied forms.—None of sufficient propinquity to need mention.

Habits.—The Ruff is rather a late bird of passage. According to Irby the migration of this species at Gibraltar commences in January, and continues until the end of May; but as the bird does not arrive in Germany or Holland until the beginning of May it must progress very slowly. It does not reach its breeding

grounds in the Arctic regions before the end of May, or the first week or ten days of June. The return migration begins in August, and continues through September into October. A few linger on the British coasts throughout the winter. Both on migration and in its winter quarters the Ruff is decidedly gregarious, and not only frequents the mud-flats and salt marshes on and near the coast, but many inland haunts. The flight of this bird is rapid and well-sustained. It both runs and walks during its search for food, occasionally wading in the shallows. During its short sojourn on the British coasts it seems to prefer mud-flats, and is especially numerous in many of the marshy districts of East Anglia—once a favourite breeding place of this species. The Ruff is a remarkably silent bird, even at the breeding grounds, but it is said to utter a low *whit* whilst on migration. This I have never heard, although I have had many Ruffs under my observation in autumn, both on the south coast and the low-lying eastern counties. The food of the Ruff consists of insects and their larvæ, worms, snails, small seeds, rice, and various vegetable substances.

Nidification.—By far the most interesting portion of the Ruff's economy is that relating to its reproduction. It is a polygamous bird, probably because for some unknown reason the females are greatly in excess of the males, estimated by several competent authorities to preponderate in the ratio of three to one. Like most polygamous birds the male Ruffs are very pugnacious, and during the "hilling" or mating season congregate at certain chosen spots to engage in combat for the favours of the females. The "hills," or fighting places, are generally small patches of open elevated land, where the herbage is short and five or six feet across. These "hills" are resorted to yearly, and have been known to continue in use for fifty years! Here the rival males engage in what seem to be furious and deadly conflicts, although little harm seldom happens to the combatants. The excitement is intense enough, and the weaker birds are driven from the "hills," the birds rushing at each other with their ruffs expanded, jumping into the air and giving thrust after thrust with their bills, which are frequently held pointing downwards for some moments while the collar is displayed. Several duels often take place at the same time on one "hill," and the meets generally take place in the early morning. These combats are of more or less frequent occurrence until the females begin to sit, a period of nearly six weeks' incessant warfare, and which lasts until the ruffs or collars (assumed about April) are either worn away or begin to fall off. Each male pairs with several females, but takes no share in the duties of incubation or in bringing up the brood. The breeding grounds are the swampy moors and fens covered with long grass, either close to the sea or some distance inland. Here the birds are by no means gregarious as soon as the "hilling" season is over, although they are conspicuous enough in their gay, varied plumage. The Reeve makes a slight nest on the ground in the swamps, usually in the centre of a tuft of sedge or coarse

grass, where its discovery is very difficult. It is a slight affair, a hollow lined with a few bits of dry withered herbage. The eggs are four in number, greenish-grey in ground-colour, spotted and blotched with reddish-brown, and with underlying markings of greyish-brown. They measure on an average 1·7 inch in length by 1·2 inch in breadth. One brood only is reared in the year. Incubation, according to Tiedemann, lasts sixteen days. The Reeve is a close sitter; perhaps because she has no watchful mate near by to warn her of coming danger.

Diagnostic characters.—*Machetes*, with the axillaries white, but with no white on the quills or central upper tail coverts. Adult males subject to considerable amount of variation, especially in the colour of the ruff or collar. Length, 12 inches male; 10 inches female.

Genus **HELODROMAS**, or **Green Sandpipers**.

Type, **HELODROMAS OCHROPUS**.

Helodromas, of Kaup (1829).—The Green Sandpipers are very closely allied to the Hard-billed Sandpipers but present several characteristics which seem to warrant their generic separation. Possibly the most important of these is an osteological one. The Green Sandpipers are remarkable for possessing two notches only in the posterior margin of the sternum. They are further characterised by having the tarsus but slightly longer than the middle toe.

This genus is composed of two species, one of which is distributed over the greater part of the Palæarctic region during summer, and parts of the Ethiopian and Oriental regions during winter; the other breeding in the extreme northern and southern portions of the Nearctic and Neotropical regions and wintering in the American portion of the Intertropical realm. One species is a not unfrequent visitor on passage to the British Islands, the other is a rare abnormal migrant to them.

The Green Sandpipers very closely resemble the Hard-billed Sandpipers in their general habits, but in the manner of their nesting differ in certain important particulars, noticed fully in the chapters dealing with them.

Family CHARADRIIDÆ.
Subfamily *TOTANINÆ*.

Genus HELODROMAS.

GREEN SANDPIPER.

HELODROMAS OCHROPUS—(*Linnæus*).

Tringa ochropus, Linn. Syst. Nat. i. p. 250 (1766).

Totanus ochropus (Linn.), Macgill. Brit. B. iv. p. 342 (1852); Dresser, B. Eur. viii. p. 135, pl. 564 (1875); Yarrell, Brit. B. ed. 4. iii. p. 457 (1883); Seebohm, Hist. Brit. B. iii. p. 126 (1885); Lilford, Col. Fig. Brit. B. pt. xxvi. (1893); Dixon, Nests and Eggs Non-indig. Brit. B. p. 248 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 137, pl. 42 (1896).

Helodromas ochropus (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 290 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 437 (1896).

Geographical distribution.—*British*: The Green Sandpiper occurs not unfrequently on spring and autumn migration in our islands, a few remaining over the summer, and a few lagging behind the rest in winter. It becomes rarer in the northern and western parts of Scotland, whilst in the west of Ireland it is even rarer still. It is not yet recorded from the Hebrides nor from the Orkneys and Shetlands. It may possibly breed in Norfolk, Yorkshire, Sussex, and elsewhere, but hitherto it has not absolutely been detected doing so. On the other hand, the birds lingering behind in spring may be immature and non-breeding ones. *Foreign*: Palæarctic region; Ethiopian and Oriental regions in winter. It breeds in the forest swamps from about the latitude of the Arctic circle from the Atlantic to the Pacific. It passes Central Europe on migration, but numbers find a suitable climate at high elevations in which to breed, on the Pyrenees, the Alps, the Carpathians, and the Caucasus. Eastwards its southern breeding range is Turkestan, and the South Siberian mountains. Dr. Abbott obtained it at the end of July in Eastern Turkestan at an elevation of 13,000 feet. The European birds winter in the basin of the Mediterranean, and in the African portion of the Intertropical realm; whilst those breeding in Northern Asia pass that season in Arabia (where it occurs in immense flocks), Persia, India, Ceylon, Burmah, China, and Japan. There can be little doubt, if this bird visits South Africa normally, that it actually breeds there, its unusual mode of nesting contributing to the fact being undetected.

Allied forms.—*Totanus solitarius*, the American representative of the Green Sandpiper, which as it has occurred in the British Islands will be dealt with fully in the following chapter.

Habits.—The Green Sandpiper arrives at its breeding grounds in Pomerania at the beginning of April, but in the Arctic regions it is nearly two months later. The return journey commences in August, and is undertaken rather slowly, and continues through September into October. The haunts of this species are swamps and marshes in forests, the banks of wooded streams, and lowland dykes. It is not much of a coast bird, even in winter. It is a solitary species, seldom seen even in small parties except during early autumn before the broods have got separated, nor does it appear to associate with other Waders. Its flight is rapid and well-sustained; and wherever there is any cover it is by no means a shy bird. Its food is principally composed of insects, but small worms and snails are also eaten. The note of the Green Sandpiper is a rather low and musical *tyë-tyë-tyë*, modulated under alarm or excitement into *tyük-tyük-tyük*. Whether the bird has any trill during the pairing season has not been recorded.

Nidification.—The breeding habits of the Green Sandpiper are remarkably interesting, inasmuch as the bird, instead of making a nest on the ground, lays its eggs in trees, usually at the deserted homes of other species. In some localities the eggs are laid as early as the middle of April, but they are of course produced much later in higher latitudes. During the breeding season the Green Sandpiper is as often to be seen in the trees and bushes as on the ground. A deserted nest of a Blackbird or Thrush, a Jay, or a Ring Dove, or even a Crow, is often selected by the female in which to deposit her eggs. As a rule old nests are selected from three to twelve feet from the ground, but the eggs have been taken from an old drey of a squirrel as many as thirty feet from it, whilst others have been found in a hole in a fallen tree, and on the stump of a tree which had either been felled or blown down. The eggs are sometimes laid in a broad fork on a lodgment of drifted leaves and lichen. Almost invariably the nests or sites selected are close to waters of some kind, and often in marshes. The eggs are four in number (seven are on record, doubtless the produce of two pairs of birds), and vary from creamy-white sometimes tinged with olive, to pale buff in ground-colour, spotted with dark reddish-brown, and underlying spots of pale greyish-brown. They measure on an average 1.55 inch in length by 1.1 inch in breadth. When the young are hatched the parents become very anxious, and flit about the trees and bushes in a remarkable and excited manner.

Diagnostic characters.—*Helodromas*, with the rump and upper tail coverts white, and the axillaries brown, narrowly barred with white. Length, 9½ inches.

Family CHARADRIIDÆ.
Subfamily TOTANINÆ.

Genus HELODROMAS.

SOLITARY SANDPIPER.

HELODROMAS SOLITARIUS—(*Wilson*).

Tringa solitaria, Wilson, Amer. Orn. vii. p. 53, pl. 58, fig. 3 (1813).

Totanus solitarius (Wilson), Seebohm, Hist. Brit. B. iii. p. 130 (1885); Lilford, Col. Fig. Brit. B. pt. xxvi. (1893); Dixon, Nests and Eggs Non-indig. Brit. B. app. 1, p. 336 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 138 (1896).

Helodromas solitarius (Wilson), Sharpe, Handb. B. Gt. Brit. iii. p. 292 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 444 (1896).

Geographical distribution.—*British*: Three recorded occurrences establish the claim of the Solitary Sandpiper to rank as “British.” They are as follows: Lanarkshire (one example), some years previous to 1870; Scilly Isles (one example), September, 1882; Cornwall (one example), October, 1884. *Foreign*: Nearctic region; Neotropical region in winter. It breeds in the northern United States from about lat. 44° up to the limits of forest growth near the Arctic circle. Passes the United States, the Bermudas (abnormally), Mexico, Central America, and the West Indies on migration, and winters in the American portion of the Intertropical or Primogæan realm. If this Sandpiper normally visits the temperate portions of South America, it most probably breeds there, and is another of those species which migrate north and south to breed from an Equatorial base.

Allied forms.—*Helodromas ochropus*, the Old World representative of the Solitary Sandpiper, a British species, and dealt with fully in the preceding chapter. Some nine years ago, Brewster described a form of this Sandpiper from the Pacific coast of North America, under the name of *Totanus solitarius cinnamomeus*. It is said to differ in being larger, the wings greyer, and the pale spots on the upper parts brownish-cinnamon instead of buffish-white. These characters, however, do not appear to be constant.

Habits.—The Solitary Sandpiper arrives at its summer quarters in the northern United States in May; a little later in higher latitudes. The return journey commences as early as the end of July, and in the extreme south lasts into October. In its habits the Solitary Sandpiper very closely resembles its Old World ally the Green Sandpiper. It is of an equally solitary disposition, only

being noticed in small parties shortly after the broods are reared. It is not specially a coast bird, but prefers to run about the margins of pools and streams, occasionally wading through the shallows, and frequenting tidal creeks and salt marshes. Its food is not known to differ from that of the Green Sandpiper, and its note is described as a shrill whistle.

Nidification.—It is a most extraordinary fact that the nesting habits and the eggs of the Solitary Sandpiper are absolutely unknown, for the nest discovered by Mr. Richardson, made upon the ground, does not seem to us sufficiently authenticated. Its breeding grounds are neither unknown nor inaccessible, nevertheless its eggs remain undiscovered. This is most probably because American naturalists have not searched for them in trees. There can be no possible doubt that the Solitary Sandpiper breeds in a similar way to its Old World representative, and lays its eggs in the deserted nests of other birds. During the breeding season it frequents similar localities, forest swamps, and pools. Its eggs, probably, closely resemble those of the Green Sandpiper.

Diagnostic characters.—*Helodromas*, with the axillaries brown narrowly barred with white, and the rump and central upper tail coverts dark, the same colour as the back and rump; primaries unbarred. Length, 9 inches.

Genus TOTANUS, or Hard-billed Sandpipers.Type, TOTANUS CALIDRIS.

Totanus, of Bechstein (1803).—The birds comprising the present genus are characterised by having the frontal feathers extending beyond the line of the gape, and the bill so nearly straight that it is practically on the same plane as the gape. The wings are long and pointed, the first quill the longest; tail variable in shape and, to some extent, in the number of rectrices, even in closely allied species. The metatarsus is scutellated anteriorly and posteriorly; the tibia above the metatarsal joint devoid of feathers. The bill is moderately long and nearly straight, hard at the point; nostrils lateral, linear. Toes, three in front, one behind, small and elevated. The difference between summer and winter plumage is generally trifling, differing considerably in this respect from the Typical Sandpipers.

This genus is composed of eleven species, distributed over the Palæarctic, and Nearctic regions; more cosmopolitan in winter. Ten species are British; some accidental wanderers, some resident, some winter visitors.

The Hard-billed Sandpipers are dwellers on moors, tundras and marshes in summer, on sea coasts in winter. They are birds of powerful, well-sustained flight, and perform extended migrations. On the ground they run and walk with ease, and frequently wade. Their notes are shrill and some not unmusical. They subsist on insects, mollusks, fruit, &c. They make scanty nests, generally placed on the ground, and their pyriform eggs are four in number and double-spotted. They are monogamous, and more or less gregarious and social, especially during winter.

Family CHARADRIIDÆ.
Subfamily TÓTANINÆ.

Genus TOTANUS.

COMMON SANDPIPER.

TOTANUS HYPOLEUCUS—(*Linnæus*).

Tringa hypoleucus, Linn. Syst. Nat. i. p. 250 (1766).

Actitis hypoleucus (Linn.), Macgill. Brit. B. iv. p. 351 (1852).

Totanus hypoleucus (Linn.), Dresser, B. Eur. viii. p. 127, pl. 563 (1877); Yarrell, Brit. B. ed. 4, iii. p. 446 (1883); Seebohm, Hist. Brit. B. iii. p. 117 (1885); Dixon, Nests and Eggs Brit. B. p. 266 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 136, pl. 43 (1896).

Tringoides hypoleucus (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 283 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 456 (1896).

Geographical distribution.—*British*: The Common Sandpiper passes the Channel Islands on spring and autumn migration. It breeds in the moorland districts of Cornwall, Devon, and Somerset, and northwards through Wales to the Peak. Thence it becomes widely distributed in the upland districts, throughout the north of England, and Scotland up to the Orkneys and Shetlands, and west to the Outer Hebrides. From the wild nature of the country and its suitability to the requirements of this species, the bird is widely distributed in Ireland. Elsewhere in England it is chiefly known on spring and autumn passage, but a few occasionally remain on our southern coasts all the winter, as I have recently proved. *Foreign*: Palæarctic region. It breeds throughout Scandinavia, and across Europe and Asia as far north as the Arctic circle. In Europe it breeds as far south as the Pyrenees, the Alps, the Carpathians, the Balkans, the hills of Greece, and the Caucasus; whilst in Asia its summer range extends to Turkestan, Cashmere, China, (where it is a common resident in the Lower Yangtse basin) and Japan. The European birds winter in the African portion of the Intertropical realm, but a few are said to be found all the year round in the basin of the Mediterranean; whilst others, probably immature or abnormal migrants from South Africa, have been noticed to remain during summer in Teneriffe and North-east Africa. The Asiatic birds winter in Arabia, India (although it appears to breed in the Calcutta district), Ceylon, Burmah, the Malay Archipelago, New Guinea, the Solomon Islands, and the northern half of Australia. Whether this species is a normal migrant to the southern half of

Australia and to Tasmania, for breeding purposes is yet unknown. There can, however, be no doubt that the Common Sandpiper breeds in South Africa, and is another of those species with a northern and southern migration from an equatorial base. This Sandpiper has been recorded from Aldabra Island, Réunion, Mauritius, the Seychelles, and Anjuan.

Allied forms.—*Totanus macularius*, the American representative of the Common Sandpiper, an abnormal visitor to the British Islands, and dealt with fully in the following chapter.

Habits.—During summer the Common Sandpiper is the best known and most widely distributed species in the present genus. It is a common bird on the banks of inland lakes and pools, rivers and lochs, especially those where the banks are at all muddy and stretches of gravel are frequent. It is, however, a bird of the wilder districts, and does not haunt the waters of the low-lying counties. It arrives at its breeding grounds in England about the middle of April, passing Gibraltar in its northern flight during March and April, but it seldom arrives in Scotland before the end of April or the beginning of May. In the high north it does not arrive until June. The return migration commences in England as early as the end of July, and continues through August to the end of September. At Gibraltar the autumn flight commences in August and lasts till October. The Common Sandpiper is an active little bird, fond of tripping round the waterside over the mud and sand, and occasionally wading into the shallows. It is not a shy bird, and may be closely approached and watched as it runs about the shore. It often runs with surprising quickness, and whenever it stops for a moment the tail is beaten rapidly up and down several times. It flies well and quickly, usually close to the water, its wings often striking the surface; and during flight it often glides for a little distance, and elevates its wings for a moment just after it drops on to the ground. Yearly it returns to the same haunts, and will make its nest in one particular spot in spite of continual disturbance. Like many other Waders it may often be seen running on walls or palings during the season of courtship, and has been known to perch in trees. The male bird also soars at this period, and utters a short but not unmusical trill. The usual note is a shrill but not very loud *weet*, rapidly repeated when the bird is excited or alarmed, and almost invariably uttered as it rises from the ground. The food of this species is composed of insects and their larvæ, worms, various ground fruits, and in autumn and winter of crustaceans and other small marine animals. Parties of Common Sandpipers may be met with on the sea-coast at the end of July, and during the period of the autumn passage they are fairly numerous on the rocks at low water, but never occur in very large flocks. Here they are just as active and lively as at their inland mountain haunts, and are by no means shy or difficult to approach. They prefer the rocky beach either to mud-flats, sands, or shingle, and are very

fond of frequenting patches of seaweed as soon as the tide has ebbed. It is said that the Common Sandpiper swims well, but I am of opinion that it only does so when wounded. I have known a bird of this species when winged take to the sea, and dive with remarkable skill, flying under water and remaining below the surface for more than a minute at a time.

Nidification.—In our Islands the breeding season of the Common Sandpiper begins in the middle of May, and fresh eggs may be obtained from that date in southern localities to the middle of June in the more northerly ones. I am of opinion this bird pairs for life. It arrives in pairs in spring, and may be seen in pairs with the brood on the sea-coast in autumn just previous to its departure for the south. For many years in succession I have also taken its eggs from one or two strips of ground which were used alternately. The nest is generally not far from the water-side, on a strip of scrubby ground where tufts of wiry grass and little heather bushes occur; but sometimes it is on the banks of one of the streams which fall into the lake; whilst more rarely it is some considerable distance from any water at all. The nest is merely a little hollow, usually under the shelter of a bush or tuft of grass, lined with scraps of dead heath, withered bents, leaves, and sometimes pine needles. The eggs are always four in number, laid with their pointed ends together, and very pyriform in shape. They are pale creamy-buff or yellowish-white in ground-colour, richly blotched and spotted with pale and dark reddish-brown and with underlying markings of violet-grey. They measure on an average 1·5 inch in length by 1·1 inch in breadth. Both parents assist in the task of incubation, but the female sits most frequently. The period of incubation is about three weeks. The parent bird is a rather close sitter, and often remains brooding on the nest until almost trodden upon. It then rises in a hurried manner and commences to reel and tumble along the ground as if wounded, seeking to decoy the intruder from its home. The eggs are very difficult to see, being coloured so much like surrounding objects. Very often I have noticed the sitting bird run for several yards after leaving the nest and then commence its antics. The young are said to remain in the nest for several hours after they are hatched. One brood only is reared in the year.

Diagnostic characters.—*Totanus*, with the axillaries white, patches of white on most of the primaries and on all of the secondaries, but with no white on the rump or upper tail coverts. Eighth and ninth secondaries mottled with brown, not barred; lower throat and upper breast streaked. Length, $7\frac{1}{2}$ to 8 inches.

Family CHARADRIIDÆ.
Subfamily TOTANINÆ.

Genus TOTANUS.

SPOTTED SANDPIPER.

TOTANUS MACULARIUS—(*Linnaeus*).

Tringa macularia, Linn. Syst. Nat. i. p. 249 (1766).

Actitis macularia (Linn.), Macgill. Brit. B. iv. p. 356 (1852).

Totanus macularius (Linn.), Yarrell, Brit. B. ed. 4, iii. p. 452 (1883); Seebohm, Hist. Brit. B. iii. p. 122 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 246 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 136, pl. 43 (1896).

Tringoides macularia (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 287 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 468 (1896).

Geographical distribution.—*British*: In working out the geographical distribution of the Spotted Sandpiper for *A History of British Birds*, Seebohm and myself came to the conclusion that of some twenty recorded occurrences in the British Islands seven were apparently genuine; an eighth has now to be added. They are as follows: Yorkshire (one example), March, 1849; Lancashire (two examples), May, 1863; Sussex (two examples), October, 1866; Aberdeenshire (two examples), August, 1867; Co. Longford (one example), February, 1899. It is most important to point out the fact that all these wanderers with the exception of the Irish example appear to be adult, and in breeding plumage with the underparts spotted. Without wishing to call in question the *bonâ fides* of these seven examples, I desire to point out the extreme improbability of so many adult Spotted Sandpipers reaching this country in autumn, at any rate, in breeding dress. Not only so, but because the Spotted Sandpiper is so different in appearance from the Common Sandpiper, its Old World ally, in breeding plumage, and so very similar in winter plumage, it is perfectly obvious that in the case of attempted fraud on the part of unscrupulous dealers to palm off American examples as British-killed, the greatest chance of success would be to select adult birds in spotted breeding plumage for the purpose. It is the young and inexperienced birds—the birds that have never migrated before—that are the most likely to lose their way, and wander from their usual habitat. Old birds, comparatively speaking, know the route too well to wander from it; and of the great number of birds that stray every spring and autumn, during the latter season especially, the great majority

(probably ninety per cent.) are birds of the year, and new to the road. That the Spotted Sandpiper has visited the British Islands there can be no doubt. I will go further, and say that it is probable the bird comes here much more frequently than is supposed; but it reaches us in first winter plumage, with white unspotted underparts, when it bears so close a resemblance to the Common Sandpiper of the Old World that ninety-nine men out of a hundred upon shooting one would declare it to be of the British species, and not worth preserving. Until the autumn of 1891, I was under the impression that the Spotted Sandpiper could be readily distinguished from its Old World ally by having all the secondaries uniformly barred. During the month of August I shot an example of a Sandpiper in Tor Bay, which appeared to comply with these conditions, and I thought we had got a genuine Spotted Sandpiper at last. I sent the bird to Seebohm, and he very kindly compared it with a large series of both species; but he informed me, after careful examination, that he felt convinced this example was a Common Sandpiper only. The character of the barred secondaries appears, therefore, to be unreliable; and, failing this, I know of no other by which Spotted Sandpipers can be distinguished from Common Sandpipers in winter plumage, or in that of birds of the year. The character of pale legs and feet (in the flesh), I think, is common to both, and I do not attach much importance to the streaked or unstreaked lower throat and breast, although I have given it as a diagnostic character—drowning men will clutch at straws! and bewildered ornithologists are often very glad to seize even the most shady character, rather than be left with none. I am, however, still disposed to regard my example as belonging to the American species. It appears that Seebohm succeeded in finding out of a large series *one* other specimen only, similar to mine, shot at Brighton, and which I am inclined to refer also to *T. macularius*, which will then avert the difficulty of the secondaries not being a constant character. This seems to me the most logical treatment of the case, at least until more information is obtained on the subject of specific distinction. (Conf. *Ibis*, 1892, p. 97.) I may add that the Tor Bay example is now in the museum of the Torquay Natural History Society. The Irish example above mentioned has certainly no better claim to be regarded as a genuine Spotted Sandpiper, seeing that it was obtained in winter, than the Tor Bay specimen, although it has been recorded by Howard Saunders in the new edition of his *Manual of British Birds*. Indeed this specimen has induced him to devote to the species a separate article, whilst the Tor Bay example is completely ignored. *Foreign*: Nearctic region; Northern Neotropical region in winter. It breeds throughout the United States and British North America up to about lat. 60°; passes the Bermudas on migration; winters in Mexico, the West Indies, Central America, and the northern portions of South America.

Allied forms.—*Totanus hypoleucus*, the Old World representative, a British species, and treated fully in the preceding chapter.

Habits.—It is not known that the habits of the Spotted Sandpiper differ in any important respect from those of its Old World ally. The bird frequents similar haunts, the banks of rivers and the margins of lakes. In autumn it gathers into little parties, probably the broods and their parents, and these appear to migrate in company. Its call-note is very similar, and most persistently uttered as the bird rises alarmed from the ground. It possesses the same habit of beating the tail up and down and nodding the head. It feeds on similar substances, and, like the Common Sandpiper, appears never to be very gregarious and often seen solitary.

Nidification.—In its habits during the breeding season, and in the choice of a locality for its nest, it also resembles the Common Sandpiper. Audubon, however, states that in Labrador it made a somewhat elaborate nest of moss, grasses and feathers, built under the ledges of the rocks; but, like a good many more of this naturalist's statements, this one is open to the gravest doubt. The eggs of the Spotted Sandpiper are four in number and pale buff in ground-colour, spotted, and more rarely blotched with very dark reddish-brown, and with underlying markings of pale grey. They measure on an average 1·3 inch in length by 1·0 inch in breadth. The eggs are smaller than those of the Common Sandpiper, and the markings are smaller, darker, and more clearly defined. It is not known that more than one brood is reared in the year.

Diagnostic characters.—The same diagnosis as that given for the preceding species, but with all the secondaries uniformly barred. It should be remarked, however, that the adult in summer plumage is spotted with black on the underparts. Length, $7\frac{1}{2}$ to 8 inches.

Family CHARADRIIDÆ.
Subfamily *TOTANINÆ*.

Genus *TOTANUS*.

WOOD SANDPIPER.

TOTANUS GLAREOLA—(*Linnæus*).

Tringa glareola, Linn. Syst. Nat. i. p. 250 (1766).

Totanus glareola (Linn.), Macgill. Brit. B. iv. p. 346 (1852); Dresser, B. Eur. viii. p. 143, pl. 565 (1877); Yarrell, Brit. B. ed. 4, iii. p. 463 (1883); Seebohm, Hist. Brit. B. iii. p. 133 (1885); Lilford, Col. Fig. Brit. B. pt. xxvi. (1893); Dixon, Nests and Eggs Brit. B. p. 267 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 138, pl. 42 (1896).

Rhyacophilus glareola (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 275 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 491 (1896).

Geographical distribution.—*British*: The Wood Sandpiper is an irregular straggler on spring and autumn passage, most frequent in the east and south; occasionally met with inland. It has been several times obtained in Ireland: (Co. Wicklow (one example), August, 1885; two more examples, August, 1896; Co. Mayo (one example), September, 1898. It has with certainty been known to breed in the now drained Prestwick Car in Northumberland, and doubtless continues to do so occasionally in Norfolk and other suitable districts without attracting notice. Its eggs are said to have been obtained in the neighbourhood of Elgin, but throughout Scotland it is of much rarer occurrence than in England, but few examples only being recorded from the west—the Clyde and Loch Lomond. *Foreign*: Palæarctic region; Ethiopian and Oriental regions in winter. It breeds throughout Europe in suitable localities from the valley of the Danube northwards, but is a straggler only to the Faroes. Eastwards it breeds in Siberia, probably as far north as land extends, and southwards in Turkestan, Mongolia, the north of China, and Kamtschatka. The European birds are well known on passage south of the Danube, and winter in the basin of the Mediterranean, and throughout the African portion of the Intertropical realm. If this species visits South Africa normally we should infer that it breeds there. An example has been obtained on Aldabra Island; whilst Captain Shelley records a female from Karonga, North Nyasaland, shot in June. The Asiatic birds winter in Persia, Beloochistan, India, Ceylon, the Burmah Peninsula, and the Malay Archipelago, but are known in Japan and South China on passage only.

Allied forms.—*Totanus flavipes*, the American representative of the Wood Sandpiper, which as it has occurred in the British Islands will be dealt with fully in the following chapter.

Habits.—The Wood Sandpiper has comparatively small right to its trivial name, the true “Wood” Sandpiper being the Green Sandpiper, the present species frequenting moorlands and tundras where thickets of willows fringe the pools and swamps. The Wood Sandpiper is a rather late bird of passage, passing Gibraltar from about the middle of March to the beginning of May, and arriving in Germany from the beginning of April to the early part of June (which is about the date of its appearance on the British coasts), birds coming at the latter date being on their way to the Arctic regions. This species was first observed in the valley of the Petchora near the Arctic circle by Messrs. Seebohm and Harvie-Brown on the 26th of May; but in the same latitude in the valley of the Yenisei, it did not arrive until the 6th of June. As with most late migrants in spring the return journey commences early in autumn, beginning with August and lasting through September into October. The Wood Sandpiper whilst on passage is said to be very tame, and was observed by Messrs. Seebohm and Harvie-Brown actually near the pools of snow water in the streets of Ust Zylma. A week later the birds were again met with thirty miles to the north at Habariki, where they were feeding by the edges of the marshes and forest streams, and occasionally perching on the topmost branches of the larch-trees. The Wood Sandpiper at its winter quarters is said not to frequent the coast, but confines itself to the marshes and inland streams and pools. It is not gregarious, is usually met with in pairs or alone, and is seldom seen even in parties. In Ceylon it frequents the rice fields, even whilst they are being tilled, running about in quest of food with little show of fear for man. Its food consists principally of insects and their larvæ, small worms, and snails. The alarm note of the Wood Sandpiper is a softly-uttered *tyü-tyü*. During the mating season the male utters a somewhat musical but monotonous trill as he descends on elevated wings after soaring, which begins in a soft and slow strain, but becomes quicker and louder as he reaches a perching place on a tree or a fence, or on the ground, and when his quivering pinions almost touch above his head. This trilling note sounds something like *til-il-il*.

Nidification.—Towards the southern limits of its breeding area the Wood Sandpiper begins to nest early in May, and fresh eggs may be obtained from about the middle to the end of that month. Further north the eggs are laid much later. The nest is generally made on a patch of dry ground close to the swamps, amongst heath, sedge, and coarse rank grass, and often in the immediate neighbourhood of a small willow thicket, in which the parent birds from time to time alight. It is only a hollow in the ground, carelessly lined with a few scraps of withered herbage. In the valley of the Yenisei, Mr. H. L. Popham found the Wood Sandpiper breeding in the deserted nests of other birds, and actually shot a sitting bird from its eggs in the old nest of a Fieldfare. He also remarked that all the birds shot from their nests were males. The eggs are four in number,

creamy-white, pale buff, or very pale olive in ground-colour, boldly blotched and spotted with rich reddish-brown, and with a few underlying markings of pale brown. They measure on an average 1·45 inch in length by 1·0 inch in breadth. The bird sits closely, usually remaining on its eggs until the last moment. One brood only is reared in the year, and both parents tend the chicks with equal solicitude.

Diagnostic characters.—*Totanus*, with the lower back nearly the same colour as the mantle, and the prevailing colour of the upper tail coverts, axillaries, and under wing coverts, white. Length of wing, 4·5 to 5·1 inches. Length, 8½ inches.

Family CHARADRIIDÆ.
Subfamily TOTANINÆ.

Genus TOTANUS.

YELLOW-LEGGED SANDPIPER.

TOTANUS FLAVIPES—(*Gmelin*).

Scolopax flavipes, Gmelin, Syst. Nat. i. p. 659 (1788).

Totanus flavipes (Gmel.), Yarrell, Brit. B., ed. 4, iii. p. 480 (1883); Seebohm, Hist. Brit. B. iii. p. 136 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 250 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 139, pl. 44 (1896); Sharpe, Handb. B. Gt. Brit. iii. p. 303 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 431 (1896).

Geographical distribution.—*British*: One doubtful and two well-authenticated occurrences establish the claim of the Yellow-legged Sandpiper to rank as “British.” They are as follows:—Nottinghamshire (one example), no exact date; Yorkshire (one very doubtful example), October, 1858; Cornwall (one example), September, 1871. *Foreign*: Nearctic and Neotropical regions. It breeds across the North American continent, from the Yukon Valley, in Alaska in the west, to the Hudson Bay territory and Greenland in the east. Its southern breeding range appears to extend to about lat. 44°. It passes through the United States, the Bahamas, West Indies, and Trinidad on migration, a few remaining to winter in the Southern States, but the majority passing on to the American portion of the Intertropical realm. We may, however, remark that Mr. Ambrose A. Lane (*Ibis* 1897 p. 311) states that this species breeds in Northern Chili (Tarapacá) about December! There can be little doubt that this Sandpiper has a northern and southern migration from an equatorial base and that it breeds in the temperate portion of South America, from the Argentine to Patagonia.

Allied forms.—*Totanus glareola*, the Old World representative of the Yellow-legged Sandpiper, a British species, and dealt with fully in the preceding chapter. *T. melanoleucus*, an inhabitant of nearly the same range as the Yellow-legged Sandpiper. Differs from both these allied forms in being larger (wing 8·0 to 7·3 inches, instead of 6·7 to 6·1 inches in *T. flavipes*, and 5·1 to 4·5 inches in *T. glareola*).

Habits.—Like all its allies, the Yellow-legged Sandpiper is a migratory bird. It arrives at its more southerly breeding grounds in North America in May, but is nearly if not quite a month later in the extreme northern limits of

its distribution. Its habits do not differ in any important respect from those of its allies. It frequents moors and tundras during summer, and in autumn and winter muddy creeks, streams, and the shores of lakes and pools, and frequently wades in the shallows. The note of this species is described as an oft-repeated shrill cry, which is imitated by the sportsman, who thus lures the bird within shot whilst on its spring or autumn flights. The food of the Yellow-legged Sandpiper consists of insects and their larvæ, worms, mollusks, crustaceans, and, it is said, small fish. In the north the return migration begins in July and lasts through August and September.

Nidification.—The nest of the Yellow-legged Sandpiper is placed upon the ground, either on the borders of a marsh or near the margin of a pool in the open treeless country. Very often it is under the shelter of a bush. It is simply a little hollow, sometimes, but not always, lined with a few dead leaves and twigs. MacFarlane found nests as early as the 2nd of June, even in the Arctic regions, and in some instances the eggs were hatched by the 19th of June. The eggs are four in number: creamy-white or pale greyish-brown in ground-colour, spotted and blotched with dark reddish-brown, and with large and conspicuous underlying markings of grey and greyish-brown. They measure, on an average, 1·65 inch in length by 1·1 inch in breadth. As soon as the young are hatched the old birds become very anxious for their safety when approached by man. MacFarlane observed the male bird perch in a tree near the nest, and both parents flew from tree to tree for a considerable distance, as if enticing him from the vicinity of their treasures.

Diagnostic characters.—*Totanus*, with the lower back nearly the same colour as the mantle, with the prevailing colour of the upper tail coverts white, and the axillaries and under wing coverts white sparsely marked with brown. Length of wing, 6·1 to 6·7 inches. Length, 10¼ inches.

Family CHARADRIIDÆ.
Subfamily *TOTANINÆ*.

Genus *TOTANUS*.

COMMON REDSHANK.

TOTANUS CALIDRIS—(*Linnaeus*).

PLATE XXVI.

Scolopax calidris, Linn. Syst. Nat. i. p. 248 (1766).

Totanus calidris (Linn.), Macgill. Brit. B. iv. p. 333 (1852); Dresser, B. Eur. viii. p. 157, pl. 568, fig. 1, pl. 569, fig. 2 (1875); Yarrell, Brit. B. ed. 4 iii. p. 469 (1883); Seebohm, Hist. Brit. B. iii. p. 140 (1885); Lilford, Col. Fig. Brit. B. pt. xviii. (1891); Dixon, Nests and Eggs Brit. B. p. 269 (1893); Sharpe, Handb. B. Gt. Brit. iii. p. 299 (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 140, pl. 44 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 414 (1896).

Geographical distribution.—*British*: The Redshank is generally though locally distributed over the marshes of the British Islands during summer, becoming more common in the eastern counties of England, and throughout Scotland, where it extends to the Orkneys and Shetlands as well as to the Outer Hebrides. It is fairly distributed over suitable localities in Ireland during summer. It becomes more numerous during autumn, as great numbers then resort to the coasts on passage, and many remain to winter on them. *Foreign*: Southern Palæarctic region; Ethiopian and Oriental regions in winter. It breeds throughout Europe, including Iceland and the Faroes, with the exception that east of long. 40° its range gradually becomes more southerly, until in the Urals the limits do not extend beyond lat. 58°. It is a resident throughout the basin of the Mediterranean, breeding in North Africa; but to the African portion of the Intertropical realm, and to the Canaries it is a winter visitor only. If the Redshank be a normal migrant to South Africa, we should infer that it breeds there. Notwithstanding Seebohm's statement that this species is a winter visitor to the "entire south coast of the continent," we may remark that the British Museum collection does not contain a single example from that vast district. Eastwards it breeds in Siberia as far north as lat. 55°, and on the mountain ranges of the south of that country as well as in Turkestan, and possibly on the highlands of Persia. It passes through Mongolia on migration, and winters in Arabia, India, Ceylon, Burmah, China, and the Malay Archipelago, and has been recorded from Japan.

Allied forms.—None of sufficient propinquity to require notice.

Habits.—The Redshank is another of those wading birds that changes its haunt according to season, frequenting littoral districts during autumn and winter, but retiring more or less inland to breed. Directly after the breeding season is over the nesting grounds are deserted, and for the remainder of the year the Redshank haunts the coast. In autumn the resident birds are largely increased in numbers by individuals from higher and colder latitudes, and in places suited to their requirements they are the commonest species of Wader on the coast. Great numbers of these Redshanks do not remain over the winter, but only pass along our coasts on their way to more southern haunts; and during passage in October a great many are caught in the flight nets of the Wash. At all times of the year the Redshank is a remarkably social bird, and is more or less gregarious in autumn and winter, frequently consorting with other small birds of the shore. Their favourite haunts are the flat muddy coasts and salt marshes, but odd birds are often flushed from the weed-covered rocks at low water. They are active, lively birds, almost constantly in motion when on the feed, wary and watchful, and amongst the very first to take wing as danger approaches. During residence on the coast the Redshank feeds on crustaceans, sand-worms, mollusks, and other small marine creatures; but in summer it eats worms, insects and their larvæ, small snails, and various kinds of ground fruits and berries. It wades a good deal when feeding, and has been observed to swim across the shallows between the mud-banks, and when wounded it will seek to escape by diving. Its flight is rapid and most unsteady, especially just as the bird rises frightened from the shore; the long wings are beaten quickly, and the white bar across them is very conspicuous when they are outspread. The usual note of the Redshank is a loud shrill *tyü-tyü*, most persistently repeated when the bird is excited or alarmed, when it sounds more like the syllables *tyik-tyik*. During the breeding season the male utters a musical trill, not only when in the air, but as he runs about the ground, or along a fence or even perches in a tree.

Nidification.—The Redshank is one of the first birds to leave the coast in spring and to retire to its breeding grounds. The first individuals to leave are those that nest on the broads and fens and swampy moors close to the sea, retiring to these places even in February; those that breed further inland delay their departure until March or early April. It is most attached to certain haunts, visiting them yearly, and in some instances is known to return and breed in favourite spots even after the marshes have been reclaimed and turned into fields. The usual summer haunts of the Redshank are broads and fens, swampy moors, and the wet ground surrounding mountain lochs and streams. It is just as wary here as on the coast, and the moment its haunts are invaded by man it rises into the air, uttering its shrill notes of alarm; here and there a few more

venturesome birds than the rest remain standing daintily poised on some little hillock, or in the bed of the stream, often swaying their elegant bodies up and down as if full of nervous excitement and undecided as to which course to follow, to remain on the ground or join the noisy birds careering about high in air above them. In southern districts the Redshank begins to lay early in April, but in the north of Scotland it is more than a month later, whilst in the Arctic regions fresh eggs may be found up to the end of June. Numbers of pairs nest in close proximity, and all through the breeding period parties of birds may be observed feeding and flying together. The nest is well concealed, often placed beneath an arched tuft of herbage, or in the centre of a hummock of grass, or under the shelter of a bush or large weed. But little, if any, nest is made; the site selected is trampled into a little hollow, which may or may not be lined with a few scraps of dry vegetable refuse. The eggs are four in number, ranging from pale to dark buff in ground-colour, handsomely spotted and blotched with rich dark brown, and underlying markings of paler brown and grey. Occasionally a few streaks occur. They are pyriform in shape, and measure on an average 1.75 inch in length by 1.2 inch in breadth. Many eggs of this bird are gathered for the table during the season. One brood only is reared in the year. Incubation is said by Naumann to last from fourteen to sixteen days, but experiments have elicited the fact that the eggs of this bird placed in an incubator did not hatch until the twenty-third day. The parent birds adopt the usual alluring antics when their young are threatened. As soon as the latter are safely reared a movement to the coasts is made.

Diagnostic characters.—*Totanus*, with the lower back and rump white, and the secondaries white, marbled with brown at the very base. Length, 10 to 11 inches.

Family CHARADRIIDÆ.

Genus TOTANUS.

Subfamily TOTANINÆ.

DUSKY REDSHANK.

TOTANUS FUSCUS—(*Linnæus*).**Scolopax fusca**, Linn. Syst. Nat. i. p. 243 (1766).

Totanus fuscus (Linn.), Macgill. Brit. B. iv. p. 328 (1852); Dresser, B. Eur. viii. p. 165, pls. 568, 569 (1875); Yarrell, Brit. B. ed. 4, iii. p. 474 (1883); Seebohm, Hist. Brit. B. iii. p. 145 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 252 (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 295 (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 141, pl. 44 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 409 (1896); Lilford, Col. Fig. Brit. B. pt. xxxiv. (1897).

Geographical distribution.—*British*: The Dusky Redshank is a rare straggler on spring and autumn migration, most frequently the latter, to the east coasts of England, south of the Humber. It becomes much rarer in the south, and of still less frequency in the west. It has occurred inland as far as Notts, as well as several times on the east coast of Scotland, but not in the west if we except Mr. Services' record from the Scotch shores of the Solway, or in the Hebrides, although it has been recorded from the Orkneys. Several examples have been killed in Ireland, one near Belfast and others in the Moy estuary, during autumn and winter, and several on the coast of Co. Dublin. *Foreign*: Northern Palæarctic region; Ethiopian and Oriental regions in winter. It breeds on the tundras of Europe and Asia, above the limit of forest growth, but nowhere apparently south of the Arctic circle (unless it be at high elevations on the mountains of Turkestan, where similar climatic conditions prevail), from Lapland in the west to the Tchuski Land in the east. It passes the European and Pacific coasts, including Japan, as well as across country on migration, and winters in the basin of the Mediterranean, in Africa north of the equator (a few wandering abnormally as far south as the Cape Colony*), in India, Burmah, and China. It has also been said to wander to Ceylon and to the Aleutian Islands, and occasionally winters in such temperate latitudes as Holland.

Allied forms.—Perhaps most nearly allied to *Totanus glottis* and *T. calidris*, both of which are well-known British species.

* A single example was obtained by Layard in the Cape Colony.

Habits.—Except during the period of its migration the Dusky Redshank is rarely seen on the coast, and it is only on passage that the bird congregates into flocks of any considerable size. It is rather a late bird of passage, probably because its breeding grounds are situated in the high north above the latitude of the Arctic circle. It begins to cross the Mediterranean in March, and continues to do so until the middle of May, which latter month and the end of April are the dates of its appearance on our coasts. The young with a few old birds begin to arrive from the north in August, and the return migration lasts through September and October. Throughout that period it may be observed irregularly on the British coasts. The principal haunts of the Dusky Redshank are inland marshes and swamps and the banks and partially dry beds of rivers, but in the breeding season it affects more wooded localities, bogs and open parts of the northern forests, sometimes at considerable distances from water. In its habits it does not differ very much from its allies. It both runs and flies quickly, often wades, and is said to swim readily with a bobbing motion of the head. It is equally as shy as the Common Redshank, just as noisy, but nothing near so social or gregarious at any time. The note of the Dusky Redshank is described by Naumann as *tyuit*, and by Wolley as *tjeuty*. This note is most persistently uttered when the haunts of the bird are intruded, and it is said the Finnish hunters have a great antipathy to this species because its noisy cry disturbs the game they are stalking. The food of this Redshank is composed of worms, insects and their larvæ, crustaceans, snails, the ova of fish and frogs, and various ground fruits and berries.

Nidification.—The only British naturalist who has ever compiled an account of the nidification of the Dusky Redshank from his own observations is John Wolley. This great field naturalist was the first to bring the eggs of the Dusky Redshank before British ornithologists, and an account of his important discoveries, with accurate figures of the eggs he obtained, were published in Hewitson's charming work on the Eggs of British Birds. He found that this species arrived at its summer quarters as soon as the ground was free from snow, and that it began to breed almost at once. He remarked that its favourite nesting places were in the open parts of the forest, not necessarily near water, and especially in places where the trees had been burnt and the vegetation was scanty. Even here the Dusky Redshank was by no means a common bird, being so thinly scattered up and down the country that a few pairs only could be met with during the course of the day. He found the nests generally on rising ground, near the tops of hills, in open clearings amongst the pines where the ground was clothed with heath and reindeer moss. They were mere hollows in the ground, lined with a few dead "needles" of the Scotch fir. In these slight nests four eggs are laid at the end of May, or in higher latitudes than Lapland towards the middle of June. They vary from pale brown to pale green in ground-colour, handsomely and heavily blotched and spotted with rich dark brown, and with underlying

markings of pale brown and ink-grey. They are pyriform in shape and measure on an average 1·85 inch in length by 1·3 inch in breadth. Wolley remarked that the parent bird sat closely, although its white rump was very conspicuous as it brooded over the eggs with its long neck drawn in. When flushed it either ran for a little way before taking wing or flew into the air at once, and wheeled round and round, uttering its note at intervals; but sometimes it perched on the top of a tree near by. As soon as the young were hatched he found that the old bird became even more demonstrative, sometimes standing close to him, snapping its bill and nodding its head. Although it sits so closely it is said to be very wary in returning to its nest. One brood only is reared in the season, and as soon as the young are hatched they are conducted to the neighbouring marshes by their parents.

Diagnostic characters.—*Totanus*, with the secondaries white, barred on both webs with grey. In breeding plumage the head, neck, and underparts are very dark slate-grey. Length, 12 to 13 inches.

Family CHARADRIIDÆ.
Subfamily *TOTANINÆ*.

Genus TOTANUS.

GREENSHANK.

TOTANUS GLOTTIS—(*Linnæus*).

Scolopax glottis, Linn. Syst. Nat. i. p. 245 (1766).

Glottis chloropus (Meyer); Macgill. Brit. B. iv. p. 319 (1852).

Totanus canescens (Gmel.); Dresser, B. Eur. viii. p. 173, pl. 570 (1871); Yarrell, Brit. B. ed. 4, iii. p. 483 (1883).

Totanus glottis (Linn.), Seebohm, Hist. Brit. B. iii. p. 149 (1885); Lilford, Col. Fig. Brit. B. pt. xviii. (1891); Dixon, Nests and Eggs Brit. B. p. 271 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 141, pl. 41 (1896).

Glottis nebularius (Gunner); Sharpe, Handb. B. Gt. Brit. iii. p. 280 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 481 (1896).

Geographical distribution.—*British*: The Greenshank is a regular visitor on spring and autumn migration to our islands, both inland and on the coast, most numerous on the eastern seaboard in England, and in Ireland a few remaining over the winter, although it is not known to breed in that country. Most of the birds that visit us are on their way to or from their breeding grounds in Northern Europe, but a few spread over parts of the north and west of Scotland to spend the summer. Here it breeds sparingly in the Hebrides, and in greater abundance over Inverness, Argyle, Perthshire, Ross, Sutherland, and Caithness, but not apparently in the Orkneys or Shetlands, which is a matter for surprise. *Foreign*: Northern Palæarctic region; Ethiopian, Oriental, and Australian regions in winter. It breeds on the tundras of Scandinavia and Lapland, in Northern Russia and Siberia up to lat. 66°, and as far south as lat. 60°, eastwards to the Stanavoi Mountains, north of the Sea of Okhotsk, Kamtschatka, and the Kurile Islands. It passes the European and Pacific coasts, including those of Japan, as well as along internal routes on migration, and winters in the basin of the Mediterranean, on the coasts and central lakes of Africa, in India, Ceylon, Burmah, China, the Malay Archipelago, and Australia. The presence of the Greenshank, during our winter, in such temperate regions of the southern hemisphere as Cape Colony, South Australia, and Tasmania suggests that the bird breeds in them although direct proof of the fact is yet wanting. As is the case with so many birds belonging to this family, it is a great wanderer during winter, and stragglers have occurred at that season on Norfolk Island and Mauritius, Aldabra Island, Gloriosa, Amirantes, and the Seychelles, in Florida, Buenos Ayres, and Chili.

Allied forms.—*Totanus fuscus*, treated of in the preceding chapter. *T. stagnatilis*,* an inhabitant in summer of the southern Palæarctic region, from the basin of the Mediterranean in the west to the Amoor Valley in the east; wintering in South Africa, India, and South China. Differs principally from the Greenshank in being much smaller (length of wing, 5·5 inches instead of 7·5 inches.) *T. guttiferus*, an inhabitant in summer of the Amoor, Kamtschatka and Behring Island, and in winter of Burmah and India. Distinguished from all other members of the genus by its combining a white lower back and axillaries, and having the middle toe united by a well-developed web to the other toes.

Habits.—It is during its passage to and from its northern breeding grounds in spring and autumn that the Greenshank is best known in our Islands, and during those periods it may be met with, not only on the coast, but in the vicinity of many inland waters. It is a bird of very regular passage, beginning to leave its winter quarters early in spring, often the first week in March. It arrives on our coasts from the end of April to the first week or so in May, and reaches Norway during the latter half of May. The return journey begins in August in Holland, in September in our Islands, and lasts through October. During migration it may sometimes be observed in small flocks, especially in Autumn, when the broods and their parents appear to journey in company, but it is most frequently seen in pairs or even alone, and with other Waders. Its actions on the coast are very similar to those of the other Totani. It runs about the muds and amongst the weed-draped rocks at low water, and often wades into the shallows, being always very wary and suspicious, taking wing long before it is within gunshot. Its flight is quick and wavering, and the bird has a habit of dropping suddenly, running a few paces with wings half open, and then, after closing them, shaking its body in a peculiar manner. It frequently perches in trees at its breeding grounds. The food of the Greenshank consists of insects and their larvæ, especially beetles, for which the bird sometimes searches amongst the droppings of cattle in the wet meadows. The bird is also said to eat small frogs and tadpoles, and the ova of fish. On the shore it eats crustaceans, and other small marine creatures; and in inland districts worms and snails are sought. The late Mr. Swaysland on one occasion showed me half-a-dozen small minnows, which he had just taken from

* The only claim of the Marsh Sandpiper (*Totanus stagnatilis*—Bechstein) to rank as "British" rests upon a single example reputed to have been shot by Mr. Rothschild near the Tring reservoirs, in Hertfordshire, in October, 1887. I am informed by the Hon. Walter Rothschild that the reputed example obtained at Tring reservoir has been lost or destroyed. I see no reason why stray individuals of this Sandpiper should not reach our area, but for the present it is perhaps the wisest course to exclude the species from the British list. It is distributed over the Southern Palæarctic, Ethiopian, Oriental, and Australian regions in winter. It breeds from the delta of the Rhone eastwards through the valley of the Danube, South Russia, North Persia (where it is said to be a resident), Turkestan, and South Siberia. North of these limits it is an accidental wanderer only, but an example has been obtained on Heligoland. It is found on the coasts of China during migration, and in winter is an inhabitant of Africa, India, Ceylon, Burmah, and the Malay Archipelago. To South Africa and Australia it can only be regarded as an abnormal migrant.

a dead Greenshank. Probably at its breeding grounds various ground fruits are eaten. The note of this bird, uttered most persistently during flight, I should describe as a shrill *chee-weet* oft repeated, but other observers attempt to express it as *tyü, tyü*.

Nidification.—The breeding season of the Greenshank varies a little according to latitude. In Scotland, as I know from personal experience, the birds return in pairs to their accustomed haunts early in May, and the eggs are laid towards the end of that month. In the Arctic regions they are from a fortnight to three weeks later. It is not at all a social bird, and the pairs are scattered up and down over a wide range of country. Its breeding grounds in our islands are on the marshy moors, sometimes quite close to the sea, and a district where lochs and little pools abound is chosen by preference. In other countries it is said to breed in marshy clearings of the pine forests. The nest, which is not found without much search, unless stumbled upon purely by accident, is made on the ground amongst the heath and other herbage, either close to the water's edge or in a dry tuft of grass in the swamp. It is merely a hollow lined with a few bits of dry vegetable refuse. The eggs are four in number, and vary from buff to very pale buff in ground-colour, handsomely blotched and spotted with rich dark brown, and underlying markings (many of them large) of pinkish-brown and grey. They are pyriform, and measure on an average 1·9 inch in length by 1·35 inch in breadth. One brood only is reared in the year. The parent birds become excessively anxious and clamorous when their solitudes are invaded, especially after the young are hatched, but as a rule they keep at a safe distance, and often run about the moor bewailing the intrusion of their haunt. As soon as the young are reared a movement is made to the nearest coasts suited to their requirements, and the passage south shortly after begins, the birds travelling much more leisurely than in spring.

Diagnostic characters.—*Totanus*, with the bill upturned, the lower back white, and the secondaries nearly uniform grey; with the wing about seven inches long, and the tarsus over two inches long. Length, 13 to 14 inches.

Subfamily SCOLOPACINÆ.—The Cleft-footed Sandpipers and Snipes.

The Cleft-footed Sandpipers and Snipes may be distinguished from other members of the CHARADRIIDÆ by having the toes cleft to the base, without any webbing between them. The nasal groove, as in the preceding subfamily, extends along the greater part of the upper mandible. The metatarsus is scutellated in front and behind. Dr. Sharpe recognises no less than nineteen genera, eleven of which contain one species only; whilst Seebohm admitted but four genera, if we exclude the Turnstones. Certainly not more than a dozen appear to be necessary for all that systematists actually require.

Genus TRINGA, or Typical Sandpipers.

Type, TRINGA CANUTUS.

Tringa, of Linnæus (1766).—The birds comprising the present genus are characterised by having the culmen longer than the tarsus and the eye situated well in front of the auricular orifice. The metatarsus is rather short, the tibia just above the joint devoid of feathers. The bill is sometimes decurved, narrow, slightly compressed and rugose towards the tip. The nostrils are lateral and situated in a groove. Toes, three in front; one behind, small and elevated.

This genus is composed of eight species and subspecies, confined during the breeding season to the northern parts of the Palæarctic and Nearctic regions, but at other times distributed more widely and then reaching the Intertropical or Primogæan zone. Five species are British, but one only breeds within our area.

The typical Sandpipers are dwellers on tundras, marshes, the banks of streams, and in winter on the sea-coasts. They are birds of rapid flight and extended migration, run and walk with ease, and frequently wade. Their notes are clear and shrill, some of them not unmusical. They subsist on insects, worms, crustaceans, mollusks, and ground fruits, etc. They make scanty nests on the ground, and the four eggs are pyriform in shape and spotted. They are monogamous, gregarious in winter, more or less social during the breeding season,

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus TRINGA.

KNOT.

TRINGA CANUTUS—*Linnaeus*.

Tringa canutus, Linn. Syst. Nat. i. p. 251 (1766); Macgill. Brit. B. iv. p. 185 (1852); Dresser, B. Eur. viii. p. 77, pls. 555, 556 (1877); Yarrell, Brit. B. ed. 4, iii. p. 413 (1883); Seebohm, Hist. Brit. B. iii. p. 174 (1885); Lilford, Col. Fig. Brit. B. pt. xii. (1890); Dixon, Nests and Eggs Non-indig. Brit. B. app. i. p. 337 (1894); Sharpe, Handb. B. Gt. Brit. iii. p. 232 (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 144, pl. 43 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 593 (1896).

Geographical distribution.—*British*: The Knot is a common winter visitor to the British Islands, most abundant on the low-lying coast of the eastern counties of England south of the Humber, and only less so in suitable districts on the south coast. It becomes rarer on the more rocky western coasts, but is abundant on many parts of the low shores of Lancashire and Cumberland. In Scotland it is much rarer on the west coast than on the east; but is commonly distributed round the Irish coasts during winter. Many birds only pass along the British coasts bound further south in autumn, or on their way north in spring, whilst in severe winters our northern coasts are almost deserted. *Foreign*: Circumpolar region; Ethiopian, Australian, Nearctic, and Neotropical regions in winter. The breeding grounds of the Knot are very restricted, and probably lie north of lat. 75° in the Western hemisphere, and north of lat. 80° in the Eastern hemisphere. No great amount of land is known north of these limits, and what little has been explored has failed to reveal the grand summer home of the tens of thousands of Knots that pour southwards from the "nightless north" in early autumn. The few scattered localities where the Knot has been met with breeding, almost invariably in small numbers, are as follows:—New World: Melville Island, lat. 80° by Sabine in 1820; (?) Melville Peninsula, lat. 67° , Grinnell Land, lat. $82\frac{1}{2}^{\circ}$ and lat. $81\frac{3}{4}^{\circ}$, by Feilden and Hart (young in down secured). Old World: Not a single known breeding place; although, judging from the birds' vast abundance in Europe during winter, at least one, if not the only, grand breeding place is on undiscovered land north of Franz Joseph Land and the Liakoff Islands, or New Siberia, if not actually upon the latter archipelago. The Knot has been observed in summer on many points much further south on Continental Asia, but there is not the slightest evidence forthcoming that these odd birds were breeding. It has been obtained in Alaska and Greenland. It was observed in the Dwina delta,

near Archangel, by Hencke ; Middendorff saw an odd bird or so on the Taimur Peninsula in May, and at the mouth of the Uda, in the Sea of Okhotsk, in July ; Schrenck obtained examples in autumn at the mouth of the Amoor, and it has been obtained at that season near Lake Baikal, and on migration in the valleys of the Obb and the Kama. It passes Greenland, Iceland, and the Faroes on migration, and occurs on passage on the entire coast line of Western Europe, and winters on the west coast of Africa as far south as the Ethiopian limits of the Primogæan realm. It is rare in the Mediterranean during winter, but common on spring and autumn passage. It is of accidental occurrence only in India, but passes, although in comparatively small numbers, the west coast of the Pacific, China, and Japan, on migration, and occurs probably only abnormally in Australia and New Zealand. It does not appear to pass the Pacific coast of America, but migrates commonly down the Atlantic coasts as well as along some of the internal routes, and winters in the southern States, probably Mexico, and some of the West Indies, and has been known to wander as far south as Brazil.

