



ESSAYS ON SPORT

AND

NATURAL HISTORY.





J. E. Hartung

ESSAYS ON SPORT

AND

NATURAL HISTORY.

BY

JAMES EDMUND HARTING,

AUTHOR OF

“EXTINCT BRITISH ANIMALS,” “A HANDBOOK OF BRITISH BIRDS,” “RAMBLES IN SEARCH
OF SHELLS,” ETC. ETC.

WITH ILLUSTRATIONS.

LONDON:

HORACE COX, “THE FIELD” OFFICE,

1883.

LONDON:
PRINTED BY HORACE COX, 346, STRAND, W.C.

QH

81

H25e

P R E F A C E .

IN offering this volume to the Public, little need be said by way of Preface. The Essays here brought together have been selected from a much larger number contributed at various times to different periodicals, and may be said to comprise chiefly those which deal with topics of more or less *permanent* interest to naturalists and sportsmen.

In regard to many of the subjects here discussed the author is constantly receiving letters asking for information, and indeed in some cases it was the frequency of these applications which originally suggested the collection of materials for an essay on the subject of inquiry.

Of one thing the reader may be assured, namely, that these Essays are not sensational. The writer does not deal with fiction, except to refute it when occasion requires. The following pages will be found to contain a large number of facts on a variety of topics connected with sport and natural

908643

history, derived in a great measure from personal observation and experience, or collected from trustworthy sources, the reference to which is invariably quoted.

It is hoped that this collection of *facts* will not only prove useful to those to whom this volume is especially dedicated, but will serve also to amuse that large class of readers who, though not claiming to be either sportsmen or naturalists, take a general interest in pursuits and studies which at the present day are so widely cultivated.



CONTENTS.

	PAGE
FOREST ANIMALS	I
DEER SHOOTING IN JANUARY.	30
THE ROE DEER IN ENGLAND	38
THE IRISH WOLF-HOUND	56
HAWKS AND HAWKING	67
THE BOKE OF ST. ALBANS	96
HAWKING AS TAUGHT BY THE BOKE	102
TAKING PASSAGE HAWKS IN HOLLAND	109
THE SAME (<i>continued</i>)	117
HOW TO TRAIN A PASSAGE HAWK	129
THE BADGER AT HOME.	149
THE OLD ENGLISH BLACK RAT.	156
COUNTRY PRODUCE OF THE OLDEN TIME	171
WILD TURKEYS	179
TRUFFLES	185
LARK MIRRORS	190
PLOVER-CATCHING IN FRANCE	201
SHORE SHOOTING	206
FISHING NOTES IN HOLLAND.	217
BRITISH SPIDERS	222
THE FERRE NATURE OF THE LONDON PARKS	229
THE SPOONBILL IN SUSSEX	248
A SPRING RAMBLE IN FRANCE	257
THE SWALLOW'S STONE AND SWALLOW'S HERB.	276
THE HUMMING OF THE SNIPE	285

	PAGE
THE ANNALS OF IRISH ZOOLOGY	295
THE GREAT BUSTARD	329
PURPLE GALLINULES	342
THE ZOOLOGY OF ARABIA	351
AN ARABIC TREATISE ON HUNTING	362
WILD CAMELS.	371
KIWIS	377
WALRUSES AND SEALS	386
SPORT IN JAPAN	407
AN ESSEX DECOY	417
FISHING WITH CORMORANTS	423
A SHOT AT WILD SWANS	441
PRACTICAL HINTS ON BIRD PRESERVING	450

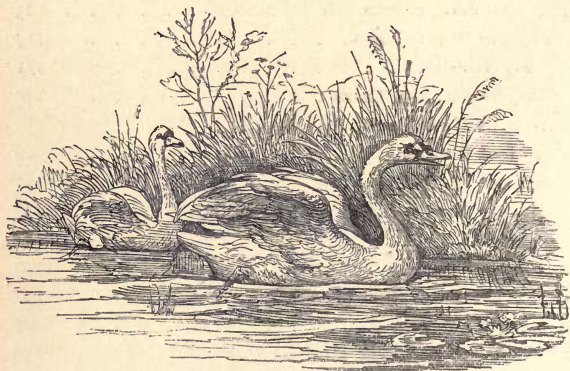


LIST OF ILLUSTRATIONS.

	PAGE
THE AUTHOR WITH A HAWK	<i>Frontispiece.</i>
THE IRISH WOLF-HOUND	61
THE FALCONER'S HUT	120
THE BUTCHER-BIRD "ON THE LOOK OUT"	123
WHEN THE HAWK COMES	125
A RUFTER-HOOD	131
JESSES, SWIVEL, AND LEASH	134
FALCON ON TURF BLOCK	136
THE HOOD PROPER	140
THE SAME IN PROFILE	141
A HOODED FALCON	148
THE BADGER	153
A LARK MIRROR	196
DITTO, ANOTHER PATTERN	197
A GARDEN SPIDER	228
SPOONBILLS IN A SUSSEX HERONRY	249
CELANDINE, OR SWALLOW'S HERB	281
OUTER TAIL FEATHER OF SNIPE	289
THE GREAT BUSTARD	331
DITTO, ON THE WING	333
A MATE FOUND	336
THE STRANGER RE-ALIGHTED	337
A PURPLE GALLINULE	345
LOPHIOMYS IMHAUSI	359

LIST OF ILLUSTRATIONS.

	PAGE
THE CHEETAH, OR HUNTING LEOPARD	365
THE DESERT LYNX, OR CARACAL	367
A CHEETAH'S HOOD	369
HAAST'S APTERYX	379
A TRAINED CORMORANT	436



ESSAYS ON SPORT
AND
NATURAL HISTORY.

FOREST ANIMALS.*

ON proceeding to take a survey of the denizens of a forest, the larger animals, from their size, naturally attract attention, and may therefore be considered first. As it will be necessary, however, for the sake of clearness, to take them in some kind of order, it will be well to explain first the meaning of the names which have been bestowed on the various groups into which it is convenient to divide them.

We have first the *Ruminants*—animals which ruminate, or chew the cud. They are mostly horned, although there are a few, in other countries, which are not. They are characterised by the absence of incisors, or cutting teeth, in the upper jaw. Instead of these, they have merely a callous pad, against which the cutting teeth in the lower jaw press, and so cut up the food in the same way as meat is cut up by means of a chopper and block.

* A lecture delivered to the Epping Forest and County of Essex Naturalists' Field Club, 10th November, 1880.

In order to go through the process of ruminating, they possess a specially formed stomach, or rather a series of stomachs, through which the food passes in turn before it becomes finally digested. It would be easy to explain by means of a diagram the exact process which is gone through by a ruminating animal every time it chews the cud, but it will perhaps suffice to state only what anyone may observe who narrowly watches the actions of a cow, or a deer. The animal first grazes, by nipping off the grass between the cutting teeth in the front of the lower jaw and the hard pad in front of the upper jaw. Each mouthful, instead of being masticated or chewed up, is swallowed at once, and it continues to graze until its hunger is appeased. It then lies down, and the process of ruminating commences. A contraction of the flanks, a spasmodic action in the throat, and the mouth (previously empty) is observed to be filled with the lately swallowed grass which has been forced up into it. The animal then proceeds to chew this between the back teeth, or grinders, with a slow and continuous motion of the lower jaw until the mouthful has become reduced to pulp, when it is again swallowed, and another mouthful is brought up to undergo the same process; and this goes on at intervals until most of the food swallowed has been masticated.

The canine teeth, or what in carnivorous animals would be called tusks, are noteworthy. In the lower jaw they are always present, though modified so as to resemble lateral incisors; in the upper jaw they are generally wanting, although in certain exotic species (as the Musk-deer, for example) they are

enormously developed, and project outwards and downwards to a considerable length.

The grinders are six on each side of each jaw, and so formed that their surfaces wear down unevenly by the lateral movement to which they are subject during the process of chewing; each tooth (as in the elephant) being composed of alternate layers of enamel—dentine and cementum—which, being of different degrees of hardness, are differently affected by the grinding action.

Another characteristic feature in ruminating animals is, that they are four-toed; they have neither thumbs nor great toes; and the feet are so proportioned that the axis of the limb falls between the two middle toes, while the inside and outside toes are much reduced in size, and in some animals (as the Camel and Giraffe) are lost entirely.

The only Ruminants still to be found wild in our forests are *Deer*, of which we have three species.

There was a time when we had also wild cattle in the forest, but those days have long gone by, and we can now only judge of their appearance from the few scattered herds which are still carefully preserved in certain parks.

To turn, then, to the *Deer*: the noblest of them all is THE RED-DEER (*Cervus elephas*) now almost entirely confined to the Highlands, and a few wild districts in Ireland; for, with the exception of Martindale Fells, in Westmoreland, and a certain portion of Somersetshire and North Devon, where it still roams in a wild state, it is not to be met with in England except in a few inclosed parks. And on Martindale Fells it appears that the few remaining deer are in

a state of semi-domestication. Still they are the original descendants of our wild Red-deer, and form a pleasing link of association with the past.

Only a hundred years ago there were Red-deer in Cornwall. When Borlase published his *Natural History* of that county, he wrote: "Red-deer are seldom seen in this county; some, however make their appearance for a time on the hilly downs about Bodmin, whence they haunt the woods upon the moors. They are found in greater plenty in the north, betwixt Launceston and Stratton, as if they were apprehensive of wanting room to range if they advanced into the narrow western parts." *

Carew, who published his "Survey of Cornwall" in 1602, regarded the Red-deer then in Cornwall as stragglers from the adjoining county of Devon, † and no doubt many of them were stragglers; but Tonkin in his edition of this Survey published in 1811, observes: "We have some Red-deer that breed in the inland and eastern parts of the county, though not very many." ‡ The fact of their breeding, however, in Cornwall at that date is significant, showing that there must have been a good deal of wild ground well suited to their habits.

Years after Carew's "Survey" had appeared, there were still plenty of wild Red-deer in Hatfield Chace,

* Borlase, "Nat. Hist. Cornwall," p. 288.

† "Red deere this shire breedeth none, but onely receiveth such as in the summer season range thither out of Devon: to whom the gentlemen bordering on their haunt afford so coarse entertainment, that without better pleading their heeles, they are faine to deliver up their carcasses for a pledge to answer their trespasses."—*"Survey of Cornwall,"* p. 23.

‡ *Op. cit.* ed. Tonkin, 4to., 1811, p. 77.

and Prynne has left a graphic account of the mode in which they were hunted there in the time of James I. He describes how, for the amusement of Prince Henry, a large herd was surrounded and driven down to the Trent, where they were forced to take the water, their antlers resembling, when close together, a moving forest; how they were pursued in boats by the Prince and his companions, and how the fattest were then selected and killed, and drawn on shore with ropes.

The precise date at which the Red-deer became extinct in that wild Chace could only be approximately surmised, for the nature of the country was such as to favour their existing there for a period long subsequent to the event described by Prynne.*

In Lancashire, in the great forests of Bowland and Blackburnshire, there were Red-deer until the commencement of the present century. The last herd was destroyed there in 1805.†

In Gloucestershire, Red-deer were introduced into the Forest of Dean in 1842, when two stags and four hinds from Woburn were enlarged. They increased slowly until 1849, when in consequence of the frequent and serious poaching affrays which took place, and the great difficulty in preserving them, all the deer in this forest were ordered to be killed.

Gilbert White's description of the Red-deer in Wolmer Forest, Hampshire, must be familiar to everyone. In Queen Anne's time, he says, they numbered about five hundred head; but some years before he commenced his delightful series of letters

* See Devon, "Issues of the Exchequer" (Pell Records), p. 293.

† Whittaker, "History of Whalley," vol. i., p. 205.

to Pennant, they had dwindled down to about fifty, and he himself saw one of the last that was taken, the survivors of the herd being captured alive by Royal command and removed to Windsor.*

A few Red-deer lingered down to the present century (1827) in Epping Forest; and Bell, in his "History of British Quadrupeds," speaks of having seen some, many years ago, in the New Forest. They were doomed in 1851.

It would be interesting to trace out the last haunts of Red-deer in the various counties of England, and the inquiry doubtless would result in the acquisition of some curious information; but to attempt it here would cause too great a digression.

Those who have not the leisure or opportunity of following the Red-deer in the Highlands of Scotland, the wilds of Kerry, or the moorlands of Devon, must be content to study them in the few parks where they are still preserved in a semi-domesticated state.

It was formerly the practice to keep the Red-deer and Fallow-deer apart in parks where both species were maintained, owing to an impression that the stags of the former species would kill the latter. Gervase Markham, in his edition of the "Maison Rustique, or the Countrey Farme," printed in 1616, says (chap. xix): "You shall not by any meanes in one parke mixe the Red-deere and the Fallow-deere together, for the Red-deere is a masterfull beast, and when the time of bellowing cometh, he grows fierce and outragious, so that hee will be entire lord of the field, and will kill the Fallow-deere if they but crosse him in his walke;

* Gilbert White, Letter VI. to Pennant.

and therefore each must be kept severally in severall parkes."

That such was the practice in the sixteenth and seventeenth centuries is proved by the "Red-deer Parks," distinct from parks for Fallow-deer, which are found in many of the great places of England, such as Badminton in Gloucestershire, and Grimsthorpe in Lincolnshire, where separate parks for the different kinds of deer were formerly kept up. The present practice appears to be generally to allow both Red and Fallow deer to be together, the danger alluded to by Markham having been proved to be exaggerated, if not without foundation.*

The different appearance presented by the stags of the two species is very marked, owing to the entirely different character of their antlers. Those of the Red-deer are round, rough, and tapering, with three tines directed forward (the *brow*, *bez*, and *royal*. antlers), and the *cup* or *crown* of three or more points at the end; those of the Fallow-deer are smooth and palmated with only two anterior tines (a third being of rare occurrence), and with the hinder margin of the flattened portion of the beam notched so as to form an indefinite number of points. The horns begin to appear at the age of about seven months, when two small protuberances are perceptible; and gradually in the second year straight pointed horns shoot forth. About the beginning of April, before the animal is quite two years old, these fall off at the very root. In the course of the summer another horn grows up, and a broad antler issues from it in a downward curve

* Shirley, "English Deer Parks," p. 236.

towards the eyes. At this stage the deer is termed a *brocket*. A year later an additional point is seen on each horn, and the animal is then known as a *staggard*. When another year has passed each main stem is termed the beam, and the whole together is worthy the name of "antler." The animal is now a *stag*. From year to year, should no accident occur, the antlers, which in summer time shoot up anew to replace the old ones, increase in regular gradation and size and branching magnificence, and when each beam bears three anterior tines, the animal is called a *hart royal*.*

This casting and reproduction of the horn, growing plant-like on the living animal, is one of the most wonderful phenomena in natural history. It is so curious and wonderful that it would be regarded as a fable were it related of a creature in a distant land which none of us had ever seen. And though the stag is a native of this country, there are probably thousands at the present day who have no correct knowledge of the process. They have heard that stags "shed their horns," but of the meaning of the words they have no clear idea. Least of all do they imagine that the whole of the strong, thick, solid growth parts at the base from the spot where it grows, and drops to the ground like a dead leaf in autumn. Nor do they know that out of the hard bone there sprouts forth a soft, sap-filled shoot, which grows up like a tree with branches.

The exact time of shedding the horns depends in some measure upon the age of the animal and the temperature of the winter and early spring. They

* Boner, "Forest Creatures," pp. 58, 59.

are sometimes shed towards the end of February or beginning of March; but should the winter be cold and spring protracted, the stags shed their horns as late as May—the old ones at the beginning, the young ones at the end of that month. It is very rarely, however, that an old stag is seen with his old horns on after the beginning of May; but a two-year-old deer will carry them for a month or two later.*

In a few days after the old horns have dropped, the new growth shows itself, and gradually the new antlers are developed. They are then covered with a thick velvet which preserves the point, as yet soft and tender, from injury. While in this soft condition they are very sensitive, and to avoid injury by striking them against trees the deer leads a life of retirement. In about twelve weeks they are full grown, and as they gradually harden, the animal rubs them against a tree to get rid of the velvet. This can only be done gradually, and a stag may often be seen at this time of year with the velvet hanging in strips, being only partially detached from the horns. The weight of the antlers in a full-grown stag varies, according to their size and massiveness, from ten or twelve to fifteen pounds. This is nothing compared to what antlers used to weigh in former days, a circumstance which must have attracted the notice of all who have examined old collections of deer's heads, such, for instance, as may be seen in some of the royal palaces and ancient halls in Germany. This is to be accounted for by the fact that the deer formerly attained a much greater age

* Collyns, "Chase of the Wild Red-Deer," pp. 32, 33.

than they are now allowed to do, and they had better and more abundant pasturage than now, when the woods are cut down and the land is highly cultivated. Abundance of nutritious food usually produces antlers of large growth.

I have referred briefly to the character of the teeth in Ruminants. Red-deer, both male and female, at one year old have two cutting teeth in the lower jaw; at two years old they have four; at three, six; and at four, eight cutting teeth in the lower jaw. Stags when five years old have two canines, or tusks, in the upper jaw; and occasionally, but rarely, very old hinds have these tusks also, but less fully developed than in the stags.

Deer pair in the autumn, a fact which the stags do not fail to announce by their loud "belling," and by the battles which they fight, when the crashing of their antlers may be heard at a considerable distance. The young are brought forth in the summertime, when a high growth of fern favours their concealment.

The Red-deer very rarely produces more than one young one at a birth.* This is born in June, and, up to the age of three or four months, is spotted with white like a Fallow-deer. Gradually it assumes a uniform colour.

With regard to food, deer subsist chiefly on grass, leaves, and tender shoots of trees, beech-mast, acorns, and even fungus. Fallow-deer are very

* So says Scrope, in his "Days of Deer Stalking;" but Collyns mentions three instances in which Red-deer hinds produced twins—pp. 48, 50.

partial to horse-chestnuts; and both species are particularly fond of salt, which they will come a long way to lick when they have once discovered that it has been laid down for them. It is doubtless the saline flavour which attracts them to gnaw antlers which have been shed; and this in some measure accounts for the infrequency with which such antlers are found. Collyns was assured by keepers and hillmen of great experience and undoubted veracity in Scotland that it is a common occurrence for the hinds to eat the cast horns, but he was never able to confirm it from his own experience in Devonshire and Somersetshire. During the summer of 1880, however, there appeared in *Nature** a letter on the subject from the head keeper at Bradgate Park, near Leicester, which is very explicit. He says: "There is not the slightest doubt of their eating each other's horns. I have myself seen several cases where both brow antlers and the top points have been gnawed off. I have also seen Scotch heads that have been quite spoiled by the tines having been gnawed, which must have been done after the horn had become hard, and whilst the animal was living."

Before concluding my notice of the Red-deer, I may mention a curious circumstance in connection with it. Lyme Park, Cheshire, was celebrated for its fine venison, and formerly the custom prevailed there of collecting the Red-deer once a-year—about midsummer or rather earlier—in a herd before the house, and then swimming them through a pool of water, with which the spectacle terminated. This

* *Nature*, 8th July, 1880.

custom of driving deer like ordinary cattle is said to have been perfected by an old park-keeper, Joseph Watson, who died in 1753, aged 104, after having filled that office for sixty-four years. He was believed to have been in his 102nd year when he hunted a buck in a chase of six hours' duration, and is said to have successfully driven twelve brace of stags from Lyme to Windsor Forest.

This reminds me of an anecdote told by Playford in his "Introduction to Music," to the effect that he once met, on the road near Royston, a herd of about twenty deer following a bagpipe and violin; that while the music played they went forward, and when it ceased they stood still; and that in this manner they were brought out of Yorkshire to Hampton Court.

THE FALLOW-DEER (*Cervus dama*) is so commonly kept in English parks and forests, that its appearance must be familiar to all; and as I have already pointed out the character of its horns as compared with those of the red-deer, I need not pause here to give any further description of it.

It is believed to be not indigenous to this country, and the general opinion is that it was introduced by the Romans. The statement in Bell's "British Quadrupeds," to the effect that the dark-coloured variety is said to have been introduced from Norway by James I., can hardly be deemed correct. He imported some, no doubt, in 1612;* they were landed in Scotland, and were afterwards transferred to Epping Forest and Enfield Chase. But we learn

* See Devon's "Issues of the Exchequer" (Pell Records), p. 150.

from Leland that there were dark-coloured deer in England long before that date.* Indeed, on this point I have found a much older authority than Leland, who commenced his "Itinerary" in 1533.

Sixty-eight years before that date—namely, in 1465—the Baron Leo von Rozmital, brother to the Queen of Bohemia, visited England, and a most interesting record of his visit, in the shape of an Itinerary written by one of his suite, has fortunately been preserved to us. In this journal, which is in Latin, it is stated that, amongst other places named, he visited Windsor Park, where he was particularly struck with the great number of Fallow-deer, which are described as being black, white, and spotted. Thus we have evidence of the existence of this dark variety of Fallow-deer in England long before the time of James I.

Another statement, which has more than once found its way into print,† to the effect that the spotted variety of this deer was produced by crossing with the Axis Deer brought from Bengal by Capt. Gough in 1742, is incredible; the two animals belong to such widely-different genera, that it is not likely that they would interbreed. Moreover, we know, from the Itinerary above quoted, that the spotted variety existed in England in 1465. James I., too, sent some as a present to the King of France in 1608, more than a century before the introduction of Capt. Gough's Axis.

* Leland's "Itinerary," vol. vii., p. 40.

† Daniel, "Rural Sports," Supplement, p. 693; and Scott, "British Field Sports," p. 380.

With regard to the reproduction of the Fallow-deer, the growth and shedding of its horns, and its food, the remarks made under the head of the Red-deer will, in a great measure, apply; and I need not dwell upon the particular respects in which a difference has been observed further than to note that the Fallow-deer not unfrequently has two fawns, and occasionally three, while the Red-deer, as already stated, has very rarely more than one.

Modern instances, in which Fallow-deer have been allowed to range freely over unenclosed ground in England, are probably rare. They are seldom seen beyond the limits of a park paling.* I may therefore mention one such instance. Longcroft, in his "Topographical Account of the Hundred of Bosmere in the Co. Southampton" (1857), states (p. 27) that "the Thicket, Stockheath, and Leigh Green are the common wastes of the Manor of Havant. The former is a large tract of land containing about 800 statute acres, was formerly a chase, or privileged place for deer and beasts of the forest, and till within the last thirty years (*i.e.*, till 1827) a herd of Fallow-deer ranged freely over its uncultivated space. These were preserved by the Bishops of Winchester, who appointed keepers and took every care to keep up the stock. There being, however, *no park or enclosure*, the deer strayed away into the neighbouring lands, and were gradually killed down."

The ROE-DEER (*Capreolus caprea*), one of the

* It is otherwise in the West of Ireland, where at the present day Fallow deer roam in a wild state through many parts of Clare and Galway.

most graceful and attractive of forest animals, is in this country almost entirely confined to Scotland. I say *almost*, for in a certain part of Dorsetshire, where the species has been re-introduced, it not only exists, but has increased and multiplied. That it was at one time plentiful in many other parts of England there is abundant evidence to show. I have notes of its former existence in the counties of Northumberland, Durham, Cumberland, Lancashire, Yorkshire, Norfolk, Suffolk, Cambridge, Hants, and Devon, as also in Wales, where it is said to have existed until the time of Elizabeth. In Cumberland it certainly survived until 1633, if no later; and in Northumberland the last Roe-deer is reported to have been killed near Hexham, in the reign of George I. (1714—1727).

In Dorsetshire it was re-introduced in 1800 by the late Lord Dorchester, who turned out a few pairs in his woods at Milton, from whence their descendants dispersed in a very short space of time, especially in a south-westerly direction.

A resident in that neighbourhood, Mr. J. C. Mansell Pleydell, estimated in 1879* that there were then no less than 120 head in the Milton, Whatcombe, and Houghton Woods, which fringe the southern side of the Vale of Blackmore, from Stoke Wake to Melcombe Park, and the Grange Wood westward, the number being merely a question of preservation or non-preservation.

The Roe-deer was once much more common in Scotland than it is at present, but it is still very plentiful, and has much increased of late years. It

* See *The Zoologist*, 1879, pp. 120, 170, 209, 262, 301.

is believed that the increase of plantations in the south of Scotland has been the means of spreading it much farther in that direction than it used formerly to be found.

In Ireland the Roe-deer is unknown, notwithstanding the statement of Bede, so quaintly contradicted by John of Trevisa; nor have any remains of this animal been discovered in the sister isle.

Those who would learn something of the habits of the Roe, from one who has had frequent opportunities of observing it, should read the excellent account given in the second volume of Stuart's "Lays of the Deer Forest;" nor should they omit to peruse the equally trustworthy account furnished by the author of "The Moor and the Loch."

One of the most curious points in the history of this animal, but one on which I need not now enter in detail, is the phenomenon known as "suspended gestation," and which long puzzled sportsmen and naturalists, until the scientific researches of Professor Bischoff, of Giessen, the well-known embryologist, placed the matter in a clear light. The result of his investigations will be found in the second edition of Bell's "British Quadrupeds." Unlike the Red-deer, the Roe generally has two fawns, and, very rarely, three have been observed with a doe.* These, like the young of the other species, are at first spotted with white.

A pure white Roe is a rarity, but is not altogether unknown. One, in the collection of Sir James Colquhoun, was obtained near Luss, on Loch Lomond; and I have heard of others in Germany.

* The *Field*, Sept. 2nd, 1871.

Occasionally one may see a female Roe-deer bearing horns; but such instances are, of course, not common.* Mr. Duncan Davidson, of Inchmarlo, Banchory, Aberdeenshire, shot a female Roe-deer, with budding horns, on the 26th October, 1875; and two other such instances are mentioned in the *Zoologist* for 1866 (p. 435).

The Roe is singularly liable to malformation of the horns, and some curious collections have been made of these misshapen antlers.

Before dismissing the subject of Deer, I should like to say something of the various modes of hunting them, past and present, and refer to some of the quaint old treatises which have been written on hunting. But space will not permit, and I must pass on to another, and a very different, group of animals—the *Rodents*, or gnawing mammals; so called from their mode of life, to which the form of their teeth is admirably suited.

So peculiar is the dentition of the Rodents that it is not to be mistaken for that of any other group. They have only incisors and grinders, no canines, and never more than two efficient incisors in each jaw. I say *efficient* because, in the Hare and Rabbit, and some allied forms, there is in the upper jaw a second pair of *rudimentary* incisors placed immediately behind the front or cutting pair, which never become developed or used.

The position and shape of the incisors proper are remarkable; they have no roots or fangs, but grow from a permanent pulp, and so continue growing through life. Their form is that of a segment of a

* *The Field*, Nov. 8th, 1873.

circle, hence they always protrude from the front of the jaws in the same direction, and meet at the same angle. By this means, as the teeth become worn by gnawing, they continue to grow forward, and so a fresh supply of tooth, so to say, is always maintained. If by any accident (as by a shot, or otherwise) one of the incisors should get broken or misplaced, the tooth with which it should come into contact, not meeting with any resistance, continues to grow downwards or upwards, as the case may be, and gradually assumes the appearance of a bony circle outside the mouth, to the great inconvenience of the poor animal, sometimes, indeed, causing death by starvation.

In the case of the Rabbit, as many people have doubtless observed, such malformations are not uncommon. The canine teeth being, as I have said, absent, there is quite a gap between the incisors and the grinders, the latter being so regular and similar in appearance, that it is difficult to recognize any distinction of molars and premolars.

The articulation of the lower jaw with the skull is peculiar, for while it results in increasing the power of the incisors or cutting teeth, it prevents much lateral movement of the jaw, and insures, as much as possible, the meeting of the incisors in both jaws.

I might point out other peculiarities of structure which distinguish the Rodents from other animals; but these will perhaps be considered dry details, and I will therefore merely direct attention to the strong and muscular hind limbs which they possess, enabling them to leap and run with great facility and swiftness. They may be said to be all vegetable

eat-ers, although some of the species, like rats and mice, are omnivorous.

In the case of such common animals as the HARE (*Lepus timidus*) and RABBIT (*Lepus cuniculus*), it is not to be supposed that I can say anything very new; but it may be assumed that there are some who, though perfectly familiar with the outward appearance of these animals, may perhaps not have paid much attention to their natural history.

Though externally somewhat similar in shape and colour (I once shot a wild rabbit of the exact colour of a hare), in other important respects hares and rabbits are very dissimilar.

Rabbits are born blind, and nearly naked; while young hares at birth are clothed with fur and have their eyes open. Rabbits produce their young underground; hares construct "a form" above ground. To this general rule, however, exceptions have been noted. Rabbits have been known to breed above ground,* and hares have been observed to burrow.† You may generally tell whether turnips have been nibbled by Hares or Rabbits by the difference in their mode of attacking the root. A Hare will bite off the peel and leave it on the ground; a Rabbit will eat peel and all.‡

Hares vary much in weight, and occasionally in colour. The average weight may be between 7lb. and 8lb., but I have notes of three, shot in Lincolnshire, in the autumn of 1877, which weighed

* See *The Field*, December 2nd and 16th, 1876.

† *Annals and Mag. Nat. Hist.*, vol. v., p. 262.

‡ *The Zoologist*, 1878, p. 100.

respectively 11lb. 3oz., 11lb. 12oz., and 11lb. 3oz.* With regard to variation in colour, I have notes of the capture of three black Hares, several albinos, and one parti-coloured one, in different parts of the country.

Black and sandy-coloured Rabbits are not very uncommon, but an albino Rabbit, truly wild, is, I think, not often met with.

Both Hares and Rabbits can swim well, but it generally requires the persuasion of the sportsman or his dog to make them take the water. I have only once seen a hare swim voluntarily, and then the stream crossed was not a wide one.

The appearance of THE SQUIRREL (*Sciurus vulgaris*) must be so familiar to everyone, that I need not offer any description, but will confine myself to a few remarks on its habits.

We have seen how one Rodent lives underground, and another makes its "form" upon the surface. We have here a case of one which constructs its nest in a tree, sometimes in a hole, sometimes in a fork between two branches. This nest, or "drey," is made of moss, leaves, and long dry grass, and makes a soft cradle for the young ones, which are born naked and blind, towards the end of May or beginning of June, when there is a good screen of leaves, be it observed, to conceal the nest and its owners.

The bill of fare of the Squirrel is a very varied one: beech - mast, acorns, nuts, young bark (especially of the birch), the cones of larch and other pines, leaf-buds and tender shoots, mushrooms, fungus, and even truffles are all eaten in turn. In

* *The Field*, November 10th, 1877.

search of many of these it often descends to the ground, and hunts for and digs up the truffle by scent. It lays up a winter store of provisions in some hole of a tree, not relying upon one such hole, however, but filling several in case of accident. Occasionally at least, if not habitually, Squirrels will take birds' eggs; and I have noted the testimony of an eye-witness to the fact that they will sometimes also carry off, kill, and eat young birds.

In May, 1879, Mr. Thomas Bagnall, of Milton Ernest Hall, Bedford, saw a Squirrel in his avenue carry off, kill, and partially devour a full-fledged young Starling, the remains of which he succeeded in recovering.

During a great part of the winter, when the red fur perceptibly changes to grey, the Squirrel lies up in a semi-torpid state, coming out on a fine day to feed on some of its stores, and then retiring again.

In answer to the question whether Squirrels are injurious to trees, I must reply, "Yes; to some trees; chiefly in plantations of Scotch fir, larch, and occasionally spruce." They attack trees in the spring, between April and June, when the sap is in full flow, biting off the outer bark, and consuming the inner. This stops the flow of sap, which there becomes dry and resinous, and the first high wind blows the top off.

In the same haunts as the Squirrel we may find that beautiful little animal, THE DORMOUSE (*Myoxus avellanarius*).

It is shy and retired in its habits, and must be noiselessly approached if one would observe its movements. It is partial to woods where there is a

thick undergrowth to conceal it, and amongst which it makes its nest ; but this is sometimes placed on the ground.*

I once discovered a Dormouse ensconced in an old nest of a Blackbird, where it had made itself very comfortable in a bed of dead leaves. Although, like other Rodents, it is, strictly speaking, a vegetarian—feeding on beech-mast, acorns, young hazel-nuts, corn, and so forth, during the autumn, and laying up stores for the winter—yet, during the summer, when such food is not to be obtained, it is insectivorous. A tame Dormouse, when allowed a run in the garden, would eat the *Aphis lanigera*, and the caterpillars of *Sphinx ocellata*. It was very fond also of the grubs of *Balanus nucum*, the nut weevil, preferring maggoty nuts to sound ones on that account ; it would also eat the small caterpillars found in apples and pears.

As its name implies, the Dormouse is a great sleeper, and remains dormant during the greater part of the winter. I once saw a pure white one which had been captured at Cowfold, near Horsham, where it is now preserved in the collection of my friend Mr. Borrer.

Two other little animals sometimes cross our path as we take our rambles through the forest—THE LONG-TAILED and SHORT-TAILED FIELD-MICE. Strictly speaking, the latter is not a true Mouse, but a Vole belonging, like the so-called Water-rat, to the genus *Arvicola*, the members of which are distinguished from those of the genus *Mus* by several well-marked characters.

* *The Zoologist*, 1872, p. 2908.

You may know the Long-tailed Field-mouse (*Mus sylvaticus*) by his sharp snout, long ears, and long rat-like tail. The Short-tailed Vole (*Arvicola agrestis*), on the contrary, has a blunt rounded muzzle, short ears almost hidden in the fur of the head, and a short hairy tail. Though very attractive in appearance, and easily tamed, they are, unfortunately, rather mischievous in their habits, and sometimes do a great deal of damage in young plantations by barking the trees.* Fortunately, they are kept in check to a considerable extent by owls, both white and brown, who capture and devour great numbers of them, as I have often ascertained by an examination of their rejected pellets.

Childrey in his "Britannia Baconica," 1660, relates (p. 14) that in 1580 an extraordinary swarm of field-mice appeared in Denge Hundred, Essex, and eat up all the roots of the grass. "A great number of Owles," he says, "of strange and various colours [doubtless the Short-eared Owl] assembled, and devoured them all; and after they had made an end of their prey, they took flight back again from whence they came."

We come now to the order *Insectivora*, or insect-eating mammals, of which two are dwellers in the forest, namely the Common Shrew and the Hedgehog. The animals belonging to this order are at once distinguishable from the Rodents by their dentition. The latter, as I have pointed out, have no canine teeth; Insectivora have, and their dentition generally resembles that of the strictly insectivorous

* See Jesse's "Gleanings," 1st series, p. 175, and St. John's "Wild Sports and Natural History of the Highlands," p. 67.

Bats, the molars, or grinding teeth, being similarly furnished with several sharp cusps, or points, which are characteristic of insect-eating mammals, and all the teeth have roots, or fangs. There are other peculiarities of structure, to which, however, at present, I need not refer.

From its shy and retired habits, THE COMMON SHREW (*Sorex araneus*) is not often to be observed in a living state, but may frequently be seen lying dead on the pathway. The cause of the mortality amongst these little animals, though frequently noticed, has never been satisfactorily accounted for; and Bell, in his "British Quadrupeds," has not attempted any explanation. It has been said that their odour is repulsive to their enemies, who will kill, but will not eat them; but this is not invariably the case, for I have found numerous skulls of shrews in "pellets" of the Barn Owl, and once took two of these little creatures from the stomach of a Stone Curlew.

Of THE HEDGEHOG (*Erinaceus europæus*) I might say a good deal, but with so many other "Forest Animals" on the list, I must be brief.

Although from its structure and mode of life the Hedgehog is properly classed with the *Insectivora*, it is really omnivorous. Nothing seems to come amiss to it. Beetles, worms, slugs, snails, frogs, mice, eggs, young chickens, and even young rabbits, are eaten in turn as opportunity serves; and on one occasion a Hedgehog was surprised with a young leveret struggling in its jaws.* Two that I kept in confinement for some time were particularly fond

* *Gardener's Chronicle*, 1846, p. 480.

of frogs, and if a single one were thrown to them would fight for it greedily, and tear it limb from limb.

In this propensity for flesh, the Hedgehog resembles the animals which I have next to notice—viz., the *Carnivora*—distinguishable by their immensely powerful teeth (the canines, or tusks, being largely developed), a loose skin, and strong legs and feet, armed with hard sharp claws.

Of this order we once had notable representatives in our forests in the shape of the Bear and the Wolf, but these, alas! are no longer to be found here; and the most powerful survivors of this group of animals are the Badger, the Wild Cat, and the Fox.

THE BADGER (*Meles taxus*) is of special interest as being the sole surviving representative of the bear family in this country. It is a plantigrade animal, walking upon the entire sole of the foot, like a bear, instead of on the toes only, like a cat. In its habits also and food it resembles the bear, living in holes, laying up by day, and coming forth at night; and feeding on various roots, fungus, earth nuts, beech-mast, blackberries, dung-beetles and grasshoppers, snails and worms, frogs and mice. Strange to say, the Hedgehog is a favourite morsel, and is easily killed by a Badger, notwithstanding its armour. In confinement the Badger has been known to devour rabbits greedily; and a partially devoured mole has been found in a nest of young Badgers.* I have never heard any accusation against the Badger for damaging young trees, nor do I believe that he would do so, his diet being what I have stated. Nor do I believe that there

* *The Field*, March 23rd, 1872.

is any truth in the allegation that if badgers are suffered to remain in a fox-covert they will drive the foxes away. Wild animals, as a rule, live in harmony, especially where (as in the case of Fox and Badger) neither preys on the other.

No apprehension need be felt about the proximity of a Badger to a farmstead. He is of a retiring disposition, and will keep out of man's way as much as possible.

Badgers sleep away much of their time in winter, and can go a long time without food. Their foot-prints are seldom seen in the snow.

Amongst the carnivorous animals which may often be seen hanging up in the "keeper's museum" at the corner of a wood, are THE WEASEL (*Mustela vulgaris*) and THE STOAT (*Mustela erminea*), the latter distinguished by his larger size, and longer tail with a black tuft at the end of it.

Weasels I regard as particularly useful animals, for they destroy a vast number of mice and voles. They should always be encouraged in the stack-yard, instead of being caught and nailed up against the barn. Stoats I am not so sure about. They kill rabbits, leverets, and young game birds. Doubtless they kill field-mice too. I have twice seen a Stoat carrying a short-tailed vole as a retriever would a rabbit; and I once witnessed a fight between a Stoat and a Rat, in which the Stoat, after a tremendous struggle, came off victorious.

Both Stoats and Weasels hunt by scent, as I have several times proved by personal observation, and I could relate many curious anecdotes of what I have witnessed. Both these animals swim well, and do

so voluntarily. I once had the pleasure of watching an old Stoat giving her young one a swimming lesson, and a very entertaining sight it was. They carry their young in their mouths as cats do their kittens.