Allied forms.—*Tringa crassirostris*, which possibly breeds in North-eastern Siberia, although the precise locality still remains unknown, and passes down the Ussuri valley, the coasts of China and Japan (where, however, it has been observed in summer) on migration, and winters in the East Indian Archipelago and North Australia. It has visited the Andaman Isles, and, more remarkable still, the coast of Scinde, the latter in considerable numbers. It is distinguished from the Common Knot by its white upper tail coverts and by its black breast and flanks, and absence of all chestnut from the underparts in breeding plumage. It is also a slightly larger bird (length of wing, 7 to 7½ inches, instead of from 6¾ to 6¼ inches).

Habits.—Although great numbers of the Knots that visit our coasts in autumn pass on in a few weeks to more southern haunts, a by no means small proportion remain behind and winter on the various coasts of the British Islands. The migrations of the Knot are very marked and regular. Small numbers, principally young birds, begin to arrive in our Islands early in August, and from that date onwards to the end of October a slowly increasing stream of birds is almost constantly reaching the British coasts, attaining its highest tide in September. As previously stated, many of these individuals do not remain long with us, but spend their winter on the mud-flats of Western Africa. These begin to pass north again in April and May, by the end of which latter month most have quitted the British coasts and retired to the unknown breeding grounds in the North Polar basin. The migrating Knots appear chiefly to follow the coast line, although small numbers occasionally cross inland ; and in spring, as is the case with the Bar-tailed Godwit, the flight across the North Sea is taken about the neighbourhood of Spurn Point, probably following an ancient coast line, as

Mr. Cordeaux suggests. A few odd birds remain in the south all the summer, as is usual with many species of Waders. The great haunts of the Knot during its stay in our Islands are the low-lying shores of the east coast of England, the vast mud-flats and estuaries, salt marshes and sandy reaches which afford the bird an ample and constant supply of food. Great numbers are caught in the flight nets of the Wash during October, as they fly low across the shallow sea; many others visit the lighthouses during migration. Upon their arrival they are often absurdly tame, especially the odd birds that have got separated from the flocks, and I have actually caught them with the hand in the narrow dykes that spread like nets over the muds and marshes. They are very gregarious and social birds, and often mingle with Dunlins. The Knots keep well together whilst feeding, with heads all turned in the same direction, and cover a good stretch of shore in a very short time, as they are always on the move. If the flock be very large, some of the birds are almost constantly in the air, flying over the heads of their companions, as if eager to get the first look over the ground. They seldom admit of a very close approach, and when alarmed rise almost simultaneously, and often wheel about, or go out to sea for a little way before alighting again. The Knot more frequently runs with short quick steps than walks, and flies rapidly and well. When their appetite is satisfied, the entire flock often stand for a long time on a certain spot and preen their plumage, but even then they are restless, and it is very rarely that all the birds are still at once. They feed as much by night as by day, especially when there is a bright moon, and shift their ground a good deal according to the state of the tide. They are remarkably silent birds, although the note at the breeding quarters is described by Captain Feilden as a wild Curlew-like cry. The food of the Knot is composed of crustaceans, sand worms, insects, mollusks, and other small marine animals. In summer it chiefly consists of insects and their larvæ, buds of the saxifrage, bits of algæ, and probably ground fruits. The flesh of the Knot is very palatable, as I know from oft-repeated experience, and in autumn the bird is often surprisingly fat.

Nidification.—The eggs of the Knot are unknown to science; but the downy young were obtained by Mr. Hart, the naturalist attached to the *Discovery*, during the last British Polar Expedition. The Knot evidently arrives at its nesting grounds in flocks, for a party of fourteen were noticed by Captain Feilden near Knot Harbour, in Grinnell Land, on June 5th. They are described as being always wild and difficult to approach. Pairing began immediately after their arrival, and two males were occasionally seen in chase of a female. During this period they indulged in flights something like those of the Common Snipe, and when descending elevated their wings and beat them together, making a whirring sound, and occasionally uttering a flute-like whistle. The birds were observed at some distance from the coast, feeding near the swamps and pools of this desolate land. The young chicks were hatched by July 11th; and when menaced by

danger the old birds feigned lameness, and sought by various antics to draw all attention to themselves. One nest is described as being placed under a flat stone which was resting on two other stones, and consisted of a few leaves and bits of dry grass loosely arranged; two others were on the banks of a stream several miles from the sea. Richardson, who derived his information from Surgeon Hutchins, describes the egg of the Knot as "dun-colour, fully marked with reddish spots," but no credence can be put on the statement. It always seems to the present writer a most unpardonable and incredible piece of neglect on the part of the naturalist attached to the latest British Polar Expedition to have missed the eggs of the Knot. The bird was observed to arrive at its breeding places, to pair, and then actually to be lost sight of until the eggs were hatched! Several reputed eggs of the Knot are in collections, but none of them are authenticated. The reputed egg obtained by the Greely Expedition near Fort Conger is unidentified, and apparently too small (1.1 inch in length by 1.0 inch in breadth). The egg which was in the possession of the late Mr. Seebohm (which I have examined), although unauthenticated, is more likely to be genuine so far as size is concerned, being similar to that of the Common Snipe, but paler in ground-colour. This egg was obtained at Disco, in Greenland; in my opinion a locality much too far south. This, however, is not the most southerly locality at which reputed eggs of the Knot have been obtained. Mr. Raine, in his *Bird-nesting in North-west Canada*, figures and describes what he asserts to be two eggs of this bird, taken on the 20th of June, 1889, at Rædodavmsi, in Iceland! The account is circumstantial enough, but, unfortunately, the parent birds appear not to have been obtained or even identified. It is only fair to say that Mr. Raine's eggs agree apparently in colour with that obtained by Lieutenant Greely, but are larger in size and, certainly, judging from the illustrations, very abnormal in appearance. The nest is described as a depression lined with bits of drift weed, the eggs as having the ground-colour pale pea-green, finely speckled with ashy-brown; size, 1.5 inch in length by 1.0 inch in breadth (*op. cit.* p. 188, Pl. II., Figs. 1 and 2). Mr. Raine's collectors seem to have been fully aware of the importance of their discovery, and were too anxious to wait, after finding the nest with two eggs, for the full complement to be laid. I can only repeat that without authentication the eggs must be rejected by scientific naturalists as valueless. I might also remark that the Grey Phalarope breeds in Iceland, and that in nuptial plumage it bears a somewhat close resemblance to the Knot in breeding dress, both species having the under-parts rich chestnut during summer. The Knot rears one brood only in the year, and as soon as the young can fly they and their parents migrate south.

Diagnostic characters.—*Tringa*, with the ground-colour of the upper tail coverts white, the wing from 6.8 to 6.2 inches in length, and the bill from 1.5 to 1.1 inch in length. Length, 10 inches.



Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus TRINGA.

CURLEW SANDPIPER.

TRINGA SUBARQUATA—(*Guldenstädt*).

PLATE XXVIII.

Scolopax subarquata, Guldenst., Nov. Comm. Petrop. xix. p. 471 (1775).

Tringa subarquata (Guldenst.), Macgill. Brit. B. iv. p. 215 (1852); Dresser, B. Eur. viii. p. 59, pl. 553 (1878); Yarrell, Brit. B. ed. 4 iii. p. 403 (1883); Seebohm, Hist. Brit. B. iii. p. 180 (1885); Lilford, Col. Fig. Brit. B. pt. xxv. (1893); Dixon, Nests and Eggs non-indig. Brit. B. Appendix i. p. 337 (1894); Seebohm, Col. Fig. Eggs, Brit. B. p. 144 (1896).

Ancylochilus subarcuatus (Guldenst.), Sharpe, Handb. B. Gt. Brit. iii. p. 240 (1896); (*spelt subarquatus*), Sharpe, Cat. B. Brit. Mus. xxiv. p. 586 (1896).

Geographical distribution.—*British*: The Curlew Sandpiper is a fairly common visitor on spring and autumn migration to our islands, most frequent during the latter season, and commonest at all times on the lower-lying coasts, notably those of the eastern counties of England south of the Humber, and westwards to Devon and Cornwall. It is rarer on the western coast line of Great Britain than the eastern, and accidental only in the Orkneys and Shetland. It is occasionally met with inland. In Ireland it is of regular occurrence in autumn, a few remaining on the southern coasts during the greater part of the winter. *Foreign*: Eastern half of the Circumpolar region in summer; Ethiopian, Oriental, and Australian regions in winter; Palæarctic region principally on migration. The breeding grounds of the Curlew Sandpiper are almost entirely unknown, and are probably chiefly situated on undiscovered land north of Franz Joseph Land and the Liakoff Islands. Indeed, it is not improbable that the bird may breed on these islands, as it was observed very late in summer by Seebohm both in the valleys of the Petchora and the Yenisei, in which latter valley its only known nesting places occur; whilst it has been obtained in summer at Archangel and on the Taimur Peninsula, and has been observed on migration in the Lena delta, near Behring Strait by the *Vega* Expedition, and at Point Barrow, in Alaska. It passes along the coasts of Europe, and crosses the interior of the continents of Europe and Asia, as well as the coasts of China and Japan on migration. Those which migrate across Europe winter in Africa,

both inland and on the coast; and a few appear to do so in the basin of the Mediterranean. Those which migrate across Asia winter on the Mekran coast, in India, Ceylon, the Andaman Islands, Burmah, the Malay Archipelago, and the Australian portion of the Intertropical or Primogæan realm. It can only be regarded as an abnormal migrant to South Australia, Tasmania, and South Africa. An example in fullest breeding plumage was obtained in the Phillipine Islands on the 18th of May. A small flock was met with on Aldabra Island, north-west of Madagascar; whilst it has also been recorded from Mauritius and Anjuan Island in the Indian Ocean and abnormally elsewhere.

Allied forms.—*T. canutus* with its ally *T. crassirostris*, and *Heteropygia fuscicollis* with allied species appear to be the most nearly allied, most of which will be treated of elsewhere (see pp. 244, 259).

Habits.—The Curlew Sandpiper is a late migrant, probably because it breeds in the high north only. Great numbers of this species cross the Straits of Gibraltar, and pass along other recognised routes in the Mediterranean district about the end of April, travelling in small parties, sometimes in the company of Knots and Dunlins, and these northern flights continue almost unceasingly until the end of May. A few reach the British coasts in March or April, but the majority pass in May, scattered individuals lingering behind the rest until early June. The southern flight, begins in August and continues through September into October, by the end of which month most have continued their journey south to Africa again. Whilst with us the Curlew Sandpiper chiefly frequents the coast, although it sometimes visits inland pools in the immediate neighbourhood, as well as the marshes some distance from the sea. It loves the mud-banks and wide open salt marshes, and is almost equally fond of estuaries, but less so of sand-banks. Its habits differ little from those of the Dunlin; its flight is similar, and like that species it feeds both by day and by night, especially during the period of a full moon. During high water, like many other Waders, it frequently retires to some inland meadow or field or swamp, and there waits for the ebb. The note is said to be louder than that of the Dunlin, and is described by Legge as being like that of the Little Stint, but louder. Its food consists of crustaceans, small worms, insects, mollusks, the roots of marsh plants, and probably during summer of various ground fruits.

Nidification.—Much less is known of the habits of the Curlew Sandpiper during the breeding season than even of the Knot. Legge observed a pair of these birds performing acts of courtship even in their winter quarters in Ceylon, so that it is not improbable many individuals mate before they migrate. Its great breeding grounds, I am inclined to think, are in the North Polar basin, in undiscovered land north of Continental Asia—some El Dorado where the Knots

also retire in countless numbers to rear their offspring. Odd birds have been shot on the Siberian tundras during summer. Some of these were evidently non-breeding individuals that had lingered south of the nesting grounds ; but the bird obtained by Middendorff on the Taimur Peninsula, with a partially shelled egg in the oviduct, most probably, in the light of recent evidence, was actually breeding there. The few examples, however, seen on the Siberian tundras are utterly insignificant in comparison with the vast numbers that are known to pass north each spring. It is with great pleasure we have now to record the discovery of the eggs of the Curlew Sandpiper during the summer of 1897 in the valley of the Yenisei by that fortunate and most persevering naturalist Mr. H. L. Popham. Mr. Popham has most obligingly communicated to me for the purposes of the present work the following note on his grand discovery : "I found the nest on one of the islands near the mouth of the Yenisei river on the 3rd of July, 1897. The birds were very scarce there, and this was the only nest discovered ; so that I suppose I was on the extreme western fringe of their breeding grounds. As you may imagine we spent several days in the unsuccessful hunt for another nest. The nest was a rather deep hollow in an open space among the coarse grass and reindeer moss on a slight ridge somewhat dryer than the surrounding swampy ground. The eggs, four in number, are like those of the Common Snipe but smaller [average measurements, 1.45 by 1 inch] ; and also resemble some eggs of the Purple Sandpiper. They have been figured for the Proceedings of the Zoological Society [1897, p. 490, pl. li., figs. 1—4]. The bird at the nest behaved somewhat like a Dunlin, with the exception that, as far as I could ascertain, it was silent. The female was sitting on the eggs, which were found by watching the bird until it returned to them."

Diagnostic characters.—*Tringa*, with the bill decurved, and the upper tail coverts white. Length, 7 to 8 inches.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus TRINGA.

DUNLIN.

TRINGA ALPINA.—*Linnaeus*.

Tringa alpina, Linn. Syst. Nat. i. p. 249 (1766); Dresser, B. Eur. viii. p. 21, pl. 548 (1876); Yarrell, Brit. B. ed. 4. iii. p. 377 (1883); Seebohm, Hist. Brit. B. iii. p. 184 (1885); Lilford, Col. Fig. Brit. B. pt. xxiv. (1893); Dixon, Nests and Eggs Brit. B. 278 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 144, pl. 43 (1896).

Tringa cinclus, Linn.; Macgill. Brit. B. iv. p. 203 (1852).

Pelidna alpina (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 228 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 602 (1896).

Geographical distribution.—*British*: The Dunlin is a fairly common resident on the British Islands, but greatly increases in numbers during spring and autumn, and is more numerous on the coasts in winter than in summer, at which season the adult resident birds retire inland to breed, leaving the immature examples behind in the usual winter haunts. It breeds sparingly in Cornwall, Devon, Somerset, the marshes of the Dee, Lancashire, Yorkshire, Cumberland, Northumberland, and throughout the west of Scotland, including the Outer Hebrides, north to Sutherlandshire, the Orkneys, and Shetland. In Ireland it breeds in a few suitable places in the Midlands and the wild north-west. Although its eggs have been taken in Lincolnshire, it can scarcely be regarded as more than an accidental breeder in that county; whilst in Wales it may probably breed regularly, but its nest does not appear yet to have been found. *Foreign*: Circumpolar, Palæarctic, and Nearctic regions; Oriental and extreme north of Neotropical regions in winter. It breeds throughout the Arctic regions of both the Old and New Worlds almost as far north as land extends. Southwards in Europe, it breeds in Denmark, Finland, and the Baltic Provinces, and instances are on record of its having done so in Southern Spain and Northern Italy. Further eastwards its breeding range does not appear to extend quite so far south, as Seebohm did not meet with it in the valley of the Yenisei below lat. 69°; nor does it appear to frequent the Baikal district or the Amoor Valley, except near the coast. Its southern breeding range on the American continent appears not to be accurately determined. It passes the coasts of Europe, down the valley of the Volga, across Turkestan, along the eastern coasts of Siberia, North China,

Japan, and both the Pacific and Atlantic coasts of North America on migration ; and winters in the basin of the Mediterranean, North Africa (to the Canaries in the west and Zanzibar in the east), the basin of the Caspian, Arabia, the Mekran coast, occasionally Northern India, South China, Formosa, Borneo, Java, the Southern States of America and the West Indies.

Allied forms.—American ornithologists have separated sub-specifically the Dunlins of that continent from those of the Old World under the name of *Tringa alpina pacifica*, on the ground of their being larger and more rufous in breeding plumage ; but as the differences are so trivial and so completely intergrade, it seems wisest, at any rate for the purposes of the present work, to treat the two races as one.* The Dunlin has probably no other ally closer than the Purple Sandpiper, a British species dealt with elsewhere.

Habits.—Of all our small Waders the Dunlin is the most widely distributed, the most numerous, and the best known. It is more or less gregarious at all times, some of the flocks in autumn and winter being composed of thousands of birds, whilst even in the breeding season parties of varying size regularly congregate at the feeding places. It is also a social species, and not only joins flocks of other small Sandpipers, but allows many other odd birds to live in flocks of its own kind. Its haunts vary a good deal with the season ; in autumn and winter the bird principally frequents mud-flats, estuaries, and salt marshes, not showing much propensity for sands unless mud-banks are near them ; whilst in summer the old birds retire more or less inland to swampy moors and marshes for the purpose of rearing their young. A great many Dunlins simply pass along our coasts in autumn and spring (in September and May) from and to their Arctic haunts, but vast numbers also stay upon them throughout the winter. The Dunlin chiefly migrates down coast lines, but a few parties cross by internal routes down great river valleys. This is especially the case with individuals breeding on the Siberian tundras ; although in America, coast lines are chiefly followed, as in the Western Palæarctic region. On our coast the Dunlin is not particularly a shy bird, except when congregated in large flocks, which are usually approached with difficulty. Odd birds may often be watched feeding amongst the dykes on salt marshes at a distance of a few feet. The Dunlin is an active little creature, almost incessantly in motion, running about the muddy shore at the margin of the water, and often wading through the shallow tide-pools, or amongst the broken receding waves. Its flight is rapid, but does not differ in any important respect from that of other small Waders. Flocks of Dunlins often indulge in various graceful aerial evolutions, spreading out like a net, closing up again,

* Some naturalists assert that two races of Dunlins frequent the British Islands, one small and bright-coloured, the other large and not so vivid ; but nothing satisfactory seems yet to have been determined.

wheeling and advancing with a common impulse, just like the autumn flights of Starlings. The food of the Dunlin consists of crustaceans, sand-worms, mollusks, etc., on the shore; but insects and their larvæ, small worms, ground fruits, and various vegetable fragments are eaten in summer. Its note is a rather harsh *purrr*—hence one of its trivial names—but at the breeding grounds it utters a long-drawn *peezh*, something like the well-known cry of the Greenfinch. The male trills repeatedly during the pairing season, like most other Sandpipers.

Nidification.—The Dunlin begins to arrive at its breeding grounds towards the end of April, and in southern haunts its eggs are laid during May, but in the Arctic regions they are about a month later. The nest is always well concealed, often by the side of a little moorland pool amongst the rush tussocks, or beneath a bush of bilberry or heather, and even more frequently in a tuft of cotton grass or other coarse herbage. It is simply a hollow with a scanty lining of dry leaves and grass, and perhaps a few twigs round the margin. The eggs are four in number, and vary in ground-colour from pale olive to pale brown and buff, blotched and spotted with rich reddish and blackish-brown, and with a few obscure underlying markings of grey. They are pyriform in shape, and measure on an average 1·3 inch in length by ·95 inch in breadth. The parent bird sits lightly, leaving the nest at the least alarm. Incubation, performed by the female, lasts from twenty-one to twenty-two days. One brood only is reared in the year, and as soon as the young can fly a movement is made to the adjoining coasts.

Diagnostic characters.—*Tringa*, with a great deal of white on the innermost secondaries, but little or none on the upper tail coverts, and with black legs and feet. Length, 8 inches.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus TRINGA.

PURPLE SANDPIPER.

TRINGA MARITIMA—*Gmelin.*

- Tringa maritima**, Gmel. Syst. Nat. i. p. 678 (1788); Macgill. Brit. B. iv. p. 197 (1852); Seebohm, Hist. Brit. B. iii. p. 192 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 262 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 146, pl. 43 (1896).
Tringa striata (nec Linn.); Dresser, B. Eur. viii. p. 69, pl. 554 (1877); Yarrell, Brit. B. ed. 4, iii. p. 408 (1883); Lilford. Col. Fig. Brit. B. pt. xxiv. (1893).
Arquatella maritima (Gmel.), Sharpe, Handb. B. Gt. Brit. iii. p. 237 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 578 (1896).

Geographical distribution.—*British*: The Purple Sandpiper is a fairly common winter visitor to the British Islands, locally distributed on all parts of the coast suited to its requirements, including the Hebrides, the Orkneys, and the Shetlands, and equally as well known in Ireland as in the rest of the United Kingdom. Many birds may probably pass our coasts in spring and autumn; some few remain in the British Islands through the summer—a fact which has given rise to the belief that this species occasionally nests with us; but no authentic instance has yet been recorded. It is not improbable that an odd pair may do so in the Orkneys and Shetlands, or in the Outer Hebrides. Young birds, scarcely fledged, have, it is said, been obtained on the Farne Islands; but this proves nothing, for young Knots, with flakes of down still adhering to their plumage, have been observed on the British coasts. The Purple Sandpiper is much rarer some years than others, especially during mild northern winters; and at no time are the migrations of this species very extended. *Foreign*: Circumpolar region. It breeds in Iceland, the Faroes, Spitzbergen, Nova Zembla, on the Taimur Peninsula, on the coast of Behring Strait, and across Arctic America to Greenland. In the extreme north of its range it appears to be migratory, but in the southern limits, as, for instance, in South Greenland, Iceland, the Faroes and the coast of Norway, it is resident. It winters on the southern coasts of the North Sea, and in small numbers on the northern shores of the Mediterranean and on the Kurile Islands, south of Kamtschatka. The American birds appear to winter round the Great Lakes and on the shores of New Brunswick, occasionally wandering to the Bermudas and the Azores; whilst one example has been obtained in South Africa.

Allied forms.—*Tringa maritima couesi*, an inhabitant of the Aleutian Islands, and *T. maritima ptilocnemis*, an inhabitant of the Prybilof Islands, in Behring Sea, during summer, wandering in winter to the Kurile Islands and the coast of Alaska. So utterly slight are the characters upon which these subspecies of the Purple Sandpiper are based, that I feel small hesitation in ignoring them, and consider it much the wiser to treat the three forms as one until more reliable and substantial characters are discovered. The Purple Sandpiper is probably most closely allied to the Dunlin, a British species dealt with elsewhere.

Habits.—A few Purple Sandpipers make their appearance on our coasts early in September, but the great majority of birds arrive towards the end of that month and during October. Many are taken in the flight nets of the Wash, or used to be twenty years ago, in the first week of November. They remain with us for the most part, comparatively few prolonging their flight to the south, until the following May, when the return migration north is undertaken. Although this species is decidedly partial to a rocky coast, a shore where huge boulders shelve down into the water and are left bare at low tide, it is by no means uncommonly observed on mud-flats and salt marshes. A favourite haunt of this kind is in the Wash, and there I have repeatedly shot this bird from flocks of Dunlins and Knots, and observed it very frequently running over the bare mud round the margins of the big tide-pools at low water. At other times it frequents the rock-bound coast, and seeks its food upon the wet weed-draped boulders as the waves break over them and spread them with the food it loves. I have seen it running over the rocks almost before the big waves have spent their force and broken into seething drifts upon them; and so venturesome is the little bird that it runs along the very edge of the waves, where each one that breaks upon the shore seems certain to sweep it away. It is by no means a shy bird, especially when by itself, and always seems to prefer to run along just out of harm's way rather than to take wing. It swims well and frequently, and occasionally alights on the sea after it has been flushed. The food of the Purple Sandpiper consists of crustaceans, mollusks, sand-worms, insects, and the seeds of various marine plants. Most of this food is obtained as the tide is dashing over the rocks in its ebb or flow, and during the period of high water the bird not unfrequently retires inland a little way, or to a rocky islet or point to await the turn. The flight of this bird is rapid and straightforward, but except during migration it is seldom taken very high, and even then I am inclined to think that the bird, as a rule, journeys close to the water. The note of this Sandpiper is a shrill and quickly uttered *tee-wit*.

Nidification.—In its more southerly breeding stations, as for instance at the Faroes, where the influence of the Gulf Stream causes a comparatively early spring, the Purple Sandpiper commences to breed in the second week of May;

further north and east it is at least a month later. Its breeding grounds are rarely far from the sea, either in the immediate neighbourhood of the beach amongst broken ground covered with scanty herbage, or in marshy districts at the summit of adjoining hills. In the Faroes both Wolley and Captain Feilden found it nesting on the fells, the latter observer taking its eggs before the snow had melted from the sheltered hollows and the tops of the hills. The Purple Sandpiper, if it does not actually pair for life, seems much attached to its nesting place, and appears yearly to frequent the same spot. Wolley had the eggs for two successive years from a nest made on the same piece of ground on which a colony of Skuas were breeding. The nest of the Purple Sandpiper, like that of most Waders, is merely a hollow in the ground, lined with a few dry bits of vegetable refuse, such as moss and grass. The eggs are four in number, and vary in ground-colour from pale olive to buffish-brown, very handsomely spotted and blotched, mottled and streaked with dark blackish-brown, reddish-brown, and with numerous and well-defined underlying markings of pale brown and violet-grey. They are pyriform, and measure on an average 1·5 inch in length by 1·05 inch in breadth. Both parents assist in the duties of incubation, and one brood only is reared in the year. Sometimes the sitting bird remains brooding on the eggs when just about to hatch until nearly trodden upon, and then hurriedly rises and begins to feign lameness to allure the intruder away. In spite of the fact that this species often breeds at some distance from the sea, the birds appear always to come to the coast to feed.

Diagnostic characters.—*Tringa*, with the rump and upper tail coverts nearly black, and the seventh to the ninth secondaries nearly white. Length, 8 inches.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus TRINGA.

BROAD-BILLED SANDPIPER.

TRINGA PLATYRHYNCHA.—*Temminck*.

Tringa platyrhyncha, Temminck, Man. d'Orn. p. 398 (1815)*; Macgill. Brit. B. iv. p. 224 (1852); Seebohm, Hist. Brit. B. iii. p. 197 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 264 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 147, pl. 40 (1896).

Limicola platyrhyncha (Temm.), Dresser, B. Eur. viii. p. 3, pl. 545 (1876); Yarrell, Brit. B. ed. 4, iii. p. 362 (1883); Lilford, Col. Fig. Brit. B. pt. xxiv. (1893); Sharpe, Handb. B. Gt. Brit. iii. p. 223 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 612 (1896).

Geographical distribution.—*British*: The Broad-billed Sandpiper is a rare straggler to our Islands on spring and autumn passage. The claim of this species to rank as “British” rests on the following recorded instances of its occurrence. England: Norfolk (five examples), May, 1836, May, 1856, April, 1858, September, 1891, August, 1895; Sussex (four examples), October, 1845, August, 1887, Autumn, 1895, Autumn, 1896; Yorkshire (one example), April, 1863. Scotland: No instance of its occurrence on record. Ireland: (one example), Belfast Bay, October, 1844. *Foreign*: Palæarctic region; Oriental region in winter. This Sandpiper is very locally distributed during summer; and although found from the Atlantic to the Pacific, its breeding area is comparatively unknown. It breeds commonly on the Scandinavian fells as far south as lat. 60°, and in Finland. These are apparently the only known breeding grounds of this species, but it has been met with near Lake Baikal and on the southern shores of the Sea of Okhotsk. It occasionally occurs on the coasts of Europe and Japan on migration, and winters in the basin of the Mediterranean, North Africa (extending to Egypt, and occasionally to Madagascar, although we may remark that it is not included in Mr. Sibree's list of birds of that island), the Mekran coast, and Northern India (accidentally to Ceylon and the Andaman Islands). It also visits during the cold season, Burmah, the Malay Peninsula, Java, the Philippine Islands, Formosa, and China. Perhaps a more unsatisfactory bit of geographical distribution cannot be found throughout the class Aves!

Allied forms.—None of sufficient propinquity to call for notice.

* Spelt *platyrincha* in the work here referred to.

Habits.—Of the habits of the Broad-billed Sandpiper during winter but little has been recorded. It is found during that season either in flocks of varying size, roaming about alone, or mingling with Dunlins and other small Sandpipers. It frequents the coasts, preferring those that are muddy, but sometimes haunts the sands. It runs about in the usual quick, restless manner of its kind, and in its flight is said to resemble the Dunlin. Its note in winter is apparently undescribed, but during the breeding season the late Richard Dann remarked that its cry when disturbed was a rapid *too-woo*, uttered whilst the bird rose and fell in the air like a Snipe. The food of the Broad-billed Sandpiper is composed of crustaceans, small worms, insects and their larvæ, and probably ground fruits.

Nidification.—Admirable descriptions of the breeding habits of the Broad-billed Sandpiper were furnished by Richard Dann to Yarrell, and by John Wolley to Hewitson, by whom they were published. The former naturalist met with this bird breeding in small colonies in the grassy morasses and swamps at the head of the Bothnian Gulf, and in the swamps of the Dovrefjeld, three thousand feet above sea-level. It arrived at its breeding stations about the end of May, being very wild and wary just after its return, and feeding on the banks of the pools and lakes. Later in the season it became more skulking in its habits, creeping through the long grass, and when flushed dropping again almost at once. It began laying about the 24th of June, and the young were still unable to fly a month later. The nest resembled that of a Snipe, and was made in a tuft of grass. Wolley remarked that its favourite nesting places were soft open spots in the marshes, where the ground was clothed with bogmoss and sedge, and the nests were often placed on grass tufts just above the water. He found that the eggs were laid about the third week in June; and that the nests were rounded hollows lined with a little dry grass. The sitting bird was observed not only to run from the eggs but to fly from her nest, and when incubation was far advanced she became very tame and confiding. Other nests, observed by Mr. Mitchell on the Dovrefjeld, contained eggs during the latter half of May. These nests were in open parts of the marshes, and were made more elaborately than is usual amongst this order of birds, the hollow being deeper and more carefully lined. He also remarked that the lining in each nest resembled the colour of the eggs it contained, the darker varieties being laid on withered leaves of the willow, the paler ones on dry grass. The eggs are four in number, buffish-white in ground-colour, densely mottled and spotted with rich chocolate-brown and paler brown, and with underlying markings of grey. They are pyriform in shape, and measure on an average 1·3 inch in length by ·9 inch in breadth. Both birds assist in the task of incubation, and one brood only is reared in the year. As soon as the young are reared the broods and their parents form into small flocks.

Diagnostic characters.—*Tringa*, with the bill very flat and wide, and more than a fourth of the length of the wing, and with little or no white on the secondaries and upper tail coverts. Length, 6½ inches.

Genus HETEROPYGIA, or Pectoral Sandpipers.

Type, HETEROPYGIA FUSCICOLLIS.

Heteropygia, of Coues (1861).—The birds comprising the present genus are characterised by having the culmen and metatarsus equal in length, but the latter longer than the middle toe and claw combined, and also by having a hind toe. The wings are long and pointed. The nostrils are lateral, and situated in a groove. The tibia just above the metatarsal joint is devoid of feathers.

This genus (omitting *H. Cooperi*, a doubtful species) is composed of four species, three of which are confined to the Nearctic and Neotropical regions, two of them migrating north and south from a range base in the Primogæan realm; and one distributed over the eastern Palæarctic, Oriental and Australian regions, according to season. Three species are abnormal migrants to the British Islands.

The Pectoral Sandpipers closely resemble allied species in their habits, migrations and nidification. In summer they frequent tundras to breed, often at no great distance from the sea; on passage, and during winter they are dwellers on coasts. They are social and gregarious, especially during the non-breeding season. They feed upon insects, worms, crustaceans, mollusks, ground fruits, etc. They are monogamous, making a slight nest upon the ground, and their double-spotted eggs are four in number.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus HETEROPYGIA.

BONAPARTE'S SANDPIPER.

HETEROPYGIA FUSCICOLLIS—(*Vieillot*).

- Tringa fuscicollis**, Vieill. N. Dict. d'Hist. Nat. xxxiv. p. 461 (1819); Dresser, B. Eur. viii. p. 15, pl. 547 (1873); Dixon, Nests and Eggs Non-indig. Brit. B. p. 261 (1894); Lilford, Col. Fig. Brit. B. pt. xxxiv. (1897).
- Tringa schinzii**, Bonaparte (nec Brehm); Macgill. Brit. B. iv. p. 222 (1852); Yarrell, Brit. B. ed. 4, iii. p. 373 (1883).
- Tringa bonaparti**, Schlegel; Seebohm, Hist. Brit. B. iii. p. 189 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 145, pl. 43 (1896).
- Heteropygia fuscicollis** (Vieill.), Sharpe, Hanb. B. Gt. Brit. iii. p. 242 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 574 (1896).

Geographical distribution.—*British*: Bonaparte's Sandpiper is an accidental straggler to our area on autumn migration, having occurred chiefly in October and November. Its claim to rank as British rests on the following recorded instances. England: Shropshire (one example), Sussex (two examples), Middlesex (one example), Devonshire (four examples), Cornwall (three examples), Scilly Isles (two examples). Scotland: Not been obtained. Ireland: One example said to have been shot near Belfast, and now preserved in the museum of that town. *Foreign*: Nearctic and Neotropical regions. In the Northern hemisphere Bonaparte's Sandpiper breeds throughout Arctic America from Greenland in the east to the Mackenzie River in the west. It is of only accidental occurrence west of the Rocky Mountains, two examples having been obtained at Point Barrow, the most northerly land in Alaska; whilst another has been recently recorded from Franz Josef Land. It passes the United States, inland as well as along the coast, and the Bermudas (abnormally) on migration, and winters in the West Indies, Central America, and throughout the South American portion of the Intertropical realm. There can be little or no doubt that in Bonaparte's Sandpiper we have another instance of a species migrating north and south from an equatorial base. In the Southern hemisphere this Sandpiper appears unquestionably to breed in the Argentine, in Patagonia and the Falkland Islands, although the nest has not yet been actually discovered, and statements made by Durnford and Abbott respecting its breeding in these localities have been derided.

Allied forms.—*Tringa subarquata*, already dealt with, and the species in the present genus described in the following chapters.

Habits.—The habits of Bonaparte's Sandpiper very closely resemble those of the Dunlin, although during the breeding season the bird is rather more of an Arctic one. Its migrations are regular, and not only taken along the coast, but inland down the great river valleys. It is equally as gregarious as the Dunlin, indeed often flocks with that species as well as with other small Sandpipers. It is described by American naturalists as being remarkably tame and trustful, and runs about the rocky beaches in the presence of an observer with little show of fear. Bonaparte's Sandpiper is a rather late bird of passage, even for an Arctic species, passing along the coasts of the United States and up the valley of the Mississippi during May, and reaching its breeding grounds towards the end of that month or early in June. Odd birds make their appearance in the Northern States near the end of July, but the majority pass southwards during September and October. Its actions on the shore are very similar to those of the Dunlin. The bird runs about the wet sands and muds, and over the weed-grown rocks in the usual restless manner. Its flight is rapid, yet rather wavering, and it often wades breast-deep into the water in its eager quest for food. The flocks often wheel and gyrate in the air when disturbed. The note of Bonaparte's Sandpiper is said by Coues to be a low, soft *weet*, unlike that of any of the bird's congeners. Its food is said to consist of insects, worms, mollusks, crustaceans, and other small marine animals, and during summer various ground fruits are eaten.

Nidification.—The breeding grounds of Bonaparte's Sandpiper are the Arctic tundras in the immediate neighbourhood of the sea. But little has been recorded of its habits during the nesting season. A nest discovered by MacFarlane was merely a hollow in the ground, lined with a few dead leaves. The eggs are four in number, and vary in ground-colour from olive to greyish-buff, blotched and spotted with dark reddish-brown and pale brown, and with underlying markings of grey. They are pyriform in shape, and measure on an average 1·25 inch in length by ·9 in breadth. It is said that one brood only is reared in the year, and, like the Dunlin, as soon as the young are fledged they with their parents begin to migrate slowly south.

Diagnostic characters.—*Heteropygia*, with the upper tail coverts white, more or less streaked with brown, and the bill under one inch in length. Length, $7\frac{1}{2}$ inches.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus HETEROPYGIA.

AMERICAN PECTORAL SANDPIPER.

HETEROPYGIA MACULATA—(*Vieillot*).

Tringa maculata, Vieill. N. Dict. d'Hist. Nat. xxxiv. p. 465 (1819); Dresser, B. Eur. viii. p. 11, pl. 546 (1878); Yarrell, Brit. B. ed. 4, iii. p. 368 (1883); Lilford, Col. Fig. Brit. B. pt. xiv. (1890).

Tringa pectoralis (Say); Macgill. Brit. B. iv. p. 190 (1852); Seebohm, Hist. Brit. B. iii. p. 201 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 148, pl. 43 (1896).

Tringa accuminata pectoralis (Say), Dixon, Nests and Eggs Non-indig. Brit. B. p. 266 (1894).

Heteropygia maculata (Vieill.), Sharpe, Handb. B. Gt. Brit. iii p. 247 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 562 (1896).

Geographical distribution.—*British*: The American Pectoral Sandpiper is a rare straggler on migration to our Islands, chiefly in autumn. The claim of this species to rank as "British" rests upon the following recorded occurrences. England: Scilly Isles (four examples, one in May), Cornwall (one example), Devonshire (two examples), Sussex (one example), Kent (one example), Suffolk (four examples), Norfolk (eight examples), Lincolnshire (one example), Yorkshire (five examples), Durham (two examples), Cumberland (one example), Northumberland (two examples, one in June). Scotland: Dumbartonshire (one example), Aberdeenshire (one example), Orkneys (one example). Ireland: Co. Galway (one example). With the two solitary exceptions noticed, these occurrences have all been in autumn, during August, September, October and November. *Foreign*: Nearctic and Neotropical regions. In the Northern hemisphere it breeds in the Arctic regions of America above the limits of forest growth, from Alaska in the west to Davis Strait in the east, and has wandered as far as Greenland. It passes the United States, the Bermudas (abnormally) and the Bahamas on migration, and winters in the West Indies, Mexico, Central America, and the South American portion of the Intertropical realm. In the Southern hemisphere it unquestionably breeds in Patagonia, and possibly the Argentine, although the nest has not yet been actually discovered.

Allied forms.—*Heteropygia acuminata*, which since the first edition of the present work was published has become a “British” species, and will be dealt with fully in the following chapter. *H. bairdi*, an inhabitant of Alaska, and the valley of the Mackenzie, passing through the Western United States on migration, and wintering in the South American portion of the Primogæan realm, occasionally straying even as far as South Africa. Distinguished from the Pectoral Sandpiper by its black legs and feet (those of the Pectoral Sandpiper are buff), and by having the central tail feathers no longer than the outer ones.

Habits.—During its migrations this Pectoral Sandpiper passes along the coasts as well as by inland routes up the river valleys of the United States during April and May. It begins to return from its Arctic breeding grounds in August, and the autumn flight continues through the two following months. It frequents by preference low sandy or muddy coasts, swampy meadows and salt marshes, running about in a restless, active manner, tame and trustful. Like the Dunlin, it is sometimes observed in large flocks and parties, and is often met with solitary or in the company of other Waders. Its flight is rapid, sometimes rather wavering, and when in flocks the birds often perform graceful evolutions after they are flushed. The birds of a flock scatter about a good deal whilst feeding, but when alarmed they soon form into a compact body in the air, and often rise to a considerable height after being fired at. It is much attached to its feeding grounds, resembling the Ringed Plover in this respect, and continues to haunt certain spots in spite of much disturbance. The food of the Pectoral Sandpiper consists of small mollusks, crustaceans, insects of various kinds, notably beetles, scraps of algæ, and seeds. In summer the bird doubtless eats ground fruits. The call-note of this species is a single *tweet*, only repeated under exceptional cases when the bird is alarmed or excited; but at the breeding grounds the male often indulges in short flights with the wings elevated and beaten rapidly together, the throat expanded to the utmost, uttering meanwhile a guttural note which has been syllabled as *hoo-hoo-hoo*. Before uttering these notes the bird fills the œsophagus with air, thus distending the throat and breast like a Pouter-Pigeon. Adams was the first observer to record this peculiarity forty years ago; whilst much more recently (in 1879) Mr. Nelson remarked the same thing of this species in Alaska. The latter naturalist states that the skin of the throat and breast become flabby and loose during the pairing season, the œsophagus soft and distensible. The male may frequently be seen running along close to the female with this enormous air-sac inflated, the head drawn back and the bill pointed forward; or flitting just above the ground with head upraised and tail depressed, uttering the singular hollow booming notes.

Nidification.—Nothing appears to have been known respecting the breeding habits of the Pectoral Sandpiper until its eggs were obtained by Lieutenant

Ray's expedition to Point Barrow in Alaska in 1882—83. The birds were observed to arrive at their nesting places on the Arctic tundras or barren grounds at the end of May, and early in June they began to pair. The nest is stated to be always placed amongst the grass in a dry part of the tundra. The nest has not been described minutely, but the eggs are four in number. These vary in ground-colour from pale olive-brown to pale buff, blotched and spotted with rich reddish-brown, and with underlying markings of grey. They are pyriform in shape, and measure on an average 1·5 inch in length by 1·1 inch in breadth. One brood only is reared in the year, and as soon as the young are fledged they begin to congregate into parties for migration, but some of the old birds linger and skulk until they have completed their moult, before starting south.

Diagnostic characters.—*Heteropygia*, with the rump and upper tail coverts blackish; with little or no white on the secondaries, and with the central rectrices .25 inch longer than the next; by the greater amount of brown on the throat and chest, *streaked* with dark brown. Length, $8\frac{1}{2}$ inches.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus HETEROPYGIA.

SIBERIAN PECTORAL SANDPIPER.

HETEROPYGIA ACUMINATA—(Horsf.)

PLATE XXVIII.

Totanus acuminatus, Horsfield, Trans. Linn. Soc. xiii. p. 192 (1820).

Tringa acuminata (Horsf.), Ground, Proc. Zool. Soc. 1892, p. 581; Southwell, Zoologist, 1892, pp. 356, 405; Seebohm, Ibis, 1893, pp. 181—185, pl. 5; Dixon, Nests and Eggs Non-indig. Brit. B. Appendix i. p. 336 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 146 (1896).

Heteropygia acuminata (Horsf.); Sharpe, Handb. B. Gt. Brit. iii. p. 244 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 566 (1896).

Geographical distribution.—*British*: The suggestion we made in the first edition of the present work that possibly some of the examples of *H. maculata* recorded as British might prove to belong to the present species, has been justified by the discovery that at least one specimen has been so confused with the American Pectoral Sandpiper. This example is said to have been obtained near Yarmouth, in September, 1848, remaining for nearly half-a-century unidentified in the Norwich museum. Curiously enough, with that strange coincidence of occurrence remarkable in not a few of the rare birds obtained in our Islands, a second example of this species was shot near the same locality on the 29th of August, 1892, by Mr. T. Ground. Both these examples are in adult plumage. They were recorded by Seebohm (*Ibis*, 1893, p. 181, pl. 5), who gives (in conjunction with Dr. Sclater) an exhaustive account of the species. Mr. Ground's specimen (the example figured in the *Ibis*) when shot was in the company of several Dunlins and a Ringed Plover. *Foreign*: Eastern Palæarctic region; Oriental and Australian regions in winter. Although the exact breeding grounds of this Sandpiper remain to be discovered, there can be little doubt that they are located in North-eastern Siberia, in Dauria, the Tchuski Land, and Kamtschatka. It is, however, worthy of remark that Dr. Stejneger, during his visit to the latter country, only obtained young examples during autumn migration on Behring Island. It passes the coasts of China and Japan on migration, and winters in the Malay Archipelago, and in the Australian portion of the Intertropical or Primogæan realm. It is a species of wide abnormal migration, and has been met with in Alaska (where it possibly breeds), at Gilgit, in the Indus Valley, in South Australia, the Friendly Islands and New Zealand.

Allied forms.—*Heteropygia maculata*, the American representative of the Pectoral Sandpiper—also an abnormal migrant to the British Islands, and the other species in the present genus already dealt with in the preceding chapters.

Habits.—But little of interest has been recorded concerning the habits of the Siberian Pectoral Sandpiper, and doubtless its economy very closely resembles that of allied and better known species. Like most birds breeding in the high north, this Sandpiper migrates late in spring and retires south early in autumn, probably as soon as the young can fly. Swinhoe found it abundant on the Chinese coasts in August, whilst Mr. Styan records it as passing through Shanghai in fair numbers in April and May. The autumn migration, however, must be somewhat prolonged, because Dr. Stejneger states that these birds were observed on Behring Island from the middle of September onwards for three weeks. He met with them both on the tundra near the lake and on the rocky beach. He speaks of them as being very shy, occurring singly or in small parties, never in large flocks. Mr. Nelson met with this Sandpiper near North Cape, on the north shore of Siberia, scattered about the wet grass flats near the coast as early as the first of August. The birds were seeking for food amongst the reindeer tracks with which the ground was covered. Curiously enough these individuals were the reverse of shy, and allowed Mr. Nelson and his companions a close observation as they circled round about his party. This naturalist states that the birds usually make their first appearance on the shores of Norton Sound at the end of August, and soon become very common. Sometimes they remained in this locality up to the 12th of October; and Mr. Nelson informs us that he has seen them searching for food along the tide-line when the ground was covered with a couple of inches of snow. Their tameness was remarkable, and if a flock was fired at the birds returned again and again to the same spot. I find little or nothing recorded respecting the flight, notes, or general habits of this interesting bird; but Dr. Stejneger states that its food partly, at all events, consists of gammarids.

Nidification.—The nest and eggs of the Siberian Pectoral Sandpiper are at present unknown to science.

Diagnostic characters.—*Heteropygia*, with the central rectrices 1 inch longer than the next, with squamate markings on the belly and flanks (adult in summer); and by the lesser amount of brown on the throat and chest, *spotted* with dark brown.

Genus LIMONITES, or Stints.

Type, LIMONITES MINUTA.

Limonites, of Kaup (1829).—The birds comprising the present genus are characterised by having the culmen and metatarsus equal in length, but the latter is no more than about equal to the middle toe and claw combined, and also by having a hind toe. The wings are long and pointed. The nostrils are lateral and situated in a groove. The tibia just above the metatarsal joint is devoid of feathers.

This genus is composed of five species, distributed over the northern portions of the Palæarctic and Nearctic regions (Arctogæan realm) in summer, and the Neotropical, Ethiopian, Oriental, and Australian regions (Primogæan realm) in winter. Three species are visitors to the British Islands, two on spring and autumn passage, and one on abnormal migration.

The Stints resemble allied species in their habits and general economy. In summer they frequent tundras and open grounds; in autumn and winter, sea coasts. They are social and gregarious, especially during the non-breeding season. They feed on insects, larvæ, worms, crustaceans, mollusks, ground fruits, etc. They are monogamous, making a slight nest upon the ground, and their eggs, four in number, are richly marked with a double class of spots.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus LIMONITES.

LITTLE STINT.

LIMONITES MINUTA—(*Leisler*).

Tringa minuta, Leisler, Nachtr. Bechst. Naturg. Deutschl. i. p. 74 (1812; Macgill. Brit. B. iv. p. 227 (1852); Dresser, B. Eur. viii. p. 29, pl. 549, fig. i (1871); Yarrell, Brit. B. ed. 4, iii. p. 386 (1883); Seebohm, Hist. Brit. B. iii. p. 204 (1885); Lilford, Col. Fig. Brit. B. pt. xix. (1891); Dixon, Nests and Eggs Non-indig. Brit. B. p. 267 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 148, pl. 44 (1896).

Limonites minuta (Leisler), Sharpe, Handb. B. Gt. Brit. iii. p. 250 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 538 (1896).

Geographical distribution.—*British*: The Little Stint is a fairly common visitor on spring and autumn migration, most abundant during the latter period. It is principally found on the eastern coast of England, more rarely on the south coast, and still less frequently on the east coast of Scotland as far north as the Shetlands. It is practically unknown on the west coast of Scotland, and is rare on the west coast of England, chiefly affecting Lancashire and the Solway district. It visits Ireland sparingly every autumn, most frequently on the north-east and eastern coast, and passes the Channel Islands on migration. *Foreign*: Western Palæarctic region; Ethiopian region, and Indian subregion of Oriental region in winter. This Stint breeds locally on the Arctic tundras of Europe and Asia from the North Cape in the west to the Taimur peninsula in the east, including Kolguev, Nova Zembla and Waigatz Island. It has been found breeding at Kistrand in Northern Norway, on the Kola peninsula in Lapland, in the delta of the Petchora in Russia, on the Yalmal peninsula, in the valley of the Yenisei, and on the Taimur peninsula in the Siberian province of Yeniseisk. It passes the coasts of Europe, the valleys of the Kama and the Volga, Western Siberia and Turkestan on migration, and winters sparingly in the basin of the Mediterranean, tropical Africa,* (including the valley of the Nile and the Central Lakes), Arabia,

* We cannot admit that this Stint is a normal migrant to South Africa, nor that it anywhere crosses the tropics to winter.

Persia, India, Ceylon and Burmah. The Little Stint has also been recorded from the Seychelles and Providence Bank, in the Indian Ocean.

Allied forms.—*Limonites ruficollis*, an inhabitant of Eastern Siberia, from the valley of the Lena to the Tchuski Land and the Commander Islands passing the Baikal region, China, and Japan on migration, and wintering in the Malay Archipelago and Australia. Possibly this bird may breed in the Southern hemisphere. Gould records it as doing so in Australia in the Houtmans Abrolhos in December. It also visits Tasmania and the smaller islands. We may rest assured that if this Stint normally crosses the tropics it breeds in south temperate or even antarctic latitudes. The eastern representative of the Little Stint, possibly distinct although completely intergrading with its western representative. Typical examples in breeding plumage differ from the Little Stint in having the underparts, from the chin to the breast inclusive, unspotted chestnut, and the two central tail feathers uniform brownish-black. In the Little Stint the chin and throat are white, and the breast is streaked with chestnut. The two forms are, however, almost if not quite indistinguishable in winter plumage. *L. minutilla* and *L. damacensis* treated of in the next chapter.

Habits.—British naturalists and sportsmen only have the opportunity of meeting with the Little Stint during the period of its autumn and spring migrations along our coasts. In autumn it begins to arrive in August, but the majority appear in September and remain until October before passing on still further to the south. It is a late bird of passage in spring with us, not arriving before May in any numbers, lingering with us often until the middle of June, then starting north for the Arctic tundras where it breeds. During its sojourn on the British coasts it chiefly frequents the low shores where mud-flats abound, and broad reaches of sand supply it with haunts where food is ever plentiful. It also frequents salt marshes, and is partial to the wide estuaries of East Anglia. Here it is frequently to be met with in the company of Dunlins and other little birds of the shore. It usually migrates in flocks of varying size which, when alarmed, perform various graceful evolutions in the air before settling again. Even during the breeding season the Little Stint is a remarkably social bird, and small parties collect round the shores of the moorland pools to feed. The immature non-breeding birds appear to keep in large flocks in the summer quarters throughout their stay; and whilst the brooding birds are busy incubating, their mates often form into considerable bands. Its habits when on the coasts of our Islands are very similar to those of the Dunlin. Like that bird it is almost constantly in motion, running hither and thither about the mud and sand in a restless manner, and even wading through the shallows, but it appears never to swim nor dive. The food of this Stint consists of insects and their larvæ, crustaceans, worms, and various small marine creatures; whilst in the Arctic

regions the bird may also eat ground fruits and small seeds. Its note at the nesting place is a rather shrill *whit*, but in autumn and winter it utters a chirping cry. This species probably has a trill during the pairing season; but as Messrs. Seebohm and Harvie-Brown did not reach the breeding grounds of the Little Stint until after this event was over, they probably did not hear it.

Nidification.—Von Middendorff was the first naturalist to discover the breeding grounds of the Little Stint. Nearly fifty years ago he met with it nesting on the Taimur peninsula, at the eastern limit of its known range. In 1875 Messrs. Seebohm and Harvie-Brown discovered nesting places of this Stint at the delta of the Petchora, and their interesting accounts of the breeding of this bird in Europe were the first made known to British ornithologists. Since their discoveries, other breeding places have been found in various parts of Arctic Europe, extending as far west as the Porsanger fjord and the North Cape in Northern Norway. At the mouth of the Petchora the breeding grounds of the Little Stint were situated on a comparatively dry and gently sloping part of the tundra close to the inland sea, at the mouth of the great river. Here the tundra was thickly studded with tussocks of grass, and the swampy ground was almost concealed by cotton-grass. These grass tufts were covered with green moss and smaller patches of reindeer moss, the whole almost hidden with a thick growth of cloud-berry and carices, dwarf shrubs, and sundry Arctic flowers. Several of the nests discovered were quite close together. Other nests were found where the ground was more sandy and full of small pools, and covered with short grass and plants. The nest of the Little Stint is merely a slight hollow in the ground, lined with a few dead leaves of the cloud-berry and other scraps of vegetable refuse. The eggs are four in number, and vary in ground-colour from pale greenish-grey to pale brown, spotted and blotched with rich reddish-brown, and with underlying markings of paler brown and grey. Most of the spots and blotches are on the larger end of the egg, as is usual with those of all Waders. They are pyriform, and measure on an average 1·1 inch in length by ·8 inch in breadth. They are laid towards the end of June, or early in July. Incubation appears to be performed by both sexes, and one brood only is reared in the year. In some cases the female alone appears to frequent the nest, and when this is approached she makes little demonstration and is remarkably quiet. It should be remarked, however, that Mr. Pearson found the *male* bird at the nests he discovered. Messrs. Seebohm and Harvie-Brown state that the tameness of the hen bird was sometimes most extraordinary. The former gentleman states that at one nest the female approached within eighteen inches of his hand as he sat beside the eggs, and when his hand was stretched towards her she quietly retreated a couple of feet; but the moment he left the vicinity of her home she changed her tactics at once, and began fluttering along the ground with quivering wings and outspread tail as if dying. After having a glove thrown at her and

being fired at, she concluded that men were not to be trusted, and she finally flew away. It is sad to read that after all she returned, faithful to her beloved eggs, and fell a martyr to science! In the summer of 1895 Mr. C. E. Pearson succeeded in obtaining fifteen sets of eggs of the Little Stint on the island of Kolguev, between the 6th and the 15th of July. All were placed at no great distance from tidal water.

Diagnostic characters.—*Limonites*, with the wing under 4 inches in length, the bill broadest at the base, and the legs and feet black. Length, 6 inches.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus LIMONITES.

AMERICAN STINT.

LIMONITES MINUTILLA—(Vieillot).

Tringa minutilla, Vieill. N. Diet. d'Hist. Nat. xxxiv. p. 452 (1819); Dresser, B. Eur. viii. p. 51, pl. 552, figs. 2, 3 (1871); Yarrell, Brit. B. ed. 4, iii. p. 396 (1883); Seebohm, Hist. Brit. B. iii. p. 213 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 149, pl. 44 (1896); Lilford, Col. Fig. Brit. B. pt xxxv. (1897).

Tringa subminuta minutilla, Vieill., Dixon, Nests and Eggs Non.-indig. Brit. B. p. 270 (1894).

Limonites minutilla (Vieill.); Sharpe, Handb. B. Gt. Brit. iii. p. 255 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 548 (1896).

Geographical distribution.—*British*: The American Stint is a very rare straggler on autumn migration to our area, but is one that is doubtless frequently overlooked. The claim of this species to rank as "British" rests upon the following occurrences:—England: Cornwall (one example), October, 1853; Devonshire (two examples), September, 1869, and August, 1892. *Foreign*: Northern Nearctic region; Neotropical region in winter. It breeds in the Arctic regions of America from Alaska to Labrador and Newfoundland, south to Nova Scotia. It passes the United States, from California in the west to the Atlantic coast in the east, on migration, occurring abnormally on the Bermudas, a few wintering in the Southern States, but the majority in Mexico, the West Indies, Central America, the Galapagos (doubtless abnormally), and the northern portions of South America.

Allied forms.—*Limonites damacensis*, an inhabitant of Eastern Siberia, south of the Arctic circle, from the valley of the Lena to the coasts of the Sea of Okhotsk, Behring Island, and the islands off Alaska. It passes through the Baikal region, the valley of the Amoor, and along the coasts of China and Japan on migration, and winters in the Malay Archipelago, North Australia, India, Ceylon, and Burmah. The Old World representative of the American Stint only sub-specifically distinct, and completely intergrading with its New World representative. Typical examples differ from the American Stint in having a larger foot (length of middle toe and claw .85 to .95 inch, instead of .8 to .85 inch). *L. minuta* and *L. ruficollis* treated of in the preceding chapter.

Habits.—The American Stint is as well known and abundant in the United States during its seasons of migration as the Little Stint is in Western Europe. Unlike that bird, however, it appears to migrate across inland districts as well as along the coast line. They begin to arrive in the Southern States in April, slowly travel on to New England early in May, reach North Carolina towards the end of the latter month, but do not appear on the Arctic tundras where they breed until early June, when the snow is melted, and the “barren” grounds no longer deserve the name but teem with life. Notwithstanding the fact that many follow an inland course, the favourite haunts, both on passage and in winter, are the mud-flats of the low-lying coasts. Here in the wide marshes behind the actual beach, amongst the creeks and mud-fringed streams, the American Stint may be watched in flocks of varying size tripping about the slimy soil, picking here and probing there in quest of its food. The return migration commences with the immature and non-breeding birds towards the middle of July; in August many of the young appear, but the great flights arrive during September. When in flocks the American Stint is rather a silent bird, but when flushed solitary or in little parties, it usually utters a sharp whist as it hurries away. It is very tame when on the coast. Flocks of this bird when flushed often perform various graceful evolutions in concert before alighting again. Like all its congeners it is a restless, active little bird, ever tripping about in quest of food, and very frequently associates with other small Waders. The food of the American Stint consists of insects and their larvæ, small worms, crustaceans and mollusks, seeds, and various ground fruits. Some of this food is sought on the weed-covered rocks at low water, or even on masses of drifting seaweed.