The Stoat becomes white, or nearly so, in winter; but there is usually a patch of brown on the face, and the tip of the tail is black at all seasons.

The Weasel very rarely becomes white. I have only seen two that were so: one killed at Willoughby, in Leicestershire, in the winter of 1867; the other in Soham Fen, Cambridgeshire, in September, 1879.

THE POLECAT (*Mustela putorius*), from which the ferret is descended, is now becoming a rare animal in England, and is not often to be seen, so extensively has it been trapped by game preservers and their keepers. That it is a very destructive animal there can be no doubt, not only to game, but also to poultry, for it will visit the farmyard and henroost, and in one night kill many more fowls than it can eat or carry away.

Many years ago I discovered a whole family of Polecats (two old ones and four young ones) in a flint cairn not more than fifty yards from a poultry-yard. They were tracked after rain, and the stones being removed one by one, we suddenly came upon a hollow in which the whole family were snugly curled up. One of the old ones escaped; of the rest, four were killed and one was taken alive, a wholesale massacre which I now regret.

That beautiful animal THE MARTEN (*Martes sylvatica*), once so common in English forests, is still to be met with in certain parts of the country

which are favourable for its protection, but it must be regarded, at least in the south, as one of the rarest of forest animals. The last killed in Essex was trapped in April, 1853, in one of Mr. Maitland's coverts at Loughton. The last seen in Sussex was killed some five-and-twenty years ago, by foxhounds, at Holmbush, near Crawley, and was preserved for Mr. Borrer, of Cowfold, near Horsham. In Dorsetshire, none have been reported since 1804, when one was killed in the Chase Woods by the late Mr. Chafin's hounds. In Devonshire a few have been met with of late years upon the borders of Exmoor, and one was killed in the north of Cornwall in March, 1878, but in the south of England it is now well nigh extinct. Of late years a few have been taken in Norfolk and Lincolnshire, but these were only isolated cases, serving to show its rarity. In some of the mountainous parts of Cumberland and Westmoreland it still holds its own, especially in Borrowdale, Scathwaite, and Wastdale, where it is occasionally hunted with foxhounds. In parts of Scotland and Ireland at the present day it is still regarded as being of more common occurrence than in England.

THE FOX (*Vulpes vulgaris*) is so well known in appearance and habits that no description seems needed of so familiar an animal.

THE WILD CAT (*Felis catus*), which was also a beast of chase in former days,* is now believed to be extinct in England, as well as in the southern counties of Scotland. It was formerly common in Westmoreland, where it appears to have become

* See *The Zoologist*, 1878, p. 251, and 1880, p. 251.

extinct within the last fifty years. Gilpin in his "Forest Scenery" refers to its former existence in Cumberland, Yorkshire, and Nottinghamshire, and particularises Wycliffe Wood, near Richmond, the neighbourhood of Ingleborough, and the forests of Rockingham and Whittlebury as former noted haunts. Donovan in his "British Quadrupeds" (1820) describes one killed in Warwickshire about 1780 which measured 18in. in height, and 38in. from tip of nose to end of tail. Perhaps the last wild cat killed in England was that shot by Lord Ravensworth at Eslington, Northumberland, in 1853.*

Mr. Harvie Brown has come to the conclusion, from statistics which he has carefully collected,† that "the Wild Cat is now extinct throughout a large portion of Scotland, namely, all south and east of a line commencing—roughly speaking—at Oban, in Argyllshire, passing up the Brander Pass to Dalmally; following the boundary of Perthshire, and including Rannoch Moor; continued north-westwards to the junction of the three counties of Perth, Forfar, and Aberdeen; thence across the source of the Dee northward to Tomintoul, in Banffshire; and, lastly, from Tomintoul to the city of Inverness. Northward and westward of this line the animal still keeps a footing in suitable localities finding its principal shelter in the great deer forests."

* Trans. Tyneside Nat. Field Club, vol. vi. 1864, p. 123.

† See *The Zoologist*, 1881, pp. 8-23.

DEER SHOOTING IN JANUARY.

ALTHOUGH "deer shooting," in its restricted sense, is not to be compared with "deer stalking," sufficient excitement attends the sport to render it attractive, and enough difficulty to make it worth the sportsman's while to attempt it.

It may seem an easy matter to shoot a deer in a park, yet to select an animal from the herd, drive it out, and kill it with a bullet at any distance from fifty to a hundred and fifty yards, is more readily conceived than executed.

Deer, when alarmed, keep very close together, and, if they do not actually go off at a good pace, are constantly in motion, passing and repassing one another in the most vexatious manner, and thus rendering it impossible to fire at any particular animal without risk of hitting, and perhaps maiming, two or three others. It is here that the patience of the sportsman is tested, as well as his skill, in taking immediate advantage of an opportunity to fire.

Again, one is expected to hit the Deer in the head, for a large hole made by the rotatory motion of a bullet spoils both skin and meat; moreover, unless particularly well directed, a bullet in the body does not always prove fatal. If, in addition to these drawbacks, the day is cold, with a fresh wind blow-

ing, or snow falling, it will be readily understood that success is by no means to be predicted as a matter of course.

I have been led to these reflections on turning over the leaves of an old note book, in which I find chronicled the result of a day's deer shooting in January. The day having been fixed a week or more previously, and a long railway journey being necessary, it was not possible to make choice of a favourable day for shooting, and we had to take our chance of the weather. As it happened, the weather could scarcely have been worse or more unfavourable for our purpose. It was extremely cold, and, while a sharp wind materially affected our shooting, our tempers were not improved by having the snow in our faces all day. But such was our fate. The park, from its large extent and the undulating nature of the ground, planted here and there with clumps of forest trees, was well adapted to the sport, for not only were the Deer able to run out of sight, and obtain a temporary repose, but, after the first few shots, when they became wary and restless, we were enabled to practise both stalking and driving.

Owing to the difficulty, before alluded to, of picking out a Deer from a large herd in close order and constant motion, it became necessary to disperse the ranks, and by means of beaters judiciously placed, we contrived to break up the herd and scatter small parties of ten or a dozen each in different directions. Having effected this, my host and I separated in opposite directions, not without certain misgivings as to the result, but buoyed up with that pleasant feeling of excitement and friendly rivalry which

sportsmen so well know when competing for the heaviest bag on different beats.

In one respect my host had an advantage, in being armed with a double rifle. Mine was a single, a miniature express by Holland, bore .360 (called by Messrs. Holland the "Climax"), and although a mere toy in appearance, with a barrel of 28in. and weighing only 6lb., it proved to be quite as effective as the larger and more formidable-looking weapon of my friend. With this rifle I use a drachm and a half of powder, and a hollow-pointed short-cone bullet. This charge gives a very flat trajectory, and only one standard sight is required from 40 to 150 yards.

Following the direction of a small herd of seven, and peering cautiously over a brow, I found myself suddenly in closer proximity to them than I expected, and obtained my first shot at about sixty yards; but whether from nervousness or haste, or both, I contrived to miss, and had the mortification of seeing the herd trot slowly away. I soon got another chance, however, and, by keeping a large oak between myself and the particular Deer which I selected, I was easily enabled to get within range again, and dropped a fine doe, the bullet going in at the base of the ear. As she rolled over in their midst, her companions, with a sudden start of surprise, fled in all directions, but, soon reuniting, disappeared in the distance, and by the time the keeper had cut her throat, they were nowhere to be seen.

As we stood over the fallen Deer, a sudden exclamation from my companion caused me to look round, but only in time to see the antlers of a buck

disappearing behind the brow which we had so recently crossed. This, apparently, was the leader of a small herd which my host had driven from the other side of the park, and which in haste must have come upon us unawares. Running back to the brow and kneeling down, I saw the herd going away diagonally in a straggling line, and, firing somewhat too hastily at the last doe, was vexed to find that I had only broken the near fore-leg. The animal fell, but, instantly recovering herself, joined her companions and got away, much to the chagrin of the keeper, who importuned me to keep her in view and kill her if possible, lest, by losing sight of her, she might escape and die. What a run we had across the open and over the crisp snow, slipping and sliding, now and then almost falling, and again recovering our feet as we held forward in the vain hope of a check that might give us a little breathing time, and enable us to come up with the quarry; but we were distanced, and, for the nonce, lost sight completely of the wounded doe. Whilst we were discussing the chances of finding her again, a herd came in view, though at some distance, and appeared to be heading towards a clump of trees that stood upon a ridge of the undulating park. They were on our right, and we were to the right of the ridge. By crossing over to the left of this, and keeping down in the valley on that side, we contrived to run forward and reach the clump before them. They came along at a moderate canter, evidently driven towards us by my host or his beaters. We stood up behind the trees, and the keeper whispered that I should take a fine black

doe, which appeared to be in splendid condition. Suddenly they caught sight of, or winded us, and, halting for a second, instantly dashed off at a good pace to our left front. They passed almost in Indian file about fifty yards off, the black doe running fifth. "Now, then, sir," said the keeper, "the black doe, take the black doe!" How I hate anyone to shout in my ear just as I am going to fire. It is bad enough when birds are rising out of turnips within easy shot of you to have a man bawling "Mark!" as if you were either deaf or blind. But it is ever so much worse with deer, when success depends entirely upon the absence of all flurry and flutter. How I wished I was alone; but there was no time for such reflection—the deer were off, and the thought was "now or never." Taking the line of the animal's head and holding well forward, I pulled at the fated doe, and, much to my satisfaction—and, I will admit, to my surprise, for I scarcely expected to kill—she rolled over like a rabbit, and lay perfectly still. The keeper shouted with delight as he ran to cut her throat; and on getting up to her we found that the ball had passed through the neck, dividing the cervical vertebræ, so that death must have been instantaneous.

As she fell the herd divided, those in her rear bounding a little to the right, and then standing to gaze in our direction. An excellent chance here presented itself of taking a Deer at a stand-still, and sufficiently apart from the rest to avoid risk of hitting any other. It was at a nice distance, too, as nearly as I could judge about eighty yards.

I must have aimed a little too high, however, for, although the animal fell, it immediately recovered its legs, ran a few yards, and fell again. Hastening up to within half the distance, loading as I ran, I got a second shot, and the bullet, going in at the ear, proved instantly fatal. The first bullet, I found, had struck the base of the skull behind the ears, slitting the right one, but without penetrating the skull, the animal standing broadside on. The blow, however, had stunned it for the moment, and produced an evident giddiness, which caused it to fall, and then to rise and fall again, when the second bullet killed it. I was standing over the prostrate animal examining the wound, when a distant shout attracted my attention, and I saw my host standing on a brow and signalling me to come to him. I wondered what had happened, but thought perhaps he had marked a small herd down in a convenient spot, or had planned a "drive." On reaching him, however, I found that he had left his bullet pouch behind in another part of the park, and had to send back for it. Meantime he had just fired at and wounded a doe, and had not a bullet left to go on with. He begged I would follow the animal up, and kill it if possible, for he had broken one of the fore-legs, and he came with me to show me where it was. We found it limping slowly along under the park fence, against which it seemed every now and then to lean for support, but still keeping on as if in an endeavour to rejoin the herd. By pushing on quickly we contrived to head it, and the moment we stopped it halted too, throwing up its head, and presenting a capital shot at about sixty yards. I aimed

at the head, and the animal fell, as we thought, dead; but no sooner had the keeper approached within ten yards, to cut its throat, than it bounded suddenly to its feet, and, much to our astonishment, continued its walk under the park fence. Where could it have been hit, we said, to fall apparently dead, and rise again? It must have been struck on the top of the head, the bullet stunning it, glancing, but not penetrating, and we must try another shot. Repeating the same manœuvre, and heading the deer to make it halt, I got a second chance at about the same distance as the first, and a very similar shot. The animal dropped again, but this time remained perfectly still. On walking up with the keeper to examine it, we found that the first bullet had entered the right cheek, and passed out on the other side, breaking the left jaw, while the second had entered the right eye, and, passing into the brain, had proved instantly fatal. We were astonished to find how much it takes to kill a Deer, and how much easier it is to wound or miss, even in a park, than to place a bullet in the right spot. As the day progressed we got thoroughly warm with our work; running full speed to cut off a band of fugitives, or stalking some outlying ones that had been separated from the main herd; and as we got warmer we got steadier, and shot better. I found my doe with the broken leg again, that the keeper was so anxious about, and, although she was very restless, I succeeded in stalking and killing her with a bullet through the upper part of the neck, just behind the cheek. Another deer which had been wounded and had got back to the

herd, gave us a great deal of trouble before it was secured. Three or four times was it driven out with ten or a dozen others, and as many times did I essay to get a favourable shot; but it invariably abstained from showing itself outside the herd, and there was always a risk of hitting one if not more of its companions. At length I climbed into a tree, and the keeper once more driving the little herd past me, I got a favourable chance at about fifty yards, the wounded doe fell to rise no more, and the startled herd were again soon lost to view. My friend had killed two more deer than I had, and when, as daylight waned, we walked across the park to the keeper's lodge, we found sixteen beauties stretched upon the grass. How pleasant the walk home was, over the crisp snow, as we compared notes and recounted every shot; and how pleasant, too, was that after-dinner cigar in that old-fashioned chimney corner, where we discussed the prospect of the weather holding up, and a good day's pheasant shooting on the morrow.

ON THE FORMER EXISTENCE OF THE ROE-DEER IN ENGLAND.

OUR old English foresters were wont to distinguish three classes of game, namely, Beasts of Venery (or of the forest), as the Hart and Hind, Boar and Wolf; Beasts of Chase, as the Buck and Doe, Fox, Marten, and Roe; and Beasts and Fowls of Warren, namely, the Hare, Coney, Pheasant, and Partridge.

When Turbervile, three centuries ago, wrote his "Book of Hunting," and woodcraft in all its branches was accounted an essential part of a gentleman's education, the Roe-deer held an important place amongst the "beasts of chase." During its first year it was termed a *kid*, the second year a *gyrle*, the third year a *hemule*, the fourth year a *Roebuck of the first head*, and the fifth year a *fair Roebuck*. When several were seen together they were spoken of as a *bevy* of Roes; and the season for hunting them was between Easter and Michaelmas for bucks, and between Michaelmas and Candlemas for does. While a hart was "harboured" and a buck "lodged" in the fern or underwood, a roe was said to be "bedded." The voices of all three were distinguished, and it was said the red-deer "belleth," the fallow-buck "groaneth," and the roe-deer "belloweth." The first named was tracked by his "slot," the second by his "view,"

the last by his "foil;" and, in the ancient jargon of the chase, various were the terms applied to each when hunted.

It is not a little curious that of the three species of deer which were once plentiful in England, the smallest should be the first to become extinct.

One would have supposed that its diminutive size, its timid disposition, and retiring habits, combined with fewer requirements as regards food, would have enabled it to linger on and hold its own in the remnants of our ancient forests, and even in smaller coverts where its allies, the red-deer and the fallow-deer, from their conspicuously larger size could not hope to escape detection. This might have been so had it not been for the important circumstance that both the red-deer and fallow-deer were at an early period taken directly under man's protection by being inclosed in parks on the first distribution of forest lands.

The Roe-deer not only disdained such protection, no ordinary park-paling being high enough to keep it within bounds, but its wandering disposition necessitating a great tract of country to roam over, rendered it unable to brook the confinement to which the larger animals soon became accustomed. Under these circumstances other causes soon supervened to bring about its extinction. Deprived of the protection afforded to other deer, the destruction of its native woods and the gradual cultivation of moors and waste lands placed it more than ever at the mercy of its enemies. It would be easily approached and killed, its size rendering it a good mark; and on the other hand its slow rate of

increase (bringing forth but once a-year, and having usually but two fawns at a birth), would be insufficient to counteract the destruction to which it became continually exposed.

That the Roe-deer must at one time have been plentiful in England, and very generally dispersed throughout the country, is made apparent in a variety of ways.

To turn, first, to the geological evidence. Its remains have been discovered in such widely distant and dissimilar situations as in the barrows and bone-caves of Derbyshire,* in the peat of Berkshire and Hants,† in the deposits of the Thames Valley,‡ in the lower marl of the Vale of Kennet,§ and in the caverns of Devonshire.|| That it was at one time a native of the eastern counties of England may be inferred from the discovery of its horns and bones mingled with those of the red-deer and other animals, now extinct, in the soil of an ancient submerged forest which has been found to extend for more than forty miles along the coasts of Norfolk, and which during the prevalence of very low tides is traceable here and there by the numerous stumps of trees which may be seen still standing erect with

* Pennington, "Notes on the Barrows and Bone-caves of Derbyshire," 1877.

† Collett, *Phil. Trans.* 1757, p. 109; Pennant, "Brit. Zool." vol. i. p. 60.

‡ Boyd Dawkins, *Pop. Sci. Rev.* Jan. 1868; Woodward, *Geol. Mag.* Sept. 1869, and Walker, *Trans. Essex Nat. Field Club*, p. 38.

§ "Sussex Archæol. Coll." xxiv. p. 160.

|| Bellamy, "Nat. Hist. South Devon," p. 440; "Brit. Assoc. Report," 1869, p. 208.

their roots attached to them, and penetrating in all directions into the loam or ancient vegetable soil on which they grew.*

“The horns of the Roebuck,” says the Rev. Richard Lubbock, in his “Fauna of Norfolk,” “are much less frequent in occurrence here than those of the stag; but a good pair, with part of the skull annexed, were dug up by the turf-cutters on Buckingham Fen, near Attleburgh, and they have occasionally occurred in other situations.”

If we dip into the records of bygone days we shall find that the Roebuck is very anciently mentioned as a beast of chase. The British name for it was *Iwrch*. In the “Colloquy of Alfric” it is included amongst the different kinds of game which the Saxon hunter usually pursued. “I take harts, boars, and deer,” he says, “and roes, and sometimes hares.” When asked how he practises his craft he replies, “I braid nets and set them in a convenient place, and set on my hounds that they may pursue the beasts of chase, until they come unexpectedly to the nets, and so become entangled in them, and I slay them in the nets.”

The practice of taking Roe-deer in nets is referred to in Domesday as being in vogue in Lancashire at the date of the Conquest. Thus, “*Rogerus de Laci teñ Cortune. Ibi est haia capreolis capieñd.*”

The haia, haye, or haie, as it is variously spelled, properly signified the hedge or fence inclosing a forest or park, but by an easy metonymy the word was transferred from the inclosing fence to the area

* Lyell, “Antiquity of Man.”

inclosed by it.* In the case of the roe-deer it doubtless implied an inclosed area into which the animals were driven, and having outlets here and there across which nets were hung for their entanglement and capture. The existence of such "haies" may be found noticed in ancient grants of land during many subsequent centuries.†

Under the Welsh laws of Howel Dha, A.D. 940 (cap. xix.), the skin of a Roebuck was worth a penny, of a hart eightpence, of a hind sevenpence.‡ The Welsh name for the Roe was *Iyrchod*.

At the time of the Conquest, Roe-deer were to be found in the isle of Ely. From an account of the natural productions of this island, drawn up for the information of the Conqueror, and embodied in what is now known as the "Liber Eliensis," it appears that Ely at that date was remarkably fertile in its resources, not only affording pasturage to numberless flocks and herds, but yielding plenty of fish and wild fowl, as well as harts and hinds, roes and hares, which abounded in its woods.§ William the Conqueror punished with the loss of eyes any who were convicted of killing a wild boar, stag, or roebuck.

In the year 1123, Bishop Pudsey caused a survey to be made of the various estates of his see in the county of Durham, with a specification of their

* For a full and interesting explanation of this word see Whitaker, "History of Whalley," vol. i. p. 283.

† See Blount's "Ancient Tenures."

‡ An English translation of these laws will be found appended to the "Myvyrian Archæology of Wales, collected out of Ancient Manuscripts," ed. Owen Jones and others. (Denbigh, 1870.) *Vide* p. 1056.

§ See "Fenland Past and Present," p. 536.

respective tenures, rents, and services. This survey is generally called the "Boldon Book," Boldon being the first place mentioned in it. From entries in this book, it appears that the early Bishops of Durham were mighty hunters, and their tenants often held lands by the service of protecting the deer, and furnishing horses, greyhounds and other dogs for the chase. It appears, moreover, that the *villani* and farmers were wont to assemble from time to time at the summons of the Bishop, for the purpose of constructing "haies," and assisting at a roe-hunt:—

*Omnes villani de Aukelandschire scilicet de North Aukeland et West Aukeland et Escumba et Newtona faciunt partem suam de haia circa logias. . . . Præterea omnes villani et firmarii eunt in "rahunt" ad summonitionem Episcopi.**

In this same county is a place called Reshope, otherwise Reshoppe and Rosheppe, † *i.e.*, Roe's hop, or jump, in all probability indicating some famous "deer-pass" in the days when these animals were common in Durham. So also in Lancashire, its former occurrence in Bowland, says Whitaker, is pretty plainly indicated in the perambulation by the word "roe-cross."

In ancient charters conveying the royal licence to inclose certain forest-lands, or to hunt in particular counties or districts, the Roebuck is sometimes mentioned amongst other animals which might be inclosed or hunted. Thus from a charter of liberties granted by King John, when Earl of Morton, to the

* The "Bolden Book," p. 26 (Surtees Society), and Raine, "Hist. Acc. of the Episcopal Palace of Auckland," p. 5.

† The "Bolden Book," p. 6.

inhabitants of Devonshire, it appears that Roe-deer at that date were included amongst the beasts of chase in that county. This deed, the original of which is still preserved in the custody of the Dean and Chapter of Exeter, is under seal, and provides, *inter alia*, as follows :—

Quod habeant canes suos et alias libertates, sicut melius et liberius illas haberunt tempore ejusd. Henrici regis et reisellos suos, et quod capiant capreolum, vulpem, leporem, etc., ubicumque illa invenirent extra regardum forestæ meæ.

It will be observed that the word here employed is *capreolus*; in many old grants, however, the term used to designate the Roebuck is *caprea*, which, from its similarity to *capra*, has led some translators to suppose that the goat was intended. But, in the first place, the context usually shows that the animals included in a licence to hunt, or to inclose, are beasts of the forest or of chase, while the goat does not fall within either category, being rather an animal of the hillsides and mountains; and, in the next place, contemporary translations of such passages go to prove that, even in cases where the term employed is *capra*, or *caper* (perhaps so written in error by the transcriber), the animal so designated is evidently the Roe-buck.*

In the time of Edward III., there were plenty of Roe-deer in the ancient forest of Pickering, in the North Riding of York; and in 1340 a prosecution by the Crown was instituted against Henry de Percy, lord of the adjacent Manor of Semere, for

* A case in point is furnished by John of Trevisa's translation of the "Polychronicon" of Ranulphus Higden, to which reference will be made hereafter.

allowing his woodward to carry a bow and arrows, and chase and take Roe-deer within the limits of this forest. It appears, however, that the defendant established a right of free-warren, and pleaded that the Roe was a beast of warren and not of the forest.* Perhaps it was on this case that Lord Coke relied, in holding the Roe to be a beast of warren, a decision opposed to the opinion of many old English writers on venery, who included this animal amongst the beasts of chase.

We learn from Holinshed, that in Henry the Fifth's time (1413-22), deer were so numerous in England as to be very destructive. "Although," he observes, "of themselves they are not offensive at all, yet their great numbers are thought to be very prejudiciall, and therefore justly reprov'd of many. Of these also the stag is accounted for the most noble game; the fallow deere is the next, then the roe, of which we have indifferent store."

The author of the ballad of "The Battle of Otterbourne" was guilty of no anachronism, when in the following lines he introduced the Roe as one of the characteristic animals of Northumberland in 1388,

"The roo full rekeles ther sche rinnes
To make the game and glee,
The fawkon and the fesaunt both
Amonge the holtes on hee,"

for, a hundred and fifty years later, Leland was able to testify that this animal was then still common in the north of England. He remarks in his "Itinerary," "In Northumberland, as I heare say, be no

† "Placita coram Rege apud Westmr Term. Hil." 13 Ed. III. Rot. 106, Ebor.

forest except Chivet Hills,* and there is great plenty of redde deare and row-bukkes." According to a Report of Royal Commissioners furnished to Henry VIII. in 1512, there were nearly 6000 head of deer, red, roe, and fallow, in the forests and parks of the Earl of Northumberland in the northern counties, at which date there were red-deer in the forest of Rothbury.†

About 1530-34, as we learn from the "Durham Household Book," Roe-deer were to be found in the adjoining county. Thus at p. 142 we find the entry:—

Et Eduardo Denynge et Johanni Greynsweyrde, per 4 dies apud Mugleswyk [Muggleswick] deferentibus 4 roys in regardis. 12d.

Here it is evident from the context that Roe-deer are intended, for the entries which precede and follow this all relate to venison brought in. At times the Latin name is bestowed, but generally the English: thus we find:—

Et famulo Abbatis de Fountanc' deferenti 1 buk bursario. 3s. 4d.

Et Thomæ Harper deferenti damam domino Priori, Dominica prima Adventus à Roberto Crosby 20d.

Et Lionello Smyth et Eduardo Denynge deferentibus 1 stage à Mugleswyk 20s.

The existence of roe-deer in Wales was noted by Leland in Henry VIII.'s time; and Camden has noticed several Welsh localities which from their

* It is curious that Leland should have made this statement, for beside Cheviot, there were in Northumberland the forests of Rothbury, Redesdale, Eresdon, Lowes (anciently Loughs, from the number of lakes in it), Allendale, and Knaresdale.

† Wallis, "Nat. Hist. and Antiq. of Northumberland" (1769), vol. i. p. 410.

name seem to indicate former haunts of this animal, as Bryn-yr-Iwrch, Phynon-yr-Iwrch, Lhwyn-Iwrch, &c. Pennant informs us that, according to Dr. Muffett, they were still to be found there in the reign of Elizabeth.* On turning to Dr. Muffett's work,† we find the bare statement (p. 75) that "the Alps are full of them in high Germany, and *some of our mountains of Wales are not without them.*" It is to be regretted that Dr. Muffett did not particularise the localities in Wales where he supposed the Roe-deer to exist, for a contemporary of his expresses a very different opinion. George Owen, of Henllys, writing of the wild animals of Pembroke-shire in his time (1595), informs us that "for Roes, the countrey yeeldeth not any, neither did I ever heare of any by reporte of the auncient men, to have been usual in this countrey."‡

One of the most interesting records which we have met with in the course of our researches on this subject, is that which relates to the transport of some Roe-deer from Cumberland to Surrey in the reign of Charles I. The king had expressed a wish to have some turned out at Wimbledon in one of the royal parks, and application was made to Lord William Howard of Naworth Castle, Cumberland

* "British Zoology," vol. i. p. 59.

† "Health's Improvement," by Dr. Thomas Muffett, corrected and enlarged by Christopher Bennett, 1655. The author died in 1590, but it does not appear that there was any earlier edition of his work than that of Bennett, who probably revised the original MS. See Wood's "Athenæ" (ed. Bliss), vol. i. p. 575.

‡ For some notice of this writer and his MSS., see Fenton's "Historical Tour through Pembrokeshire," 4to, 1811, pp. 524, 562, 563 note, and Appendix, p. 54.

(where we may presume Roe-deer were then common), to have some caught and sent up. Directions for this purpose were accordingly given, and what followed may be gathered from the following entries in the "Household Book" of the owner of Naworth:—

1633, June 29.—To severall persons for takeinge 31 Roekidds,
as appeareth by bill vijli xijs vjd.

They were, no doubt, taken in a "haie" with nets, according to the ancient practice; and after being kept in an inclosure for a fortnight until they had got more tame and accustomed to confinement, they were ready to be moved to London. This was accomplished by means of three carts, as we learn from the next entry:—

1633, July 16.—To Wm. Lancaster the Smith, for binding
3 payre of wheeles with iron which carried Roes to
London... .. vli xvjd.

And subsequently on the return of these carts:—

For repairinge 3 cartes sent with Roes to London to Kinge
Charles thether and home again xvs xd.

How these animals fared in their new home in Surrey we are not accurately informed; but it may be surmised that they throve and did well, for a few years later, viz., on January 17, 1639, a warrant was issued to Sir Henry Hungate for "the preservation of His Majesty's game of roe-deer broken out of Half-Moon Park, Wimbledon, and now lying in the woods adjoining thereto, and to take care that no person, hunt, course, or use any net or gun, within four miles of the said park."*

* S. P. Dom. Charles I. ccccix. 105, Docquet.

When the Roe-deer became extinct in England is not quite certain. In Percy's "Reliques of Ancient English Poetry," in a footnote to the passage in the "Battle of Otterbourne" above quoted, it is stated that Roebucks were to be found upon the wastes not far from Hexham in the reign of George I., and that Mr. Whitfield of Whitfield is said to have destroyed the last of them. This is probably the instance referred to by Scott in his "British Field Sports," who states (p. 381) "that the last of its race in England was, it seems, killed in Northumberland about seventy years ago;" but, if so, his book having been published in 1818, he would have been nearer the mark had he said "ninety" or even "a hundred years ago."

An exceptional instance, however, of the capture of a wild Roe in Northumberland, occurred early in the present century, and is thus recorded by Bewick in his "History of Quadrupeds" (ed. 1807, p. 148): "Some years ago one of these animals, after being hunted out of Scotland, through Cumberland, and various parts of the North of England, took refuge in the woody recesses bordering upon the banks of the Tyne between Prudhoe Castle and Wylam. It was repeatedly seen and hunted, but no dogs were equal to its speed; it frequently crossed the river, and either by swiftness or artifice eluded all its pursuers. It happened during the rigour of a severe winter that, being pursued, it crossed the river upon the ice with some difficulty, and being much strained was taken alive. It was kept for some weeks in the house, and was then again turned out, but all its cunning and activity were gone; it seemed to have

forgotten the places of its former retreat, and after running some time, it laid down in the midst of a brook, where it was killed by the dogs."

The late Prof. Garrod has stated in his account of the *Ruminantia* in Cassell's "Natural History," (vol. iii. p. 63) that the Roebuck "still survives in the woods of Westmoreland and Cumberland," but this statement has since been contradicted by residents in both counties.

The species had probably been extinct in England for some years, when Lord Dorchester, in 1800, turned some out in the woods at Milton Abbey, Dorsetshire, from whence their descendants dispersed in a very short space of time, especially in a south-westerly direction. They were frequently hunted, and afforded excellent sport. About 1829, when the Master of the Hounds, Mr. Pleydell, gave up his pack, after hunting Roe-deer exclusively for sixteen years, he permitted Mr. Drax, of Charboro Park, to capture several of these deer and turn them out in the Charboro Woods. From this second centre they increased in numbers, and wandered far and wide—from Moreton to Warmwell in the valley of the Frome, and from Hyde to Houghton in that of the Puddle. Their extreme eastern extension at present is Lychett, and they have been met with as far west as Hook Park. Mr. J. C. Mansell Pleydell informed the writer that in 1879 he estimated there were no less than 120 head in the Milton, Whatcombe, and Houghton Woods, which fringe the southern side of the Vale of Blackmore, from Stoke Wake to Melcombe Park, and the Grange Wood westward, the number being

merely a question of preservation or non-preservation.*

Chafin, in his "Anecdotes of Cranbourn Chase," mentions the Roe-deer as an animal indigenous to that part of the country; but as his book was not published until 1816, it seems possible that the presence of the roes in Cranbourn Chase (where a few are still to be found) may have been due to Lord Dorchester's experiment commenced six years previously. At all events, Chafin says nothing of the existence of the Roe-deer in the Chase prior to 1800.

Dorsetshire is now the only county in England, it is believed, where Roe-deer still exist in a wild state; not because the ancient race have survived there till now, but because, as we have seen, it was reintroduced at the commencement of the present century, by turning out a few brace procured from Scotland.†

In 1810 there were a good many Roe-deer in the woods belonging to the Earl of Egremont at Petworth, Sussex. A skull of one of them (a female, with rudimentary horns) was presented in that year by Lord Egremont to the Museum of the Royal College of Surgeons, where it is preserved (No. 3598D),‡ and the abundance of roes in the Pet-

* See *The Zoologist*, 1879, pp. 120, 170, 209, 262, 301.

† In addition to the information given on this point in *The Zoologist* for 1879, above quoted, the reader will find further details in *The Sporting Magazine* for 1817, in Scott's "British Field Sports, p. 381, and in Gilpin's "Forest Scenery" (ed. Lauder), vol. ii. p. 301.

‡ This skull is figured in the *Proceedings of the Zoological Society*, 1879, p. 297, in illustration of some remarks on female deer with antlers, by the late E. R. Alston.

worth woods at that date, is proved by his lordship's letter which accompanied the specimen in question.*

The writer has been recently informed by Lord Leconfield, the present owner of Petworth House, that there is a tradition to the effect that the Roe-deer were introduced there, and were not the descendants of an ancient stock. About thirty years ago, some were sent as a present to Prince Albert, and were turned out at Windsor, where a few are still preserved in the neighbourhood of Virginia Water. Those which still survive at Petworth are kept in the park, which being surrounded by a wall fourteen miles in length, affords them unusual security and yet abundant liberty.

In Scotland, the Roe-deer was once much more common than it is at present, although it is still plentiful in some parts of the country, and has even increased of late years.

It is believed that the increase of plantations in the south of Scotland has been the means of spreading it much further in that direction than it used formerly to be found.

In Ireland the Roe-deer is unknown, and since no remains of it have been discovered, it seems probable that it was never indigenous to that country, although some have asserted otherwise, on the authority of Bede. John of Trevisa, however, in his translation of Higden's *Polychronicon*, observes: "Beda seith that there is grete huntynge of Roobukkes (*caprorum* is the word used by Higden), and it is i-knowe that Roobukkes beeth noon there.

* This letter will be found printed in the "Museum Catalogue of Monstrosities," part v., p. 17.

It is no wonder of Beda, for Beda knew nevere that ilond with his eyes; bot som tale tellere told hym suche tales.* On the other hand, if the testimony of Ossian be admitted, it would seem that the Roe was not uncommon formerly in Ireland. There are many very striking passages in which that poet adverts to the hunting the Roe-deer there. He thus pictures the animal's haunts:—"Lumon of foaming streams . . . the dun Roe is seen from thy furze; the deer lifts his branchy head, for he sees at times the hound on the half-covered heath." *Temora*, book vii. Again:—"The king rejoiced as a hunter in his own green vale, when after the storm is rolled away, he sees the gleaming sides of the rocks. The green thorn shakes its head in their face; from their top look forward the Roes." *Temora*, book viii.

Strange to say, also, the Roebuck is mentioned as a native of Kerry in an Irish MS. poem of the ninth century, which is thus referred to by the late Sir W. Wilde:†

In the collection of Irish MSS. preserved in the Library of the University of Dublin, is a very curious zoological and topographical poem, the original of which is believed to be as old as the ninth century; it is certainly one of the most remarkable productions of its kind known in any language in Europe of the same date. The history of this poem is as follows: Finn Mac Cumhaill was made prisoner by Cormac Mac Art, monarch of Erin, who, however, consented to liberate him when a ransom of two of every wild animal in Ireland—a male and female—were brought before him on the green of Tara. Cailte Mac Ronain, the foster-brother and favourite of the celebrated Irish general,‡ having first performed

* See also "The Book of Howth," Brewer and Bullen, Calendar Carew MSS. p. 32.

† *Proc. Roy. Irish Acad.*, vol. vii. p. 182.

‡ See "Annals of the Four Masters," under A.D. 286.

many remarkable feats at Tara in the king's palace, undertook and succeeded in accomplishing this apparently hopeless task within a twelvemonth; and in this poem is said to have related to St. Patrick the result of his mission. There is, perhaps, no other example in the Irish language of the same extent containing so many words—names of animals—of which the meaning is not known; and there are but few poems of so many lines requiring the same amount of topographical annotation. The names of several animals are, as stated, untranslatable; either the animals themselves have become extinct in Ireland, or they are now known by other names than those preserved in the MS.

As a specimen we quote the following lines:—*

“ I then went forth to search the lands,
 To see if I could redeem my chief,
 And soon returned to noble Tara
 With the ransom that Cormac required.
 Two foxes from Slibh Cuilinn [co. Armagh],
 Two wild oxen from Burren [co. Clare],
 Two swans from the dark wood of Gabhran,†
 And two cuckoos from the wood of Fordrum.”

The most remarkable line, however, so far as concerns our present inquiry, is that which relates to the bringing of two Roebucks (*Earbóg*) from Luachair Deaghaidh, *i.e.*, Slieve Lougher, Co. Kerry.

We are not informed upon what authority the word *Earbóg* is rendered “Roebuck.” It seems not a little curious that the Irish in the ninth century should have had a name for an animal which, it is supposed, was never indigenous to Ireland; at the

* A translation of this poem appeared in the *Dublin University Magazine*, March, 1854, and the Irish version, with the translation opposite, is given in the seventh volume of the *Proceedings of the Royal Irish Academy*, 1859, pp. 184-191.

† Now Gowran, co. Kilkenny.

same time, it should be observed that the Irish name, *Earbóg*, closely resembles the Gaelic names for this animal (Earb, Earba, Earb-boc) in use at the present day.

It is worthy of remark, too, that in the Museum of the Royal Irish Academy, amongst the collection of Irish Red-deer horns, is a small specimen catalogued as "No. 45, a small shed horn, *apparently of the Roebuck*, presented by Joshua Ferguson, Esq." Not having seen this specimen, we can express no opinion upon it; but if it be really the horn of a Roebuck found in Ireland, its history would be worth tracing.

Professor Leith Adams, in an interesting paper on "Recent and Extinct Irish Mammals," published in the "Proceedings of the Royal Dublin Society" for 1878, says:—"Neither the Fallow nor the Roe Deer, nor the Moose (or Elk) have any valid claim to be considered Irish mammals."

THE IRISH WOLF-HOUND.

ALTHOUGH the Irish Wolf-hound can no longer be numbered amongst the "Dogs of the British Islands," a certain interest must always attach to the history of an animal that once played so conspicuous a part in the annals of the chase.

To say that this fine race has become entirely extinct, although very near the truth, is happily not quite the case yet, for we have reason to believe that there is still so much of the true breed existing as, with proper management, to admit of its complete recovery. It is a fact well known to breeders of mastiffs that, until within the last thirty or forty years, these dogs as a pure race had almost ceased to exist, but active measures having been adopted to restore the breed, it has been entirely recovered, in a form at least equal, if not superior to, what it was of yore. There is no reason why a similar success should not attend a properly managed attempt to restore the more ancient and equally noble Irish Wolf-hound. To say that the services of such a dog, being no longer required for sport, it is no longer desirable to preserve the breed, is an argument which scarcely deserves consideration; for very many dogs are bred and exhibited at the present day for whom no work is provided, nor is

any expected of them. Moreover, although it may be true that the Irish Wolf-hound can no longer be turned to account by sportsmen in this country, the same cannot be said of our colonies, where such a dog, in pursuit of wolves, deer, kangaroos, and other animals, would prove a most useful ally.

From the fragmentary accounts which have been published of the appearance and dimensions of this dog, it is to be inferred that it was of considerably greater stature than any race existing at the present day, unless perhaps we except the Great Dane, or Boarhound, with which many writers have confounded it.

The original Greyhound was unquestionably a long-haired dog, and the modern smooth-coated and thin animal now known by that name is of comparatively recent date. Of this we have sufficient evidence in the ancient monuments of Egypt, where, as well as in Persia and India, rough greyhounds of great size and power still exist. A dog of the same kind has been described as well known in Arabia; and a gigantic rough greyhound was found by Dr. Clarke on the confines of Circassia, and by him described as identical with the old Irish Wolf-hound.* Ray describes the dog correctly as a tall rough greyhound; so also does Pennant, who descants on its extraordinary size and power, although he falls into an error in identifying it with *le grand Danois* of Buffon.

Much difference of opinion has been expressed on the subject of its stature. Buffon states that one measured 5 feet in height when sitting up.

* Clarke's "Travels in Russia, Tartary, and Turkey," 1816.

Goldsmith says it stood 4 feet; while Richardson (author of "The Dog: its Origin, Natural History, and Varieties"), whose practical acquaintance with the subject on which he wrote entitles him to respect, was of opinion that the average height was probably about 3 feet 4 inches. The discrepancy between the first and last of these measurements obviously arises from the circumstance that, in the former case, the dog was measured from the top of the head when sitting up; while Richardson refers to its height from the shoulder when standing. Moreover, Buffon's dog, as we have hinted, was perhaps not a Wolf-dog at all, but a Great Dane.

Captain Graham, of Rednock, Dursley, Gloucestershire, a gentleman who has devoted many years, much trouble, and considerable expense towards the restoration of the Irish Wolf-hound, had lately a splendid specimen of this dog, which he bred himself, and whose pedigree can be traced back for more than thirty years. This animal at twenty-three months old, weighed over eight stone, and measured thirty-one inches at the shoulder. Its colour is dark brindle, and it has a splendid full coat, with wonderful depth of chest. Captain Graham has other dogs of this breed in his kennels, descended from animals procured in Ireland many years ago, before the race had become quite so rare as it is at present. His researches into the history of the Irish Wolf-hound, coupled with his own experience as a breeder, have led him to publish the following as its points:

General appearance and form.—That of a very tall, heavy Scottish deerhound; much more massive

and majestic-looking; active and tolerably fast, but somewhat less so than the present breed of deerhounds.

Head.—Very long, but not too narrow; skull much squarer between the ears than the present deerhound, and flat; nose large; neck very muscular, and rather long.

Ears.—Small in proportion to size of head and half erect, resembling those of the best deerhounds. If the dog is of a light colour, a dark ear is to be preferred.

Coat.—Rough and hard all over the body, tail, and legs, and of good length; the hair on the head long and rather softer than that on the body, and growing over the eyes and under the jaws.

Colour.—Black, grey, brindle, red, and fawn, though white and parti-coloured dogs were common, and by some preferred in olden times.

Measurements.	Dogs.		Bitches.	
	Inches.	Inches.	Inches.	Inches.
Probable height at shoulder ...	32	to 35	28	to 30
Girth of chest... ..	38	„ 44	32	„ 34
Round forearm	10	„ 12	8	„ 9½
Length of head	12½	„ 14	10½	„ 11½
Total length	84	„ 100	70	„ 80
Weight in lbs.	110	„ 140	90	„ 110

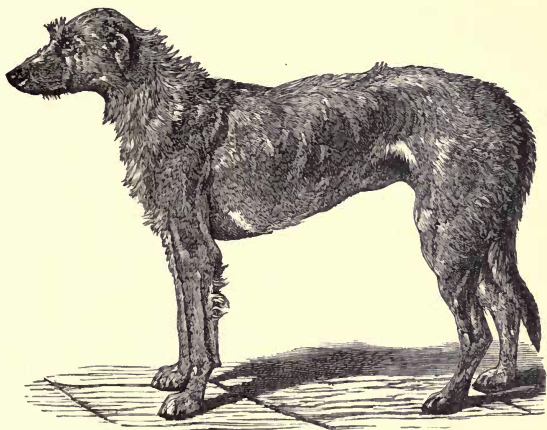
From this table it will be seen that Captain Graham's estimate of the height does not reach that assigned by Richardson, whose calculation, it appears, was based on the measurement of skulls of the Irish Wolf-hound preserved in the Museum of the Royal Irish Academy. He states "the skull is 11 inches in the bone;" to that he adds 3 inches

for nose, skin, and hair, thus getting 14 inches as the length of the living animal's head. The head of a living Deer-hound, which he measured, and which stood 29 inches high, was 10 inches; from which he infers that the height of the Irish Wolf-hound must have been 40 inches. But as Captain Graham has pointed out, the allowance for covering the skull is excessive, $1\frac{1}{2}$ inches instead of 3 inches being much nearer the mark. Thus, if the head of the Wolf-hound be taken at $12\frac{1}{2}$ inches instead of 14 inches, the height would be reduced to 36 inches. Moreover, a Deer-hound that stands 29 inches should have a head measuring at least 11 inches instead of 10 inches. So that, on this calculation, the Irish dogs which owned the skulls referred to would only have stood about $33\frac{1}{2}$ inches. Thus we arrive at a very fair notion of the appearance and size of the Irish Wolf-hound.

That the breed is one of great antiquity in this country is evident, for so early as the latter end of the fourth century we find Symmachus, a Roman consul, writing to his brother Flavinus, to thank him for a present he made him of some dogs, which he calls *Canes Scotici*, and which were shown at the Circensian games, to the great astonishment of the people, who could not believe it possible to bring them to Rome otherwise than in iron cages. Some commentators have suggested that the dogs referred to by Symmachus were English mastiffs,* but that this is a mistake has been shown by Harris, who, in his edition of Sir James Ware's "Antiquities

* Cf. Lepsius, *Epist. ad Belg. Cent.*, i. p. 144; Burton, *Itinerary Anton.*, p. 220.

of Ireland," has pointed out, that for some time before Symmachus lived, and for many centuries after, Ireland was well known by the name of "Scotia," and that the appellation *Canes Scotici*, while wholly inapplicable to English mastiffs, was quite appropriate to Irish greyhounds. Moreover, the dogs upon which the highest value was always set in former times were those which were of use



The Irish Wolf-hound.*

for the chase of wild animals, and we know from various sources that Wolf-dogs were held in such esteem as to be considered worthy the acceptance of monarchs, and were frequently sent abroad as presents to foreign potentates. In some instances

* From a photograph of Capt. Graham's "Scot," whose sire "Oscar" was bred by the late Sir John Power, of Kilfane.

lands were held by the service of providing the king with a certain number of these dogs. Thus, in Edward the First's time, one William de Reynes held land at Boyton, in the parish of Finchingfield, Essex, by the serjeanty of keeping for the king five wolf-dogs (*Canes luporarius*).*

Campion, whose "History of Ireland" was published in 1570, especially refers to the chase of the wolf there with Wolf-hounds. "The Irish," he says, "are not without wolves, or greyhounds to hunt them; bigger of bone and limme than a colt." Sir James Ware, too, in his "Antiquities of Ireland" (1658), speaks of "those hounds, which, from their hunting of wolves, are commonly called 'Wolf-dogs,' being creatures of great strength and size and of a fine shape." Many of our kings used to send direct to Ireland for Wolf-dogs; and illustrious visitors to the English Court used to petition the king to exert his influence in procuring for them some of these animals of which they had heard so much. Thus, in a privy seal from King Henry VIII. to the Lord Deputy and Council of Ireland, dated 19th Dec. 1545, his Majesty referring to a request of the Duke of Alboquerque, of Spain (a member of the Privy Council), on behalf of the Marquis Desarya and his son, that it might please His Majesty "to grant unto the said Marquis and his son, and the longer liver of them, yearly, out of Ireland, two Goshawks and four Greyhounds," commands the Deputy and his successor for the time being, to order the delivery of the Hawks and Hounds, and to charge the cost to the Treasury.

* Blount, "Ancient Tenures," pp. 235, 236 (ed. 1815).

In November, 1562, as we learn from the State Papers relating to Ireland, the Irish chieftain, Shane O'Neill, forwarded to Queen Elizabeth, through Robert Dudley, Earl of Leicester, a present of two horses, two hawks, and two Irish Wolf-dogs; and in 1585, Sir John Perrott, who was Lord Deputy of Ireland from January, 1584, to July, 1588, sent to Sir Francis Walsingham, then Secretary of State in London, "a brace of good wolf-dogs, one black, the other white." Later still, in 1608, we find that Irish wolf-hounds were sent from Ireland by Captain Esmond, of Duncannon, to Gilbert, Earl of Shrewsbury. When Sir Thomas Rowe was Ambassador at the Court of the Great Mogul, in the year 1615, that Emperor desired him to send for some *Irish grey-hounds* as the most welcome present he could make him.

Thus it appears that these dogs were considered very valuable, and were highly thought of by those who received them as presents; but some years later, when, owing to the great increase in the number of wolves in some parts of Ireland, their services were more than ever required to keep down these ferocious animals, a law was passed to prohibit their exportation.

In 1641 and 1652 wolves were particularly troublesome in Ireland; and in the latter year the following Order in Council was issued by Cromwell, prohibiting the exportation of Wolf-dogs:

DECLARATION AGAINST TRANSPORTING WOLFE DOGGES.

Forasmuch as we are credibly informed that Wolves doe much increase and destroy many cattle in several partes of this Dominion, and that some of the enemies party, who have laid down armes,

and have liberty to go beyond sea, and others, do attempt to carry away several such great dogges as are commonly called *Wolfe dogges*, whereby the breed of them which are useful for destroying of wolves, would (if not prevented) speedily decay. These are therefore to prohibit all persons whatsoever from exporting any of the said Dogges out of this Dominion; and searchers and other officers of the Customs, in the several partes and creekes of this Dominion, are hereby strictly required to seize and make stopp of all such dogges, and deliver them either to the common huntsman, appointed for the precinct where they are seized upon, or to the governor of the said precinct.—Dated at Kilkenny, April 27, 1652.

The following year another Order in Council was made, which ran as follows:—

DECLARATION TOUCHING WOLVES.

For the better destroying of wolves which of late years have much increased in most parts of this nation, it is ordered that the Commanders-in-chiefe and Commissioners of the Revenue in the several precincts doe consider of, use and execute all good wayes and meanes how the wolves in the counties and places within the respective precincts may be taken and destroyed; and to employ such person or persons, and to appoint such daies and tymes for hunting the wolfe, as they shall adjudge necessary. And it is further ordered that all such person or persons as shall take, kill, or destroy any wolves, and shall bring forth the head of the wolfe before the said Commanders of the Revenue, shall receive the sums following, viz., for every bitch wolfe, six pounds; for every dog wolfe, five pounds; for every cubb which preyeth for himself, forty shillings; for every suckling cubb, ten shillings. And no wolfe after the last September until the 10th January be accounted a young wolfe, and the Commissioners of the Revenue shall cause the same to be equallie assessed within their precincts.—Dublin, June 29, 1653.

When, through these and other coercive measures, wolves at length became exterminated in Ireland, there was no longer any inducement to preserve the breed of Wolf-hounds, and this noble race of dogs, in

many parts of the country, was suffered to die out. It was thought, indeed, at one time to have become quite extinct; but there is reason to believe that, owing to the preservation of a few in scattered localities, the breed has never been entirely lost.

The learned antiquary, Dr. Pegge, writing in 1792 ("Archæologia," vol. x., p. 160), states that he had seen some. "There was one," he says, "at Lambeth Palace, and another at Wentworth House, and if the breed be not now quite worn out, perhaps it may be found in Ireland or Scotland."

Sir Walter Scott had two, both very large animals, which were presented to him by Glengarry and Cluny Macpherson. Writing of these "wolf-hounds," he observed, "There is no occupation for them, as there is only one wolf near, and that is confined in a menagerie!" He was offered a fine Irish wolf-hound by Miss Edgeworth, who owned some of this breed, but, having the others, he declined it.

In the third volume of the "Linnæan Society's Transactions" is a paper by Mr. Aylmer Burke Lambert, in which he describes and figures a dog in the possession of Lord Altamount, son of the Marquis of Sligo, as the old Irish Wolf-hound.

In the opinion of Richardson, however, than whom no one was better qualified to form an opinion, this was not a Wolf-dog at all, but "a middling-sized, and apparently not very well-bred specimen of a comparatively common breed of dog, called the Great Dane. Had *this* been the Irish wolf-dog," he adds, "it were absurd to speak of its scarcity, far less of its extinction."

Richardson, being an enthusiast on the subject,

and not content with merely writing, himself took measures to recover the breed. With much patience and trouble he hunted up all the strains he could hear of, and bred dogs of gigantic size, to which the strains now in existence can be distinctly traced. The late Sir John Power, of Kilfane, and the late Mr. Baker, of Ballytobin Castle, co. Kilkenny, both owned kennels of these dogs, on the breeding of which they expended both time and fortune freely, and produced some very fine animals. Captain Graham, to whom reference has been already made, and whose authority on the subject is now generally recognised, has laboured for many years to restore the breed, and has, most vexatiously, lost several valuable dogs just as he was approaching the standard at which he aimed. Of late years, however, his efforts have been rewarded, and he has succeeded in producing some grand dogs of the ancient type. Would that others could be induced to follow his example.

In these days, when so much interest is manifested in producing and preserving pure strains of various breeds, and kennel shows are in such favour throughout the country, neither means nor inclination should be wanting to effect so praiseworthy a result as the complete resuscitation of this noble, ancient, and purely national dog.

HAWKS AND HAWKING.*

IT has been said that the history of animals interests us in proportion as they are of service to us, or are the means of providing us with amusement. Hawks are capable of both, and on this account, therefore, may be said to deserve a greater share of attention than is generally accorded to them at the present day. We are all hunters by nature. We have an inherent passion for chasing and taking wild animals, and feel an inward satisfaction in outwitting their natural instinct which prompts them to fly from us, by our reason, which is exercised by observation of their habits. Our ancestors were hunters through necessity. They had to chase and kill wild animals in order to live. They either pursued them with hounds till they were brought to bay, and then slew them with sword or spear, or stalked them in the forest, and killed them with bow and arrow, or with a sling. The larger animals were taken in nets, pitfalls, or other devices, and succumbed to the united strength of numerous assailants.

Birds which in their own element, the air, evaded pursuit, were taken either in snares or with birdlime,

* An abstract of one of the "Davis Lectures" delivered at the Zoological Gardens, June 24th, 1880.

the use of which appears to have been known at a very early date. By degrees, it would seem, from continued observation of their predatory habits, hunters conceived the idea of snaring birds of prey and of training them to be of use to them in the chase; in other words, they instituted the art of Falconry or Hawking.

The origin of this art it is now impossible to discover. From the earliest times of which history takes cognizance people of all nations, but more particularly those of eastern origin, have practised the sport; and we may form some idea of its antiquity from Sir A. H. Layard's discovery of a bas-relief amongst the ruins of Khorsabad, in which a falconer is represented carrying a hawk upon his wrist. From this it is to be inferred that hawking was practised there some 1700 years B.C. In China it was known even at an earlier date than this; for in an old Japanese work, of which a French translation appeared at the beginning of the present century,* it is stated that falcons were amongst the presents made to princes in the time of the Hia dynasty, which commenced in the year 2205 B.C. The records of King Wen Wang, who reigned over the province of Hunan between 689 and 675 B.C. show that in his day hawking was much in vogue there.† In Japan it seems to have been known many centuries before the Christian era, and

* "Topographie de la Province Kawatsi," par Akizato Rito, avec des planches faites par Tokei, peintre de Tanba-no. 6 vols. 8vo, 1801.

† The authority for this statement is an ancient Chinese MS. quoted by Schlegel, in his "Traité de Fauconnerie."

probably at an equally early date in India, Arabia, Persia, and Syria.

From the East it was introduced into Europe, although the precise date of such introduction is unknown; but from the allusions made to the sport by Aristotle,* Pliny,† Ælian,‡ Martial,§ and Oppian,|| brief and even vague though they be, we may infer that hawking was known to, if not practised by, Europeans at least three centuries before the Christian era.

John of Salisbury, who died in 1182, discussing the question of the origin of Falconry in Europe,¶ arrived at the conclusion that it was introduced into Greece by Ulysses after the siege of Troy, an opinion which has been indorsed by several subsequent writers. According to von Hammer,** however, the Turks were the first masters of the art in Europe, and imparted it to the Persians, who in turn instructed the Greeks and Arabs. This view receives some confirmation from a recently published French translation of an Arabic MS. of the 10th century on Hunting and Hawking, which is now before me.†† In this work it is stated that the first falconer, according to an Arabic tradition, was a King of Persia. During one of his excursions he

* "Hist. Anim." i. lib. 9, cap. 36. † "Hist. Nat." lib. 7, cap. 10.

‡ "De Nat. An." lib. 2, cap. 42. § "Epigr. lib. 14, no. 216.

|| "Cynegeticon," lib. 1, 62—66.

¶ "De nugis curialium et vestigiis philosophorum," lib. 1, cap. 4.

** "Falknerklee," p. 20, quoted by Schlegel, *op. cit.*

†† "Sid Mohamed el Mangali, Traité de Venerie, traduit de l'Arabe par Florian Pharaon." Tiré à 300 exemplaires numérotés. Paris, 1880.

was greatly interested in watching unobserved the actions of a wild hawk. He saw it perch upon a bough "with the air of a sovereign upon his throne," where it watched for an opportunity to seize a passing bird. He saw it at last take one, and having made a meal of it, fly down to the river, drink, and bathe, and then return to its tree. He was struck with admiration at its majestic appearance, its wonderful patience, and its power over other birds, which it seemed to take by sovereignty of nature, and was seized with a desire to possess it. His fowlers gratified his inclination by snaring it. He caused it to be tied on a perch near him, and succeeded in taming it, learning many a lesson from observation of its good qualities. It was asserted, indeed, as a consequence, that this king, who was naturally of a violent disposition, became, through this lesson, a better administrator and a wiser sovereign. The Arabic writer here quoted remarks that "the *savans* of Greece pretend that it was in Greece that falcons were first trained, but Mohamed ben Mangali (the author) says, and is inclined to believe, that it was in Persia that the art of Falconry was invented."

It would be beside the present purpose, however, to discuss any further the question of origin, or to detail the development and spread of falconry in countries beyond the British Islands. This would not only be a very considerable task, but it is to a great extent rendered unnecessary by the existence of Professor Schlegel's admirable folio work, "Traité de Fauconnerie," which is illustrated, by J. Wolf, with coloured plates of all the hawks used by fal-

coners, and should be consulted by everyone who takes an interest in this subject.

Although the precise date of the introduction of hawking into England cannot now be ascertained, we know from several sources that it was practised by our ancestors in early Saxon times. In a letter addressed by King Ethelbert (A.D. 748—760) to St. Boniface, Archbishop of Mayence, who died in 755, the monarch asked him to send over two falcons that would do to fly at the crane, for, said he, "there are very few birds of use for this flight in this country," *i.e.*, Kent.*

Asser, in his "Life of Alfred the Great," says of this king, "His felicity in hunting and hawking, as well as in all the other gifts of God, was really incomparable, as I myself have often seen."†

William of Malmsbury records much the same of Athelstan, who was extremely fond of hawking, and procured his hawks from Wales.‡ The same historian (lib. ii. cap. 13) thus describes Edward the Confessor's love of hunting and hawking:—"It was his chiefest delight to follow a pack of swift hounds in pursuit of their game, and to cheer them with his voice, or to attend the flight of hawks taught to pursue and catch their kindred birds. Every day

* *Epistolæ Sancti Bonifacii in Max. Bibl. patr.*, vol. xiii., *Epist.* xl., p. 85. See also *Chronicum Saxonicum*, ed. Gibson (1662), p. 56; 2, and p. 60, 1.

† See also Florence of Worcester, *Chronicon*, ann. 871, p. 310, and Spelman, "*Glossarium Archæologicum*," pp. 6, 7.

‡ It is recorded by this chronicler that Athelstan required of the Welsh "*Volucres quæ aliarum avium prædam per inane venari noscerent.*"

after Divine service he took the field, and spent his time in these beloved sports."

So general was the pastime in Saxon times, that the monks of Abingdon found it necessary to procure a charter from King Kenulph to restrain the practice in order to prevent their lands from being trampled on.

Strutt gives an engraving from a MS. of the end of the 9th and beginning of the 10th century, representing a Saxon nobleman and his falconer with hawks on the bank of a river where a crane and wild ducks are feeding. Another drawing upon the same subject, with a little variation, occurs in a Saxon MS. of somewhat later date.

Every British chieftain kept a large number of hawks,* and in the 10th century, as we gather from the Laws of Howel Dha, hawking was a favourite sport with the Britons in Wales. The Penhebogydd, or Master of the Hawks, was the fourth officer in rank and dignity, and sat in the fourth place from his sovereign at the royal table. He was permitted to drink no more than three times, lest he should neglect his birds from intoxication; and when more than usually successful, the prince was obliged by law and custom to rise up and receive him as he entered the hall, and sometimes to hold his stirrup as he alighted from his horse. Spelman relates that a British chief named Gaufredus, A.D. 1008, was struck on the head with a stone and killed by an angry woman, because his hawk had seized one of her fowls: "*quod accipiter ejus mulieris gallinam invaserat.*"

* A passage in "Ossian" (i., p. 115) refers to a negotiation of peace by the proffer of 100 managed steeds, 100 foreign captives, and "100 hawks with fluttering wings that fly across the sky."

Hawking was pursued by all the Norman princes with the greatest enthusiasm. In those days a person of rank seldom stirred out without a hawk upon his hand. In old paintings and tapestry this was a sign of nobility, a good illustration of which is furnished by the celebrated Bayeux tapestry, which is preserved in the cathedral of Bayeux, in Normandy, and is there known as "la toilette du Duc Guillaume." It is 200 feet long, and about two feet six wide, and is said to be the work of Queen Matilda, the wife of the Conqueror. It represents the departure of Harold for Normandy, and the conquest of England by William the Conqueror. Harold and Guy Comte de Ponthieu are represented each carrying a Sparrowhawk on the wrist.*

From the time of Henry I., that is to say, from the commencement of the 12th century, and during many subsequent reigns, offences against the crown were often punished by the infliction of a fine of so many hawks; † prisoners were ransomed on similar terms; ‡ and lands were held of the king by the

* Lancelot, "Explication de la tapisserie de Bayeux, dans les Mémoires de l'Académie des Inscriptions et Belles Lettres," Paris, vi. p. 739; and viii. p. 602.

† In the reign of Stephen, Outi of Lincoln was fined 100 Norway hawks, and as many Jerfalcons, of which four of the former and six of the latter were to be white. Mag. Rot. 5 Steph. Rot. 12 a. Madox, "History and Antiquities of the Exchequer," vol. i. p. 273.

‡ In 1212, during one of the Welsh campaigns of King John against Llewellyn ap Iorwerth, Prince of North Wales, the king, passing the river of Conway, encamped by its side, and sent part of his army, with guides of the country, to burn Bangor. This they did, and, amongst other prisoners, took Rotpart the Bishop, who was afterwards ransomed for two hundred hawks!

tenure of finding annually one or more falcons, or of providing for their keep.* Stringent laws were passed, making it felony to steal a trained hawk, and subjecting offenders in this respect to fine and imprisonment. It was even made illegal to take the eggs of any falcon or hawk, and in the reign of Henry VII. things came to such a pass, that, without the king's permission, no one could even fly a hawk that had been bred in England, but if he wanted one was obliged to import it from abroad.† Concerning the prices paid for hawks formerly, abundant information may be found in court rolls, privy purse expenses, and various household books, from which sources of information also may be learnt the value, at various periods, of hawks' hoods and bells, falconers' wages, and other expenses relating to the sport.‡

Our kings frequently received presents of hawks

* Blount, "Ancient Tenures," *passim*.

† The following are amongst the principal statutes relating to Hawks and Hawking:—Hen. III. Carta de Foresta, cap. xi.; 34 Edw. III. c. 22; 37 Edw. III. c. 19; 11 Hen. VII. c. 17; 31 Hen. VIII. c. 12; 5 Eliz. c. 21; 23 Eliz. c. 10; 7 James I., c. 11.

‡ See the Rotulus Misæ, 14 John; the Originalia Rolls, 35 Edw. III.; the Privy Purse Expenses of Edward IV., Hen. VII., and Henry VIII.; Issues of the Exchequer, James I.; Duke of Buckingham's Household Book, 1507; the Northumberland Household Book, 1512; the Household Books of the L'Estranges of Hunstanton, 1520; and of Squire Kytson, of Hengrave, Co. Suffolk, 1572; and of Lord North, 1575. In his "History of Agriculture and Prices in England" (vol. ii. p. 566), Prof. Thorold Rogers quotes the prices given for hawks in various parts of the country during the reigns of Henry III. and Edward I.; and in my "Ornithology of Shakespeare" (pp. 77—82) I have given similar quotations of prices in Shakespeare's day.

from foreign potentates, and often made similar presents themselves. Edward I., in 1276, received eight grey and three white Jerfalcons from the King of Norway,* some of which he seems to have forwarded to the King of Castille, a letter of his to that sovereign being extant in which he says:—"We send you four grey Jerfalcons, two of which are trained to fly at the Crane and Heron; as to the other two, you can use them as you think best. Having already lost nine white falcons we have none of these at present to offer. Meanwhile we have sent some of our people to Norway to fetch some."†

The Norwegian hawks were early celebrated for their quality and beautiful plumage. They are mentioned in the old romance of "Sir Tristram" as being anciently objects of commerce and importation:—

Ther com a schip from Norway
 To Sir Rohandes hold,
 With hawkes white and grey
 And panes fair y fold."‡

Their value may be inferred from the fact that in this romance twenty shillings is staked in a game of chess against one hawk; and a further testimony of their value is given by Olaus Magnus, who states that the white ones were never shot at by the inhabitants, but were considered sacred, unless they did too much hurt and rapine.§

* Thorkelin, *Analecta Hist. Regni Norwegici*, p. 158.

† Rymer, "*Fœdera*," i. p. 186 (3rd ed.)

‡ "*Sir Tristram*," fytte 1, xxviii. (ed. 1833).

§ *Ol. Mag. Hist. Goth. Angl.* 1658, p. 200.

The practice of sending presents of hawks to the English court was continued during many reigns. John Chamberlain, in a letter to Sir Dudley Carleton, dated 15th November, 1617, relates how the Muscovian ambassador had an audience of the king, and brought divers presents of furs, estimated at better than 6000*l.*, and divers hawks with coats or coverings of ermison satin and other colours, embroidered with pearl.* And Pepys, describing the entry into London of the Russian ambassador, in November, 1662, writes:—"I could not see the ambassador in his coach; but his attendants in their habits and fur caps very handsome comely men, and most of them with hawks upon their fists to present to the King," who "took two or three hawks upon his fist, having a glove on wrought with gold, given him for the purpose."

The King of Denmark sent Iceland Falcons to the court of Great Britain between 1699 and 1703, and to the Prince of Wales from 1741 to 1745.

Did space permit, a long account might be furnished of the doings of many of our kings in the hawking-field; but it must suffice to select only a few illustrations.

In October, 1172, Henry II. was at Pembroke, *en route* for Ireland, where, says Giraldus Cambrensis, he amused himself with the sport of hawking. He chanced to espy a noble falcon perched on a crag, and making a circuit round the rock, he let loose upon it a large high-bred Norway hawk, which he carried on his left wrist. The falcon, though its flight was at first

* "Court and Times of James I.," vol. ii. p. 54.

slower than the other bird's, having at last mounted above it, became in turn the assailant, and, stooping from aloft with great fury on the Norway hawk, laid it dead at the king's feet. From that time, it is said, the king used to send every year, in the proper season, for young falcons from the cliffs of South Wales, for in all his lands he could not find better or more noble hawks.

Richard Cœur de Lion, while in the Holy Land, amused himself with hawking at Jaffa, in the plain of Sharon; and it is related of him that he sent an ambassador in vain to Melik el Aadil to try and procure some fowls for the hawks which he had brought with him from England, and which he desired to present to the Sultan. On another occasion, while passing through Dalmatia, he carried off a falcon which he saw in one of the villages, and, on refusing to give it up, was attacked so furiously by the villagers that it was with great difficulty, and only by valiantly defending himself, that he managed to make his escape.

King John used to send to Ireland for his hawks, amongst other places to Carrickfergus, Co. Antrim,* and was especially fond of a flight at the Crane with Jerfalcons, which he received from Philip, King of Norway. He used to hawk in Dorsetshire and Somersetshire, as appears by entries in the Court Rolls of payments of the expenses of the journeys.

* *Cf.* Rotulus Misæ Anno Regis Johannis quarto-decimi, A.D. 1212-13. Hawks were formerly trained in Connaught. See Hardiman's edition of O'Flaherty's "West or H'Iar Connaught," 1684, pp. 67, 115, 118; Carve's "Lyra," 4to. 1666, p. 47, and Ware, Antiquities of Ireland, chap. xxii.

Here is an extract from the "Rotulus Misæ,"
1212—13:—

On Wednesday, the Feast of the Innocents [Dec. 28th], at Ashwell [Cambridge], alms contributed, to buy food for 350 paupers, by the King, who proceeded to capture and took 7 Cranes, with his Hawks, for each of which he feasted 50 paupers, and every one of them had one penny summa ... 29s. 2d.

Again:—

On Wednesday next following the Purification at Limber Magna [Lincoln] as alms to 100 paupers whom the King fed, as he went with his Gersfalcons to capture Cranes, and having taken 9 Cranes, he commanded the aforesaid paupers to be fed with bread, meat, and ale to the amount of ... 13s. 4d.

These entries serve not only to illustrate the history of Hawking in England, but are interesting as proving the former existence of the Crane in this country in sufficient number to be flown at when required. Nor are these exceptional instances. In the Wardrobe Accounts of King Edward I., preserved in the British Museum (Add. MSS., No. 7965; Ed. I., 1297-8) is the following entry:—

Jan. 5. To Alexander Coo, the King's falconer, for presenting to the King 3 Cranes taken in Cambridgeshire by the Gersfalcons of Sir Geoffrey de Hauville... .. 6s. 8d.

When Edward III. invaded France, he had with him, according to Froissart, thirty falconers, and every day he either hunted, or went to the river for the purpose of hawking, as his fancy inclined him. A curious description of a hawk's perch of this period, which a lady had put up at the head of her bed and covered with blue velvet, is given by Chaucer, in the "Squire's Tale" (part ii.)

The Paston Letters, written in the reign of Edward IV., give us also a curious insight into the ways and doings of English falconers in the middle ages;* as do likewise the various Household Books and Privy Purse Expenses already referred to. Henry VII. used to import Goshawks from France, and gave as much as £4 for a single bird—a large sum in those days.†

Henry VIII.'s love of hawking is well known from the anecdote related of him in Hall's Chronicle (sub. an. xvi.),‡ to the effect that, being one day out hawking at Hitchin, in Hertfordshire, he was leaping a dyke with a hawking-pole, when it suddenly broke and the King was immersed head first in the mud and water, and might have lost his life had not Edmund Moody, one of the falconers, immediately come to his assistance and dragged him out.

During the reign of Elizabeth hawking was much in vogue, particularly with the gentlemen of Cornwall and Devonshire, as we learn from Carew,§ and Nichols, in his "Progresses and Public Processions of Queen Elizabeth" (3 vols. 4to., 1788—1807) has given some interesting details concerning the Queen's participation in this and other field-sports.

James I., as is well known, was a most enthusiastic sportsman, and especially delighted in hawking, on which he spent considerable sums annually. As I have elsewhere given some account of his hawk-

* See Prof. Newton's remarks on these letters, Appendix to Lubbock's "Fauna of Norfolk," 2nd ed. p. 224.

† Bentley, "Excerpta Historica," p. 95.

‡ See also "Union of the two Noble and Illustre Famelies of Lancastre and Yorke," 2nd ed. 1558, fol. cxxxix.

§ "The Survey of Cornwall, 1602, folio 24.

ing establishment, and of his fishing with trained cormorants,* it will be unnecessary to repeat here the information which I have collected on the subject. I need only refer to Falconry as practised in this reign for the purpose of contradicting a statement which has been copied over and over again, and appears in almost every book which contains a notice of the Peregrine Falcon. It was sanctioned by Yarrell in the first edition of his "History of British Birds,"† and is repeated even in Prof. Schlegel's great work, that author apparently having had no opportunity of testing the accuracy of a story which he was obliged to quote secondhand. The statement in question is to the effect that hawks in former days were so valuable that, in the reign of James I., Sir Thomas Monson gave £1000 for a cast—*i.e.*, for two. This is not the fact, for if we trace the story back to the original narrator of it, Sir Antony Weldon, we find the truth to be that Sir Thomas Monson spent £1000 before he succeeded in getting a perfect cast of Falcons for flying at the Kite. His words are:—"Sir Thomas Monson desired to have that flight [*i.e.*, at the Kite] in all exquisiteness, and to that end was at £1000 charge in Gos Faulcons‡ for that flight; in all that charge [*i.e.*, after going to all

* "Transactions of the Norfolk and Norwich Naturalists' Society," vol. iii. pp. 79-94; and Dickens's "Dictionary of the Thames," 1879, art. Ornithology.

† In the fourth edition of this standard work, by Professor Newton, the Editor, with his usual acumen, has been careful to correct the mistake.

‡ The Gersfalcon was sometimes called Gos-falcon. It is related by Godscroft that at the Battle of Ancram Moor, in 1545,

that expense] he never had but one cast would performe it, and those had killed nine kites, never missed one."*

These were the palmy days of hawking, when the sovereigns on both sides of the channel (James I. and Louis XIII.) were enthusiastic falconers, giving every encouragement to the sport, when the species of hawk carried was indicative of the rank of the owner, and when the best books on the subject were written by English and French masters of the craft.†

All the Stuarts were fond of hawking, and many anecdotes might be narrated illustrative of their participation in this sport. Three may be noticed, which refer respectively to the reigns of James I., Charles I., and Charles II.

as the English and the Scots were approaching each other on a piece of low flat ground called "Panier-heugh," a Heron, roused from the marshes by the tumult, soared away between the encountering armies. "Oh!" exclaimed Angus [Archibald Douglas, seventh Earl of Angus] "that I had here my white Gos-hawk, that we might all yoke at once!"

* "The Court and Character of King James," sm. 8vo, 1650, pp. 104, 105. In the 2nd ed., 1651, pp. 96, 97, the word "Gos-Faulcons" is altered to "Ger-Faulcons."

† Amongst the English works printed about this time may be mentioned George Turbervile's "Book of Falconrie" (1575, 2nd ed. 1611); Gervase Markham's "Gentleman's Academie" (1595) and "Country Contentments" (1611); William Grindal's "Hawking, Hunting, Fowling, and Fishing" (1596); Simon Latham's "Faulconry, or the Falcon's Lure and Cure" (1615, 2nd book, 1618); and Edmund Bert's "Treatise on Hawks and Hawking" (1619); while in France appeared the equally valuable and now scarce works of Jean de Franchières, Jacques du Fouiloux, and D'Arcussia. The last-named writer, who frequently accompanied Louis XIII. on his hawking excursions, has left some capital descriptions of particular flights which he witnessed.

Sir Antony Weldon relates that the French king having sent over his falconer to show some flights at the Kite, "his master falconer lay long here, but could not kill one, ours being more magnanimous than the French kite." Sir Thomas Monson, the Earl of Pembroke, and other noblemen, being not unnaturally anxious to eclipse the Frenchmen, begged the king (James I.) to go out to Royston to see a flight. The king went, and a kite was found and flown at; but, in the words of Sir Antony Weldon, "the Kite went to such a mountee, and the Hawke after her, as all the field lost sight of Kite and Hawke and all, and neither Kite nor Hawke were either seen or heard of to this present, which made all the Court conjecture it a very ill omen."

There is a curious supplement to this story. A writer in the "Gentleman's Magazine" for 1793 states that in the beginning of September, 1792, a paragraph appeared in several newspapers mentioning that a hawk had been found at the Cape of Good Hope, and brought from thence by one of the India ships, having on its neck a gold collar on which were engraven the following words:—

This goodlie Hawk doth belong to his Most Excellent Majestie,
James, Kinge of England. A.D. 1610.

The writer in question infers the authenticity of the inscription from Sir Antony Weldon's anecdote, and believes it must have been "the lost hawk"!*

Aubrey, in his "Miscellanies" (p. 56, ed. 1784),

* I need not here repeat the adverse criticism which I have elsewhere made on this passage, and which will be found in the "Transactions of the Norfolk and Norwich Naturalists' Society," vol. iii., pp. 87, 88.

says:—"When I was a freshman at Oxford, 1642, I was wont to go to Christ Church, to see King Charles I. at supper; where I once heard him say 'that as he was hawking in Scotland, he rode into the quarry, and found the covey of partridges falling upon the hawk;' and I do remember this expression further, *viz.*, 'and I will swear upon the book 'tis true.'" Aubrey adds, "When I came to my chamber I told this story to my tutor; said he, 'that covey was London!'"*

The third anecdote is related by Aubrey on the authority of Sir Edward Sherborne, and refers to Charles II. Not long before the death of this king, a Sparrowhawk escaped from the perch, and pitched on one of the iron crowns of the White Tower, where, entangling its leash in the crown, it hung by the heels and died. Not long after, another hawk pitched on one of the crowns. This was naturally regarded as a very ominous circumstance.

After the Restoration, hawking ceased to be popular, and gradually fell into desuetude, although from that time until the present it has never ceased

* Although no falconer of my acquaintance can confirm the truth of this story, and the well-known timidity of the partridge renders it well nigh incredible, instances have been known in which birds have come to the rescue of a companion attacked by a hawk. The late John Barr, one of the best professional falconers of modern times, told me that when he was falconer to the Champagne Hawking Club (in 1866), he once flew at a carrion crow, one of a pair which they sighted, at Chalons, and his hawk struck it down. While the two were struggling on the ground and the crow was being killed, its companion came to the rescue, and darting down, pecked at the hawk, and caused her at length to let go. The hawk, however, immediately gave chase to her assailant, and at the second stoop brought it also to the ground.

to be practised by a few admirers of the old sport in various parts of the country. The last member of the Royal Family, it is believed, who sent for or received hawks from abroad was Frederick Prince of Wales, son of George II. This prince used to occupy "the palace of Durdans," at Epsom, now the residence of the Earl of Rosebery, and used to hawk over the downs, where in 1825, according to the authors of a "History of Epsom" published in that year, there was a spot still known as "the Hawkery."