Nidification.—Eggs of the American Stint may be found towards the end of June or early in July. Its breeding grounds are on the Arctic tundras, sometimes near the coast, more frequently a short distance inland on the margins of the lakes and pools. The nest is merely a slight hollow in the ground, lined with a little withered grass and dead leaves, and is often made under the shelter of a bush or a stone. The eggs are four in number, pale buff in ground-colour, spotted and blotched with reddish-brown, and with underlying markings of paler brown and grey. They very closely resemble those of the preceding species. They are pyriform in shape, and measure on an average 1·0 inch in length by ·8 inch in breadth. The female is very tame and trustful at the nest, but sometimes seeks to lure an intruder away by feigning lameness. One brood only is reared in the year, and as soon as the young can fly they and their parents begin to draw southwards.

Diagnostic characters.—*Tringa*, with the outer rectrices grey, the legs and feet pale brown, and the wing less than 4 inches long. Length, $5\frac{1}{2}$ to 6 inches.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ,

Genus LIMONITES.

TEMMINCK'S STINT.

LIMONITES TEMMINCKI—(*Leisler*).

Tringa temminckii, *Leisler*, Nachtr. Bechst. Naturg. Deutschl. ii. p. 78 (1812); *Macgill*, Brit. B. iv. p. 230 (1852); *Dresser*, B. Eur. viii. p. 45, pl. 549, fig. 1; pl. 555, fig. 2 (1871); *Yarrell*, Brit. B. ed. 4, iii. p. 398 (1883); *Seebohm*, Hist. Brit. B. iii. p. 217 (1885); *Dixon*, Nests and Eggs Non-indig. Brit. B. p. 272 (1894); *Lilford*, Col. Fig. Brit. B. pt. xxxi. (1895); *Seebohm*, Col. Fig. Eggs Brit. B. p. 149, pl. 44 (1896).

Limonites temmincki (*Leisler*), *Sharpe*, Handb. B. Gt. Brit. iii. p. 257 (1896); *Sharpe*, Cat. B. Brit. Mus. xxiv. p. 555 (1896).

Geographical distribution.—*British*: Temminck's Stint is a rare but regular visitor to our Islands on spring and autumn migration; most frequent on the east and south coasts of England from the Humber to the Scilly Isles, and especially so in Norfolk. North of the Humber it is rare, and has once only or twice been recorded from Scotland. It is very rare on the west coast of England; whilst one example only has been recorded from Ireland, and this in January, the sole known instance of this species being found in our Islands during winter. It occasionally wanders inland—Middlesex, Cambridgeshire, Notts, and Lancashire. *Foreign*: Northern Palæartic region; Oriental region in winter. It breeds on the tundras above the limits of forest growth, from Scandinavia in North-western Europe to the Tchuski Land in North-eastern Asia, and in suitable localities on river banks as far south as lat. 65° on the White Sea and Bothnian Gulf, and lat. 55° on the coasts of the Okhotsk Sea. It has been said to breed on the lofty Siberian Mountains, but the evidence is unsatisfactory, although the record of a male bird obtained on the 26th of May from Tagdumbash Pamir, at an elevation of 14,000 feet, is very suggestive. It passes the European coasts, and along internal routes both of Europe and Asia, and the coasts of China (accidentally in Japan), on migration, and winters in the basin of the Mediterranean, in Northern Africa, and on both eastern and western coasts as far south as lat. 10°, India, Ceylon, Burmah, South China, and the Malay Archipelago.

Allied forms.—None nearer than the Stints already dealt with, and to which it is only distantly related.

Habits.—The British Islands are evidently situated on the extreme outer fringe of the spring and autumn migration of Temminck's Stint. This is probably because the bird's line of flight is more inland, not so maritime as that of the Little Stint, and taken down the great river valleys which extend almost due north and south between the tundras where it breeds and the countries where it winters. The few individuals that do stray so far to the westward as our coasts usually make their appearance in May and September, and the great majority of the birds reach their Arctic haunts during the last week of May in Europe and the first week of June in Siberia. It is much more addicted to inland lakes and rivers than to the coast, and always prefers a muddy shore to a sandy one. During passage and in its winter quarters Temminck's Stint is generally met with in flocks, but occasionally in scattered pairs or alone, and odd birds are frequently met with in the gatherings of other Waders. Its habits and movements on the mud-flats do not differ in any important respect from those of its congeners. Its flight is rapid and the small bunches of birds frequently gyrate in the air after being disturbed from their feeding places, each movement being performed with such precision that a common impulse seems to control the entire number of individuals. The food of Temminck's Stint is composed principally of insects and their larvæ, worms, and various small marine animals; particles of vegetable matter have been noticed in the stomach of this bird. Its call-note is a shrill *ptirr*, very different from the *whit* of the Little Stint.

Nidification.—The breeding season of Temminck's Stint is in June. Wolley was the first naturalist to furnish detailed information of the nest and eggs of this species. He found it breeding sparingly in the marshes to the north of the Bothnian Gulf. Although several nests may be found quite close together, it is said that Temminck's Stint is not gregarious at the breeding grounds, keeping in pairs during that period. During the pairing season this Stint frequently perches on the small trees in its haunts, or stands on a post or fence, vibrating its wings and trilling lustily. This musical trill, however, is generally uttered whilst Temminck's Stint is wheeling round and round or hovering and floating in the air, although it is sometimes heard as the bird runs along the ground with uplifted wings. The nest is usually made near to water, often on low islands which are clothed with willows and long grass at the delta of a river. It is merely a hollow amongst the sedge, rushes, or grass, scantily lined with dry grass and withered leaves. The eggs are four in number, ranging from pale buff to pale olive in ground-colour, spotted and blotched with reddish-brown and dark brown, and with underlying markings of paler brown and grey. On some eggs a few dark, nearly black, streaks occur. They are pyriform in shape, and measure on an average 1·1 inch in length by ·85 inch in breadth. When its breeding grounds are invaded Temminck's Stint becomes exceedingly demonstrative and noisy, and often betrays the whereabouts of its nest by careering wildly about above it,

When the nest is actually discovered the bird becomes much quieter, and its actions closely resemble those of the Little Stint under similar conditions. Incubation seems in many cases to be performed by the male (although instances are on record where the female has been shot from the nest), and it is usually he that is so excited and alarmed when the nest is threatened by danger. One brood only is reared in the year, and as soon as the young are able to fly the breeding grounds begin to be deserted.

Diagnostic characters.—*Limonites*, with the outer rectrices pure white. Length, 6 inches.

Genus TRINGITES, or Buff-breasted Sandpipers.

Type, TRINGITES RUFESCENS.

Tringites, of Cabanis (1856).—The birds comprising the present genus are characterised by having the metatarsus longer than the culmen, and the central retrices extending beyond the others. The bill is short, the culmen less than the metatarsus in length. The wings are long and pointed, and the black mottling on the inner webs of the primaries and secondaries is very noteworthy and peculiar to the genus. The nostrils are lateral and situated in a groove. The tibia just above the metatarsal joint is devoid of feathers: the hind toe is present.

This genus is composed of a single species only, distributed over the American Continent from the Arctic regions south to the Primogæan realm. It is an abnormal migrant to the British Islands.

The habits, food, migrations, nidification, notes, etc., of this single species are described in the following chapter.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus TRINGITES.

BUFF-BREASTED SANDPIPER.

TRINGITES RUFESCENS—(Vieillot).

PLATE XXVII.

- Tringa rufescens**, Vieill. N. Dict. d'Hist. Nat. xxxiv. p. 470 (1819); Macgill. Brit. B. iv. p. 194 (1852); Lilford, Col. Fig. Brit. B. pt. xix. (1891); Dixon, Nests and Eggs Non-indig. Brit. B. p. 276 (1894).
- Tringites rufescens** (Vieill.), Dresser, B. Eur. viii. p. 111 pl. 561 (1876); Yarrell, Brit. B. ed. 4, iii. p. 435 (1883).
- Tryngites rufescens** (Vieill.), Seebohm, Hist. Brit. B. iii. p. 226 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 151, pl. 43 (1896).
- Tringites sub-ruficollis** (Vieill.); Sharpe, Handb. B. Gt. Brit. iii. p. 264 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 521 (1896).

Geographical distribution.—*British*: The Buff-breasted Sandpiper is a rare straggler to the British Islands, chiefly on autumn migration, as is usually the case with abnormal migrants from the New World. The claim of this species to rank as "British" rests on the following recorded occurrences:—England: Cambridgeshire (one example), Norfolk (four examples), Sussex (one example), Cornwall and Scilly Isles (four examples), Lundy Isle (one example), Lancashire (one example), May, 1829; Cumberland (one example). Scotland: Caithness (one very doubtful example). Ireland: Co. Dublin (one example), Antrim (two examples). All have occurred in autumn with the exception of the Lancashire example, the date of which is open to some doubt. *Foreign*: Northern Nearctic region, and probably extreme north-east of Palæarctic region; Northern Neotropical region in winter. It breeds in the Arctic regions of America, from Alaska probably to Baffin Bay, although it is unrecorded from Greenland. Westwards it appears to range to the Siberian coasts of Behring Strait, and has been obtained on the southern shore of the Okhotsk Sea. It passes the United States and the Bermudas (abnormally) on migration, and winters in Mexico, the West Indies, and the northern portion of South America. A single example has been obtained on Heligoland in May, a date, by the way, which tends to confirm that of the Lancashire example, whilst it has been recorded from Japan.

Allied forms.—None of sufficient propinquity to require notice.

Habits.—The Buff-breasted Sandpiper is a Sandpiper that eschews the sands. It is not a coast bird, and prefers the prairies to the mud-flats, and the

wide grassy wastes to the shore. Its migrations to and from its breeding grounds are consequently chiefly taken across inland districts, but small parties occasionally frequent the shore. It passes across the prairies of the United States in spring, and arrives at its Arctic breeding grounds during the first week in June, and the return migration commences in August and lasts through the autumn. In many of its habits it resembles Bartram's Sandpiper, and like that species it is fond of frequenting the wagon tracks and bare spots on the plains, where it runs about in quest of food. It is said to be a very tame bird, seldom flying far after being fired at. Its flight is rapid and straightforward. The note of the Buff-breasted Sandpiper is described by Dr. Heermann as a low, oft-repeated *tweet*. The food of this species consists principally of insects, especially coleoptera, for which the bird searches amongst the droppings of animals and the herbage of its haunts. Worms, and when on the shore, crustaceans and mollusks, are also eaten, and during summer various ground fruits and berries. During migration the Buff-breasted Sandpiper is more or less gregarious, but whether these flocks continue through the winter appears to be unknown.

Nidification.—But little has been recorded of the habits of the Buff-breasted Sandpiper during the breeding season. Mr. Elliot states that the males go through various antics during the pairing season, sometimes sparring with each other like game cocks and then soaring into the air. MacFarlane found this bird breeding in abundance in the Anderson River district in the north-west of America, and obtained a remarkably fine series of eggs; but unfortunately he neglected his splendid opportunities of observing and recording details of the nesting habits of this and many other Waders, and the few facts he has furnished only bring out in stronger contrast his unpardonable neglect. He informs us that the nest is always on the ground, and scarcely distinguishable from that of the Golden Plover (*Charadrius fulvus*). His series of eggs was obtained between the 26th of June and the 9th of July. The Buff-breasted Sandpiper was also met with breeding at Point Barrow, in Alaska by Mr. Murdoch. He states that it frequented the dry portions of the tundra, and that the nest was a shallow depression lined with a little moss. The eggs are four in number, and vary in ground-colour from pale to rich buff, sometimes tinged with olive, handsomely blotched and spotted with rich reddish-brown and blackish-brown, and with numerous underlying markings of ink-grey. They measure on an average 1.45 inch in length by 1.0 inch in breadth. The parent birds are said to be very tame at the nest, only flying away for a little distance when flushed from the eggs. But one brood is reared in the season, and the southern flight commences shortly after the young can fly.

Diagnostic characters.—*Tringites*, with the under surface of the wings buff, mottled with black and white, and the tail graduated. Length, 7 to 8 inches.

Genus CALIDRIS, or Sanderlings.Type, CALIDRIS ARENARIA.

Calidris, of Illiger (1811).—The birds comprising the present genus are characterised by having the metatarsus and culmen about equal in length, combined with the absence of a hallux or hind toe. The bill is short and stout, the culmen about equal to the metatarsus in length. The wings are long and pointed. The nostrils are lateral, and situated in a groove. The tibia, just above the metatarsal joint, is devoid of feathers.

This genus is composed of a single species only, which has a range base in the Primogæan realm, migrating north to breed, apparently as far as land extends in the Northern hemisphere (Arctogæan realm), and south to unknown limits, possibly for a similar purpose, although its breeding grounds in the Southern hemisphere (Notogæan realm) are still undiscovered. It is a common visitor to the British Islands on migration, and a few remain to winter within our limits.

The habits, food, migrations, nidification, notes, &c., of this single species are described in the following chapter.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus CALIDRIS.

SANDERLING.

CALIDRIS ARENARIA—(*Linnæus*).

Tringa arenaria, Linn. Syst. Nat. i. p. 251 (1766); Dixon, Nests and Eggs Non-indig. Brit. B. p. 274 (1896).

Calidris arenaria (Linn.), Macgill. Brit. B. iv. p. 237 (1852); Dresser, B. Eur. viii. p. 101, pls. 559, 560 (1877); Yarrell, Brit. B. ed. 4, iii. p. 420 (1883); Seebohm, Hist. Brit. B. iii. p. 221 (1885); Lilford, Col. Fig. Brit. B. pt. xxi. (1892); Seebohm, Col. Fig. Eggs Brit. B. p. 150, pl. 41 (1896); Sharpe, Handb. B. Gt. Brit. iii. p. 260 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 526 (1896).

Geographical distribution.—*British*: The Sanderling is a common visitor to our area on spring and autumn migration, most abundant during the latter, a few remaining behind in the fall to winter, especially in the mild climate of the south. It visits all the islands as well as the mainland coasts, including the Orkneys and Shetlands, the Hebrides and the Channel Islands; and occasionally occurs some distance inland, especially near to large sheets of water. *Foreign*: Circumpolar region in summer, Palæarctic and Nearctic regions chiefly on passage; Ethiopian, Oriental, and Neotropical regions in winter. It probably breeds in suitable localities on all the shores of the Arctic Ocean, although its known breeding grounds are remarkably few. In the Old World its eggs appear only to have been taken in Iceland (lat. 65°), although it is to be met with during summer on Spitzbergen, as was recently ascertained by Mr. Pike, on the Golaievskai Islands in the Petchora Gulf, the Waigats, Nova Zembla, the delta of the Yenesei, the Taimur peninsula, and the Laikov Islands. In the New World portion of the Circumpolar region its eggs have been taken on the Anderson River (lat. 68°), on the Parry Isles (lat. 78°), in Grinnell Land (lat. 82½°), and in Greenland on the west coast near Smith Sound (lat. 79°), and Godthaab (nestlings) (lat. 63°), on the east coast, Sabine Island (lat. 74½°). It is also a common bird during summer in Alaska. It passes the coasts of Europe, Asia, and America, as well as along many internal routes, on migration, and winters in the basin of the Mediterranean, on the coasts of Africa, Arabia, and the Mekran coast, but becomes rare in India, Ceylon and Burmah. Dr. Abbott states that this species is "common" on Aldabra Island, north-west of Madagascar, whilst four examples are recorded from it by Ridgway. Further east it

is a winter visitor to China, Japan, and the Malay Archipelago (Java, Borneo), and has been recorded from Australia. During that season it visits all the coasts of South America within the tropics, the Galapagos, the West Indies, and the Bermudas. In the New World the Sanderling is found as far south as Terra del Fuego; in the Old World down to Cape Colony. If these visits are normal, then the species breeds in southern latitudes.

Allied forms.—None of sufficient propinquity to demand notice.

Habits.—A few Sanderlings, probably individuals that have not been breeding, appear on the British coasts at the end of July, but the majority of birds arrive during August and the early days of September. By the middle of the latter month many have passed on towards the south; by the end of October comparatively few are left, and some of these linger with us throughout the winter. The return migration of the Sanderling commences on our coasts in April, and lasts into May and early June. It is said to be one of the first migrants to arrive in the Arctic regions, even reaching such high latitudes as the extreme north of Siberia by the 4th of June, and Grinnell Land, upwards of eight degrees further north, one day later. That the Sanderling migrates by night there can be little doubt, for I have repeatedly become aware of its arrival in the Wash in autumn by taking as many as half-a-dozen birds from a single flight net as soon as the tide had ebbed, and before sunrise. I do not think they fly very high whilst on passage, for these birds must have struck the net at the half-ebb, when only a part of it was exposed above water. The Sanderling is a gentle, trustful little creature, not only fond of the sandy reaches, but the mud-flats and shores of the creeks and streams in salt marshes and in the estuaries of rivers. Whilst on passage and in its winter quarters the Sanderling gathers into flocks of varying size, but many pairs frequent the coast by themselves, or attach themselves to parties of other small Waders. I have especially remarked the partiality of this little bird for the company of Ringed Plovers. Here in Devonshire most large bunches of that Plover contain a few Sanderlings during the period of the latter bird's migrations. Its actions on the sand are very similar to those of the Ringed Plover. It does not appear to run in such fits and starts, but steadily searches the ground after the manner of a Dunlin or a Stint. In many localities I have repeatedly observed that during high water the Sanderling skulks on the higher shingle, returning to the actual beach as soon as the sands begin to be exposed. Here it follows the receding tide, running about the edge of the waves as they break on shore, and occasionally wading through the shallow water. The white breast of the Sanderling makes it a very conspicuous bird on the dark sands, and the effect produced of a scattered flock all standing head towards the observer is very pretty. It is a remarkably tame little creature upon its first arrival, but becomes more wary later. The food of this species consists of crustaceans, sand-

worms, and various insects, as well as of great quantities of minute shells. In summer the Sanderling is much more insectivorous, and also feeds on the buds of the Arctic saxifrages. The note of this Wader is a sharp, shrill *whit*; whether it utters a trill or any other cry at the breeding grounds observers who have had ample opportunities of noticing omit to inform us.

Nidification.—Only meagre details concerning the breeding habits of the Sanderling are on record. MacFarlane appears to have been the first naturalist to take the nest of this bird, he killing a female from her eggs on the tundras near the Arctic Ocean in North-west America, on the 20th of June, 1863. This nest was merely a hollow scantily lined with dry grass and leaves. Thirteen years afterwards, almost to the very day (24th June), Captain Feilden found a nest of the Sanderling, close to Cape Union in Grinnell Land, on the shores of the Arctic Ocean at the very northern limit of known animal life. This nest was made on a ridge of gravel several hundred feet above sea-level, and was merely a slight hollow in the centre of a bent-down willow plant, lined with a few dead leaves and withered catkins. By the 8th of August he observed the young able to fly, yet still in company with their parents. The eggs of the Sanderling are four in number, buffish-olive in ground-colour, densely mottled and spotted with pale olive-brown, and with underlying markings of ink-grey. They measure on an average 1·4 inch in length by 1·0 inch in breadth. Both parents assist in the task of incubation, and one brood only is reared in the season. It is rather an unusual circumstance in this group of birds for the adults to migrate south before completing their autumn moult; but this the Sanderling does, and I have repeatedly shot adults in breeding dress in the first week in August.

Diagnostic characters.—*Calidris*, with no hind toe, and the legs and feet black. Length, 8 inches.

Genus SCOLOPAX, or Woodcocks.

Type, SCOLOPAX RUSTICULA.

Scolopax, of Linnæus (1766).—The birds comprising the present genus are characterised by having the culmen longer than the tarsus (twice its length), and the prominent eye situated so far back in the head as to be only just in front of the auricular orifice. The metatarsus is somewhat short, and the tibia is feathered in three species, bare just above the metatarsal joint in one other. The bill is long and straight, swollen laterally, and softened towards the tip, which is rugose or pitted. The nostrils are lateral, basal, and covered with a membrane. The wings are more rounded than in the Sandpipers, the long innermost secondaries not so long as the primaries, the black markings on the head are transversely situated, the tail is tipped with silvery white spots on the under surface; and the summer and winter plumage are similar in colour. Sternum so far as is known abnormal, with two notches only in the posterior margin.

This genus is composed of four species, one of which is peculiar to the Moluccas; two others distributed over the Palæarctic and Oriental regions; and a fourth confined to the Nearctic region. One species is common in the British Islands.

The Woodcocks are dwellers in woodland swamps. They are birds of rapid and powerful, if somewhat erratic, flight, displayed to a remarkable degree during courtship. They run and walk with ease; are shy and retiring, skulking close amongst the cover, from which they rarely wander far. Their food consists of worms, insects, and larvæ. Their nests are made upon the ground amongst herbage, and their double-spotted eggs are, so far as is known, less pyriform in shape, paler, and less richly marked than the Snipes, and four in number. They are monogamous, and for the most part solitary in their habits, except perhaps during migration and in the pairing season.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus SCOLOPAX.

WOODCOCK.

SCOLOPAX RUSTICULA—*Linnaeus*.

PLATE XXIX.

Scolopax rusticula, Linn. Syst. Nat. i. p. 243 (1766); Dresser, B. Eur. vii. p. 615, pl. 540 (1877); Yarrell, Brit. B. ed. 4, iii. p. 320 (1883); Seebohm, Hist. Brit. B. iii. p. 231 (1885); Lilford, Col. Fig. Brit. B. pts. viii. (1888), xiv. (1890); Dixon, Nests and Eggs Brit. B. p. 280 (1893); Sharpe, Handb. B. Gt. Brit. iii. p. 205 (1896); Seebohm, Col. Fig. Eggs Brit. B. p. 152, pl. 41 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 671 (1896).

Rusticola sylvestris (Brehm); Macgill. Brit. B. iv. p. 386 (1852).

Geographical distribution.—*British*: In the British Islands the Woodcock is a local resident, but most abundant during winter and on spring and autumn migration, especially the latter. It breeds sparingly throughout the British Islands (including the Shetlands), except perhaps on the Orkneys and Hebrides. It has, however, been recorded as having bred on the Long Island and other similar districts where suitable cover is wanting. *Foreign*: Palæarctic region; Oriental region in winter. It breeds in the forest districts of Scandinavia as far north as the Arctic circle, in West Russia up to about lat. 65°, and in East Russia and Siberia not much beyond lat. 60°. Southwards it breeds as low as the Azores, the Canaries, and Madeira, and at considerable elevations in the Alps, the Carpathians, the Balkans, and the Caucasus. Its southern breeding range in Asia reaches the Himalayas at an elevation of ten thousand feet, the mountains of the Baikal district, Mongolia, and the mountains of Japan. In the southern portion of its breeding area it is probably a resident, but the birds breeding in the north pass southwards to the basin of the Mediterranean, Persia, India (occasionally straying to Ceylon), Burmah, and China for the cold season; breeding, however, in the latter country in Western Szechuen at an altitude of from ten thousand to twelve thousand feet. It has occurred on the Faroes, and is an accidental wanderer to the Azores, Newfoundland, New Jersey, and Virginia.

Allied forms.—*Scolopax minor*, an inhabitant of North America from about lat. 50° in the north to Texas in the south, and as far west as the Rocky



Mountains. It is a resident in the south, but migratory in the north of this area. This species is distinguished by its attenuated first three primaries, and nearly uniform buff underparts. *S. rochusseni*, an inhabitant of the Moluccas, distinguished by its unbarred breast, and primaries marked with rudimentary bars; and *S. saturata*, an inhabitant, so far as is known, of Java and New Guinea, much smaller than the Common Woodcock and with the primaries barred on the outer webs only. These are all the true Woodcocks at present known to science.

Habits.—Speaking from a naturalist's point of view, and with a full knowledge of the habits of birds during the moulting season, I should say emphatically that the Woodcocks breeding in the British Islands are stationary, that is, in the sense of not crossing the seas. I am glad to say that this opinion is confirmed by several intelligent gamekeepers, on whose grounds the bird breeds in fair numbers every season. After the breeding season is over the Woodcock is a most skulking bird until its moult is completed; in this respect it resembles the Snipe. Not only so, but many of these resident Woodcocks are actually breeding even before the return migration of this species in spring, when the birds that breed further north pass our Islands on their way thither. The migrations of the Woodcock are both marked and regular. The bird may be traced leaving its winter quarters in the Mediterranean basin at Gibraltar in the west during the latter half of February, and in Asia Minor in the east during the first half of March. We find it in the British Islands on its way north in March, and it reaches Scandinavia by the end of that month or early in April. The return migration in autumn, which is much more pronounced and noticeable than the vernal one, begins early in October, and continues with varying intensity through the month into the first half of November. Asia Minor is reached towards the end of October, but in the west of the Mediterranean the birds are about a fortnight later. The Woodcock almost invariably migrates by night, up wind, and at a considerable elevation. This species is seldom or never caught in the flight nets, because it continues its lofty course until over dry land, and then drops down almost perpendicularly into the cover below. I have met with great numbers of tired-out Woodcocks in the early morning before actual sunrise on the shores of the Wash, skulking in the hedge-bottoms amongst the drifts of autumn leaves, or on the sea banks amongst the long dry grass. Here they generally remain, if not much disturbed, until the evening, and then, under the cover of darkness, continue their flight inland to their favourite and more suitable winter haunts. Many migrating Woodcocks come to grief at the lighthouses, attracted by the glare of the lanterns. The Woodcock very often arrives on our coasts, especially in autumn, in considerable numbers, or "rushes," but the bird, notwithstanding, is eminently a solitary one, even on passage, and these unusual arrivals are caused by a prolonged spell of unfavourable weather detaining them on Continental Europe and causing them to accumulate whilst waiting for a

favourable passage. As soon as this is presented all start off, eager to get to their journey's end, and consequently arrive simultaneously on our coasts, but as soon as they reach land they separate and each bird, or at most a pair, retire to their own particular haunts. Even in districts where the Woodcock is common during winter no gregarious tendencies are ever observed, and the birds are flushed with rare exceptions one after the other from certain favoured spots. Its habits are quite as solitary as those of the Snipes, and like those birds it is ever changing its ground, sometimes for no apparent cause. Woodcock-shooting is a sport that should never be put off till to-morrow; if plenty of birds chance to be in the covers they should be looked after at once, for very often if a night is allowed them they have taken their departure. The favourite haunts of the Woodcock are plantations of young trees and spinneys with plenty of long grass and undergrowth, and the borders of woods where similar cover abounds, especially hollies, under which the bird loves to skulk during the day. Its feeding grounds are marshes, swamps, and the boggy banks of streams, even turnip fields, and these are often some considerable distance from the haunts it frequents during the day-time. The Woodcock feeds principally at night, and it retires to its favourite pastures with great regularity about dusk, following a certain track to and from them; when its feeding places are close by it always prefers to walk down to them. Even whilst feeding it is ever a shy and cautious bird, and I have heard dozens of men whose daily lives have been spent in the woods and other haunts of this species remark, when questioned on the subject, that they had never seen a Woodcock feeding or running about in a purely voluntary manner. The occasions on which I have seen Woodcocks stirring of their own free will could easily be counted on the fingers of one hand. I have seen odd birds during a bright moonlight night whilst sitting near the swamps, certainly not watching for them, wandering about probing the mud with their long beaks, and looking very big and round and plump in the uncertain light, and disappearing like phantoms, as it were, into the very ground the moment they were alarmed. I remember one of these occasions was in the depth of winter and all the countryside was deep in snow, except the little swamp in question. The food of the Woodcock consists principally of earth-worms and grubs, but beetles and other insects are eaten, and vegetable fragments have been found in the bird's stomach. It has also been known to eat shellfish. Its flight is quick, but somewhat laboured, the bird carrying its long bill depressed. Sometimes when flushed the Woodcock hurries off at first in a very erratic manner, dipping and gliding or turning and twisting from side to side, and it is surprising how deftly the bird will thread its way between the tree-trunks and network of branches. It makes a very distinct whirr with its wings as it rises and at the same time occasionally utters a croaking sound, which I will not attempt to syllable, although some naturalists have done so with that of *skaych*. The Woodcock has been known to perch in trees,

Nidification.—As previously inferred, the breeding season of the Woodcock is an early one. Even in the north of Scotland its eggs have been taken on the 9th of March; a week earlier still in the north of England. The majority of the eggs are laid during April. The Snipes are birds remarkable for their peculiar flight and for the singular sounds they produce during the love or pairing season. The Woodcock, although somewhat aberrant, is not wanting in this curious performance. With the approach of the pairing season the habits of the male undergo considerable change. From being one of the shyest and most skulking of birds he suddenly changes, for a certain time each day, into a bold and obtrusive one. For a quarter of an hour in the early morning and again at night the male birds fly slowly to and fro along certain routes, usually a “drive” or an open glade in the woods or along the borders of the plantations and spinneys, uttering two peculiar notes, sometimes in succession, at others only one of them. One of these notes is a harsh, guttural *r-r-r-r-k*, the other a cry between a whistle and a hiss, impossible to express on paper. Whilst “roding,” as it is termed, should rival males meet each other a chase and a combat very often occur, incited more probably by invasion of haunt rather than the favour of the female. The nest is made in a dry secluded corner of the wood or spinney, where plenty of cover is to be found in the form of last year’s withered bracken, tall dry grass, brambles, and drifts of fallen leaves. It is merely a hollow in the ground, rather thickly lined with dry grass and withered leaves, and is usually sheltered more or less with surrounding vegetation, but sometimes in a bare spot at the foot of a tree. The lining materials are occasionally increased whilst incubation is in progress. The eggs of the Woodcock are four in number, and vary in ground-colour from very pale yellowish-brown to buffish-brown, rather sparingly spotted and blotched with reddish-brown, and with underlying markings of grey. They measure on an average 1·7 inch in length by 1·35 inch in breadth. Incubation lasts about three weeks. The Woodcock is a close sitter and usually remains upon the eggs until the last moment; rarely, if ever, are both parents seen near the nest together. Whether the eggs are ever covered when they are left voluntarily I cannot say, but I strongly suspect that such will prove to be the case. Although this species is solitary enough during the breeding season, as at most other times, several nests may frequently be found within a small area, especially in districts where suitable sites are not very common. One brood only is usually reared in the year, but instances are on record where fresh eggs have been found in July and August. St. John states that this species is double-brooded in Scotland, and this is also the experience of Hume in India. There can be no question that the female Woodcock very often removes her brood from place to place, carrying the chicks one at a time between her legs and pressed close to the body with her bill. It has even been stated that where the favourite feeding grounds are some distance from the nesting place the chicks are carried to them

at night and brought back to the woods at dawn. The flesh of the Woodcock is not excelled by that of any other bird.

Diagnostic characters.—*Scolopax*, with silvery tips to the under surface of the rectrices, with the breast barred and with the primaries marked with rudimentary bars on both webs. Length, 13 to 14 inches. The Woodcock is subject to considerable variation in size, weight, and plumage. Average weight, 11 to 12 oz. ; more rarely 14 to 16 oz. ; an example is on record weighing 27 oz. Indian individuals are said by Hume to be constantly smaller and lighter than British ones. Birds with the ground-colour of the plumage white or yellow are not very uncommon.

Genus GALLINAGO, or Snipes.

Type, GALLINAGO MAJOR.

Gallinago, of Leach (1816).—The birds comprising the present genus are characterised by having the culmen longer than the metatarsus (twice its length) and the long innermost secondaries equal in length to the primaries. The bill is long and straight, swollen laterally, and softened towards the tip, which is rugose or pitted. The nostrils are lateral, basal, and covered with a membrane. The black or dark markings on the head are longitudinal, not transverse as in the birds in the preceding genus. The number of rectrices varies to an enormous extent—from fourteen in the common British species to twenty-six in *Gallinago stenura*! The summer and winter plumage are similar in colour. Sternum, as far as is known, abnormal, with two notches only in the posterior margin.

This genus is composed of twenty-two species and subspecies, and may be described as almost cosmopolitan in distribution. Two species are British, one of which breeds within our Islands, and the other is a somewhat rare visitor, chiefly in autumn.

The Snipes are dwellers in marshes and woodland swamps. They are birds of rapid, powerful, and well-sustained if somewhat erratic flight, and run and walk with ease. They are more or less nocturnal in their habits. Their notes are loud, some of them not unmusical. They subsist on worms, insects and larvæ, etc. They make slight nests on the ground and their pyriform eggs are four in number and double-spotted. They are monogamous. They are almost solitary, never gregarious, save perhaps during migration or courtship. Their flesh is highly esteemed for the table.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ. •

Genus GALLINAGO.

GREAT SNIPE.

GALLINAGO MAJOR—(*Gmelin*).

PLATE XXX.

Scolopax major, Gmel. Syst. Nat. i. p. 661 (1788; Macgill. Brit. B. iv. p. 364 (1852); Seebohm, Hist. Brit. B. iii. p. 237 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 278 (1894); Lilford, Col. Fig. Brit. B. pt. xxviii. (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 152, pl. 41 (1896).

Gallinago major (Gmel.), Dresser, B. Eur. vii. p. 631, pl. 541 (1876); Yarrell, Brit. B. ed. 4, iii. p. 336 (1883); Sharpe, Handb. B. Gt. Brit. iii. p. 211 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 626 (1896).

Geographical distribution.—*British*: The Great Snipe is a rare straggler, chiefly on autumn migration, to our Islands, and most frequently observed in the eastern and southern counties. It is very rare in Scotland, perhaps not more than a dozen authentic instances of its occurrence being known, two of which were in May—a fact which more likely proves the bird occasionally to winter with us than to wander here in spring. In Ireland it is of even rarer occurrence still, probably not more than four examples having been recorded. *Foreign*: Western Palæarctic region; Ethiopian region in winter. It breeds more or less frequently in Holland, Denmark, North Germany, Poland, throughout Scandinavia, and Russia south to about lat. 50°, and north to the coast. In West Siberia it is found as far north as lat. 67½° in the valley of the Obb, but only to lat. 66½° in the valley of the Yenisei, which appears to be the eastern limit of its range. It passes the remainder of Europe (east of the Rhone valley), the Caucasus, and Persia on migration, a few wintering in the basin of the Mediterranean, but the majority passing on to the Ethiopian portion of the Intertropical realm for the cold season. It is said that the Great Snipe crosses the tropics to winter in South Africa, but possibly the present species has been confused with *Gallinago equatorialis*; if found there it is either as an abnormal migrant or as a summer visitor for breeding purposes.

Allied forms.—*Gallinago megala*, an inhabitant in summer of South-east Siberia and the north island of Japan, passing China on migration, and wintering in the Malay Archipelago. It is distinguished from the Great Snipe by having twenty tail feathers instead of sixteen, the outermost being narrow and banded with brown, instead of being broad and pure white for at least the terminal half.



G. australis, an inhabitant of Japan in summer, passing the coast of China and the Philippine Islands on migration, and wintering in the Australian portion of the Intertropical realm. The individuals of this species visiting South Australia and Tasmania most likely breed there, or, on the other hand, must be classed as abnormal migrants. Distinguished from the Great Snipe by having eighteen tail feathers, the two outermost only being narrow, and by having the wing six inches or over in length. *G. æquatorialis*, an inhabitant of Africa south of the Great Desert. Distinguished from all other birds of this genus by its having the ground-colour of the four outer tail feathers on each side white, and the medium wing coverts narrowly tipped with buff.

Habits.—Although the Great Snipe is but accidental in its visits to our islands, its migrations (undertaken at night) in Continental Europe and in Asia are very marked and regular. It crosses the Mediterranean during March and April—a month earlier in the east than the west (which is an exceptional passage)—and arrives at its breeding grounds in Norway and Sweden from the middle to the end of May. Seebohm found that it was one of the latest birds to arrive in the latitude of the Arctic circle, not doing so in the Petchora Valley until the 3rd of June, and eight days later still in the Yenisei Valley in Siberia. The haunts of the Great Snipe are in swamps, especially those where patches of bare mud or sand occur; and the marshy margins of rivers and lakes, where tall rank grass, sedges, and other aquatic vegetation furnish plenty of cover. Its habits are very similar to those of its congeners. It delights to skulk amongst the herbage, remaining buried under the grass and sedge until almost trodden upon before it rises. Its flight, however, is neither so erratic nor so rapid as that of the Common Snipe, and the tail is much more expanded; the bird makes a considerable whirr as it rises. Like that bird, however, it feeds principally at dusk or by the light of the moon, then wandering from its favourite cover on to the more open parts of its haunts, where it struts about in a timorous kind of way in search of food, at the least alarm hiding amongst or behind the nearest tuft of vegetation. Its food consists principally of worms, but insects and their larvæ, as well as slugs, are also eaten. Whilst in quest of food the Great Snipe often wanders into districts which it does not usually frequent—turnip fields, and grass lands, and dry commons. Seldom more than a pair of these birds are flushed in one particular spot during autumn and winter, but on migration and in the pairing season much more gregarious tendencies are developed.

Nidification.—In the pairing season parties of male birds appear often to collect and go through various strange antics on the ground and in the air. Seebohm, who has had exceptional opportunities of observing this species at its nesting grounds, relates how he has often watched them at a distance of from fifteen to twenty yards, whilst concealed among willow bushes, “stretch

out their necks, throw back the head almost upside down, and open and shut their beaks rapidly, uttering a curious noise like that produced by running the finger along the edge of a comb." Sometimes these notes were uttered just after the bird had taken a short flight, or spread its wings and tail. As many as six birds were counted in the air together, during this singular tournament, in another locality. The nest of the Great Snipe is either made amongst the long coarse grass which the bird frequents, or in the centre of a tussock of rush or sedge. It is merely a shallow depression lined with dry grass and sometimes a little moss. The eggs are four in number, and vary in ground-colour from olive and greyish-buff to brownish-buff, handsomely and heavily spotted and blotched with rich dark brown and pale brown, and with numerous and large underlying markings of violet-brown and grey. Most of the blotches are obliquely distributed, and on some eggs many streaks are to be seen. They are pyriform, and measure on an average 1·8 inch in length by 1·25 inch in breadth. The eggs are laid at the end of May in some localities, nearly a month later (the middle to the end of June) in others. Incubation lasts from seventeen to eighteen days. One brood only is reared in the year.

Diagnostic characters.—*Gallinago*, with the major portion of the four outer rectrices on each side white, and with broad white tips to the median wing coverts. Length, $10\frac{1}{2}$ to $11\frac{1}{2}$ inches.



Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus GALLINAGO.

COMMON SNIPE.

GALLINAGO SCOLOPACINA.—*Bonaparte*.

PLATE XXXI.

Scolopax gallinago, Linn. Syst. Nat. i. p. 244 (1766); Macgill. Brit. B. iv. p. 368 (1852); Seebohm, Hist. Brit. B. iii. p. 241 (1885); Dixon, Nests and Eggs Brit. B. p. 282 (1893); Lilford, Col. Fig. Brit. B. pt. xxxi. (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 153, pl. 40 (1896).

Gallinago cælestis (Frenzel); Dresser, B. Eur. vii. p. 641, pls. 542, 543, fig. 1 (1880); Yarrell, Brit. B. ed. 4, iii. p. 342 (1883).

Gallinago gallinago (Linn.); Sharpe, Handb. B. Gt. Brit. iii. p. 215 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 633 (1896).

Geographical distribution.—*British*: The Common Snipe is a common resident in our islands, breeding wherever suitable localities occur; most numerous in Scotland, and especially so in Ireland. It is more abundant in winter than in summer, its numbers being largely increased during the cold season by arrivals from higher latitudes. *Foreign*: Palæarctic region; Oriental region and northern confines of Ethiopian region in winter. It breeds throughout Northern and Central Europe (including Iceland and the Faroes) north to the Arctic Ocean, and south to the Alps and South Russia. Eastwards it breeds throughout Siberia, south of lat. 70°; southwards to the lofty heights of Turkestan and South-east Mongolia. The northern birds pass the intermediate country on migration, and winter in the basin of the Mediterranean and North Africa (south to about lat. 10° on both east and west, and including the Azores, Madeira, and the Canaries); in Persia, India, Ceylon, Burmah, China, Formosa, and the Philippine Islands. It has once been recorded from the Malay Peninsula, and is said to have visited South Greenland.

Allied forms.—*Gallinago wilsoni*, northern Nearctic region in summer; southern Nearctic and extreme north of Neotropical regions in winter. Breeds throughout North America from the Atlantic to the Pacific, as far north as the Arctic circle, and as far south as the northern United States to about lat. 40°. It winters in Mexico, Central America, the West Indies, and the northern limits of South America, and is an abnormal migrant to the Bermudas. The New

World representative of the Common Snipe. Typical examples are distinguished from the Common Snipe by having sixteen tail feathers instead of fourteen, by having the axillaries barred with brown instead of pure white, and the breast marked with transverse bars instead of longitudinal streaks. The outer tail feathers are crossed by five dark bars instead of three, and the bill is appreciably shorter, varying from 2·3 to 2·7 inches instead of from 2·5 to 3·0 inches. Intermediate forms are said to be common in India, and birds possessing some of the characteristics of the American Snipe are often met with in England and elsewhere, but hitherto no Snipe combining all the characters of the New World race has been detected in the Eastern hemisphere. The *G. sabinii* of Vigors, practically confined to the British Islands, is now universally admitted to be nothing but a melanistic variety of the Common Snipe, with no specific value.

Habits.—Like many other birds that may be found in the British Islands throughout the year, the Common Snipe is migratory elsewhere, even in such countries as Denmark and Germany. It is, however, an early migrant, reaching its summer quarters in Central Europe by the middle or towards the end of March. Finland is reached by the end of April; Lapland not until the end of May; whilst further north and east it is at least a week later still. Hume states that in India this species leaves the plains towards the end of March, but in the north it lingers a month or six weeks longer, which is a fair corresponding date for its arrival in Siberia. The return journey commences in Europe about the middle of August, and continues for at least two months. In India it is later, the earliest arriving at the end of August, but the greater number in September, and in the south in October. Oates states that in Burmah it does not arrive until December. In our islands the Common Snipe is certainly a solitary bird, but in India Hume distinctly states that it is eminently gregarious, and arrives and departs *en masse*. By this, however, he does not appear to infer that the birds when flushed rise in flocks, although three or four will rise from the same spot where they had evidently been feeding in company. In our Islands no matter how thick Snipe may be on the ground, they are almost invariably put up a yard or so apart; and this is Hume's experience in India, where it should be remarked the Common Snipe is probably more abundant in winter than in any other known locality. The Snipe is nocturnal in many of its habits; it migrates at night; becomes most active at dusk, and obtains the greater part of its food between sunset and sunrise. In its skulking habits it does not differ from its congeners. No birds are more retiring, or more persistently hide themselves away, and unless flushed they are rarely seen on the wing except in the breeding season. The usual haunt of the Snipe is never far away from marshy ground, either in a swamp or a bog, but never on the mud-flats or bare sands. Cover is imperative; rough herbage such as sedges, rushes, and coarse grass, being the usual vegetation amongst which the bird delights to hide. From this cover it

strays to the bare spots in the marshes, to the banks of the sluggish streams, and the margins of the pools where the ground is soft, to feed. Hume states that in India during winter, the Common Snipe may be found in every swamp and marsh, on the banks of rivers, ponds, and lakes, wherever the foreshore is mud, protected by short grass, rushes, or reeds. Here their favourite vegetation, and amongst which they are sure to be found if in the locality at all, is the round-stemmed rush (*Scirpus carinatus*). Snipe never rest much in swamps covered with water; they may and do feed in such localities, but rarely or never squat in them; they invariably skulk in a comparatively dry spot where their under plumage is free from contact with water. Hume remarks that many Snipe often rest at midday on large floating masses of water weed, the birds keeping close until the boat pushes against the patch of vegetation, which may be as much as half a mile from land. The flight of the Common Snipe, just after the bird rises, is very rapid and uncertain, full of sudden unexpected twists and turns which baffle the best of shots, but it soon becomes steadier, and is rarely far prolonged. The Common Snipe occasionally perches in a tree, and has been known to utter its peculiar pairing notes whilst sitting on the topmost spike of a bare larch seventy feet from the ground. The Common Snipe, except during the breeding season, is a very silent bird, but sometimes as it rises it utters a long-drawn guttural note as impossible to express on paper as that of the Woodcock. The pairing notes will be described later. The food of the Common Snipe consists of worms, grubs, aquatic insects and their larvæ, and small water-snails. Much of this food is obtained whilst the bird probes the soft mud with its extremely sensitive bill, which is full of small thread-like nerves connected with the brain. This complicated nervous plexus renders the bill of the Common Snipe so sensitive that the bird is enabled to feel its prey when buried deep and out of sight in the soft mud. Much difference of opinion has been expressed respecting the best method of shooting Snipe, some sportsmen preferring to work their ground "off the wind" or down wind; whilst others are equally attached to working against the wind. Both methods are to be recommended according to circumstances, but light charges and a gun held straight rarely fail to answer for Snipe, however worked. A hundred couple a day have been known to fall to a single gun in India.

Nidification.—In the British Islands the breeding season of the Snipe commences towards the end of March, and fresh eggs may be obtained through April and May. In more northern latitudes the eggs, of course, are laid much later. During the pairing season especially, and less frequently even up to the time the young are hatched, the male Snipe spends a good deal of his time in the air. All the old love of skulking in the marshes seems relinquished for the time being, and high in the air the bird careers about, uttering his love notes and making the sound popularly known as "drumming" or "bleating." These flights

may be witnessed at all hours of the day, but are most persistently and frequently indulged in towards evening. The bird rises to a considerable height, often uttering his note of *tchik-tchak*, *tchik-tchak*, or *tyik-tyuk*, *tyik-tyuk*, as he goes. Then when at the zenith of his course, which may be almost if not quite beyond the limits of human vision, he suddenly descends with great velocity on vibrating wings and outspread tail, making the drumming noise. Sometimes this descent is continued until the ground is reached, but more often the bird stays its course at varying heights, the drumming ceases, and he flies off in another direction uttering his monotonous *tchik-tchak* as he goes. Much difference of opinion has been expressed concerning the "drumming" of the Snipe. Some writers assert that the sound is a vocal one, others maintain that the vibration of the wings is responsible for its production; whilst others yet again hold that it is caused by the rush of air through the outspread tail. Stejneger maintains that the sound originates from the throat, a view of the question which was suggested to him by the actions and voice of the Aleutian Sandpiper, which he observed sitting upon a tussock with puffed plumage and pendant wings and producing a loud bleating sound like that of the Common Snipe. The vocal organs must be dismissed, because the Snipe has been heard to utter its love notes whilst drumming, although this is exceptional. I am inclined to adopt Colonel Legge's explanation, based as it was on much careful observation and experiment, which he minutely described to me some years ago, and that is the drumming is produced by the combined action of the wings and tail. He informed me (as he also published in his magnificent work on the *Birds of Ceylon*) that the vibrations of sound were exactly coincident with the beats of the wings, and that the air-waves are driven by the powerful wing-beats through the expanded and rigid tail feathers. The nest of the Common Snipe is usually placed in the centre or under the side of a tuft or tussock of coarse grass and rush in the swamps. It is merely a slight depression lined with dry grass and bits of dead aquatic herbage. The eggs are four in number, and vary from buff of different shades to olive of different shades in ground-colour, heavily and handsomely blotched and spotted with rich dark brown, occasionally streaked with blackish-brown and with numerous large underlying markings of pale brown and grey. They are pyriform and measure on an average 1·6 inch in length by 1·1 inch in breadth. Incubation, principally performed by the female, lasts from sixteen to twenty days. But one brood is reared in the year.

Diagnostic characters.—*Gallinago*, with fourteen rectrices, with dark streaks (not bars) on the breast, and with the axillaries white, more or less marked with dark grey. Length, 10½ inches. Albinos and fawn-coloured varieties are not uncommonly met with, especially in India.

Genus LIMNOCRYPTES, or Jack Snipes.

Type, LIMNOCRYPTES GALLINULA.

Limnocryptes, of Kaup (1829).—The birds comprising the present genus are characterised by having the culmen longer than the metatarsus (twice its length), and the long innermost secondaries equal in length to the primaries. The most important distinction between the Jack Snipes and the Snipes is an osteological one, the latter birds having two notches only in the posterior margin of the sternum, whilst the former have four notches, the normal number in the present family. The Jack Snipes further differ from the Snipes in having twelve tail feathers only, instead of fourteen and upwards. In most, if not all, other respects the Jack Snipes resemble the birds in the preceding genus.

This genus is composed of a single species only, which is distributed over the northern portions of the Palæarctic region in summer, drawing southwards in autumn and winter, when it visits the Oriental region. It is a common winter migrant to the British Islands.

The Jack Snipe closely resembles the Snipes in its habits and economy, which will be fully dealt with in the following chapter.

Family CHARADRIIDÆ.
Subfamily SCOLOPACINÆ.

Genus LIMNOCRYPTES.

JACK SNIPE.

LIMNOCRYPTES GALLINULA—(*Linnæus*).

PLATE XXXI.

Scolopax gallinula, Linn. Syst. Nat. i. p. 244 (1766); Macgill. Brit. B. iv. p. 380 (1852); Seebohm, Hist. Brit. B. iii. p. 247 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 280 (1894); Lilford, Col. Fig. Brit. B. pt. xxx. (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 154, pl. 41 (1896).

Gallinago gallinula (Linn.), Dresser, B. Eur. vii. p. 653, pl. 544 (1877); Yarrell, Brit. B. ed. 4, iii. p. 351 (1883).

Limnocyptes gallinula (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 220 (1896); Sharpe, Cat. B. Brit. Mus. xxiv. p. 665 (1896).

Geographical distribution.—*British*: The Jack Snipe is a common winter visitor locally distributed throughout the British Islands, including the Orkneys, the Shetlands, and the Hebrides. Owing to the fact of odd birds having been met with in early summer, it has been surmised that the Jack Snipe may occasionally breed within our limits, but there is no decided evidence whatever that such is ever the case. *Foreign*: Northern Palæarctic region; southern Palæarctic region and Oriental region in winter. It breeds locally above the limits of forest growth, on the Dovrefjeld and the tundras of Lapland, and in Western Russia as far north as St. Petersburg. In Asia it appears to breed as far north as lat. 70°, and about as far south as lat. 60°; eastwards possibly to the Pacific. It passes Europe, south of the above limits, on migration, and winters in the basin of the Mediterranean, in North Africa as far south as the Great Desert, and is said to penetrate down the Nile Valley to Abyssinia. The birds breeding in Asia are known to pass South-west Siberia, Turkestan, and less frequently China and Japan on migration; and probably cross other central districts, though as yet undetected, and winter in Persia, Afghanistan, India, Ceylon, and Burmah.

Allied forms.—None of sufficient propinquity to call for notice.

Habits.—A few Jack Snipes make their appearance in our Islands during the latter half of September, but the great bulk of the birds arrive in October and the beginning of November. The return migration begins in March and

continues into April. Birds which breed in the highest Arctic limits of the European range of this species do not appear to pass our Islands at all; those that winter with us breed in Scandinavia most probably; those that pass later in spring through Central Europe nest in Northern Russia. Jack Snipes arrive in India as a rule at the end of September or early in October, and leave later than the Common Snipe, in April and May. Middendorff noted their arrival in North Siberia on the 8th of June. The Jack Snipe frequents almost precisely the same kind of haunts as its larger ally, but it is frequently found in much smaller bogs. A few square yards of marshy ground, provided there is cover and a snug corner in which to nestle, will content a Jack Snipe; and haunts that are tenanted one year are invariably filled the next, either by the same bird, if it is fortunate enough to escape the sportsman, or by another individual that in some strange manner only known to themselves becomes aware that the eligible haunt is vacant. Jack Snipes migrate at night, obtain much of their food by night, and change their ground—say when frozen out during continued frosts—at the same time. It is always a mystery to me how these birds can spot a tiny bog in the darkness when newly arrived in this country; the sense that guides them must be one totally unknown to man. The Jack Snipe at all times is a very solitary species, but whether it migrates in company is entirely unknown to me. If the birds do journey together (and Hume seems to infer that they do) they must separate at once; and though many may be flushed from one bog, each seems concerned with its own affairs. It is a skulking bird enough, and usually remains squatting close in the herbage, often behind a tuft, until nearly trodden under foot. When put up it flies at first in a very unsteady manner, but after going some distance the flight becomes steadier, and the bird pitches again almost directly. It may be flushed time after time in this manner, as it is one of the easiest birds to mark down. Much has been said about the difficulty of shooting Jack Snipe; but if the gunner can only control himself, and wait until the critical moment, when the zig-zag flight is changed into a steadier course, and which usually happens when the bird is just a nice distance from the gun, a moderate marksman should rarely miss. The Jack Snipe whilst with us is remarkably silent, and never, so far as my experience goes, utters a sound as it rises, nor is the whirr of its wings very perceptible. As Hume very aptly remarks, the favourite haunt of a Jack Snipe is a *corner*; the bird loves a cosy nook in which to nestle, a sheltered secluded spot where the cover is ample and where there is just enough bog to ensure a comfortable living. In such a retreat a Jack Snipe will remain the entire winter through—unless it is shot, of course. The food of this species consists of worms, insects and their larvæ, mollusks and crustaceans, and a considerable amount of vegetable substances, such as small seeds, bits of green weed, club-moss, and grass. In the manner of its search for food the Jack Snipe resembles its congeners. During the heat of the day this Snipe keeps very close and sleeps; but it has been shot, in the

absolute act of feeding, rather late in the morning and long before sunset. The flesh of the Jack Snipe is excellent, and even in very severe weather, when Common Snipe have been woefully out of condition, I have remarked that Jack Snipe continue to remain as plump and fat as ever.

Nidification.—It is rather remarkable that so little has been recorded of the breeding habits of the Jack Snipe. Every writer has to depend upon the information gathered by Wolley, and this in a great measure is meagre and vague. It would be interesting to hear the accounts of other naturalists. The Jack Snipe begins to breed towards the end of June. Wolley found the first nest on the 17th of that month, and four others on the 18th. From his account we are left in ignorance as to whether the male bird drums like the Common Snipe during the nesting season; indeed, the facts appear to be against it. He describes the bird careering about the air over the marshes of Muonioniska, uttering a sound like the distant canter of a horse over a hard road. This evidently refers to the *note*, which is compared by Naumann to the clicking of the death-watch beetle, and undoubtedly not to drumming or bleating. He found the nests placed in dry spots amongst the sedge and grass close to the borders of the more open swamps. They were mere hollows lined with a little dry grass, equisetum, and dead withered leaves of the dwarf birch. The eggs are four in number, ranging from buff to olive in ground-colour, blotched and spotted, and sometimes streaked with rich blackish-brown, and with underlying markings of pale brown and grey. They are pyriform, very large for the size of the bird (a clutch weighs nearly as much as the hen herself), and measure on an average 1.5 inch in length by 1.0 inch in breadth. The female is a close sitter, and remains brooding over her eggs until the last moment; Wolley was allowed to approach one nest within six inches before the parent rose. One brood only is reared in the year, so far as is known.

Diagnostic characters.—*Limnocryptes*, with the mantle glossed with purple, and the inner webs of the scapulars with metallic green; rectrices twelve in number. Length, $7\frac{1}{2}$ inches.

ORDER ANSERIFORMES.—

THE SCREAMERS, FLAMINGOES, SWANS, GEESE,
DUCKS, AND MERGANSERS.

THE birds comprising the present order constitute a fairly well-defined group, possibly most nearly related to the Storks by way of the Flamingoes, and to the Rails by way of the Screammers. They are perhaps also more remotely allied to the Raptores and the Pelicans. They form the order to which the name of CHENOMORPHÆ was applied by Huxley; and Count Salvadori, the most recent monographer of the group, recognises what are certainly three very natural suborders, viz., the PALAMEDEÆ, or Screammers; the PHÆNICOPTERI, or Flamingoes; and the ANSERES, or Ducks and allied forms. The birds in these three groups have the palate desmognathous, and the spinal feather tract not defined upon the neck: the young are also hatched covered with down, and able to forage for themselves soon after breaking the shell. Other characters common to the order (as shown by Count Salvadori) are the long neck, the tufted oil gland, the incomplete internasal septum (*nares perviæ*), the coalescing of the maxillo-palatines across the middle line, the presence of the ambiens muscle and the leading of the flexor perforans digitorum to all three anterior digits but not to the hallux. With the Flamingoes and the Screammers we are not concerned in the present work. So far as the Ducks and their allies are concerned the regular moult is a single one in autumn. In the Ducks the males moult their small feathers twice during twelve months; the Geese, Swans, and possibly all the Sheldrakes have one moult only. The quills are moulted so rapidly as to incapacitate the bird for flight. The progress of the young to maturity seems to be as follows: In the Geese the young do not differ very remarkably from their parents in colour, except in those species where the adults are characterised by violent contrasts of colour; in the Ducks the young in first plumage very closely resemble the old female, and acquire (males) nearly adult plumage after their first

autumn moult; in the Swans in first plumage the colour is greyish-brown, a plumage which they appear to lose in their first autumn, when the adult attire is almost completely assumed. So far as concerns the white species a few brown markings occur on the scapulars. Males appear to assume the white dress sooner than females; whilst the young of both sexes, even when a year old, are very perceptibly smaller.

The birds in the present order number upwards of two hundred species and subspecies. Of these but nine are included amongst the Flamingoes and Screamers; the remainder (the Ducks) forming one large family, which is practically cosmopolitan in its distribution and well represented in the British Islands.

**Family ANATIDÆ.—The Swans, Geese, Ducks,
and Mergansers.**

The birds comprising this by far the largest division of the order may be distinguished by their peculiar laminated bill, short legs, and webbed feet. They are characterised by having the basipterygoid processes placed as far forward as possible and by the metatarsus being about equal in length to the femur, reticulated behind and generally in front. Their sternum contains one notch only on each side of the posterior margin. The tongue is large and fleshy, the edges serrated. The bill is generally broad and flat, and has a nail at the tip of the upper mandible. Count Salvadori (whose arrangement as elaborated in the Catalogue of Birds in the National Collection we propose chiefly to follow) divides the present family into eleven fairly well-defined subfamilies, five of which are represented in our area.