The causes which have led to the decline of falconry are many and various. The inclosure of waste lands, the drainage and cultivation of marshes, the great improvement in fire-arms of all kinds, and particularly the introduction of shot, have each in their way contributed to lessen the interest once so universally taken in this sport.* Fashion also, no doubt, has had a good deal to do with the decline of hawking, for so soon as the reigning sovereign ceased to take an interest in the sport, the courtiers and their friends followed suit.

It would not be difficult, did space here permit, to fill up the intervening gap in the history of falconry in England, between the period to which we refer and the present time, and an interesting account might be given of the principal hawking establishments which have been maintained in the

* I have elsewhere referred to a letter from Sir Edmund Bedingfeld to Lord Bath, dated in 1548, and printed in Gage's "History of Hengrave," which shows very clearly with what disfavour the introduction of game and wildfowl shooting was regarded by falconers. "Transactions of the Norfolk and Norwich Naturalists' Society," vol. iii., pp. 81, 82.

United Kingdom during the past and present centuries.

On hawking in Scotland and in Ireland two separate chapters might be written ; while to give a sketch of the English poets, dramatists, and novelists who have described or touched upon hawking, and to criticise the knowledge of the subject displayed by them, would involve the preparation of a moderate-sized volume.

I must reluctantly leave untouched these branches of the subject, and come to the practical part of my discourse, which is to give some account of the various hawks employed by falconers ; to point out the particular respects in which hawks and falcons differ ; to describe the mode in which they are captured, tamed, and trained ; and to indicate the particular prey or "quarry" (as it is termed) at which each is flown. Above all, bearing in mind the object of the course of lectures now in progress, I shall endeavour to show how much practical instruction may be gained upon the subject under discussion by a careful examination and comparison of the hawks and falcons now living in the Zoological Society's Gardens.

It is hardly necessary to observe that the birds under consideration all belong to the order *Accipitres*, or birds of prey, an order which may be regarded as the most natural in the system, because it is founded not upon a single character, but upon the general habit of the birds, in the formation of which all their leading organisations bear a part. It seems natural that the *Accipitres* should stand at the head of any system of ornithological classifica-

tion, because *wings* are the grand characteristics of birds which especially distinguish them from all other vertebrated animals, and therefore those species in which the organs of flight are most highly developed may be regarded as the most typical of their class.

All birds of prey have certain characters in common which distinguish them as an order from other birds, namely, a powerful curved beak, with the upper mandible, in the most typical species, deeply notched, and therefore well adapted for seizing and cutting up the prey; strong feet and toes, with long, curved, sharp talons for striking the prey and firmly holding it; and a specialised form of sternum, or breast-bone, with a deep keel for the attachment of the pectoral muscles which move the wings, and give these birds that superior power of flight which excites the wonder and admiration of all who witness it. In nearly all the species the female is larger than the male, and consequently more powerful.

The present occasion does not admit of a discussion at any length of the different systems of classification which have been proposed for the birds of prey, nor of a description in detail of the various modifications of structure observable in the numerous genera and species included in this Order. But inasmuch as the species which are capable of being trained and employed for hawking form but a small proportion of the birds of prey, it is desirable to comprehend at the outset the position which they occupy in relation to the remaining species in the Order. This will be best understood by glancing at the table on page 89.

Until a comparatively recent date, the order *Accipitres* was generally divided into the families *Vulturidæ*, or Vultures, characterised by their naked heads, terrestrial and sluggish habits, and predilection for carrion; *Falconidæ*, or Falcons, Hawks, Eagles, and other diurnal birds of prey, distinguished by their feathered heads, great speed upon the wing, and eminently predatory habits; and *Strigidæ*, or Owls, characterised by having the eyes directed forward instead of laterally, and by their nocturnal habits. It has been pointed out, however, by Professor Huxley, in the "Proceedings of the Zoological Society for 1867," that the so-called family *Vulturidæ* was an unnatural association of members of two very distinct families, viz., the *Cathartidæ*, or American Vultures, on the one hand, and a group of the *Falconidæ* (the old World Vultures), on the other. He has also shown that the Secretary-bird (*Serpentarius reptilivorus*), previously included amongst the *Falconidæ*, is in reality the sole representative of a very distinct family which he has named *Gypogeranidæ*, but which might with more simplicity have been termed *Serpentariidæ*.

He would accordingly refer the typical members of the old so-called family *Vulturidæ* to the *Falconidæ*, and divide the diurnal birds of prey into the (1) *Cathartidæ*, American Vultures, (2) *Gypaetidæ*, which we should prefer to call *Falconidæ*, including the Falcons, Hawks, Eagles, and Old World Vultures, and (3) *Gypogeranidæ* (or, as we would term it, *Serpentariidæ*), to include the Secretary-bird.

On the present occasion we have only to deal with the second of these families (which, as we have

said, we should prefer to call *Falconidæ*), and we may therefore, dismiss the others at present from consideration.

As regards the subdivision of this family into "groups" or "subfamilies," opinions differ, and it is unnecessary on the present occasion to discuss the various views which have been expressed. On this point the student may be referred to Professor Huxley's paper, already mentioned; to Messrs. Sclater and Salvin's "Nomenclator Avium Neotropicalium"; Mr. Sharpe's "Catalogue of the *Accipitres* in the British Museum," with Mr. Gurney's valuable comments thereon in "The Ibis;" Mr. Robert Ridgway's outlines of a natural arrangement of the *Falconidæ*;* and Professor Newton's article on the genus *Falco*, in the "Encyclopædia Britannica," ninth edition.

For our present purpose it will be most convenient to adopt the subdivision employed by Mr. Sclater in his "List of the Vertebrated Animals in the Gardens of the Zoological Society." This will obviate confusion, and will enable any visitor, with the "List" in his hand, to apply the remarks I have here to offer.

Order ACCIPITRES.

Family FALCONIDÆ.

Subfamily.	Genus.	English Name.
I. Pandioninæ	Pandion	Osprey.
II. Circinæ	Circus	Harriers.
III. Buteoninæ	Buteo	} Buzzards.
"	Archibuteo	
"	Pernis	

* Bull. U. S. Geol. and Geogr. Survey of the Territories, second series, No. 4 (1875).

Subfamily.	Genus.	English Name.
III. Buteoninæ	Haliastur	Brahminy Kite.
„ (contd.)	Urubitinga	Urubitinga.
„	Geranoætus	Chilian Sea Eagle.
„	Harpyhaliaetus	} Harpies.
„	Thrasaetus	
„	Helotarsus	Bateleur Eagle.
„	Haliaetus	Sea Eagles.
„	Aquila	Typical Eagles.
„	Nisaetus	Booted and Bonelli's Eagles.
„	Spizaetus	Crested Hawk Eagles.
„	Circaetus	Short-toed Eagle.
„	Spilornis	Cheela and Bacha Eagles (India and Java).
IV. Accipitrinæ	Accipiter	Sparrow-hawks.
„	Melierax	African Zoned Hawks.
„	Astur	Goshawks.
V. Falconinæ	Falco	Typical Falcons.
„	Hypotriorchis	Hobbies.
„	Hieracidea	Berigora Falcons (Austra- lia and New Zealand.
„	Tinnunculus	Kestrels.
VI. Milvinæ	Milvus	Kites.
„	Baza	Crested Black Kite.
„	Elanus	Swallow-tailed Kites.
VII. Herpetotherinæ	Herpetotheres	Laughing Falcon (Brazil).
VIII. Polyborinæ	Polyborus	Brazilian Caracara.
„	Milvago	South American Kites.
IX. Vulturinæ	Vultur	Typical Vultures.
„	Gyps	Griffons.
„	Neophron	White Scavenger Vultures.
X. Gypohieracinæ	Gypohierax	Angolan Vulture.
XI. Gypaetinæ	Gypaetus	Lammergeier.

On looking over this list (which has reference only to species now or formerly living in the Society's Gardens), it will be seen that the birds used by falconers are restricted to a very few

subfamilies.* I have marked the genus *Aquila*, because in Persia, Tartary, India, and other parts of the East, eagles are said to be used for taking small deer, antelopes, and hares; † and there is some reason to believe that the Osprey has been trained to catch fish. ‡ The Kite, although incapable of being trained, affords good sport when flown at by Falcons, and so does the Kestrel. Falconers are in the habit of classifying the birds used by them as "Long-winged" and "Short-winged" Hawks, a very convenient division. To the first-named group belong all the typical Falcons (*Falco*), with the Hobby and Merlin and their allies (*Hypotriorchis*); the last-named comprises the Goshawks (*Astur*) and the Sparrow-hawks (*Accipiter*).

Grouping the species which have been living in the Gardens of the Zoological Society, we have the following summary, the various *habitats* being taken from Mr. Sclater's "List":—

LONG-WINGED FALCONS.

<i>Falco peregrinus.</i>	Europe.
„ <i>biarmicus.</i>	South Africa.
„ <i>barbarus.</i>	North Africa.
„ <i>lanarius.</i>	Eastern Europe.
„ <i>jugger.</i>	India.
„ <i>sacer.</i>	Western Asia.
„ <i>candicans.</i>	Greenland.
„ <i>islandus.</i>	Iceland.

* These are printed in thicker type.

† See Sir J. Malcolm's "Sketches of Persia;" Johnston's "Sketches of Indian Field Sports;" Atkinson's "Travels in Oriental and Western Siberia" and "The Upper and Lower Amoor;" and Burton's "Falconry in the Valley of the Indus."

‡ See the Pell Records, pp. 219, 333.

- Hypotriorchis subbuteo*. Europe.
 „ *vespertinus*. South Europe.
 „ *eleonoræ*. South Europe and North Africa.
 „ *æsalon*. Europe.
 „ *columbarius*. North America.
 „ *rufigularis*. South America.

SHORT-WINGED HAWKS.

- Astur palumbarius*. Europe.
 „ *tibialis*. West Africa.
 „ *approximans*. Australia.
 „ *novæ-hollandiæ*. Australia.
Accipiter nisus. Europe.
 „ *melanoleucus*. Africa.

Hitherto the terms “Falcon” and “Hawk” have been used indifferently, and, generally speaking, they are regarded as synonymous terms; but the opportunity may now be taken of pointing out in what respects they differ, and how they may be always known apart. A falcon has long wings, reaching, when closed, to the end of the tail, which is comparatively short and square; short thighs and tarsi, comparatively robust toes with powerful claws; and always has a dark eye. A hawk, on the other hand, has short wings, which, when closed, do not reach nearly to the end of the tail, the latter long in proportion to that of a falcon, and rounded; long thighs and slender tarsi and toes; and invariably has a coloured eye, usually yellow or orange. The mode in which the two take their prey is very different. The long-winged falcon rises in circles until above the bird she is pursuing, and then, with half-closed wings, descends upon it with a “stoop,” often from a considerable height. The short-winged hawk flies directly behind its prey, and,

overtaking it by superior speed, either clutches it, or makes but a very short "stoop" to seize it. Falconers accordingly take advantage of this difference of habit, and select such "quarry" as each is capable of taking. The Peregrine will kill Rooks, Crows, and Magpies, Partridges, Grouse, Peewits, Curlews, and even Herons; the Jerfalcon used to be the hawk *par excellence* for Herons and Cranes; the Hobby and Merlin will take Larks well; the Goshawk is flown at Partridges, Pheasants, Wild-fowl, Rabbits, and Hares; and the Sparrowhawk, which, although usually employed to catch Black-birds and Thrushes, will (*i.e.*, the female bird will) kill Partridges like a Goshawk. In Syria it is commonly used for taking Quail.

Let us see now how these falcons and hawks are caught, and how they are tamed and trained. They may be either taken when fledged from the nest, or they may be caught after they have flown; and at any age. If taken from the nest they must be flown "at hack," as it is termed; that is to say, they must be allowed their liberty for a certain time, and fed regularly every day at the same place and at the same hour, until they are strong on the wing and able to kill "quarry" for themselves. They are then taken up, and the training commences. If caught "on passage," *i.e.*, while migrating in spring and autumn, they are treated in a different way, presently to be noticed.

The falconer, or rather the hawk-catcher, lies in wait for the hawks during the time they are migrating, and attracts the attention of those passing over by means of a live pigeon, which is tethered close to

a bow-net. The hawk, having seized the pigeon, is covered by the net, and is thus taken alive and uninjured.

Timely warning of the approach of a hawk is given by a tame Butcher-bird (the Great Grey Shrike), which, tethered close to the falconer's hut, keeps a sharp look-out, and has so keen a vision that it can detect a hawk in the air long before the latter comes within reach of human eyes.

On being taken out of the net, gently yet firmly *by the legs*, the hawk is immediately hooded, and has a "jess," or thin leather strap, put on each leg. To the other ends of these a "swivel" is attached, and through this again is passed the "leash," by which the bird is fastened, first to a "block" of turf, and eventually to a perch. Later on a bell is attached to one leg. The hood renders it quiet, the soft jesses confine it without hurting it, the turf block prevents any injury to wings and tail when it "bates," or flutters. It is fed once a day (in the evening); the hood is not removed, but, having a large opening in front, the bird is enabled to feed *through it* while held upon the glove. It is always carried upon the left hand for convenience of "hooding," "slipping," "feeding," &c., although eastern falconers carry it on the right. By degrees the bird gets tame, and will feed upon the hand without a hood. It is then taught to jump to the fist when called, and when it will do this readily the training commences, at first with a long string fastened to the swivel (instead of the leash), and ultimately the string is dispensed with. The hawk is always flown fasting, and on one or two days

before going out for the first time it is desirable to give the hawk a live bird of the kind which it is intended to fly at, so as to accustom it to its appearance and give it confidence. On days when it cannot be flown at live "quarry" it may be exercised by being flown to the lure, a dead pigeon (or pair of wings weighted) tied at the end of a long string and whirled in the air by the falconer. Should a flight feather become broken, or injured, it is easily repaired by a process called "imping," a description of which will be found in any book on Falconry.*

Hawks should be fed once a day, and it is best to accustom them to be fed in the afternoon. Peregrines and the larger falcons should have lean beef or bullock's heart (about half a pound), and about every third day a pigeon or other bird for the sake of the feathers, which are essential from time to time to keep a hawk in health. All birds of prey, and some others, as Shrikes, Flycatchers, and Rooks, are in the habit of rejecting the indigestible portions of their food in the shape of pellets, called "castings." From the appearance of these the bird's condition may be judged. Hobbies, Merlins, and

* I may here recommend, as the best modern work on the subject, Salvin and Brodrick's "Falconry in the British Islands," royal octavo, published by Van Voorst. It is full of useful information, and contains coloured plates of the hawks admirably drawn from living specimens by Mr. Brodrick. An excellent little book, also, for beginners, is "Practical Falconry," published at *The Field Office*, and written by an enthusiastic falconer under the pseudonym of "Peregrine," who has perhaps done more than anyone else now living to revive the art of falconry in this country.

Sparrowhawks should, if possible, be fed on small birds and mice, or sheep's heart. Beef is too stimulating, and not easily digested by them.

It is of course impossible, within the limits of a single chapter to give expression to half the ideas which suggest themselves in connection with the subject. I should like to have supplied some additional historical notices of Falconry in England, and to have described some of the "flights" I have witnessed with the Peregrine, Jerfalcon, Merlin, and Sparrowhawk; but space will not permit.

It is to be hoped that these remarks concerning hawks may be regarded *as a plea in their favour*. They are useful to us in many ways. They are "Nature's police;" they keep down many birds, which, if allowed to become too numerous, might endanger our crops (for example, the natural prey of the Peregrine is the wild Pigeon); and they prevent a district from becoming overstocked with game, which is almost as prejudicial, in the eyes of a sportsman, as holding too little. They are capable of providing us with much amusement in the way of taming, training, and flying them; they are highly intelligent, and, if properly managed become most gentle and docile. If gentlemen would only request their keepers to *catch* instead of *shoot* hawks (that is, assuming the liberty of these birds must be restrained), and try their hands at training them, they would derive a pleasure from the experiment far beyond their expectations.

THE BOKE OF ST. ALBANS.

MOST people have heard of the "Boke of St. Albans," but few, probably, have ever seen it; fewer still, we imagine, have troubled themselves to inquire into its history and authorship. No reprint has appeared since that of Haslewood in 1810, and this has long been scarce and difficult to procure; Mr. Blades therefore has conferred a boon on bibliophiles by the issue of the edition which he has lately reproduced in facsimile.*

The earliest printed book, although not the earliest English treatise, on the subject with which it deals, it has long been regarded as the production of a certain Dame Juliana Barnes or Berners, said to have been a daughter of Sir James Berners, of Berners Roding, in Essex, and Prioress of Sopwell, near St. Albans, where it was printed in 1486. Such is the generally received opinion concerning it, and such it would seem is the opinion of Mr. Blades, who in the title which he has supplied (the original being without one), credits Dame Juliana Berners with the authorship of the entire volume. We

* "The Boke of St. Albans." By Dame Juliana Berners. Containing Treatises on Hawking, Hunting, and Cote Armour. Printed at St. Albans by the Schoolmaster Printer in 1486. Reproduced in facsimile, with an Introduction by William Blades. London: Elliot Stock. 1881.

perceive, however, that in his introduction, Mr. Blades casts some doubts upon the biography of the lady, and upon the history of the book as handed down to us. In the expression of these doubts we entirely concur; for, having been at some pains to look into the matter, we are convinced that no materials exist for a biography, notwithstanding all that has been printed on the subject by Bale, Chauncy, Haslewood, and others. The statements put forth by these writers, and the biographical notices of the lady which occur in various encyclopædias, must be regarded as purely apocryphal; since no evidence has been adduced in support of them, and they rest upon mere assertions (copied over and over again by successive authors) of writers who, not being contemporaries of the worthy dame, had no means of knowing much about her, or if they had, have omitted to state how and in what way. We are furthermore convinced that Dame Juliana had very little share in the composition of the Boke of St. Albans, and none at all in the printing of it. These are somewhat sweeping assertions to make, and we fear that, with most bibliophiles, they will savour somewhat of heresy. It will be expected therefore that we should offer some explanation in justification of our remarks.

In the first place, then, to deal with the lady's name and pedigree, in the only treatise where her name occurs, namely, in that on hunting, she is styled "Barnes," and it does not follow because the family name of Lord Berners was sometimes spelled Barnes that Dame Juliana Barnes was, as has been asserted, a member of his family. Moreover, there

is no evidence to show that her reputed father, Sir James Berners, of Roding Berners, who was beheaded on Tower Hill in 1388, had a daughter Juliana. According to the most trustworthy pedigrees, he had three sons, Richard, Thomas, and William, but no daughter; although an old Latin pedigree, printed by Collins in the case of the Barony of Berners, and written temp. Henry VII., names a daughter Isabella, who died at the age of twelve.

Assuming, however, that our dame was a daughter of this Sir James Berners who was executed in 1388, she would have been about a hundred years old when the *Boke of St. Albans* was printed! Again, there is no evidence of her ever having been Prioress of Sopwell, nor is it clear that she was even an inmate of that convent. In the only list of Prioresses which has been preserved, her name does not occur. In 1480 one Joan Chapell was Prioress, and she was succeeded by Elizabeth Webb. As to her being the author of the three books attributed to her on hawking, hunting, and coat armour, we have already expressed our doubts. That she may have transcribed them, or some parts of them, is very likely, but to say that she composed them is not warranted by the evidence.

In the first treatise no author's name appears. In the second the name of Juliana Barnes does occur (at the end of page 23), but in such a way—"Explicit Dam Julyans Barnes in her boke of huntyng"—as to lead to the inference that the lady was only responsible for a portion of the book. Furthermore, the first part of the treatise on hunting, which is in doggerel rhyme, bears evidence

of having been translated or adapted from an older work, and that in French, perhaps from a copy of Tweci. It abounds with untranslated French terms employed in hunting.

With regard to the third treatise, on coat armour, it is clear from the colophon that it was not an original work but a translation.

And here now endyth the boke of blasyng of armys translatyt and complyt togedyr at Seynt Albans the yere from thincarnation of our lorde Jhu Crist M.CCCC.LXXXVI.

The MS. from which this was "translatyd and complyt" was evidently that of Nicholas Upton "de Studio Militari."

The share, then, which Dame Juliana had in "The Boke of St. Albans" was very small. There is no evidence that she wrote the first of the three treatises, and it is certain that she did not write the third, while of the second only a portion, and that the least important, can be credited to her. In what capacity was this portion written by her? In all probability in the capacity of school-dame. For not only was the word "dame" not exclusively applied to a lady of noble birth, as some would have us suppose, but the phraseology in many places in the Boke of Huntyng as well as the doggerel rhymes show that it was adapted especially for young scholars, so as to enable them to learn it by heart. Thus :

Wheresoevere ye fare by fryth or by fell,
My dere chylde take hede how Tristram doth you tell
 How many maner beestys of venery ther were
Lystyn to youre dame and she shall you lere.

The knowledge she proceeds to impart, then, is not derived from her own experience, but from the

statements of one "Tristram," an older writer on the subject.

On the whole, it would appear that the chief merit of the production of "The Boke of St. Albans" belongs not to Dame Juliana Barnes, but to the schoolmaster of St. Albans who compiled and printed it, but whose name unfortunately has not come down to us. As a "schoolmaster" he, of course, appreciated the production of the "school dame," and utilised it.

"The treatyse of fysshyinge wyth an angle" formed no part of the "Boke of St. Albans," as originally printed in 1486, but was added by Wynkyn de Worde in his edition (the second) which appeared in 1496. And here it should be noted that it was the second edition which Haslewood reprinted in 1810, while the volume now before us is a reproduction of the first edition, the former being a reprint in black letter, the latter an absolute facsimile by the aid of photography.

Turning from the question of authorship and typography, "what," it may be asked, "is the value of the several treatises embodied in the work?" It cannot be said that they are of much practical value at the present day. Of the treatise on Coat Armour we offer no opinion, having made no study of the subject, but of the treatises of hunting and hawking, which more properly come within our province, we may observe that there is little to be learnt from them beyond the recognition of certain general principles by which our ancestors were guided, and which are adopted by huntsmen and falconers at the present day; whilst no one nowa-

days with any regard for the condition of hawk or hound would dream of adopting the extraordinary recipes and cures for diseases, real or imaginary, which our ancestors invented, and many of which strike us as more likely to kill than cure. The whole system of hunting, too, is now entirely changed, and many of the chases in which our forefathers delighted, such as those of the buck (*i.e.*, the fallow deer), the roe, and the wild boar, have become things of the past. As regards hawking, not much is to be learnt from the treatise before us, and it is evident that although English falconers of the fifteenth century were well acquainted with the method of reclaiming "eyesses" or nestlings, and were apparently very successful in flying at game and wildfowl, they knew nothing about training "passage hawks," as they are now trained and flown by modern falconers; and the writer of the treatise before us would be probably very much astonished could he enjoy, as we have done, a good day's rook hawking on the Wiltshire downs, and witness the successful termination of a flight with a passage hawk after a two mile gallop.

The "Boke of St. Albans," then, must be regarded rather as a literary curiosity than as a book of practical value. But inasmuch as it affords us an insight into the modes of hunting and hawking employed in bygone days, and enables us to trace the origin of many practices and terms still in vogue with sportsmen, all who desire to know something of the history of their own particular branch of sport should possess themselves of the reprint of this very curious work.

HAWKING AS TAUGHT BY THE BOOK OF ST. ALBANS.

IT is a common mistake with writers who know nothing of the subject, and who perhaps have never seen the work, to suppose that the "Book of St. Alban's" is the falconer's Bible, the text-book *par excellence* on hawking, the *sine quâ non* with all who would acquire a practical knowledge of the art of taming and training either eyess or passage hawk.

The treatise to which this fictitious value has been assigned is one of three contained in the said book, the other two being on hunting and on coat-armour. It occupies fifty-three quarto pages, and may be characterised as a compilation without method, embodying here and there some useful directions for training short-winged hawks, interspersed with a variety of extraordinary recipes for curing numberless ailments, real or imaginary, to which hawks were supposed to be subject, but few, if any, of which would be tried at the present day with any hope or chance of success.

Setting aside the question of authorship, already discussed in the last chapter, and which does not affect the question of merit, it is not uninteresting to examine the nature and contents of this treatise from the practical falconer's point of view,

in order to test its real value, and ascertain how far it is deserving of the encomiums which, through so many ages, have been bestowed upon it.

The opening paragraph runs as follows :

In so moch that gentill men and honest persones have greete delite in haukyng and desire to have the maner to take haukys : and also how and in what wyse they shulde gyde theym ordynateli : and to know the gentill termys in communying of theyr haukys : and to understonde theyr sekeneses and enfirmittees ; and also to knowe medicines for theym accordyng, and many notabull termys that ben used in haukyng both of their haukys and of the fowles that their haukys shall fley. Therefore thys book fowlowyng in a dew forme shewys veri knowledge of suche plesure to gentill men and p̄sonys disposed to se itt.

So methodical an introduction, it might be supposed, would be followed by an equally methodical treatise ; but this, unfortunately, is not the case, for the medical recipes are so dispersed throughout the work as to entirely interrupt and destroy the continuity of the remarks upon taking and training hawks, which if only brought together would be far more intelligible. We are inclined to suspect that the history of this confusion probably lies in the fact that the manuscript from which the unknown printer of St. Albans set up the work was unpagged, and portions of it must have got misplaced. In no other way does it seem possible to account for the singular jumble which is presented to the reader.

Before it is possible, therefore, to form any opinion on the practical value of this treatise, it becomes necessary temporarily to re-arrange the subject-matter, by eliminating all which relates to the cure of diseases from that which concerns the method of capturing and training hawks, reserving some brief

remarks on the former subject until the latter has been disposed of.

How, then, did the falconers of yore proceed, according to "The Book of St. Albans?"

About St. Margaret's Day (June 10) they took the nestling hawks, the names for which varied according to their age, those which had just left the nest being called "bowesses" or "boughesses," and those which could fly from tree to tree being termed "branchers." After "seeling" them in the old way, by passing a thread through the eyelids and tying it (a method long superseded by the more humane use of the hood), they carried them home on the fist, and set them on a perch for a night and a day, and on the second day towards evening they cut the threads and fed the hawk gently with warm meat, watching her all night and all the next day to keep her awake. She was then ready to be "reclaimed" if "hard panned;" but if the quills were still soft, the falconer would have to wait.

When ready, washed meat was given, and hot, with a "casting" every third day, the casting for a Goshawk being composed of five pellets of "blanket cloth," each an inch long, imbedded in five morsels of meat, given at feeding time after half a crop full taken.*

A Sparrowhawk was always fed with unwashed

* They are termed "castings" from the habit, which is common to all birds of prey, of casting up or rejecting the indigestible portions of their food in the shape of bones, fur, and feathers—a process of necessity to keep them in health. When falconers feed their birds on raw meat only, they supply artificial castings to copy nature, but nowadays these castings are generally composed of feathers or fur.

meat and had "plumage" given for "castings." A bath was given every third day in summer and once a week in winter, if fine, after giving a morsel of hot meat unwashed, "even though she be a Goshawk." Until a hawk was ready to reclaim, she was given only two meals in the time that she would otherwise have three, "Ye must deposite one meeles in thre meeles unto the tyme that she will come to reclayme."

The various steps in the process of training or reclaiming are not detailed, although later on some indication is afforded of the use of a long line for the purpose, when the "creance" is described; and after numerous recipes and explanation of terms employed by falconers, the reader comes abruptly to a paragraph headed, "How ye shall gyde you when your hawk is ready to flie."

A covey of partridges is found, flushed with the aid of spaniels, and the scattered birds marked down. The hawk (a Goshawk or Sparrowhawk), having first killed a bagged partridge in a string, is taken to where one of the covey has been marked in, and on its being again flushed, is flown at it, and, if successful in killing it, is rewarded with the head and neck, and considered "made." Some good advice is given with regard to not approaching the hawk too suddenly when she has killed, and the mode described of taking a hawk up is that practised at the present day.

Then follow more recipes for diseases, which may be here passed over, and we come to a description of the jesses, leash, and swivel, which one would have expected to find described long before the

hawk was "redy to flie." This chapter is headed "The lengthe of the *gesse*, *lewnes*, *tyrettis*, and how they ben fastined; and *bewettis*;" and it will be seen from the following description that, while the use of the term "jesses" is still retained by modern falconers, the "lewnes" or "lunes" answered to our "leash," and the "tyrett" (from the French *tourette*) to our "swivel."*

Hawkys have aboute ther legges *Gesses*, made of leder most commynly, som of silke wich shulde be no longer bot that the knottis of theym shulde appere in myddys of the lefte honde betwene the longe fynge and the leche fynge, because the *lewnes* shulde be fastened to theym with a payre of *tyrettis* which *tyrettis* shuld rest uppon the *lewnes*, and not uppon the *gesses*, for hyngyng and fastynyng uppon trees when she flyeth. And the same *lewnes* you shall fastyn them abowte your lyttyll fynge slackely in compassyng the same in iiii or iv folde as a bow stryng unocupyede. And the *terettys* serve to kepe her from wyndyng when she bates.

Also the same letheris that be putt in her bellis to be fastyned aboute her leggyes ye shall call *bewettis* [the modern *bewits*].

Also ye shall calle the long lynes that ye doo call youre hawke to reclaym with, yowre *creaunce* whatsoever it be [a term still in use].

After some more "medecynes" we are told "how a man shall take an hawke fro the eyrer" (eyrie). This, inserted as it is amongst various medicines, is evidently misplaced.

The mewing, or moulting, of hawks is next considered, and the reader is advised not to put his hawk too late in the mew.

Who so puttyth his hawke in mewe in the begynnyng of Lente; if she be kepte as she ought to be she shall be mewyd in the begynnyng of Auguste.

Modern falconers have not proved this to be true.

* See Warton, *Hist. Eng. Poetry*, vol. ii., p. 199 (ed. 1824).

Hawks are very uncertain and irregular in their moulting, and we have never known a hawk to be clean moulted anything like so early as August.

The mew, we are told, should be warm, and so arranged as to admit the sun. A sick hawk should never be put in the mewe till she is well, nor should she be too fat or too lean, but "lyke as she shoulde flie beste." Bathing will not "hynder her mewynge," and she should bathe every third day. While in the mew she should be well fed, with plenty of birds (for castings), the meat most recommended, however, being kid, young swan, chicken, or young rat.

More "medecynes" are then described, and further "termys" explained. Then follows an argument upon the derivation of the name "Sparrowhawk," the writer favouring the view that the bird was so called because of all hawks she is the most spare—*i.e.*, in shape.

The female Sparrowhawk was thought highly of, and was used chiefly for taking partridges. But we read also that—

She wyll flee [fly] well yong fesawntis; yong heth cockys in the begynnyng of the yere: and after Michelmas, when partriches passe her daunger, I have seen them made sum to fle the pie, sum to fle the Tele upon the Rever at the juty; sume to fle the wodecok, and sum for the blacke birde and the thrushe. The wodecok is cumbrous to fle; bot if ther be crafte. Therefore, when ye come to a wode or a quech of bushes, cast yowre sparehawke into a tre, and beete the bushes then, and if any wodecok arise she will be sure thereof. Ye must first make her to a fowle caste up out of the bushes, and yowre hawke must sit on lofte as ye make her to a partriche.

After some advice about bells, which should not be too heavy, and be of equal weight, one a semitone under another, we read:—

Of spare hawke bellis ther is choice and lyttill of charge of theym for ther beeth plenty. But for goshawkes somtyme bellis of Melen [Milan] were calde the best. And thay be full goode, for thay comunely be sownden with silver and solde thereafter. Bot ther be now used of Duchelande bellys, of a towne calde Durdright (Dortrecht) and thay be passing goode; for thay be well sortid, well sownded, sonowre of ryngyng in chilnes and passing well lastyng.

Here endyth the proceis of hawkyng. And now foloys the namys of all maner of hawkys and to whom they belong.

These names will be found in Strutt's "Sports and Pastimes," and have been frequently copied.

From this glance at the contents of the work it will be seen that as a treatise on hawking it is very incomplete. The instructions given apply only to Goshawks and Sparrowhawks; the Peregrine, Hobby, and Merlin are not mentioned. Nothing is said about hoods and how to make them, nor how the jesses are put on; nor is any reference made to the form of perch, or block, which should be used. No stress is laid upon the importance of carrying a hawk in order to tame it, so necessary in the case of both Goshawk and Sparrowhawk. In fine, it is clear that without some other assistance than the "Book of St. Albans," a novice would never succeed in training a hawk properly. The paucity of instructions and the want of method in detailing the various steps in the process, many of which are altogether omitted, seem to warrant the conclusion that the treatise was compiled by one who had little practical knowledge of the subject, albeit living in an age when hawking was much in vogue.

TAKING PASSAGE HAWKS IN HOLLAND.

ABOUT six miles south of Eindhoven, in North Brabant, lies the little village of Valkenswaard, long celebrated in the annals of hawking as the dwelling-place of many generations of Dutch falconers, and the rendezvous in autumn of falconers from other countries, who resort thither to procure from the former as many as they can spare of their recently-caught "passage hawks." Valkenswaard, in fact, is one of the few places in Europe where at the present day wild hawks are still systematically captured while on their southward "passage" or migration, and are tamed and trained for the purposes of falconry. "Nestling hawks," or "eyesses" as they are termed, may be procured at home from the sea cliffs on many parts of our coast; but to obtain "passage hawks" one must go abroad, either to Holland or to Norway. The journey from London to North Brabant is not a long one. An hour and a half by rail to Queenboro', nine hours' passage to Flushing, in one of the fine new vessels belonging to the Royal Netherlands Steamship Company, and four hours thence by rail *via* Eindhoven, brings you to your destination. In other words, you may dine in London one day and lunch at Valkenswaard the next. The comfortable steamers on this route make

amends for what might otherwise prove a dull and often a rough passage, while the time occupied in crossing is the shortest that can be achieved. Such, at least, was my experience in October, 1877, when, in company with a friend, and a falconer with a cast of hawks, I started for Valkenswaard. Although the main object of my journey was to be initiated into the mysteries of catching and training passage hawks, I also hoped to enjoy some magpie hawking, and to explore, on bye days, gun in hand, some of the Dutch fens. The sequel will show how far my expectations were realised.

On reaching Flushing we at once took train for Eindhoven, *via* Middleburg, Goes, Bergen, Breda, Tilburg, and Boxtel. The first half of the journey lay through a flat tract of country, with much water and few trees. Marsh birds were tolerably plentiful, especially peewits, which seemed very numerous; grey plovers, herons, and a few ducks. We also saw two small flocks of grey geese, which were feeding close to the line in the early morning, and rose at our approach within shot of the railway carriage. After leaving Breda the character of the country changes, marsh land giving place to heath, with here and there clumps and belts of oak and fir. At Eindhoven we had to change carriages for Valkenswaard, where we arrived a little before midday. There being no conveyance of any kind at this small and unimportant station, we engaged a porter to bring our luggage, guns, and ammunition, and, carrying our hawks, started on foot for the Hotel de Valk. This hostelry has been for years the house of call for falconers from all parts of

Europe, and is kept by Henri Bots, the son of a well-known professional falconer, Jean Bots, now deceased.*

The house, which lies on the left hand side as you enter the village from the station, is long and low, with a screen of trees in front, from one of which depends the appropriate sign of "a hooded falcon." We secured a comfortable sitting-room on the ground floor, with a double-bedded room opening out of it, for ourselves, and a third room for our falconer; and, while lunch was being prepared, we had leisure to examine our apartments. The walls were hung with pictures of hawks and falcons, which we recognised as plates from Schlegel and Wulverhorst's splendid folio work on Falconry,† framed and glazed; while on the top of a cabinet were two cases of stuffed gerfalcons, which had been preserved many years previously by the father of our host. On the left of the door on entering, and opposite our sitting room, we found a billiard and smoking room, to which one might resort should the evenings prove long or dull—an event which we did not realise. What more attractive quarters could be found under the circumstances? If the *cuisine* was somewhat plain, we were able to secure plenty of fish, flesh and fowl, and the extreme cleanliness of everything contributed much to our comfort. Lunch ended, we went to find lodging for our hawks, and proceeded to the house of the Dutch falconer, Mr. Adrien Mollen, who was to act as our "guide, philosopher,

* Jean Bots was for some years in England, in the service of Colonel Wilson, afterwards Lord Berners, at Didlington, Norfolk.

† "Traité de Fauconnerie." The plates by Wolf.

and friend" during our stay at Valkenswaard. From his long experience in the capture, management, and training of hawks, we found his assistance invaluable.

In the palmier days of falconry, when there were as many as eighteen resident falconers at Valkenswaard, and thirty huts were put out in the season for hawk catching, he had been a pupil of Jean Bots, to whom he acted as assistant-falconer from 1833 to 1836. In 1837 he entered the service of Prince Trautmansdorff, at Oberwaldersdorf, some leagues from Vienna, where he remained until 1840, during which time he trained not only passage hawks brought from Holland, but also nestling Lanners from Hungary, for flying at partridges, rooks, and thick-knees. In 1841 he became head-falconer to the Loo Hawking Club, his place at Prince Trautmansdorff's being taken by a nephew of Pell's from Valkenswaard.

The day being fine, we hardly expected to find him at home, for no doubt he would be out in the hut, hawk-catching; and so it proved. His wife, however, received us good-naturedly, and we soon found ourselves in the hawk-house, a perfect model of what a hawk-house should be. On a long "screen-perch," running the entire length of the room, beneath which was a layer of fine yellow sand, sat five splendid hawks with their ruffer hoods on—two fresh-caught haggards, one red tiercel, and a male and female goshawk—the last-named a beauty. The haggards were fine old birds, in the most perfect order, although not quite clean moulted, but with a freshness and bloom upon the plumage, and a bright colour in the legs and feet not seen in

hawks that have been long in confinement. This bright colour is the result of high living, and a full crop daily from freshly-killed and warm prey. In confinement it is not always easy to procure this ; and, although there is nothing like a freshly-killed pigeon for your hawk, pigeons are dear luxuries, and can only be given now and then as a treat and a change from the ordinary diet of good lean beef.

As we gazed with admiration upon these newly-taken hawks, the beauty of whose form and colour was heightened by the new hoods, jesses, and leashes, with which they were adorned, we longed for the pencil of a Wolf to commit to paper so picturesque a sight. Our reverie was at length interrupted by the entrance of Mollen, who had returned from the hut—a tall, spare man, clad in a dark long-skirted coat with deep pockets, and a pair of long boots ; clean shaved, with a profile that reminded us strangely of the great Duke of Wellington, and, with what Shakespeare has termed “a hawking eye,” he looked every inch a falconer. We met as old friends, although we had never seen each other before ; but each had heard of the other’s love of hawks, and that was quite enough to put us at once on the best of terms. He had been out since six in the morning on the look-out for passage hawks, but none had appeared, and he had returned empty-handed. The wind was in the wrong quarter, and until that changed he did not expect any luck. After seeing his hawks fed, and finding room for our own on a spare perch, we accompanied him indoors for a chat, and to arrange plans for the next day. This gave us an opportunity also of inspecting a

small collection of stuffed birds he has, which were obtained in the neighbourhood, and preserved by one of his sons. There was nothing very rare amongst them, however; the most prized specimen being a Sea Eagle, which Mollen had captured in the hawk-net with a live pigeon. Amongst the marsh birds I noticed the Curlew, Ruff and Reeve, Black-tailed Godwit, Wood Sandpiper, and Spotted Crake, all of which breed in the neighbouring marshes. On the chimney-piece were some half-finished hawks' hoods, the art of making which is now lost in England. Every species of hawk takes a particular size and shape, and has to be accurately fitted, to prevent injury to the eyes. Even a falcon and tiercel of the same species require hoods of different sizes, the former bird being so much larger and stouter in all its measurements. These hoods, which are prettily made of leather, with an opening in front for the beak to pass through, and with eye-pieces of green or scarlet cloth, are moulded on wooden blocks, which have previously been cut to the exact shape and size of the hawk's head; and Mollen assured us that the making of these blocks required an amount of care and skill which few would credit. The jesses and leashes are cut out of dogskin when it can be procured, and for jesses, from its strength, it should always be used; but it is difficult to get dogskin long enough for leashes, and hence calfskin, although not so good, is often substituted. The swivels and bells required to complete the hawk's furniture are both to be obtained only in Holland, no one in England understanding or undertaking the manufacture of them, and the specimens

of each which may be seen here and there at our saddlers' or ironmongers' are utterly useless for the purpose. Were it not for the difficulty in procuring them, Indian bells, from their greater lightness and superior tone, are preferable even to the Dutch.

Midway between Mollen's house and the Hotel de Valk, and in the centre of the village, stands the lofty and imposing church of St. Bavon; an edifice which, from its size and grandeur, seems more adapted for a city, than for the quiet little out-of-the-way spot in which it stands. St. Bavon is the patron of falconers. He was a native of Hall, in Belgium, and lived in the seventh century. The legend runs that being accused of having stolen a white falcon, he was tried for the offence and condemned to be executed. The day fixed, he had arrived at the place of execution, when, all of a sudden, the missing falcon appeared in the air and came down. The innocence of the prisoner having been thus clearly established, as it was said, by a sign from heaven, he was immediately released, and subsequently came to be regarded as the patron of falconers.

Not far from the church stands an inn, known as "The Three Swans," and kept by one Daams, the descendent of a falconer of that name. It was in the large room of this inn that an annual sale by auction of passage hawks used to take place. This was at the time to which I have referred, when there were so many resident falconers at Valkenswaard, and when strangers used regularly to resort thither in autumn for the express purpose of

procuring hawks. Every owner of birds for sale was his own auctioneer. Taking a hawk on his hand, he would descant upon its age, merits, and condition, and invite bidders.

On one occasion a remarkably fine passage falcon was put up for sale, and great competition ensued amongst the would-be purchasers. Everyone said it was the best hawk of the season. A French falconer who was present was determined to have it, and continued to put down gold ducats on the table until there was a row as long as his leash. Finally, it was knocked down to him, and he carried it off in triumph. During the remainder of his stay at Valkenswaard nearly all his time was spent in taming and training this grand bird, and the day before he left he went out in the marshes to fly at a heron. A heron was found, and, after a splendid flight, was struck down, the hawk following it quickly to the ground. The heron, however, was only winged; and, before the hawk could kill it, or the falconer could run to its assistance, it inflicted a severe stab in the breast with its powerful bill, from the effects of which the much-prized falcon died in a few days. The very spot where the accident occurred was afterwards pointed out to us, and we noticed the intervening pool which prevented the distracted falconer from getting in time to the assistance of his favourite.

With such pleasant tales and "chronicles of eld" was the evening beguiled, until repeated warnings from the clock at length suggested a retirement in good time if we wished to be early at the hut the next morning to catch a passage hawk.

TAKING PASSAGE HAWKS IN HOLLAND

(Continued).

ABOUT a couple of miles east of the village of Valkenswaard lies a vast heath or plain, about twelve miles long by about three miles wide. Covered for the most part, with heather of two species, it resembles a flat moor, dotted here and there with small shallow pools surrounded with long yellow grass, and tenanted occasionally by ducks and snipe. Trees there are none, or very few, and these are to be observed chiefly in narrow belts or plantations at the edge of the plain, between which, at intervals, may be seen patches of young firs, not more than three or four feet high. This is excellent ground for magpie hawking; but, of course, during the season for taking passage hawks we could not fly anywhere near the falconer's hut, or our hawks would infallibly have taken his pigeons and found themselves in his bow-net. On this account, when flying our trained birds we had to give the hut a wide berth.

No better place perhaps in the world could be found for hawk-catching than the great heath of Valkenswaard. Flat, uninclosed, and of vast extent, it lies just in the way of all the migratory birds which, as autumn advances, quit Scandinavia and

the north of Holland to spend their winter in the south.

As I walked to the hut in the early morning with the Dutch falconer, Mollen, it was curious to note the successive flocks of birds of passage which crossed the heath in a southerly direction; they all travelled the same route, and as if with a set purpose, flying low, and never stopping to alight and feed so long as we could keep them in view. Larks by hundreds, Chaffinches, Bramblings, Linnets, and Hooded Crows were the most noticeable; while Buzzards and Merlins occasionally appeared, and travelled onward in the same direction. Now and then a Rough-legged Buzzard came along, distinguishable from the common species by his lighter colour on the back, sharper wings, and more buoyant flight.

The passage lasted generally from about eight o'clock in the morning until about three o'clock in the afternoon, when we usually quitted the hut. One thing struck me as particularly remarkable—the undeviating line of route taken by birds of the same species. Sitting in the hut and gazing across the plain, we would see a flock of fifty or sixty larks come suddenly into view, flying low, and passing within gunshot. As a rule they flew so low that we did not see them until they were within a couple of hundred yards of the hut, when they passed over a particular bush and were soon out of sight. In ten minutes or a quarter of an hour another flock would come along, and strange to say, would pass over the very same bush by which I had marked the line of the first flock, then probably some miles

away. It seemed as if the leader of flock No. 2 had kept in sight the last bird of flock No. 1.

The Buzzards which we saw—and some of them passed close to us—took little notice of our decoy pigeon; or if from curiosity they flew towards it, they made no attempt to carry it off, perhaps observing the line to which it was attached; and, as these birds are quite useless for the purposes of falconry, we never tried to catch them. They are to be caught, however, in the same way as Peregrines, but are more difficult to capture, from their suspicious nature, and their unwillingness to take the pigeon boldly and hold it.

The falconer's hut would be a rare post of observation for any naturalist desirous of studying the subject of migration; and many an interesting sight would reward his patient and lonely watching.

Early one morning a vast number of Cranes appeared; seven flocks, numbering in all about a thousand birds, arrived in succession, and alighted upon the heath about a hundred and fifty yards from the hut. Each flock as it appeared was hailed with noisy greetings by the first comers, and the whole company, with outstretched wings, performed many strange evolutions. They rested for several hours, and then, with loud cries, rose upon the wing and took their departure, affording a strange and never-to-be-forgotten spectacle.

The hut (A), to which at dawn we had directed our steps, lay well out in the plain. It is partly dug out—to lessen its height above the level of the surrounding country—and partly built up of heather sods. The diameter inside is not more than five

feet, and the height much less. In other words, you can put in a couple of rush-bottomed chairs, and sit side-by-side with the falconer, with your head just clear of the roof. A turf ledge runs round the inside, and is useful for holding hoods and jesses, gloves, tobacco pouches, schiedam, and luncheon; for it is nothing unusual to sit in the hut from six in the morning until three o'clock in the afternoon. The diameter of the hut lessens as it approaches the top, and the roof is supported by an old cart-wheel, upon which are placed heather sods with the heather downwards, to keep the soil out of one's hair; and on the top of these again fresh sods, with the heather upwards and growing; so that at a little distance the hut looks like a natural mound upon the plain.

Fifty or sixty yards in front of the hut, and about the same distance apart, are two upright fir poles (B B), about twenty-five feet high. From the top of each a thin light line is carried to the falconer's hand. To one is tethered a live pigeon (P); to the other a live hawk—a Peregrine—(H) in front of which at the point F, a bunch of feathers is tied on, the use of which will be presently explained. At the foot of the pigeon's pole is a little hut (D), into which the pigeon is from time to time allowed to retire, and will naturally do so at the approach of a wild hawk. A hundred yards to the right, to the left, and behind the hut are other little huts (D D), just big enough to hold a live pigeon each. These birds are tethered by long light lines, which run to the falconer's hand, and each is kept a prisoner by a little turf door, which opens outward

on pressure from within, when the line is pulled and the pigeon's weight brought against it.

Each of these lines passes through the eye of an iron pin, which is driven down close to the ground in front of the pigeon's hut, and in the centre of a concealed bow-net (E E). For want of space, only the right and left-hand bow-nets are shown in the accompanying sketch. The position of the third trap is merely indicated by the direction of the two lines at E 3.

The bow-net is formed of two half-hoops of wood, hinged together, and one half folded back upon the other. The net, which when open is of course circular, is gathered round the two half-hoops (the lower one of which is pegged down), and the whole is concealed as well as may be with grass and bits of heather. A wire pull is then fastened to the upper half-hoop, and runs to the falconer's hut, where it is made fast to a piece of rope's-end by way of handle.

So far as the trap is concerned, all is now in readiness; but one thing is wanting before we go to work, and that is a Grey Shrike or Butcher-bird, without which many a weary hour might be passed, many a chance thrown away. This elegant little bird is used, not to attract the hawk as might be supposed, but to give notice of its approach. Its power of vision is perfectly marvellous, for it will detect and announce the presence of a hawk in the air long before the latter is discernible by human eye. On this account it is a most useful ally, and the falconer is enabled to judge by its actions of the most opportune moment at which to pull out his

decoy pigeon and allure the falcon to his net. Generally two are used, being tethered on little mounds in front of the hut (G G), and they "back" each other like pointers. A tiny hut is made on the top of each mound, into which the Butcher-bird retires and hides at the approach of the hawk, chattering loudly the while.



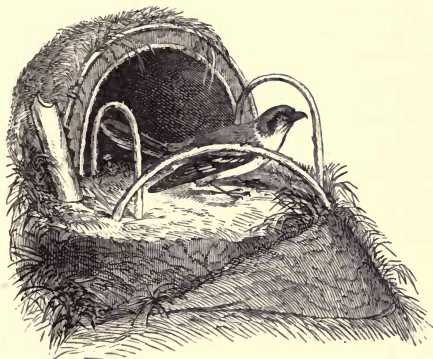
Butcher-bird. "On the look-out."

The pole-hawk and the butcher-birds are kept at night in the falconer's hut, where they are well fed and properly cared for; but the decoy pigeons are left out all night in their own huts, being fed by an ingenious contrivance. An opening is cut in the

back of each hut, and little wooden pegs are driven into the ground from top to bottom, just wide enough apart to allow the pigeon to get its head through. Some buckwheat is then thrown down outside, and a little tin can of water placed within reach, so that the bird can feed readily, and yet not waste or spoil its food.

We will now consider that everything is in readiness. The pole-hawk is tied on with a swivel, the pigeons are in their huts, three bow-nets are set, and the butcher-birds are on their mounds, pegging away at some dainty pieces of lean beef, which are placed in a cleft stick within reach, for their amusement and delectation. We take our seats on the chairs in the hut, and fill our pipes; the falconer takes in hand the lines of the pole-hawk and the decoy pigeon (P). A fragrant cloud fills the interior of our dwelling, and finds its way out of the narrow opening in front, through which from time to time we cast a wistful glance. Other openings there are on the right and left behind us, but these are closed for the time being with little turf doors, which are only opened when it is necessary to watch a particular bow-net. We converse freely about the work in hand, and many an anecdote is exchanged of sport and natural history. Hawking, fowling, fishing, and shooting are all in turn discussed, and the time passes pleasantly enough. Suddenly our attention is attracted by one of the shrikes. He chatters and appears uneasy. He crouches and points. The other follows his example, and "backs" him. He jumps off the roof of his hut, and prepares to take shelter within it. The other does the same. The

falconer says there is a hawk in the air. We look anxiously out, and soon perceive a buzzard, with slow and heavy flight, passing at some distance from the hut. We don't want him, and so don't pull out our pigeon. He does not come very near, and soon passes on out of sight. The butcher-birds, reassured, come forth from their little huts, and perch aloft again, attacking with renewed vigour their supply of



“When the hawk comes.”

beef. They are wonderful birds to eat, apparently “on the feed,” as an angler would say, all day.

Again we settle down, the excitement passed; we light another pipe and listen to another yarn. One day two eagles came to the hut; they were immature birds of the white-tailed species. One of them struck the pigeon close to the net, the other alighted and disputed its possession. They were equally matched, and each seemed inclined to play “a waiting game.” The falconer did the same, hoping to catch them both; but only one was taken, the one

which had struck the pigeon. The other could only have come within reach of the bow-net by accident.

On another occasion an Osprey was observed flying at a moderate height, and bearing in its talons a good-sized fish. It approached the hut, lowering its flight as if to settle, and, like all birds of prey when they alight to feed, it chose high ground from which to scan any approaching intruder. In this case the highest mound was the roof of the hut, and upon this it pitched. But the falconer completely frustrated its design, for, rushing out suddenly and waving his arms, the scared bird precipitately took to flight, leaving on the roof of the hut a fine pike, which, on being carried home for the falconer's supper, was found to weigh three pounds and a few ounces!

But one of the strangest visitors to this lonely spot was a Great Black-backed Gull, or, as it is often called, "saddle-back" (*Larus marinus*). This bird came two days running, and appropriated some of the hawk's meat, which had been left here and there by the pole-hawk. It was impossible to catch it in the bow-net, but the falconer, employing a method adopted to take up nestling hawks, set a noose round some meat, and, carrying a line to the hut, very soon had his visitor by the legs.

But look! the butcher-bird is pointing again. There is something in the air. He chatters and quits his perch; the other "backs" him. We look in the direction indicated, and strain our eyes, but see nothing. "You will see him presently," says the falconer; "the butcher-bird can see much farther than we can." And so he can. Two or

three minutes afterwards on the far distant horizon of that great plain, a speck comes into view, no bigger than a Skylark. It is a Falcon.

The falconer pulling his right-hand line, up goes the pole-hawk (H). Lifted suddenly some ten or twelve feet, he spreads his wings and flies round in circles the length of his tether; the bunch of feathers tied on the line in front of him (F) producing the illusion, at a little distance, of his pursuing a bird. The wild hawk sees him, and is deceived. He flies towards him, to join in the chase; but before he is within 200 yards, the pole-hawk is allowed to drop, the left-hand line is pulled, and out comes the decoy pigeon (P). This bird is not intended to be taken by the hawk; it merely serves as a lure. As soon as it is in the air we see the wild falcon "put on steam," and come right at it in a direction from right to left. In the very nick of time the falconer lets it drop, and it runs into its hut for shelter. The wild falcon has scarcely time to wonder what has become of it, when out comes the pigeon from the left-hand hut (D), and away it flies, carrying the line some fifteen or twenty yards. With a splendid stoop it is cut down by the hawk, which then seizes and grasps it as in a vice, perhaps fifteen yards from the concealed bow-net. Slowly but surely, the falconer hauls in the pigeon's line, which passes, as I have explained, through the eye of an iron pin driven down close to the ground in the centre of the trap. Slowly but surely, the pigeon approaches that pin, the hawk still clutching it tightly, and deceived by the movement into thinking that the pigeon is endeavouring to escape him. Suddenly

the line checks, and we know, although we cannot see, for it is a hundred yards away, that the pigeon and the falcon are in front of the bow-net. With a swing which drives his right elbow into my ribs and nearly knocks me off my chair, Mollen pulls the net-line (it is long pull for a net, one hundred yards), and both hawk and pigeon are safe.

* "Run out, sir!" says he, "she's caught." We do run out, and cover that hundred yards in no time. By Jove, what a splendid falcon! She has let go the pigeon, and, lying on her back, is fighting "tooth and nail" against the net. Mollen puts on a falconer's glove, and in a few minutes, as soon as he can disentangle her claws, she is drawn forth by the legs. Panting from her efforts to escape, with flashing eye and wide-extending wing, she looks the very picture of all that is noble and defiant. I cannot express my admiration at the sight. No one knows what a hawk is like until he has seen a freshly caught falcon just taken from the net; every feather perfect, such a bloom upon the plumage, such colour in the bill and feet, such beauty of outline, and what an eye! Nobility, indeed, in every feature; the peregrine has well been called the "noble falcon!"

We return to the hut with our prize; the bow-net is reset, a fresh pigeon supplied, and we sit watching for another hawk, until the short October day closes round us, and the last tiny bird of passage disappearing in the gloom reminds us that we too must away.

HOW TO TRAIN A PASSAGE HAWK.

IN a former chapter it was explained that a passage-hawk is a wild hawk caught during its passage, or migration, and so called to distinguish it from an eyess, or nestling, taken from the eyrie, or nest. In this country it is easier to procure nestlings, because hawk-catching is not practised here, as it is in Holland. On the other hand, not an autumn elapses in which one does not read in the columns of *The Field*, and contemporary journals, occasional paragraphs to the effect that on a particular date a fine peregrine falcon was shot, or trapped, by the keeper of Mr. So-and-so, and has either gone to a bird stuffer's to be preserved, or, if taken alive, has been placed in a cage where it may be seen by the curious. It apparently never enters the minds of the captors or their masters to what good account a falcon, caught alive and uninjured, may be turned, and how much amusement may be derived from taming and training it.

It will be readily imagined that it is easier to tame a young bird taken from the nest than a wild caught hawk that has been flying about for months. But, although this may hold good as regards taming, it is otherwise as regards training. Strange as it may appear to the uninitiated, an old

hawk, or haggard, or a young passage hawk that has left the nest five or six months, is more easily trained than any nestling.

The fact is that the birds which have been on the wing for some time have learnt a good deal before they are caught; above all, they have learnt to chase and kill prey for themselves, this alone saving a world of trouble to the trainer.

For the benefit of those country gentlemen who may, unexpectedly or designedly, find themselves in possession of a Peregrine falcon, newly caught and uninjured, I propose to point out, as briefly and as clearly as possible, how they should set to work to tame and train it, and in so doing I will consider the reader to be in the position of the young squire in Ben Jonson's "Every Man in his Humour," who said, "I have bought me a hawk and a hood, and bells, and all, and lack nothing but a book to keep it by!"

But here it will be proper to observe that in the following "instructions" I have borrowed nothing from books. I relate only what I have observed and learnt from my own experience, and what I have acquired through the teaching of two of the best professional falconers of the English and Dutch schools, John Barr and Adrien Mollen.* Indeed, it is to these two masters of the art of falconry that I owe much of what is here set down; and I can claim little merit save what may attach to the trouble of collecting and arranging the results

* Adrien Mollen was formerly head falconer to the Loo Hawking Club, but retired on a pension from the King of Holland, when that club was dissolved.

of their teaching, which, from their inability or disinclination to place them on record, might otherwise be lost.

In a former chapter I asked the reader to accompany me mentally to Holland, in order to see how passage hawks are captured. I will now suppose that we have just taken a hawk from the trap, and the question is, "What is to be done with it?"

It is scarcely necessary to observe that a certain

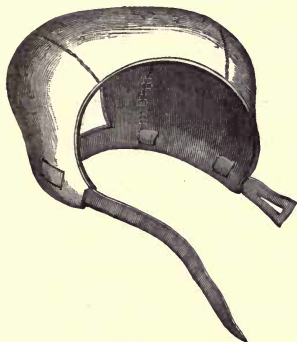


FIG. 1.—Ruffer Hood.

amount of care is requisite in freeing a hawk from the net, in order that none of the wing or tail feathers may be broken. With a thick glove on the left hand (a hawking glove is made of buckskin, and has a gauntlet to protect the wrist), seize the bird firmly by the legs, and, after disengaging the quill and tail feathers from the meshes of the net, slip on a leather hood of the shape delineated in Fig. 1. This is called a "ruffer hood," or training hood. To fasten it, pass the end of the longer strap

through the loop of the shorter one, and make a single knot on it to prevent its slipping back. The bird, being thus blindfolded, remains much quieter than would otherwise be the case. The next step is, with a pair of sharp-edged pliers or nippers, like those used for cutting wire, to take off the tips of the upper mandible and the claws on each toe; about an eighth of an inch will generally suffice. These are as strong and as sharp as needles, and would certainly pierce the falconer's glove unless blunted in the manner described. The process is not at all painful, any more than the process of cutting one's finger nails, and does not prevent the bird, when trained, from grasping and killing its prey. Before performing this operation, and the next one of putting on the "jesses" (presently to be described), professional falconers generally make use of what is termed a "sock." This is an oblong-square piece of calico, say about fifteen inches long by nine wide. The ends are folded back towards the centre (until the length is reduced, say to 9in.), and stitched along the top side only, so as to make a sort of pocket on either side for the reception of the shoulder of each wing. The two ends of a piece of tape, fastened by the middle to the back of the "sock," are then brought round in front, crossed, and returned behind, where they are tied in a bow, and the bird is then practically in a "straight waistcoat." The process of cutting the claws and the extreme point of the beak ("coping" as it is termed) is then easily performed, as is also the task of putting on the "jesses." These are two supple leather straps, of the shape, and for a Peregrine of the

size of that shown in the annexed engraving (Fig. 2), one of which is fastened round each leg just above the foot. The best are made of real dogskin. To put them on, place the hawk's leg mid-way between the slits A and B; draw the point A through the slit B until the two slits A and B come together, and daylight can be seen through *both*; then pass the point C through *both*, and draw up tight. The jess will then be so firmly put on that it will be impossible for the hawk to undo it as it would a knot. With one on each leg, the ends C hang down. Bring these ends together, and fasten them on a figure 8 brass swivel, as shown in the cut (Fig. 3). This is effected by putting the end of the jess (C) through one ring of the swivel, and then the swivel through the slit C. The same with the other jess. Through the *other* ring of the swivel is passed the "leash," a narrow leather thong about a yard or so long, one end of which is rolled up to form a "button," too large to pass through the ring of the swivel, the other end being held in the hand when the hawk is carried.

If you have not got a figure 8 swivel, put the leash through the ends of the jesses (C) without it; and by passing it through *twice*, you will prevent it from slipping.

When this operation is complete, the "sock" may be removed. If you have not time to make a "sock" before the necessity for using it arises, get someone to hold the hawk gently, but firmly, in both hands, on her back, her wings pressed close to her sides, and her legs and tail pointing towards you. In this position you will readily be able to perform

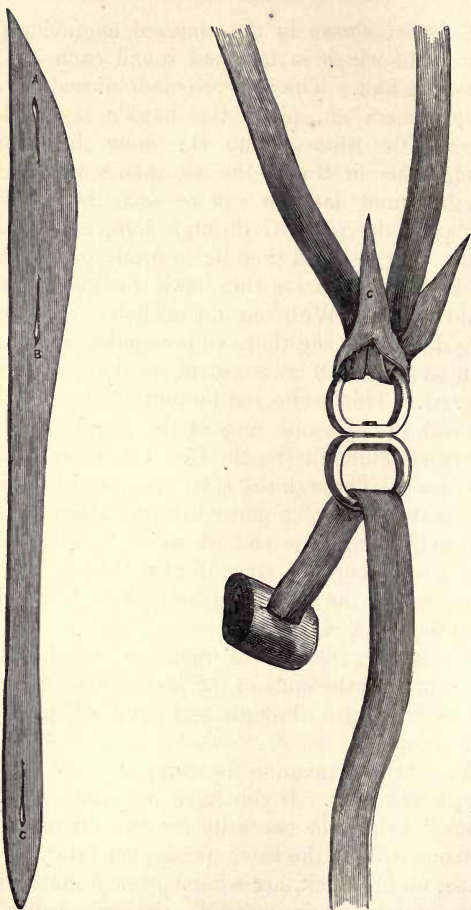


FIG. 2.—Jess for Peregrine. FIG. 3.—Jesses, Swivel, and Leash.

the operation described. This done, the hawk is ready to carry home. Place her on the left hand (gloved), grasp both the jesses between the finger and thumb close under the bird's feet; then pass the ends of the jesses, with the dependent swivel and leash, between the middle and third fingers, to be out of the way, and coil the leash up on the little finger.

Having got your hawk home, the question will then arise, "where to keep it?" Any shed or out-house will do, provided it is dry, and not cold and draughty, and has a door, of which you can keep the key. This for two reasons: It is important that no one should feed or handle the hawk but yourself, and no cats should be able to come near it. A hawk without its hood can defend itself well enough; but if suddenly pounced upon by a cat when hooded, it might be seriously injured, and perhaps killed.

On no account put your hawk *in a cage*, however large, for this is a sure way to get feathers broken, and perhaps render the bird useless. To guard against this it should be placed upon a turf block, set upon the floor of the shed, or, as we may term it, the hawk-house. This turf-block is formed by cutting out two hexagonal thick sods, narrower at the bottom than at the top. One is placed grass downwards on the floor, the other grass upwards on the top of that, and a stick being run through between them with the ends projecting, the leash (which is passed twice through the swivel about the middle to prevent it from slipping) is fastened tightly to each end of the stick, as shown in the accompanying illustration (Fig. 4). The Dutch

falconers use a cord instead of a leash for this purpose, and, making a cleft in each end of the stick, fasten it in the cleft.

In this position the hawk can only move the length of the jesses, and cannot injure its wings or tail.

The dimensions of the block are one foot across,

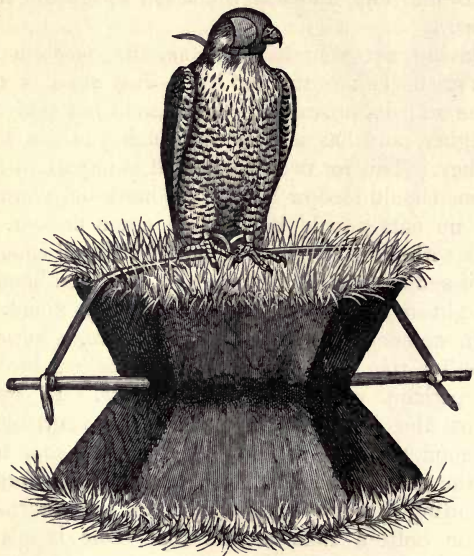


FIG. 4.—Falcon on Turf Block.

one foot high ; each sod six inches thick. A couple of wooden pegs, hammered vertically down through both sods, on each side of the stick, keeps all steady.

After putting down your hawk on the block in the way described, leave it quiet, with the hood on,

until the evening. Then comes one of the most difficult tasks of all with a newly caught hawk, namely, to get it to feed. This often requires the greatest patience and no little skill. A bird will sometimes be so sulky and obstinate that it may take a couple of hours or more to get it to eat a mouthful. The *modus operandi* is as follows: Take the hawk on your glove with the ruffer hood on (as shown in Fig. 4); place the meat, a solid piece of lean beef, on its feet, and then squeeze one foot hard. The bird will then put down its head and attempt to seize your fingers to remove the pressure, when, by an adroit movement of the hand, the meat is put in the way of the open beak, and a mouthful is immediately torn out.

The first few mouthfuls are seldom or never swallowed, the hawk tossing them away with a shake of the head as soon as seized, and panting and struggling like a passionate child. It is here that the patience of the falconer is tried. No speaking to the bird will avail, and indeed should be strictly avoided, for at this early stage the voice would only alarm it and make it still wilder.

After tossing a great many pieces of meat away with much show of temper, it will perhaps accidentally taste and swallow a little bit, then another, and another, until at length the bird may have taken perhaps half a cropfull the first time of feeding; in this case it may be said that good progress has been made.

The feeding should take place in the evening, and no one should be in the room but the falconer (that is, the master or owner of the bird), and he should keep as still as possible.

The following evening the same plan must be pursued, and so on for several days, until the bird will take a full crop through the hood; the opening for the beak in a ruffer hood is on this account purposely cut larger than is the case in the hood afterwards worn by a trained hawk. The meat may then be cut in small long thin slices, and given in the same way. When it will take this well the hood may be taken off, and the hawk carried on the fist in the house every evening for a couple of hours or more, so that it may get accustomed to people talking and moving about. It must have a "brail" on the right wing to prevent it from "bating" or fluttering. This is made with a narrow piece of soft leather, about fifteen or sixteen inches long, and about a quarter of an inch wide, cut square at one end and pointed at the other. A slit about an inch and a quarter is cut in it, about one-third of the length from the square end. To put it on hold the square end up, put the shoulder of the wing through the slit, pass the pointed end under the wing, bring it round on to the back, and tie it in a single bow behind the shoulder.

Always brail the *same* wing—that is, the *right* one. The advantage of this is that, as the hawk sits on your left hand, the right wing is nearest to you, and, being tied, cannot be fluttered in your face. When the brail is on, and a proper hood—which differs from the ruffer hood in having a smaller opening for the beak (see Fig. 5), a tuft of feathers on the top (to take it off and on by, as well as for ornament), and is opened and closed at the back by means of two pair of "braces," or little

narrow leather straps, one pair of which when pulled opens, the other pair closes it—take the hawk on the glove always on the left hand ; sit in the corner so that the hawk may not be frightened by anyone approaching suddenly from behind, and let the bird look about for an hour or two. Stroke it gently now and then with a pigeon's wing to accustom it to be handled. If it "bates" or flutters much, and is very restless, get some cold water in a sponge and give it a shower bath. This will make it sit still. At intervals put on the hood and remove it again.

Some dexterity is required to hood a hawk well, and it should be done as quietly and gently as possible. Some hawks are very troublesome to hood, and never take kindly to it. They bate off the moment the hood is shown to them, and will rather hang head downwards from the glove than face it. Such a hawk may be easily hooded head downwards, in which position it is powerless ; but it is always preferable to break a hawk to the hood if possible, and this may be done at feeding-time, by allowing the bird to get its meat only through the opening of the hood which should be held with the meat in the right hand. After a few mouthfuls, and when the beak is thrust almost through the opening in the eagerness for more food, the hood may (by raising the plume) be slipped quietly over the bird's head, and the hawk should then be fed through the hood, as in the early stages of training. After a few such lessons she will evince no objection to be hooded.

After the bird has been on your hand an hour or two, get a nice pigeon's breast, and, putting on the

hood, squeeze one foot, when it will begin to feed through the hood, as it has previously done through the ruffer hood. After a few mouthfuls take off the hood again, to try and get it to feed without it. If it will not do so, replace the hood, when it will begin to feed again, and so on until the bird will feed without it. This must be continued every evening until your



FIG. 5.—The hood proper (showing mode of fastening).

hawk will feed well without the hood. You may then rehood it, and tie it on a perch (instead of on the grass block) for the night.

The perch may be made by fixing a pole across one side of the hawk-house, about a yard from the wall, and 4ft. from the ground. This is covered with sacking or stout canvas, a strip of which is

allowed to fall from the under side like a straight curtain, almost to the ground. The object of this is to enable a hawk which has fluttered off the perch to regain it again, by climbing up, instead of swinging backwards and forwards underneath, in a position



FIG. 6.—The hood proper (showing opening for beak). which would eventually cause it to die from exhaustion.

It is tied on by the "leash," which is first passed through the "swivel" *twice*, to prevent it from slipping.* The swivel is then placed on the top of

* A neater mode adopted by some falconers is to make a short slit in the leash towards the centre, and after passing the pointed end through the swivel, then to pass it through this slit and draw up tight.

the perch, round which the leash is tied through a slit in the canvas just under the perch, to let the end of the leash through, being passed over and under from behind and tied in front. It is necessary to observe that the perch should be fixed in a dry place and moderately warm. If placed in a damp room your hawks will contract an incurable disease known as "blain," which is a gradual rotting of the wing.

Having thus shown how a newly caught passage-hawk is to be handled and tamed, I will now describe the mode of training it.

Those who have observed the habits of birds of prey in a wild state, or have kept them for any time in confinement, must have remarked a practice which they have, after a meal has been digested, of ejecting from their crops a mass of feathers, fur, small bones, and other indigestible portions of their food, in the shape of oval "pellets," or, as falconers term them, "castings." The process seems to be essential to the bird's health, and, as the "pellet" is worked round and round in the course of formation, the feathers or fur act like a mop, and thoroughly cleanse the inside of the stomach and keep it in a healthy condition and good working order.*

Falconers, borrowing a lesson from nature, and desirous of keeping their hawks in good health, always take care not to feed them exclusively on butchers' meat, *i.e.*, lean beef, but give an occasional

* This habit is not confined to birds of prey only. Rooks cast up oblong pellets composed of the husks of grain and other un-nutritious portions of the food they have swallowed. Butcher-birds and flycatchers eject globular pills, formed of an agglutinated mass of the elytra or hard wing-cases of beetles and other insects captured and devoured by them.

pigeon, or a handful of pigeons' feathers rolled up with the meat after it has been cut up and prepared.

The health of a hawk may be known by the appearance of its "castings," which should be tolerably firm and clean, and not out of shape and covered with thick mucus, as is found to be the case with a disordered bird. Many of the old treatises on hawking are filled with prescriptions and all manner of quaint recipes for curing hawks of various real or fancied complaints, and a long list might be given of the different medicines recommended. Experience, however, has shown that nature is the best healer of all disorders, in the case of birds at all events, and the best medicine for a sick hawk is a freshly killed pigeon.

These remarks seem necessary by way of preface to enable a proper understanding of the allusions to "castings" which will be made in the course of this chapter. To proceed then with the training.

As soon as your hawk will feed well without the hood, a pigeon's breast may be given with some feathers to make "castings," and it may be tied on the perch without a hood for the night, and in the morning it will be found that the bird has thrown up its "casting," when it may be re-hooded. Never hood a hawk in the morning until it has dropped its "casting," and if none be found on the floor, give a second light feed, with feathers, to insure it, and let the bird remain unhooded until the following morning. The same course must be adopted the next evening, until the hawk learns to feed freely on the hand without a hood, giving it a full crop; and after the fourth, fifth, or sixth evening, when it

appears pretty tame, and eager for its food, give it a light feed. It may be hooded in the morning as usual, carried on the hand and stroked for an hour or two, and in the afternoon in the hawk-house by daylight its hood may be removed. Place it on a low perch or back of a chair, take a piece of meat in the glove, and get it to step off the perch on to the hand and feed. Repeat this every day, increasing the distance, until the bird will jump to the hand the length of the leash. The lesson may be varied by stooping down, and getting it to jump from the hand to the floor and back to the hand again. This must be done very slowly and very quietly, for nothing frightens a hawk so much as a sudden movement, and this is the most troublesome part of the training.

When the hawk will do this nicely (and it must be practised for several days) it may be "entered" at a pigeon as follows: Lay down some turf in the hawk-house for about the extent of a billiard table; drive in an iron pin, with an eye to it, in the centre; get a live pigeon, and, fastening a string to both legs, pass the string through the eye of the pin, giving the pigeon a foot or two of tether, tie the string round a peg at the side of the grass, and then the other end to the hawk's swivel. Carry the hawk, hooded, to within a short distance of the pigeon, take off the hood and let it see it, and then let it stoop from the fist at it. Allow it to kill the pigeon, and then, approaching very slowly and very quietly, offer it a bit of pigeon's meat (from another pigeon) from the hand, and take it up on the glove and feed it. This course must be repeated every

day for some days, increasing the length of the stoop each day, till the hawk will fly the length of the room at the pigeon. It may then be flown out of doors as follows: A live pigeon is put down on the grass tethered as before, the line passing under a “bail” or wooden half-hoop; the hawk is then flown with a cord attached to the swivel, the distance being increased each day until the cord can be dispensed with.

We then come to the last stage of the training, termed “calling off.” The falconer carries his hawk, hooded and fasting, out into some open space free from trees, and standing still, facing the wind, waits until an assistant has walked away some fifty or sixty yards from him, with a live pigeon in a string. Holding the pigeon in his right hand, and seeing that his line will run out clear, he waits for a signal from the falconer, who unhoods his hawk the moment the pigeon is thrown up, and casts her off, taking care not to let go the jesses, which are held between the finger and thumb, until he perceives that the hawk has caught sight of the pigeon, and he will know this by watching her until he sees her lower her head and elevate her wings, looking fixedly towards the pigeon. At that moment he will let her go. She will pursue the pigeon eagerly, and when on the point of seizing it, the assistant will check the line, and so pull the pigeon out of the hawk’s way. After keeping her on the wing and exercising her in this way for a few minutes, he will at length allow her to strike the pigeon, kill it, and commence feeding on it.

The falconer will then approach very slowly and

quietly, putting his foot on the line to prevent the hawk from carrying away the pigeon, which at first she will generally attempt to do, and then stooping down will take hold of the jesses, lifting the hawk gently on to the glove, pigeon and all, and allow her to continue feeding on it on his hand. When she has taken about half a crop full, she may be rehooded, and on reaching home may be fed up and replaced on the perch.

After a few trials of this sort, the falconer may easily manage to save his pigeon; for the hawk, getting accustomed to see him approach the instant she has struck her quarry, will gradually get to understand that he comes, not to deprive her of a meal, but to give her one himself as a reward. She will therefore let him approach without fear, and, planting her foot on a pigeon's wing which he holds in his glove, will allow him to take her up, letting go the live pigeon, which with his right hand he secures and puts in his pocket. She will then go on feeding on the spare wing which he has substituted, and after a few mouthfuls will allow herself to be re-hooded.

The hawk is now trained, and ready for "entering" at rooks, magpies, plovers, partridges, wood-pigeons, herons, or whatever other quarry the falconer intends to fly at. As a rule it is desirable to keep a hawk to one particular quarry, for she then gets accustomed to it, is eager to follow it, and will not leave it for another bird which may cross her and perhaps offer an easier chance of killing. I have frequently seen a good rook hawk pass within a few yards of peewits on the wing, and utterly disregard

them, although she might have killed one easily, and have found it better than eating a rook.