Subfamily CYGNINÆ, or Swans.

The birds included in the present subfamily are distinguished from their allies by having the lores (space between the eye and the bill) bare of feathers. Their reticulated metatarsus further distinguishes them from the Ducks, whilst the shortness of that member (not so long as the middle toe) is a point of distinction from the Geese. The hind toe is not lobed; the neck is extremely long. The sexes are nearly alike in colour. One moult in autumn.

This subfamily is composed of seven species, referable to three genera.

Genus **CYGNUS**, or Swans.

Type, **CYGNUS MUSICUS**.

Cygnus, of Bechstein (1803).—The birds comprising the present genus are characterised by having the lores devoid of feathers, the metatarsi reticulated, and shorter than the middle toe. The wings are long, but rather rounded, secondaries long and broad, the first four primaries being of nearly equal length, the tertials and scapulars normally smooth; the tail is short and rounded. The predominant colour of the plumage is white. The bill is moderately long and of equal breadth, higher than wide at the base, depressed at the tip; nostrils oblong, lateral and central. The neck is long and slender. Three toes in front webbed, hind toe small.

This genus is composed of six species, which are confined to the Palæarctic, Nearctic, and Neotropical regions; more widely distributed in winter than in summer. Three species are British, but one only is resident, and breeds in our Islands in a semi-domesticated state.

The Swans are dwellers on lakes and inland waters in summer; more maritime in winter. They are birds of very powerful and sustained flight, and swim and walk with ease. Their notes are loud and trumpet-like. They subsist chiefly on vegetable substances, insects, and mollusks. They make large and bulky nests on the ground, and their eggs are oval, three to twelve in number, dull white and unspotted. They are monogamous, and probably pair for life. More or less social and gregarious, especially in winter. Their flesh was formerly held in high repute for the table.

Family ANATIDÆ.
Subfamily CYGNINÆ.

Genus CYGNUS.

WHOOPEE SWAN.

CYGNUS MUSICUS—*Bechstein*.

Anas cygnus, Linn. Syst. Nat. i. p. 194 (1766 *partim*).

Cygnus musicus, Bechstein; Macgill. Brit. B. iv. p. 659 (1852); Dresser, B. Eur. vi. p. 433, pl. 419, fig. 4 (1880); Yarrell, Brit. B. ed. 4, iv. p. 308 (1885); Seebohm, Hist. Brit. B. iii. p. 480 (1885); Lilford, Col. Fig. Brit. B. pt. xxv. (1893); Dixon, Nests and Eggs, Non-indig. Brit. B. p. 144 (1894); Salvadori, Cat. B. Brit. Mus. xxvii. p. 26 (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 29, pl. 7 (1896); Sharpe, Handb. B. Gt. Brit. ii. p. 247 (1896).

Geographical distribution.—*British*: The Whooper Swan, upon the authority of Low, is said to have bred in the Orkneys upwards of a hundred years ago. It is now a winter visitor only, passing the Shetlands on migration, and is found more or less commonly round the Scotch coasts, including St. Kilda, the Orkneys, and the Hebrides. To England it is not so common a visitor, but it occurs in most suitable districts from Northumberland to Devonshire, inland as well as on and off the coasts, Slapton Ley, in South Devon, being one of its many favourite resorts. The same remarks apply to Ireland, although this species is never seen in such enormous quantities as its smaller ally, Bewick's Swan. *Foreign*: Northern Palæarctic region; southern Palæarctic region in winter. It is an accidental straggler to Greenland, visits the Faroes on migration, and breeds commonly in Iceland. It breeds throughout Arctic Europe and Asia, in the former not below the Arctic circle in Norway, but four degrees further south in Sweden, Finland, and North Russia. In Asia it does not appear to nest commonly below the Arctic circle, and ranges above that limit eastwards to Behring Strait. In Europe it wanders south during winter to the basin of the Mediterranean, Black and Caspian Seas, as far as the lakes of Algeria, Lower Egypt, and Palestine. The Asiatic birds pass South Siberia and Mongolia on migration, and spend the cold season in Japan and on the coasts of China as far south as Shanghai. It is said to have wandered abnormally to Nepal.

Allied forms.—None nearer than *Cygnus bewicki*, a British species treated fully in the following chapter.

Habits.—The Whooper migrates to and from its Arctic haunts in flocks of varying size, and sometimes in pairs, not only at night but during the day, as may easily be learned from its loud notes uttered during flight. It begins to leave its winter quarters in the south in spring, and reaches the Arctic regions about the middle of May, just as the ice in the great rivers is about to break up and the snow to melt from the grounds where it breeds. At first only a few pairs make their appearance, but soon the migration is in full swing, and continues until the early days of June. The migration south in autumn commences soon after the moult is completed; in fact, whilst it is in progress the birds begin to wander down the great rivers towards their winter quarters, which are reached in October and November. Migrating flocks of this species usually assume the form of a wedge, and fly at an immense elevation. The flight is rapid enough when the bird gets fairly under weigh, and the swish, swish of the long wings beating regularly can be heard for long distances; the head and neck are stretched out in a straight line. The Whooper spends much of its time on the water, searching round the banks and in the shallows for food. It is nothing near so graceful in its movements as the Mute Swan, and the neck is never so beautifully curved, being almost always held up straight except when the bird is feeding. Like most big birds it is excessively wary and shy, and during its sojourn in our Islands is very careful to keep well in the centre of the pool or lake, or at some distance from shore, when not actually feeding. When disturbed from the water it rises with apparent difficulty, and the long wings beat the surface for some distance as the bird attempts to reach the air. The Whooper feeds a good deal whilst on dry land, and is very fond of swimming round the banks of a deep pool, from time to time plunging the head and neck under water to explore the mud and the roots of the herbage growing at the bottom. The food of this species is principally of a vegetable nature—herbs, grasses, weeds, flowers and seeds, roots, stems, buds, and leaves—but water insects and mollusks are also eaten. The note of the Whooper once heard can never be forgotten or confused with that of any other British species. It is a short, loud, clear, far-sounding trumpet-blast, uttered several times in succession, and when mellowed by distance sounds far from unpleasant, but at close quarters is ear-splitting and discordant. Nothing in bird life to my mind sounds so inspiring as the distant yet clear calls of migrating Swans, one to the other, as they cross the night sky.

Nidification.—The chief breeding grounds of the Whooper are beyond the Arctic circle on the islands in the deltas of the great rivers that flow into the northern seas, or near the big lakes of the tundras, or the creeks that run some distance inland from the parent stream. The birds pair for life. The nest is usually placed on an island well covered with willow-trees and other dense scrub, or at others amongst the tall rank grass and reeds that fringe the pool. It is a huge pile of coarse grass, sedge, and other herbage built upon the ground, and

probably carried to such a height in anticipation of any sudden rise in the water near by. As incubation proceeds it often increases in bulk, the birds adding materials from time to time. In Northern Russia from two to four eggs form a clutch; in Iceland five are frequently found; and old females are said occasionally to lay as many as seven. The eggs are laid towards the end of May in some districts, a fortnight later in others. They are creamy-white in colour, rough in texture, and nearly oval in shape. They measure on an average 4·5 inches in length by 2·8 inches in breadth. Incubation lasts from five to six weeks, and according to Dr. Palmén the young mature slowly. One brood only is reared in the year.

Diagnostic characters.—*Cygnus*, with the tail short and rounded, and with the lores and the basal portion of the bill extending below the nostrils yellow, remainder black. Length, 60 inches.

Family ANATIDÆ.

Genus CYGNUS.

Subfamily, CYGNINÆ.

BEWICK'S SWAN.CYGNUS BEWICKI—*Yarrell.*

Cygnus bewickii, Yarrell, Trans. Linn. Soc. xvi. p. 445 (1833); Macgill. Brit. B. iv. p. 669 (1852); Dresser, B. Eur. vi. p. 441, pl. 419, fig. 3 (1880); Seebohm, Hist. Brit. B. iii. p. 484 (1885); Yarrell, Brit. B. ed. 4, iv. p. 315 (1885); Lilford, Col. Fig. Brit. B. pt. xxv. (1893); Dixon, Nests and Eggs Non-indig. Brit. B. p. 145 (1894); Salvadori, Cat. B. Brit. Mus. xxvii. p. 29 (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 29, pl. 8 (1896); Sharpe, Handb. B. Gt. Brit. ii. p. 252 (1896).

Geographical distribution.—*British*: Bewick's Swan is a winter visitor to the coasts and many inland waters of the British Islands. It is most abundant on the wild broken coast of the west of Scotland and the lakes and western coasts of Ireland. It is, however, fairly well known as a frequent winter visitor on the east coast of Scotland and the coasts of England. *Foreign*: Northern and Eastern Palæarctic region; southern Palæarctic region in winter. But little is known of the breeding grounds of this species, and until the visit of Messrs. Seebohm and Harvie-Brown to the valley of the Petchora in the summer of 1875 the eggs were absolutely unknown to science. It breeds on the tundras above the limit of forest growth, on the eastern shores of the White Sea, on the islands of Kolguev and Nova Zembla, and in the deltas of the Petchora, Obb, Yenisei, and Lena; on the Liakov Islands and the tundras of North-Eastern Siberia, possibly to Behring Strait. It is only an accidental visitor to Norway and Finland, and the coasts of the Baltic, Denmark, Holland, and France; one example is recorded from Nepal. It passes the great river valleys from the Kama and the Volga eastwards, down those of the Obb, the Yenisei and the Lena, and crosses Turkestan and Mongolia on migration, and winters in the basin of the Caspian, and on the coasts of Japan and China as far south as Shanghai. Mr. Styan records them in flocks of at least a thousand at the head of the Poyang Lake, whilst he states that large flocks frequent the low islands and mudflats at the mouth of the Yangtse.

Allied forms.—None nearer than *Cygnus musicus*, a British species, treated fully in the preceding chapter.

Habits.—Bewick's Swan resembles the Whooper very closely in its habits. It is a bird of regular passage to and from the Arctic regions, arriving at its

breeding grounds just as winter is about to give way to the short, hot northern summer, and the ice on the great rivers is breaking up, towards the end of May. It is a gregarious bird on passage, and journeys in herds of varying size, which usually assume a wedge-shaped formation as they fly. It migrates by day as well as by night, and like its larger ally is a very noisy bird on passage, the individuals of the party calling to each other at intervals. This note is neither so loud nor so harsh as that of the Whooper, and is aptly described by Sir Ralph Payne-Gallwey as *tong*, short but musical. Both at its summer quarters and whilst in our Islands during winter Bewick's Swan is a remarkably shy and cautious bird, difficult to approach either on the sea or on an inland lake. During winter it is a very gregarious species, sometimes congregating on certain favoured waters in flocks, hundreds or even thousands strong. Its food is obtained in a very similar manner to the Whooper, and consists of the roots, stems, buds, flowers, seeds, and leaves of herbs and aquatic plants, and of grass, insects and their larvæ, and worms. The bird, perhaps, feeds more whilst on land than the Whooper, and is more partial to enclosed waters than the open sea. Its flight is just as rapid and powerful, the long wings beat regularly with a loud noise, and the bird's neck is outstretched.

Nidification.—Very little is known of the breeding habits of Bewick's Swan, and although its eggs have been obtained, few naturalists have yet been fortunate enough to see them *in situ*, or to examine the nest. Messrs. Seeböhm and Harvie-Brown, when in the valley of the Petchora in 1875, had eggs of this bird brought to them by a Russian fisherman, which were obtained on the island of Pyonin in the delta of that river. Other eggs were brought to the former gentleman during his visit to the valley of the Yenisei two years afterwards, which had been obtained from an island, and on the mainland of the delta of that river. Mr. Trevor Battye discovered the nest of this Swan on the island of Kolguev—a huge pyramid of moss, with a cup at the apex for the eggs, whilst the young in down were obtained there more recently by Mr. H. J. Pearson's expedition. The nest resembles that of the Whooper, and is built in a similar situation. The number of eggs in a clutch is not known with certainty, but more than three have not yet been found in one nest. They are smaller than those of the Whooper, whiter on an average, and not so glossy. They measure on an average 4.0 inches in length by 2.6 inches in breadth.

Diagnostic characters.—*Cygnus*, with the tail short and rounded, and with the lores and the basal portion of the bill (but not extending below the nostrils) yellow, remainder black. Length, 50 inches.

Family ANATIDÆ.
Subfamily CYGNINÆ.

Genus CYGNUS.

MUTE SWAN.

CYGNUS OLOR—(*Gmelin*).

Anas olor, Gmelin, Syst. Nat. i. p. 501 (1788).

Cygnus olor (Gmel.), Vieillot, N. Dict. d'Hist. Nat. ix. p. 37 (1817); Dresser, B. Eur. vi. p. 419, pl. 418 (1880); Yarrell, Brit. B. ed. 4, iv. p. 324 (1885); Seebohm, Hist. Brit. B. iii. p. 476 (1885); Dixon, Nests and Eggs Brit. B. p. 222 (1893); Salvadori, Cat. B. Brit. Mus. xxvii. p. 38 (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 28, pl. 7 (1896); Sharpe, Handb. B. Gt. Brit. ii. p. 254 (1896); Lilford, Col. Fig. Brit. B. pt. xxxv. (1897).

Geographical distribution.—*British*: Whether the Mute Swan was introduced into the British Islands (as some writers affirm it was by Richard I. from Cyprus) or not is a question somewhat difficult to decide. It is rather remarkable that such an explanation should ever have been put forward, for there is nothing extraordinary in a bird which, in a wild state, is a regular summer visitor to Denmark and North Germany, extending its migrations to our Islands. Its exceeding beauty and gracefulness probably led very early in the history of our civilisation to its domestication, which has finally brought it to its present condition of a semi-wild resident species. It is to be met with more or less abundantly throughout the United Kingdom, wherever man affords it protection, some of the Swanneries being very ancient and extensive. *Foreign*: Western Palæarctic region; occasionally in the extreme north-west of the Oriental region during winter. It breeds in South Sweden (but is an accidental visitor only to Norway), Denmark, Germany west of the Rhine, Central and South Russia, the valley of the Danube, Transylvania and Greece, Turkestan and Mongolia. It occasionally wanders into Dauria and to North-west India during the cold season. In the basin of the Mediterranean, and throughout most of Europe south of the above limits, it is best known as a winter visitor, and during that season it is also found in the southern districts of the Caspian.

Allied forms.—None of sufficient propinquity to demand notice. In 1838 Yarrell described a Swan under the name of *Cygnus immutabilis* (*Proc. Zool. Soc.* 1838, p. 19). It was said to differ from the Mute Swan in having the tubercle at the base of the upper mandible smaller, the legs lead colour instead of black. A further specific distinction was that the young birds had a paler

bill, and the plumage of the upper parts pure, unsullied white. Although this bird received the trivial name of "Polish" Swan, it appears to have been confined to the British Islands with the exception of a single example captured on the Haarlem Lake, in Holland, during December, 1840. The alleged characters of the "adult" appear only to depend on age—the older the bird the larger the frontal tubercle, and the darker the legs. As regards the white plumage of the young, it appears to be nothing but an exceptional albinism, the result probably of semi-domestication, and from a similar cause as that which has originated white Ducks and poultry.

Habits.—The Mute Swan is too well known in a domesticated state to require any lengthy description of its habits in our Islands. There can be little doubt that a few really wild birds visit the British Islands from time to time in winter, but it is utterly impossible to identify them, as domesticated birds often wander about a good deal from one sheet of water to another where they are allowed to live unopinioned. In the northern portions of its range the Mute Swan is a regular bird of passage, appearing in its summer quarters in March, and leaving them with its brood in October. Like its congeners, it migrates in flocks of varying size by day and by night, in the same wedge-shaped formations. Its haunts in summer are large lakes, especially those that contain islands with plenty of low cover, amongst which it can make its nest safe from enemies. During winter wild Mute Swans frequent the coast as much as their congeners do; and in India they haunt the tanks and lakes, but are rare visitors. The flight of this bird is powerful and rapid, and the noise of the mighty wings may be heard a long distance, especially across water on a calm, still day. Although tame and confiding enough with us in a semi-domesticated state, when wild it is excessively shy and wary, rarely admitting of a close approach. When fired at, however, instances are on record where the flock has returned again and again, flying over their fallen companions, and showing the greatest reluctance to quit the place. The Mute Swan is a much more graceful bird in the water than either of its two preceding congeners, and its neck is often curved into beautiful lines. It feeds, however, in much the same manner, both whilst on land and swimming in the water. This food consists of aquatic plants and grass, insects and their larvæ, mollusks, and frogs. The bird is also said to eat fish spawn, and I have known it to devour small fish. In a state of domestication the Mute Swan, as its name implies, is a very silent bird, only making a low, hissing noise, especially when excited or angry; but wild individuals are said to utter a loud, trumpet-like cry, similar to the note of the Whooper.

Nidification.—The breeding season of wild Mute Swans commences in April or May. Both tame and wild birds appear to pair for life, and to return each season to a favourite nesting place, although they usually make a new nest

every year, but in some cases repair the old one. This is usually made on the ground on an island in a dense thicket, or amongst tall grass and other aquatic vegetation, and consists of a huge pile of dead grass, rushes, reeds, and any other rubbish the birds can collect in the neighbourhood. As incubation advances the nest is increased in bulk, especially when in a district subject to sudden inundation. Many nests are said to be built together in some localities. The eggs are from five to eight in number, old birds laying from eight to twelve. They are greenish-white or very pale green, rough in texture, and with little or no gloss. They measure on an average 4·5 inches in length by 3·0 inches in breadth. Incubation, performed by the female, lasts from five to six weeks. One brood only is reared in the year.

Diagnostic characters.—*Cygnus*, with the tail wedge-shaped and long, and with the lores and frontal tubercle black. Length, 60 inches.

Subfamily ANSERINÆ, or Geese.

The birds included in the present subfamily are distinguished from their allies by the absence of a cere, having the lores covered with feathers and the metatarsus reticulated all round. They are further distinguished from the Swans by their longer metatarsus (longer than the middle toe) and much shorter neck; whilst from the Ducks, their short, robust, sub-conical (and in many cases higher than broad at the base) bill is an additional distinction. The sexes are nearly alike in colour.

This subfamily is divisable into about half-a-dozen genera.

Genus CHEN, or Snow Geese.

Type, CHEN HYPERBOREUS.

Chen, of Boie (1829).—The birds in the present genus are characterised, according to Count Salvadori, by having the serrations on the cutting edge of the upper mandible visible externally for the greater part of the tomium. The bill is exceptionally stout, the height through the base being equal to considerably more than half the length of the culmen. The species are further characterised by their white or bluish body plumage and their black wings.

This genus is composed of four species and races, which are confined to the Arctic regions. One of these is an abnormal migrant to the British Islands.

The Snow Geese are inhabitants of the Arctic seas and the open tundras or barren grounds in their immediate vicinity. Their habits are but little known. They feed on both vegetable and animal substances. Their nests are mere hollows in the ground lined with down. Their eggs are white.

Family ANATIDÆ.

Genus CHEN.

Subfamily ANSERINÆ.

LESSER SNOW GOOSE.

CHEN HYPERBOREUS—(*Pallas*).

PLATE XXXII.

Anser hyperboreus, Pallas, Spicil. Zool. vi. p. 25 (1769); Seebohm, Hist. Brit. B. iii. p. 490 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 30, pl. 11 (1896).

Anser albatus, Cassin.; Saunders, Proc. Zool. Soc. 1871 p. 519.

Chen albatus (Cassin), Dresser, B. Eur. iv. p. 409, pl. 417, fig. 2 (1873).

Chen hyperboreus (Pallas), Yarrell, Brit. B. ed. 4, iv. p. 275 (1885); Lilford, Col. Fig. Brit. B. pt. xxvi. (1893); Dixon, Nests and Eggs Non-indig. Brit. B. p. 147 (1894); Salvadori, Cat. B. Brit. Mus. xxvii. p. 84 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 225 (1896).

Geographical distribution.—*British*: The Lesser Snow Goose is a very rare straggler to Ireland on autumn migration, and has been observed in England. The claim of this species to rank as “British” rests on the following occurrences:—Ireland: Lake Tacumshane, south coast of County Wexford (two immature examples purchased in Leadenhall Market, one example shot at the same time and place but not preserved), November, 1871; Termoncarra, Co. Mayo (flock of seven seen, one of which was shot and another trapped), October, 1877. The two examples said to have been captured in Ireland, and afterwards placed in Lord Derby’s menagerie at Knowsley, and which subsequently were sold by auction to Castang, the bird and animal dealer of London, have too dubious a pedigree to share the honour of positive evidence. England: Coast of Cumberland (one adult example, “identified but not obtained”), August, 1884; others noticed in Yorkshire (1891), Northumberland and elsewhere, but no examples obtained. *Foreign*: Northern Nearctic region; more southerly in winter. It breeds, as far as is known, in the Arctic regions of North-west America; probably also breeds in the extreme north-east of the Palæarctic region, and winters as far south as California in the west and the Valley of the Mississippi in the east, and visits Japan at that season, a fact which strongly confirms the suggestion that it breeds in Asia. Owing to the two races of this species being confused, it is difficult to trace the geographical area of the smaller form in any more detail with accuracy.

Allied forms.—*Chen nivalis*, only known to breed in Hudson Bay territory, but is probably circumpolar, as it has occurred on migration in various



localities throughout the Palæarctic region, especially in Japan and China. It winters in the United States south to Texas, and is an occasional visitor to Greenland and the Bermudas. The large form of the Snow Goose, and possibly only superficially distinct. Typical examples measure from 17 to 18·5 inches in length of wing, instead of from 15 to 17·5 inches, and in length of bill from 2·38 to 2·65 inches, instead of from 1·95 to 2·28 inches.

Habits.—But little has been recorded of the habits of the Lesser Snow Goose. It is a migratory bird, breeding on the tundras or barren grounds above the limit of forest growth, reaching its summer quarters towards the end of May and returning to its winter haunts in September and October. During winter the Lesser Snow Goose appears seldom to stray far from large sheets of water, but visits inland localities as well as the coast. The food of this species consists largely of grass and rushes, but ground fruits and berries are also eaten, as well as insects and small mollusks. During winter the Snow Goose becomes gregarious, and not only flocks with the larger race but with other kindred species. The note of this species is nowhere clearly described to my knowledge.

Nidification.—The Lesser Snow Goose breeds on the tundras on the banks of the northern lakes, or on small islands in the Arctic Ocean not far from the mainland. Again MacFarlane, with his splendid opportunities, only records the barest details of the nesting habits of this interesting bird. He says that the nests were mere hollows in the sandy ground, warmly lined with down. The eggs are generally five in number, dull white in colour. They measure on an average 3·4 inches in length by 2·2 inches in breadth. The young can fly by the middle of August, and about a month later begin their southern journey. One brood only is reared in the year.

Diagnostic characters.—*Chen*, with the primaries black and the remainder of the plumage white, with the wing 17 inches or less in length. Length, 23 inches.

Genus ANSER, or Typical Geese.

Type, ANSER CINEREUS.

Anser, of Bechstein (1803).—As Bechstein was the first naturalist properly to define the Geese, he has far more claim to the genus than Brisson, whose *Anser* is a confused and bewildered mass of distantly related species. The birds comprising the present genus are characterised by the absence of a cere, having the lores feathered and the metatarsus reticulated. The wings are long and ample, but not acutely pointed; the tail is short and rounded, and said to contain sixteen feathers. The bill is nearly as long as, not longer than, the head, and has a strongly defined unguis or nail at the tip; the inner edge of the mandibles is crooked and the lamellæ are conspicuous; nostrils lateral. The neck is much shorter than in *Cygnus*. Three toes in front webbed, one behind small and elevated.

This genus is composed of about ten species, which are distributed throughout the colder and temperate regions of the Northern hemisphere; more cosmopolitan in winter than in summer. Six species and subspecies are British, but one only of these breeds within our Islands.

The typical Geese are dwellers on moors and marshes and more or less cultivated plains, but in winter they become more maritime. They are birds of rapid if somewhat laboured flight, swim well, and walk with equal facility. Their notes are loud and unmusical. They subsist chiefly on vegetable substances. They make bulky nests upon the ground, and their eggs are numerous and creamy-white in colour. They are monogamous, and probably pair for life, the male assisting the female in family duties. They are gregarious in winter, and more or less social even in the breeding season. Their flesh is palatable.

Family ANATIDÆ.
Subfamily ANSERINÆ.

Genus ANSER.

BEAN GOOSE.

ANSER SEGETUM—(*Gmelin*).

Anas fabalis, Latham, Gen. Syn. Suppl. i. p. 297 (1787).

Anas segetum, Gmel. Syst. Nat. i. p. 512 (1788).

Anser segetum (Gmel.), Macgill. Brit. B. iv. p. 595 (1852); Dresser, B. Eur. vi. p. 363, pl. 412 (1879); Yarrell, Brit. B. ed. 4, iv. p. 265 (1885); Seebohm, Hist. Brit. B. iii. p. 493 (1885); Lilford, Col. Fig. Brit. B. pt. xxvi. (1893); Dixon, Nests and Eggs Non-indig. Brit. B. p. 148 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 30, pl. 8 (1896).

Anser fabalis (Lath.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 99 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 232 (1896).

Geographical distribution.—*British*: The Bean Goose is a common visitor on spring and autumn migration, most abundant during the latter, but great numbers remain to winter in our Islands. It is not known to breed in any part of the British area, although widely dispersed on the mainland of Scotland and some of the adjoining islands, but only a straggler to the Orkney and Shetland Islands, and on the Outer Hebrides it appears to be quite unknown. In England it is most frequent on the southern and western coasts south of Lancashire, becoming rarer on the east; whilst in Ireland it appears to be generally distributed and abundant, but less common on the southern coast than the White-fronted Goose. *Foreign*: Northern and, at high elevations, central Palæarctic region; southern Palæarctic region in winter. Accidental in Iceland. It breeds in Scandinavia north of lat. 64°, in North Russia as low as Archangel, in the delta of the Petchora, on Kolguev, Waigats, and Nova Zembla, in the valley of the Yenisei above forest growth, and southwards on the mountains of the Baikal district, eastwards to the Stanavoi Mountains, and the Arctic tundras of Eastern Siberia northwards to the coast. It passes Europe south of the limits already given to winter on both shores of the Mediterranean (with the exception of North-east Africa); but in mild winters many remain on the coasts of Denmark and France, and more rarely those of Spain, whilst it has been known accidentally to wander as far south as Madeira. Vast numbers also winter in the south of Russia and in the basin of the Caspian. Further east it passes South-west

Siberia, Mongolia, and the valley of the Amoor on migration, and winters in North-east Turkestan, China, and Japan.

Allied forms.—*Anser serrirostris*, the eastern form of the Bean Goose; only apparently subspecifically distinct, the two races intergrading. As we have already noticed, in treating of the entire range of both forms, it is an inhabitant of Eastern Siberia from the Baikal district to the Pacific. Typical examples differ from the Bean Goose in being larger, especially the bill and feet (length of bill from frontal feathers to tip 3·4 to 2·4 inches, instead of from 2·5 inches to 1·7 inch). The head and neck are buffish-brown instead of brownish-grey. *A. brachyrhynchus*, a fairly distinct island race, a British species, and *A. neglectus*, both dealt with in the following chapter.

Habits.—Great numbers of Bean Geese simply pass along our coasts in autumn for more southern haunts, and re-pass them on their way north again in spring; still many remain with us throughout the winter. This species, like most of its congeners, begins to arrive in its northern haunts with the first signs of departing winter. Small parties reach the neighbourhood of the Arctic circle, both in Europe and Asia, during the second half of May, but these are often compelled to retire some distance south again owing to a late frost. When once the great rivers break through their bonds of ice, and the south wind brings summer to the Arctic regions, the Bean Geese arrive in full force, flock after flock pouring in from the south, following in the wake of the open water. As soon as the young are half-grown, and the short summer begins to wane, these Geese again unite into flocks to complete their moult, and then in early autumn the grand flight south commences. In our Islands the Bean Goose lives in flocks of varying size, which wander about a good deal, according to the state of the weather and the supply of food. Some of these gatherings are very large, and at all times difficult to approach, although the birds are certainly less wary at night. The Bean Goose usually frequents the sea and the coast during the night, coming inland to stubbles and fields of newly-sown grain in the day to feed. During long-continued frost they keep more to the coast, but in rough, stormy weather they are more partial to remaining in inland districts, from which, however, they soon depart at the first sign of recurring frost. The flight of this Goose is rapid and strong, and the birds when passing from place to place usually assume a wedge-shaped formation. Its note whilst staying in our Islands is the familiar *gag-gag* variously modulated. Bean Geese when feeding on the inland fields usually post sentinels here and there to give timely warning of the approach of danger. Upon the water the Bean Goose swims well and buoyantly, but it rises with apparent labour with a great flapping of wings until well into the air. The food of this species consists of grass, the tender shoots of grain, and the roots of various plants. In autumn the bird picks up a great quantity of grain of all kinds from

the stubbles, and also frequents the newly-sown fields at that season and in spring to dig up the seed-corn as well as beans. Much of this food is sought at dawn.

Nidification.—The breeding grounds of this bird are situated on the northern tundras beyond or near the limits of forest growth, in the vicinity of lakes and pools. The nest is made early in June, and is usually placed amongst the tall rank grass and sedge of an islet in the lake or on a hillock on the bank. It is merely a slight hollow lined with dry grass and other vegetable refuse, with down from the old bird's body. The eggs are three or four in number, creamy-white in colour, and rather rough in texture. They measure on an average 3·2 inches in length by 2·15 inches in breadth. One brood only is reared in the year.

Diagnostic characters.—*Anser*, with the central portion of the bill orange-yellow, black at the base and on the nail, and with the legs and feet orange-yellow. Length, 34 inches.

Family ANATIDÆ.
Subfamily ANSERINÆ.

Genus ANSER.

PINK-FOOTED GOOSE.

ANSER BRACHYRHYNCHUS—*Baillon*.

Anser brachyrhynchus, *Baillon*, Mém. de la Soc. roy. d'ém. d'Abbev. 1833. p. 74; *Macgill*, Brit. B. iv. p. 602 (1852); *Dresser*, B. Eur. vi. p. 369, pl. 413 (1878); *Yarrell*, Brit. B. ed. 4, iv. p. 270 (1885); *Seebohm*, Hist. Brit. B. iii. p. 498 (1885); *Lilford*, Col. Fig. Brit. B. pt. xxv. (1893); *Dixon*, Nests and Eggs Non-indig. Brit. B. p. 150 (1894); *Salvadori*, Cat. B. Brit. Mus. xxvii. p. 103 (1895); *Seebohm*, Col. Fig. Eggs Brit. B. p. 31, pl. 10 (1896); *Sharpe*, Handb. B. Gt. Brit. ii. p. 234 (1896).

Geographical distribution.—*British*: The Pink-footed Goose is a common winter visitor, found most abundantly on the east coast of England and Scotland, more sparingly on the west coast of Scotland, and locally in the Outer Hebrides, and on the south coast of England. Singularly enough this species has but once been obtained in Ireland, nor has it been observed in the Shetland Islands. *Foreign*: Extreme north-western Palæarctic region; accidental in the Oriental region during winter. The only known breeding places of this very doubtfully distinct species are on the islands of Spitzbergen, probably on Iceland, and possibly on Nova Zembla and Franz-Josef Land. It is found on the coasts of Scandinavia, Denmark, and Holland during the autumn and spring migrations, and during winter has been observed on the coasts of Belgium and France. So far as is known, the British Islands are the grand headquarters of this Goose during winter. It has been obtained in Northern India. Among other occurrences may be mentioned a pair shot in the Jumna by Hume during January, 1864.

Allied forms.—*Anser segetum*, probably the parent form, a British species, and treated fully in the preceding chapter. Whether the *Anser neglectus*, recently described by Sushkin from the government of Ufa, be distinct from the Pink-footed Goose and the Bean Goose we are not as yet prepared to admit. It is said to be larger than, and to differ somewhat in colour from, the former. (*Conf. Ibis* 1897, pp. 5—8.)

Habits.—The habits of the Pink-footed Goose are not known to differ in any very important particular from those of the closely allied Bean Goose; indeed,

further investigation may yet prove that the two birds are only subspecifically distinct. The note of the Pink-footed Goose, however, is said to be sharper and more quickly repeated. The flocks of this Goose that visit our Islands every autumn frequent the stubbles, fields, and marshes inland during the day and on moonlight nights to feed, and retire to the coast at the approach of darkness to sleep, generally frequenting some low island or sandbank for the purpose. The flight of this Goose is very similar to that of the Bean Goose, and the bird also subsists on precisely similar fare. Referring to the peculiar habit of the Bean Goose of squatting close to the ground in the same manner as a Norfolk Plover when alarmed, Mr. Trevor-Battye remarks: "The Pink-footed Geese of Spitzbergen behave in the same way if they have their young with them. Provided the ground is not too steep, they run for long distances, sometimes even along the edge of the water without entering it. Pink-footed Geese are remarkably quick upon their legs, and the young birds when half-grown can run as fast as the old ones; the latter, if hurried, run with outstretched wings, which hinder them against the wind, but if too closely pressed the goose which leads (the gander brings up the rear) will suddenly drop, and the whole party follow her example. You can then walk up and look at them lying there, all in precisely the same attitude, with bodies flattened down and necks outstretched on the ground, so that you must stir them up in order to start them off again."

Nidification.—But little is known of the breeding habits of the Pink-footed Goose. Early in the summer it frequents its breeding grounds in small flocks, but these eventually separate into pairs. The eggs are laid in June, and the young are hatched about the middle or towards the end of the following month. They are said to make their nests on low rocks near the sea, or in higher cliffs either in the fiords or at some distance inland, but Mr. Trevor-Battye remarks that in Spitzbergen it seldom nests by the sea, but retires inland, choosing as a site some elevated point overlooking a stream or lake, but occasionally it selects a small island. The nest is not known to differ from that of the preceding species. The eggs are four or five in number, white or creamy-white in colour, and somewhat smooth in texture. They measure on an average 3·15 inches in length by 2·15 inches in breadth. Incubation, performed by the female, lasts twenty-eight days. The male keeps constant watch close to the nest, to warn or defend his mate. One brood only is reared in the year.

Diagnostic characters.—*Anser*, with the central portion of the bill usually pink, but sometimes orange-yellow, black at the base and on the nail, and with the legs and feet flesh-colour. Length, 28 inches.

Family ANATIDÆ.

Genus ANSER.

Subfamily ANSERINÆ.

GREY LAG GOOSE.

ANSER CINEREUS—*Meyer*.**Anas anser**, Linn. Syst. Nat. i. p. 197 (1766).**Anser ferus**, Schaeff. ; Macgill. Brit. B. iv. p. 589 (1852) ; Salvadori, Cat. B. Brit. Mus. xxvii. p. 89 (1895).**Anser cinereus**, Meyer ; Dresser, B. Eur. vi. p. 355, pl. 411 (1878) ; Yarrell, Brit. B. ed. 4, iv. p. 253 (1885) ; Seebohm, Hist. Brit. B. iii. p. 500 (1885) ; Lilford, Col. Fig. Brit. B. pt. xxvi. (1893) ; Dixon, Nests and Eggs Brit. B. p. 224 (1893) ; Seebohm, Col. Fig. Eggs Brit. B. p. 32, pl. 8 (1896).**Anser anser** (Linn.), Sharpe, Handb. B. Gt. Brit. ii. p. 227 (1896).

Geographical distribution.—*British* : The Grey Lag Goose is most probably the original form from which the domestic Goose was derived. It formerly bred in the fens and marshes of East Anglia, but for nearly a hundred years now has ceased to do so, the reclamation of so much of the swampy wastes in this district causing it to forsake its ancient strongholds. Its only breeding places now are in the north of Scotland, especially in the Outer Hebrides, as I know from personal experience, in Ross, Sutherland, and Caithness. In Ireland a colony of birds in a half-domestic state have their breeding place on the lake at Castle Coole, the seat of Lord Belmore, in Co. Monaghan. It is a winter visitor to the British Islands, accidental in the Orkneys and Shetlands, rare on the east coast of Scotland, more abundant on the east coast of England, but rare on the south. It is rare on the west coasts of England and Scotland, and very local in Ireland, mostly in the central counties and the sea lough at the mouth of the Shannon. *Foreign* : Palæarctic region ; northern Oriental region in winter. It breeds throughout Scandinavia and Denmark, and Russia below the Arctic circle in all suitable localities south to the Caucasus. It also breeds sparingly in North Germany, and still more rarely in Holland and South-western Spain ; and is known to do so in the valley of the Danube. Eastwards it may probably breed in Central Persia and in the valley of the Obb as far north as the Arctic circle, but in the remainder of Siberia it does not appear to extend north of Lake Baikal. It breeds in the upper valley of the Amoor, in Mongolia, and Turkestan. On migration it occurs in the Faroes, and is said to breed in Iceland. It visits Holland, Belgium, and France on passage, sometimes remaining to winter

during mild seasons, and is also known on migration in Central Europe, and is a winter visitor to both coasts of the Mediterranean and the Spanish Peninsula. The Asiatic birds winter in China south to Shanghai and in Northern India.

Allied forms.—*Anser rubrirostris*. Eastern examples of the Grey Lag Goose are said to be rather larger than those from western localities, and to have more black on the underparts and less grey on the wing coverts, but whether these differences are of sufficient constancy and importance to merit subspecific rank is still an open question. *A. albifrons* and *A. erythropus*, British species, dealt with fully in the following chapters.

Habits.—The Grey Lag Goose does not go so far north to breed as the preceding species, and consequently its migrations are performed earlier in spring, and in some localities the return south is also much sooner than is usually the case with birds that seek their summer quarters early. The return migration begins early in March, both in Europe and in Asia. Naumann states that they arrive in Germany at the end of February or early the following month. Hume says that they begin to leave India early in March, and continue to do so throughout that month; whilst Scully observed them at Yarkand, in Turkestan, flying due north at a corresponding date. The return migration is said by Naumann to begin in Germany towards the end of July, and a month later most of the birds have gone; but in Upper India this Goose is not observed until the end of October, and in the south a week or so later still. In its winter quarters it is a very gregarious bird, and often congregates into large flocks of many hundreds, which, when passing from one distant place to another, or during migration, fly high either in a single line or in the shape of a V or W, but when simply changing their feeding grounds progress in scattered order. Although so gregarious, it is rather a remarkable fact that the Grey Lag Goose seldom consorts with other Wild Geese, yet it is ready enough to fraternise with its domesticated descendants. Normally this Goose is a day feeder, but in districts where it is much persecuted it changes its habits and searches for its food at night. In India, where the days are very hot, it does not feed much after nine in the morning until about four in the afternoon, spending the interval in sleep in some safe and convenient spot. In our Islands many Grey Lag Geese repair to the coast towards evening and sleep on some sandbank or low island; others resort to wild marshes and uplands to spend the hours of repose. This Goose does not frequent the water much unless alarmed or during the helpless period of its moult; then the flocks often go for some distance out to sea to rest. It swims well and buoyantly, and when wounded is even known to dive, although it cannot remain under water long. Hume remarks that in India it always prefers rivers, and is rarely seen on lakes and pools. Although a wary bird it is by no means a shy one, and if proper means are adopted can often be approached with little

difficulty. The stalker, instead of advancing directly towards the flock, should approach in a sidelong manner as if about to pass them. The flight of the Grey Lag Goose is rapid and powerful, and often very graceful, especially as a big flock of birds survey the ground previous to alighting. When satisfied that all is safe the birds often descend with great velocity, circling and turning, and alighting on the earth almost directly below them. The call-note of this Goose is a loud, far-sounding *gag-gag*, which is uttered not only when the birds are migrating, but when they are congregated on the ground, or just after they are disturbed. The din of *gag-ing* sounds, and the rattle of wings as a big flock struggle into the air after being fired at, is almost deafening. This note is variously modulated during sexual excitement or surprise. The food of the Grey Lag Goose consists largely of grass and the tender shoots of growing corn. Grain of all kinds is also eaten, both on the stubbles and the newly-sown fields, whilst buds and leaves and roots of various aquatic plants are sought.

Nidification.—The Grey Lag Goose is an early breeder; in southern localities the eggs are laid late in March or early in April, but further north they are from three to five weeks later. This Goose pairs for life, as probably all other of its congeners do, and during the breeding season is more or less gregarious, numbers of nests often being made in a comparatively small area. The breeding grounds of this bird are wild moors and swamps. The nest is made on the ground, amongst tall heather or the rank, coarse vegetation of the swamps, and is a huge structure sometimes more than a foot in height and three feet in diameter. The materials of which it is composed vary a good deal according to locality—branches of dead heath, rushes, reeds, dry grass, bracken, leaves and turf, lined, as incubation progresses, more and more thickly with down and feathers plucked from the breast of the female. The eggs are six or eight in number, but in rare instances it is said twelve or fourteen have been found. They are creamy-white, and exhibit little or no gloss. They are oval in form, and measure on an average 3·45 inches in length by 2·35 inches in breadth. Incubation is performed by the female, and lasts twenty-eight days. The male keeps close in the neighbourhood of the nest, ready to warn his mate or to fight fiercely if the eggs are threatened by any marauding bird or beast. One brood only is reared in the year, and as soon as the young are sufficiently fledged a move to the sea is usually made. The young are said to return at night and sleep in the nest for some time, covered by the wings of the female. Flocks of immature, non-breeding birds may often be observed in the neighbourhood of the breeding grounds, waiting until the young are reared, when they flock with the rest for the winter.

Diagnostic characters.—*Anser*, with the rump and wing coverts slate-grey, with the bill flesh-coloured, the nail white, and with the legs and feet flesh-coloured. Length, 35 inches (male); 30 inches (female).

Family ANATIDÆ.
Subfamily ANSERINÆ.

Genus ANSER.

WHITE-FRONTED GOOSE.

ANSER ALBIFRONS—(*Scopoli*).

Branta albifrons, Scop. Ann. I. Hist. Nat. p. 69 (1769).

Anser albifrons (Scop.), Macgill. Brit. B. iv. p. 609 (1852); Dresser, B. Eur. vi. p. 375, pl. 414 (1878); Yarrell, Brit. B. ed. 4, iv. p. 261 (1885); Seebohm, Hist. Brit. B. iii. p. 505 (1885); Lilford, Col. Fig. Brit. B. pt. x. (1889); Dixon, Nests and Eggs Non-indig. Brit. B. p. 151 (1894); Salvadori, Cat. B. Brit. Mus. xxvii. p. 92 (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 32, pl. 10 (1896); Sharpe, Handb. B. Gt. Brit. ii. p. 230 (1896).

Geographical distribution.—*British*: The White-fronted Goose is a winter visitor, local in distribution, and much more abundant some seasons than others. It is found in small numbers on the east coast of Scotland, but is for the most part very rare in the Shetlands, and is even more local on the west, where its chief strongholds are the Outer Hebrides, notably Islay. It is rare on the east coast of England and in Wales, but much more common—in some seasons remarkably abundant—on the south and south-west. It is commonest in Ireland, its principal haunts being in the north-west, west, and south. *Foreign*: Palæarctic region; some parts of the Oriental region in winter. It is an accidental visitor to the Faroes and Iceland, but breeds regularly in Arctic Russia and across Siberia to Behring Strait. It passes the coasts of West Europe, the river valleys of Russia and Siberia, and Turkestan on migration. It winters off the coast of France, and occasionally wanders as far south as Gibraltar, Italy, and Transylvania. Other parties of migrants crossing inland routes winter in Greece, South Russia, Asia Minor, North-east Africa, the Persian coasts of the Caspian, and North-west India. In the far east the migrants follow the coast as in the west, and winter in Japan and China as far south as Shanghai.

Allied forms.—*Anser erythropus*. The small form of the White-fronted Goose, a “British” species, and dealt with fully in the following chapter. *A. gambeli*, an inhabitant of Arctic America as far north as lat. 72°, ranging from Alaska to Greenland, wintering in the United States as far south as the Gulf of Mexico. The Nearctic form of the White-fronted Goose, perhaps only

subspecifically distinct. Typical examples are distinguished by their large size (total length, 29 inches), much darker wing coverts, and greater amount of black on the underparts. *A. cinereus*, a British species, to which the present Goose and its several forms are most nearly related.

Habits.—Remarkably little of any value has been recorded concerning the economy of the White-fronted Goose. It is by no means common in our Islands, but here its habits are certainly very similar to those of the allied Geese. Unfortunately it is a rare bird in India, and Hume has little to tell us of its habits there in winter. Captain Shelley, however, remarked its abundance in Egypt during the cold season, where it remains until March, usually in flocks. They visit their feeding grounds with great regularity, taking one particular line of flight each day and frequenting particular places, but if shot at soon quit the neighbourhood altogether. The birds that Hume obtained in India had been feeding on wild rice and tender shoots of grass or corn. The note of this Goose is said to be rather more harsh and cackling than that of the preceding species, hence the bird's name in India and other districts of "Laughing" Goose.

Nidification.—Von Middendorff met with this Goose breeding in great numbers on the tundras of the Taimur Peninsula, the most northerly land of Continental Asia, and states that the nest was built on a grass-covered mound. It was simply a hollow on the top of a mound, lined with plenty of down from the body of the female. Dall, in Alaska, describes nests he found on the banks of the Yukon as depressions in the sand, but this was probably before the full clutch of eggs was laid and no down had been added; for MacFarlane discovered nests on the Anderson River warmly made of dry grass and well lined with down and feathers. The eggs are from five to seven in number, but ten have been found, creamy-white in colour, and measure on an average 3·0 inches in length by 2·0 inches in breadth. The period of incubation is unknown, and doubtless one brood only is reared in the year.

Diagnostic characters.—*Anser*, with the bill orange-yellow and the nail white, with the legs and feet orange-yellow, and with a variable amount of white feathers at the base of the upper mandible, but not reaching a line between the eyes. Adults much mottled with brownish-black on the breast. Length. 27 inches.

Family ANATIDÆ.
Subfamily ANSERINÆ.

Genus ANSER.

LESSER WHITE-FRONTED GOOSE.

ANSER ERYTHROPUS.—(*Linnæus*).

Anas erythropus, Linn. Syst. Nat. i. p. 197 (1766).

Anser erythropus (Linn.), Newton, Proc. Zool. Soc. 1860, p. 341; Dresser, B. Eur. vi. p. 383 (1879); Yarrell, Brit. B. ed. 4, iv. p. 263 (1885); Salvadori, Cat. B. Brit. Mus. xxvii. p. 97 (1895).

Anser albifrons minutus, Naumann; Seebohm, Hist. Brit. B. iii. p. 505 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 153 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 33, pl. 12 (1896).

Geographical distribution.—*British*: There can be no possible doubt that the Lesser White-fronted Goose—the small race of the White-fronted Goose—is a regular visitor to the British Islands during winter, although never apparently so numerous as its larger relation. Be this as it may, there is an old saying by an ornithologist now passed away, “What is hit is history, and what is missed is mystery,” which applies not only to this species but to all other rare birds that pay us their uncertain and irregular visits, and the only claim of this small Goose to rank as “British” rests, so far as I am aware, upon one recorded occurrence. England: Northumberland, Holy Island (one example), September, 1886. *Foreign*: Northern Palæarctic region; more southerly in winter. It breeds in the northern districts of Scandinavia, and thence across Arctic Russia and Siberia at least as far as the valley of the Yenisei. The range of this species, however, both in summer and winter and during migration, is very imperfectly known, but, so far as it can be traced, it appears to be almost identical with that of the large form of this Goose.

Allied forms.—*Anser albifrons*, the large race of the White-fronted Goose, a British species, and dealt with fully in the preceding chapter. *A. gambeli*, the Nearctic representative race, previously alluded to (Conf. p. 325).

Habits.—Owing to the confusion of the two races, the information concerning the habits of the Lesser White-fronted Goose is even more scanty than that respecting the economy of the preceding race. Hume states that in India,

where it is a rare straggler, it is not so shy as the other Geese, probably because it is so much smaller. Its flight is said to be much quicker, and the bird has more command over itself in the air, owing to the wings being proportionately longer and more pointed. It is also less noisy than the other Geese, and is fond of the society of other species, but neither feeds nor flies in their immediate company. It is said also to be more aquatic in its habits, but its food is not known to differ from that of its congeners.

Nidification.—Little or nothing is known of the breeding habits of this species. The nest is said to resemble that of the other allied Geese and to be placed in a similar position. The eggs are from five to seven in number, creamy-white in colour, and measure on an average 2·9 inches in length by 2·0 inches in breadth.

Diagnostic characters.—*Anser*, with the bill very small, orange-yellow in colour, white on the nail; with the legs and feet orange-yellow, and with a considerable amount of white plumage on the forehead extending backwards on to the crown. Adults as in preceding race, but dark markings more clearly defined. Length, 20 to 24 inches.

Genus BRANTA, or Brent Geese.

Type, BRANTA BERNICLA.

Branta, of Scopoli (1769).—The birds comprising the present genus are characterised by their short subconical bills, much shorter than the head. The inner edge of the mandibles is nearly straight, and the lamellæ are concealed. The strongly contrasted colours of the plumage are also very characteristic. The wings are long and ample and more pointed than in *Anser*; the tail is short and rounded. The bill is higher than broad at the base, the unguis ovate; nostrils oval and nearly central. Three toes in front webbed, the webs not deeply excised; hind toe small, elevated.

This genus is composed of about eight species and subspecies confined to the northern portions of the Palæarctic and Nearctic regions, slightly more widely dispersed during winter. Four species and subspecies are visitors to the British Islands, but none breed within our area.

The Brent Geese are maritime in their haunts during winter, but in summer little is known concerning them. They are birds of sustained and rapid flight, and swim and walk with ease. Their notes are loud and sonorous. They subsist chiefly on vegetable substances. They are said to make bulky nests on the ground, and their eggs are numerous, and creamy-white in colour. They are monogamous, and probably pair for life. During winter they are remarkably gregarious. Their flesh is not unpalatable.

Family ANATIDÆ.

Genus BRANTA.

Subfamily ANSERINÆ.

BRENT GOOSE.

BRANTA BERNICLA—(Linn.)

PLATE XXXII.

Anas bernicla, *a*, Linn. Syst. Nat. i. p. 198 (1766).**Anser brenta**, Pallas, Zoogr. Rosso-As. ii. p. 229 (1811); Seebohm, Hist. Brit. B. iii. p. 508 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 33, pl. 10 (1896).**Bernicla brenta** (Pall.), Macgill. Brit. B. iv. p. 629, (1852); Dresser, B. Eur. vi. p. 389, pl. 415, fig. 2 (1877); Yarrell, Brit. B. ed. 4, iv. p. 290 (1885); Lilford, Col. Fig. Brit. B. pt. xxiv. (1893); Dixon, Nests and Eggs Non-indig. Brit. B. p. 154 (1894).**Branta bernicla** (Linn.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 119 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 239 (1896).

Geographical distribution.—*British*: The Brent Goose is a common winter visitor to the British Islands, perhaps the most abundant species of Goose upon our coasts during the cold season, universally distributed, especially on the east and south, becoming rarer, however, in the Orkneys and Shetlands, the Hebrides, and along the entire western shores of Scotland. In Ireland it is equally abundant and widely distributed. *Foreign*: North-west Palæarctic region; more southerly in winter. The typical form of the Brent Goose breeds on Spitzbergen, Franz-Josef Land, and Nova Zembla, but how far to the east is unknown, possibly to the Taimur Peninsula. It was not found by Mr. Popham in the valley of the Yenisei south of lat. 72° N., where young in down were obtained. It passes the Faroes, the coasts of Scandinavia, and the shores of the Baltic on migration, and winters on the coasts of Denmark, Holland, Belgium, North Germany, and France. During the cold season it occasionally visits the Mediterranean basin, the Black Sea, and the Nile delta. It has been shot as far south as Mogador, in Morocco, by Mr. A. C. Payton. Of the breeding of this species in Iceland there is not a shred of positive evidence.

Allied forms.—*Branta glaucogaster*, an inhabitant of the northern Nearctic region, breeding from the Arctic Archipelago in the east to the west coast of Greenland in the west, and as far north as land is known to exist. It winters on the Atlantic coasts of North America as far south as Texas. The American form of the Brent Goose, only subspecifically distinct, a "British"

species more or less intergrading with its Old World ally, and dealt with fully in the following chapter. *B. nigricans*, an inhabitant of Siberia as far east as the Lena and North-west America, west of the Rocky Mountains. It is distinguished from the Brent Goose by having the white of the neck meeting in front and forming a nearly uninterrupted collar, and the black of the breast reaching to the belly.

Habits.—Brent Geese are seldom very common in our Islands before October, but from that date onwards, through the winter up to the end of March, they are far and away the most numerous species of the present subfamily to be found on the British coasts. Vast flocks accumulate in certain favoured districts, among which I may specially mention the Wash, where I have seen gatherings of these birds covering many acres of mud-flat, and whose noisy clamour in the still hours of early morning could be heard for a mile or more across the salt marshes. The Brent Goose whilst with us is decidedly a coast bird, rarely seen inland, but spending its time either on the sea or the great mud-banks adjoining. It is a very gregarious bird, and the young and adults flock together; but it has frequently been remarked that in some winters few, if any, young birds made their appearance, a fact which apparently suggests a great misfortune at the breeding grounds. It is a remarkably wary bird, seldom allowing a near approach on shore, and requiring the most skilful management on the part of the sportsman to creep up within range on the sea. The principal food of the Brent Goose consists of the grass-wrack (*Zostera marina*) and laver (*Ulva latissima*), which grow plentifully on certain mud-banks, and to these banks the Geese resort as soon as the tide recedes sufficiently for them to reach the plants, which are torn up and eaten. If approached at these times the adult birds usually fly off to sea well out of harm's way, but the young birds are more trustful, and simply rise and settle again, as if loth to leave the feast, and this greediness or inexperience costs the lives of a good many every year. During the period of high water the Brent Goose usually retires some distance out to sea, but I have known great flocks settle on low islands, and pass the time between the tides in sleeping or preening their plumage. The Brent Goose feeds principally during the day, but often visits the banks at low water for that purpose during a bright moonlight night. In addition to the food already mentioned, Feilden records that at their breeding grounds Brent Geese feed on the buds of a saxifrage, a substance which is only taken whilst the birds are ashore rearing their young. Grass and possibly animal food may also be eaten then. The flight of this bird is rather laboured but regular. Its note is a loud and oft-repeated *hank*, or *honk*, which is uttered not only on the ground, but when the birds are flying.

Nidification.—The breeding habits of the Brent Goose have been carefully observed by Colonel Feilden during the Nares Arctic expedition. This informa-

tion, strictly speaking, applies to the White-bellied Brent Goose, but possibly does not differ to any important extent in the two races. He noticed its arrival at the breeding grounds near Knot Harbour in lat. $82\frac{1}{2}^{\circ}$ N. on the 9th of June, and eggs were laid by the 21st of that month. Shortly after its arrival the male and female were observed rising in spiral flight to a great elevation, toying and playing with each other meanwhile. Some of the nests were made on the hill sides between the snow-line and the sea, others were placed on an island, beyond the line of open water, and separated from the mainland by rough hummocks of snow and ice. The nests were made in hollows in the ground, and were composed of grass, moss, and saxifrages, and warmly lined with down. The eggs are four or five in number, creamy-white in colour, and rather smooth and glossy. They measure on an average 2.75 inches in length by 1.85 inch in breadth. As with other species, the male keeps watch near the nest whilst the female is incubating, ready to warn her or assist in defending the eggs. One brood only is reared in the year, and by the end of July most of the Brent Geese were moulting their quills so quickly as to be incapable of flight. When alarmed, however, they ran quickly to the nearest water for safety.

Diagnostic characters.—*Branta*, with the head and neck black, and a small white patch on the sides of the latter. Length, 22 to 24 inches.

Family ANATIDÆ.
Subfamily ANSERINÆ.

Genus BRANTA.

WHITE-BELLIED BRENT GOOSE.

BRANTA GLAUCOGASTER—(*Brehm*).

Bernicla glaucogaster, *Brehm*, Vög. Deutschl. p. 849 (1831).

Anser brenta glaucogaster (*Brehm*), *Seebohm*, Hist. Brit. B. iii. p. 508 (1885);
Seebohm, Col. Fig. Eggs Brit. B. p. 33, pl. 10 (1896).

Bernicla brenta glaucogaster (*Brehm*), *Dixon*, Nests and Eggs Non-indig. Brit. B. p. 156 (1894).

Geographical distribution.—*British*: The White-bellied Brent Goose, which with some hesitation we have separated specifically from the Brent Goose, is a winter visitor to the coasts of the British Islands, where its distribution is not known to differ from that of the typical Brent Goose, although the bird is a much rarer one. Intermediate forms between the two races occur on our coasts, and are perhaps more numerous than the thorough-bred white-bellied race. *Foreign*: Northern Nearctic region; more southerly in winter. It breeds on the coasts and islands north of lat. 72°, from the Arctic archipelago to the east coasts of Baffin Bay and north to the limits of known land. It has recently been observed on Nova Zembla and Kolguev, so that its normal geographical area may prove to be circumpolar. Captain Feilden, during the Nares Arctic expedition, found this Goose breeding in lat. 82½°, near Knot Harbour. It winters on the Atlantic seaboard of North America as far south as Texas, the birds appearing on our coasts in winter, reaching our shores by way of Spitzbergen and Franz-Josef Land.

Allied forms.—*Branta bernicla*, the typical race of Brent Goose, a British species already dealt with in the preceding chapter. *B. nigricans*, the American representative of that species, and previously alluded to (Conf. p. 331).

Habits.—It is not known that the habits of the White-bellied Brent Goose differ in any important respect from those of the typical form. It is just as northerly in its distribution during summer, and comes south in winter to the coasts of temperate America. It is equally gregarious, and often mingles in small numbers with flocks of the preceding race.

Nidification.—The breeding habits, the nest, and the eggs of the White-bellied Brent Goose have been already described in the previous chapter.