Before flying a hawk at wild quarry, it should be introduced, as it were, to the particular kind of bird it is intended to fly at, for if you wish to make a good rook hawk, for example, and you have been training it in the way described, on pigeons, you can hardly expect it to follow and kill a rook the first time it sees one in a wild state. It is desirable, therefore, to give it a live rook in the foot a few times beforehand, and let it kill it. A rook or two may be slipped also when "calling off," and in this way your hawk will get accustomed to the quarry you intend more particularly to fly at. After this, practice, in the sense of a few good flights, will soon make your hawk perfect. When unable to fly at wild quarry, it may be exercised at home by flying to the "lure," either a live or dead pigeon in a string; but it should not be kept too long at a time on the wing, lest it become discouraged and take off, perhaps, after some passing bird and get lost. It should always be flown fasting, and fed after a flight or exercise. In the event of showery or misty weather it is not desirable to go out, for rain will not improve a bird's power of flight, and in a fog it might get lost. On the other hand, hawks are by no means averse to water. They not only drink a good deal, but in warm weather are fond of bathing, and by setting down an earthenware pan for the purpose on the grass, close to which your hawk may be tethered, you will contribute materially to its health and enjoyment. After bathing (and for this a warm day should be selected) it should be allowed

to dry itself thoroughly in the open air, by sitting on the block and expanding its wings, as it will do, before carrying it into the hawk house.

It is, of course, impossible within the compass of a single chapter to draw attention to all the duties of a falconer, and point out all that relates to the management of hawks ; this can only be learned by degrees, and by experience. Enough has perhaps been said, however, to show how much amusement may be derived from taming and training a hawk, and how comparatively easy it is, with a little patience, to accomplish it.



THE BADGER AT HOME.

ONE of the few large animals which is still to be found wild in our woods is the Badger—the sole representative in this country of the great family of *Plantigrades*. Notwithstanding the persecution to which it is usually subjected wherever and whenever opportunity occurs, in some parts of the country it is still pretty numerous. The old English name for the badger is *brock*, and many localities, such as Brockenhurst, Brockholes, Brockhampton, and Brockley-hill, still indicate by their name the former and possibly the existing haunts of this animal.

Most people, we imagine, must be acquainted with the form and general appearance of the Badger, and those who use a shaving-brush or a paint-brush are doubtless aware of his utility. But few probably have had the opportunity of seeing a Badger in his native haunts, and of studying, unobservedly, his movements in a state of nature.

It has been my good fortune to see the Badger in several counties both in England and Ireland, and looking back, as I do, with pleasure to many a woodland ramble in search of him, I venture to think that that pleasure may be in some degree shared by brother naturalists who may peruse the following lines.

The advent of September recals to mind the fact

that I had taken up my quarters with a friend in the west of England to enjoy a week's partridge shooting. The weather was intensely hot, the ground hard and parched, and little cover could be found in the way of swedes or turnips. Everything was against us as regards a heavy bag. But as we worked hard, walked far, and held pretty straight, we were not ashamed after all of the result.

The long cool evening which succeeded a sultry day, suggested a ramble in the distant woods, and as my friend hinted that we might come across a Badger, it did not require much persuasion to accompany him. Dinner ended, and cool claret succeeded by "a whiff," we put on our old jackets again, and taking our guns, drove over to the woods about five miles distant, and made straight for the keeper's cottage. We found the old man at home, with his son who was to succeed him, and a long and pleasant chat we had about Badgers and other "vermin."

The room was hung around with an extraordinary collection of old guns, most of which had been wrested in fight from poachers. As we examined them one by one, the old man related how each had been obtained. The best might be described as a rusty barrel bound with wire to a "home-made" stock, the lock of which had been adjusted with nails, and certain flaws in the barrel filled up with lead! It would indeed require some courage to pull the trigger of such a gun when loaded. The perching pheasant at which it might be aimed would surely be in greater safety than the man who aimed it! But to return to our Badgers.

About eight o'clock, just as it began to get dusk, I accompanied the keeper to a lonely spot, about a mile from his house, where the badgers had an "earth," and, cautiously approaching the place up wind, sat down at the foot of a tree, about twenty yards from the mouth of the hole, and remained perfectly still, while the keeper retraced his steps with orders to return upon hearing the gun fired.

As his footsteps died away and everything became perfectly still, I had leisure to examine the nature of the spot which the Badger had selected as a home. A wild lonely spot it was. Thick underwood and brambles made it difficult to approach even in a stooping position, and great caution was necessary to avoid making a noise by breaking twigs or dead boughs as I advanced. The ground was very bare, there being neither grass, moss, nor any covering on the surface, and being at the same time very hillocky, a Badger might approach the "earth" without being easily seen. All was silent as the grave, save when the stillness was broken by the bark of a Fox, or the hooting of a Tawny Owl.

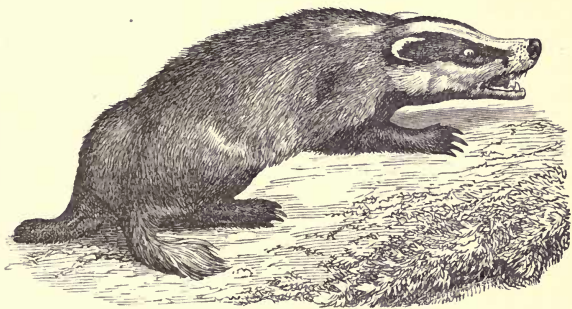
Now and then a Squirrel passed over head, causing a shower of beech-mast or dried leaves to rustle down, and then all was still again. With my back against the foot of a tree and the gun ready loaded across my knees, I sat musing for a long time. Darkness came on apace, and no moon had yet appeared. It is just at this uncertain light that the Badger comes forth to feed, and the caution which this animal exercises on leaving home is something

remarkable. For some little time I had sat motionless, straining eyes and ears through the darkness without seeing or hearing anything but the fox and the "nightly owl." Presently the dead leaves rustled at a little distance, and I knew that some vermin was afoot. For a long time no other sound was heard, and I looked in vain in the direction of the noise to catch a glimpse of the author of it. Anon, the rustling increased, and added to this was heard a snuffing sound like that of a dog, when with nose to the ground, he pauses to smell something which has attracted his attention. Just as I was thinking it would soon be too dark to see a Badger if he approached, a white face appeared over a mound and looked out from amongst the thick brambles. Here at length was my expected friend. Putting his nose high in the air, he took two or three good sniffs and disappeared again.

I remained perfectly still, making no doubt that the Badger would now come out finding the coast apparently clear. Nor was I disappointed; in two or three minutes the white face again appeared, and soon after the entire body of the animal emerged from the cover which hid from my view the mouth of the hole. Judge of my surprise when I saw that my friend was followed by two others, and all three were now within twenty yards of me. They were none of them full grown, although of a very fair size. Their close proximity allowed me to judge very well of their proportions and actions, although it was getting darker every minute, and, as yet, no moon was up. In complete ignorance of my presence, they commenced playing about like dogs and

rolling over one another, while an occasional grunt or whine testified to their high spirits.

Once I feared they had detected me, for in an instant all three disappeared suddenly down the hole as if alarmed. But, as I remained perfectly still, in about ten minutes they reappeared and commenced playing as before.



THE BADGER.

Although formed in foot like the bear, their actions reminded me a good deal of the pig, especially in the way in which they tossed the head before breaking into a canter. One of them commenced feeding on some blackberries, and the others turned over some dead leaves in quest probably of beech-mast.* How little, alas! did two of these Badgers think that they were taking their last run in the woods! But so it was. I only wanted one, but by an accident killed two. In an evil hour they wandered from

* Vide *anted*, p. 25.

their hole. Two of them crossed in a line—the fatal trigger was pulled, and when the smoke, for some time kept down by the foliage above, had cleared away, one Badger was lying dead and another making off badly wounded. The third had disappeared down the hole.

Laying down the gun I jumped to my feet and at once gave chase to the wounded one, and hardly knowing how to stop him, tripped him up by the hind leg just as he was reaching his "earth." He was too heavy to hold up and I could only keep him out at arm's length while repulsing his attempts to swing in and bite by a series of hearty kicks. The question was how to kill him? I might have thrown him down and dispatched him with another shot from a distance, but then I should have spoiled the skin. I could therefore only drag him about by the legs in search of a stick heavy enough to dispatch him. This at length I found, and with a blow or two which shivered the stick, the poor Badger was killed.

Giving a loud "whoop" to call the keeper, and dragging a Badger by each hand, with the gun under one arm, I forced my way through the thick under-wood on to the ride, where I was glad to throw down my burden and rest my arms. Lighting a pipe to while away the time, I watched the darkening shadows of the trees, and listened to the hooting of the Owl, and as the moon rose over the wood, filling the ride in which I sat with a flood of light, I almost fancied myself in one of those fairy scenes which Shakespeare has depicted so charmingly in the "Midsummer Night's Dream."

Suddenly the stillness was broken by a distant report, followed soon after by a "whoop," and I knew then that E—— had made a lucky shot. In half an hour the keeper returned, accompanied by E——, who dragged another Badger by the leg. He had climbed into a tree in sight of the "earth," and had shot the animal just as he was leaving the hole.

The capture of three Badgers in one night rather astonished the keeper, who said that we might have remained in the woods all night without even seeing one, for they are so extremely cautious in their movements. He did not regret the death of so many, for they were almost too numerous in the neighbourhood, and wanted "thinning," as he said.

The satisfaction, however, which we felt in contemplating the slain was marred by the reflection that, after all, these badgers were very harmless, and we had unnecessarily killed three of them. There was more real pleasure in watching their movements when alive than will ever be experienced in looking at their preserved skins. Nevertheless, these trophies will always remind us of a very enjoyable night in the woods.

THE OLD ENGLISH BLACK RAT.

THE origin of the Black Rat (*Mus rattus*) is involved in obscurity. From time immemorial it has been the "house rat" of the civilised world, but it is now nearly exterminated by the Brown Rat in places where the two species have come in contact, and in Great Britain is so nearly extinct that the occasional capture of a specimen is generally considered worthy of record in some or other of the natural-history journals. The gradual decrease of the species in this country has long been noted. So far back as 1768, the author of a "Universal Directory for taking alive and destroying Rats, and all other kinds of four-footed and winged Vermin," one Robert Smith—who described himself on the title-page as "Ratcatcher to the Princess Amelia,"* and who appears to have been an observant man—remarked a difference in the habits of the Black and Brown Rats, and an animosity of the latter to the former:

The black ones (he says) do not burrow and run into shores as the others do, but chiefly lie in the ceilings and wainscoats in houses, and in out-houses they lie under the ridge tiles and behind

* A description of the dress of the royal ratcatcher has been preserved by Pennant, who states, in his "British Zoology," 1812 (vol. i., p. 142):—"Among other officers, his British Majesty has a ratcatcher, distinguished by a particular dress, scarlet, embroidered with yellow worsted, on which are figures of mice destroying wheatsheaves."

the rafters, and run about the side plates ; but their numbers are greatly diminished to what they were formerly, not many of them being now left, for the Norway rats always drive them out and kill them wherever they can come at them ; as a proof of which I was once exercising my employment at a gentleman's house, and when the night came that I appointed to catch, I set all my traps going as usual, and in the lower part of the house in the cellars I caught the Norway rats, but in the upper part of the house I took nothing but black rats. I then put them together into a great cage, to keep them alive till the morning, that the gentleman might see them, when the Norway rats killed the black rats immediately, and devoured them in my presence.

This having been written more than a century ago, it would scarcely be supposed that any of the Black Rats could now be left. And yet they still survive in very limited numbers in scattered localities ; so difficult is it completely to eradicate a species !

The account given of *Mus rattus* in Bell's " British Quadrupeds " (2nd ed. 1874), is not altogether satisfactory ; the information as to its distribution in this country being very meagre, and little or nothing being said as to its geographical range beyond the British Islands. Some statistics on both these points seem desirable, and the following remarks are offered as a contribution towards such statistics.

From the isolated notices to be met with concerning the occurrence of the Black Rat in different counties, it would seem that in England and Wales, at all events, it must have been pretty generally distributed. The Welsh give it the name of *llygoden fferngig*, or " French mouse ; " and Bell thinks it probable, from the proximity of the two countries, that it was introduced into England from France. This, however, is merely a surmise, and it is just as

likely to have come from Scandinavia. It could scarcely have reached the Orkneys from France, and yet in 1813, when Low published his "Fauna Orcadensis," it was to be found in South Ronaldsha; and many years previously was common in Orkney, until extirpated by a still more pernicious species. This author adds that the Brown Rat swarms on the mainland of Orkney, and suffers none else of the genus to remain where it comes. Concerning the occurrence of the Black Rat in Scotland, little seems to have been published. Mr. James Lumsden, jun., of Alexandria, N.B., procured some evidence of its former existence in the district of Loch Lomond; and Colonel Drummond Hay informed Bell that while staying in the Highlands, in the vicinity of Pitlochry, in 1860, a small colony of Black Rats (five or six pairs) made their appearance, and occupied a drain which had been covered in about two years previously. They were very shy, and decamped as suddenly as they came. They were the first of the kind ever heard of within the memory of any living person in the county. In some of the old houses in Edinburgh Black Rats are occasionally captured. Mr. Hugh Stewart, of Tonderghie, Whithorn, Wigtonshire, had a Black Rat brought to him for identification in August, 1879, which had been picked up dead on a farm near the coast.

In the North of England it is to be inferred, rather than discovered from published records, that the Black Rat is not unknown, although probably it is now a rare animal there. It is not included by Selby in his list of "Mammals in the Northern District of Northumberland" (*Mag. Zool. and Bot.*, vol.

1, p. 423); but in a communication to *Nature* (March 20, 1879) Mr. Morton Middleton, of West Hartlepool, reported that in the adjacent county of Durham "the animal lingers in one old building at Stockton-on-Tees." Mr. H. G. Faber, of Stockton-on-Tees, however, reports that it is not uncommon there. In 1880 he caught two in his own house, and a neighbour caught three in his stable. In the former case they were taken in a garret in a three-storied house, in the latter case in a hay-loft, so the habitat in both cases was no doubt the roof. Some time previously Mr. Faber had seen one in a trap which had been caught alive in a warehouse in the town. Mr. W. Backhouse says the species used to inhabit his father's house in Darlington, living in the garrets, either from preference, or driven there by the Brown Rat. Waterton, who has given such an amusing account of the Brown Rat in his "Essays on Natural History" (First Series, p. 210), never met with the Black Rat in Yorkshire, and states that in all his life he never saw but one single solitary specimen, which was sent to Nostell Priory, in a cage, from Bristol. Mr. Boulton, of Beverley, however, has recorded the capture of one, which was killed on a barge which had come with coals from Wakefield direct to Hull Bridge, Beverley" (*Zoologist*, 1864, pp. 8872 and 9016). In a list of Shropshire animals furnished by Mr. Eyton (*Mag. Zool. and Bot.*, vol. ii., p. 539) the Black Rat is included as an extinct species. Mr. Bond writes word that he has heard of the Black Rat in Leicestershire, Staffordshire, Cambridgeshire, Lancashire, and Middlesex, but that, until he received a specimen from Lanca-

shire two years ago, he had not seen one for upwards of twenty years. "Fifteen or twenty years ago," observes Bell, writing in 1874, "this animal was not rare in several localities in Warwickshire; but we now doubt the possibility of obtaining a single example." In Norfolk, according to Messrs. Paget, the Black Rat still survived in 1834, though its numbers were stated to be then gradually decreasing. "It is now (1834) seldom found, except in the ceilings and upper stories of old buildings, to which it has been obliged to retreat before its more powerful enemies of the preceding species, *Mus decumanus*."* The Rev. Richard Lubbock, writing a few years later (1845), observed, in his "Fauna of Norfolk," that the original rat of Britain, *Mus rattus*, is still occasionally found in the city of Norwich. In or about the year 1854 Mr. Southwell, of Norwich, saw one which was killed in the coal house at the Lynn Library. Writing in 1871,† he considered it to be then extremely rare, if not quite extinct, in Norfolk.

At Liverpool, in 1854, it was reported to be abundant on ship-board, occasional stragglers being seen ashore;‡ and Mr. W. A. Durnford in 1879 obtained four specimens, an old female and three young ones, which had been trapped in the ship-building yard at Barrow-in-Furness. Mr. E. Gosling, of Twickenham, in a note in *The Field* of 8th Nov. 1879, reported having seen the previous summer a Black Rat which

* "Sketch of the Natural History of Yarmouth and its Neighbourhood, p. 2.

† Trans. Norfolk and Norwich Naturalist Society, 1871.

‡ Byerley's "Fauna of Liverpool," p. 7.

had been recently killed by a dog at Aberffraw in Anglesea.

There can be little doubt that the old race has been in part resuscitated from time to time by the occasional escape of specimens from on board ship in many of our seaport towns, as well as in the London docks. In December, 1876, I had an opportunity of examining a live animal of this species, which had been caught in a house on Cornhill;* and in the summer of 1881 one was caught in the Minories as reported in *The Field*, 2nd Aug. 1881.

A well-known naturalist in Sussex (Mr Borrer, of Cowfold, near Horsham) writes that he has never been able to meet with it in his own county, but that he has a specimen from Portsmouth and another from Cambridge. Mr. R. M. Christy, however, reports having found a Black Rat lying dead on the mud at Shoreham Harbour in April, 1880, and two months later another under similar circumstances nearer to Brighton. In September, 1877, the Rev. Murray A. Mathew, of Bishop's Lydeard, near Taunton, communicated to *The Zoologist* the fact that a cat in his parish had killed a fine specimen of the Black Rat, the only example which had ever fallen under his observation. Mr. Brooking Rowe, in his "Catalogue of the Mammals of Devon," has included the Black Rat as "found occasionally," and he has heard of both species living under one roof in a house at Plymouth. In 1879 half a dozen were caught in Mr. Slade's warehouse at Torquay. Bellamy, in his "Natural History of South Devon" (p. 195), refers to a

* See *The Field*, Dec. 16th, 1876.

specimen that was taken many years ago (1839) at New Passage; and according to Mr D'Urban, in 1875, the species was still to be met with at Exeter. Amongst the last British-killed Black Rats recorded is one which was procured by Mr Thomas Cornish at Prussia Cove, Marazion, Cornwall, in the month of August, 1878. It is not quite clear, however, that this was a specimen of *Mus rattus*. Indeed, from the description furnished (*Zoologist*, 1878, p. 388), there seems some reason to suppose that it may have been *Mus alexandrinus*, a closely allied species, if not, as some have asserted, a mere geographical race of *M. rattus*. The fisherman of the place identified it as one of a species which escaped from the wreck of the Italian grain-laden ship "Espagnol." *Mus alexandrinus* had previously been recorded as having occurred in this country.*

The Black Rat is reported by Mr. Sinel to be pretty numerous in Jersey, especially in the eastern part, and also in Guernsey. In Sark where its rights have not been disputed by its brown relative, it is abundant. The fact of no vessels coming alongside in this latter island, all landing of goods and passengers being effected by means of small boats, accounts, of course, for the non-introduction of the Brown Rat. In the Isle of Jethon also it is pretty numerous. Mr. A. B. Moullin, who resides there, states that his keeper has killed several. He adds that in Sark both Black and Brown Rats co-exist in the same territory though not quite the same haunts, the latter preferring old buildings; while in

* Cf. Salter, Journ. Linn. Soc., 1858, and *Zoologist*, 1860, p. 7232.

the little island called Ile des Marchands, separated from the larger island of Sark by a deep, though narrow strait about a hundred and fifty yards in width, the Black Rat lives undisturbed.

In Ireland the Black Rat has been met with in various counties, and in localities widely distant from each other; but there is no evidence to show that it was ever plentiful, and must now be regarded as very rare. Thompson, in his "Natural History of Ireland" (vol. iv., p. 16), mentions the following localities where specimens have been procured or were said to have been met with, for he was not able in every instance to examine the so-called "black rats" which were reported to him, and it is possible that some of them may have been black varieties of *Mus decumanus*: Ballyheigne Castle, Kerry; Youghal, Cork; Crowhill, Armagh; Talaght, near Dublin; Portglenone, Antrim; and Glenravel, Cork.

Dr. Harvey, in his "Fauna of Cork" (p. 2), has the following note on this species: "In old buildings in the northern parts of the city of Cork, near Garrydone; rare." Thompson, commenting upon this statement, remarks there is no doubt of these being the true *Mus rattus*, and not black varieties of *M. decumanus*, which are sometimes mistaken for it, as Dr. Harvey, in a letter to him, observed that they were much smaller, more delicate in the limbs, and altogether strikingly different from the Brown Rat.

About the year 1876 a litter of Black Rats appeared in the stableyard of Mr. Haughton, at Levitstown, Co. Kildare, who recollected having killed one many years previously in the town of Carlow.

Bell was informed by Dr. Kinahan that many

years ago he had seen Black Rats "at play in the areas in Dublin," but it is now scarce there: ("British Quadrupeds," second ed., p. 303.) To the above-mentioned counties may be added the county Down, where an example of *Mus rattus* was procured a few years since, as recorded in *The Field* of March 28, 1874.

In bygone times it was a prevalent notion that rats might be extirpated by a persevering course of anathematising in rhyme. Reginald Scott, in his "Discoverie of Witchcraft" (1584), says the Irish thought they could rhyme any beast to death, but the notion was in general restricted to the rat. It is with reference to this belief or practice that Shakespeare, in "As you like it" (act iii., scene 2), makes Rosalind say, "I never was so berhymed since Pythagoras' time, that I was an *Irish Rat*, which I can hardly remember."

It is to the antagonism of the two species and to the superior strength of the Brown Rat, that the gradual extermination of the Black Rat has been attributed. And yet both have been found living together within a very circumscribed area, as, for example, on board the same ship. In August, 1879, on board H.M.S. "Valorous," then at Devonport, both species were found to be much too numerous, and several of each kind were destroyed. One of the officers on board that vessel (Mr. G. Goodman) was kind enough to forward a specimen of the Black Rat, to make certain of its identity, and, in a letter which accompanied it, he remarked:

About two years ago a large number of grey rats were found to exist on board the 'Valorous' at Devonport (she having been previously quite free from this pest). I think they came in when the ship was alongside the Yard. The services of the professional

ratcatcher were engaged, and, after some days' trapping, during which time large numbers were caught, they seemed to have nearly disappeared, only an occasional one being seen now and then. Since then the ship has been alongside several of the old coal hulks lying in "Hamoaze," and I have no doubt the black rats came on board from one of these. Some of these hulks have been undisturbed at their moorings for years, and are very old ships. I have been informed that a large colony of black rats were known to exist at Torpoint many years ago, and I have no doubt that some of these found their way on board the hulks, which are moored close by, and, from being unable to leave, have continued to inhabit them. I think the existence of the black and grey rat together on board ship is not so uncommon as is generally supposed. I have just been informed by our boatswain, on whose testimony I can place implicit reliance, that in H.M.S. "Euphrates," some years ago, there were a great number of rats, and that the black and grey were equally divided in numbers, the grey sometimes preponderating, owing to the arrival of fresh recruits on board from the dockyard when the ship was alongside. He also tells me that one night he killed eight rats in the same vegetable bin. Of these the greater number were black rats, but he distinctly remembers that two of them were very large grey rats, male and female. They were all feeding together on the vegetables when surprised. Both species continued to exist on board the ship while he was in her, a period extending over three years.

It has since been reported that the "Valorous" is by no means a solitary case in which both Black and Brown Rats have been found living together. H.M.S. "Victor Emanuel" in 1874, on her passage to China, was infested with both kinds, and in 1878 both kinds swarmed on board the ironclad "Valiant."

The distribution of *Mus rattus* beyond the British Islands is very wide. To begin with, it is spread all over Europe—how far north is not quite certain, although we know that it has not been met with in the arctic regions, where the stoat, lemming, hare, and other well-known mammals, are able to find

subsistence. Probably it will not be found farther north than lat. 65°. The late Mr. Wheelwright (the "Old Bushman" of *The Field*) never met with either the Brown Rat or the Black Rat in Lapland, although the former is found in all the coast towns, even up within the polar circle, and from thence is gradually spreading inland. The Black Rat, which is included in Rétzius's "Fauna Suecica," and Nilsson's "Fauna Scandinavica," appears now to be nearly rooted out of Sweden by the Brown Rat. In Stockholm, where five-and-forty years ago they were said to be plentiful, they are now never met with; and in Carlstadt, and in other places along the banks of the Wenern, where the Black Rat was formerly the only species, the Brown Rat has now quite usurped its place.*

A glance at Schmarda's "Geographische Verbreitung der Thiere" (1853) and Blasius's "Fauna der Wirbelthiere Deutschlands" (1857) shows that five-and-twenty or thirty years ago the Black Rat was known as an inhabitant of parts of Central Europe, although Dr. Peters, of Berlin, considers that in Germany it is now extremely rare, if not quite extinct. Dr. Meyer, of Dresden, has recently made inquiries as to whether the Black Rat is still to be found in that city, where many years ago specimens were procured, which are preserved there in the museum under his care. In *Nature* of 8th of May, 1879, he writes :

The streets where this rat then occurred being known to me, viz., Meissener-strasse, Alaun-gasse, Königsbrücker-strasse, all on the right bank of the Elbe, in Dresden-Neustadt, I inquired in

* Wheelwright, "Spring and Summer in Lapland," pp. 237, 238.

many houses, offering a relatively high reward for a specimen, but hitherto in vain. The museum possessing further a specimen from a place called the Schenkhubel, about an hour's walk from the town, in the direction of the last of the above-named streets, I had traps put there, but also in vain; only the brown rat, *Mus decumanus*, could be procured. Every two years a general rat poisoning being ordered by the magistrate of the town, I shall wait till the next one (March, 1880), and then try to state whether *Mus rattus* still lives in Dresden, as it no doubt lived here several years ago. The museum possesses besides specimens from Muhlhausen, in Thuringia, and a series from Saxe-Altenburg; in the latter country I do not know the exact locality, the man—a dealer—who sent them, being very mysterious on this point, but I have indubitable evidence that it still lives there, and even is not rare at some spots. Knowing that it occurred some time ago in the brewery of Blankenheim Castle, near Crimmitschau, in Saxony, I inquired there, but got the answer that for two years it has been replaced by *M. decumanus*. Therefore, I am not sure that *M. rattus* still lives in the kingdom of Saxony, but I am sure that it occurs in the Saxon Duchies.

In a subsequent number of the same journal (*Nature*, May 29, 1879) he makes the following supplementary remarks:

I am able to complete my note as to the exact habitat of the black rat in Thuringia. Professor Liebe, of Gera, kindly wrote to me that it occurs in East Thuringia and the Voigtland in single elevated side-valleys of the rivers Weisse Elster and Roda, as well as in single lurking-places of the Frankenwald. Here it occurs in isolated forest-houses, in the valleys, in pretty large villages—for instance, St. Gangloff. In this place for a long time past *Mus rattus* and *M. decumanus* have occurred together among each other, not one above the other, on different roofs, as might be supposed, though "*rattus*" now and then rather prefers the upper floors, and the latter does not appear to be decreasing in number. In those villages about three specimens of *rattus* are always killed for one specimen of "*decumanus*," the latter, apparently, being less numerous.

As regards France, the Black Rat is included as

an existing species by Professor Gervais in his "Zoologie et Palæontologie Françaises" (1859), but whether it is generally distributed or merely local at the present time, there is not sufficient evidence to show. Lord Clermont, writing in 1859, remarked* that at that date it was "still to be found on some of the small islands on the north-west coast of France."

In Italy, we learn from the same authority *Mus rattus* has been driven away in the south by the allied *Mus alexandrinus*. Of the distribution of the former in Spain we know little, but Colonel Irby has recorded his having met with it in Andalusia. It is common in many parts of Portugal and the Azores, where, according to Mr. F. Godman, it chiefly frequents the gardens and orange plantations, doing considerable mischief by climbing the trees and eating out the pulp of the fruit.†

In Algeria it is well known, and even in the Sahara, says Canon Tristram, writing in 1860, "it still maintains its position, as the Norway rat does not appear to have penetrated yet into the interior."

In North-east Africa, Egypt, and the Nile District, *Mus rattus* seems to be well known, but apparently does not travel far down the east coast, for we find no mention of it in lists of mammalia from Abyssinia, Zanzibar, and Mosambique, nor is it to be found in South Africa, unless, perhaps, introduced by shipping at the ports. In Madagascar it seems to be unknown, as also in Mauritius; but in Bourbon it is said to have been introduced by the Buccaneers in

* "Quadrupèds and Reptiles of Europe," pp. 98, 99.

† Natural History of the Azores, 1870, p. 17.

1548—see "Coquerel, *Revue et Magasin de Zoologie*, 1859, p. 468.

Its absence from all the catalogues of West African mammals to which reference has been made, may indicate either that it is unknown on the west coast, or is so common as not to be worth notice.* I incline, however, to think that the climate and condition of the country may be unsuited to its existence and habits. As we proceed eastward from Europe, the Black Rat appears to get gradually scarcer. It is not found in Western Siberia, nor in Amurland, or we should doubtless find some mention of it in the works of Radde and Von Schrenk. According to Eichwald, the Black Rat is found in the Caucasus and in Georgia, and Major St. John obtained specimens at Resht Ghilan, near the Caspian Sea, but it is unknown on the Persian plateau. The late Mr. Blyth regarded it as a native of India south of the Himalayas, and has recorded its occurrence in Burmah, the Malayan peninsula, and the Tenasserim provinces, Arakan, Tipperah, and Chittagong. The Brown Rat occurs in China, but not its black relative, nor is the latter found in Japan, although it seems to have made its way to the Philippines, and has been introduced by European ships into New Zealand, where it has overrun the country and nearly exterminated a former native species, the only terrestrial mammal yet ascertained to have existed in New Zealand. It would be interesting to know whether the Brown Rat is now established there to the prejudice in turn of the black one.

* Mr. E. L. Layard reports that in 1866 he noted it as being common on the Isle of Ascension.

According to Erxleben, the Black Rat was brought to the New World about 1544, that is, just about fifty years after its discovery, and it increased so rapidly as to have given rise to the supposition that it was introduced into the Old World from the New. It is now to be found in the West Indies, and in many parts of both continents of America. In Jamaica they exist in great numbers in the woods and in groves round the homesteads, but they have quite vacated the cane pieces and houses in favour of the new comer. In one part of Jamaica (Clarendon), the Grey Rat is known as "Charles Price rat" among the old negroes, and the grandfather of the present M.P. for Devonport has the credit for having introduced it. If such be the case, it has certainly made good use of its time, having occupied all the houses and cultivated places in the district, and has driven its black brother back into the woods and pastures, where it lives on roots and fruits, and seems to thrive very well. On the Pacific side, Mr. Fraser, in 1858, procured specimens in Ecuador. Some of these had the ends of the tail and the feet white; but, with the exception of this slight variation in colour, did not differ from European examples of *Mus rattus*.

The respects in which this animal differs from the Brown Rat (*Mus decumanus*) have been clearly pointed out by Bell in his "British Quadrupeds;" and as the same authority has also furnished a good, though brief account of its habits, it will be unnecessary here to recapitulate what he has written on the subject.

COUNTRY PRODUCE OF THE OLDEN TIME.

MANY localities might be named which have long been celebrated for the good things which they produce. Dunstable larks and Yarmouth bloaters, Banbury cakes and Burton ale at once suggest themselves; while the four "good things" of Sussex—an Arundel mullet, an Amberley trout, a Selsea cockle, and a Chichester lobster—have long been proverbial.

On looking into the records of a byegone age, it is curious to note how fully aware the reigning monarch of the day seems to have been of the existence of "good things" in particular places; and not only did he have his regal eye upon them, but he found an easy and, in most cases, an inexpensive mode of securing a liberal supply of them.

In the simplicity of olden times, when gold and silver were scarce, the household of the King was supported by provisions furnished from his demesnes. Lands were from time to time granted on condition of yielding supplies, and by degrees those who furnished them obtained a fixed tenure of the estates, rendering certain services and supplying certain provisions. But these reservations were often small, and many of them had only to be rendered when the King

travelled in the county wherein the lands were situate. In some cases special care was taken that his Majesty should not make this service burthen-some by coming too often: as in the case of a certain William Aylesbury, who held lands in Aylesbury, in consideration of his finding (amongst other things) three *eels* for the King when he should come to Aylesbury in the winter, and two green geese in the summer; but this was not to be expected of him more than three times in the year. Fish, fowl, and game, fruit, honey, and wine, all found their way by this means into the King's exchequer; while, according to the season, his Majesty was as liberally supplied with fine linen and furs, with litter for his couch, and firewood for his fire.

In the reign of Edward I. a resident in the county of Devon, by name De La Barre, held eight acres of the King on condition of his supplying his Majesty with a salmon and two barbed arrows whenever he came to hunt in the Forest of Exmoor.

In the same reign the son of William of Aylesbury, above referred to, held land in the county of Bucks. by the serjeanty of finding straw for the King's chamber, and bringing three *eels* to the King when he should come to Aylesbury in winter. In summer he was to find straw for his bed, grass or rushes for his chamber, and two green geese.*

The town of Yarmouth was bound by charter (temp. Ed. I.) to send to the sheriffs of Norwich a hundred *herrings*, to be baked in twenty-four pies or pasties, and thence delivered to the lord of the

* For an explanation of the term "Green geese," see "The Ornithology of Shakespeare," pp. 197, 198.

manor of East Carlton, to be conveyed to the King;* and the said lord held thirty acres of land at Carlton, by the serjeanty of carrying these herrings to the King when they first came in.

In 1778 the sheriffs of Norwich attended with them in person, and claimed the following allowance in return—viz. : Six white loaves and six dishes of meat out of the King's kitchen, one flaggon of wine, one flaggon of beer, one truss of hay, one bushel of oats, one pricket of wax, and six tallow candles. But no precedent appearing of these things having been delivered, they were refused.†

Pigeons and poultry were supplied in much the same way.

Geoffrey Frumband held sixty acres of land at Wingfield, Suffolk, by the service of paying to the King two white doves yearly (4 Edw. I. Rot. 6, dors.).

William de Thadeham held two hides of land at Mid-Lavant, Sussex, by the service of providing for the King yearly two white capons (7 Edw. I. Rot. 93, Sussex). This was subsequently commuted for a fine.

At Bosham, near Chichester, Roger Papilon held a house, a mill, and three yard lands of the king in consideration of his finding two white capons for him as often as he passed his gate (16 Edw. I. Rot. 67, dorso.).

A similar tenure existed at Lavington, in the same county.

In the reign of Edward III. the family of Beckett

* Camden, Britannia, tit. Norfolk.

† Records of the Board of Green Cloth. *Archæologia*, vol. viii., p. 330.

(then called Becote, or Backote) held lands at Shrivenham, in the county of Berks, by the service of coming before the king whenever in his progress he should pass by Fowgates Mill Bridge, Shrivenham, bringing him two white capons, and making the following singular speech: "*Ecce domine istos duos capones quos alias habebitis sed non nunc*" (!)*.

Fruit and wine had to be similarly provided. A Norfolk gentleman in Edward II.'s time had to find annually, by way of rent, two hundred pearmain (a kind of apple), and a couple of hogsheads of wine.

In Lancashire seven acres of land were held by the service of finding the king in potherbs and leeks. Berkshire provided his Majesty with ale, Oxford with linen, Wiltshire, Hants, and Essex with firewood, hay for his horse, and litter for his bed; this would be either straw or fern. As a quantity came from Brokenhurst in the New Forest, it was probably fern; but straw was used for the king's bed so late as the time of Henry VIII.† In some of the old records straw is especially mentioned as being supplied for that purpose.

The goldsmith to the royal family in the reign of Henry III., held an acre of land at Newington Butts, by the service of forwarding a gallon of honey annually to the king.

Passing from food and drink to raiment, we find that in former times many of the wild animals indigenous to this country contributed to supply the

* Harl. MS. Brit. Mus., No. 2087, p. 177; Lyson, Mag. Brit., vol. i., p. 366.

† See "Archæologia," vol. iv., p. 312.

royal family with furs for winter wear. Hares' fur was much used for trimming. A certain William Drury, who lived in Queen Elizabeth's time, held the manor of Little Holland, in the county of Essex, of the Queen, by the service of one knight's fee and the rent of a pair of gloves turned up with hare's skin (Inquis., 27 April, 32 Eliz., No. 210). Gloves were also furred with foxes' skin. One John Basett, *inter alia*, paid 8d. to the King (Edw. iij.) for his relief for 48 acres of land in Elmesdale, co. York, which John his father held of the King by the service of paying at the Castle of Pontefract one pair of gloves furred with fox's skin or 8d. yearly.* In addition to these there was a grey fur, variously termed "grey," "gris," "grise," "grys," used for trimming robes and gloves, and formerly much esteemed. This, no doubt, was the fur of the badger, for it was furnished by some animal indigenous to this country; and in old books on hunting we find beasts of the chase divided into two classes—"beasts of sweet flight" and "beasts of stinking flight;" amongst the latter class being enumerated the fougart, the cat, the fox, and the "grey," while the badger is nowhere mentioned unless by that name. In the reign of Edward I. the manor of Woking, in Surrey, was held by Philip Bassett by the service of half a knight's fee and "one pair of gloves furred with *grise*," to be paid yearly at the King's Exchequer. In Edward II.'s time John de Metham and Sybilla his wife held of the King a moiety of the town of Lyndeby, in Nottinghamshire, by the service of sending a coat or cloak of *grey*

* 2 Edw. iij., Harl. MS., Brit. Mus., No. 34, p. 96.

furred skins (pellicium de griseo) to the King's Exchequer.

Nor was it only to the larder and the wardrobe of the royal household that various loyal subjects sent supplies. Many contributed in other ways to the King's amusement by furnishing him with hounds for hunting, and with falcons for hawking, which they did annually at stated times by way of quit rent for the land they held. In the reign of Edward I., Henry de la Wade held ten pounds of land* at Staunton, in the county of Oxford, by the serjeanty of carrying a Gerfalcon every year, before the King whenever he should please to hawk with such falcons, at the cost of the King.

The Isle of Man was granted by Henry IV., to Sir John Stanley and his heirs for ever, to be held of the King, his heirs, and successors, by liege homage; rendering to the King two falcons, once only, viz., immediately after the homage done; and rendering to his heirs, Kings of England, two falcons on the day of the coronation of the said heirs, for all services, customs, and demands; as freely, fully, and entirely as William Scrope, Knight, or any other, held the same. (Patent Roll. 7th Hen. IV., par. 2, m. 18.) The island was afterwards held by the Duke and Duchess of Athol (in right of the Duchess, lineally descended from Sir John Stanley) by the same honorary service of rendering two falcons on the day of the coronation of the Kings of England. (Stat. 5 Geo. III., c. 26.)