Diagnostic characters.—*Branta*, with the underparts below the breast nearly white, and with the head and neck black, with a small white patch on the sides of the latter. Length, 22 to 24 inches. Intermediate forms between the two extreme races are frequently met with in the British Islands.

Family ANATIDÆ.

Genus BRANTA.

Subfamily ANSERINÆ.

BERNACLE GOOSE.BRANTA LEUCOPSIS—(*Bechstein*).**Anas leucopsis**, Bechstein, Orn. Taschenb. ii. p. 424 (1803).**Bernicla leucopsis** (Bechst.), Macgill. Brit. B. iv. p. 622 (1852); Dresser, B. Eur. vi. p. 397, pl. 415, fig. 1 (1878); Yarrell, Brit. B. ed. 4, iv. p. 286 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 157 (1894).**Anser leucopsis** (Bechst.), Seebohm, Hist. Brit. B. iii. p. 512 (1885); Lilford, Col. Fig. Brit. B. pt. xi. (1889); Seebohm, Col. Fig. Eggs Brit. B. p. 34, pl. 10 (1896).**Branta leucopsis** (Bechst.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 117 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 236 (1896).

Geographical distribution.—*British*: The Bernacle Goose is a winter visitor to the British Islands, most abundant during severe seasons. It is least common on the eastern coast line of Scotland and England, rare on the south coast, but becoming much more frequent on the west, from Cornwall northwards. It is abundant in the Solway district and on the coasts of Lancashire, and commonly distributed throughout the west coast of Scotland, including the Hebrides. It passes the Orkneys and Shetlands on migration. It is locally distributed in Ireland, where it is most abundant on the north and north-west coasts, and, as might naturally be expected, in one or two favoured districts on the east. This Goose frequently wanders inland, and winters on large sheets of water, especially where it is afforded protection. *Foreign*: North-west Palæ-arctic region; more southerly in winter. Although the Bernacle Goose has been well known for the past three hundred years and more, its breeding grounds remain undiscovered, and authentic eggs laid by the bird in a wild state are unknown. All that can be said is that it has been met with during the breeding season in Greenland, Iceland, Spitzbergen, Kolguev, and Nova Zembla. Collett states that this bird breeds on the Loffoden Islands, off the coast of Norway, in lat. $68\frac{1}{4}^{\circ}$; but inasmuch as the evidence is second-hand, only the eggs being sent, with a meagre description of the parents (by the proprietor of the island), it is unwise to accept it. It should also be remembered that these "Black Geese" are birds of the high north, and seem to require far different climatic conditions for their reproduction than those prevailing in these comparatively low and Gulf Stream-encircled islands. It occurs sparingly in the White

Sea, and regularly along the coasts of Scandinavia, on passage, and winters in the Baltic and on the coasts of Denmark, Holland, Belgium, and North France, accidentally straying as far south as the Spanish Peninsula and Foggia, in the Italian province of Capitanata. A pair were seen some ten years ago by Mr. C. A. Payton, near Mogador, in Morocco, in company with Ruddy Sheldrakes. It occurs as a straggler in the Shetlands and the Faroes, and has been known to wander as far as the extreme southern shore of Hudson Bay.

Allied forms.—*Branta canadensis* and its allied forms, all inhabitants of the New World, from which the Bernacle Goose is readily distinguished by its white instead of black forehead, and black instead of white upper breast.

Habits.—Probably owing to its much more shy disposition, the Bernacle Goose frequents wilder haunts than the Brent Goose, nor is it so much addicted to the low shore or mud-banks. It is by far the most abundant, perhaps, from the neighbourhood of the Solway northwards, along the wild, secluded coasts of the Hebrides and the Scotch mainland. The Bernacle Goose is just as gregarious as the Brent Goose during its sojourn in the British Islands, but, unlike that species, it sometimes frequents inland waters, returning to them regularly every year. Owing to the different nature of its food, the Bernacle Goose is much more of a land bird than the Brent Goose, whilst, instead of feeding by day, it is decidedly a night feeder. I am of opinion that this nocturnal habit is ancestral but intensified through the bird's habitual shyness impelling it to select the time when it is least likely to attract observation during its visits to land, especially in civilised countries. Even when much disturbed at night, it is ready enough to come ashore during the day. The Bernacle Goose frequents the mud-flats to sleep and rest, but it does not feed much whilst there. Its food consists principally of marsh grass, to obtain which the bird comes up from the sea to the littoral saltings, and the banks of lakes and tidal rivers. The flight of this Goose is quick and powerful, and the bird not only swims well, but is capable of running very fast when wounded or during the helpless period of its moult. The note of this species is a short, loud, and trumpet-like clang, variously modulated. A flock of Bernacle Geese, whilst feeding, will keep up a constant chatter among themselves, and it should be stated that sentinels are stationed to keep watch, and to give the alarm in case of danger approaching.

Nidification.—It is rather remarkable that nothing absolutely is known of the breeding habits of this Goose. The nesting grounds of the great flocks that come south in winter are still undiscovered. It has, however, repeatedly been induced to breed in captivity, and by this means its eggs are known. They are creamy-white, rather rough in texture, and without gloss. They are rather larger than those of the Brent Goose, and measure on an average 2·85 inches in

length by 1.95 inch in breadth. It may safely be inferred that the Bernacle Goose rears one brood only in the year, and the eggs are probably laid early in June, seeing that the birds have been discovered in full moult and incapable of flight on the 22nd of July in Spitzbergen.

Diagnostic characters.—*Branta*, with the hind half of the head and the neck black, and with the fore half of the head white, except the lores and the feathers at the base of the upper mandible, which are black. Length, 25 inches.



Family ANATIDÆ.
Subfamily ANSERINÆ.

Genus BRANTA.

RED-BREASTED GOOSE.

BRANTA RUFICOLLIS—(*Pallas*).

PLATE XXXIII.

Anser ruficollis, Pall. Spicil. Zool. vi. p. 21, pl. v. (1769); Seebohm, Hist. Brit. B. iii., p. 515 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 35, pl. 11 (1896).

Bernicla ruficollis (Pall.), Macgill. Brit. B. iv. p. 634 (1852); Dresser, B. Eur. vi. p. 403, pl. 416 (1876); Yarrell, Brit. B. ed. 4, iv. p. 281 (1885); Lilford, Col. Fig. Brit. B. pt. xxi. (1892); Dixon, Nests and Eggs Non-indig. Brit. B. p. 158 (1894); Sharpe, Handb. B. Gt. Brit. ii. p. 243 (1896).

Branta ruficollis (Pall.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 124 (1895).

Geographical distribution.—*British*: The Red-breasted Goose is an accidental straggler during autumn and winter to our area. Among many more than doubtful records, the following instances are apparently thoroughly trustworthy:—England: Near London (one example), 1776. Quite an historical interest attaches to this specimen. It was recorded by Tunstall, formed the subject of one of Bewick's plates, and is still preserved in the Newcastle Museum. Yorkshire (one example), probably got about the same time as Tunstall's specimen; Caithness (one example); Northumberland (one example), 1818; Devonshire (two examples), 1828, 1837; Essex (one example), January, 1871. *Foreign*: Extreme north-central Palæarctic region; more southerly in winter. It is only known to breed above the limits of forest growth in the valleys of the Obb, the Yenisei, and the Boganida. Middendorff obtained the first authenticated eggs of this Goose on the Boganida, and was assured that the bird was still more numerous at the mouth of the Piasina, some miles further west. An egg with the parent bird which had been obtained from an island in the delta of the Yenisei was brought to Seebohm; whilst Finsch found it fairly numerous in the valley of the Obb. More recently (1896) Mr. H. L. Popham found four nests in the valley of the Yenisei. The migration of this species appear to be across the plains of the Tax, between the Yenisei and the Obb, and down the valley of that river into the Irtish valley, thence into that of the Tobol and the Ural, onwards to the Caspian. This route takes the bird through South-western Siberia and Northern Turkestan to its winter quarters in the basin of the Caspian. Eastwards this species has wandered as far as Lake Baikal, whilst westwards it has occurred in every country of Europe, except the Spanish Peninsula. The only evidence of this bird extending its wanderings southwards

to Africa is that it is figured with unmistakable accuracy on some of the ancient Egyptian papyri, and on the tombs of her kings; whilst coming to modern times an example of the Red-breasted Goose, labelled "Alexandria," is in the Lilford collection, whilst Mr. Saunders records skins on sale in 1884 said to have come from Algeria.

Allied forms.—None of sufficient propinquity to call for notice.

Habits.—Although the habits of this beautiful Goose are but little known, they appear to resemble very closely those of allied species. The Russian naturalist Radde states that it winters in great numbers on the southern coasts of the Caspian Sea, and that during this season and whilst on migration it congregates into large flocks. It is shy and very difficult to approach. The Red-breasted Goose is a day feeder like the Brent Goose, but comes inland to do so like the Bernacle Goose. Radde states that the flocks visit the inland pastures during the day, but at the approach of night return to the sea, and pass that period at some considerable distance from land. During heavy falls of snow which cover its feeding grounds, great numbers of this Goose are caught in nets spread on places where the snow has been cleared away for the purpose. Many birds are also shot during their migration as the thousands of flocks pass along certain routes towards the Arctic regions where they rear their young. The food of this Goose consists principally of grass, and the leaves and shoots of other herbage. The flight note is described by Pallas and other naturalists as resembling the syllables *shak-voy*, but when feeding a short trumpet-like cry is uttered somewhat similar to that of the Brent Goose.

Nidification.—Von Middendorff obtained the first authentic eggs of the Red-breasted Goose on the banks of the Boganida, in Northern Siberia, on the 6th of July. In more recent times another nest was discovered on July 1st, on an island in the delta of the Yenisei, containing two eggs, one of which was broken, as the female was shot upon them, and the other was brought to Seeböhm, then on his visit to the valley of that river. The nest was described as being like that of the Bean Goose, only not so large. A month later that gentleman observed broods of Red-breasted Geese and their parents on the banks of the river a few miles to the south of the locality where the nest had been discovered. The nests found by Mr. Popham were placed at the foot of a cliff, occupied by either a Peregrine or a Rough-legged Buzzard, and were well supplied with down of a creamy-white colour. The eggs, from seven to nine in number, are creamy-white in colour, somewhat smooth in texture, very fragile, and measure on an average 2·75 inches in length by 1·8 inch in breadth. There can be little doubt that this species rears one brood only in the year.

Diagnostic characters.—*Branta*, with the forehead black, the lores white, and the throat and breast rich chestnut. Length, 22 inches,

**Subfamily ANATINÆ, or Sheldrakes and
Non-diving Ducks.**

The birds included in the present subfamily are distinguished from their allies by having the metatarsus scutellated in front, and only a narrow membrane attached to the hind toe. The bill is rather flat and broad. None of the species contained in this group ever dive for their food, which they search for on land or in shallow water, only submerging the fore half of the body whilst probing and sifting the mud and weeds for sustenance. In the Sheldrakes the sexes are nearly alike in colour, but in the Ducks there is usually considerable sexual difference in this respect. The Sheldrakes moult once in autumn, but the Non-diving Ducks have one complete moult in autumn, and the males of many species moult their small feathers twice—once in early summer and once in autumn.

This subfamily is composed of upwards of seventy species, divisible into about a score fairly well-defined genera.

Genus TADORNA, or Sheldrakes.

Type, TADORNA CORNUTA.

Tadorna, of Fleming (1822).—The birds comprising the present genus are characterised by their white carpal region of the wing, which is also swollen into a hard feathered protuberance; by their rather long metatarsus (nearly as long as the middle toe and claw), and by their prevailing and usually strongly contrasted colours of black, white, and chestnut. The wings are long and ample, the second primary the longest. The bill is broader towards the tip than at the base, the lamellæ equally developed along the inner edge of the upper mandible, those on the lower mandible not projecting outwardly; the unguis decurved and hooked; nostrils oval, sub-basal. Three toes in front webbed; hind toe small. Sexes similar in colour.

This genus is composed of two species, breeding in the temperate portions of the Palæarctic region, and in the Australian region; Oriental region chiefly in winter. One species is British, a common resident in our Islands.

The Sheldrakes are dwellers on sea-coasts, and on salt lakes and marshes. They are birds of rather slow and laboured flight, progressing by slow, regular beats of the wings, like Swans. They also swim and walk with ease. Their notes are harsh and unmusical. They subsist on both animal and vegetable substances. They breed in holes of trees, in rocks, or in the ground, and their eggs are numerous and creamy-white. They are monogamous, pair probably for life, and the male bird shares the duty of tending the eggs and young. They are more or less gregarious and sociable, especially during winter.



Family ANATIDÆ.
Subfamily ANATINÆ.

Genus TADORNA.

COMMON SHELDRAKE.

TADORNA CORNUTA—(*S. G. Gmelin*).

PLATE XXXIV.

Anas tadorna, Linn. Syst. Nat. i. p. 195 (1766).

Tadorna vulpanser, Fleming; Macgill. Brit. B. v. p. 22 (1852).

Tadorna cornuta (*S. G. Gmelin*), Dresser, B. Eur. vi. p. 451, pl. 420 (1878); Yarrell, Brit. B. ed. 4, iv. p. 352 (1885); Seebohm, Hist. Brit. B. iii. p. 520 (1885); Lilford, Col. Fig. Brit. B. pt. xxvii. (1893); Dixon, Nests and Eggs Brit. B. p. 225 (1893); Salvadori, Cat. B. Brit. Mus. xxvii. p. 171 (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 36, pl. 16 (1896).

Tadorna Tadorna (Linn.), Sharpe, Handb. B. Gt. Brit. ii. p. 258 (1896).

Geographical distribution.—*British*: The Common Sheldrake is a resident in and widely dispersed throughout the British Islands. It breeds in all suitable places on the east and west coasts of England, but is very much more local in the south during the breeding season. It breeds in many localities on the east of Scotland, notably in the Forth, and the same remarks apply to the west, including the Hebrides. It also breeds sparingly and locally round the Irish coasts, but is most abundant during winter, as it also is on the eastern coast line of Great Britain. *Foreign*: North-western and southern Palæarctic region; northern Oriental region in winter. It breeds throughout Europe in all suitable localities, but in the basin of the Mediterranean, where it nests sparingly on both shores, it is best known as a winter visitor, whilst in the north it does not extend beyond lat. 69° in Norway, lat. 60° in the Baltic, and lat. 56° in the Urals. In Asia it does not appear to breed north of lat. 52° in the west, and the valley of the Amoor in the east. The birds breeding in the northern portions of this range, including Turkestan and Mongolia, are migratory, but in the basin of the Black and Caspian Seas they are resident, as they also appear to be in Japan. To the coasts of China and to India, as far south as the Tropic of Cancer, it is a winter visitor. A single example has been recorded from the Faroes.

Allied forms.—*Tadorna radjah*, an inhabitant of the Moluccas, Papuan Islands, and Australia. It differs from the Common Sheldrake in having no knob at the base of the bill and in having the head and neck white, the tail black.

Habits.—The Sheldrake is a thorough bird of the coast, and only under exceptional circumstances frequents inland waters, and even then when they are salt. Although it is a resident with us in all the colder portions of its range, it is a bird of passage, drawing south in October and retiring north again in March. Its numbers are consequently increased in our Islands during winter. In India it arrives later in autumn, during the latter half of November, and appears to linger longer in spring, till nearly the middle of April, probably because at its breeding grounds in Mongolia and South Siberia the summer is much later than in Europe. The Sheldrake prefers sandy coasts to mud-flats, and low beaches and dunes are its favourite resorts. It is ever a shy and wary bird, difficult to approach, and usually takes alarm before any other wild fowl that may by chance be in its vicinity. At all times the Sheldrake is a rather sociable bird, but never appears to congregate into very large flocks, being usually met with in small parties or scattered pairs. It changes its ground a good deal according to season, and in winter visits many parts of the coast where it is entirely absent in the breeding season. The flight of the Sheldrake is regular and straightforward, not performed with rapid beats like that of the typical Ducks, but with slow and measured strokes, which lend the bird's movements a laboured appearance, more apparent than real. The flight is seldom taken very high, usually close to the water, and is often considerably prolonged; but when on migration, the bird rises much higher. The food of this species consists of grass, and the stems and leaves of various plants growing in or near the water; of insects, crustaceans, worms, mollusks, and small fish. The young, in their downy stage of existence, feed almost exclusively on sand-hoppers, which they are very expert at catching, even shortly after they are hatched. None of this food is obtained by diving, but whilst the bird is wandering about the shore, paddling in the shallows, or swimming in water just deep enough to allow it to reach the bottom when the fore part of the body is submerged, and the hind quarters are held almost perpendicular. The Sheldrake swims well and lightly, and on land walks more elegantly than the typical Ducks. It seldom wanders far from the water, but occasionally visits the pastures close to its haunts, and wanders to the turf amongst the dunes. As soon as the young are reared the broods and their parents frequently go out to sea, only coming on shore to feed, but not always to sleep. The call-note of the Sheldrake is a harsh *quack*; in the pairing season an oft-repeated, tremulous whistling or chirping note is uttered, and when the young are abroad a hoarse *korr* or *kurr* is heard. Hume states that, when surprised, both sexes utter a whistle of alarm.

Nidification.—The breeding grounds of the Sheldrake are near the sea, either on the sandy coasts of the mainland or on low islands. In our Islands the birds gather at their breeding places in March, but the eggs are usually laid during May; in other localities they are a little earlier or later according to

circumstances. The Sheldrake pairs for life; at all seasons the duck and drake may be observed in company, and in many cases the old nesting site is tenanted yearly. This Duck cannot be termed gregarious in the breeding season, and although many pairs may nest within a small reach of the coast, each appears to keep apart from the rest. The nest is usually placed at the end of a burrow, especially a rabbit hole; sometimes it is under rocks, and has been known in a very dense furze thicket. The Sheldrake may occasionally dig its own burrow, and this is then said to be nearly circular, but I do not think that such is often the case, at least in our Islands. The nest is a simple one, and consists of a little dry grass and an abundant lining of down from the bird. The eggs are from six to twelve in number, but larger clutches are on record, and in cases where they have been judiciously removed as many as thirty have been taken from a single nest. They are creamy-white in colour, smooth in texture, very brittle, and possess considerable gloss. They measure on an average 2·7 inches in length by 1·9 inch in breadth. The down is lavender-grey. Incubation is performed by both male and female (but the latter sits the most), and lasts about a month. The nest is very difficult to find unless the birds are watched at morning and evening when the sitting bird is relieved by its mate. The male is seldom seen near the nest, and both birds are remarkably cautious when leaving or approaching it. One brood only is reared in the year, and as soon as the young are hatched they are taken by their parents to the beach.

Diagnostic characters.—*Tadorna*, with the head and neck green (brown in young or first plumage), below which is a broad white collar. Length, 25 inches.

Genus **CASARCA**, or Ruddy Sheldrakes.

Type, **CASARCA RUTILA**.

Casarca, of Bonaparte (1838).—Count Salvadori, whose general arrangement of the ANSERIFORMES we intend to follow in the present work, characterises the birds in the present genus by their having more or less prominent lamellæ to the edges of the bill, which is not broader towards the tip than at the base. The culmen is almost straight and the lamellæ are equally developed along the inner edge of the upper mandible; the lamellæ on the lower mandible projecting outwardly. In this genus the sexes are, to a more or less extent, dissimilar in colour.

This genus is composed of four species, distributed over the Southern Palæ-arctic, Ethiopian, Oriental, and Australian regions. One species is an abnormal migrant to the British Islands.

The Ruddy Sheldrakes are, strictly speaking, more fresh-water than maritime in their haunts, and to a large extent frequenters of the land. They are gregarious during the non-breeding season, but appear to nest in pairs only. Some of the species, at least, often nest far from water. They breed in holes of cliffs or trees, as well as in the ground, choosing covered sites for their nests. Their eggs are numerous and creamy-white. Their food consists partly of vegetable and partly of animal substances. Their notes are harsh. Their flight is stately and deliberate.

Family ANATIDÆ.
Subfamily ANATINÆ.

Genus CASARCA.

RUDDY SHELDRAKE.

CASARCA RUTILA—(*Pallas*).

Anas casarca, Linn. Syst. Nat. iii. p. 224 (1768).

Anas rutila, Pallas, Nov. Comm. Petrop. xiv. 1, p. 579, tab. 22, fig. 1 (1770).

Tadorna casarca (Linn.), Macgill. Brit. B. v. p. 19 (1852); Dresser, B. Eur. vi. p. 461, pl. 421, (1875); Yarrell, Brit. B. ed. 4 iv. p. 347 (1885); Lilford, Col. Fig. Brit. B. pt. xx. (1891); Dixon, Nests and Eggs Non-indig. Brit. B. p. 160 (1894).

Tadorna rutila (Pallas), Seebohm, Hist. Brit. B. iii. p. 524 (1885); Seebohm, Col. Fig. Eggs Brit. B. p. 36, pl. 16 (1896).

Casarca rutila (Pallas), Salvadori, Cat. B. Brit. Mus. xxvii. p. 177 (1895).

Casarca casarca (Linn.), Sharpe, Handb. B. Gt. Brit. ii. p. 263 (1896).

Geographical distribution.—*British*: The Ruddy Sheldrake is a very rare straggler to us on autumn migration and in winter; but many of the records of the occurrence of this species in the United Kingdom unquestionably relate to birds escaped from the semi-captivity in which the bird is commonly found in our Islands. As such I should feel disposed to class all the occurrences in summer. Among the most trustworthy instances may be mentioned the following:—England: Dorset (one example), winter, 1776; Suffolk (one example), January, 1834; Kent (one example, shot from a party of four), September, 1884. Scotland: Orkneys (one example), October, 1831. Ireland: Co. Kerry (one example), August, 1869; Shannon River (two examples), summer, 1886. Others are reported to have been either seen or taken in Suffolk, Yorkshire, the “south of England,” Caithness, Forfarshire, Waterford, and Wicklow. The year 1892 was remarkable for a large immigration of Ruddy Sheldrakes to the British Islands. Flocks of from ten to twenty birds were observed, between the middle of June and the middle of September, and many examples were obtained. (Conf. *Zoologist*, 1892, pp. 392—398.) *Foreign*: Southern Palæarctic region; Oriental region in winter. It is a resident in the basin of the Mediterranean and Black Seas, but not known to breed in Europe north of the Spanish Peninsula, the valley of the Danube, and South Russia; whilst to the lakes and waters of North Africa it is principally a winter visitor. To Greenland, Iceland, Sweden, the Baltic, West Russia, Germany, Denmark, and France it is, as to our Islands, an accidental visitor only. In Europe the Ruddy Sheldrake is mostly a resident species, but in Asia it

is migratory, and there can be little doubt that the accidental wanderers to the extreme west of Europe are from this district. In Asia it breeds throughout Persia, Turkestan, and South Siberia, as far north as Lake Baikal and the valley of the Amoor. It possibly breeds in Japan, and is a regular summer visitor to Mongolia, but to China, Burmah, and India it is known as a migrant in autumn and winter only.

Allied forms.—*Casarca cana*, an inhabitant of South Africa as far north as what is to be hoped will soon be the British Colonies of the Transvaal, and the Orange Free State. It differs from the Ruddy Sheldrake in having the head and neck ash grey. More distantly allied species are *C. tadornoides*, of Western and Southern Australia, including Tasmania, and *C. variegata*, of New Zealand.

Habits.—The range of the Ruddy Sheldrake in Europe does not extend sufficiently far north to render the bird a migratory one, but in Asia, where the climate is much colder in winter, and where the limits of its distribution extend slightly higher, this Duck is a bird of regular passage. Hume states that it winters in India in countless myriads. It begins to arrive in Cashmere and on the southern slopes of the Himalayas at the end of September, which agrees with the date of its departure from South Siberia about the middle of September. By the end of October it is generally dispersed over Northern India, and during November it reaches the southern districts. It leaves the south towards the end of March, the north a little later, and reaches its breeding grounds in Siberia again towards the end of April. The Ruddy Sheldrake migrates in enormous flocks, but these soon separate, and distribute themselves in scattered pairs throughout the country. In spring it again unites into flocks, and is then more frequently seen on lakes than at any other time of its stay in India. These gatherings disperse at the breeding grounds. The Ruddy Sheldrake is a fresh-water Duck, and a shore bird rather than a water one, spending most of its time on or near the bank. In India its favourite haunts are the broad rivers where sandbanks break the stream into numerous channels, but the bird occasionally visits fields and flooded grounds at some distance from its usual retreats. It not only swims well, but often dives when wounded, and on the ground walks with a rather graceful, sedate step in a very erect manner. The flight of this species is easy and quick when once the bird is fairly on the wing, but it rises in a laboured manner and with apparent difficulty. The wings are flapped slowly rather than beaten rapidly. The food of the Ruddy Sheldrake consists of both animal and vegetable substances, the former, according to Hume, predominating. Of the vegetable element may be mentioned grass and sprouting corn, especially when growing near the edge of the water, water weeds of various kinds, and seeds; of animal substances, insects, the fry of fish, shrimps, small frogs, and all kinds of land and fresh-water snails. It has been said that this Sheldrake occasionally

feeds on carrion in India, and consorts with Vultures; the evidence is certainly very conclusive. The usual note is a rather loud and monotonous *kark*; but the alarm note is described by Pallas as resembling the syllables *à-oung*, rendered by the Turks as *au-gout*. According to Jerdon there is a superstition in India among the natives that "the souls of erring lovers, who have loved not wisely but too well, pass into the forms of these Ducks, condemned thenceforth to pass the night, the season of their transgressions, apart, on opposite banks of some stream, each ever praying the other for permission to rejoin them, and each ever compelled sternly to refuse. 'Chakwa, shall I come?' 'No, Chakwi!' 'Chakwi, shall I come?' 'No, Chakwa!'" "This story," Hume continues, "however, I fear belongs to a more poetical age than the present, and I myself have never met with a native in Upper India who knew of it except from Europeans. Perhaps, too, the world is more virtuous, or celestial vigilance less keen, for certain it is that in these degenerate days, except in the case of very narrow rivers like the Hindon in Meerut, alike by day and night, Chakwa and Chakwi are to be found both on the *same* side of the water." In India the Ruddy Sheldrake, or Brahminy Duck, as it is otherwise called, is nowhere held in reverence; but in Burmah it is the sacred and national bird of the natives; the Llamas of Mongolia also regard it as an object of religious respect. The Ruddy Sheldrake is a remarkably wary bird, rarely allowing any one to approach it within gunshot, and, owing to its restless, noisy habits, it is much disliked by the sportsman. Hume writes: "Not only do they carefully provide for their own safety, but they seem positively to take a malicious pleasure in spoiling all sport. You are working down on a lump of fowl—a few minutes more and you will be within range. Suddenly the loud call of the Brahminy sounds, and rising out of a hollow in the sand where they have been squatting, you see a pair waddling to the water's edge. Again and again the pair call and answer (side by side as they are, one would think that save out of sheer spite they need not shout at each other thus), then with a rapid chuckle off they go, their wings clattering as they rise like a train on an iron culvert, and with them of course go all the Fowl. Further on are a lot of Geese; you work towards them; vain hope! The ruddy wide-awakes have alighted near these now, and duly put them up before you are within a hundred yards, and sometimes a pair will thus persecute you for a couple of miles before they finally turn up-stream to return to their proper beat." The flesh of this Duck is hard and dry, with a rank and fishy flavour, but is rendered palatable if the bird be skinned before it is cooked.

Nidification.—The Ruddy Sheldrake, like the preceding species, pairs for life, and the male and female are said to be tenderly attached to each other, and rarely stray far apart even during winter. At the breeding grounds in Mongolia, however, Prjevalsky states that the males often fight, not only with themselves but with other species. This Sheldrake is an early breeder, beginning to lay in

Persia early in May and in Dauria by the middle of that month. In Europe it is earlier still, and begins laying towards the end of April. The nest is made in various situations, but almost always in a covered site. Sometimes it is made in holes in cliffs, at others in holes and clefts in the ground, even in the middle of a corn-field; whilst holes in trees and logs, and the deserted nests of birds of prey, are also selected. Prjevalsky states that it is sometimes made in the fireplaces of houses in deserted Mongol villages; whilst it has been found amongst a colony of Griffon Vultures and near to nests of the Raven, the Black Kite, the Egyptian Vulture, and other cliff-haunting birds. It is often made at considerable distances from water, but more frequently in rocks that overhang a stream or lake. But little nest is made, although the eggs usually rest amongst a soft bed of down plucked from the parent's body. The eggs are from eight to sixteen in number, more frequently the former than the latter. They are creamy-white in colour, smooth in texture, and very fragile. They measure on an average 2·7 inches in length by 1·8 inch in breadth. The colour of the down is undescribed. It is said that the male takes no part in incubating the eggs, but we doubt this. In the case of the young he is just as assiduous as the female. Incubation in this species lasts thirty days. The young are carried from the nest to the nearest water by their parents, but in what manner is apparently unknown, some writers asserting in the beak, others on the back, others yet again in the feet. One brood only is reared in the year.

Diagnostic characters.—*Tadorna*, with the general body-colour rufous-buff, and the wing coverts white. Length, 25 inches. Males in breeding plumage have a narrow black ring round the neck.

Genus CHAULELASMUS, or Gadwalls.Type, CHAULELASMUS STREPERUS.

Chaulelasmus, of Bonaparte (1838).—The birds comprising the present genus are characterised by the bill, which is shorter than the head, not very broad, and somewhat compressed, whilst there is no fringe of soft membrane near the tip of the apical portion. The lamellæ of the upper mandible are prominent. The central rectrices scarcely extend beyond the rest; and the speculum is black outwardly and white inwardly.

This genus is composed of two species, one of which is distributed over the temperate and tropical portions of the Northern hemisphere, whilst the other is confined to the Fanning group of islands.

The Gadwalls are frequenters of fresh waters rather than coasts and seas. One species is migratory, the other, so far as is known, sedentary. They are birds of rapid and sustained flight. Their notes are harsh and discordant. Their food is partly vegetable and partly animal substances. They are gregarious, especially during the winter, and to some extent social, fraternising with other Ducks. Their nests are rude and made upon the ground, warmly lined with down, and their eggs are numerous and buffish-white.

Family ANATIDÆ.
Subfamily ANATINÆ.

Genus CHAULELASMUS.

GADWALL.

CHAULELASMUS STREPERUS—(*Linnæus*).

Anas strepera, Linn. Syst. Nat. i. p. 200 (1766); Yarrell, Brit. B. ed 4, iv. p. 370 (1885); Seebohm, Hist. Brit. B. iii. p. 530 (1885); Lilford, Col. Fig. Brit. B. pt. xv. (1890); Dixon, Nests and Eggs Brit. B. p. 227 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 37, pl. 14 (1896).

Querquedula strepera (Linn.), Macgill. Brit. B. v. p. 59 (1852).

Chaulelasmus streperus (Linn.), Dresser, B. Eur. vi. p. 487, pl. 424 (1873); Salvadori, Cat. B. Brit. Mus. xxvii. p. 221 (1895); Sharpe, Hand-b. B. Gt. Brit. ii. p. 273 (1896).

Geographical distribution.—*British*: The Gadwall is a comparatively rare and local winter visitor to the British Islands, although many apparently pass our coasts on migration, especially in spring. It is found in small numbers in the Orkneys and Shetlands, thence down both the east and west coasts of Scotland including many of the Hebrides, becoming less common in England, where it occurs most frequently in the east. It is a fairly frequent visitor to Ireland, where it appears to be much overlooked. It breeds locally in Norfolk, originally a pair of pinioned birds only, but now their descendants together with apparently thoroughly wild birds which have been tempted to lag behind their companions in spring. The Gadwall is a fresh-water species, frequenting inland pools as well as those in the vicinity of the sea. *Foreign*: Circumpolar, Palæarctic and Nearctic regions; Oriental region in winter. It breeds locally in Iceland. It is not known to breed in Norway, but does so in the south of Sweden, and more sparingly in North Germany, Eastern Prussia, and the Baltic provinces. Eastwards it ranges across Russia and Siberia to the Stanavoi Mountains, south of about lat. 60°, from east to west. In Europe it certainly breeds as far south as Spain, the valley of the Danube, the Crimea, and the Volga and Ural deltas in South Russia; whilst eastwards it breeds in Northern Turkestan, South-west Siberia, the Baikal district, and probably the valley of the Amoor. A few European birds winter in Holland, Belgium, France, and the Spanish Peninsula, but the majority do so in the basin of the Mediterranean, extending into the African Continent as far south as the Great Dessert, and down the Nile Valley to Nubia. In Asia it is known to pass Mongolia on migration, and to winter throughout India,

which appears to be its grand head-quarters in that continent during the cold season, although it then visits Northern Burmah, China and Japan, but in smaller numbers. In the Nearctic region it breeds in the Northern United States, and beyond as far north as about lat. 50° to Vancouver Island in the west, to Winnipeg in the central portion, and to Nova Scotia (lat. 45°) in the east. It winters in the Southern United States, the West Indies, and Mexico.

Allied forms.—Although the geographical area of the Gadwall appears to be discontinuous, it is not known that New World examples differ in any way from those of the Old World, which is a most interesting and remarkable fact. *Chaulelasmus couesi*, an inhabitant of Washington Island and New York Island (Fanning Group) in the Pacific Ocean, is said to be the nearest allied form to the Gadwall. It is distinguished by being much smaller in size (length of wing 8 inches, instead of 11 inches in *C. streperus*).

Habits.—In spite of the fact that the Gadwall nowhere breeds in the Arctic regions proper, it is a migratory bird. In Europe its periods of passage are about the same as in India. It arrives at its breeding grounds early in April, and departs in September and October for its winter quarters. Its migrations are undertaken at night, and during flight the birds keep calling to each other, probably to keep their ranks together. The Gadwall is not a coast nor a salt-water Duck, but prefers inland fresh waters. When once these are assured, locality and extent seem of only minor importance, for mighty rivers are frequented just the same as small brooks, huge lakes equally as small pools and ponds, whilst tangled swamps with little open water in them are resorted to. As a rule the the larger and more open the sheet of water the bigger the flock of birds, only small parties frequenting the smaller lakes and streams. For the most part the Gadwall is a night feeder, dozing during the day and retiring inland to feed at dusk. If much harassed the flocks seldom rest close inshore, but take up their position in the centre of the lake well out of harm's way; but sometimes the birds are fond of skulking close amongst the dense vegetation. Occasionally the Gadwall may be seen feeding during the day, paddling about in the shallows and searching the bottom of the water, with the fore part of the body entirely under the surface and the hind quarters bolt upright. It swims well and buoyantly, and rises from the water with a single bound at a rather acute angle, continuing for several yards before hurrying away on a horizontal course. Its flight is rapid and straightforward, and the long, pointed wings make a peculiar whistling sound as they are beaten rapidly through the air. The note of the Gadwall very closely resembles the well-known *quack* of the Mallard, but is uttered oftener and is weaker and sharper in tone. It is a much more noisy bird than the Mallard, and whilst feeding in localities where it is not disturbed keeps up a shrill, feeble, and perpetual chatter. The present species is very sociable, and fraternises with all

kinds of Water Fowl, even with Geese. It swims well and lightly, and walks on land in a rather graceful manner, sometimes running about the marshy ground in quest of insects. It dives easily when wounded, but never does so whilst feeding. The food of the Gadwall consists of the seeds, leaves, and buds of rushes and other aquatic plants, wild and cultivated rice, insects and their larvæ, worms, frogs, and small fish. Hume states that small butterflies and moths are caught by this Duck. The flesh of this Duck as a rule is very good, especially in India as long as the rice lasts, but it is of poor flavour if the bird has been feeding much upon an animal diet.

Nidification.—The Gadwall usually begins to breed in May, and the eggs are laid towards the end of that month or early in June, both in the Old World and the New World. The nest is usually well concealed amongst the vegetation on the banks of the water, but occasionally it has been met with some distance from the pool or stream. It is merely a hollow in the ground strewn with dry grass and bits of dead vegetation, and warmly lined with down from the body of the female. The eggs are from six to thirteen in number, ten being an average clutch. They are buffish-white or cream-colour with a faint greenish tinge, very smooth in texture and somewhat glossy, and measure on an average 2·1 inches in length by 1·5 inch in breadth. The down is neutral grey, with scarcely perceptible white tips. Incubation, performed by the female, lasts, according to Naumann, from twenty-one to twenty-two days. One brood only is reared in the year, and the ducklings are conveyed to the water soon after they are hatched.

Diagnostic characters.—(Nuptial Plumage), *Chaulelasmus*, with the alar speculum white, and the wing 11 inches in length. Length, 20 to 21 inches.

Genus DAFILA, or Pintails.

Type, DAFILA ACUTA.

Dafila, of Stephens (1824).—The birds comprising the present genus are characterised by the long tail, the central rectrices being pointed and considerably extended beyond the rest. The culmen is nearly straight. The speculum is broader than the light band at the tip of the secondaries.

This genus is composed of three species, and may almost be regarded as a cosmopolitan one with the exception of the Australian region. One species is best known as a common winter visitor to the British Islands, although it breeds locally within our limits.

The Pintails frequent both maritime and fresh water areas. Some of the species are migratory. They are gregarious, especially during winter. Their flight is rapid and well sustained. Their notes are harsh and unmusical. Their food consists of vegetable and animal substances. They swim well, but do not dive. They are gregarious and social, especially during the non-breeding season. Their nests are rude, and placed upon the ground, lined warmly with down. Their eggs are numerous, and greenish-grey.

Family ANATIDÆ.
Subfamily ANATINÆ

Genus DAFILA.

PINTAIL DUCK.

DAFILA ACUTA—(*Linnaeus*).

PLATE XXXV. *nd* : *see p.*

Anas acuta, Linn. Syst. Nat. i. p. 202 (1766); Seebohm, Hist. Brit. B. iii. p. 534 (1885); Dixon, Nests and Eggs Brit. B. p. 229 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 38, pl. 13 (1896).

Querquedula acuta (Linn.), Macgill. Brit. B. v. p. 65 (1852).

Dafila acuta (Linn.), Dresser, B. Eur. vi. p. 531, pls. 430, 431 (1873); Yarrell, Brit. B. ed. 4, iv. p. 380 (1885); Lilford. Col. Fig. Brit. B. pt. xiii. (1890); Salvadori, Cat. B. Brit. Mus. xxvii. p. 270 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 287 (1896).

Geographical distribution.—*British*: The Pintail Duck is a fairly common winter visitor to our area, but breeds sparingly in Scotland and Ireland. It passes the Shetlands on migration, but winters in the Orkneys, and has occurred in every county of Scotland, although it becomes rarer in the west, especially in the Hebrides. It is also far from uncommon on the west coast of England, but becomes more plentiful on the east and especially the south coasts. It is rare in the north of Ireland, but from Galway and Meath southwards it is a regular winter visitor. Eggs of this species have been obtained by Mr. Harvie-Brown on Hysgeir, off the south coast of Skye, and I have every reason to believe that the bird breeds sparingly in the Firth of Forth. More recently (1898) nests have been found on Loch Leven by Mr. W. Evans. Hancock states that it formerly bred in the now drained Prestwick Car, in Northumberland. In Ireland, according to Sir R. Payne-Gallwey, several pairs breed at the duck preserves at Abbeyleix, in Queen's County, and he has observed females with their broods on Loughs Mask and Corrib, in Co. Galway. It may also breed in some parts of Connemara. The Pintail is a fresh-water species, and often frequents inland pools as well as the coast. *Foreign*: Circumpolar, Palearctic and Nearctic regions; Oriental and extreme north of Neotropical regions in winter. It breeds throughout the Arctic regions of Europe, Asia, and America at least up to lat. 70°, for in the valley of the Yenisei Mr. Popham met with it up to lat. 72°. In Europe it breeds much less abundantly south of lat. 60°, although it does so sparingly in North Germany, and Russia as far south as the Caucasus in the east, and the Carmargue in the west; whilst in Siberia it is said to breed as low as lat. 50°, which is practically the whole of that country south of lat. 72°. It passes down the coast of

Europe and along the great river valleys to winter in the basin of the Mediterranean, Black, and Caspian Seas. It also passes Turkestan and Mongolia on migration, and winters in Persia, India, Ceylon, Burmah, China, Borneo, and Japan. In the New World it winters in all the Southern States, and in Mexico and Central America as far south as Panama.

Allied forms.—*Dafila eatoni*, an inhabitant of Kerguelen and probably the Crozette Islands. It may be readily distinguished by its smaller size and by the colour of the sides of the neck, the breast, and the abdomen, which in the present species is grey; in the Pintail these parts are white.

Habits.—The Pintail Duck appears everywhere to be a migratory bird. It arrives at its summer quarters early in spring, as soon as it can be sure of finding open water, and in like manner lingers in them late in autumn. It arrives in its more southern breeding area about the middle of March, and leaves in October and November, but in the Arctic regions it makes its appearance towards the end of May, when the ice on the great northern rivers is just breaking up. Vast quantities of this Duck were observed in the valley of the Petchora by Messrs. Seeböhm and Harvie-Brown, hundreds of thousands crowding the narrow belt of open water on each side of the ice in the river, and filling the air like swarms of bees. The Pintail is equally gregarious at its winter quarters, congregating in thousands in favourite localities, and it has been remarked that in India some of these large gatherings are composed entirely of males. Although this Duck breeds near fresh water, in winter and on passage it frequents the sea-coast a good deal, as well as large inland sheets of water. Hume states that in India its favourite haunts are sheets of comparatively open water studded here and there with patches of a long-leaved water plant (*Sagittaria*), which grows to a height of several inches above the surface, amongst which the bird can hide and sleep in safety. The flight of the Pintail is very rapid, and the wings make a peculiar swishing sound as they beat the air. It is always a shy and wary bird, and almost invariably flies right away to other haunts after being fired at once or twice. As they usually sit close when on the water, a punt gun often thins their ranks considerably, even at long range. The Pintail swims well and looks remarkably graceful in the water, but it is not known to dive much when wounded; on the ground it walks freely, usually with long neck outstretched and tail raised. Pintails feed at night principally, and towards sunset may be observed in the shallows, with the fore half of their bodies entirely submerged and their long tails bent downwards parallel to the water. One or two birds of the flock are generally on the look-out for approaching danger whilst their comrades are so searching for food. Sometimes stubbles and grass fields are resorted to for the purpose of feeding, and mud-flats, as soon as they are left bare, or nearly so, are frequented. The food of the Pintail consists of grass and the leaves and shoots

of aquatic plants, insects of all kinds, worms, and land and water shells, especially the small and fragile species; grain and wild rice are also eaten in great quantities. Hume states that next to the Mallard the Pintail is the best Duck for the table in India, but the same remarks do not always apply to its flesh when killed in this country. The Pintail is not a very noisy bird, and during the day rarely utters a sound, except a very low chattering, which may be heard amongst a flock whilst feeding. When alarmed they utter a soft *quack*, much less strident than that of the Mallard, but audible for a long distance. The call-note is described by Naumann as a low *kah*, and during the love season the drake utters a deep *clük*, preceded by a hiss and followed by a low grating note.

Nidification.—According to latitude, and consequent state of the season, the eggs of the Pintail are laid early in May or early in June. The favourite breeding grounds of this species are situated on the Arctic tundras near water of some description, or, in lower latitudes, on the margin of lakes and ponds, or in swamps and marshes. The nest is usually made on a dry bit of ground amongst shrubs or coarse vegetation, and is made of dead grass, withered sedges and rushes, and dry leaves, lined warmly with down mingled with a few curly feathers from the breast of the female bird. The eggs are from six to ten in number, pale buffish-green in colour, smooth in texture, but with little gloss. They measure on an average 2·15 inches in length by 1·5 inch in breadth. The down is sooty-brown distinctly tipped with white, but not so conspicuously as that of the Wigeon. One brood only is reared in the year. Incubation lasts from twenty-three to twenty-seven days.

Diagnostic characters.—(Nuptial plumage) *Dafila*, with the central tail feathers black, a narrow cinnamon band across the wing coverts, and the culmen more than 1·8 inch in length (male); with the tail feathers brown obliquely barred with white, and the culmen more than 1·8 inch in length (female). Length, 24 to 28 inches.

Genus MARECA, or Wigeons.

Type, MARECA PENELOPE.

Mareca, of Stephens (1824).—The birds in the present genus are characterised by having the bill small, not very broad, and shorter than the head, gradually tapering towards the tip, whilst there is no fringe of soft membrane near the tip of the apical portion; the lamellæ of the upper mandible are not prominent. The central rectrices are acuminate, and extend slightly beyond the outer ones. We may also mention that the general style of plumage is very characteristic, furnishing almost a sufficient generic character.

This genus is composed of three species, one of which is confined to the Palæarctic region, and the other two are dwellers in the Nearctic and Neotropical regions respectively. Two species are British, one of them indigenous to our Islands, the other an abnormal migrant to them.

The Wigeons are found in both inland and maritime localities—on fresh water and salt water. They are of migratory habits. They are birds of rapid and sustained flight. Their notes are harsh and characteristic. They subsist partly on animal and partly on vegetable substances. They are social and gregarious, especially during migration and at their winter quarters. They are monogamous; their nests being made upon the ground, rude in structure, yet warmly lined with down. Their eggs are numerous and buffish-white.

Family ANATIDÆ.
Subfamily ANATINÆ.

Genus MARECA.

WIGEON.

MARECA PENELOPE—(*Linnaeus*).

PLATE XXXV.

Anas penelope, Linn. Syst. Nat. i. p. 202 (1766); Seebohm, Hist. Brit. B. iii. p. 539 (1885); Dixon, Nests and Eggs Brit. B. p. 230 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 38, pl. 13 (1896).

Mareca penelope (Linn.), Macgill. Brit. B. v. p. 83 (1852); Dresser, B. Eur. vi. p. 541, pls. 432, 433 (1876); Yarrell, Brit. B. ed. 4, iv. p. 397 (1885); Lilford, Col. Fig. Brit. B. pt. xv. (1890); Salvadori, Cat. B. Brit. Mus. xxvii. p. 227 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 277 (1896).

Geographical distribution.—*British*: The Wigeon is a common winter visitor to the British Islands, frequenting inland swamps and waters as well as the coast. Many pass our coast lines on passage to still more southern haunts; and return along them in spring, so that the bird is generally most abundant in autumn. It frequents all parts of the United Kingdom suited to its requirements. A few remain behind to breed in Scotland, and frequent for this purpose Ross, Sutherland, Caithness, Cromarty, Perthshire, and Selkirkshire, and the Orkneys and Shetlands. The nest does not yet appear to have been met with in the Hebrides. In Ireland it is said to have nested in Antrim, Armagh, Tyrone, and Mayo counties, but recent information is wanting. Although supposed to have bred in Norfolk, there is no actual proof of the fact, and the birds that recently bred in Yorkshire (near Scarborough) cannot be regarded as strictly wild. *Foreign*: Palæarctic region, more southerly in winter; Oriental region, and extreme western and eastern confines of Nearctic region in winter. It breeds throughout Arctic Europe and Asia from about lat. 70° southwards. Under ordinary circumstances its southern breeding range is lat. 60°; south of which it is only known to nest in exceptional conditions. These conditions appear to exist in France, Germany, Denmark, Bohemia, and the valley of the Danube in Europe, and in the Baikal basin in Asia, in all of which localities it is known to breed. It is said to breed in the Faroes, and certainly does so in Iceland; and is an accidental visitor to Greenland, and to the Atlantic coasts of North America; whilst on the eastern limits of its range it occasionally wanders across Behring Strait, where it has

from time to time been found as an abnormal migrant on the Pacific coast from Alaska to California. It passes through Central Europe on migration, and winters on the coasts of Holland, Belgium, France and Spain, and throughout the basin of the Mediterranean, Black, and Caspian Seas, ranging as far south as Abyssinia in the east and Madeira and the Canaries in the west of the African Continent. The Asiatic birds pass through Turkestan and Mongolia on migration, and winter in India, Burmah, Borneo, China, and Japan.

Allied forms.—*Mareca americana*, the New World representative of the Wigeon, a “British” species, and dealt with fully in the following chapter.

Habits.—The autumn migration of the Wigeon commences in the British Islands towards the end of September, and birds continue to arrive upon our coasts through October and the first half of November. The return migration begins in March, and lasts until the end of April. The Wigeon arrives at its Arctic haunts just as the ice is breaking up and winter is making way for summer. In the valley of the Petchora Seeböhm remarked that this Duck arrived simultaneously with the break-up of the ice, on the 19th of May, but further east in the valley of the Yenisei it was much later, not appearing until the 6th of June, at which date the general summer thaw had commenced. Hume states that the Wigeon seldom arrives in India before the end of October, and leaves again in March and April. Whilst on migration, and in its winter quarters, the Wigeon is a very gregarious bird, and even in the breeding season is remarkably social, and consorts with various other Ducks that frequent the same districts for nesting purposes. Whilst in the British Islands the Wigeon is principally a coast bird, frequenting bays, lochs and estuaries, and occasionally visiting large sheets of fresh water in the vicinity of the sea. In India, however, this Duck is found on inland waters, but even here is most abundant on the coast, choosing by preference estuaries and creeks where the water is brackish. It is also very erratic in its choice of a haunt, being absent from some districts and present in others during different years. The flight of the Wigeon is swift and powerful, but not very loud, and often the bird will glide down from a considerable height to the water on arched and motionless wings, beating them rapidly just as it drops on the surface, as if to break the force of the contact. It also swims well, and is very adept at diving when pursued if wounded. This species is also seen a great deal on land, walking about the turf banks of the water. They are rather shy and wary birds, evidently gifted with great powers of scent and hearing, and approached the most successfully up wind. The note of the Wigeon is very characteristic, and not easily confused with that of any other British Duck. I describe it as a wild and loud *mee-ow* or *uee-ow*; others writers as *mēé-yōo* or *whēē-yōū*. My experience is certainly different from that of Naumann, who states that this species utters a cry like that of the Shoveller as it rises. A note sounding like *kr-r* is said also

to be occasionally uttered. The food of this species consists of grass, buds, leaves, and shoots of various aquatic plants, grass wrack, insects, shrimps, and mollusks. The bird feeds by day in some districts, by night in others, and both by night and day in localities where it is much harassed. Hume states that in India the Wigeon is more of a grass-eater than any other Duck. The flesh of this bird varies a great deal in quality, according to the food which has been lately eaten. British individuals are considered to be more palatable than those shot in India.

Nidification.—The principal breeding grounds of the Wigeon are the wild districts, partly scrubby forest, partly swamp, studded with lakes and pools and intersected with rivers and streams—the border land, in fact, between the bare tundra and the limit of the growth of trees. The nests are made in May and June, according to locality, and are usually well concealed near the water-side, but sometimes a considerable distance from it, either among the long coarse grass and other vegetation or beneath the shelter of a bush. They are placed on the ground and made of dry grass and dead aquatic vegetation, rather deep, and warmly lined with down and a few feathers. The eggs are from six to ten or even, in rare instances, twelve in number, and are creamy-white in colour, sometimes buffish-white. They measure on an average 2·2 inches in length by 1·5 inch in breadth. The down is sooty-brown with distinct white tips. According to Naumann, incubation lasts from twenty-four to twenty-five days. When leaving the nest the female carefully covers the eggs with down. One brood only is reared in the year, and the young are deserted as soon as they are able to fly.

Diagnostic characters.—(Nuptial plumage) *Mareca*, with the upper tail coverts grey, the under tail coverts black, the upper part of the head buff (male); with the head chestnut spotted with black (female). Length, 18 to 20 inches.

Family ANATIDÆ.

Genus MARECA.

Subfamily ANATINÆ.

AMERICAN WIGEON.

MARECA AMERICANA.—(*Gmelin*).

Anas americana, Gmel., Syst. Nat. i. p. 526 (1788); Seebohm, Hist. Brit. B. iii. p. 543 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 161 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 39 (1896).

Mareca americana (Gmel.), Macgill. Brit. B. v. p. 90 (1852; Yarrell, Brit. B., ed. 4, iv. p. 403 (1885); Salvadori, Cat. B. Brit. Mus. xxvii. p. 233 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 281 (1896); Lilford, Col. Fig. Brit. B. pt. xxxiii. (1896).

Geographical distribution.—*British*: The American Wigeon is a very rare and accidental visitor to our Islands; its claim to rank as a “British” species being supported by most unsatisfactory evidence. It is with much hesitation that I have included this species in the present work, and my chief reason for doing so is to stimulate the interest of British sportsmen, and to put them on the *qui vive* in case examples chance to visit our Islands. That this bird does so from time to time is far from improbable; but until we have more positive proof than that forthcoming, every careful student must feel dubious of its claim to rank as an accidental wanderer to our shores. The evidence is as follows: Leadenhall Market (one example, which may have been captured on the Continent and consigned with other fowl to London), winter of 1837-38; coast of Essex (one example, not confirmed by any recognised authority), January, 1864; Devonshire (one example, not confirmed by any recognised authority), April, 1870; Yorkshire, one example, obtained at a game dealers in Leed, February, 1895; Scotland: Banffshire (one example, not preserved, and entirely unauthenticated), January, 1841. Ireland: Strangford Lough, Co. Down (one example, not preserved, and recorded by Thompson on hearsay evidence), February, 1844 (*Conf.* Thompson, *B. of Ireland*, iii. p. 112). One example is said to have occurred in France; and Mr. Howard Saunders records a specimen as being in a collection of birds at St. Michael’s, in the Azores. This together with the fact that the bird wanders to the Bermudas and is rarely or never kept in captivity in our Islands, is confirmatory evidence of its accidental occurrence in them. *Foreign*: Nearctic region, more southerly in winter; northern limits of Neotropical region in winter. It breeds in the Arctic regions of America from Alaska to the Hudson Bay basin, as far north as lat. 70°, and

probably as far south as Winnipeg. It has also been recorded by Dr. Stejneger from Bering Island. It passes the Northern States, both inland and along the coast, on migration, and winters in the Southern States, Mexico, the West Indies, and Central America.

Allied forms.—*Mareca penelope*, the Old World representative of the American Wigeon, a British species, and dealt with fully in the preceding chapter.

Habits.—The habits of the American Wigeon are not known to differ in any very important particular from those of its Palæartic congener. In the Southern United States, where it is extremely common during winter, it is known to sportsmen by the name of “Bald-Pate.” Like its Old World ally, it is said to frequent inland localities as well as the coast, and to visit rice-fields and rivers. Its note is described as a low whistle, but probably it has others which resemble those of the Common Wigeon. Its food is composed of vegetable and animal substances, notably the succulent weed *vallisneria* and rice. The flesh of this bird is said to be excellent.

Nidification.—The nest of the American Wigeon is placed on the earth amongst trees and bushes in swampy districts, but always on a dry bit of ground, and is made of dead grass, leaves, and other vegetable refuse, and lined with plenty of down and a few feathers plucked from the breast or flanks of the female. The eggs are from six to twelve in number, creamy-white in colour, and measure on an average 2·2 inches in length by 1·5 inch in breadth. The down is apparently the same in colour as that of the Common Wigeon. One brood only is reared in the year.

Diagnostic characters.—(Nuptial plumage) *Mareca*, with the upper tail coverts grey, the under tail coverts black, the upper part of the head whitish, sides of head and upper neck whitish, spotted with black (male); with the head and upper neck whitish spotted with black (female). Length, 19 to 20 inches.

Genus NETTION, or Teals.

Type, NETTION CRECCA.

Nettion, of Kaup (1829).—The birds in the present genus are characterised by having the bill moderate in size, not very broad and shorter than the head, but not gradually tapering towards the tip, whilst there is no fringe of soft membrane near the tip of the apical portion; the lamellæ of the upper mandible are not prominent. The central rectrices are acuminate, and extend slightly beyond the outer ones, whilst the scapulars and tertials are longer and narrower than in the Wigeons.

Fifteen species of Teals are recognised by Count Salvadori, the most recent monographer of the ANATIDÆ. The present genus may be regarded as practically a cosmopolitan one. Two species are British, one being indigenous to our Islands and the other an abnormal migrant to them from the Nearctic region.

The Teals show a decided preference for fresh waters, and often frequent very small pools and streams. During winter they visit estuaries and other marine localities. Their flight is rapid and powerful. Their notes are shrill and unmusical. They subsist partly on animal and partly on vegetable substances, and are both day and night feeders. They are social and gregarious. They are monogamous, making their nests upon the ground, warmly lining these structures with down, and their eggs are numerous, and buff of varying shades in colour.

Family ANATIDÆ.
Subfamily ANATINÆ.

Genus NETTION.

COMMON TEAL.

NETTION CRECCA—(*Linnaeus*).

Anas crecca, Linn. Syst. Nat. i. p. 204 (1766); Seebohm, Hist. Brit. B. iii. p. 545 (1885); Dixon, Nests and Eggs Brit. B. p. 232 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 40, pl. 16 (1896).

Querquedula crecca (Linn.), Macgill. Brit. B. v. p. 48 (1852); Dresser, B. Eur. vi. p. 507, pl. 426 (1871); Yarrell, Brit. B. ed. 4 iv. p. 387 (1885); Lilford, Col. Fig. Brit. B. pt. viii. (1888).

Nettion crecca (Linn.), Salvadori Cat. B. Brit. Mus. xxvii. p. 243 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 283 (1896).

Geographical distribution.—*British*: The Teal is a common resident in, and breeds in all suitable localities throughout the British Islands, but becomes more abundant in the northern districts. The residents are largely increased in numbers during autumn, not only by birds passing our Islands on migration, but by individuals that remain all the winter. It frequents the coasts during winter as well as inland swamps and waters. *Foreign*: Palæartic region, more southerly in winter; Oriental region in winter. The Teal is a summer visitor to and breeds in Iceland. It breeds throughout Arctic Europe and Asia as far north as lat. 70°, but south of the Arctic Circle (lat. 66½°) it becomes more local and rare. South of that limit, however, it breeds in the Azores and Madeira, very sparingly in South Europe, but more freely in Holland, Denmark, Germany, and Southern Scandinavia. During winter it is generally distributed throughout the more temperate and southern portions of Europe, and in Northern Africa, as far south as the Canaries in the west, and Abyssinia in the east. It also winters in considerable numbers in the basin of the Black and Caspian Seas. The Asiatic birds pass through Turkestan, Mongolia, and the Amoor Valley on migration (a few remaining to breed), and winter in Arabia, Persia, India, Ceylon, Burmah, China, and Japan. This Teal has been known to stray across Behring Strait into Alaska, where it has been captured in June; whilst on the east of America it occasionally visits Greenland, and the eastern coasts between Labrador and North Carolina.

Allied forms.—*Nettion carolinense*, the Nearctic representative of the Common Teal, a "British" species, and dealt with fully in the following chapter.

Habits.—Although a great many Teal are practically resident in the British Islands, this Duck is by far the most common and widely dispersed in winter, when its numbers are increased by migratory individuals from more northern and colder latitudes. With us this Duck begins to arrive in September, and continues to do so through the following month. In India, where it is one of the commonest Ducks during the cold season, they begin to appear in September in the north, but the heaviest flights arrive during October, whilst further south they are not observed until the north-east monsoon in November. They leave most parts of India about the end of April, although a few are seen even in May. In the valley of the Petchora, Teal arrived on the 18th of June with the general smash-up of the ice on the river and the melting of the snow; in the Yenisei district its arrival was also coincident with the thaw. The Teal is much more partial to reed-fringed pools and small lakes than to the mud-banks and estuaries of the coast. In India, Hume remarks they may be met with anywhere, on fresh water of course, either on the village pond, in the marshy corner of a broad, on large lakes, or on sluggish rivers and dancing upland streams. The Teal is by no means a shy bird, yet it is very fond of skulking amongst the tall aquatic vegetation, remaining close until flushed by dogs or men. It is a gregarious bird, especially just previous to and on migration. In India bunches of from ten to thirty are most frequent, but much larger gatherings are on record, especially during Flight. As a rule the smaller the pond or lake, the fewer in number the birds will be. The flight of the Teal is rapid, and the bird has considerable command over itself in the air, often escaping the swoop of a Falcon with a sudden dip or twist. This Duck has also a way of dropping suddenly into cover again soon after being flushed. It swims well and lightly, but never dives unless wounded, and even then makes but poor attempts to do so. The Teal is most frequently seen on the water, but occasionally it walks about the banks with a waddling gait, and may be often observed standing on one leg with its head drawn in, or even buried beneath the scapulars. The Teal is both a day and night feeder where left unmolested, but in districts where it is much disturbed it varies its time, and obtains most of its sustenance at night. Under these circumstances, especially if the flock be fairly large, the birds spend the day on some large sheet of water, and retire at night to the marshes and small ponds to feed. They usually change their quarters towards sunset, and as they follow certain routes backwards and forwards, afford fairly good sport on flight. The Teal obtains most of its food either whilst floating in the shallows, from time to time turning upside down in true orthodox Duck fashion, or when paddling round the weedy margin of the water. This food consists of grass and seeds, shoots, roots, and leaves of aquatic plants; grain, rice, insects and their larvæ, small mollusks, and worms. The usual alarm note of the Teal is a rather weak but shrill *quack*, but the call-note, which may be heard incessantly as the pair of birds swim to and fro, is a harsh Rail-like *crriick*. The flesh of the Teal is excellent for the table.

In India great numbers of these birds are kept in confinement and fattened for food, especially by the Anglo-Indians, whom a hard fate condemns to residence on the sultry plains during the hot season.

Nidification.—The breeding season of the Teal in the British Islands commences early in May, but is a month or more later in higher latitudes. In the Arctic regions this Duck makes its nest in similar localities to those selected by the Wigeon; but with us it is usually placed amongst the dense vegetation, brambles, sedge, heather, or coarse grass growing by the waterside, but occasionally some distance from it. It is made on the ground, of dry grass, leaves, broken sedge and reeds, and warmly lined with down from the female. The eggs are from eight to ten in number, in rare instances up to fifteen, and vary from creamy-white to buffish-white, sometimes with a faint greenish cast. They measure on an average 1·7 inch in length by 1·3 inch in breadth. The down is small and uniform dark brown without any white tips. Incubation, performed by the female, lasts from twenty-one to twenty-two days. One brood only is reared in the year, but if the first clutch of eggs be taken others will be laid. The old Teals are much attached to each other, and we should say undoubtedly pair for life. The male Teal assumes a brown moulting dress like allied species.

Diagnostic characters.—*Nettion*, with the head partly metallic green, with the top of the head chestnut like the cheeks, with no white crescent on the sides of the breast and with the lower scapulars white, edged with black on the outer web (male); with the alar speculum black, and the wing under seven inches long (female). Length, 13 to 16 inches.

Family ANATIDÆ.
Subfamily ANATINÆ.

Genus NETTION.

AMERICAN TEAL.

NETTION CAROLINENSE.—*Gmelin*.

Anas carolinensis, Gmel. Syst. Nat. i. p. 533 (1788); Seebohm, Hist. Brit. B. iii. p. 549 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 163 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 40 (1896).

Nettion carolinense (Gmel.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 250 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 286 (1896).

Geographical distribution.—*British*: The American Teal is a very rare accidental visitor to the British Islands. The claim of this species to rank as "British" rests upon the following recorded occurrences. England: Hampshire (one example of doubtful authenticity), about 1838; Yorkshire (one example), November, 1851; Devonshire (one example, the most satisfactory of the three), November, 1879. *Foreign*: Nearctic region, more southerly in winter; extreme northern limit of Neotropical region in winter. It breeds in the Arctic regions of America, from the Aleutian Islands and Alaska in the west to Greenland in the east. It passes the Northern States and Southern Canada on spring and autumn migration, but in these localities a few remain to breed and a few remain to winter; it also visits the Bermudas abnormally in autumn. It winters in the Southern States, Mexico, the West Indies, and Central America.

Allied forms.—*Nettion crecca*, the Palæarctic representative of the American Teal, a British species, dealt with fully in the preceding chapter.

Habits.—The American Teal is not known to differ in its habits in any important respect from the Common Teal. It is migratory in the higher and colder latitudes, sedentary in warmer districts, as the Old World Teal is with us. The haunts it frequents are very similar, both in summer and winter. Its flesh is highly esteemed for the table.

Nidification.—The breeding habits of the American Teal—the situation and materials of the nest, the period of incubation, the number of eggs—are all similar in every important respect to those of the Palæarctic species. The eggs

are the same creamy-white colour, and measure on an average 1·8 inch in length by 1·3 inch in breadth. The down is undescribed, but is probably precisely similar to that of the Common Teal, seeing that the females of the two species are entirely alike in colour.

Diagnostic characters.—*Nettion*, with the head partly metallic green, with the top of the head chestnut like the cheeks, and with a broad crescentic band of white on each side of the breast, and with no white on the scapulars (male); similar in every external character to the female of the Common Teal (female). Length, 14 to 15 inches.

Genus QUERQUEDULA, or Garganeys.

Type, QUERQUEDULA CIRCIA.

Querquedula, of Stephens (1824).--The birds in the present genus, although closely allied to the Teals, are readily characterised by having the upper wing blue, in this respect showing considerable affinity with the Shovelers.

Five species of Garganeys are at present recognised by ornithologists, four of which are distributed over the American Continents (two being Nearctic and two being exclusively Neotropical), and one is confined to the Palæarctic region in the Old World during the breeding season becoming more southerly in its dispersal during winter. Two species are British, one being indigenous to our Islands, the other an abnormal migrant to them.

The Garganeys closely resemble the Teals in their habits and economy. They are partial to fresh water during the breeding season, but become more maritime in their tastes during migration and in winter. Their flight is powerful and comparatively silent. Their notes are harsh and unmusical. Their food, obtained mostly at night, is chiefly composed of vegetable substances, but an animal diet is sometimes resorted to. They are social and gregarious, especially during the non-breeding season. They swim well, but never dive except when wounded. They are monogamous, and make their nests upon the ground, often amongst herbage far from water, lining them with down. Their eggs are numerous, and various shades of buff in colour.

Family ANATIDÆ.
Subfamily ANATINÆ.

Genus QUERQUEDULA.

GARGANEY.

QUERQUEDULA CIRCIA—(*Linnaeus*).

Anas circia, Linn. Syst. Nat. i. p. 203 (1766); Seebohm, Hist. Brit. B. iii. p. 551 (1885); Lilford, Col. Fig. Brit. B. pt. xiii. (1890); Dixon, Nests and Eggs Brit. B. p. 234 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 41, pl. 16 (1896).

Querquedula circia (Linn.), Macgill. Brit. B. v. p. 55 (1852); Dresser, B. Eur. vi. p. 513, pl. 427 (1871); Yarrell, Brit. B. ed. 4, iv. p. 393 (1885); Salvadori, Cat. B. Brit. Mus. xxvii. p. 293 (1895).

Querquedula querquedula (Linn.), Sharpe, Handb. B. Gt. Brit. ii. p. 291 (1896).

Geographical distribution.—*British*: The Garganey is a rare and exceedingly local visitor to our area on spring and autumn migration, a few remaining behind in spring to breed in suitable localities. It becomes rarer in Scotland than in England, of only accidental occurrence in the Orkneys and Shetlands, and entirely unknown in the Outer Hebrides. It breeds regularly, and it is said in increasing numbers, in Norfolk, less commonly in Suffolk, and perhaps in a few of the southern English counties. It used formerly to breed in Cambridgeshire and Huntingdonshire, and in Prestwick Car in Northumberland, but the reclamation of its favourite haunts has driven it to seek nesting places elsewhere. It is said by Sir R. Payne-Gallwey to be the rarest of the ordinary Ducks in Ireland, and practically confined to the southern portion of the country where it has been met with very early in spring and even in winter. *Foreign*: Southern Palæarctic region; Oriental region in winter. It is a rare visitor to the Faroes and Iceland, and only known to have occurred twice in Norway. It breeds in Denmark, Sweden, the Baltic Provinces, Finland, and North-western Russia as far as Archangel. It also breeds throughout Central and Southern Europe (although rare in Portugal), the Caucasus, and eastwards through Turkestan and the extreme south of Siberia (Mr. Popham records it from as far north as Yeneseisk in the valley of the Yenisei), probably to the valley of the Amoor. It winters in the basin of the Mediterranean, Black and Caspian Seas, extending southwards as far as Egypt and Arabia. The Asiatic birds appear to winter in India, Burmah and China (a few lingering to breed in these countries), in many parts of the Malay Archipelago, and in Japan.

Allied forms.—*Querquedula discors*, one of the two representative American species, which have occurred in our Islands, forms the subject of the following chapter. *Q. cyanoptera*, the second representative species of the New World. An inhabitant of Western America from the Columbia River to Chili, Buenos Ayres, and the Falkland Islands; of only accidental occurrence in the Eastern States. It is distinguished from the Garganey by having the under tail coverts black, and by the uniform chestnut head and neck.

Habits.—The aversion of the Garganey to cold is displayed very decidedly in several ways. In the first place the birds' geographical area nowhere extends into an Arctic climate; and, secondly, its migrations are performed much earlier in autumn and later in spring than those of most if not all other Palæartic Ducks. These remarks apply as much to the individuals breeding in Europe as to those breeding in Asia, where the climate is much more severe than with us. The Garganey leaves the northern limits of its range in Europe long before winter, and in India it is the earliest duck to arrive in autumn, large flights appearing towards the end of August, slowly reaching the southern districts in October and November. It lingers in India until the end of April or early May, beginning to leave the southern portions of that country in March. The Garganey is decidedly a fresh-water species with us, but in its winter quarters in India and other places it is more maritime, frequenting creeks and estuaries as well as inland waters. Whilst on passage, and in its winter haunts, the Garganey is gregarious, forming into flocks of from a dozen to a hundred individuals, which as they invariably keep well together, afford most effective shots for the swivel gun. In India the Garganey affects by choice the rather large broads and swamps where plenty of aquatic herbage grows, shunning bare lakes, rivers, and small ponds. It is neither a very wild nor a very wary species, and approached more easily in a punt than most other Ducks. It rises quickly from the water and its flight is rapid and strong, but almost silent, although when large flocks of birds pass directly overhead a very distinct *swishing* sound is produced. When flushed from dry ground, however, its first movements are rather clumsy and laboured. It not only swims well and lightly, sitting well out of the water, but dives readily when wounded. The food of the Garganey is chiefly of a vegetable nature inland, but on the coast an animal diet is more usual. It consists of the buds, leaves, shoots, seeds, and roots of various aquatic plants, and in India of rice, both wild and cultivated; insects and their larvæ, frogs, worms, mollusks, and crustaceans. The Garganey is for the most part a night feeder, and at such times it has been known to visit rice-fields in such numbers as to destroy acres of the crop in a few hours. The call-note of the Garganey is a harsh *quaack*, and is common to both sexes; but during the breeding season the drake makes a harsh Rail-like *errick*. It is not a garrulous bird when in flocks. The flesh of this Duck is not very palatable, even when the bird has been obtained under the most favourable conditions as to diet.

Nidification.—The Garganey is a rather late breeder for a southern species, and its eggs are seldom laid before the end of April or the first half of May. The nest is placed in a great variety of situations, very often in places similar to those selected by the Teal. It is as often as not some distance from water, and has been found in open forests and amongst growing corn. Usually it is built on the ground amongst tall, thick grass or sedge, or amongst low heath. The nest is made of dry grass, dead rushes, leaves, and other vegetable refuse, warmly lined with down. The eggs are from eight to fourteen in number, and vary from cream-white to buffish-white in colour. They measure on an average 1·8 inch in length by 1·35 inch in breadth. The down tufts are small and brown with long white tips. Incubation, performed by the female, is said by Naumann to last from twenty-one to twenty-two days. One brood only is reared in the year, and of this the female apparently takes the entire charge.

Diagnostic characters.—(Nuptial plumage), *Querquedula*, with the mantle unvermiculated, with the wing coverts pale blue, and with the under tail coverts white spotted with dark brown (adult male); with no metallic alar speculum, and the wing about 7 inches long (adult female). Length, 15 to 16 inches.

Family ANATIDÆ.
Subfamily ANATINÆ.

Genus QUERQUEDULA.

BLUE-WINGED GARGANEY.

QUERQUEDULA DISCORS—(*Linnæus*).

Anas discors, Linn. Syst. Nat. i. p. 205 (1766); Seebohm, Hist. Brit. B. iii. p. 551 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 164 (1894); Seebohm, Col Fig. Eggs Brit. B. p. 42 (1896).

Querquedula discors (Linn.), Yarrell, Brit. B. ed. 4, iv. p. 392 (1885); Salvadori, Cat. B. Brit. Mus. xxvii. p. 300 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 294 (1896).

Geographical distribution.—*British*: The Blue-winged Garganey is another dubious “British” species which we include in this volume with considerable hesitation. Its claim to rank as “British” rests on a single occurrence, and even about this there has been considerable confusion. The late Mr. Gray, in his *Birds of the West of Scotland*, states that the example in question was killed in January, 1863; but Mr. Gibson, in recording the same specimen in the *Naturalist* for 1858, avers that it was obtained “a few weeks ago” in that year. The latter date appears to be the correct one. This example, a male, was obtained in Dumfriesshire by a Mr. Shaw. It passed through the hands of a local bird-stuffer into the collection of Sir William Jardine, and is now in the Edinburgh Museum. Other alleged occurrences have been recorded, but in every case identification has been found to be wrong. It has once been recorded from Continental Europe—an adult male shot in Denmark in April, 1886. *Foreign*: Central and southern Nearctic region, more southerly in winter; extreme northern limits of Neotropical region in winter. It breeds from the Atlantic to the Pacific, south of lat. 60°, but becomes more local west of the Rocky Mountains. Southwards its breeding range extends to Florida and Mexico as far as the northern tropic. The northern birds pass south in autumn, abnormally visiting the Bermudas, and winter in Mexico, the West Indies, and the northern portions of Central America.

Allied forms.—*Querquedula circia*, a British species, and dealt with fully in the preceding chapter. *Q. cyanoptera*, an inhabitant of the Nearctic region. Distinguished from the Blue-winged Garganey by its uniform chestnut head and neck.

Habits.—The habits of the Blue-winged Garganey are not known to differ in any important respect from those of allied species already described.

Nidification.—In its nidification the Blue-winged Garganey resembles its congeners; the nest, site, number of eggs, are all similar in every respect. The eggs are creamy-white in colour, and measure on an average 1·9 inch in length by 1·3 inch in breadth. The down is apparently undescribed.

Diagnostic characters.—(Nuptial plumage), *Querquedula*, with the under tail coverts black, with a white crescent between the eye and the bill, and with the shoulders or wing coverts bright blue (male); with a green speculum, and dull blue shoulders (female). Length, 16 inches.

Genus SPATULA, or Shovelers.

Type, SPATULA CLYPEATA.

Spatula, of Boie (1822).—The birds in the present genus are characterised by having a spatulate bill, combined with the absence of a soft membrane at the sides of it near the tip, and the presence of blue wing coverts.

Four species of typical Shoveler are at present known to ornithologists, and a fifth and somewhat aberrant species (confined to Australia and Tasmania) is generically separated under the term *Malacorhynchus*, remarkable for having the bill furnished with a soft membrane at the sides near the tip. The Shovelers are practically cosmopolitan in their distribution, although but one species is British.

The Shovelers show a decided preference for fresh water, being especially partial to lakes, pools, and rivers with shallow muddy banks. Their flight is rapid and powerful when once fairly commenced. They walk with the usual waddling gait peculiar to most Ducks, but swim with ease although they never normally dive. They are social but not so gregarious as some other species in the present subfamily. Their notes are harsh, becoming guttural during flight. They are almost omnivorous in their diet, feeding by night as well as by day. They are monogamous, making their rude nests, ultimately lined with down, upon the ground, and their numerous eggs are buffish or olive-white in colour.

Family ANATIDÆ.

Genus SPATULA.

Subfamily ANATINÆ.

SHOVELER.SPATULA CLYPEATA—(*Linnæus*).

PLATE XXXVI.

Anas clypeata, Linn. Syst. Nat. i. p. 200 (1766); Seebohm, Hist. Brit. B. iii. p. 554 (1885); Lilford, Col. Fig. Brit. B. pt. x. (1889); Dixon, Nests and Eggs Brit. B. p. 235 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 42, pl. 13 (1896).

Rhynchaspis clypeata (Linn.), Macgill. Brit. B. v. p. 74 (1852).

Spatula clypeata (Linn.), Dresser, B. Eur. vi. p. 497, pl. 425 (1873); Yarrell, Brit. B. ed. 4. iv. p. 375 (1885); Salvadori, Cat. B. Brit. Mus. xxvii. p. 306 (1895); Sharpe, Handb. B. Gt Brit. ii. p. 265 (1896).

Geographical distribution.—*British*: The Shoveler is a fairly common winter visitor to the British Islands, but practically resident in many localities, and is found both inland and on the coast. It becomes rarer in Wales, the southern and western districts of England, and the west of Scotland, being very rare in the Outer Hebrides and on the Orkneys, and appears never to have visited the Shetlands. Its recorded breeding places are as follows. England: Shires of Dorset, Kent, Hertford, Cambridge, Norfolk, Lincoln, Nottingham, Huntingdon, Stafford, York, Durham, Northumberland, and Cumberland. Wales: no reliable data. Scotland: Kircudbright, East Lothian, Dumbarton, Argyle, Elgin, Ross, Sutherland and the Orkneys, and the island of Tiree, one of the Hebrides. Ireland: Queen's County, Galway (Lough Derg on the Shannon), Cos. Dublin, Antrim, Donegal, Fermanagh, Westmeath, Louth, Roscommon, Mayo, Sligo, and possibly in King's County and Kerry. During winter also the Shoveler is much more frequent in the south of Ireland than the north. *Foreign*: Circumpolar, northern Nearctic and Palæarctic regions, more southerly in winter; Oriental and extreme northern limits of Neotropical regions in winter. It breeds throughout the Subarctic regions of Europe, Asia, and America, from about the latitude of the Arctic Circle south to lat. 50°. Below this latitude it becomes more local, and not so abundant during the breeding season, although it nests in small numbers in the west Palæarctic region as far as the African shores of the Mediterranean, and in the east Palæarctic region as far south as Turkestan and Mongolia; whilst in the Nearctic region it breeds very sparingly in the north of the United States. Its winter quarters in Europe are the basin of the Mediterranean and North Africa as far south as the Great Desert and Abyssinia. Those

in Asia are Persia, India, Ceylon, China and Japan. Those in America are the Southern States, the West Indies, Mexico, and Central America, south to Panama. A specimen has been obtained at Cape Town, another in the Canaries, whilst we find it also recorded from Borneo and Australia.

Allied forms.—None of sufficient propinquity to call for special notice. Representative species occur as follows: *Spatula platalea*, Neotropical region; *S. capensis*, Ethiopian region; *S. rhynchotis*, Australian region.

Habits.—The migration of the Shoveler to our islands from more Arctic latitudes commences in September and continues through October to November. The return journey commences in April and lasts well into May, and in some countries continues right through the latter month into June. It was first noticed in the valley of the Petchora, near the Arctic Circle, by Messrs. Harvie-Brown and Seebohm on the 19th of June; and by the latter gentleman one day earlier in the valley of the Yenisei, in the same latitude. These dates are late even for the Arctic regions, and the species was probably overlooked upon its first arrival. It arrives at its winter quarters in India towards the end of October and the beginning of November, and leaves during April and May. Its migrations are almost invariably performed during night, and the bird does not appear to congregate in very large parties for the purpose. Although the Shoveler occasionally visits the low-lying coasts, it is a thorough fresh-water species, and loves to frequent lakes and large sheets of water, ponds and slow-running rivers. In our islands it is certainly a shy, suspicious bird, keeping well out in the centre of the water if human intruders be lurking about; but in India it is one of the tamest of Ducks. Hume states that in the North-west Provinces it may be met with in pairs on almost every village pond, even those of the filthiest description, little more than cesspools, being frequented until scarcely a drop of liquid filth remains as the hot season approaches. Here on these ponds it is often as tame as the domestic Ducks, and when approached merely waddles into the water and swims out from shore, seldom rising until fired at, and then usually returning after a circle or two in the air. The Shoveler is not very gregarious, and even when a flock is congregated on some certain favoured pool the birds are usually scattered about in pairs or in very small groups. This Duck almost constantly keeps to shallow water close inshore, only swimming farther out when alarmed, and may usually be seen dabbling about in the mud, or with head and neck under the surface seeking for food. The peculiar habit of a pair of birds feeding whilst swimming round in circles with their heads in the centre is graphically described from personal observation by Professor Newton. Sometimes they may be seen standing on the bank preening their plumage, or dozing with their head twisted round and nearly buried in the dorsal plumage. This species walks in the usual waddling manner, but the body is carried somewhat erect, and sometimes the bird runs rather

quickly. It swims fairly well, but rarely dives, and only when wounded. From the nature of the locality in which most of its food is obtained, the very shallow water, the Shoveler rarely turns upside down to feed; it has no need to do so. The Shoveler very often associates with other Ducks, but owing to its partiality for small muddy pools it is most frequently seen by itself. The flight of this species when once the bird is fairly launched is rapid and powerful, but it rises heavily and slowly from the water. The food of the Shoveler consists of grass, grain, shoots, buds, leaves, and roots of aquatic herbage, insects of all kinds and their larvæ, mollusks, frogs, small fish, in fact anything and everything edible. As Hume justly remarks, in some localities it would be difficult to say what this bird will *not* eat. Much of its food is obtained in the shallow water as it moves its broad spatulated bill from side to side, sifting every likely and unlikely bit of mud. It is both a day and night feeder, but obtains most of its food after dusk, leaving in many cases the haunts it has frequented during the day and flying for some considerable distance to places where its staple fare is abundant. The call-note of the Shoveler is a harsh *quack*; a lower guttural note is uttered during flight. It is a remarkably silent bird, always apparently too intent on feeding to *talk*. Its flesh is of very variable quality, depending a good deal upon the diet of the bird.

Nidification.—The Shoveler is a rather late breeder, and even in our Islands its eggs are not laid until the middle of May or later, whilst in more northern latitudes they are not laid before June or even early in July. The breeding grounds of the Shoveler are situated amongst lakes and swamps where plenty of aquatic vegetation grows on the banks, and where shallow water or sluggish streams choked with weed furnish plenty of feeding places. The nest is generally made on a bit of dry ground amongst the tall grass and sedge or heath, and is simply a hollow into which a little dead grass, sedge, and a few dead leaves are collected, and warmly lined with down and feathers plucked from the female. The eggs are from seven to fourteen in number, nine or ten being an average clutch. They vary from pale buffish-white to very pale olive-green, fine in texture, and with some little gloss. They measure on an average 2·0 inches in length by 1·5 inch in breadth. The down tufts are moderate in size, neutral dark grey with large pale centres and very conspicuous white tips. Incubation, almost invariably performed by the female, lasts, according to Naumann, twenty-one to twenty-three days, but Tiedemann gives twenty-eight days as the period. The male Shoveler has been found sitting on the eggs in at least one well-authenticated instance. The young are usually able to fly a month after they are hatched, but until then they are assiduously tended by the female. One brood only is reared in the year, but, as is often the case, if the first eggs be taken others are laid.

Diagnostic characters.—*Spatula*, with the head and upper portion of the neck rich glossy green. Length, 20 inches.

Genus ANAS, or Typical Ducks.

Type, ANAS BOSCHAS.

Anas, of Brisson (1760).—The birds comprising the present genus are characterised by having the tarsus scutellated in front, the tail feathers graduated and pointed at the tips, and the carpal region dull grey. The wings are long and pointed. The bill is broad, but not spatulate, and about the same length as the head. Three toes in front webbed; hind toe small and unlobed. Sexes different in colour.

This genus contains about eighteen species and subspecies, and is almost cosmopolitan. One species is British, breeding in our Islands.

The Non-diving Ducks are dwellers near inland waters and in fens and marshes in summer, but during their seasons of passage and in winter they are more maritime. They are birds of rapid if somewhat laboured flight, swim well, rarely if ever dive, and walk awkwardly with a waddling gait. Their notes are loud and unmusical. They subsist on both vegetable and animal substances, being practically omnivorous. They make somewhat bulky nests, lined with down, upon the ground, or in holes of trees. Their eggs are numerous, and range from buff to pale greenish in colour, unspotted and smooth. They are monogamous, and probably pair for life; the male taking no part in the rearing of the young. They are more or less gregarious, except in the breeding season. Their flesh is esteemed for the table.

Family ANATIDÆ.
Subfamily ANATINÆ.

Genus ANAS.

MALLARD.

ANAS BOSCHAS—(*Linnæus*).

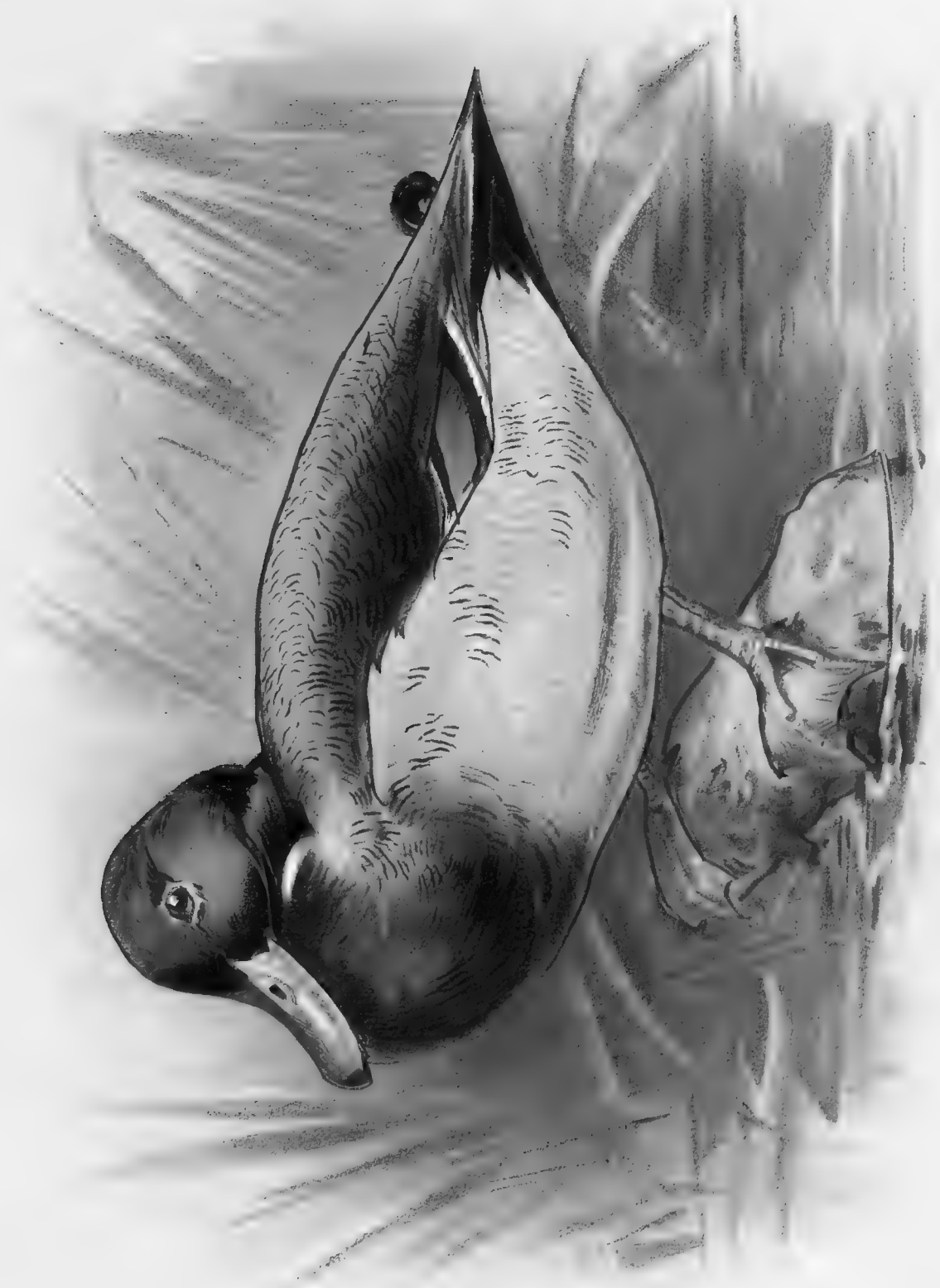
PLATE XXXVII.

Anas boschas, Linn. Syst. Nat. i. p. 205 (1766); Macgill, Brit. B. v. p. 31 (1852); Dresser, B. Eur. vi. p. 469, pl. 422 (1873); Seebohm, Hist. Brit. B. iii. p. 559 (1885); Lilford, Col. Fig. Brit. B. pt. viii. (1888); Dixon, Nests and Eggs Brit. B. p. 237 (1893).

Anas boscas (Forst. ex Linn.), Yarrell, Brit. B. ed. 4. iv. p. 358 (1885); Salvadori, Cat. B. Brit. Mus. xxvii. p. 189 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 269 (1896).

Geographical distribution.—*British*: The Mallard, or Wild Duck, is the commonest species of fresh-water Duck in our area, and generally distributed throughout the British Islands, breeding in every part suited to its needs, including the Orkneys and Shetlands, the Hebrides and Ireland. It is much rarer in the extreme north of Scotland during winter; otherwise it is even more widely dispersed at that season, then extending to the Channel Islands, whilst its numbers are largely increased by migrants from more northern regions. It frequents the coasts as well as inland swamps and waters. *Foreign*: Palæarctic and Nearctic regions; Oriental and Neotropical regions in winter. It breeds throughout Europe south of the Arctic Circle, but only sparingly in the basin of the Mediterranean; and throughout Asia, south of that limit (but only locally and in small numbers) to Cashmere and probably Mongolia. In the Nearctic region it breeds from the Arctic Circle southwards to the United States. Its winter range in Europe extends to North Africa, as far south as Madeira, the Canaries, and the Azores (where a few pairs are said to breed) in the west, and to Nubia in the east. In Asia it is found during that season in Persia, Northern India, China, and Japan; and in America, in the Southern States, Mexico, the West Indies, and the extreme northern portion of South America.

Allied forms.—*Anas wyvilliana*, an inhabitant of the Sandwich Islands, with a greenish blue speculum and the black under tail coverts (in the adult male) mottled with chestnut. *A. laysanensis*, an inhabitant of the Laysan Islands, distinguished by the ring of white feathers round the eyes. Both these species, together with the Mallard have the central tail feathers curled upwards.



Habits.—The Mallard is the commonest species of Duck in the British Islands, and may be met with almost everywhere according to season. Its usual haunts are secluded ponds, lakes, reservoirs, brooks, slow-running rivers, marshy moors and commons, and broads, mud-flats, salt marshes, drains and sluices. Except in the extreme northern and colder portions of its range, the Mallard is a resident, but its numbers are largely increased in our islands during winter, arriving in October and November. The same may be said of India, where, although enormous numbers breed in Cashmere, it is a winter visitor to the rest of the country, arriving at the end of October and leaving by the end of March or early in April. Although not very gregarious in India, where it is usually met with in parties of from three to ten, in other parts of the world, as for instance in our islands, it may frequently be observed in very large flocks, composed principally of migratory individuals and often accompanied by Wigeons and Pintails. The Mallard does not frequent deep water much, unless when alarmed. It is fond of the shallows, where it can feed whilst paddling round the margin, and where the water is not too deep for it to reach the muddy bottom with its bill as it turns upside down, keeping its hind quarters erect by incessant motion of the feet as if in the act of swimming. Few birds fly more rapidly than this species; Macgillivray computed its flight to be probably a hundred miles per hour. The wings are beaten rapidly and make a whistling sound. As the bird rises from the water it flies in an oblique direction for some distance, but the angle with the level of the water is seldom very acute, either as the bird leaves or regains it. The Mallard swims well and lightly, but it never dives in quest of food, only when wounded or in playful chase of its mate or companions. For the most part this species is a night feeder, and that is the time selected not only for its migrations, but for its many wanderings across country in quest of fresh haunts. It may, however, often be seen feeding during the day. The Mallard is almost omnivorous; to mention the various substances on which it has been proved to feed would be to catalogue almost everything that a bird can eat. In its greedy quest this Duck often wanders far from the water, visiting stubbles, the open parts of forests, meadows, and even gardens. Its vegetable diet may be said to range from grain and grass to acorns; its animal diet from insects to fish. The note of the Mallard is the all-familiar *quack*; but in the pairing season both sexes utter sounds impossible to express on paper. This Duck is remarkably wary and well able to take care of itself in the British Island; but in India it is said to be less wary and suspicious, allowing a near approach. Many Mallards and other Ducks are caught by the natives of India in a very ingenious manner. The fowler enters the pool and covers his head with a gourd or basket, then carefully walks under water towards the unsuspecting birds, the gourd apparently floating along the surface. As soon as he reaches the Ducks they are adroitly pulled under one by one, killed at once by a sharp twist of the neck, and slung into a cord worn round

the waist. A skilful man will sometimes capture as many as twenty Ducks during one trip. Sometimes the skin of a Pelican is used instead of a gourd.

Nidification.—The Mallard is an early breeder, in England commencing to lay in March or early April, but a month or six weeks later in Scotland. Farther north, of course, the bird is later, not beginning to lay until June in Finland, for instance; but in Cashmere it is also late, laying in May and the first half of June. We are of opinion that this species pairs for life, and the duck and drake are considerably attached to each other even in winter. The nest is built in a variety of situations, and not by any means always in the neighbourhood of water. I have seen the nests in open parts of the forest on ground covered with bracken and studded with clumps of thorn-trees, and also on the barest ground under heather on small islands in the Highland lochs. Occasionally it is built in the deserted nest of a Crow or Rook, under the shelter of a wall of peat, in a boat-house, amongst ivy, in a hollow tree-trunk, or on the top of a pollard; more frequently in a field of corn or a hedge bottom. Very often it is made amongst long coarse grass and sedge by the waterside. The nest is usually made in a hollow scraped in the ground and filled with dry grass, bracken, leaves, or any vegetable refuse easily obtainable, and warmly lined with down and a few small feathers from the breast and flanks of the female. The eggs are from eight to sixteen in number, twelve being an average clutch. They vary in colour from pale buffish green to greenish buff, are fine and smooth in texture, and with a faint gloss. They measure on an average 2·3 inches in length by 1·6 inch in breadth. The down tufts are large and neutral grey with very faint white tips. The female covers her eggs carefully whenever she leaves them; and if flushed usually flies close to the ground for some distance, hiding herself as soon as possible. She alone performs the task of incubation, which lasts from twenty-six to twenty-eight days. The drake takes no share whatever in bringing up the brood, one only being reared in the season, and is never seen in the nest. When surprised with her ducklings the female sometimes feigns lameness, and devotedly remains by her brood even in the presence of dogs. Numbers of nests of this Duck may be found close together; we have seen three within as many yards on one small islet. We have never observed any polygamous tendency in this species.

Diagnostic characters.—*Anas*, with the predominating colour of the alar speculum purple; the central tail feathers curled up, and with no white ring round the eyes. Length, 21 to 24 inches. The Mallard is the original species from which the domestic Duck has sprung.

Subfamily FULIGULINÆ, or Diving Ducks and Eiders.

The birds included in the present subfamily are distinguished from their allies by having a pendant lobe or membrane attached to the hind toe, and the tarsus scutellated anteriorly. The bill is more or less depressed, and the tail feathers are not abnormally stiffened as in the *ERISMATURINÆ*. All the species contained in this group habitually dive for their food, and are marvellously adept under water. The sexes are generally different in colour. The moult is similar to that of the Non-diving Ducks, single in females, partially double in males.

This subfamily is composed of nearly forty species, divisible by Count Salvadori (whose arrangement we have followed) into some thirteen genera.

Genus NETTA, or Red-crested Pochards.

Type, NETTA RUFINA.

Netta, of Kaup (1829).—The single species of Red-crested Pochard possesses sufficiently well-marked generic characteristics to warrant its separation from nearly allied birds in the present subfamily. As in the Pochards (*Nyroca*) and the Scaups (*Fuligula*) the primaries are not uniform brown but marked or mirrored with grey; whilst in addition to this character the indentations of the upper mandible are prominent: the head is also finely crested, and the number of tail feathers is sixteen, against fourteen in *Fuligula*.

As previously remarked but one species of Red-crested Pochard is known. It is an abnormal migrant to the British Islands, and its distribution, habits, and general characteristics will be dealt with fully in the following chapter.

Family ANATIDÆ.

Genus NETTA.

Subfamily FULIGULINÆ.

RED-CRESTED POCHARD.

NETTA RUFINA—(*Pallas*).

PLATE XXXVIII.

Anas rufina, Pallas, Reise, ii. app. p. 713 (1773).**Aythya rufina** (Pall.), Macgill. Brit. B. v. p. 109 (1852).**Fuligula rufina** (Pall.), Dresser, B. Eur. vi, p. 559, pl. 435 (1873); Yarrell, Brit. B. ed. 4, iv. p. 403 (1885); Seebohm, Hist. Brit. B. iii. p. 567 (1885); Lilford, Col. Fig. Brit. B. pt. x. (1889); Dixon, Nests and Eggs Non-indig. Brit. B. p. 166 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 43, pl. 14 (1896).**Netta rufina** (Pall.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 328 (1895); Sharpe, Handb. B. Gt. Brit. iii. p. 2 (1896).

Geographical distribution.—*British*: The Red-crested Pochard is a rare winter visitor to the British Islands, chiefly to England. Perhaps fifty examples have been either obtained or seen in the United Kingdom; of these no less than eighteen were observed in a single flock on the Thames, near Erith. It is most frequently observed in the district lying between the Thames and the Humber, especially in Norfolk, which has contributed some eight or nine examples. Odd birds have been obtained as far west as Devon, Cornwall, and Pembroke, and as far north as Northumberland and Westmoreland. One example is recorded from Scotland (Argyllshire, January, 1862), and one from Ireland (Co. Kerry, January, 1881). *Foreign*: South-western Palæarctic region; Oriental region in winter. The Red-crested Pochard is of accidental occurrence only in the Baltic Provinces, Pomerania, Poland, Denmark, Holland, Belgium, France, and Switzerland. It breeds locally in the Spanish Peninsula, chiefly in the east, in the Balearic Islands, Sardinia, Sicily, Italy, Central and Southern Germany, the valley of the Danube, and Southern Russia. South of the Mediterranean it breeds on the lakes of Northern Africa, but becomes very rare in the east. In Asia it breeds in Turkestan, Kashmir, and North Persia. It is a rare winter visitor to the extreme east of the Mediterranean. The birds breeding in Turkestan and Persia pass through Afghanistan on migration, and winter in India. It has once been recorded from North America (New York Market, February, 1872).

Allied forms.—None of sufficient propinquity to call for notice.

Habits.—In the warm districts of the Mediterranean basin the Red-crested Pochard is a resident, but farther east, in the much more rigorous climate of Russian Turkestan, it is a migrant, and in autumn retires southwards to India to spend the winter. These two countries are its great head-quarters; nowhere else is it so abundant. Its migrations into India begin towards the end of October, and gradually the bird spreads south through November, not reaching the extreme limits until early in December. It leaves the most southerly districts towards the end of March, and the northern provinces during the first half of April. The Red-crested Pochard is a thorough fresh-water Duck, and haunts by preference still deep broads and lakes where the bottom is full of weed and the shore covered with coarse grass, sedge, and rushes. It also frequents the wide slow-running reaches of rivers where plenty of submerged weeds grow near the shore. Hume states that it sometimes pays fleeting visits to any streamlet pool whilst on passage. At its winter quarters it is decidedly gregarious, usually forming into flocks of from ten to thirty birds, but sometimes they congregate thousands strong on very large sheets of water. This Duck is remarkably shy and wary, taking wing the moment danger threatens, and is considered by those sportsmen who have had much experience with it to be the most troublesome fowl to work. Very rarely flocks composed entirely of males have been seen, but as a rule the sexes congregate indiscriminately. The flight of this Pochard is strong and rapid, but the bird is slow to get under weigh, and flies rather heavily. The rustle made by the rapid beats of its short wing is a very characteristic rushing sound, enabling the experienced sportsman to identify the bird as it passes overhead in the darkness. The Red-crested Pochard is perhaps most at home in the deep water where it dives for its food, disappearing from time to time with remarkable speed, and with a pertinacity unsurpassed. It obtains most of its food by diving, and rarely visits land to feed, although Hume remarks that he has sometimes met with it walking about the banks a few yards from the water's edge, searching for insects and grazing. Although it may be constantly seen feeding by day, much of its food is obtained at night, and many birds start off at dusk to visit localities where food is more plentiful than in the haunts they affect in the daytime. It is at night, too, that it chiefly moves from place to place, as is proved by the frequency that it is killed by the flight shooter. The food of this beautiful Duck is principally composed of the roots, stems, leaves, and juicy rhizomes of aquatic plants, arrow-grass, sagittarias and horn-worts; but insects and their larvæ, worms, mollusks, frogs, fish spawn, and occasionally small fish are eaten. The Red-crested Pochard is most active in search of food early in the morning, but during the great heat of the Indian day it frequently floats out into the centre of the water to sleep, and here it is usually very quiet. The call-note of this species is a deep grating *kurr*; but the male in addition now and then utters a whistling cry, both on the water and during flight. The flesh of this Duck varies considerably in quality for table purposes, probably a good deal owing to diet.

Nidification.—The breeding season of the Red-crested Pochard commences late in April or early in May in some localities, not before June in others. The nest is rarely made far from the water, and an island covered with flags and other aquatic vegetation is selected where possible. It is made amongst the herbage on the ground, of dead rushes, leaves, and other vegetable refuse, and lined with a warm bed of down from the female's breast. Nests found by Canon Tristram in Algeria, are described as being like that of the Coot, but not so large. The eggs are from seven to ten in number, and described by Salvin as "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." They are greyish-olive after being in collections for some time, and measure on an average 2·3 inches in length by 1·6 inch in breadth. The down tufts are apparently undescribed. One brood only is reared in the year.

Diagnostic characters.—(Nuptial plumage), *Netta*, with the head and upper neck chestnut, and the bill vermilion (adult male); with the axillaries white, with no white alar speculum, and with the head and neck yellowish-white speckled with black (adult female). Length, 20 to 22 inches.

Genus NYROCA, or Pochards.

Type, NYROCA AFRICANA.

Nyroca, of Fleming (1822).—The birds in the present genus are characterised by having the primaries marked with grey, the indentations of the upper mandible prominent, the bill smooth at the base, and not widening out towards the tip.

Ten species are included in the present genus, two of which, however, are at present of doubtful rank. The Pochards are practically cosmopolitan in their distribution. Two species are included as British, one indigenous to our Islands, and the other an abnormal migrant to them.

The Pochards are found upon fresh water and in maritime localities, showing a decided preference for pools and lakes containing plenty of cover. Their movements on the land are awkward, but in the water these birds swim and dive with ease. They are social and gregarious, especially during the non-breeding season. Their flight is rapid and strong, if somewhat laboured at its commencement. They feed both by day and night on animal and vegetable substances, the diet varying a good deal in the several species. Their notes are harsh and unmusical. They are monogamous. Their rude, down-lined nests are made amongst the herbage or float some distance from shore amidst reeds and rushes. Their eggs are numerous, and various shades of grey or buff in colour.

Family ANATIDÆ.

Genus NYROCA.

Subfamily FULIGULINÆ.

WHITE-EYED POCHARD.NYROCA AFRICANA (*Gmelin*).**Anas nyroca**, Güld. Nov. Comm. Petrop. xiv. p. 403 (1769).**Fuligula nyroca** (Güld.), Macgill. Brit. B. v. p. 113 (1852); Seebohm, Hist. Brit. B. iii. p. 571 (1885); Yarrell, Brit. B. ed. 4, iv. p. 418 (1885); Lilford, Col. Fig. Brit. B. pt. xiv. (1890); Dixon, Nests and Eggs Non-indig. Brit. B. p. 167 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 44, pl. 14 (1896).**Nyroca ferruginea** (Gmel.), Dresser, B. Eur. vi. p. 581, pl. 438 (1872).**Nyroca africana** (Gmel.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 345 (1895).**Nyroca nyroca** (Güld.), Sharpe, Handb. B. Gt. Brit. iii. p. 9 (1896).

Geographical distribution.—*British*: The White-eyed Pochard is a rare and irregular straggler to our area on spring and autumn migration, most frequently met with in the eastern counties of England. Norfolk heads the list with about a score examples; others have been obtained in Suffolk, Cambridgeshire, Nottinghamshire, and Yorkshire. Northumberland, Cumberland, Lancashire and Dorset can each claim an example; Devon can now claim two examples; Radnorshire another; and Oxfordshire no less than four. There are three occurrences on record for Scotland, and six for Ireland, *Foreign*: Southern Palæartic region; parts of Oriental region in winter. This Pochard is of only accidental occurrence in the Canaries, Denmark, and the Baltic Provinces. It breeds throughout Europe in suitable localities as far north as Holland, Germany, and in Russia up to Moscow, Kazan, and Ekaterinburg. It is found in summer only in the northern portions of this area, but is a resident in the basin of the Mediterranean (although it is not known to breed in Egypt), Black and Caspian Seas, its numbers being increased in winter. In Asia, Finsch is the only authority for the occurrence of this species in Siberia, where he states positively that he saw it as far north as the Arctic Circle, in the valley of the Obb. It breeds, however, throughout Turkestan and Cashmere, and most probably in Mongolia. Many of these Asiatic birds pass through Afghanistan on migration and winter in India and Northern Burmah.

Allied forms.—*Nyroca baeri* an inhabitant of Eastern Asia from the valley of the Obb to Kamtschatka, southwards to China and Japan. The Eastern representative of the White-eyed Pochard having the head and upper neck black shot with green. Eleven examples of this Eastern Pochard were recently obtained (February, 1897) in the Calcutta Bazaar.

Habits.—The movements of the White-eyed Pochard are almost exactly similar to those of the preceding species. Like that bird, the present Duck is sedentary in the warm climate of the Mediterranean basin, but migratory further east in the colder regions of Turkestan. In Cashmere it is chiefly a resident, but to the remainder of India it is a well-known and abundant winter visitor, arriving towards the end of October and leaving in March and April. Its haunts are very similar to those of the Red-crested Pochard, moderately deep broads and lakes where weeds abound, and occasionally rivers and ponds. Hume states that in India it is very seldom seen in open water, clinging to the cover of the reeds and rushes, but certainly in other parts of the world it may as often as not be observed far out from shore in the exposed portions of its haunt. It is also loth to rise from its retreats, skulking close among the aquatic vegetation until compelled by the advancing boat to rise. Its flight is moderately quick, the bird rising with considerable effort, invariably against the wind, and very often after flying in a straight course for a little way dropping suddenly into cover again. This Duck is not seen much on land, and its waddling gait is said to be even more clumsy than that of its congeners. The water is the home of the White-eyed Pochard, and there it swims well and quickly, and dives, according to Hume, with Satanic speed. "Indeed," he writes, "what becomes of them is often a puzzle; the instant that, wounded, they touch the water, they disappear, and not unfrequently that is the last you see of them; at most they only rise once or twice, and then disappear for good. It is a waste of time to pursue them; if they do rise, give them instantly a second barrel." In India this Duck is not very gregarious, the flocks, even when large, being scattered about here and there among the cover, never rising *en masse*, but individually or in twos and threes as the birds may chance to be flushed. In Egypt, however, the very reverse is the case. There Captain Shelley observed them in vast compact flocks, keeping to the centre of the lake, and the noise made by their beating wings and pattering feet striking the water as they rose, was audible for a distance of two miles! The White-eyed Pochard obtains most of its food by diving and bringing up the weeds to the surface, where they are eaten. Sometimes it remains under the surface for nearly two minutes, but when feeding half that time is the usual period. Occasionally it feeds on the surface, picking at the floating weed or the insects and shells clinging to the leaves. It is for the most part a day feeder, and where plenty of food is available seldom wanders from its haunts; in districts, however, where the water is not very well stocked, it starts off at dusk to better quarters, but this appears to be quite exceptional. The food of this Duck is composed principally of vegetable substances, aquatic plants, seeds of grass, rushes, and sedge; but insects and their larvæ, small mollusks, shrimps, worms, grubs, and even tiny fish are eaten. The note of this Pochard is described as a harsh *kirr kere kirr*, invariably uttered as the bird rises startled from the cover. The flesh of the White-eyed Pochard is said by

Hume to be very inferior; but Irby, on the other hand, informs us that it is excellent. Either this is purely a matter of taste, or due to a difference in the food of the bird.

Nidification.—The White-eyed Pochard is a late breeder in the extreme eastern and southern portions of its range, not laying before June; but in Spain and Central Europe it is at least a month or five weeks earlier. The nest is usually made among the reeds and rushes at the margin of the pool, either on land, or more or less floating on masses of rotten fallen vegetation or drifting weed. Occasionally, however, it is built on a tuft of sedge or rush; and it has been found carefully concealed in a bush several feet from the ground. It is made of dry rushes, sedge, and other vegetable refuse, the finer materials being used for the interior, which is again lined with down and a few feathers from the body of the female. The eggs are from eight to fourteen in number, ten being an average clutch, and are pale creamy-brown, a delicate *café au lait* hue, faintly tinged with green. They are smooth and fine in texture, but show little gloss, and measure on an average 2.1 inches in length by 1.49 inch in breadth. The down tufts are rather small and very dark brown; but the late Lord Lilford, I notice, describes the down as “brownish-white” in a nest from which the female was shot in Southern Spain. Incubation, performed by the female, is said by Favier to last thirty days; Naumann affirms twenty-two to twenty-three days. It is not known that more than one brood is reared in the year.

Diagnostic characters.—(Nuptial Plumage), *Nyroca*, with the head, neck, and upper breast rich chestnut, with a white spot on the chin, with a white alar speculum, and with the bill dark lead-blue or bluish-black (adult male); with a white alar speculum, with the head and neck pale chestnut, and with the under tail coverts and axillaries white (adult female). Length, 16 inches.

Family ANATIDÆ.
Subfamily FULIGULINÆ.

Genus NYROCA.

POCHARD.

NYROCA FERINA—(*Linnæus*).

Anas ferina, Linn. Syst. Nat. i. p. 230 (1766).

Aythya ferina (Linn.), Macgill. Brit. B. v. p. 103 (1852).

Fuligula ferina (Linn.), Dresser, B. Eur. vi. p. 551, pl. 434 (1878); Seebohm, Hist. Brit. B. iii. p. 575 (1885); Yarrell, Brit. B. ed. 4, iv. p. 413 (1885); Lilford, Col. Fig. Brit. B. pt. xiii. (1890); Dixon, Nests and Eggs Brit. B. p. 239 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 45, pl. 14 (1896).

Nyroca ferina (Linn.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 335 (1895); Sharpe, Handb. B. Gt. Brit. iii. p. 5 (1896).

Geographical distribution.—*British*: The Pochard is a common winter visitor to the United Kingdom, but many remain in spring to breed in our Islands. It is abundant in Scotland, including the Orkneys and Shetlands, but rarer in the Outer Hebrides. It breeds very locally in South Perthshire and in Fife-shire, in Moray, Ross and Roxburghshire; as well as in Hoy (Orkney), as recorded by Messrs. Evans and Buckley. It is equally common in Ireland in winter, and has been said to breed in the counties of Sligo, Antrim, Tipperary, Galway, Roscommon, Westmeath, and Meath. It is commonly distributed in England between autumn and spring, and breeds in Lancashire, the East Riding of Yorkshire, Norfolk, some of the midland counties, and Dorset. *Foreign*: West-central Palæarctic region; parts of Oriental region in winter. This Pochard is an accidental visitor to the Faroes, Iceland, and Scandinavia. It breeds across Europe and Asia from the British Islands in the west to Lake Baikal in the east, as far north as Lake Ladoga, and as far south as the Caucasus in Europe; but in Asia not further north than Lake Baikal, southwards to North-western Mongolia and the lakes and swamps of South-western Siberia. Great numbers of the European birds winter in the basin of the Mediterranean; and it is said that a few used to breed in Spain and Algeria. The Asiatic birds pass Turkestan on migration, and winter in Asia Minor, Persia, Afghanistan, India, and China. It was observed by Prjevalsky on migration in South-eastern Mongolia, and occurs during winter in Japan.

Allied forms.—*Nyroca americana*, an inhabitant of the Nearctic region, considered by some authorities to be of doubtful distinctness, but by others to be worthy of specific rank. It is distinguished from the Pochard by having the back greyer in colour, by its unvermiculated white belly, and reddish-purple gloss on the neck, and by having no black at the base of the bill. The famous Canvass-back (*N. vallisneria*) of North America is somewhat closely allied to the Pochard.

Habits.—The Pochard is best known as a winter visitor to the British Islands, arriving in October and leaving in March and April. These dates also correspond very well with the bird's arrival in and departure from India, although it is a few weeks later in the extreme southern limits of its distribution there. Although met with commonly enough in our Islands on the coast in winter, in other localities it is almost exclusively confined to fresh water during that season. In India it prefers reedy meres and broads of moderate depth, where there is a considerable breadth of open water. Here it congregates in vast flocks, often covering acres of water in extent. Like its congeners, the Pochard is a thorough water bird, spending most of its time swimming and diving. It is comparatively rarely seen on land, where it walks in an awkward, waddling manner, but in the water it is the embodiment of easy grace, swimming rapidly, if rather low, diving with as much skill as a Grebe or an Auk, or chasing its companions in sportive mood under and above the surface. When once the bird gets fairly under weigh its flight is rather quick, but at first its movements are rather slow and laboured, and it rises with some apparent difficulty, against wind if possible, the wings making a very characteristic rustle as they rapidly beat the air. The Pochard feeds both by day and by night, but perhaps the most regularly and persistently during the latter. As is usual with many other species of Duck, a considerable flight is often undertaken at dusk by birds frequenting waters where food is not very plentiful to waters better stocked. This Pochard obtains the greater part of its food by diving and bringing up masses of weeds, which are eaten after they are brought to the surface. It is principally a vegetable feeder, and water weeds and marine plants are its favourite fare. It also eats considerable numbers of insects, worms, small fresh-water shells, and young frogs; and when frequenting the coast, crustaceans and mollusks. Shot from fresh water the Pochard is excellent for the table, but birds killed on the coast are rarely palatable, owing to the stronger nature of their food. The note of this Pochard is a rather loud and harsh *kurr*.

Nidification.—The breeding season of the Pochard in our Islands is in May, and fresh eggs may be obtained all through that month and the first half of June; farther south they are nearly a month earlier still. The nest is always near to fresh water, amongst the coarse grass and sedge and flags growing round the margins of pools and lakes, and in many instances is a floating structure,

built on a mass of fallen vegetation many yards from shore, in moderately deep water, or in a tuft of sedge surrounded by shallow water. The nest is made of dry grass, sedge, broken rushes and flags, or any other aquatic vegetable refuse that may chance to be readily available, warmly lined with down and a few feathers from the body of the female. The eggs are from eight to twelve, or even fourteen in number, ten being an average clutch, and are greenish-grey in colour. They measure on an average 2·4 inches in length by 1·7 inch in breadth. The down tufts are large, greyish-brown in colour, with dull white centres. When the female leaves the nest she carefully covers the eggs; and to her alone is left all care of the brood.

Diagnostic characters.—(Nuptial plumage), *Nyroca*, with the head and neck chestnut, and the lower back and scapulars white vermiculated with black (adult male); with the axillaries white, with a varying amount of white vermiculations on the upper parts, and with no white alar speculum (adult female). Length, 17 to 19 inches.

Genus **FULIGULA**, or Scaups and Tufted Ducks.

Type, **FULIGULA CRISTATA**.

Fuligula, of Stephens (1824).—The birds comprising the present genus are characterised by having the bill smooth at the base and flat, somewhat wider near the end than at the base, rather broad and short and much rounded at the tip, furnished with lamellæ, not with saw-like teeth, with the rectrices soft and pliable; and with no patches of emerald green on the head, which in adult males is glossy-black. The former characters separate them from the Mergansers and the Spine-tailed Ducks (non-British), whilst the latter character diagnoses them from the Eiders. The wings are rather short but pointed; tail somewhat variable in shape and in number of feathers. Three toes in front webbed; hind toe moderate and lobed.

This genus is composed of five species, which are mostly distributed in the Nearctic and Palæarctic regions, but one inhabits New Zealand. Three species are British.