The tenants of the manor of Tey Magna, in the

* A pound of land was as much as paid a yearly rent of an English pound of twenty shillings. (Hearne).

county of Essex, were formerly bound to maintain a number of *hawks* for the lord's use, till they were a year old. This service, however, was turned into a rent of 30s., and in 1782 this rent was paid to Thomas Astle, Esq., Chief Clerk of the Records in the Tower.

Sir Robert Broughton, Kt., held the manor of Wellwyn in Hertfordshire of the King *in capite*, by the service of annually rendering a Sparrowhawk, or two shillings, yearly, by the hands of the sheriff of Hertford for the time being. This form of tenure was not an uncommon one.

The manor of Sutton, within the purlieus of the forest of Macclesfield, was formerly held by the service of free forestry, the owner being bound to follow the king's standard in war, with the same arms (bows and arrows) with which he guarded his bailiwick of the forest, and whilst attending in the wars he was exonerated from the custody of his bailiwick.*

The foresters were entitled to timber and firewood, within their own districts, with other perquisites, and they had liberty of fishing within the forest, and of taking Foxes, Hares, Squirrels, Bawsons (Badgers), Otters, Muskets (Sparrowhawks), and Eagles.†

From the depositions of some old persons taken in the year 1720, it appears that the manor of Taxall, in the county of Chester, was anciently held by the service of blowing a horn on Midsummer Day at a high rock near Taxall, called Windgather; and

* Woodnoth's Collections, pp. 122, 123.

† Lyson, Mag. Brit., vol. ii., p. 744.

that there was a tradition that the lord of this manor was to hold the king's stirrup and rouse the stag when he should come to hunt in Macclesfield Forest.*

These and many other old customs which may be found adverted to in Blount's "Ancient Tenures," Dugdale's "Baronage," and other similar works, have gradually fallen into disuse, or have been commuted long since into a money payment by way of acknowledgment of the king's right. Now that many of these customs are forgotten, even in the localities where they were once maintained, it is both amusing and instructive to revive the memory of them by peering into these records of a bygone age.

* Lyson, *op. cit.* vol. ii., p. 801.

WILD TURKEYS.

THERE can hardly be a greater ornament in a park than a flock of wild Turkeys. Birds are always picturesque objects, on account both of form and plumage ; yet, generally speaking, they are so diminutive, that, beautiful as they are, they have little effect. But the Turkey is a large bird, and, being gregarious, forms groups which become objects of consequence. Its shape also is picturesque, and all its actions. Its colour, too, if it be of the bright copper hue of the American wild type, varying with every movement in the sunlight, is really very beautiful. Its habits continue wilder than those of any domestic fowl. It strays widely in search of food ; it flies well, considering its apparent inactivity, and perches and roosts on trees. On all these accounts it is a proper inhabitant of parks.

There can be scarcely any doubt that were Turkeys treated as pheasants, allowed unrestrained liberty, and thus permitted to feed on all kinds of wild seeds and fruit, their quality, from a gastronomic point of view, would be materially improved ; and, although Turkey-shooting, as compared with pheasant-shooting, would be tame sport, it is quite conceivable that, after some years of freedom, continued through many generations, Turkeys might become

as wary and as difficult of approach on large shootings in England, as they are found to be by sportsmen in America, and it would then require as much skill to bring one to bag as it does to stalk and shoot a capercaillie.

Nor is Turkey-shooting in England a thing quite unheard of. One of the keepers in Richmond Park informed the late Mr. Jesse that he had often heard his father, also a keeper, state that in the reign of George II. a large number of wild Turkeys, consisting of not less than 3000 birds, was regularly kept up as part of the stock of the park. In the autumn and winter they fed upon acorns, of which they must have had an abundant supply, since the park was then almost entirely wooded with oak, interspersed with thick coverts of furze; and although at the date of Mr. Jesse's note (1832) it was eleven miles in circumference, it was formerly much larger, and connected with extensive possessions of the Crown since alienated. Stacks of barley were also put up in different places in the park for their support, and some of the old Turkey cocks are said to have weighed from 25lb. to 30lb. They were hunted with dogs, and made to take refuge in trees, where they were frequently shot by George II.

Mr. Jesse was unable to learn how long they had been preserved in the park before this reign; but they were all killed off towards the latter end of it, in consequence of the dangers to which the keepers were exposed in protecting them from poachers.

In Windsor Great Park, about fourteen miles in circumference, there were plenty of wild Turkeys in the reign of William IV., who is said to have taken a

special interest in preserving them. At Blickling, in Norfolk, at the present day, there are reported to be some wild Turkeys of ancient stock, which are carefully preserved.

In some parts of Ireland, also, wild Turkeys were at one time to be found. Dubourdieu, in his "Statistical Survey of the Co. Antrim (1812)," says: "Wild Turkeys are now nearly extinct, though once in such numbers at Portmore; the breed the true copper-colour, with red legs."

The date of the introduction of the Turkey into England is not precisely ascertained; although there is reason to believe that it was imported into Spain by the Spanish discoverers in the New World early in the sixteenth century (its wild prototype being *Gallipavo mexicana*), and from Spain it was introduced into England about the year 1524. In 1525 was composed the now well-known couplet celebrating the introduction of this bird, as well as other good things, into this country:—

Turkeys, carps, hoppes, piccarell, and beere,
Came into England all in one yeare.

By some writers, however, an earlier, and by others a later date is assigned for the importation of this bird into England. Thus, according to the "Encyclopædia Britannica," "this fowl was first seen in France in the reign of Francis I., and in England in that of Henry VIII. By the date of the reigns of these monarchs, the first Turkeys must have been brought from Mexico, the conquest of which was completed in 1521."

On the other hand, Conrad Heresbach, in his

“Foure Bookes of Husbandrie, newly Englished and increased by Barnaby Googe,” 1586, referring to the Turkey in his “fourth booke, entreating of poultry,” says: “This kind of poultry we have not long had amongst us, for before the yeere of our Lorde 1530 they were not seene with us, nor I believe knowne to the old wryters.”

An earlier writer, however, than Barnaby Googe has mentioned the Turkey-hen, although it is clear from the context that he applied this name to the Guinea-fowl. In Cooper’s “Thesaurus,” ed. 1542, we find, “Meleagrides, byrdes which we doo call hennes of Genny, or Turkie hennes.”

It is somewhat remarkable that, amongst the numerous entries of fowl of all kinds provided for the royal household, no mention of Turkeys is made in the privy purse expenses of Henry VIII.

Shakespeare, oddly enough, makes one of the carriers in an inn scene in “Henry IV.” refer to “the Turkeys in his panniers” (part 1, act 2, sc. 1); but this, of course, is an anachronism.

The origin of the English name Turkey, as applied to a bird indigenous to America, has provoked much discussion.

That a good deal of misapprehension on this subject existed in the minds of otherwise well-informed men in Queen Elizabeth’s time is evident from the remarks of Dr. Muffett, who died in 1590, and whose curious book, “Health’s Improvement,” was edited and published in 1655. Treating of the flesh of tame fowl (p. 84), he says: “Turkies, though they be very hardly brought up and require great cost for their feeding, yet their flesh is most dainty

and worthy a prince's table. They were first brought from Numidia into Turkey, and thence to Europe, whereupon they were called Turkies." This, of course, we now know to be a mistake. He adds, "There are some which lately brought hither certain checkered hens and cocks out of new Guiny, spotted white and black like a barber's apron; whose flesh is like to the flesh of Turkies, and both of them like the flesh of our hens and cock chickens." Of course, he refers to our well-known Guinea-fowl.

Perhaps the best explanation of the origin of the name Turkey is that suggested by the late Edward Blyth, in the *Journal of the Asiatic Society of Bengal* (vol. xxix., p. 390). He says:—

It is certain that the Guinea-fowl was commonly termed the Turkey-hen in former days, and hence arises a difficulty sometimes in knowing which bird is meant by sundry old authors. As the Portuguese discoveries along the west coast of Africa preceded those of the Spaniards in America, there is reason to infer that our British ancestors became acquainted with the guinea-fowl prior to their knowledge of the Turkey; and the English trade being then chiefly with the Levantine countries, our ancestors may well have fancied that it came from thence. Referring to a curious old dictionary in my possession (published in 1678), for the *Meleagris*, I find it translated "a Guinny or Turkey Hen; *Gallinæ Africanæ seu Numidicæ*, var. *sive quæ vulgo Indicæ*" (*Coq d'Inde* of the French, corrupted into *Dinde* and *Dindon*). Again, *Numida guttata* of Martial is rendered "a Ginny or Turkey hen." Looking also into an English and Spanish dictionary of so late a date as 1740, I find *Gallipavo* rendered "a Turkey or Guinea cock or hen." Now, it is known that our British forefathers originally derived the domestic Turkey from Spain, and meanwhile they are likely to have obtained a knowledge of the true habitat of the Guinea-fowl, and therefore may very probably have supposed the former to be the real Turkey fowl, as distinguished from the Guinea-fowl; and if the word "fowl" be dropped in the one instance, and not in the other, be it remembered that there was

another special meaning for the word "Guinea," having reference to the Gold Coast, otherwise the bird might have come to be known as the "guinea," just as the Bantam fowl is now currently designated the "bantam," the Canary bird as the "canary," or the Turkey fowl the "turkey." The Latin-sounding name *Gallipavo* seems to be of Spanish origin, and obtains amongst the Spaniards to this day; but their earliest name for it was *Pavon de las Indias*, or, as Buffon has it, *Paon des Indes Occidentales*, which explains the reference to India perpetuated in *Dindon*.

Since this chapter was written my attention has been directed to an interesting correspondence on the subject which appeared in "Notes and Queries," 6th series, vol. iii. (1881) pp. 22, 193, 369, in which some curious extracts from old writers are furnished by Prof. Newton, and the Rev. R. Hooper, both of whom seem to be agreed that the name "Turkey," as above suggested, was originally and erroneously bestowed on the Guinea-fowl.

TRUFFLES.

FEW people, probably, are unacquainted with the appearance and flavour of truffles; but the manner in which they grow, and the mode in which they are collected, may not be so well known. There are several species of truffles, many of which are indigenous to this country; but the most remarkable is *Tuber æstivum*, which forms so important an article of commerce. It may be described as a fungus which grows entirely underground, in appearance not unlike a small potato, and varying in shape from the size of a filbert to that of a man's fist. In colour also, it resembles a potato, being of a brown or dark grey shade, sometimes almost black, and covered with a thick wart-like skin. The inside is firm, of a pale brown or dirty white colour, marbled or veined, as it were, with a darker shade. It usually grows at a depth of two or three inches, but sometimes appears almost at the surface, and again as low down as a foot or more. It is found throughout central and southern Europe, but is chiefly sought for in southern Germany, Italy, France, and Spain, as well as in England. In some parts of the south of England truffles are not uncommon, notably in Kent, Sussex, Hampshire, and parts of Wiltshire, where they are usually found in woods bordering the chalk

hills, and especially in plantations of deciduous trees. In France and Germany, it is said, they are most often to be found under or near the oak and the whitethorn; in England they are supposed to grow best in beech woods. Shade and a light loamy soil appear to be essential to their proper development.

Of the peculiar organisation and mode of reproduction in the truffle I need say nothing here, although it is a curious subject, and one worth investigating.* Until the truffle is ripe it has merely an earthy smell; but about the end of August or beginning of September, when it is fit for use, it gives forth the peculiar odour which to many people is so agreeable. It is then that the truffle-hunters go forth in quest of it, and, considering its subterranean growth, and the difficulty which most persons would experience in finding it, it is curious what a quantity is collected and sent to market. This is the more remarkable since a variety of wild animals, such as deer, badgers, squirrels, and field mice, all eagerly search for, and must devour large quantities of truffles.

Those who are most successful in their search employ dogs specially trained for the purpose, usually poodles or French barbets. Both kinds are docile, and have good noses. Moreover, not having any strong instinct or inclination for following game, they are less likely to be distracted in their search for truffles than other dogs would be. They learn to discover the truffles by their odour, and scratch them up. Many years ago, a writer in the *Penny Magazine* elicited from an old truffle-hunter in

* See *The Zoologist*, 1878, p. 226.

Sussex an account of the mode in which his dogs were trained. From his description it appears that the dog is first well taught to fetch and carry; the article carried is then buried, and he learns to scratch it up and bring it to his master, for which he is duly rewarded with a piece of bread; this bread, by the way, being usually kept in a bag with truffles, in order that it may acquire the flavour. As his education advances, truffles are substituted for the article buried, and the dog is rewarded for finding them and scratching them up. As soon as he has become sufficiently acquainted with the smell of the hidden truffle, his owner takes him out to a spot where truffles are known to grow, or are likely to be met with, and, in company with another dog already trained for the purpose, commences to hunt about in search of them. As soon as the dogs begin to scratch, their owner assists them to dig out the truffle with a spud, which he always carries, and rewards them both with truffle-flavoured bread if successful. In this way a dog is soon taught to understand what is required of him; and probably other breeds besides those above named might be educated and employed for the same purpose.

Rat-catchers, with their dogs and ferrets, are still to be met with in many of the rural districts of England; but the old race of truffle-hunters seems to have almost, if not entirely, died out. The reason for this may be twofold. There are probably at the present day few owners of woods and plantations who would care to have their coverts disturbed by truffle-hunters in the height of the shooting season, however much the latter might vouch for

the steadiness of their dogs and their total disregard of game; moreover, the large supply of truffles in the English market from foreign sources, especially from parts of Italy and the South of France, must render the English truffle-hunter's occupation much more precarious and less remunerative than was formerly the case.* In parts of Sussex and Hampshire a regular trade in truffles used at one time to be carried on; and during the autumn months men made it their business to go round the country with their dogs, visiting the outlying plantations on the downs (called "hangers," from their overhanging the valleys) and other likely spots in search of this far-famed comestible. When not engaged in this pursuit, they would occupy themselves, amongst other ways, in training young dogs, either for themselves or others, for which a remunerative price would be obtained. One occasionally meets with a notice of these gentry in old works on natural history, as in the *Natural History of Selborne*; and in some MS. diaries of Gilbert White—with a sight of which I have lately been favoured—I observed several entries relating to truffle-hunters. Thus, under date Oct. 22, 1783, the following entry occurs:

Two Trufflers came with their dogs to hunt our hangers and beechen woods in search of Truffles, several of which they found in the deep narrow part of the hill between Coney Croft Hanger and the High Wood; and again on each side of the hollow road up the High Wood, known by the name of the Coach road.

* Some interesting information on the subject of "Truffle Culture in France" will be found in *The Field* of April 2nd, 1870, and details of some experiments made by the Duke of Portland at Welbeck are given at p. 375 of *The Field* of May 1st, 1869.

A few years later, under date Nov. 12, 1786, is the remark :

The hogs find, no doubt, many Truffles in the High Wood, where they are said to abound.

And again, under date Oct. 21, 1790 :

I conclude that the Holiburne Truffler finds encouragement in our woods and hangers, as he frequently passes along the village. He is a surly fellow, and not communicative. He is attended by two little cur-dogs, which he leads in a string.

During many rambles in the neighbourhood of Selborne in summer and autumn, I never chanced to meet with or hear of any professional truffle-hunter of the old sort, and it would seem as if the race must have died out. *Autres temps, autres mœurs!* It is possible, however, that a Truffle-hunter who may be heard of at the present time at "The Golden Pot," Shalden, near Alton, and who still plies his avocation in that neighbourhood, may be a descendant of "the Holiburne Truffler" referred to by Gilbert White, since he informed a friend of the writer that both his father and his grandfather had been Truffle-hunters in the county before him.

LARK MIRRORS.

INQUIRIES are often made by those who care more for their seeds than for the birds that devour them, as to the best means of getting rid of Larks, which during the late autumn and winter months assemble in large flocks upon the cultivated lands, and occasion much trouble and loss to the farmers. "Getting rid of them" of course means catching or killing them; for to attempt to frighten them away would be a hopeless undertaking. The sentiment which at one time would have evoked an outburst of indignation at the notion of killing Larks seems to be gradually evaporating as people are getting to know more of the habits of birds from more attentive observation of their movements.

It was at one time supposed (perhaps many still believe it) that the Skylark is resident in the British Islands throughout the year, and that to destroy it by hundreds when congregated in flocks during the winter would surely deprive us in summer of the notes of one of our sweetest songsters. The published observations of modern naturalists, however, have shown this to be a fallacy; and it is now well ascertained that the Skylark is truly migratory in its habits, and that hundreds and thousands of these

birds come over to this country from the Continent between the months of August and January.

It is perhaps not generally known that during the past three years, under the auspices of the British Association, systematic measures have been adopted by a committee of ornithologists, with a view of ascertaining the precise conditions of time, place, and weather under which the so-called migratory birds reach our shores at their respective seasons. This is sought to be achieved by enlisting the services of the keepers of lighthouses and lightships on various parts of the coast, and getting them to record their observations on forms supplied to them for the purpose, from which at the end of each year tabulated results are worked out.

Turning to the last published report of this committee,* we find numerous observations on the Skylark. Thus at page 42 :

Entries of the migration of the Skylark at the east-coast stations are far too numerous to note separately. In many cases they occupy a large portion of the returned schedules, and individually far outnumber any other species. On our east coast they are noticed at thirty-one of the stations making returns, from the Farne Islands to the Casquets, Alderney.

Then follow details showing that at certain lighthouses and lightships, on certain days during the months of September, October, and November, Skylarks were observed to arrive on the east coast in "numbers," "great numbers," "flocks," and "numerous flocks." Thus, at Spurn Lighthouse

* Report on the Migration of Birds in the Spring and Autumn of 1880. By J. A. Harvie Brown, J. Cordeaux, and P. Kermodé. 8vo., pp. 120. Published by Sonnenschein and Co., 15, Paternoster-square.

the arrival of flocks in October was "from the 9th to 15th, every day continuous." At Lynn Well light vessel, Oct. 11, 12, and 13, "continuous arrivals during day." At the Leman and Ower light vessel on eleven days in October, "day and night." At the Galloper light vessel, on seventeen days during October and November, "in large flocks up to five hundred in a flock." At four stations on the Goodwin Sands "enormous numbers crossed."

This migration of the Skylark, says the reporter (Mr. Cordeaux), was carried on at all hours of the day and night, in all weathers, from Aug. 27th to Jan. 12th. The "great rush" took place during the last fortnight in October, more crossing probably on the 22nd than on any other day; and at Heligoland on the 20th and 21st. A second "rush" a month later, on or about Nov. 21st; and a third "rush" on the outbreak of severe weather in the second week in January, 1881. General line of direction E. to W., sometimes N.E. to S.W., but generally with a strong trend from points south of east. It is remarkable, as shown by the returns, how frequently Larks are associated in migration with Starlings, either in separate flocks or together; in fact, the two species seem to be inseparable. In a large majority of instances these two meadow-feeders are associated as if impelled to migrate by a common cause.

These observations suffice to set at rest the question whether Larks are migratory, and at the same time remove the objection which has been raised to their being killed here in numbers during the winter months. Then comes the question, if they may be killed, or (as some agriculturists would say) must be killed, how is this to be accomplished? Obviously either by netting or shooting. In days of yore, before the use of small shot was introduced, "the art of fowling" was a necessary part of the education of an English country gentleman; and

Larks, like game and wildfowl, were then taken abundantly in nets. Now the art is almost forgotten, and few probably know how to make and use a Lark net, except the professional bird-catchers, who derive a profit from the practice.

But, although the use of nets and lime-twigs has been almost entirely superseded by the use of guns, Lark-shooting in England is not regarded with much favour by the majority of shooters, being generally considered to be *infra dig.*, not worth the powder and shot, and so forth. In France, however, the case is far different. Not only are immense numbers of Larks taken there for the market by means of the night net, which the French call *traîneau*, but sportsmen in various parts of France shoot hundreds of these birds at the proper season by means of that ingenious contrivance called a "Lark mirror." The device is a very old one; according to French authors as old as the time of Louis XIII. (1610), who first introduced in France the art of shooting flying. It is referred to by Shakespeare, and after him by various writers of the seventeenth century, but it has been supposed to be no older in origin than the date of the invention of small shot, which came into use in England in 1548.

It is most probable, however, that the Lark Mirror was originally the device of a fowler, and was used with a net some time before it came to be employed with a gun. This assumption at least seems warranted by the allusions made to its use by writers of the early part of the 17th century, who do not refer to it as a novel device, or as one

then lately introduced. Thus, in "The Jewell for Gentry," 1614, we read:—

There is another Stale belonging to these Day-nets, which is very proper and excellent, chiefly at the latter end of the yeere when Birds are least apt to play; and that is a three square piece of wood, a foote in length, and three inches each square; it must be painted red, and be all inlaid with square or round pieces of looking-glasse, it must have a foote in the midst, which must goe into a wide socket of wood, made in a strong stake, which must be stricken into the earth, then to the foote must be fastened a packthread, which being wounde many times about the foote, and issuing through a little hole of the stake, must come to your feete, so that when you pull it, the wood will turne so round, that it will give a strange reflection and so continuing the turning it will entice the Birds to play wonderfully; the place where you shall set it shall be by the stale, your Larke, so that you may use one string after another.

Markham certainly refers to the use of the mirror with nets. In his now scarce little volume, entitled "Hunger's Prevention, or the Art of Fowling," printed in 1621, he says (p. 116): "There is also another stale or inticement for these byrdes which is called the looking-glasse." This he describes at some length, and then proceeds: "Now both this and the other stale before spoken of [a live decoy bird] are to be placed in the very midst or centre betweene the two nets, and about two or three foote one distant from another, so that in the falling of the nets the cords may by no means touch or annoy them; neither must they stand one before or after another, but in a direct line one over against the other, the glasse being kept continually moving, and the bird very oft flickering."

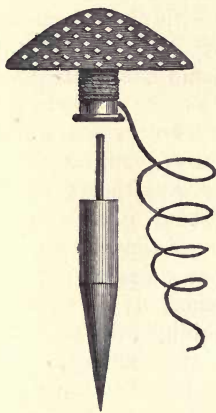
When did the birdcatchers cease to employ this device with their nets? Apparently not for some

considerable time after the introduction of shooting flying, and the employment of the mirror for lark shooting. Nicholas Cox, in his "Gentlemen's Recreation," 1674, referring to the capture of Larks, says "The next way of taking them is with a day net, and a glass, which is incomparable pastime on a frosty morning. These nets are commonly seven foot deep and fifteen long, knit with your French mesh and a very fine thread."

In a curious little book entitled "The Field Songster, or Bird Fancier's Delight" (1753), the author, whose name does not appear on the title, says (p. 31), "To take the Skylark in Flight.—You take them as you do other small birds—with a clap-net; in the country about Dunstable and several other places they take them with a glass called a larking-glass. These glasses are made of the bigness and shape of a cucumber, hollow within, and three, four, or five holes cut round, and pieces of looking glass placed in; it is fixed by a staff, and runs out like a whirligig, having a line which comes where we stand, at a pull-pin. We work it backwards and forwards. This must be of a sunshiny day, then the larks will play the better, the glass glittering and the larks playing about, and seeing themselves in it, makes them come down to it. As soon as they come within reach, pull the nets over them. By this I have known, in the country, ten or fifteen dozen taken in a morning."

But whatever the antiquity of Lark-mirrors may be, the contrivance is as efficacious as it is simple. There are various patterns in use at the present day in France, but all are constructed on the same

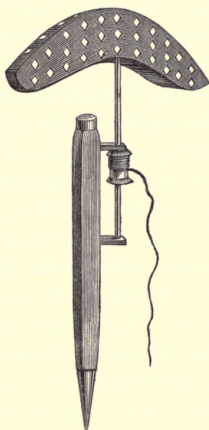
principle. The simplest is a wooden spindle with a mushroom-shaped head, which is studded with small pieces of looking-glass set at various angles. Round the shank of the head which revolves upon the spindle, a long light line is wound, which, being carried some five and twenty yards by the shooter, is pulled by him in such a manner that the impetus gained by unwinding it causes the line to at once



re-wind itself round the shank, and thus the glass is kept twirling as long as the shooter pleases. Some fasten the end of the line to one leg, which is kept in motion at the critical time when both hands are required for the gun; others, to save trouble, employ a lad to pull the line for them. The remarkable feature about this device is the extraordinary fascination which the revolving and shining glass seems to exercise upon the unfortunate Larks.

They see it at a considerable distance, are attracted towards it, and positively hover over it (*faisant le Saint Esprit*, as French sportsmen call it), presenting the easiest possible mark for a charge of snipe shot.

All sorts of theories have been propounded to account for this singular fascination. Some (like Buffon) assert that the lark mistakes the shining



glass for running water; but, unfortunately for this theory, larks are not in any sense water-birds, and are more often met with on stubbles, fallows, and, generally speaking, dry situations. Another pretty theory is that the small facets of the mirror sparkling in the autumn sun so much resemble dew-drops, that the migrating birds are deluded into fancying that summer has come again, and with it

all that is most grateful to a lark's palate, in that shining spot which seems to offer attractions for food and rest after their long flight. A third notion is that the bird, so fond of soaring to enjoy the warm rays of a summer sun, mistakes the mirror for the sun; and only discovers its error when meeting with a warm reception of a very different kind, namely, that which ardent sportsmen delight to extend to everything with feathers that comes within their range.

In the absence of any certain knowledge on the subject, it seems most reasonable to suppose that *curiosity* is really the motive which impels the bird to its fate. Curiosity we know impels the fowl upon a decoy pond to enter the pipe and follow the decoyman's little dog which gradually lures them to destruction. Curiosity, too, has induced many a wild animal to come within range of the hunter's rifle when the owner, lying prostrate and concealed, has slowly waved a small red flag upon a wand affixed to his boot. Curiosity, then, in all probability, attracts the lark to the mirror.

Vast numbers, as stated, are in this way allured and shot. The conditions considered most favourable for this sport by our French neighbours are a fine October morning, with a slight frost and the wind in the east. In addition to this, a good deal will depend upon the position taken up by the shooter; for it is not enough to possess a mirror and be a tolerably good shot. One must take up one's position, so to say, in the very wake of the migrating flocks, and to be on the right or left of the line of their direction means comparatively little shooting.

As the wildfowl-shooter observes the line taken by the ducks at flight time, so the lark-shooter must note the direction in which his smaller quarry is migrating, and, availing himself of a certain amount of concealment (as, for instance, in a hollow or behind a bush), must study both sun and wind. It is needless to say he must not face the sun; nor is it advisable that it should be entirely at his back. The best light is a side light, the mirror being set up in such a position that a few feet of horizon may be seen clearly above it. Care should be taken also, when fixing the spindle in the ground, to make the mirror lean slightly away from the gun, so as to prevent its catching and checking the line when pulled. It is important also to see that the ground is sufficiently clear along the course of the line; it would never do, for instance, to lay it in high stubble.

With regard to the wind; when it is in the north, the Larks fly fast and seem loth to stop. With a southerly wind they fly low, and often hang about without taking much notice of the mirror. Should it blow from W.S.W. the passage is often considerable, but this wind is almost always accompanied with a cloudy sky, in which case the mirror is not seen well at a distance, and becomes practically almost useless. An east wind is the best of all, for that usually brings plenty of Larks, travelling leisurely, and stopping more readily to hover around the mirror.

The shooter should be on the ground about half-past seven or eight, and stay till about eleven or twelve, at which time the tide of migration seems

to ebb, and the birds alight to rest and feed. In the north and east of France Lark shooting with mirrors (*la chasse d'alouettes au miroir*) is generally carried on between Oct. 1 and Nov. 10; in the south somewhat later.

An old hand at this sport, on being asked whether smoking was permissible while lying in wait, or whether it would deter the Larks from approaching, replied with a grin, "Mais oui; fumez tant qu'il vous plaira, *mais* ayez soin de ne fumer que du bon tabac; car l'odeur du tabac inférieur (du tabac Allemand, par exemple) est désagréable à l'allouette!" What reply would a German lark shooter have made to the same question?

I ascertained when last in Paris that Lark Mirrors may be obtained there of Rédillard, 25, Rue Notre Dame de Nazareth, and in London they used to be made by Bellchambers of 221, Waterloo Road.

PLOVER CATCHING IN FRANCE.

La Chasse aux Pluviers in many parts of France is quite an institution, and the time and trouble which is expended at the proper season to secure these *bonnes-bouches* may well be thought worthy of a nobler quarry. Guns, snares, nets, bird-calls, and call-birds, are in turn brought into requisition, and the leader of a flock or "wing" must indeed be a crafty bird if he can save his companions from the destruction which threatens them on all sides.

The Golden Plover in France is only a migratory species, passing through the country twice a year, in spring and autumn, and does not, as in England, remain to nest. It is therefore only for a short time at these seasons that the *chasseurs* can carry on their sport. The months of March and September are said to be the most favourable for Plover catching. In March the birds are on their way northward for the nesting season. In September they are moving southward with their young for the winter. Larger numbers, as a rule, are taken in the latter month; for the flocks then consist for the most part of young birds, which, being less suspicious in their nature, are more readily ensnared.

Of the various methods employed for their

capture, there is no doubt that the net is the most destructive; and it has this advantage over the gun, that the birds when caught are sent to market without loss of blood and feathers, which disfigures their appearance and lessens their weight.

The most favourable time for netting is said to be at early dawn, when the flocks begin to answer the call of their leader—the *sentinelle* or *Pluvier appellant*, as the French call it. A long net or *rideau de filet* is stretched across the ground, facing a spot where the birds have been observed to roost the night before. The *chasseurs* then surround the flock, and, advancing in line, put them up, and with much shouting and throwing of sticks drive them towards the net, into which they fly pell-mell. The net falls, and numbers are entangled in the meshes. It sometimes happens that an entire flock is taken in this way.

If a birdcatcher, or *oiseleur*, goes to work single-handed, he manages somewhat differently. He conceals himself behind the net, and calls the birds towards it, instead of driving them into it. Many bird-catchers can imitate the call of a Plover so well with their lips that they have no need to use a regular bird-call (*appeau*). Those, however, who are not so gifted, avail themselves of a very ingenious contrivance to answer the purpose. The leg bone of a goat is sawn to the length of about three inches, and cut transversely at both ends, one end of which is stopped with wax. Three round holes are then bored in the tube, one near the closed end to whistle on, a second just below it, in which a quill is inserted, and a third at the other end, larger than

the other two, and closer to the sides of the bone. With this instrument they do wonders, imitating the Plover's note to perfection, and, as occasion requires, giving all the modulations which render their wild and melancholy cry so pleasing to the ear.

The decoy-birds used are termed *appelans* or *entes*, according as they are alive or stuffed. In the former case peewits are always used, not only because they are birds of similar habits to the Golden Plover, consorting with them in a state of nature, and acting the part of sentinels, but also because they are easily tamed, and will feed readily in confinement. They are pegged down with short lines, giving them just enough play to enable them to move about in a small circle, and rise a foot or so off the ground when pulled by a check-string. The Plovers, seeing their wary friends the Peewits apparently at their ease, answer the birdcatcher's call, and fly towards them. They are then either taken gradually by the nooses into which they walk, or are put up and shot as soon as they come within range.

The device employed with what the French call *entes* has long been known in England amongst our fen-men, and is still practised on a small scale by the men who are employed to catch Linnets, Goldfinches, and Chaffinches for the trade. The old English equivalent for the French term is "stale." It is simply a stuffed bird of the species which the fowler wishes to decoy, set up in as natural a position as possible, either before a net or in the midst of several springes. Imitating the call of the

passing birds, the fowler attracts their attention to the "stale" or "stales," and, as soon as they alight, they are either caught in the snares or the net is pulled over them.

Beaumont and Fletcher speak of "stales to catch kites" (Hum. Lieut., iii., 2). Sometimes a live bird is pegged down as soon as caught instead of a stuffed one, and is doubtless much more effective; for, as Sidney says ("Arcadia, ii., p. 169), "One bird caught serves as a 'stale' to bring in more." Shakespeare, as I have pointed out elsewhere,* has employed the word "stale" in this sense in the "Comedy of Errors" (Act ii., sc. 1), "The Tempest" (Act iv., sc. 1), and "The Taming of the Shrew" (Act iii., sc. 1). At page 18 of "The Experienced Fowler," a curious little volume, published in 1704, the reader is thus instructed, "How to make a Stale": "You may shoot a Lark or some other bird; take out the entrails, stuff him with tow, and dry him in an oven, his wings set in a flying posture; and so you may be furnished at all times." This device was chiefly resorted to formerly for taking the Ruff and Reeve, and other fen birds, which fetched good prices for the table.

A mode of killing Plovers by night has been adopted with more or less success by French *chasseurs*. It is well known that many birds which fly by night are powerfully attracted by a bright light, and, taking advantage of this, the fowlers go out in a party at night, one of them carrying a large lantern on a pole. They use their bird-calls until they hear them replied to, then advance in line, the light being

* "The Ornithology of Shakespeare," p. 245.

carried on the side nearest to the birds. The latter come dashing along with wild cries, sweep over or past the light, and are "cut into" by the whole party as they go by,

In the matter of bird-calls the French may be allowed to excel us; and amongst many of their ingenious inventions in this line they contrive a very effective and simple call for the Peewit. They take a piece of wood about three inches long, and somewhat thicker than the little finger, split it half-way down, and insert in the slit a piece of ivy or laurel leaf. With this in their mouth they can so beguile a Plover that they have only to hold up the net and—*le voilà*.

When bringing the gun into operation by day, they avail themselves at the same time of both bird-calls and call-birds. The latter are pegged down in position; the sportsmen, pushing a screen of twigs before them, advance slowly, and put up the Plovers. The live call-birds, seeing them on the wing, try and rise too; but, "the mountain being unable to come to Mahomet," Mahomet (with all his tribe) obligingly comes to the mountain, and pays the penalty. A fusillade is opened from the little screens, and dead and dying quickly strew the ground.

But is this sport? Surely it is taking "a mean advantage." No! Leave screens and call-birds behind. Seek the Plovers in their wild haunts if you *will*; stalk them if you *can*; and *then*, if the powder be "straight," and you fill your pockets, tramp merrily home, and talk of Sport.

SHORE SHOOTING.

ALTHOUGH some few species of shore birds may be found on our coasts throughout the year, the majority of them, and certainly the most attractive species, are birds of double passage; that is to say, they visit us in flocks in spring on their way northwards to their breeding haunts, and again in autumn on their return southwards for the winter. Thus it will be seen that it is not enough to select a favourable locality for shore shooting, but success will to a certain extent depend upon the time of year at which that locality is visited. May and August are, *par excellence*, the two best months for shore shooting. In May the flocks are composed exclusively of old birds, which have by that time assumed, more or less, their summer plumage; in August the greater portion of the flocks which visit us consist of young birds in a phase of plumage intermediate in colour between the summer and winter dress of their parents. Heavier bags will be made in autumn than in spring; first, because the flocks which pass southwards in autumn are much larger than those which go northwards in spring; and secondly, because the young birds are less shy and suspicious, and will permit a much nearer approach.

Having arranged these preliminaries, then, the choice of locality and the time to visit it, you arrive at the "happy hunting ground" with the necessary *impedimenta*. The next question is how to go to work. In the first place, it is desirable to learn the geography of the neighbourhood, and a day or two thus employed will be well spent. It is not to be supposed that this means a walk along shore. In the vicinity of a tidal harbour, or river mouth, more birds will be found than along shore, because there is more fresh food to be obtained there. You must visit the harbour, then, at flood-tide and ebb-tide; ascertain which of the "muds" are last covered by water, and first exposed at the turn of the tide; and find out whither the birds go at high water. Some birds, as the Knot, Ringed Plover, and Dunlin, go on to the beach, and doze on the warm shingle till the water falls again; others, as the Golden Plover, Peewit, and Godwits betake themselves to the meadows and marshes, and appear to be "on the feed" all day. A good deal of information may be obtained from the native fishermen, and the best plan is not to go down to the beach and engage the first man who offers, for he will probably know less on the subject than anyone else, but quietly find out at the inn who has the best reputation for wild-fowling, and send for him overnight, when you can arrange plans for the next morning.

There are several ways of getting to birds. You may punt down the harbour at low water, and shoot them on the "muds;" you may stalk them at high tide under cover of a sea wall, or bank of shingle, or

you may "lay up" in their line of flight just before high water, and shoot them as they leave the harbour for the beach, or marshes. The last-named plan answers admirably if you happen to select the right spot, and as soon as the last "mud" is nearly covered, and the birds begin to move, you may have some capital shooting if you only hold straight. We have frequently had eight or ten birds of various kinds down before we could stop to pick up one, and in consequence have lost many a winged bird, which had time to run and hide before it could be secured. In a case like this a good retriever is invaluable; the plan which ensures the heaviest bag, however, with the least fatigue is undoubtedly the first-named. In this case you must start on a flood-tide, a little before high water, and punt down the channels or creeks, which often lie so much below the mud as to prevent your seeing anything as you proceed except a high mud-bank on either side of you. If you don't know how to scull, you must take a man with you who does, and who is acquainted, moreover, with the habits of the birds, and knows how to get at them. By "sculling" we do not mean that you are to sit upright and with a pair of long oars, pull and "feather" as on the *Cam* or *Isis*, but lying down in the punt with a single short oar in a swing rowlock on your right, you propel the punt with a movement analogous to the "screw" of a steamer. It requires some practice to work a punt in this way, especially in difficult channels and shallow water.

I do not here dilate upon the most desirable form of punt, because, unless you take your own, you must

be content with what you can get. Suffice it to say that I do not refer to a fishing punt with a heavy well and square ends, but to a gunning punt, narrow, long, and light, decked in fore and aft, and just big enough to take two persons only. Under the fore-peak you may stow away your cartridges "high and dry," not forgetting flask and sandwiches, besides a good spy-glass and some cotton wool and newspaper for any choice birds that may be worth preserving. Thus equipped you lie down in the bows, with your head just showing above the fore deck, and your gun pointing ahead in front of you. Alongside and behind you lies your man, of whom little is to be seen save his right hand upon the oar.