The Scaups and Tufted Ducks frequent maritime as well as more inland waters, but are most commonly distributed on salt water during winter, though some frequent fresh water always. They are birds of rapid yet somewhat laboured flight; swim and dive with marvellous skill, but walk clumsily. They make their nests, lined with down, either in the ground or in holes in trees, and their numerous eggs range from buff to olive-brown and green in colour. They are monogamous; more or less gregarious in winter.

Family ANATIDÆ.

Genus FULIGULA.

Subfamily FULIGULINÆ.

SCAUP.

FULIGULA MARILA—(*Linnæus*).**Anas marila**, Linn. Syst. Nat. i. p. 196 (1766).

Fuligula marila (Linn.), Macgill. Brit. B. v. p. 116 (1852); Dresser, B. Eur. vi. p. 565, pl. 436 (1878); Seebohm, Hist. Brit. B. iii. p. 579 (1885); Yarrell, Brit. B. ed. 4, iv. p. 423 (1885); Lilford, Col. Fig. Brit. B. pt. xv. (1890); Dixon, Nests and Eggs Non-indig. Brit. B. p. 169 (1894); Salvadori, Cat. B. Brit. Mus. xxvii. p. 356 (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 46, pl. 14 (1896); Sharpe, Handb. B. Gt. Brit. iii. p. 16 (1896).

Geographical distribution.—*British*: The Scaup is a common winter visitor to our Islands, confined to the coasts and estuaries, where it is widely distributed. It is least common in the Hebrides, and rare on the south coasts of Ireland. It is occasionally seen in summer in the Shetlands and other parts of Scotland. The very circumstantial account of this species breeding on Loch Leven, by Mr. A. C. Stark, published in the *Proceedings of the Royal Physical Society of Edinburgh* (vii. p. 203), and quoted by Mr. Saunders in his *Manual of British Birds* (although afterwards corrected in his appendix), turns out to be a myth, there being no doubt whatever that the Tufted Duck had been confused with and mistaken for it! *Foreign*: Northern Palearctic and Nearctic regions, more southerly in winter; parts of Oriental region in winter. The Scaup breeds in the Faroes, and still more commonly in Iceland. It also does so throughout the Arctic regions of Europe and Asia, from the Atlantic to the Pacific as far north as lat. 70°, and at high elevations on the mountains of South Scandinavia. In America it breeds as far north as 70° from east to west, but not lower than the Hudson Bay Territory. The European birds winter on the coasts of the Baltic, and those of the southern German Ocean not so commonly on the Spanish coasts and the basin of the Mediterranean, but becoming more frequent in the Black Sea and on the south coasts of the Caspian. In North-east Africa it has been met with as low as Abyssinia. The Asiatic birds appear to winter in Persia, North-western India, the Lake Baikal district, China, Formosa, and Japan. The American birds winter on the great lakes and rivers of the interior as well as on the Atlantic and Pacific coasts of the United States, down to Mexico and Central America.

Allied forms.—*Fuligula affinis*, a small race confined to the Nearctic region (measuring $1\frac{1}{2}$ inches less in length of wing than large European birds, and three-quarters of an inch less than small ones) and the head glossed with purple instead of green; of very doubtful distinctness. As the two forms intergrade, and as their geographical area on the American continent is the same, the most that can be claimed for them is a subspecific distinction. According to Dr. Stejneger, the typical Scaup *F. marila* is confined to the Palæarctic region. In the far east of this area, "Pacific coast of Asia from Japan southward," another subspecies is distinguished under the name of *F. affinis mariloides* (Vigors), a representative race of the Nearctic *F. affinis*; whilst the second American form, the most nearly allied representative of *F. marila*, is separated under the name of *F. marila nearctica*. Count Salvadori, however, is unable fully to support these conclusions. (Conf. Bulletin, U.S. Nat. Mus. No. 29, p. 161, 1885.)

Habits.—The Scaup begins to arrive on the most northerly coasts of the British Islands in September, but is nearly a month later in the south. The return migration begins in March and lasts through April into May, the Scaup being among the last of the migratory Ducks to leave our coasts. In the Arctic regions it arrives with the break up of the ice towards the end of May, or early in June. The Scaup during winter is for the most part a dweller on or near the sea, resorting to quiet bays and estuaries, especially where a considerable amount of mud is exposed at low tide. It may, however, be frequently met with on fresh inland waters at that season, and in summer is fond of lakes and wild, swampy districts. During winter this Duck often congregates into large flocks, and associates with various other species, notably with Wigeon and Pintail; whilst in summer it still remains very sociable and gathers into parties to feed. Like all its allies it is an accomplished diver, and spends most of its time on the water, where it swims well and rather high, but if alarmed it slowly sinks much lower. As a rule it prefers to dive rather than to fly in avoiding pursuit. When flushed it rises slowly and with considerable splashing effort, but when once well up it progresses with considerable speed, its short, quickly-beating wings making a whistling or rustling sound. The call-note of this Duck is a most harsh and discordant *scaup*, but an equally hoarse and grating *kurr* is uttered, especially during flight or under sexual excitement. The food of the Scaup, which is mostly obtained by diving, consists of mollusks, crustaceans, and great quantities of marine weeds growing in the haunts of the bird. Probably in summer it is more of a vegetable than an animal nature. Sometimes when diving for food the Scaup will remain under the surface for quite a minute. The Scaup feeds a good deal at night, and, like most other Ducks that habitually do so, it passes regularly from its usual haunts to its feeding grounds.

Nidification.—The breeding season of the Scaup commences in May in some localities where the climate is open, but a month later in the colder regions

of Northern Europe and Asia. It is most probable that this Duck pairs for life, as all the winter it may be noticed swimming in pairs, and even the large flocks are made up of about equal numbers of ducks and drakes. The nest is made by the waterside among willows and junipers, or on a bank where the ground is clothed with sedge tufts and various species of the order Ericaceæ, or bilberries, cranberries, and the like. In Iceland Proctor found it among large stones near the water's edge. The nest is made in a hollow in the ground of dry grass, bits of sedge, and withered leaves, warmly lined with down as the eggs are deposited. The usual number of eggs is eight or nine; but where several females lay in the same nest, as is sometimes the case, Dr. Kruper found as many as twenty-two. They are pale greenish-grey, and measure on an average 2·6 inches in length by 1·7 inch in breadth. The down tufts are large, dark brown in colour, with pale centres. One brood only is reared in the year, the female taking all charge.

Diagnostic characters.—(Nuptial plumage), *Fuligula*, with the crown and neck metallic-green and purple, and the lower back and scapulars white vermiculated with black (adult male); with a white alar speculum and axillaries, and with a varying amount of white vermiculations on the upper parts (adult female). Length, 18 inches.

Family ANATIDÆ.

Genus FULIGULA.

Subfamily FULIGULINÆ.

TUFTED DUCK.

FULIGULA CRISTATA—(*Leach*).

PLATE XXXVIII.

Anas fuligula, Linn. Syst. Nat. i. p. 207 (1766).**Fuligula cristata** (*Leach nec Gmel.*), Macgill. Brit. B. v. p. 121 (1852); Dresser, B. Eur. vi. p. 573, pl. 437 (1879); Seebohm, Hist. Brit. B. iii. p. 583 (1885); Yarrell, Brit. B. ed. 4, iv. p. 430 (1885); Lilford, Col. Fig. Brit. B. pt. xiii. (1890); Dixon, Nests and Eggs Brit. B. p. 240 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 47, pl. 13 (1896).**Fuligula fuligula** (Linn.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 363 (1895); Sharpe, Handb. B. Gt. Brit. iii. p. 12 (1896).

Geographical distribution.—*British*: The Tufted Duck is a fairly common winter visitor to most of the low-lying coasts as well as to many of the inland waters of the British area. It breeds locally throughout the British Islands, and in numbers which are steadily increasing in many districts. British breeding area:—England: Nottinghamshire (Newstead, Clumber, Rainworth, Welbeck, and Rufford), Norfolk, Sussex, Dorset, Devonshire, Hertfordshire, Shropshire, Yorkshire, Lancashire, and Northumberland. Scotland: Roxburghshire, Perthshire, Kinross-shire, and Aberdeenshire. Ireland: Loughs Neagh and Beg and in some parts of Co. Monaghan; also, according to Mr. Ussher, in Fermanagh, Roscommon, and Sligo, and probably on the lakes in Longford and Westmeath. *Foreign*: Palæarctic region; parts of Oriental region in winter. It is said to breed sparingly in the Faroes and to have occurred in Greenland. In Europe the regular breeding area of this species reaches little if any above the Arctic circle, although the bird has been obtained in Scandinavia up to lat. 70°. Southwards it breeds in all suitable localities to about lat. 50°. Eastwards its regular breeding area scarcely reaches the Arctic circle in the west, although the bird has been obtained in the valley of the Yenisei up to lat. 68°; whilst on the Pacific coast it drops down to lat. 62°. It breeds throughout Southern Siberia; the Asiatic birds winter in Japan, China, and India, abnormal migrants even reaching Malaysia and Polynesia. The European birds winter in South Europe and Northern Africa as low as Abyssinia.

Allied forms.—*Fuligula collaris*, an inhabitant of the Nearctic region and the New World representative of the Tufted Duck. A “British” species and dealt with fully in the following chapter. Distinguished from the Tufted Duck by its much shorter crest, chestnut collar, and pale grey instead of white speculum.



Habits.—During its sojourn in our Islands the Tufted Duck is for the most part a coast bird, those that frequent inland waters being the resident individuals that breed with us or birds that have been enticed by them. The Tufted Duck makes its appearance in the British Islands towards the end of October or early in November, and remains until the following March or April. They arrive at their Arctic haunts with the thaw and leave in September or October. Their arrival in and departure from India is about at the same time as in England. The principal haunts of this Duck with us are the low-lying coasts, especially in the neighbourhood of mud-banks and estuaries. In India it prefers large sheets of water with plenty of weed at the bottom and plenty of reeds and rushes round the margin. Odd pairs and small parties also frequent the smaller ponds where food and cover are suitable; but the large flocks of this bird that congregate in that country in the cold season, sometimes ten thousand strong, are invariably found on the extensive sheets of water. The Tufted Duck migrates at night, generally in large flocks, and on passage will often pay a fleeting visit to some lake or pool *en route*. It is also nocturnal in its habits, seeking most of its food at night, in this country, but, curiously enough, Hume remarks that they are day feeders in India. The flight of this Pochard is rapid and well sustained, smooth and easy, but the rapidly-beaten wings make a characteristic rustling sound. In rising the bird strikes the water with its feet something like a Coot, so that when a large flock takes wing together the splashing can be heard for a long distance. It swims well and rapidly, sitting rather low in the water, and, of course, dives with marvellous speed and skill, sometimes remaining below for a minute or more. During the day the Tufted Duck usually keeps well out from shore, often sleeping and preening its plumage whilst in the centre of the lake. It rarely visits land, and always tries to evade pursuit by diving if possible; and Hume states that after a gun has been fired he has seen a large flock of several hundred birds dive simultaneously as if moved by a common impulse! The Tufted Duck is not a very noisy bird, especially during winter, but occasionally utters a harsh *kurr-kurr* as it rises alarmed from the water. The food of this species consists of aquatic insects, worms, grubs, lizards, frogs, spawn, and small fish; whilst the roots, stems, leaves, and buds of water plants are also eaten. After having fed inland chiefly on vegetable diet the flesh of this Duck is by no means unpalatable, but birds shot on the coast are rank and fishy in flavour.

Nidification.—The breeding season of the Tufted Duck commences about the middle of May in some localities, the end of May or early in June in others. Its favourite breeding grounds are on the banks of meres and lakes, and in marshy districts full of small ponds. This Duck may probably pair for life, as in districts where the fact can be observed the duck and drake swim and fly in company for the greater part of the year. The nest is either built amongst the rushes, in the centre of tufts of sedge, in long, coarse grass, or under a stunted

bush, always, however, near to the water. It is merely a hollow in which is arranged a little dry grass or other vegetable refuse and lined with plenty of down from the female. The eggs are usually eight or ten in number, sometimes several more are found. They are greenish-buff, smooth in texture, and rather polished, and measure on an average 2·3 inches in length by 1·6 inch in breadth. The down tufts are small, dark greyish-black with obscure pale centres. But one brood is reared in the year, and the female takes sole charge of the young. Incubation lasts from twenty-five to twenty-eight days.

Diagnostic characters.—(Nuptial plumage) *Fuligula*, with the crown and neck metallic green and purple, with a conspicuous crest, and with only dust-like traces of vermiculations on the upper parts (adult male) ; with white axillaries and alar speculum, and with dark brown unvermiculated head, neck, and upper parts (adult female). Length, 16 to 17 inches.

Family ANATIDÆ.
Subfamily *FULIGULINÆ*.

Genus *FULIGULA*.

RING-NECKED DUCK.

FULIGULA COLLARIS—(*Donovan*).

Anas collaris, *Donovan*, *Brit. B.* vi. pl. cxlvii. (1809).

Anas fuligula (*nec* *Linn.*), *Wilson*, *Am. Orn.* viii. p. 66, pl. 67, fig. 5 (1814).

Fuligula collaris (*Donovan*), *Seebohm*, *Hist. Brit. B.* iii. pp. 584, 610 (1885); *Dixon*, *Nests and Eggs Non-indig. Brit. B.* p. 355 (1894); *Salvadori*, *Cat. B. Brit. Mus.* xxvii. p. 370 (1895).

Geographical distribution.—*British*: The Ring-necked Duck, like the American Bittern, was first made known to science from an example obtained in England. In connection with this matter we are not disposed to rob *Donovan* of the honour of his discovery by transferring it to *Lewis and Clarke*, by whom *Dr. Coues* endeavours to prove the bird had been previously obtained near the mouth of the *Columbia River*. For just upon a century ornithologists appear to have ignored the claim of this species to a place in the British list, whilst many other birds have been admitted upon much less slender evidence. We are at a loss to account for this, and shall here take the opportunity of reinstating the Ring-necked Duck to our list of abnormal migrants to the British Islands. It has certainly an equal, if not a better, right to be so included than such species as the *Griffon Vulture* and the *Black-browed Albatross*, both of which can only claim a similar single record. This solitary example of the Ring-necked Duck was obtained in *Leadenhall Market* in *London* some time in *January, 1801*. *Foreign*: *Nearctic region*; extreme north of the *Neotropical region* during winter. The Ring-necked Duck breeds sparingly, at least, as far south as *Minneapolis* in *Minnesota*, and at *Clear Lake* in *Iowa*; thence northwards, in larger numbers, across *Canada* to the *Arctic regions* of *America*. Its principal breeding grounds are probably in the high north, although it is somewhat remarkable that *Macfarlane* failed to meet with the nest of this Duck. It passes southwards over the *United States* to winter, extending, at that season, to *Guatemala* and the *West Indies*. It is an abnormal migrant to the *Bermudas*.

Allied forms.—None of sufficient propinquity to call for notice. It is probably most nearly allied to the *Tufted Duck* (*Fuligula cristata*) of the *Old World*, although very distinct from it.

Habits.—The migrations of the Ring-necked Duck are by no means the least interesting portion of the bird's life history. In northern Minnesota this species is widely known as the "Fall Duck," doubtless, because it is so abundant in that area during the fall or autumn migration. Its passage up the Mississippi Valley in spring takes place during March and April: the return migration is performed during October and November. According to Wilson this Duck shows more preference for inland waters than the open sea. Most meagre details of the habits of the Ring-necked Duck have been recorded, but they doubtless do not differ much from those of allied species. The favourite haunts of the Ring-necked Duck seem to be streams and lakes rather than the open coast. It does not appear to be anything like so gregarious during winter as its Old World representative the Tufted Duck, the flocks consisting of a dozen or twenty individuals—perhaps a brood and its parents. To the wild fowlers of Long Island this Duck is widely known as the "Bastard Broad-bill," a term indicating the popular belief that the bird is a hybrid. Like kindred species, the Ring-necked Duck obtains most of its food by diving in deep water; but it also seeks for sustenance by dabbling amongst the roots of grasses and other vegetation on the banks. Its food consists of aquatic insects, snails, worms, small fishes, frogs and the buds, seeds and leaves of various plants. It swims well and buoyantly, and, like the Scaup, is said to keep raising its head, erecting the bushy plumage of the occiput and uttering a note similar to the "sound produced by a person blowing through a tube." It rises from the water or the land with little effort, and its flight is rapid and often lofty, the individuals of a flock frequently scattering when disturbed. During winter small parties of Ring-necked Ducks frequently associate with allied species, and these may often be seen flying quite close to the surface of the water. The flesh of this Duck is described as being of excellent quality, according to Audubon, tender and juicy, and without that fishy flavour that generally renders most "Black Ducks" almost uneatable, especially when shot off salt water.

Nidification.—I find but little recorded of the nesting habits of the Ring-necked Duck. Its favourite breeding-grounds appear to be in the vicinity of lakes and rivers. The bird is decidedly sociable during summer, and more than one observer has remarked several pairs breeding in company. The nesting season begins in May, the more northern breeding individuals being of course the latest. The nest, usually well concealed, is generally placed amongst reeds, dense grass and other vegetation on the margin of the water, sometimes in a bog, and is made of dry grass and leaves, to which down and feathers are added as the period of incubation advances. The eggs, ten or twelve in number, are described in Messrs. Baird, Brewer and Ridgway's standard work on the birds of North America, to which I am largely indebted for my account of this species, as greyish ivory-white, sometimes the greyish tinge being replaced by buff. They

measure on an average 2·1 inches in length, by 1·65 inch in breadth. One brood only appears to be reared in the season, but whether the male takes any share in the duty, observers fail to inform us. Doubtless the female alone takes sole charge of eggs and brood. The period of incubation, so far as I can ascertain, has not been recorded. Hybrids between this species and *Nyroca americana* have been recorded by Professor Newton (Proc. Zool. Soc., 1860, pl. clxvii.), and by Leverte (Journ. Orn. 1890, p. 224).

Diagnostic characters.—*Fuligula*, with the speculum bluish-grey; and in males in breeding dress with a varyingly distinct chestnut ring round the neck. Length, 17 inches.

Genus CHARITONETTA, or Buffel-headed Ducks.

Type, CHARITONETTA ALBEOLA.

Charitonetta, of Stejneger (1885).—Although perhaps the majority of ornithologists include the Buffel-Head with the Golden-eyes, under the generic term of *Clangula*, there can be no doubt that this species is quite as worthy of generic distinction as certain other members of the present subfamily. Among the more important characters of this genus pointed out by Stejneger as distinctive from *Clangula*, may be mentioned the nostrils, which are situated in the anterior portion of the posterior half of the bill instead of the reverse; they are also rather narrow and the tubercle is visible. The outer toe without the claw is decidedly longer than the middle one; and lastly the tail is rather long, more than twice the length of the metatarsus.

But one species of Buffel-headed Duck is known. It is an abnormal migrant to the British Islands, and its distribution, habits, and general characteristics will be fully described in the following chapter.

Family ANATIDÆ.
Subfamily FULICULINÆ.

Genus CHARITONETTA.

BUFFEL-HEADED DUCK.

CHARITONETTA ALBEOLA—(*Linnæus*).

Anas albeola, Linn. Syst. Nat. i. p. 199 (1766).

Clangula albeola (Linn.), Macgill. Brit. B. v. p. 185 (1852); Dresser, B. Eur. vi. p. 589, pl. 439 (1877); Yarrell, Brit. B. ed. 4, iv. p. 442 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 178 (1894); Salvadori, Cat. B. Brit. Mus. xxvii. p. 385 (1895); Lilford, Col. Fig. Brit. B. pt. xxx (1895).

Fuligula albeola (Linn.), Seebohm, Hist. Brit. B. iii. p. 588 (1885); Lilford, Col. Fig. Brit. B. pt. xi. (1889); Seebohm, Col. Fig. Eggs Brit. B. p. 48 (1896).

Charitonetta albeola (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 24 (1896).

Geographical distribution.—*British*: The Buffel-headed Duck is a very rare straggler to our Islands. Its claim to rank as “British” rests on the following evidence:—England: Norfolk (one example), winter, 1830; Yorkshire (one example), winter, 1864-65. Scotland: Aberdeenshire (one example), January, 1865; Loch Strathbeg (one example), no date. Ireland: Although there is some evidence that this species has visited Ireland, nothing can be stated positively until an example be secured. *Foreign*: Northern Nearctic region; more southerly in winter. It breeds throughout Arctic America up to the limit of forest growth, and as far south as Maine and Wisconsin. It winters in the United States, California, the West Indies, and Mexico, and occasionally visits the Bermudas on abnormal passage, whilst it has occurred in Greenland on the east and Behring Island on the west.

Allied forms.—None nearer than *Clangula glaucion* and allied races, the former a British species, and dealt with fully in the following chapter.

Habits.—So far as they are known the habits of the Buffel-headed Duck resemble very closely those of its near ally, the Golden-eye. Like that species it is much attached to inland waters, and only appears to seek the sea when its other retreats are sealed by ice. It flies well and strongly, swims quickly, and dives with such astounding speed that in some localities it is known by the name of “Spirit Duck.” Its note is a somewhat grating and feeble *kurr*. The food of

this species consists of the buds, roots, stems, and leaves of aquatic plants, worms, mollusks, crustaceans, etc. Most of this is obtained by diving. During winter this Duck usually consorts in small flocks, but sometimes gathers into greater numbers during severe weather when its feeding grounds are more restricted.

Nidification.—According to latitude and climate the breeding season of the Buffel-headed Duck begins in May or June. Like the Golden-Eye it breeds in hollow trees, sometimes as much as twenty feet from the ground. No particular species of tree seems selected; all that is desired is a suitable hole. No nest is made, and the eggs are laid on the decayed powdered wood at the bottom of the hole, which is, however, eventually lined with down, plucked from the body of the female. They are from six to ten in number, and pale greenish-grey in colour. They measure on an average 2·0 inches in length by 1·45 inch in breadth. Although several observers have been very careful to inform us that the nest hole contained a quantity of down, none of them have deemed it sufficiently important to describe it; it probably resembles that of the Golden-eye. Whether the male takes any share in domestic duties is unknown, as is also the period of incubation.

Diagnostic characters.—(Nuptial plumage) *Charitonetta*, with the axillaries brown and with a large white patch on the side of the head, commencing behind the eye (both sexes). Length, 14 to 15 inches.

Genus CLANGULA, or Golden-eyes.

Type, CLANGULA GLAUCION.

Clangula, of Leach (1819).—The birds in the present genus are characterised by having the primaries uniform brown or unmirrored with grey. The head is well crested; the bill strong; the edges of the upper mandible not bent inwardly; the nostrils situated in the posterior portion of the anterior half, rather broad, and the tubercle invisible. The outer and middle toes are of equal length; the tail is rather short, less than twice the length of the metatarsus.

This genus contains but two species distributed over the northern portions of the Palæarctic and Nearctic regions. One of these is a well-known British species, and the other has been included in our list but on unreliable evidence.

The Golden-eyes are inhabitants of both fresh water and marine localities. They are more or less migratory. They swim and dive with marvellous skill, but their movements on the land are clumsy and their gait waddling. They are to some extent gregarious during winter and on passage. Their flight is powerful, and accompanied by a peculiar rushing or whistling noise. Their notes are harsh and unmusical. Their food is chiefly of an animal character, but vegetable substances are also eaten. They are monogamous. They nest in holes of trees, and their numerous eggs are greyish-green in colour.

Family ANATIDÆ.

Genus CLANGULA.

Subfamily FULIGULINÆ.

GOLDEN-EYE.CLANGULA GLAUCION—(*Linnaeus*).**Anas clangula**, Linn. Syst. Nat. i. p. 201 (1766).**Anas glaucion**, Linn. Syst. Nat. i. p. 201 (1766).**Clangula chrysophthalma**, Stephens; Macgill. Brit. B. v. p. 174 (1852).**Clangula glaucion** (Linn.), Dresser, B. Eur. vi. p. 595, pl. 440 (1875); Yarrell, Brit. B. ed. 4, iv. p. 435 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 179 (1894); Salvadori, Cat. B. Brit. Mus. xxvii. p. 376 (1895).**Fuligula clangula** (Linn.), Seebohm, Hist. Brit. B. iii. p. 590 (1885); Lilford, Col. Fig. Brit. B. pt. xi. (1889); Seebohm, Col. Fig. Eggs Brit. B. p. 48, pl. 13 (1896).**Clangula clangula** (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 20 (1896).

Geographical distribution.—*British*: The Golden-eye is a common winter visitor to the coasts and inland waters of the British Islands, including the Orkneys and Shetlands, but in the Outer Hebrides it is perhaps less numerous. It is equally common in Ireland, both inland and on the coast. The statement that this bird has bred in a hollow tree in Sutherlandshire is still unconfirmed, as is also Saxby's opinion that it bred in the Shetlands. *Foreign*: Northern Palæartic and Nearctic regions, more southerly in winter; small portion of the Oriental region in winter. The Golden-eye is rare in the Faroes, and has been only recently proved to inhabit Iceland. It breeds throughout the Arctic and Subarctic regions of Europe and Asia as far north as the limit of forest growth. In Europe it breeds as far south as Northern Germany, Pomerania, and the Caucasus; in Asia it does so throughout Siberia, south of the limits already given. During winter it visits the coasts of Western Europe and the basin of the Mediterranean, but is very rare on the southern shores. The basins of the Black and Caspian Seas are also winter quarters of this species. The birds breeding in Siberia pass Mongolia on migration (although those inhabiting the Baikal basin are said to be resident, and many remain to winter in Mongolia), and spend the cold season in Turkestan, Upper India, China and Japan. In the Nearctic region it breeds in British North America and Alaska, up to the limit of forest growth and winters in the Southern States, Mexico, and parts of the West Indies.

Allied forms.—The Nearctic Golden-eyes have been separated from the Palæartic individuals by American ornithologists under the name of *Clangula glaucion americana*, because they are said to be a trifle larger. Whether this race is worthy of subspecific rank is yet by no means proved, Count Salvadori asserting that he is unable to distinguish the two races specifically. *C. islandica*, an inhabitant of much the same area in the Nearctic region as *C. glaucion*, but extending to Greenland and Iceland. It is distinguished from the Golden-eye by having the white on the sides of the head extending in the form of a crescent in front of the eye: females and young birds are indistinguishable from those of the Old World species. This species has been included in the British list on the faith of a *female* example, said to have been shot at the mouth of the Derwent! There is no evidence whatever to confirm this.

Habits.—The Golden-eye is certainly more addicted to fresh water than the sea, and so long as its inland haunts remain open it remains upon them; continued frost sends it to the coast, where it is most partial to low-lying muds and estuaries. This Duck arrives on the British coasts and inland waters about the middle of October and remains with us until the following April, although immature birds have been noticed as late as the end of May. Prjevalsky found small numbers of these birds wintering on Lake Hanka, on the open part of the river Sungatch in Mongolia (N. lat. 44°); but late in March and early in April they become very plentiful. At the large lake of Koko-Nor (N. lat. 37°), situated at an elevation of 10,000 feet, they arrived on the 4th of March and became numerous towards the middle of the month; whilst at Dalai-Nor (in N. lat. 43°) they arrived at the end of March and early in April, congregating on those parts of the lake that were free from ice. The migration south in autumn takes place in September and October. Stoliczka observed numbers at Lake Sirikul, on the Pamir, at an elevation of 10,000 feet, in May, when most of the water was covered with ice. From these facts it will be gathered that the Golden-eye is a hardy species, apt to linger in its favourite haunts until the frosts seal them and stop its food supplies, and returning as soon as open water is to be found. The Golden-eye is not a very gregarious bird, and its flocks are generally small, but in restricted feeding areas it is apt to congregate in larger numbers. Like all its congeners it dives with wonderful skill, swims well and lightly, but is apt to sink its body when alarmed. Its flight is strong and rapid, and the bird usually strikes its feet in the water several times until fairly off, especially when there is no wind; then, however, it is seen to get up with little effort. The wings as they rapidly beat the air make a peculiar rushing whistling sound, hence the bird's Latin name of *clangula*. This Duck almost invariably seeks to escape sudden danger by diving and appearing again at a much safer distance. It is ever a vigilant bird, and even when a small flock is busy feeding they never all dive together, one or two

remaining on the surface to watch over the rest. The Golden-eye does not visit the land much, and there its waddling gait is clumsy and awkward enough; it spends most of its time on the water. At its breeding grounds, however, it frequently perches on trees, probably because it makes its nest in holes in their limbs and trunks. The note of the Golden-eye is a low, croaking *kurr*, uttered during flight as well as when at rest. The food of this species, which is mostly obtained by diving, consists of small fish, crustaceans, testaceous mollusks, insects, and various aquatic weeds and plants. Its flesh is not only dark in colour but unpalatable.

Nidification.—The breeding season of the Golden-eye begins soon after the ice breaks up in its Arctic and subarctic haunts towards the end of May, and the eggs are laid from that date onwards until near the end of June. It is very probable that this Duck pairs for life and uses the same nesting site annually. The eggs are laid in holes of trees, often as much as twenty-five feet from the ground, although Naumann asserts (probably where suitable holes cannot be found) that this Duck frequently makes its nest amongst rushes and other aquatic vegetation, and on the top of a pollard, either near to the water or at some considerable distance from it. When in a hole, no nest is made beyond a warm and plentiful lining of down and a few feathers plucked from the body of the parent. It should be remarked that the Golden-eye never attempts to bore a hole for itself, but selects one ready for the purpose, often the deserted nest of a Black Woodpecker. The Lapp and Finnish peasants are in the habit of placing boxes and hollow trunks for this bird to breed in, and from which they regularly and judiciously remove the eggs. The partiality of this bird for a nesting site near a waterfall or quick-flowing stream has been noticed by several observers. The eggs are usually from ten to thirteen in number, but exceptionally as many as nineteen have been found. They are bright greyish-green, smooth in texture, and somewhat glossy, and measure on an average 2·3 inches in length by 1·6 inch in breadth. The down tufts are moderate in size and pale lavender-grey in colour, with paler and obscure centres. The young are conveyed to the water one by one, pressed between the female's bill and her breast. One brood only is reared in the year.

Diagnostic characters.—(Nuptial plumage), *Clangula*, with the head and upper neck metallic green, with a white patch at the base of the bill, not extending above the eye, and with the scapulary region striped with white (adult male); with the axillaries brown, with a white alar speculum, and with the under tail coverts white (adult female). Length, 16 to 19 inches.

Genus COSMONETTA, or Harlequin Ducks.Type, COSMONETTA HISTRIONICA.

Cosmonetta, of Kaup (1829).—The Harlequin Ducks are distinguished by having the primaries uniform brown. The head is uncrested; the bill is conical, the base of the upper mandible overlapping the tomium, and the base of lower mandible for some distance being covered with a soft naked membrane. The peculiar colour-pattern of the plumage is another generic distinction of considerable importance.

But one species of Harlequin Duck is known, and as this is a rare abnormal migrant to the British Islands its distribution, habits and characteristics will be fully described in the following chapter.

Family ANATIDÆ.

Genus COSMONETTA.

Subfamily FULIGULINÆ.

HARLEQUIN DUCK.

COSMONETTA HISTRIONICA—(*Linnæus*).

PLATE XL.

Anas histrionica, Linn. Syst. Nat. i. p. 204 (1766).**Clangula histrionica** (Linn.), Macgill. Brit. B. v. p. 169 (1852).**Cosmonetta histrionica** (Linn.), Dresser, B. Eur. vi. p. 609, pls. 600, 613 (1877); Yarrell, Brit. B. ed. 4, iv. p. 452 (1885); Lilford, Col. Fig. Brit. B. pt. xxx. (1895); Salvadori, Cat. B. Brit. Mus. xxvii. p. 395 (1895); Sharpe, Handb. B. Gt. Brit. iii. p. 31 (1896).**Histrionicus minutus** (Linn.), Dresser, B. Eur. vi. p. 613 (1877).**Fuligula histrionica** (Linn.), Seebohm, Hist. Brit. B. iii. p. 594 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 171 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 49, pl. 15 (1896).

Geographical distribution.—*British*: The Harlequin Duck is a very rare and accidental straggler to the British Islands. Out of a score or more examples recorded as “British,” about half-a-dozen only have withstood the test of a searching inquiry into their antecedents. (*Conf.* Prof. Newton, *Ibis*, 1859, p. 162, and J. H. Gurney, *Rambles of a Naturalist*, p. 263). The claim of this species to rank as “British” rests on the following evidence, which appears to be thoroughly reliable:—Scotland: Lewis (?) (two examples, recorded by Montagu in 1802 and presented to Mr. Sowerby, by whom they were figured in his *British Miscellany* in 1806); Aberdeenshire (one example), 1858, a male in full adult plumage. England: Yorkshire, one trustworthy example, found dead in the autumn of 1862; Northumberland, off the Farne Islands (three seen, two secured, both young males), December, 1886. There is a male example of this Duck in the Torquay Museum, which may have been obtained in Tor Bay (*Conf.* *Bird-Life in a Southern County*, p. 290). *Foreign*: Eastern Palearctic and Nearctic regions. Probably a Nearctic species that has only comparatively recently extended its range into the Old World. It is a resident in Iceland and breeds in Greenland, south of the Arctic circle. It breeds across the North American Continent from about the Arctic circle south to lat. 45°. Thence it is a resident in the Aleutian Islands, and probably breeds in Kamtschatka, the Stanavoi Mountains, the valley of the Amoor, and the Baikal district. The

evidence of the occurrence of this species further west is extremely meagre and unsatisfactory. Sabanäeff states that it breeds in the Ural and Yaroslav; Eversmann records it also from the Ural, and Nordmann from Finland. It is said by Hencke to be rare in summer near Archangel, and a single example has been obtained off the coast of Sweden. The birds breeding in Eastern Siberia draw south in winter to the Kurile Islands and Northern Japan; those breeding in America visit the Great Lakes and the Middle States during that season.

Allied forms.—None of sufficient propinquity to call for notice.

Habits.—The migrations of the Harlequin Duck are not very regular or extended, and the bird appears to winter as far north as it can find open water. During summer it is for the most part an inland species attached to fresh water, but at the approach of winter it wanders seawards, and is then principally observed in the sheltered bays and inlets of rocky coasts. In summer this Duck lives in scattered pairs, but in winter it congregates on the sea in considerable flocks. It swims well and is a most accomplished diver, some of its aquatic gambols being remarkably beautiful, as it swims amongst the surf like the Eider or darts through the waterfalls in sportive play or in quest of food. As is usual with these diving Ducks the present species always tries to evade pursuit by darting under the surface, and, when alarmed, sometimes sinks its body so low that little more than the head is exposed to view. Notwithstanding it flies well and rapidly, with wings beating the air so quickly as to make a characteristic whistling sound. The note of this Duck appears to be undescribed, except on hearsay evidence; but most reliable authorities agree that the bird is remarkably silent at all times. It is said to be a rather tame and confiding species, numbers being easily killed. The food of the Harlequin Duck consists of insects, both marine and fresh water, crustaceans, mollusks, and small fish. This Duck does not appear to be much of a vegetable feeder, although some naturalists assert that it eats various aquatic plants and weeds. Its flesh by some authorities is said to be excellent, by others the reverse, doubtless owing to the nature of the food on which it has been living just previous to being killed.

Nidification.—The breeding season of the Harlequin Duck commences towards the end of May or early in June, at the beginning really of the short Arctic summer. Its breeding haunts are on the banks of rivers, and the nest is placed on the ground close to the water. Messrs. Pearson have recorded some very interesting particulars relating to the nesting habits of this Duck in Iceland. They write:—"Generally speaking the nest is placed within six feet of the water, a rapid stream being preferred. On the 11th of July one of us visited some islands on a river, the remains of an ancient flow of lava. The lava had formed a dam across the river, which had afterwards broken through, forming four channels, and down these the waters ran like a mill-race, so that it was

difficult to find a place where even Iceland ponies could cross. On these islands were six nests with eggs, three of them only two feet from the water, and placed under the leaves of wild angelica, the others in holes in the banks close to the water, and protected by a screen of trailing plants. Many of the nests contained but little down, though several of the eggs were much incubated. The down of this Duck is much larger than that of most other species we have taken, individual pieces having sometimes a diameter of about $1\frac{3}{8}$ inch. There were many old nests in these holes, showing the islands to have been a favourite breeding-place for years. The dog put the duck off a nest of seven eggs on the 9th. This was placed about ten yards from the water, under a birch bush, but we are sure that this is a very unusual distance from water." The eggs are from eight to ten in number; they are creamy-white in colour, smooth, and rather glossy. They measure on an average 2.2 inches in length by 1.7 inch in breadth. The down tufts are large, light greyish brown with white centres and white tips. The broods and their parents in some cases apparently keep together all the winter; but it is not known whether the drake takes any share in bringing the young to maturity, and Messrs. Pearson observed flocks of more than thirty males on several occasions during the summer.

Diagnostic characters.—(Nuptial plumage) *Cosmonetta*, with a metallic purple alar speculum and the scapulary region striped with white, and with broad white crescentic bands across the lower neck and breast (adult male); with the axillaries grey, with the under tail coverts dark brown, with a white spot on the forehead and another behind the eye, and with the bill less than 1.5 inch in length (adult female). Length, 14 to 17 inches.

Genus HARELDA, or Long-tailed Ducks.Type, HARELDA GLACIALIS.

Harelda, of Stephens (1824).—The Long-tailed Ducks are distinguished by their uniform brown primaries. The head is fully crested; the bill is strong and conical, but with no overhanging membrane at the base; the edges of the upper mandible bent inwards to some extent. The long-pointed central tail feather of the male is another well-marked characteristic of the genus.

But one species of Long-tailed Duck is known, a British species, the distribution, habits and characteristics of which will be fully described in the following chapter.

Family ANATIDÆ.

Genus HARELDA.

Subfamily FULIGULINÆ.

LONG-TAILED DUCK.HARELDA GLACIALIS—(*Linnaeus*).**Anas glacialis**, Linn. Syst. Nat. i. p. 303 (1766).**Harelda glacialis** (Linn.), Macgill. Brit. B. v. p. 192 (1852); Dresser, B. Eur. vi. p. 617, pls. 443, 444 (1875); Yarrell, Brit. B. ed. 4, iv. p. 446 (1885); Lilford, Col. Fig. Brit. B. pt. xxx. (1895); Salvadori, Cat. B. Brit. Mus. xxvii. p. 389 (1895); Sharpe, Handb. B. Gt. Brit. iii. p. 26 (1896).**Fuligula glacialis** (Linn.), Seebohm, Hist. Brit. B. iii. p. 598 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 173 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 50 pl. 15 (1896).

Geographical distribution.—*British*: The Long-tailed Duck is a fairly common winter visitor to the British Islands. It is only sparingly distributed round the English coasts, especially on the west and south; and in Ireland it is equally uncommon, being rare in the south and of irregular appearance in the west and north. It becomes most numerous in Scotland, both on the east and west, and in the Orkneys and Shetlands, examples having been met with in summer in the latter locality. Throughout the Hebrides it is a well-known and at times even abundant species. It sometimes visits us in unusual numbers, during exceptionally severe weather in the North Sea basin, as, for instance, during the winter of 1887-88. *Foreign*: Northern Palæarctic and Nearctic regions, more southerly in winter. It breeds throughout the Arctic zone above the limits of forest growth, and in a similar climate at high elevations in Scandinavia, in Iceland, and perhaps the Faroes. Its northern range appears to extend as high as land is known, and may possibly reach the North Pole. The winter migrations of this species are not very extended, but at that season it visits the Faroes, the Baltic, the North Sea basin, and much more rarely that of the Mediterranean Sea, where it has occurred on the Italian lakes and on the coasts of the Adriatic. Eastwards it visits, during winter, the Caspian Sea, Lake Baikal, North China, and Japan; whilst on the American Continent it is found at that season as far south as the Great Lakes and the Northern United States.

Allied forms.—None of sufficient propinquity to call for notice.

Habits.—Of all the Arctic Ducks none are more thoroughly Arctic than the present handsome species. It is late to arrive in British waters, and is seldom seen off even our northern coasts before November, later still in the south. It leaves us in April and reaches its Arctic haunts with the opening of the northern waters. Like most of its congeners it is gregarious in winter, but the flocks that frequent our seas are seldom very large; even in summer it is to a certain extent sociable, and numbers of nests may be found within a small area of suitable ground. Whilst with us it keeps principally to the sea, often wandering long distances from land, only approaching the shore during stormy weather, when it shows a decided preference for creeks and inlets on a wild, rocky coast. It is rarely or never seen on inland fresh water during winter, although in summer its favourite retreats are the northern lakes, often at some considerable distance from the sea. The flight of this Duck is remarkably quick and graceful, the long tail making the bird look very elegant as it careers along with wings beating the air so rapidly as to be almost invisible. It dives with even greater speed, so quickly as often to dodge the shot from a modern breech-loader, and under water it darts about and goes for long distances like a Grebe or an Auk, appearing far out of danger. The note of the Long-tailed Duck cannot easily be confused with that of any other species. It is a loud, clear cry of several syllables, the middle one being the longest and the loudest, rendered by some authorities as *cow-cow-w-ie*, *col-gòh'-y*, or *cal-loo-oo*; whilst in some parts of Scotland the sportsman has made a free translation of it into “coal-an-can'le-licht.” The food of this species consists of small mollusks, crustaceans, insects, minute marine animals, and the buds, roots and leaves of various water plants and weeds. Most of this is obtained whilst the bird is diving.

Nidification.—The great breeding grounds of the Long-tailed Duck are on the Arctic tundras of the Old World and the barren grounds which extend from beyond the limit of forest growth to the frozen ocean in the New World. Here its haunts are the pools and lakes, often those studded with islands. Odd pairs are scattered up and down the small pools, whilst the larger sheets of water are the haunts of perhaps a dozen or twenty pairs. The breeding season commences at the end of May or early in June, and fresh eggs may be obtained throughout the latter month and the first half of July. The nest is usually placed in some sheltered nook, often among willow and birch scrub in the drifted rubbish left by the floods when the big northern rivers break up in spring, or among long grass. An island is usually selected when available in the lake or pool. The nest is merely a hollow among the herbage, plentifully lined with down and a few feathers from the breast of the female. The eggs are from seven to twelve in number, eight or nine being an average clutch. They are pale buffish-green or greenish-buff in colour, smooth, and with some gloss, and

measure on an average 2·1 inches in length by 1·5 inch in breadth. The down tufts are small in size, warm brown in colour, and without any white tips. The period of incubation is unknown. It is a noteworthy fact that the drake of this species assists the duck in bringing up the young, moulting much earlier than is usual in this group into his post-nuptial plumage, and remaining in this garb until the brood can fly. During the breeding season this Duck is very tame and most unwilling to take wing, generally swimming out into the centre of the large lakes for security. When the brood of ducklings is menaced, the female tries to get her offspring to follow her out into the open water, and is said to display great anxiety for their safety. One brood only is reared in the year.

Diagnostic characters.—(Nuptial plumage), *Harelda*, with the prevailing colour of the head and neck white (but with an oval patch of brown on each side of the latter), with the tail (of 14 feathers) white, except the two central feathers, which are black and about five inches longer than the rest, and with the scapulary region striped with white (adult male); with the axillaries brown, with the sides of the head white, and the sides of the neck brown (adult female). Length, 22 to 26 inches inclusive of the tail in the male.

Genus ŒDEMIA, or Scoters.Type, ŒDEMIA NIGRA.

Œdemia, of Fleming* (1822).—The Scoters are distinguished by their uniformly coloured primaries, and by the uniform black plumage in the males and brown unbarred plumage in the females. There can be no doubt that these birds are as fully entitled to generic distinction as any other group in the present family, notwithstanding the fact that colour is always a more or less unsatisfactory character and should be avoided as far as possible.

There are at present six species of Scoters recognised by ornithologists. These are distributed over the northern portions of the Palæarctic and Nearctic regions, their range becoming more southerly in winter. Three species are British, two of them being indigenous, and a third an abnormal migrant to our Islands.

The Scoters are thoroughly marine in their habits. Their flight is noisy and powerful. They keep well out to sea, rarely visiting the land except to breed. They are all more or less migratory, and exceptionally gregarious during passage and in winter. Their notes are harsh and unmusical. Their food, obtained by diving, is chiefly of an animal character, crustaceans, mollusks, fry, and insects. They are monogamous, making their rude but down-lined nests on the ground. Their eggs are numerous, and various shades of greyish-buff in colour.

* Spelt *Oidemia*.

Family ANATIDÆ.

Genus ŒDEMIA.

Subfamily FULIGULINÆ.

COMMON SCOTER.ŒDEMIA NIGRA—(*Linnæus*).**Anas nigra**, Linn. Syst. Nat. i. p. 196 (1766).**Oidemia nigra** (Linn.), Macgill. Brit. B. v. p. 140 (1852).**Œdemia nigra** (Linn.), Dresser, B. Eur. vi. p. 663, pl. 449 (1877); Yarrell, Brit. B. ed. 4, iv. p. 472 (1885); Lilford, Col. Fig. Brit. B. pt. xii. (1892); Salvadori, Cat. B. Brit. Mus. xxvii. p. 401 (1895); Sharpe, Handb. B. Gt. Brit. iii. p. 43 (1896).**Fuligula nigra** (Linn.), Seebohm, Hist. Brit. B. iii. p. 602 (1885); Dixon, Nests and Eggs Brit. B. p. 242 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 51, pl. 14 (1896).

Geographical distribution.—*British*: This Scoter is a common winter visitor to our area, especially on the eastern coasts, from the Shetlands and Orkneys to the mouth of the Thames, in all suitable districts, and thence round the southern coast of England, although not in such vast numbers. Comparatively speaking it is much less common on our western coast line, the flat shores of Lancashire and the Solway district being its chief head-quarters. It is most abundant in the north of Ireland, becoming more sparingly distributed in the west and south. Small numbers of immature non-breeding birds frequent the British coasts during the summer, and a few pairs of adults are known to breed in the north of Scotland, in Caithness, Sutherland, and Ross-shire. It is also recorded as having bred in 1897 on the island of Tiree. This Duck is recorded (*Science Gossip*, 1891, p. 256) as having bred on Earnley Marshes, near Chichester, but further confirmation of the fact is much to be desired.

Foreign: Northern and western Palæarctic region, more southerly in winter. It breeds in the Arctic regions of Europe and Western Siberia, from Iceland to the Taimur Peninsula, as far north as lat. 74°, and as far south as the Arctic Circle, and in a few localities at high elevations below it where similar climatic conditions prevail. It is found during winter in the Baltic and the basin of the North Sea, exceptionally as far south as the Azores, and only very sparingly in the Western Mediterranean as far as Italy. It was said by Pallas to visit the Black Sea, and is reputed to be common in the Caspian Sea, whilst it has been obtained on the coasts of Palestine during winter.

Allied forms.—*Edemia americana*, an inhabitant in summer of Kamtschatka, the Kurile Islands and Arctic America eastwards to Hudson Bay, and in winter of Japan, the Pacific coast of America to Southern California, the Great Lakes, and the Atlantic coast as far south as the Gulf of Mexico. The American representative of the Common Scoter. It may be distinguished from the Common Scoter by having the tubercle at the base of the bill orange-yellow instead of black. This form should be looked out for on the British coasts, especially in autumn.

Habits.—The Common Scoter is one of the best known, and one of the most common Ducks to be found on and off the British coasts during winter. In some parts its vast flocks literally blacken the water, and may be observed far away from land during moderately calm weather. No Duck is more gregarious or more exclusively marine in its habits. The great autumn migration of this species begins in September and lasts through October in our Islands, but many old birds are said to arrive in the Baltic during August. The return flight commences in April and lasts well into May. The line of migration is taken across country as well as along the coast, and though this Duck certainly migrates in flocks, these appear to break up into pairs as soon as the breeding grounds are reached. This, however, only applies to adults, for the immature birds do not appear to breed during their first spring, but to continue all the summer in the vast flocks they journeyed in from the south. These keep for the most part to the sea, hanging about the Arctic islands and the deltas of the great northern rivers. An immense flock, estimated at ten thousand strong, was observed by Messrs. Seeböhm and Harvie-Brown in the middle of July, circling over the Golievsky Islands in the delta of the Petchora. Flocks of non-breeding Scoters also frequent our coasts all the summer as previously remarked. The Scoter is rather a late bird of passage in spring, and was not observed in the valley of the Petchora until the 1st of June. This Duck is just as proficient a diver as its congeners, and swims with equal power; on the land it is rather clumsy, waddling with an awkward gait, but in the air it is more at home, and flies with great speed. The note of this Scoter is a harsh *kurr*, but in the pairing season the drake is said to modulate it into a more musical cry, syllabled by Faber as an oft-repeated *tu*, that of the female at this season, according to the same authority, being a grating *re-re-re*. The food of this species consists of mollusks, crustaceans, and insects, and in summer the leaves, roots, and buds of weeds and aquatic plants. Its flesh is fishy in flavour and unpalatable.

Nidification.—The Common Scoter is a late breeder, even in the comparatively temperate climate of Iceland, not beginning to lay before the middle of June, and in Arctic Russia not until the end of that month or early in July.

The favourite breeding grounds of this Duck are the lakes on the northern tundras and the banks of the rivers, at no great distance from the sea, especially in localities where dwarf willow and birch scrub is abundant. An island in the lake or river is selected where choice of such a situation admits. The nest is merely a hollow, in which is placed a little dry grass, sprigs of heath, withered leaves, or other such-like refuse, and warmly lined with down from the body of the female. The eggs are eight or nine in number and pale greyish-buff in colour, smooth, and with little gloss. They measure on an average 2·5 inches in length by 1·8 inch in breadth. The down tufts are large, brownish-grey in colour, with pale centres. One brood only is reared in the season, of which the female apparently takes the entire charge.

Diagnostic characters. — (Nuptial plumage), *Ædemia*, with the bill black with a yellow mark on the culmen in front of the basal knob, with the entire plumage bright black (adult male); with the axillaries brown, with the under tail coverts dark brown, with the culmen 1·5 inch or more in length, and with no alar speculum (adult female). Length, 20 to 21 inches.

Family ANATIDÆ.

Genus ŒDEMIA.

Subfamily FULIGULINÆ.

VELVET SCOTER.

ŒDEMIA FUSCA—(*Linnæus*).**Anas fusca**, Linn. Syst. Nat. i. p. 196 (1766).**Oidemia fusca** (Linn.), Macgill. Brit. B. v. p. 134 (1852).**Œdemia fusca** (Linn.), Dresser, B. Eur. vi. p. 657, pl. 448 (1877); Yarrell, Brit. B. ed. 4, iv. p. 476 (1885); Lilford, Col. Fig. Brit. B. pt. xxii. (1892); Salvadori, Cat. B. Brit. Mus. xxvii. p. 406 (1895); Sharpe, Handb. B. Gt. Brit. iii. p. 46 (1896).**Fuligula fusca** (Linn.), Seebohm, Hist. Brit. B. iii. p. 605 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 175 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 52, pl. 15 (1896).

Geographical distribution.—*British*: The Velvet Scoter is a regular winter visitor to our islands, but much less common than the preceding species. It occurs sparingly on the south and east coasts of England, chiefly in those localities frequented by the Common Scoter, becomes more frequent on the east coast of Scotland, but is decidedly rare in the Shetlands. It is much less common round the western coasts of Scotland, and is said to be rare in the Outer Hebrides. It is rare and local in the west of England and chiefly mixed with the common species. It is also rare in Ireland, chiefly met with at sea off the east and south coasts. According to Booth a few pairs may possibly breed in the north of Scotland, but no direct evidence is yet forthcoming. *Foreign*: Northern Palæarctic region, more southerly in winter. This Scoter breeds in the Arctic and Subarctic regions of Europe and Asia from the Atlantic eastwards at least to the Yenisei, as far north as lat. 72°, and as far south as the Baltic Provinces in the west and lat. 55° in the east. It winters in the basin of the North Sea, occasionally wandering as far south as Spain and the Mediterranean and Black Seas. To Turkestan it is a visitor on passage, and in winter it is found in the basin of the Caspian. It has once been obtained in Alaska, once in Greenland, and is an abnormal migrant to the Faroes.

Allied forms.—The Velvet Scoter of Eastern Asia has been specifically separated from the Western bird under the name of *Ædemia carbo*. It possibly breeds throughout Eastern Siberia, and winters off the coasts of China and Japan, occurring apparently as an abnormal migrant in Alaska. *Æ. deglandi*, an inhabitant in summer of Arctic America from west to east, and in winter of the Great Lakes and the Atlantic, and Pacific coasts as far south as the Gulf of Mexico and Lower California. This Scoter also visits the Pacific coasts of the Old World, and may be traced from Alaska, across the Aleutian Islands to Kamtschatka, the Kuriles, Japan and China. This race should be looked out for on the British coasts, especially in autumn. The Velvet Scoter and these two allied species belong (as pointed out by Count Salvadori) to that division of the genus *Ædemia* in which the length of the commissure is much more than the length of the inner toe without the claw, and the feathering of the head advances farther forward on the lores than on the forehead; the wing has also a white speculum. *Æ. carbo* and *Æ. deglandi* are distinguished from *Æ. fusca* by having the loreal feathering separated from the nostrils by a space much narrower than the length of the nostril. In *Æ. carbo* the lateral outlines of the bill are nearly parallel, and the knob on the bill of the male is very high, with the anterior outline concave, and the upper one horizontal. In *Æ. deglandi* the lateral outlines on the bill are convex, and the knob on the bill of the male with the anterior outline sloping backward. The female of *Æ. carbo* is distinguished from that of *Æ. deglandi*, by having the frontal feathering almost transverse, as in the female of *Æ. fusca*, from which it is readily separated by the peculiarity of the loreal feathering already alluded to.

Habits.—The habits of the Velvet Scoter do not differ in many important respects from those of the allied Common Scoter. It is, however, a bird more addicted to inland waters, and even during winter, although commonly met with at sea, often far from land, wanders up rivers and estuaries and visits lakes. Its breeding grounds also are as a rule situated at greater distances from the sea, and the nest is not unfrequently made a long way from any water at all. The flight of this Scoter is rapid and well-sustained, but except on migration the bird is loth to take wing, and almost invariably seeks to elude danger by diving. In the water it is extremely active, not only swimming well, but diving with amazing speed, and going not only to a considerable depth in quest of food, but for a long distance to escape an enemy, appearing again well out of harm's way. It is seldom seen on land, and there its gait is waddling and clumsy, even for a Duck. In more favoured winter quarters there is no doubt that the Velvet Scoter congregates in large flocks, but in our seas it is rare to see more than a small company together, and is usually met with in odd birds or scattered pairs among flocks of the much more abundant Common Scoter. It appears in

British waters and takes its departure about the same time as the preceding species, although odd (and probably immature) birds sometimes linger with us throughout the summer. The food of the Velvet Scoter consists principally of mollusks, crustaceans, and small fish in winter, but in summer there can be little doubt that vegetable substances, such as aquatic weeds, are eaten. Its note is said not to differ very much from that of the preceding species, and is a grating *kurr*.

Nidification.—The Velvet Scoter is a late breeder, even for an Arctic species, and its eggs are not laid until the very end of June or early in July. It appears to separate into pairs as soon as the breeding grounds are reached, and the duck and drake keep close company until the eggs are laid, after which the latter leaves his mate to incubate them and take all care of the brood. The nest is made amongst scrub or coarse tundra vegetation, either near a lake or river, or some dry part of the moor away from either. The nest is merely a hollow, often under some small stunted bush, into which a little dry grass, dead leaves, or other vegetable refuse is placed, and finally lined with down and a few feathers from the breast of the female. The eggs are eight or nine in number and pale greyish-buff in colour, smooth, and with little gloss. They measure on an average 2·8 inches in length by 1·9 inch in breadth. The down tufts are larger than those of the Common Scoter, brown, with a slight tinge of grey and with indistinct pale centres. One brood only appears to be reared in the season.

Diagnostic characters.—(Nuptial plumage), *Edemia*, with the loreal feathers separated from the nostrils by a space nearly or quite equal to the length of the nostrils, with the lower part of the swollen basal portion of the upper mandible on sides unfeathered, with the basal portion of the culmen elevated, but not forming an abrupt knob (adult male); with the plumage greyish-brown and with no white on the head (adult female). Length, 21 to 22 inches.

Family ANATIDÆ.

Genus ŒDEMIA.

Subfamily FULIGULINÆ.

SURF SCOTER.ŒDEMIA PERSPICILLATA—(*Linnaeus*).**Anas perspicillata**, Linn. Syst. Nat. i. p. 201 (1766).**Oidemia perspicillata** (Linn.), Macgill, Brit. B. v. p. 129 (1852).**Œdemia perspicillata** (Linn.), Dresser, B. Eur. vi. p. 669, pl. 450 (1877); Yarrell, Brit. B. ed 4, iv. p. 481 (1885); Salvadori, Cat. B. Brit. Mus. xxvii. p. 412 (1895); Lilford, Col. Fig. Brit. B. pt. xxxi. (1895); Sharpe, Handb. B. Gt. Brit. iii. p. 48 (1896).**Fuligula perspicillata** (Linn.), Seebohm, Hist. Brit. B. iii. p. 607 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 176 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 52, pl. 15 (1896).

Geographical distribution.—*British* : The Surf Scoter is a rare straggler in winter to the British Islands, and known to be such for upwards of sixty years. It was first recorded by Blyth in 1838, from a somewhat doubtful example sent in the flesh to Bartlett, which may or may not have been captured in this country in a wild state. The other evidence of this bird's claim to rank as "British" is as follows—England: Cumberland (one example), August, 1856; Yorkshire (one example), October, 1860; Lancashire (one example), December, 1882; Dorset (two examples), winter, 1851, December, 1853; South Devon (three examples); Cornwall (one example), no exact date; Scilly Isles (two examples), September, 1865, October, 1867. Ireland: Belfast Lough (two examples, one shot), September, 1846; Co. Dublin (one example), October, 1880; Co. Cork (one example), November, 1888; Achill Island (one example) Moy estuary (two examples. Scotland: Edinburgh Co. (one example), spring, 1852; Stornoway, Outer Hebrides (one example), winter, 1865; North Shetland (one example, said to have been seen by Mr. Dunn), June, 1847; The Orkneys are apparently the most favoured locality of this species in its erratic visits (six examples secured, many others seen and identified), March, 1866, February, 1872, 1876, October, 1880. *Foreign* : Northern Nearctic region, more southerly in winter. It breeds in the Arctic and Subarctic regions of America from the Atlantic to the Pacific, as far north as lat. 70°, and as far south as lat. 50°. In winter it strays down the Pacific coasts as far as Lower California; inland it is found at that season on the Great Lakes; whilst on the Atlantic coasts it extends as far as Florida, and occasionally visits the Bermudas and

Jamaica. It is a rare straggler to Greenland and the Faroes, and has occurred on the coasts of Heligoland, Scandinavia, Germany and France, and inland as far as Switzerland.

Allied forms.—None of sufficient propinquity to call for notice.

Habits.—The migrations and habits of this Nearctic Scoter very closely resemble those of the preceding species. Its grand summer quarters are in the Arctic and Subarctic regions of British North America. From the most northerly of these it begins to retire early in September, and as the autumn and winter advance it slowly works south, not only along the coast, but across country by way of the great lakes and river valleys, as it appears to be as much at home on inland waters, so long as they are open, as the sea. In April it begins to migrate north again, and reaches its highest Arctic haunts as the ice is breaking up, and summer is bursting with startling suddenness over the wild, lone land. It is just as gregarious as its allies, not only on migration and in winter, but in summer also; for as soon as the females have scattered up and down the breeding grounds and gone to nest, the males flock once more, and apparently keep gregarious until the following spring. The flight of the Surf Scoter is strong and rapid, but the bird is said to rise with difficulty from the water. It is an expert and rapid diver, keeps principally to the water, where it swims equally well, and ever seeks to evade pursuit by diving out of reach of its enemies. It is not much of a land bird, and walks in a clumsy, waddling manner. The note of this bird is not known to differ from that of its allies, and the female is said to utter a hoarse cry as she rises startled from the nest, As is the case with both the other British Scoters, but more especially with the Common Scoter, many immature and non-breeding birds stay behind in their winter quarters, where they keep in large flocks. The food of the Surf Scoter, obtained almost entirely by diving, consists of mollusks, crustaceans, and small fish. It is not known whether this bird is a vegetable feeder in summer; but there can be little doubt that to a certain extent this is the case. Great flocks of this bird almost blacken the sea, and look like mud-banks in the distance, congregating in certain favoured haunts during winter, often in company with other Ducks, but as its flesh is fishy and unpalatable it is not much sought after by American sportsmen, by whom it is known in some districts as “Surf Coot,” “Spectacled Coot,” or “Skunk-headed Coot.”

Nidification.—The favourite breeding grounds of the Surf Scoter are the lake-studded northern tundras, and the banks of the winding rivers that join them into a more or less swampy paradise for aquatic birds. It is a late breeder, like its allies, laying towards the end of June or early in July. The nest is made near the water, in many cases amongst scrub and coarse vegetation; but MacFarlane found one concealed under the drooping lower branches of a

stunted pine-tree, and others have been observed in similar situations. It is merely a hollow in the ground, lined with any vegetable refuse that may chance to be near, and with an abundance of down from the body of the female. The eggs are from five to eight in number, pale greyish-buff in colour, smooth, and with little gloss. They measure on an average 2·3 inches in length by 1·65 inch in breadth. The down tufts, so far as I am aware, are still undescribed. One brood only is reared in the year.

Diagnostic characters.—(Nuptial plumage), *Ædemia*, with the feathering of the head advancing much farther forward on the forehead than on the lores, with the entire plumage glossy-black, except a broad patch of white on the forehead and another on the nape (adult male); with bare swellings at the base of the sides of the bill, with the frontal feathers extending about an inch beyond those at the sides of the bill, and with the white nape patch indistinctly defined (adult female). Length, 21 inches.

Genus HENICONETTA, or Rufous-breasted Eiders.

Type, HENICONETTA STELLERI.

Heniconetta, of Gray (1840)*.—By many authorities Steller's Eider, the sole member of the present genus, is associated with the typical Eiders, but the species possesses several characters which perfectly justify its removal from *Somateria*. Steller's Eider belongs to that division in which the primaries are uniform in colour. The bill is very peculiar. The edges of the upper mandible are bent inwardly; the lower mandible has the apical portion almost spatulated. "Especially characteristic," writes Stejneger, "are the soft lobes formed by the tomia of the upper mandible in the anterior half. When dried they roll up so as to enclose the lower mandible, and become hard, the lateral outline thereby being considerably changed, becoming unduly narrowed towards the tip." Both sexes exhibit a metallic alar speculum; the tertials are more or less falcate, and on the head of the males are patches of stiff feathers.

This genus contains but a single species, a rare abnormal migrant to the British Islands, the distribution, habits, and characteristics of which will be fully described in the following chapter.

* Spelt *Eniconetta*.

Family ANATIDÆ.

Genus HENICONETTA.

Subfamily FULIGULINÆ.

STELLER'S EIDER.HENICONETTA STELLERI—(*Pallas*).**Anas stelleri**, Pallas, Spic. Zool. vi. p. 35, tab. v. (1769).**Stellaria dispar** (Sparrm.), Macgill, Brit. B. v. p. 164 (1852).**Somateria stelleri** (Pall.), Dresser, B. Eur. vi. p. 649, pl. 447 (1871); Yarrell, Brit. B. ed 4, iv. p. 468 (1885); Seebohm, Hist. Brit. B. iii. p. 613 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 181 (1894); Seebohm, Col. Fig. Eggs Brit. B. p. 63, pl. 9 (1896).**Heniconetta stelleri** (Pall.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 419 (1895); Sharpe, Handb. B. Gt. Brit. iii. p. 34 (1896).

Geographical distribution.—*British*: Steller's Eider is a very rare straggler to the British Islands in autumn and winter. The very slender claim of this species to rank as "British" is based upon the following occurrences—England: Norfolk (one example), February, 1830. Shot at Caistor, near Yarmouth, a nearly adult male, formed the subject of the illustration in Yarrell's *British Birds* and is now preserved in the Norwich Museum; Yorkshire (one example), August, 1845. It was shot on the sea off Filey Brigg, a male assuming nuptial plumage, and is now in the collection of Lord Scarsdale. *Foreign*: North-eastern Palæarctic region, and possibly the extreme north-west of the Nearctic region, more southerly and westerly in winter. The exact breeding range of this species is very imperfectly known. It has been found breeding in Kamtschatka, on the islands round about Behring Strait, the Aleutian Islands (although the fact is doubted by Stejneger), the delta of the Lena, the Taimur Peninsula, the coast of Russian Finmark, and in the Varanger Fjord. Mr. Nelson states that it breeds in tens of thousands along the north coast of Siberia. In winter it is found in Northern Norway, in the Baltic, in the Sea of Okhotsk, and off the coasts of the Kurile Islands. During this season it has been observed in Denmark, Heligoland, North Germany, and France.

Allied forms.—None of sufficient propinquity to call for notice.

Habits.—But little has been recorded of the habits of Steller's Eider. The bird appears, however, very closely to resemble its congeners in its economy, being eminently a sea Duck and almost sedentary, only wandering in winter from its

usual haunts to the nearest open water. The adults probably live in pairs through the summer, but immature individuals remain in parties at that period; whilst in autumn both old and young become more or less gregarious. Dr. Stejneger found this Duck very common during winter on Behring Island. They made their appearance in large flocks about the first of November, remaining about the rockiest parts of the coast where the breakers were most violent. In spring, especially during April, the number of Steller's Eider greatly increased, and immense flocks covering many acres were watched floating on the sea within half-a-mile of the shore. Towards the end of April their numbers perceptibly decreased; by the end of the month but few remained, and none were remarked after about the 25th of May. During its winter sojourn here Dr. Stejneger found it to be, next to the Golden-eye, the shyest of all the Duck tribe. The adult males generally keep apart from the adult females and young males, and, as is usual they did not as a rule come so near to the land. It is interesting to remark that Dr. Stejneger found the females of this Duck in full moult at the end of April while the males were not in such condition, and at that date not a single young male among many thousands observed showed even a trace of new white plumage. The food of this Eider is not known to differ from that of allied species, and is obtained in a similar manner. Its note is undescribed, but Von Middendorff states that the female when flying from the nest uttered a rattling cry.

Nidification.—The only particulars concerning the breeding habits of Steller's Eider, obtained from personal observation, appear to be those published by Von Middendorff, who met with this Duck breeding in some numbers on the Taimur Peninsula, the most northerly continental land on the entire globe. The eggs are apparently laid early in July, or at the very end of June. The nests were made on the tundra, and were merely deep hollows in the moss-clothed ground, lined with quantities of down plucked from the breast of the females. The eggs range from seven to nine in number, and are pale buffish-green in colour, smooth, but with little gloss. They measure on an average 2.35 inches in length by 1.55 inch in breadth. The down tufts are apparently undescribed. But one brood is reared in the year. The females are said to sit closely, and, as is usual with the Eiders, the drakes swim about in the neighbourhood of the nests, and probably join their mates when they leave the eggs and retire to the water to feed.

Diagnostic characters.—(Nuptial plumage), *Heniconetta*, with the back black and the falcated scapulars white on the inner and bluish-black on the outer webs (adult male); with the alar speculum purplish-blue, enclosed between two white bars (adult female). Length, 18 to 20 inches.

Genus **SOMATERIA**, or Eiders.

Type **SOMATERIA MOLLISSIMA**.

Somateria, of F. Boie (1822). The birds comprising the present genus are best characterised by having the scapulars long and falcated, and the head marked with emerald green. Unfortunately these distinctions apply to males only, and the following character must also be added to distinguish the females: feathers on the forehead and on the sides of the bill projecting in triangular patches nearly or quite as far as the nostrils. The wings are moderately long; the tail is short and consists of fourteen feathers. The bill is swollen and elevated at the base, extending on to the forehead, and the edges of the upper mandible are not bent inwardly; nostrils small and oval. Three toes in front webbed; hind toe moderate and lobed.

This genus contains four species and subspecies which are confined to the northern portions of the Palæarctic and Nearctic regions. Two species are British, one of which is a common resident in, and the other is an accidental visitor to, our Islands.

The Eiders are dwellers exclusively on rocky coasts. They are birds of somewhat slow and laboured yet powerful flight; they swim and dive well, but walk clumsily. They subsist on crustaceans, marine insects, and shell-fish. Their notes are harsh and grating. They make slovenly nests, which are lined with down, upon the ground, and their eggs are numerous and green of various shades, unspotted. They are monogamous, but the male takes no share in family duties. They are more or less gregarious and social at all seasons.



Family ANATIDÆ.
Subfamily FULIGULINÆ.

Genus SOMATERIA.

COMMON EIDER.

SOMATERIA MOLLISSIMA—(*Linnæus*).

PLATE XXXIX.

Anas mollissima, Linn. Syst. Nat. i. p. 198 (1766).

Somateria mollissima (Linn.), Macgill. Brit. B. v. p. 147 (1852); Dresser, B. Eur. vi. p. 629, pl. 445 (1871); Seebohm, Hist. Brit. B. iii. p. 616 (1885); Yarrell, Brit. B. ed. 4, iv. p. 457 (1885); Lilford, Col. Fig. Brit. B. pt. xxii. (1892); Dixon, Nests and Eggs Brit. B. p. 244 (1893); Salvadori, Cat. B. Brit. Mus. xxvii. p. 425 (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 54, pl. 9 (1896); Sharpe, Handb. B. Gt. Brit. iii. p. 37 (1896).

Geographical distribution.—*British* : The Common Eider is a rare straggler in winter to the southern portions of the British Islands, including the west, east, and south coasts of England, and all the coasts of Ireland. It breeds from the Farne Islands locally northwards to the Orkneys and Shetlands, and along the west coast of Scotland, including the Outer Hebrides and St. Kilda, as far south on the mainland as Inverness-shire. *Foreign* : Northern and western confines of Palæarctic region, and northern and eastern confines of Nearctic region, more southerly in winter. It breeds on the shores of the Kara Sea, Franz-Josef Land, Spitzbergen, Jan Mayen, the coasts of Norway and Denmark, the Faroes, Iceland, and Greenland up to lat. $81\frac{1}{2}^{\circ}$, thence across Baffin Bay and Davis Strait, along the coast of the mainland and on the islands in the Arctic Ocean as far east as Banks Land and the Coppermine River. Wherever the winters are sufficiently severe to seal the water it draws southwards, and is then found in the Baltic, the basin of the North Sea, and the English Channel, and in the New World as far south as the coast of Maine. It is said very exceptionally to wander as far south as the Mediterranean, and has been recorded on doubtful authority from the Swiss lakes.

Allied forms.—*Somateria dresseri*, an inhabitant in summer of Labrador and Newfoundland, drawing south in winter as far as the coast of Maine. A mere local race said to differ from the Common Eider in having the feathers on the forehead prolonged in a narrow line only half as far as those on the side

of the bill, instead of almost as far. *S. v-nigrum*, an inhabitant of the coasts of East Siberia, the islands of Behring Sea, and the coast of Alaska. The Pacific representative of the Common Eider, closely allied but apparently specifically distinct. It differs from the Common Eider in being a larger bird, and in having a very distinct V-shaped mark on the throat, in this particular showing a close affinity with the King Eider. The Nearctic Eider Ducks have been separated from the typical Old World form under the name of *S. borealis*, but the slight differences, if constant, do not appear to warrant specific distinction.

Habits.—This beautiful Duck is probably the most maritime of its family, and, except in the breeding season, spends nearly all its time on the sea. So closely is it attached to the sea, so thoroughly “sea-faring” in its habits, that it rarely flies overland at all except to its nest, and prefers to follow a winding coast line rather than to cross even the narrowest of promontories. The Eider is practically a sedentary species, only wandering south a little way from its summer haunts either in quest of food or in prolonged severe and stormy weather. It loves the wild, rock-bound coasts, especially where plenty of precipitous islands occur and the shore line is broken up into sheltered bays and fiords. Sometimes it may be seen standing on the rocks close to the water’s edge, but usually it keeps well out to sea, and even sleeps on the water. At all times it is more or less gregarious, although never congregating into the vast flocks that many other sea Ducks do. It is generally observed in parties, in summer and winter alike, for the drakes swim in company whilst the ducks are incubating on shore, and when the latter come to the sea to feed all join into a scattered company. In summer the female Eiders are remarkably tame and confiding, but in winter they are wary enough, and at all times of the year the males are difficult birds to approach. The food of the Eider consists of minute marine insects, crustaceans, and shell-fish, especially mussels and small crabs. Most of this food is obtained by diving, the bird being remarkably expert at this, descending to considerable depths and remaining a long time under the surface. The Eider loves to draw shorewards with the flowing tide, and to swim just outside the breakers. It is most interesting to watch this bird swim clean through each mighty wave just before it turns over and breaks upon the beach. It may be watched gradually swimming towards the land in some sheltered bay, feeding as it comes, until the very edge of the breakers is reached. If alarmed, instead of diving it usually swims quickly out from shore, and when still further pursued or fired at, instantly takes wing, rising from the water at once and with little splash or fuss. So far as my experience extends the Eider is a day feeder, and during the breeding season at any rate passes the night on land. I never met with this bird at sea during the night amongst the coasts where it was breeding in considerable numbers, although Auks were common enough; still it is abroad and feeding by dawn. The flight of this Duck is, as a rule, not very

quick, the wings being beaten very regularly; but on occasion the bird can fly with astounding speed, as I have on many occasions learnt to my own humiliation. The Eider is a remarkably silent bird, its usual note being a not very loud *kurr*, but in the breeding season the drake makes a cooing noise when paying court to his mate, accompanying it with a bobbing motion of the head, usually as he swims round and round her, guarding her from the attentions of rivals. The Eider is not very social, and seldom mingles with other fowl. Its flesh, as I can testify from experience, is not unpalatable *when* prepared by a skilful cook.

Nidification.—In our Islands the small flocks of Eiders begin to break up more distinctly into pairs towards the latter end of March, but the eggs are seldom laid until the middle or end of May, and in the Arctic regions not before the end of June. The nest, wherever possible, is built on a small uninhabited island, a rocky one by preference, moderately level, but covered with plenty of marine vegetation. In some places it is made among ruins, where the fallen masonry offers snug sites; at others it is on the top of the cliffs, or among the long heather of the hillsides that slope to the sea. I have seen it at the very top of cliffs several hundred feet in height on the Island of Doon, in the St. Kilda group. Usually it is not very far from the water, but reliable instances are on record where it has been discovered several miles from the sea, and at an elevation of one thousand feet above the sea level. The nest is generally made amongst sea campion or coarse grass, but often in a crevice of low rocks, or on a ledge of the same. It is usually a bulky, well-made structure, composed of dry grass and bits of other marine herbage, sometimes twigs of heather, and is well and warmly lined with down plucked from the body of the female, gradually accumulated as the eggs are laid. The eggs are six or seven in number, sometimes eight, and vary in colour from cream-grey to greyish-green, smooth and wax-like in texture, but with little gloss. They measure on an average 3·1 inches in length by 2·0 inches in breadth. The down tufts are moderate in size, and vary from brownish-grey to greyish-brown with obscure pale centres. This down is the highly-prized article of commerce, used for stuffing quilts and other purposes, and valued, when cleaned, at about twenty shillings per pound. Each Duck produces about four ounces of down in the season. In Greenland, Iceland, and in some parts of Norway the birds are regularly farmed for this product. (Further particulars of this industry may be obtained in our work entitled, *Stray Feathers from many Birds*, p. 21.) Incubation, performed entirely by the female, lasts twenty-eight days. When suddenly flushed from the eggs, the female Eider almost invariably discharges excreta over them and the nest as she hurries away. Mr. Trevor-Battye remarked the same peculiarity amongst the Eiders (as well as the Long-tailed Duck) breeding on Spitzbergen. (Conf. *Ibis* 1897, p. 585.) When the young are hatched the mother soon conveys her brood to the sea, carrying them in many cases one by one in her bill.

Here the old bird will often take one or more of her ducklings on her back to rest and sleep, sinking her body low in the water to allow the little creature more easily to mount. One brood only is reared in the year. The male does not desert the female after the eggs are laid. He never comes near the nest, but is usually not far away on the sea close by, and when his mate leaves the eggs to feed he invariably joins her. I should remark that the Eider is gregarious during this period, and numbers of nests may be seen almost side by side, in some cases two females sharing the same nest. As soon as the young are reared the birds quit the land, and undergo their annual change of plumage for the most part out at sea.

Diagnostic characters.—(Nuptial plumage), *Somateria*, with the upper back, mantle, and falcated scapulars white (adult male); with the feathers on the forehead only extending about half as far as those on the side of the upper mandible (adult female). Length, 25 inches.

Family ANATIDÆ.

Genus SOMATERIA.

Subfamily FULIGULINÆ.

KING EIDER.

SOMATERIA SPECTABILIS—(*Linnaeus*).

PLATE XXXIX.

Anas spectabilis, Linn. Syst. Nat. i. p. 195 (1766).**Somateria spectabilis** (Linn.), Macgill. Brit. B. v. p. 158 (1852); Dresser, B. Eur. vi. p. 643, pl. 446 (1877); Seebohm, Hist. Brit. B. iii. p. 621 (1885); Yarrell, Brit. B. ed 4, iv. p. 463 (1885); Dixon, Nests and Eggs Non-indig. Brit. B. p. 183 (1894); Lilford, Col. Fig. Brit. B. pt. xxx. (1895); Salvadori, Cat. B. Brit. Mus. xxvii. p. 432 (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 54, pl. 9 (1896); Sharpe, Handb. B. Gt. Brit. iii. p. 41 (1896).

Geographical distribution.—*British*: The King Eider is an accidental straggler to the British Islands, and so frequently observed during summer as to suggest the possibility of its breeding within our limits. It has been seen and obtained in various localities from Plymouth to the Orkneys and Shetlands, although it is much rarer in Ireland, where only four instances of its occurrence are on record. It has been observed at the Farne Islands in summer; and we met with two pairs during June at St. Kilda. *Foreign* Extreme northern Palearctic and Nearctic regions, more southerly in winter. It breeds on the islands off the coast of Northern Siberia, Nova Zembla, Franz-Josef Land, probably Spitzbergen, Greenland, and the islands and coasts of Arctic America, perhaps as far north as land extends. It is a more or less accidental visitor in winter to the coasts of Norway, the Baltic, Denmark, Holland, and France, to the Faroes, Iceland, Labrador, New Jersey, the Great Lakes, and California.

Allied forms.—None more closely allied than the Eider Duck and its representative forms treated of in the preceding chapter.

Habits.—The King Eider, although it resembles the Common Eider very closely in its general habits, is not quite such an exclusively marine species, and is occasionally found on fresh water, yet only, so far as I can determine, on such vast expanses as the Great Lakes in North America. It is almost if not quite as sedentary as the Common Eider, and does not wander far beyond the limits of open water during winter. Most of those that do straggle south at that season

are immature birds. It is just as gregarious, perhaps more so, inasmuch as Ross often met with large flocks of adult males and others of adult females with their young in the open Atlantic. In its food, note, and mode of progression in the air and the water it does not differ in any important respect from the Common Eider. I had the good fortune to meet with the King Eider during my prolonged visit to St. Kilda in the summer of 1884, and made the following note respecting its habits, which I transcribe verbatim from my paper on the birds of these Islands contributed to the *Ibis*: "Ornithologists will read with pleasure that the King Eider frequents St. Kilda. I first became aware of this interesting fact when trying to stalk the Common Eiders in the bay. For two hours I lay concealed behind a huge boulder, watching the little party of Ducks that were swimming just outside the breakers. Two of the pairs were King Eiders. In spite of all my efforts, both on this and subsequent occasions, I failed to secure an example. They were not more than seventy yards away from me several times, so that I had every opportunity of observing them; and on more than one occasion I carefully scanned them through a powerful glass. They mingled freely with the Common Eiders, and did not differ in any perceptible degree in their habits. It was a pretty sight to watch these rare and charming birds sporting in the heaving waves, the males and females swimming side by side. As the mighty rollers broke upon the shore the birds dived through the bright green wave just before it turned over. They were busy feeding on the small animals which were disturbed by the breaking waves. They floated light as corks on the heaving sea, now high up exposed to view, then deep down in the trough of the waves. As soon as they caught a glimpse of me they quickly swam farther from shore. Every day they might be observed in one particular part of the bay; and I have not the slightest doubt that they were nesting on the precipitous island of Doon. Of course the natives did not distinguish them from the Common Eider; and they take but little interest in them, for they tell me the male Eider is the only bird of St. Kilda that they are unable to snare." I am pleased to be able to record that my opinion respecting the breeding of the King Eider in these islands is shared by others of much wider experience of the ornithology of this district than myself. Mr. John A. Harvie-Brown, the gentleman so frequently alluded to in these pages relative to the habits of some of the least known of the species, says *in epistola*: "I shall be glad if you succeed in getting undoubted King Eiders. Personally, I believe they breed on the Dun [Doon] every year."

Nidification.—The King Eider breeds even later than the Common Eider, probably because its summer range nowhere reaches quite so far to the south, and extends more to the north. Its eggs are laid during the first half of July. It appears to arrive at its most northerly breeding stations in flocks towards the end of June. The nests are made on islands as well as on the

coasts of the mainland, and are placed in similar situations to those of the Common Eider. The nest is merely a depression in the ground, which may or may not contain a little vegetable refuse, but is always warmly lined with down from the body of the female by the time the full number of eggs is deposited. The eggs, so far as is known, are six in number and pale greenish-grey in colour, smooth in texture, and with little gloss. They measure on an average 2·6 inches in length by 1·75 inch in breadth. The down tufts are similar in every respect to those of the preceding species. One brood only is reared in the year. The habits of this Eider during the nesting period and after the young are reared do not differ from those of allied species.

Diagnostic characters.—(Nuptial Plumage), *Somateria*, with the upper back white and the falcated scapulars black, and with a black stripe on each side of the throat meeting on the chin, forming a V-shaped mark (adult male) ; with the feathers on the forehead extending beyond those on the side of the bill (adult female). Length, 24 inches.

Subfamily MERGINÆ.—The Mergansers.

The Mergansers resemble the Diving Ducks and Eiders in having the hind toe broadly lobed; but the bill is compressed, the lower mandible without lamellæ, but with the edges of both mandibles furnished with a series of very prominent tooth-like serrations. The moult is similar to that of the non-diving Ducks.

This subfamily is composed of nine species, divisible into three fairly well defined genera.

Genus MERGANSER, or Typical Mergansers.

Type, MERGANSER CASTOR.

Merganser, of Brisson (1760).—The birds comprising the present genus are characterised by having the culmen longer than the metatarsus, and the tooth-like serrations on both mandibles very prominent and inclined backwards at the tips. The wings are moderately long. The nostrils are lateral and central. Three toes in front connected with webs; hind toe moderate and lobed.

This genus contains seven species, distributed over the Palæarctic and Nearctic regions, Northern India, South-eastern Brazil, and the Auckland Islands in the South Pacific Ocean. Two species are British.

The typical Mergansers frequent both inland waters and maritime districts. They are birds of rapid flight, and swim and dive with exceptional skill. Their notes are harsh and unmusical. They subsist largely on fish, crustaceans, mollusks, etc. They make rude nests, either on the ground or in holes of trees and rocks. Their eggs are numerous and creamy-buff or olive-grey, unspotted. They probably pair for life, and are more or less gregarious and social.



Family ANATIDÆ.
Subfamily M_{ERG}INÆ.

Genus M_{ERG}ANSER.

GOOSANDER.

M_{ERG}ANSER CASTOR—(*Linnæus*).

PLATE XL.

Mergus merganser, Linn. Syst. Nat. i. p. 208 (1766); Dresser B. Eur. vi. p. 685, pl. 452 (1875); Seebohm, Hist. Brit. B. iii. p. 625 (1885); Yarrell, Brit. B. ed. 4 iv. p. 488 (1885); Dixon, Nests and Eggs Brit. B. p. 245 (1893); Lilford, Col. Fig. Brit. B. pt. xxiii (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 55, pl. 15 (1896).

Merganser castor (Linn.), Macgill. Brit. B. v. p. 207 (1852); Salvadori, Cat. B. Brit. Mus. xxvii. p. 472 (1895).

Merganser merganser (Linn.), Sharpe, Handb. B. Gt. Brit. iii. p. 58 (1896).

Geographical distribution.—*British*: The Goosander is a fairly common winter visitor to the British Islands, both inland and on the coast. It is rare in the Orkneys and Shetlands, but more frequent on the east and west coasts of Scotland, especially the latter; tolerably common on the eastern shores of England, but rarer on the south and west. It is rare in Ireland, although in the severe weather of 1880-81 an unusual visitation took place, and examples were obtained in all parts of the Island. It breeds sparingly in Scotland, in Sutherlandshire, Argyllshire, North Perthshire, and a few other localities in the Highlands. *Foreign*: Palæartic region; northern limits of Oriental region in winter. It breeds in Iceland and Denmark, and throughout Scandinavia, but does not winter north of the Arctic Circle. It is said to breed in Switzerland, and has been recorded from Nova Zembla. Eastwards it is found during summer in Pomerania, and Russia as far north as the Arctic Circle, and as far south as lat. 50° in the Ural and Volga districts. In Asia it breeds throughout Siberia south of the Arctic Circle, and in a similar climate at high elevations in Turkestan, and the Himalayas up to 10,000 feet above the level of the sea. It winters on the coasts and inland waters of Central and Southern Europe, but rarely crosses to the African side of the Mediterranean. It is also found at this season in the Black Sea, on the lower lands of Turkestan, in Northern India, Mongolia, China and Japan.

Allied forms.—*Merganser americanus*, an inhabitant of the Nearctic region, breeding from about lat. 42° as far north as the limit of trees, and in winter

of the United States, and occasionally the Bermudas. The American representative of the Goosander, and perhaps only superficially distinct. Typical examples may be distinguished from the Goosander by having a narrow black bar across the greater wing coverts. *M. comatus*, an inhabitant of Central Asia, including the Himalayas. Distinguished by being smaller in size, and in having the crest feathers fewer, narrower, and longer, the bill shorter, and (in the male) the black margins of the tertials broader, the lower back and rump paler grey, and much freckled with white. *M. squamatus*, from China (?), a doubtful species, described from an immature bird by Gould, possibly a hybrid between the Goosander and the Red-breasted Merganser.

Habits.—During winter the Goosander with us is for the most part a coast bird, showing a preference for sea lochs and the quiet bays of a rocky shore, such as are so common on the west of Scotland, but it may be met with in estuaries, as well as on broads and inland lakes. In Lower India, however, it is almost exclusively confined during the cold season to rivers, and those where the bed is rocky or sandy are preferred to others which flow over clay or alluvial soil. It is a hardy bird, and lingers in its summer haunts until the waters are frozen, not leaving the pools and streams of the Himalayas until December, and quitting its southern retreats again in March. The same remarks apply to the individuals breeding at elevations of from 8,000 to 11,000 feet in Central Asia; they linger until driven down by the ice sealing their favourite haunts. The Goosander is a remarkably agile bird in the water, swimming and diving with wonderful skill. When going down stream it sits high on the water, but when swimming against the current its body is kept low, so that the oar-like feet may work to the best advantage. It is capable of diving a great depth, and remains under water for as much as two minutes at a stretch. It flies well and with great speed, but rises from the surface with difficulty, flapping along for several yards before it gets clear into the air. The Goosander does not spend much of its time on shore, but when gorged with food it will often sit and bask, like a Cormorant, on some rock rising out of deep water, resting with its body upright and with its wings half expanded. It seldom rests far from the water's edge, and when disturbed wriggles forward with its breast almost touching the ground, in a very Diver-like manner. It is a wary bird, much more so than the Red-breasted Merganser. The note of this species is a harsh *karr*, but on the whole it is a remarkably silent bird. The Goosander feeds almost exclusively on fish ranging from two to six inches in length, but aquatic insects, mollusks, and shell-fish are eaten, and the remains of vegetable substances have been found in its stomach. Most of these creatures are obtained by diving, and sometimes when feeding in flocks the entire party of birds will dive simultaneously, although it is more usual to see several individuals on the surface, as if acting as sentinels for the rest. The flesh of this Duck is said to be rank and fishy, and most unpalatable.

Nidification.—The favourite breeding grounds of the Goosander are open swampy forests, in which there are plenty of lakes and rock-bound streams and rivers. It is a somewhat early breeder, laying towards the end of April in the British Islands and in Denmark, and a month or six weeks later in Finland. Dybowsky states that it arrives at its breeding grounds near Lake Baikal by the middle of April, which is early for that cold region, and remains until December. The Goosander, wherever it can obtain one, prefers a hole in a tree, but in sparsely-wooded districts a cleft or hole in a rock or cliff not far from the water is used instead. It has been known to breed in an old nest of a Crow, or in the top of a pollard. According to Selby, Dresser, Dybowsky, and others, the nest is sometimes made on the ground amongst grass, but this must be highly exceptional if the observers named were not actually in error in identifying the species. In Finland the Goosander readily avails itself of boxes or hollow logs placed in the trees by the peasants, and submits very patiently to the daily removal of its eggs to the number sometimes of a score. The nest of this bird is slight, little more than the dust and refuse at the bottom of the hole selected, but warmly lined with plenty of down before the eggs are incubated. The eggs are from eight to twelve in number, creamy-white in colour, smooth in texture, and with a satin-like gloss. They measure on an average 2·7 inches in length by 1·8 inch in breadth. The down tufts are large and uniform greyish-white. Incubation lasts twenty-eight days. The young are carried to the nearest water one by one in the bill of the parent, and until they are considerably advanced towards maturity do not stray far from the shallow water. One brood only is reared in the year.

Diagnostic characters.—(Nuptial plumage), *Merganser*, with the head (crested) and upper neck black, shot with green and purple, and with the lower neck and the whole of the underparts pure white, with a rosy tinge on the breast and belly (adult male); with the head (crested) and upper neck chestnut, and with the wing varying from 9·5 to 10·25 inches in length (adult female). Length, 25 to 28 inches (male); 22 to 25 inches (female).

Family ANATIDÆ.

Genus MERGANSER.

Subfamily MERGINÆ.

RED-BREASTED MERGANSER.MERGANSER SERRATOR—(*Linnæus*).

Mergus serrator, Linn. Syst. Nat. i. p. 208 (1766); Dresser. B. Eur. vi. p. 693, pl. 453 (1874); Seebohm, Hist. Brit. B. iii. p. 629 (1885); Yarrell, Brit. B. ed 4, iv. p. 494 (1885); Lilford, Col. Fig. Brit. B. pt. xxi. (1892); Dixon, Nests and Eggs Brit. B. p. 247 (1893); Seebohm, Col. Fig. Eggs Brit. B. p. 56 pl. 16 (1896).

Merganser serrator (Linn.), Macgill, Brit. B. v. p. 216 (1852); Salvadori, Cat. B. Brit. Mus. xxvii. p. 479 (1895); Sharpe, Handb. B. Gt. Brit. iii. p. 61 (1896).

Geographical distribution.—*British*: The Red-breasted Merganser is a common resident in the north, but only a winter visitor in the south of our Islands. It is generally distributed along the English coasts and, in smaller numbers, on the inland waters, during winter, and breeds throughout Scotland in all suitable districts, both inland and on the coasts, north to the Orkneys and Shetlands, and west to the Outer Hebrides and St. Kilda. It is generally distributed in Ireland, both inland and on the coast, and breeds most abundantly on the wild, broken coast of the west. *Foreign*: Northern Palæartic and Nearctic regions, more southerly in winter. It breeds in Greenland, Iceland, the Faroes, and throughout Scandinavia; thence across the basin of the Baltic and Russia, as far north as the Arctic Circle, and south to the Volga and Ural districts in lat. 50°. Eastwards it ranges across Siberia south of the Arctic Circle to the Pacific, but is not known to breed in Turkestan or the Himalayas. Its summer range in America extends a little lower, and during that season it ranges from about lat. 45° north to the Arctic Circle, from the Pacific to the Atlantic. During winter it is found on the inland waters and coasts of Central and Southern Europe as far south as the Mediterranean, but only accidentally on the African coast. It is also common at this season in the Black and Caspian Seas, in Turkestan, China, and Japan; whilst on the American Continent it ranges throughout the United States, and occasionally visits the Bermudas.

Allied forms.—None of sufficient propinquity to call for notice.

Habits.—Our resident Red-breasted Mergansers are considerably increased in numbers in autumn by migratory individuals from higher latitudes, which return again in spring. A considerable southern movement also takes place

among the birds breeding in Scotland and the north-west of Ireland, many of the former straying to English waters. Although common enough in many comparatively inland districts, I should say that the favourite haunts of this species are on the coast, and that it is far more partial to marine localities than the preceding species. It loves a wild, rocky coast full of secluded bays and lochs and fiords, and studded with islands, and may frequently be observed where streams and rivers flow into the sea or loch. During winter it is gregarious, and flocks of varying size may then be met with at sea, or during rough weather, congregated in the sheltered bays and fiords. A long-continued spell of rough weather on the coast often drives this bird to inland waters and exceptional haunts. By the end of March most of these flocks are dispersed and the birds are in pairs at their usual breeding places. It is a shy and wary species, but owing to the rough nature of the banks of its favourite waters it may be easily stalked and watched. I know of few prettier sights than a pair of these Mergansers swimming all unsuspecting of danger in some quiet sea-loch. They swim side by side in the deep water close in shore, and from time to time dive and reappear some distance farther on. Then, perchance, they paddle in the shallows, or stand upon a rock an inch or two below the surface and preen their plumage, standing very upright, like a Cormorant or a Diver. In the pairing season I have often witnessed the aquatic gambols of these birds, the drake chasing the duck through the water or diving after her and churning the calm sea into bubbles and foam for a considerable area. The Merganser feeds principally by day, and will fly with great regularity to certain spots, timing its arrival to a nicety just when the rocks are beginning to be exposed by the ebbing tide, and remaining as long as the deep pools, in which many fish are stranded, remain isolated. It flies almost invariably in spring and early summer in pairs, sometimes one bird several yards behind the other, but always in company. The flight of this species is rapid and straightforward, the wings, which are beaten very quickly, making a whistling sound. It rises from the water in a rather laboured manner, often flapping along the surface for several yards before getting well on the wing; but during a high wind I have noticed it start up from the sea almost at once. It swims well, but sits low in the water, and dives head first like a Cormorant, descending to considerable depths, and often remaining under the surface for a minute or more. The note of this bird is aptly described by Naumann as a guttural *kurr*, uttered most frequently during flight. The food of the Red-breasted Merganser consists largely of fish, but crustaceans and small crabs are also eaten; and I have known this bird feed on limpets and whelks which the Oystercatchers had only partly devoured. This food is mostly obtained by diving, and it will be remarked that each capture is almost invariably brought to the surface to be eaten, the bird drinking and often rising three parts out of the water and flapping its wings after doing so. The flesh of this bird is fishy in taste and unpalatable. Be this as it may, I knew an

old Highlander who used to swear by a fat Merganser, which he partly boiled first and then baked or roasted! This bird always tries to elude pursuit by diving—at least, such is my experience—both when in pairs and in flocks, only taking wing when the chase has evidently become too hot.

Nidification.—In the British Islands the breeding season of the Red-breasted Merganser begins in May, and the eggs are laid during the latter half of that month and the first half of June; but in more northern latitudes they are about a month later. This bird can scarcely be called gregarious during the breeding season, although many pairs may nest within a comparatively small area, especially in places where suitable sites are scarce. I should say they are distributed in more or less scattered pairs, each keeping much to itself. An island is preferred for a nesting-place, but where such is not available a quiet part of the mainland is chosen. All the nests that I have seen, and I have seen a good round number, were situated on rocky islets, except one, and that was on a portion of the shore which became an island at high water. The nest is usually made under a rock or bank; but rabbit burrows and crevices in walls are sometimes selected, and it is even placed among heather, bracken, and furze, at no great distance from the water in our Islands, but often some distance from the sea in wooded localities in other countries. The nest is scanty and in many cases is dispensed with altogether, the eggs lying on the ground until sufficient down accumulates to protect them. When a nest is made, it is merely a hollow into which a little dry grass and dried leaves are placed, finished off with a warm lining of down from the body of the female. The eggs are from eight to twelve in number and olive-grey of various shades in colour, smooth in texture, and with some little gloss. They measure on an average 2·6 inches in length by 1·7 inch in breadth. The down tufts are large, pale brownish-grey in colour, with obscure pale centres and tips. Incubation, performed entirely by the female, lasts twenty-eight days. Sometimes she sits very closely, but generally slips off at the first sign of danger and goes right away at once. The male is never seen at the nest, but he is generally stationed on the sea close by, and joins his mate when she leaves her eggs to come and feed; whilst as soon as the young brood are abroad he retires to moult. The young soon take to the sea with their mother, and are remarkably active both in swimming and diving. One brood only is reared in the year.

Diagnostic characters.—(Nuptial plumage), *Merganser*, with the head (crested) and upper neck black, shot with green and purple, with the lower neck and upper breast buff streaked with black, with black margins to the white feathers on the sides of the breast, and with the flanks strongly vermiculated with greyish-black (adult male); with the head (crested) and upper neck pale chestnut, and with the wing varying from 8·25 to 9 inches in length (adult female). Length, 24 to 26 inches (male); 22 to 23 inches (female).

Genus LOPHODYTES, or Hooded Mergansers.Type, LOPHODYTES CUCULLATUS.

Lophodytes, of Reichenbach (1852.)*—The birds comprising the present genus are characterised by having the culmen longer than the metatarsus, and the tooth-like serrations on both mandibles are short and blunt, and not distinctly inclined backwards at the tips. The nostrils are lateral and central. The wings are moderately long. Three toes in front connected with webs; hind toe moderate and lobed.

This genus contains a single species only, confined to the New World. It is an inhabitant of North America generally, from Alaska to Mexico and Cuba. It is an abnormal migrant to the British Islands.

The habits of the single species in the genus are fully described in the following chapter.

* ? 1850.

Family ANATIDÆ.

Genus LOPHODYTES.

Subfamily Merginæ.

HOODED MERGANSER.

LOPHODYTES CUCULLATUS—(*Linnæus*).

Mergus cucullatus, Linn. Syst. Nat. i. p. 207 (1766); Seebohm, Hist. Brit. B. iii. p. 663 (1885); Yarrell, Brit. B. ed. 4, iv. p. 509 (1885); Dixon, Nests and Eggs Non-indig, Brit. B. p. 185 (1894); Lilford, Col. Fig. Brit. B. pt. xxxi. 1895; Seebohm, Col. Fig. Eggs Brit. B. p. 57, pl. 16 (1896).

Merganser cucullatus (Linn.), Macgill. Brit. B. v. p. 225 (1852).

Lophodytes cucullatus (Linn.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 468 (1895); Sharpe, Handb. B. Gt. Brit. iii. p. 56 (1896).

Geographical distribution.—*British*: The Hooded Merganser is a rare and irregular straggler to the British Islands in winter. Several of the alleged occurrences of this species are unworthy of credence, but the reliable evidence on which its claim to be regarded as “British” is founded may be briefly summarised as follows—England: Norfolk (two examples), winter of 1829, and winter of 1837-38. Wales: Menai Straits (one example), winter of 1830-31. Ireland: Co. Kerry, Dingle Bay (one example), about the year 1840; Co. Meath (one example), no data; Co. Cork, Cork Harbour (two examples), December, 1878; Co. Kerry (one example), January, 1881; Co. Sligo (one doubtful example, not preserved), winter 1880-81. *Foreign*: Northern Nearctic region, more southerly in winter. It breeds in Arctic and North Temperate America from the Atlantic to the Pacific, as far north as the Arctic Circle, and as far south as about lat. 45°. During winter it visits most parts of the United States, extending its winter area to Mexico and the West Indies. It occasionally visits the Bermudas, but is not known to occur in Greenland, Iceland, or any part of Continental Europe.

Allied forms.—None of sufficient propinquity to call for notice.

Habits.—The Hooded Merganser does not differ in its habits and economy from its congeners in any known important particular. It is perhaps more of an inland species than the preceding bird, attached to fresh water during summer like the Goosander, but resorting to the coasts in winter, where it prefers a

deeply indented rocky shore to the more open sea. It is gregarious during the latter season, although the flocks are never very large, and not only frequents the sea, but visits inland waters, especially flooded tracts of country. Like its allies it is an accomplished diver, obtaining most of its food under the surface. It also flies with great speed, but is clumsy enough on land, shuffling along in an awkward manner with its breast touching the ground or nearly so. The food of this Merganser is composed almost exclusively of fish, but crustaceans and various kinds of aquatic insects are also sought. It is said to be a shy, wary bird, preferring to elude pursuit by diving rather than flying, and so expert at this as to disappear very often at the flash of the gun, and rising again uninjured far out of range. The note of this species does not differ from that of allied birds. During winter the Hooded Merganser sometimes associates with other Ducks, and in our Islands has been observed to do so with its ally, the Red-breasted Merganser.

Nidification.—The breeding grounds of the Hooded Merganser are lake and river districts where plenty of trees occur; in this respect it exactly resembles its two allies, the Smew and the Goosander. The nest is made in a hole of a tree or in a hollow fallen log. The eggs are at first laid on the powdered wood, but gradually a thick warm bed of down accumulates, plucked from the body of the female. The eggs are from five to eight in number, pure white in colour, smooth in texture, and remarkably rotund; the latter shape, it may be remarked, is very prevalent among birds nesting in holes where space is limited. They measure on an average 2·1 inches in length by 1·7 inch in breadth. The down tufts are moderate in size, and very pale grey in colour. The female performs the task of incubation, which is said to last thirty-one days. She then conveys her chicks to the water in her bill one by one, where they are remarkably active, swimming and diving with ease. It is not known that more than one brood is reared in the year.

Diagnostic characters.—(Nuptial plumage), *Lophodytes*, with the head and upper neck black, ornamented with a very conspicuous crest, white margined with black, and with two black crescentic marks on each side of the breast (adult male); with the head (crested) and upper neck uniform brown, and the underparts below the neck uniform white (adult female). Length, 17 to 19 inches.

Genus **MERGUS**, or **Smews**.

Type, **MERGUS ALBELLUS**.

Mergus, of Linnæus (1766).—The birds comprising the present genus are characterised by having a straight, slender, narrow bill shorter than the metatarsus, furnished on both upper and lower mandible with saw-like lamellæ. The wings are moderately long. The nostrils are lateral and central. The metatarsus is short; three toes in front, webbed; hind toe moderate and lobed.

This genus contains but a single specie which is distributed over the northern portions of the Palæarctic region, and is a winter visitor to our area.

The Smews frequent both inland waters as well as maritime districts. They are birds of rapid, if laboured flight, and swim and dive with wonderful skill, but on the land they walk clumsily. Their notes are loud and unmusical. They subsist on fish, crustaceans, mollusks, and shell-fish. They make rude nests, which are lined with down, in holes of trees. Their eggs are numerous, and cream-white in colour. They are monogamous and probably pair for life. They are more or less gregarious, except in the breeding season, although social tendencies are even then observable.

Family ANATIDÆ.
Subfamily MERGINÆ.

Genus MERGUS.

SMEW.

MERGUS ALBELLUS—*Linnæus*.

Mergus albellus, Linn. Syst. Nat. i. p. 209 (1766); Macgill. Brit. B. v. p. 233 (1852); Dresser, B. Eur. vi. p. 699, pls. 454, 455 (1874); Seebohm, Hist. Brit. B. iii. p. 636 (1885); Yarrell, Brit. B. ed. 4, iv. p. 449 (1885); Lilford, Col. Fig. Brit. B. pt. xiv. (1891); Dixon, Nests and Eggs Non-indig. Brit. B. p. 186 (1894); Salvadori, Cat. B. Brit. Mus. xxvii. p. 464 (1895); Seebohm, Col. Fig. Eggs Brit. B. p. 58, pl. 15 (1896); Sharpe, Handb. B. Gt. Brit. iii. p. 52 (1896).

Geographical distribution.—*British*: The Smew is a rare and irregular winter visitor to the British Islands, where, as one might naturally expect from the peculiarities of its normal geographical area, it is most frequently observed on our eastern seaboard. Adult males are nothing near so frequently observed as young males and females, and these are pretty generally dispersed along the south and east coasts of England and the east coast of Scotland. On the west of England and Scotland, including the Hebrides, it is much rarer. In Ireland it is also of rare and irregular appearance, principally in the north and central districts. *Foreign*: Northern Palæarctic region, more southerly in winter; extreme north of Oriental region in winter. The Smew breeds in Russia as far west as Finnish Lapland, as far north as the Arctic Circle, and as far south as the Gulf of Finland in the west, and the valleys of the Kama and Lower Volga in the east. Thence it may be traced across Northern Siberia south of the Arctic Circle (some authorities say the limit of forest growth) to the shores of the Pacific. During migration or in winter it is an accidental wanderer to the Scandinavian coasts (both the Atlantic and the Baltic), but it is not known to visit the Faroes and Iceland. It is also found at this season along the coasts and on the inland waters of Central, Western, and Southern Europe, as far south as Morocco and the Mediterranean. It also visits the Black and Caspian Seas at this season. On migration it crosses Turkestan, Southern Siberia, and Mongolia, and winters in Northern India, China, and Japan.

Allied forms.—None of sufficient propinquity to call for notice.

Habits.—The Smew is certainly the least maritime of the Mergansers, although it is most frequently met with on the coasts, and not inland, during its winter visits to the British Islands. Here, as elsewhere in the southern limits of its winter area, young birds are apparently most frequent, possibly because the old birds keep more out to sea. The Smew remains in its usual haunts as long as the water remains free from ice, and even in the exceptionally severe climate of Asia it is a bird of late passage. Hume states that even in Upper India it does not arrive until November, and that it leaves equally early in spring, most having left the country by the end of March. Not only so, but its appearances are rare and irregular, and mostly confined to immature individuals. Like all its allies it is a very gregarious bird during winter, and lives in flocks of varying size up to thirty or forty individuals. Its favourite haunts in India are large rivers and lakes, but it occasionally frequents smaller sheets of water. Where its haunts are extensive it usually remains the entire winter sedentary, but in the more restricted waters it is more restless, and generally deserts them altogether if much sought by the gunner. It is a wary bird, keeping well out from shore in the open water, and even when diving a few individuals remain on the surface to watch for danger. This it usually seeks to evade by swimming quickly away, its body low in the water, and when fired at dives at once, and reappears well out of range. The flock after having dived *en masse*, come up in scattered order, but each bird swims to a converging point, and all are soon bunched together again. If hard pressed the birds rise and circle in the air, again dropping perhaps several miles away. The Smew is said to be ever a restless, active bird, swimming to and fro and diving at intervals. It rarely visits land, and even sleeps upon the water. Its flight is quick but almost silent, and the bird rises out of the water with little effort or splash. The Smew is a most accomplished diver, and according to Hume its movements under water are even more rapid than those of the Cormorants or Grebes. The wings are used in diving, and the birds frequently go to a great depth, and remain under water for a minute at a time. The food of this Duck is composed principally of small fish, but frogs, aquatic insects, and crustaceans are also eaten. The bird is not known to eat anything of a vegetable nature. The note of the Smew is described as a harsh *kurr*, but it is a remarkably silent bird in its winter quarters. Jerdon states that it utters an oft-repeated bell-like call, probably at its breeding grounds, because this peculiar note has won for it the name of Bell Duck in Northern Asia. The flesh of this species is rank and unpalatable.

Nidification.—The breeding grounds of the Smew are situated in the swampy forest districts of the Arctic regions where lakes and streams abound, where big swamps, studded with pools connected by streams, and surrounded by trees form a pleasant relief to the monotony of the northern forests. It is a rather late breeder, not laying until July or the very end of June. The nest is

placed either in a hollow fallen log, or in a hole in the trunk of a tree or broken stump. The first eggs are laid on the powdered wood at the bottom of the hole, but as the clutch is completed a plentiful lining of down is added, plucked from the body of the female. The eggs are seven or eight in number, creamy-white in colour, smooth in texture, and with some gloss. They measure on an average 2·0 inches in length by 1·47 inch in breadth. The down tufts are moderate in size and very pale greyish-white. The female usually conveys her chicks to the nearest water in her bill. One brood only is reared in the year, and it would appear that the duck and her young, or at least the young, keep company during the winter.

Diagnostic characters.—(Nuptial plumage), *Mergus*, with the head (crested) and neck white, except a large spot between the eye and the bill, and another on each side of the nape, where they meet, which are black shot with green (adult male); with the feathers of the forehead, crown, and nape (the latter elongated into a crest) chestnut, and with a large black patch between the eye and the bill (adult female). Length, 17 to 18 inches (male); 15 to 17 inches (female).

APPENDIX.

OWING to the length of time which the present edition has necessarily taken in passing through the press, I find it necessary, in order to bring the information as nearly up to date as possible, to add the following records of abnormal migrants to the species named below :—

- Page 74—Baillon's Crake (*Crex bailloni*): Add one, Renfrewshire, May, 1893; one near Thurso, September, 1898.
- „ 92—Crane (*Grus cinerea*): Has been obtained in Ireland as recently as 1896.
- „ 95—Demoiselle Crane (*Grus virgo*): Add one, Norfolk Coast, July, 1899 (? an escaped bird).
- „ 103—Little Bustard (*Otis tetrao*): Ireland can now claim six examples.
- „ 117—Common Pratincole (*Glareola pratincola*): Add a second Scotch example, Rocksands, Montrose, November, 1899.
- „ 154—American Golden Plover (*Charadrius dominicus*): Add one, Co. Mayo, September, 1894.
- „ 165—Sociable Lapwing (*Vanellus gregarius*): Add one (♀), Co. Meath, August, 1899.
- „ 210—Bartram's Sandpiper (*Bartramia longicauda*): Add one Irish specimen, Co. Cork, September, 1894.
- „ 277—Buff-breasted Sandpiper (*Tringites rufescens*): Add one (♂), Norfolk, September, 1899.
- „ 315—Greater Snow Goose (*Chen nivalis*): Now a British species, of which an account is given on the two following pages (pp. 455, 456).
- „ 398—Tufted Duck (*Fuligula cristata*): Add to British breeding area, South-west Derbyshire.

Family ANATIDÆ.

Genus CHEN.

Subfamily ANSERINÆ.

GREATER SNOW GOOSE.

CHEN NIVALIS—(Forster).

Anas nivalis, Forster, Phil. Trans. lxii. p. 413 (1772).**Chen hyperboreus** (Pall.), Coues, Birds N.-West, p. 548 (1874 *partim*); Newton, Dict. Birds, p. 374 (1893 *partim*).**Chen hyperboreus nivalis** (Forst.), Baird, Brewer, and Ridg., Water-B. N. Amer. ii. p. 440 (1884); Dixon, Nests and Eggs Non-indig. Brit. B. p. 148 (1894).**Anser hyperboreus nivalis** (Forst.), Seebohm, Hist. Brit. B. iii. p. 490 (1885).**Chen nivalis** (Forst.), Salvadori, Cat. B. Brit. Mus. xxvii. p. 86 (1895); Sharpe, Handb. B. Gt. Brit. ii. p. 227 (1896); Sharpe, Bull. Brit. Orn. Club, Nov. (1899).

Geographical distribution.—*British*: Providing the identification be correct, and of this there seems to be little or no doubt, so far as I am able at present to judge, the Greater Snow Goose (as recorded in *Knowledge* for February, 1900), must now be included as a rare abnormal migrant to the British Islands. Its claim to rank as “British” rests upon a single occurrence, though possibly some of the “Snow Geese” seen but not obtained both in England and Ireland may have belonged to the larger of the two races into which most scientific ornithologists agree in dividing them. It is a somewhat remarkable coincidence, and one which has frequently been noticed in the repeated appearance of abnormal migrants in certain areas, that Co. Mayo can claim the first record of the Greater Snow Goose. This example appears to have been shot near Belmullet in November, 1899. It was exhibited on behalf of Mr. R. J. Ussher (a gentleman long known in connection with Irish ornithology) by Dr. Sharpe, at a meeting of the British Ornithologists’ Club, held on the 22nd of November of that year. *Foreign*: Northern portions of the Arctogæan realm; more southerly in winter. The large race of the Snow Goose is only known to breed in the Hudson Bay territory, but its appearance in North-eastern Asia, especially in Japan and China, and its visits to Greenland, seems to suggest that its summer range is vastly more extended. If we cannot at present exactly define the breeding area of this Goose, its wide extent is certainly indicated by the flocks of this species that visit during winter various localities in the Old World from Russia to Japan, and in the New World the

United States as far south as Texas. This Goose must also be included in the list of abnormal migrants to the Bermudas. Macfarlane states (*Proc. U. S. Nat. Mus.* xiv. p. 423) that breeding grounds of this species are situated on the shores and islands of Esquimaux Lake and Liverpool Bay.

Allied forms.—*Chen hyperboreus*, an abnormal migrant to the British Islands, and dealt with on pages 314 and 315. The small form of the Snow Goose, and possibly only subspecifically distinct. *C. rossii*, an inhabitant of Arctic America during summer, migrating south as far as California and Montana in winter. It differs from the two preceding species in being much smaller in size, and in having, as pointed out by Count Salvadori, the bill comparatively weak, and the feathering at the base of the upper mandible, along each side, forming a nearly straight oblique line instead of a very convex line, as in the other three species of Snow Geese. It forms the type of Elliot's genus *Exanthemops*. *C. caerulescens*, an inhabitant of the interior of Arctic America east of the Rocky Mountains, drawing south in winter. It is distinguished by its greyish-brown plumage, becoming bluish-grey on the wing coverts and rump.

Habits.—It is not known that the habits of the Greater Snow Goose differ in any important respect from those of the smaller race. Macfarlane states the belief that the Greater Snow Goose was some days later in arriving at its arctic haunts in spring. These appear to be reached in May and left again in September and October. It is chiefly found during winter on the Atlantic coast, not entering the Mississippi Valley in such numbers as its smaller ally. This Goose during winter frequents inland localities as well as maritime ones. Its food is largely of a vegetable character, grass, roots, ground fruits and berries, varied with insects and mollusks. It is gregarious during winter, and consorts with the smaller race as well as with other allied species. The note, so far as I can ascertain, has never been described.

Nidification.—The information relating to the nidification of this Goose is of a most meagre description, but doubtless the nesting habits differ little from those of the smaller race. The eggs are similar in colour, and I know of no character by which they may be distinguished from those of the preceding form. One brood only is reared in the year.

Diagnostic characters.—*Chen*, with the primaries black and the remainder of the plumage white, with the wing $17\frac{1}{2}$ inches or more in length. Length, 30 to 38 inches.

ERRATA.

- Page 6—Line 4, for Plate II., fig. 1, *read* Plate II.
- „ 9—Line 4, for Plate II., fig. 2, *read* Plate IIA.
- „ 50—Line 2, for monogamous, *read* polygamous.
- „ 54—Line 4, for Plate XI., fig. 1, *read* Plate XI.
- „ 58—Line 4, for Plate XI., fig. 2, *read* Plate XIA.
- „ 98—Line 29, for five families, *read* four.
- „ 181—Line 39, for *wkich*, *read* *which*.
- „ 218—Line 1, for *Totanus solitarius*, *read* *Helodromas solitarius*.
- „ 247—Plate XXVIII.—Mr. Whympet has unfortunately omitted the squamate or arrow-shaped markings from the flanks that are such a characteristic feature of the Siberian Pectoral Sandpiper (*Heteropygia acuminata*).
- „ 261—Line 10, for *Tringa accuminata pectoralis*, *read* *Tringa acuminata pectoralis*.
- „ 315—Line 4, for *superficially*, *read* *subspecifically*.
- „ 341—Line 13, for *Tadorna Tadorna*, *read* *Tadorna tadorna*.
- Pages 354, 358, Plate XXXV.—It has been thought advisable to omit this Plate, and to replace it by Plates IIA and XIA. The decision was made too late to delete the Plate number under the Pintail Duck and the Wigeon, or to make the necessary alterations in the numbering of the succeeding plates.
- Page 430—Add below line 4, “ Plate XXXIX.”

ALPHABETICAL INDEX.

NOTE.—The names in black type are used for the British species in the present work.

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