Away you go with an easy gliding motion, the water lapping against the flat sides of the punt, till the little fishing village fades behind you in the distance, and you find yourself in a dreary waste of mud and water far from every living thing save the birds whose lives you are intent upon compassing. Foremost amongst these the inevitable Dunlins, Ox-birds, or Purres, as they are variously called, will doubtless first attract your attention. These and the Ringed Plovers, from their insignificant size, often escape the fate of their larger congeners, and being unmolested, become emboldened to advance nearer to the houses than any of the others, and thus are generally the first to be met with. Scattered over the mud in little flocks, they may be seen in every variety of attitude, standing, running, flying; now and then a lame one amongst them hopping vigorously on one leg, and vainly attempting to keep pace with his more nimble companions. It is well

to scan these little flocks with your glass, for now and then a stranger may be detected in the ranks. The Curlew Sandpiper (*Tringa subarquata*), for instance, which resembles the Dunlin at a distance, but which on nearer view is seen to stand higher on its legs, with a longer body, and white upper tail coverts. In winter the resemblance is greater than in summer, for at the latter season the plumage of these two species is very different, the Dunlin displaying a black breast, the Curlew Sandpiper having the same part chesnut. A common bird in our harbours generally is the Redshank (*Totanus calidris*)—the fishermen always call them Red-legs—and it is not a difficult species to approach. You may get tolerably close to them sometimes in a punt, and if you can whistle well when “laying up” on shore, you may easily call them within shot. They have a wild, musical note, which harmonises strangely with the wild wastes over which it is heard. So loud is their call, moreover, that it may be heard long before the birds are in sight. From observations made in one of the Sussex harbours, I reckoned that the note could be heard at a distance of a mile and a half, for, when “lying up” at the mouth of the harbour, waiting for the flood tide to take the birds off their legs, I could hear the Redshank’s call just about the time that the highest “muds” would be covered, a mile and a half distant. In less than a minute afterwards the birds came in sight—a long, straggling flock; and in less than two minutes three or four of their number were lying dead in the punt. There is a larger species of Redshank known as the Spotted or Dusky Redshank (*Totanus fuscus*)

which is met with but rarely in the same situations. Beyond its superior size it may be readily distinguished by its longer legs and longer bill, the mandibles of which come to a finer point, while the upper mandible hooks over the under to a more noticeable extent. The plumage in winter is not unlike that of the commoner species, but in summer the Dusky Redshank becomes almost uniformly black, while the tail is at all seasons longer and more closely barred.

Less rare than the Dusky Redshank, yet by no means a common bird, is the Greenshank (*Totanus canescens*). It is never seen in flocks like the Common Redshank, although it will feed in company with the latter species. It separates, however, from the others on rising, and, being an extremely shy and watchful bird, will frequently give the alarm, and so spoil a good shot, for which you may have worked for half an hour. Single birds may be whistled round within shot if you remain perfectly still, and this applies more particularly to young birds in the autumn. The Greenshank differs from the Redshank, not only in the colour of the legs, which are pea-green instead of orange-red, but in the shape of the bill, which curves slightly upwards, showing, in this respect, an affinity to the Godwits. Of the last-named we have two species,—the Bar-tailed (*Limosa lapponica*), and the Black-tailed Godwit (*Limosa ægocephala*). The Bar-tailed is by far the commoner of the two, and visits our shores regularly in spring and autumn, often in considerable numbers. In summer plumage it is a remarkably handsome bird, having the whole of the

underparts bright bay, while the back is mottled with various shades of brown and black, the tail barred, and the rump white. So regularly does this bird make its appearance, that on some parts of the coast the 12th of May is called "godwit day," and all the gunners in the place turn out in full expectation of making a good bag. When the birds first come they are very tame, and you may get within thirty yards of them before they will take wing, but after a few shots have thinned their numbers, it is not so easy to approach them. They are such good eating, however, that it is well worth a little trouble to bag a few. The Black-tailed Godwit, although formerly a regular summer migrant, nesting in some parts of the eastern counties, is now generally regarded as an occasional visitant only. It has long ceased to breed here, and can only be looked for with any chance of success at the periods of migration in spring and autumn. It is a much longer legged bird than the bar-tailed Godwit, and, although it assumes a similar rufous plumage in summer, the bright bay colour never extends below the breast as in the other species. The tail, too, instead of being barred, is white, terminated by a broad black band. Another bird which undergoes a similar change of plumage, being red in summer and grey and white in winter, is the Knot (*Tringa canutus*). In the autumn this bird may be seen in large flocks, and is often exceedingly tame. It is one of the easiest birds to decoy by an imitation of its note, and, as it is not so fast a flyer as many of the shore birds, it is easily stopped. On one occasion I whistled five Knots right over the punt, and stopped them all before they

were out of range. On some parts of the coast the Knot is called the "little plover," perhaps from its rounded head and short bill and legs, which reminds one somewhat of a Plover.

On the sand and shingle, but not often on the mud, you will see that handsome little bird, the Turnstone (*Streptilas interpres*). Black, chesnut, and white are its principal colours; a short horn-coloured bill, and orange legs. In size it is somewhat larger than a Ringed Plover, and has a peculiar twittering note, between a whistle and a chatter, and difficult to describe. It looks very black and white on the wing, in consequence of the dark primaries, broad black gorget, and white underparts. Seldom more than three or four are seen together, although it is sometimes seen feeding with Ringed Plovers, and flying with them when disturbed. In the same way the Knot frequently accompanies the flocks of Dunlin.

That handsome black and white bird, the Oyster-catcher (*Hæmatopus ostralegus*), with its long orange bill and pink legs, is more attractive in appearance than in point of flavour. It cannot be recommended for the table; for, as compared with the Godwits, Greenshank, and Knot, its flesh is decidedly coarse and unpalatable. By some it is called the Sea-pie (from its resemblance in colour to the magpie), by others the Olive (the derivation of which term is uncertain). The appellation of Oyster-catcher is of course a misnomer, for the bird is utterly incapable of opening "a native." Crabs, whelks, and sand-eels furnish it with food, and it can crush a mussel, and prise a limpet of the rock with comparative ease.

But the rock-like shell of an oyster, which defies for a time a well-directed blade of steel, fairly bothers a hungry Oyster-catcher. It is not very often that you can get a shot at one of these birds, unless you come upon them unawares. They are very suspicious, and keep a sharp look-out.

But of all shy birds, commend me to the Curlew. If you can see a Curlew within shot before he sees you, and can stalk and kill him, you may flatter yourself you are not a bad hand at shore-shooting. The young birds in autumn, like those of many other species, are more readily approached and decoyed, but to kill an old Curlew, except by a lucky chance, requires an amount of patience, endurance, and stratagem, that few who have not tried it would credit. I have proved on several occasions, however, that the Curlew depends for safety upon his keen sight, and not upon his sense of smell or hearing. His clear wild cry of *cour-lieu* must be familiar to all who love a walk along shore. His smaller congener the Whimbrel (*Numenius phæopus*) is not unlike him in appearance and habits. On the south coast this bird is called "titterel," from his note. In many places it is known as the May-bird, from its regular appearance on our shores in the month of May. The young birds are not bad eating, but neither this species nor the Curlew can be compared for flavour to the smaller Sandpipers.

The Common Sandpiper comes down to the coast, but generally keeps to the brackish water, and is never seen right out on the mud, like the Dunlin and other small waders. In the same way the Green and Wood Sandpipers (*Totanus ochropus* and

glareola) prefer the marsh, and the neighbourhood of fresh water pools and streams, and thus are seldom met with by the shore-shooter unless he wanders inland to vary his bag. Both these birds rise like snipe, and fly rapidly with many twists and turns. They both "show the white feather" on their backs, but have a different note, and the Wood Sandpiper looks much lighter in colour, while the other is nearly black. On comparison it will be found that the Wood Sandpiper has a shorter bill and longer legs than its congener, and the tail is much more barred.

Another bird, which is common in most harbours at the seasons mentioned, and which ought not to be overlooked, is the Grey Plover (*Squatarola helvetica*). In its summer plumage, it is perhaps unrivalled amongst the shore birds for beauty. The back and wings are boldly chequered with black and white, while the whole of the under parts, from chin to vent, are jet black. In its winter plumage, the Grey Plover might be mistaken for another species, and is, in fact, frequently confounded with the Golden Plover, for after the autumn moult all trace of black disappears, and the whole of the under parts from jet black become pure white. So complete a change is very remarkable, and puzzled the ancient naturalists to such an extent, that they made two species out of one in different stages of plumage. This was the case also with the Godwit, Knot, Ruff, and others. The Grey Plover is larger than the Golden Plover, and though it resembles it in winter, it may readily be distinguished by its small hind toe, which is wanting in the other, and by the colour

of the axillary plumes, which are black instead of white. These characters will always serve to distinguish the young Grey Plover in autumn from the Golden Plover, the former at that season, like the latter, being spotted with yellow on the upper parts of the plumage. In some districts the Grey Plover in winter is known as the "Silver Plover," a name not inappropriate at that season of the year. It is never met with in such large flocks as the Golden Plover, and, unlike that species, is seldom found very far from the coast; although at the period of the autumn migration I have occasionally met with little parties of five or six birds, some twenty or thirty miles inland.

The Grey Plover is an excellent bird for the table, and is well worth the trouble of stalking. It has a peculiarly mournful cry, which cannot fail to attract a musical ear, since it consists of two notes, the second of which, with an *appoggiatura*, is a semitone only above the first.

Indeed, he who with a taste for sporting combines a love for music, should not fail to make himself acquainted with the wild notes of the shore birds, for he will thus find another charm in the many attractions of shore-shooting.

FISHING NOTES IN HOLLAND.

"ARE there any Pike in Holland?" inquired a friend one day in autumn. "I don't know," I replied, "but I will go and see," and, somewhat to his amusement, I started the next day. The fact was, I had already made all my arrangements for a trip to Holland, and it was not much trouble, therefore, to make inquiries for him *en route*.

As the little information which I picked up, and which is not to be found in "Bädeker," may be of use to others who, like myself, may contemplate visiting that country for the sake of sport, I venture to offer it for what it may be worth.

In the first place, it may be as well to state that a shooting licence in Holland costs 21 florins 21 cents, a florin (twelve of which make 1*l.*) being equivalent to two francs, or 1*s.* 8*d.* A licence for fishing with any tackle or net, 7 florins 7 cents, and a licence to hawk (not a "hawker's" but a "falconer's" licence) costs 38 florins. Anyone taking out a licence to this last amount, may hawk, shoot, or fish, to his heart's content, provided he has leave over the requisite ground or water. As a rule, permission to fish is freely accorded.

Pike fishing may be had on the Maes, near Grave, which is reached by steamer from Rotterdam or Bois le Duc; at Nymeguen, about nine miles from Arn-

heim ; and at Ouderkirk, on the Eisel, about six miles from Rotterdam, between Rotterdam and Gouda. To Ouderkirk a boat runs twice a day from Rotterdam. If I had not premised that the information contained in these notes is not to be found in "Bädeker," I should say let the wayfaring angler look in, *en passant*, at the church at Gouda, to see the magnificent stained-glass window which is there, and which really is worth seeing.

The brother of my informant as to Ouderkirk, while shooting one day in the vicinity of that place, found a Pike of about seven or eight pounds on somebody's night line. As a little surprise for the owner of the line, he took off the Pike, and put on a Grey Crow which he had just shot, leaving the finder to speculate, and, if it pleased him, to indite an essay on the omnivorous and piscivorous habits of crows in general, and grey crows in particular. There is some jack fishing to be had in the river at Loo, the station for which is Appledore. The fishing belongs to the king, but leave may be obtained through one of the innkeepers without much difficulty.

My pursuit for the time being (hawking) having taken me into North Brabant, I made inquiries there about Pike, and ascertained that in the rivers Tongreep and Dommel, which run east and west of the village of Valkenswaard, where I was staying, a few Pike are to be had, but they are not very large. Just before my visit a dog had caught one in a shallow, weighing about three pounds. On another occasion an Osprey, flying over the great heath of Valkenswaard with a fish in its talons, and seeing no

one in sight, alighted on the roof of a falconer's hut, far out in the plain, to devour its meal; but the falconer was within and saw it approach. Rushing out with a shout and throwing up his arms, he so frightened the bird that it dropped the fish, and incontinently took to flight. The fish proved to be a jack weighing something over three pounds, and furnished a nice dinner for the falconer.

The rivers in North Brabant are muddy and sluggish, winding with innumerable turns and twists over a very flat country. They seem well stocked with eels, for which the condition of the water is well suited, and the local fishermen pay more attention apparently to these than to any other fish. From experience I can say that, although not large, they are extremely well flavoured.

Although there are no trout to reward the fly-fisher's skill, he may have some sport with the "whitefish," roach and dace, particularly if he tries, as I did, the natural fly. I had never heard before of roach taking a fly, and discovered almost by chance that they will do so. It happened in this way. Having asked a good many questions about the capabilities of the locality for sport in different branches, I was referred, on the subject of rod fishing, to an old man who was said to be the oracle of the place in all that relates to angling. His name was Mohr, and his history as told by himself is worth repeating. Although now on crutches, he was once an active falconer and fisherman, and years ago, when a boy, had accompanied Peter Bots (the father of mine host) to England, and had served as assistant falconer under him to Col. Wilson, afterwards

Lord Berners. There he learnt to speak English, and although he had not quite forgotten it now, he was unable for want of practice to speak it very fluently. Previously to 1845 he had acted as servant and *factotum* to Mr. Robert Hammond, a Norfolk gentleman, whose love of fishing, hawking, and wildfowl shooting had induced him to take up his residence permanently at Valkenswaard. Here he lived for about twenty years, and died in 1845—a martyr to rheumatism, contracted, it is said, in the Dutch fens while in pursuit of wildfowl. During the last year or two of his life he was quite unable to get about, and used to solace himself with his books and papers, which were sent to him regularly from England. He used to lend Mohr numbers of the *Penny Magazine* to read, and in one number Mohr found a description of a clock and how to make it, with illustrations. This interested him so much that he set about translating the article into Dutch, and studied it carefully, until he almost knew it by heart. Then, following the description, he commenced to make a clock for himself, in which, after a few attempts, he was at length perfectly successful. He then took to clockmaking as a trade, became the village clockmaker, and now most of the clocks in the neighbourhood bear his name.

He was a great fisherman at one time, and made his own reels and tackle. He showed me some of the reels, and very well made they were. Asked what fish there were in the neighbourhood, he replied, roach, perch, and dace, and a few pike, the last-named usually of no great size, although he once landed one which weighed $11\frac{1}{2}$ lb.

On asking his opinion of my chance of sport with the rod, he shook his head. "It was too late in the year (October)," he thought; "the white fish would not feed well; I ought to have been there in the summer; I could catch plenty then," &c. However, I might try; and so I did. Worms and paste were brought into requisition, and both failed as predicted. But idling one day on one of the bridges while smoking the "calumet of peace," I was inspired with a "happy thought." The roach, which played about the wooden piers, came up at intervals to the surface and sucked down the drowning flies—a sort of stone-fly, something like a mayfly, but browner. "Happy thought," that is their natural food! try them with stone flies! And so I did. Beating the bushes and rushes which fringed the stream, the flies were soon on the wing and soon captured; and having laid in a little stock which were carefully impaled on the wooden bridge until wanted, I was soon enabled to set to work. At the very first cast, a roach rose, was struck and landed, giving much encouragement thereby to the experiment, which it is needless to say was continued *ad libitum* until a nice little dish of fish was lying in the cool rank grass. I found that this fly was most killing when allowed to sink a little below the surface; and I shall never forget the keen interest which my old friend displayed when listening to the details of my experiment, nor the way his face lighted up when I imparted "a wrinkle" which, strange to say, had never before occurred to him. He had caught hundreds of "white fish," as he called them, with paste and worm, but had never tried the natural fly.

BRITISH SPIDERS.

IN reply to the question "How many species of spiders do you suppose there are in this country?" asked of a friend by a leading authority on the subject, the answer given was that "he knew of four kinds only—the red spider, the harvest spider, the garden spider, and the house spider." This answer probably indicates pretty correctly the existing state of popular knowledge in respect to spiders, and shows a very common misconception, not only as to the number of species, but also as to what *is* a spider; for the first two of the creatures above mentioned are neither of them spiders in the strict sense of the term, the first belonging to the order *Acaridea*, the second to the order *Phalangidea*. Ninety-nine persons out of a hundred probably would find themselves unable to state, if asked, in what respect a spider differs from all the insect tribes, and their estimate of the number of known species in this country would doubtless be considerably below the mark.

It may be not unprofitable, therefore, to state a few plain facts concerning a numerous class, as interesting, in their way, as many which are better known because more observed.

What, then, is a spider? The derivation of the

name is evidently obtained from the habit of spinning silken lines, an unvarying character of the whole order to which spiders belong. Hence the Swedish name *spindlar*, or "the spinner." The name is also essentially the same in German and other Teutonic languages. From *spindlar* we get *spider* by the simple and natural elision of the *n* and *l*. A spider, then, is a creature that spins, not like a silkworm through its mouth, but by means of special external organs—*spinners*—placed at the hinder extremity of the abdomen. It differs from all the insect tribes in not undergoing metamorphosis, either *complete*, as in the case of a butterfly or moth (which arrives at maturity through the well-marked stages of caterpillar and chrysalis), or *incomplete*, as in the case of the bugs (*Hemiptera*) and grasshoppers (*Orthoptera*). It is produced from an egg, and arrives at maturity after several successive moultings of the whole skin, the only outward structural change that takes place being at the final moult, when the male spider attains its complete armature of spines, bristles, and hairs, according to its kind, while the last joints of the *palpi*, or feelers, are curiously developed; and the female spider exhibits for the first time a development of the reproductive organ.

The body of a spider is divided into *two*, instead of (as in insects) *three* visibly distinct parts. These parts are in insects the *caput*, *thorax*, and *abdomen*; but in spiders the *caput* and *thorax*, with its several segments, called the *cephalo-thorax*, are soldered together. The eyes, too, are all simple, thus differing remarkably from the compound eyes of the *Insecta*; and the legs, *six* in the insect tribes, are

always *eight* in the spider, and furnished with two or three terminal tarsal claws. These different characters are easily observed, and enable one to decide at once, upon examining a specimen, whether it be spider or insect. But then comes the question how to distinguish the true spiders (*Araneidea*) from the mites (*Acaridea*) and harvesters (*Phalangidea*), two other orders of the sub-class *Arachnida*? The mites have a body which consists, at first sight, of one portion only, the outer skin being continuous, and in many cases not showing, by even a suture or groove, any division between the cephalo-thorax and abdomen. Although the body of a harvester appears at first sight to consist of one portion only, the cephalo-thorax usually is distinctly defined by a transverse indentation or groove; the abdomen is covered with a series of coriaceous or somewhat horny transverse folds or plates; the eyes are *two* only, placed one on each side of a tubercular eminence near the fore extremity of the cephalo-thorax; and the legs are generally very long and remarkably slender, the terminal joint being sub-divided into numerous minute articulations.

We have been led to consider thus attentively the definition of a spider from having taken up the first volume of a recently published work entitled, "The Spiders of Dorset."* When Mr. Blackwall brought out his important folio volume on spiders,

* The Spiders of Dorset; with an Appendix containing short descriptions of those British species not yet found in Dorsetshire. By the Rev. Octavius Pickard Cambridge, M.A., C.M.Z.S. Edited by Professor James Buckman, F.L.S. 8vo. Sherborne: L. H. Ruegg. 1879-81.

under the auspices of the Ray Society (1861-64), 304 species were enumerated as British. The present work already includes 510, and fresh additions are constantly being made to this total. Out of these 510 species at present known to inhabit Great Britain and Ireland, 358, or more than two-thirds, have been found in Dorsetshire. Of the remaining 152, nine only have been recorded in Ireland, and several others are at present doubtful species. The very large proportion of British spiders found in Dorsetshire is, no doubt, as the author of the book before us intimates, partly to be accounted for by the great variety of soils which exist in the county, but in a great measure, perhaps, is due to the fact that Dorsetshire has been more thoroughly worked than any other limited portion of the British Islands. To this cause is doubtless due the large number of species—about eighty-four—which have as yet been found only in this county. Mr. Pickard Cambridge, who has devoted years of leisure to the study of British Spiders, has not unnaturally come to be regarded as the chief authority on the subject, and in the volume before us has certainly given an importance to Spiders, and an interest to the study of their structure and habits, which we doubt not will cause many people to alter very materially their opinions concerning them. His book is no mere list of species. An excellent introduction of more than forty pages, to which we are indebted for many of the facts above briefly noted, contains an amount of information, clearly and intelligibly conveyed, which many naturalists, we feel sure, would be glad to possess, did they know where to look for it.

We have already briefly referred to the characters which especially distinguish spiders from all other insect tribes. Dealing with their external structure, Mr. Pickard Cambridge describes the eyes, legs, and falces; the maxillæ, or jaws, which assist in the compression of the spider's prey and in squeezing out its juices into the throat; the palpi, or feelers; and those wonderful organs, the spinners, at the extremities of which are the spinnerets through which the silken lines issue, in part propelled at the will of the spider, and partly drawn forth by external influences.

Under the head of "Internal Structure," we find a description of the organs of digestion, circulation, and respiration. The mode of respiration in spiders is very curious. Mr. Cambridge says :

It is effected, not by *pulmonary* organs, but by essentially *tracheal* ones, which may be described as consisting of both *tracheæ* proper and *sac-tracheæ*. The latter form the principal breathing organs, their position being shown outwardly by the spiracular plates detailed above; they consist of a collection of flattened membraneous sacs, inclosed within an outer membrane, and lying together somewhat like the leaves of a book. The air is collected in these *sac-tracheæ*, and re-oxygenates the main body of the vital fluid in its passage through the dorsal vessel; while by the *tracheæ* (properly so called) air is conveyed in small quantities to the vital fluid in various parts of the system.

To anyone familiar with the structure and functions of the lungs of mammals, the essential difference between them and the *sac-trachæ* of spiders will be obvious.

On the habits and economy of Spiders, their snares and mode of entrapping their prey, a long essay might be written, and we have not space here to

notice half the interesting facts referred to by Mr. Pickard Cambridge under this heading. There is one question, however, to which we may briefly allude, namely, whether spiders are venomous. Amongst other reasons why they are so much neglected by the common run of natural-history observers is the idea that their bite is poisonous. Again we quote Mr. Cambridge :

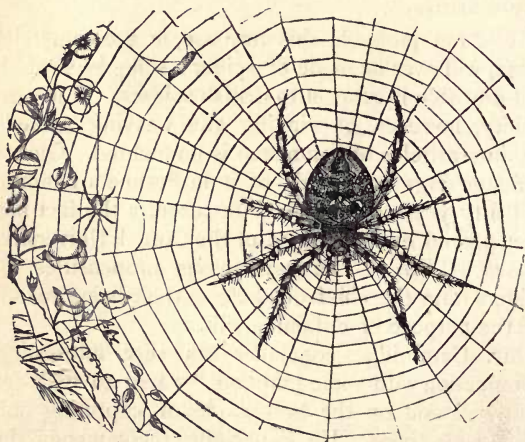
This is certainly not the case in respect to any known British spider. I have myself often tested the absence of venom in some of our strongest species, and Mr. Blackwall's far more extended experiments some years ago (*Linn. Trans.* vol. xxi., pp. 31-37) were attended with a similar result. There is, however, good reason to believe that in the south of Europe, as well as in the tropics, and certainly in New Zealand, there are some venomous spiders, but these are not among the larger kinds, and the species are probably few.

It is not probable that any use, in a commercial sense, will ever be made of spider's silk ; least of all is it probable in respect to British spiders. The possibility, however, of winding and weaving spider's silk into articles of commerce is undoubted. Gloves and stockings were made of it in France a hundred and fifty years ago, and quite recently the fact has been proved by Dr. Wilder, of the Cornell University, Ithaca, U.S.A. The carnivorous propensities of spiders form the chief obstacle to their being reared for the purpose of obtaining silk.

Mr. Cambridge concludes his very interesting introduction with some hints on "where to look for spiders," and on the best mode of capturing and preserving them. He especially recommends the study of spiders to persons of a sedentary habit, or to those who may love natural-history pursuits, but

do not desire to form a collection. In this respect, he considers, the observing of spiders possesses an advantage over observation of the insect tribes in general, inasmuch as spiders are more stationary, and, when found, do not escape observation by flight, but require only patience in the observer to unfold much of their history and economy.

From the many interesting facts which Mr. Cambridge has brought to light in the prosecution of his favourite study, it would certainly appear that there is much to recommend it.



THE FERÆ NATURÆ OF THE LONDON PARKS.

THE extent and variety of animal life which may be found existing in the parks and gardens of London, notwithstanding the co-existence of many unfavourable conditions, is very remarkable, and furnishes a curious illustration of that "struggle for existence" which is being perpetually carried on, not by man alone, but by all living things.

In the midst of so densely populated a city as ours, where the vegetation of the open spaces is being constantly trodden under foot, or struggles upward with difficulty through an atmosphere of smoke and sulphur, it would hardly be supposed that any wild creature—unless the Rook and the ubiquitous Sparrow may be so termed and excepted—could find either sufficient food or sufficient freedom from molestation to enable their existence. The inquisitive naturalist, however, well knows that the case is otherwise.

It is, of course, many years since any of the larger *feræ naturæ* were to be found in the London parks, although many persons still living must remember the Deer in Hyde Park; and may have had pointed out to them the places where the last Otter was speared, and the last Hare killed.

Before considering the attractions which the parks at present afford to the naturalist, it may be not uninteresting to glance briefly at their former condition. When, in exchange for the priory of Hurley, in Berkshire, Henry the Eighth, in 1536, acquired from the monks of Westminster the manor of Hyde, the park, of larger dimensions than we now see it, was fenced in for the greater protection of the Deer which were preserved there, and frequently hunted. In that year a royal proclamation was issued, in which it was stated that "as the King's most Royal Majesty is desirous to have the games of Hare, Partridge, Pheasant, and Heron preserved in and about the manor of his palace at Westminster, for his own disport and pastime, no person, on the pain of imprisonment of their bodies, and further punishment at his Majesty's will and pleasure, is to presume to hunt or hawk from the palace of Westminster to St. Giles' in the Fields, and from thence to Islington, to our Lady of the Oak, to Highgate, to Hornsey Park, and to Hampstead Heath,"

In several succeeding reigns Hyde Park served as a royal hunting-ground. Edward the Sixth, while yet a boy, hunted there in 1550 with the French Ambassadors. In 1578, when John Casimir, Duke of Bavaria, paid a visit to Queen Elizabeth, he stayed at Somerset House, and amused himself with hunting at Hampton Court, and shooting in Hyde Park, where it is recorded that in February of that year, "he killed a barren doe with his pece from amongst ccc other deere." *

The Queen herself used evidently to witness the

* Lodge's "Illustrations of British History," 1791, vol. ii. p. 205.

sport, if she did not actually take part in it, as she did elsewhere,* for in the accounts of the Board of Works for the year 1582 is an entry of a payment "for making of two new standings in Marybone and Hyde Park for the Queen's Majesty and the noblemen of France to see the hunting." It is to these, probably, that Norden, the topographer, alludes when describing the place about this time. He writes: "Hyde Park, substantially impayled, with a fayre lodge, and princelye standes therein. It is a stately parke, and full of fayre game." †

James the First continued to preserve the game here with great strictness; and in October, 1619, some deer-stealers were executed at Hyde Park Gate, and with them a poor labourer, whom they had hired for 1s. 4d. to hold their dogs. ‡

In January, 1625, a warrant was sent to the keeper of Hyde Park to cause three brace of bucks to be taken to Marybone Park, to supply the scarcity caused by the great rain there; and another warrant to the "master of the toils", for the toils to be sent to Hyde Park for the purpose. §

St. James's Park, which, prior to the time of Henry the Eighth, was little better than a marshy field, was in his reign inclosed and stocked with deer.

There were no less than eleven ponds there in

* Letter from Rowland White to Sir Robert Sidney, dated September 12, 1600; and Nichols' "Progresses, &c., of Queen Elizabeth," vol. iii. p. 90.

† Norden, "Survey of Middlesex and Hertfordshire," 1596, p. 19.

‡ Calendar of State Papers, Domestic Series, 1619-23, p. 88.

§ *Ibid.*, 1623-25, p. 445.

James the First's time. These were turned to account by being stocked with fish and waterfowl, and the park was then much improved and ornamented with walks and fountains. The part of the park now called the Enclosure was staked off from the walks by Charles the Second for the purpose of protecting the deer and other animals, of which he was very fond.

The collection of waterfowl maintained by Charles the Second in St. James's Park must be familiar to all who have read the diverting pages of Evelyn and Pepys. The park at this time, says Evelyn, was "stored with numerous flocks of several sorts of ordinary and extraordinary wildfowl, breeding about the decoy, which, for being so near a city, and among such a concourse of soldiers and people, is a singular and diverting thing."*

In William the Third's time a proclamation was issued for the preservation of game "within ten miles of the Court of Whitehall and the precincts thereof." This proclamation, which was published in the *London Gazette* in October, 1690, forbade the keeping of "a fowling-piece, gun, setting dog, net, trammel, or other unlawful engine," by any person "other than such as shall be by law qualified;" and such as gave information concerning offenders to John Webbe, living in St. James's Park, were to be rewarded.

Grosley, in his "Tour to London," 1772, especially notices the deer in St. James's Park, and remarks that "in that part nearest Westminster nature appears in all its rustic simplicity—a meadow

* Evelyn's Diary, February 9, 1664-5.

regularly intersected and watered by canals, and with willows and poplars without any regard to order."

Deer were to be seen in Kensington Gardens for some time after the commencement of the present century, and remained in Hyde Park until the year of the Queen's coronation when, a great fair being held there for some days, they were removed to Bushey, and never replaced.

The last Wolf is thought to have been killed in England during the reign of Henry the Seventh, at which period this animal had become so extremely scarce as to be confined to a few of the wilder and more remote districts in the North of England.*

Its extinction in the neighbourhood of London dates some centuries earlier, and we are happily unable to include it in our present list. But there is a story on record of a Wolf at large in St. James's Park, which may be appropriately quoted here.

In 1739, near the Vineyard, in St. James's Park, lived a gentleman who kept a Wolf. One night in January in that year the animal broke loose and found its way into the park. The first human being he saw, early in the morning, was a milkman, at whom he flew furiously. The man set down his pails and took to his heels; and as the milk was apparently more tempting to the Wolf than the milkman, he began at once to drink it, during which time the man escaped. The animal having thus refreshed himself, and espying a calf at a little distance, immediately killed and partly devoured it;

* Harting, "Extinct British Animals," p. 151.

but fortunately while thus engaged he was found by his keeper and recaptured before he could do any further mischief.*

The Fox as a lurker in London parks survived to a comparatively recent date. So late as the end of the last century a good many were still to be found in Hyde Park, and the Ranger used to carry a gun in his walks for the purpose of shooting them whenever he had a chance. There is extant a minute of the Board of Green Cloth, dated in 1798, granting a pension of £18 to Sarah Gray, in compensation for the loss of her husband, who had been accidentally shot by one of the keepers whilst they were hunting for foxes in Kensington Gardens.† These animals were but the natural attendants upon the hares and pheasants which existed in the parks at that date. When game was no longer preserved there, and henroosts were not at hand, the foxes must have left their quarters there, or starved. The Ranger's gun probably hastened their extinction by a few years only.

So long as the parks were on the outskirts of London so long was there a chance of accession to the number of *feræ naturæ* within their precincts from the country beyond; but so soon as houses crept up to and surrounded the parks, and the latter became more and more resorted to by the public, the impossibility of preserving the game became apparent, and the attempt was abandoned.

A curious hare-hunt took place in Hyde Park in October, 1809, and resulted in the death of what was,

* Larwood, "London Parks," vol. ii. pp. 175-6.

† Smith, "Historical Recollections of Hyde Park," 1836, p. 39.

perhaps, the last Hare killed in that park. At that time, and for many years afterwards, there were only a few detached houses north of the Uxbridge Road, an alehouse or two by the roadside, and, farther on, two little hamlets in the midst of the fields—viz., Craven Hill and Westbourne Green—for Paddington was then limited to a row of houses along the Edgware Road. A Hare having found her way into Hyde Park from the adjoining country, was suddenly discovered on the open space between the Barracks and the Serpentine; and as soon as she was started all ranks joined in the chase. Poor Puss, finding retreat impossible, took to the Serpentine and swam rapidly across. But the alarm having spread to the other side, before she could land numbers were waiting ready to receive her. At length, being afraid to attempt a landing, and almost exhausted by terror and fatigue, she seemed to be drowning, when a boy jumped into the water and seized her. A gentleman immediately released her from her pain by killing her, and, giving the boy a crown, carried away the prize.

For some years after this, the Regent's Park—then private royal property—held plenty of hares, and between 1824-28 coursing matches used to be held there.

The marshy pools in Hyde Park which once occupied the site of the Serpentine, and afforded sanctuary to the Herons which Henry the Eighth was at such pains to protect, were at one time the haunt of Otters. These animals would find their way up the two small streams which entered London from the west and north-west, viz., the West Bourne

and the Eye Bourne (Tyburn); and, remaining concealed by day, would find their food at night amongst the coarse fish which tenanted the pools. But when, in 1730, all the ponds were united into the handsome piece of water called the Serpentine, the streams covered in, and the ground cleared and made more ornamental, the home of the Otter was destroyed. For some years afterwards, however, a stray one seems now and then to have reappeared, but only to meet with that reception from a crowd which, prompted by thoughtlessness and inhumanity, is usually accorded to strange animals.

During the summer of 1739 a large dog Otter took up its abode in St. James's Park, and there made free with his Majesty's fish. For a long time it escaped all the gins and snares laid for it; but at length, its death being resolved on, a regular otter-hunt was organised, at the desire of the Earl of Essex, who was then ranger, and Sir Robert Walpole's pack of otter-hounds was borrowed for the occasion. The Otter had taken shelter on Duck Island, but was soon driven into the moat, and was closely pressed by the hounds at his frequent "venting," though sometimes he dived half the length of the canal which surrounded Duck Island. After a long chase he left the water, and attempted to run to the great canal, but before he reached it he was speared by Mr. Smith, the huntsman of the pack. This unprecedented otter-hunt took place in the presence of His Royal Highness the Duke of Cumberland, the Earl of Essex, and several other noblemen, who, armed with spears, all took an active part in the sport. According to the papers

of the day, the animal measured five feet in length.

But although so many years have elapsed since this incident occurred, it is by no means the latest date at which the Otter has been met with in the neighbourhood of London, if not actually in a London park. In March, 1829, a young Otter, about eight months old, was killed at Kilburn in a field which is now the site of the railway station. In the autumn of 1831 an Otter haunted the Brent, where the head of Kingsbury Reservoir now is. The reservoir was not then formed, and at that particular spot was a famous bed of flags, well calculated to afford shelter to such an animal. About the end of September or beginning of October in that year this animal was shot. A third Otter was seen for several months during the latter part of 1847 about the brook between Hendon and Edgware, and was several times hunted by the harriers of Mr. Dancer, of Kenton, but never killed. A fourth, which was described as a very fine large animal, was observed early one morning, by a policeman on duty, crossing the park belonging to Lord Mansfield, at Hampstead, and making for the water. It was subsequently seen by several other persons, some of whom, known to the writer, laid in wait to try and shoot it, but without success. This was in the spring of 1855.

But perhaps the most extraordinary capture of an Otter in London was that which was made in 1863. On March 25, in that year, as a coachman was proceeding at daybreak along Aberdeen Place, leading from Maida Hill to St. John's Wood, he observed

an Otter trotting along close to the wall, and overtaking it, succeeded by repeated kicks with his heavy boots in killing it. It was then taken to Mr. Gardner, of Holborn, for preservation, where the writer saw it on the following day. It was a young animal, of very moderate dimensions; and if it had not escaped from confinement, its appearance in such a place can only be accounted for by supposing that it had come up the Canal to Maida Hill; and, being unwilling to keep to the water through the tunnel, was following its course above ground, and if molested would probably have entered the Canal again in the Regent's Park.

It is doubtful whether the Squirrel was ever an inhabitant of the London parks, no record of its appearance there being extant, although, from its having been met with in the woods of Hampstead, Highgate, and Hornsey, it is not unlikely that it was at one time common enough on the north side of London. In all probability the park trees, although affording shelter enough to screen these little animals from observation, would not supply sufficient food suited to their requirements.

During the long summer evenings, Bats may not unfrequently be observed on the wing, not only in the parks, but even in the London streets. At least four species have been identified, conspicuous amongst which is the great Noctule—the *Vespertilio altivolans* of Gilbert White—which has frequently been observed in Kensington Gardens. We have on several occasions seen the Pipistrelle on the wing in Oxford-street—sometimes quite early in the afternoon; and we once examined a specimen of Nat-

terer's Bat which was caught in Thayer-street, Manchester-square. The fourth species referred to is the Long-eared Bat, which, next to the Pipistrelle, is perhaps the commonest species of all.

From the present aspect and condition of the parks it is evident, as might be expected, that the majority of the existing *feræ naturæ* belong to the feathered rather than to the four-footed tribes; and the number of birds, both resident and migratory, which may be detected there by a good observer is not a little remarkable.

Only a century ago the Kite used to build in London. In an unpublished letter from Pennant to a Mr. Turner, dated "August, 1777," the following passage occurs:—"I thank you for the young Kites from the Rook's nest from an elm tree in the garden of Gray's Inn Square. Their stomachs contained young frogs. The locality is interesting, but I find that the Kite has bred in Hyde Park in two instances."

Although the days have long since gone by when Kites used to carry off the offal from the streets of London, and build their nests in Hyde Park and in the clumps of trees in Gray's Inn, one of these birds was observed no longer ago than 1859 passing over Piccadilly.* Almost the only birds of prey still to be seen occasionally about London are Sparrow-hawks and Kestrels. The former are sometimes taken in the act of dashing at cage-birds when hung up near a window, three or four such instances having come to the writer's knowledge. In April,

* See *The Zoologist*, 1859, p. 6676.

1871, a pair of Kestrels had a nest in the cable attached to the anchor of the naval hero on the summit of the column in Trafalgar Square.

We have more than once observed a Peregrine Falcon passing over London, where, there is reason to believe, these birds occasionally make a temporary stay, frequenting the church-tops and roofs of public buildings, attracted no doubt by the pigeons, which furnish them with many a meal. A pair for many years frequented the top of St. Paul's, where it was supposed they had a nest. When the royal hawks were kept at the Mews, at Charing Cross, the "eyess" falcons were probably "flown at hack" in Hyde Park, but on this point no contemporary writer gives any information.*

Aubrey gives an anecdote related to him by Sir Edward Sherborne, of a Sparrowhawk belonging to Charles the Second. "Not long before the death of that king," he says, "a Sparrowhawk escaped from the perch, and pitched on one of the iron crowns of the White Tower, and entangling its leash in the crown, hung by the heels and died. Not long after, another hawk pitched on one of

* The royal hawks were kept at Charing Cross during many reigns (according to Stow, from the time of Richard II., in 1377), but they were removed by Henry VIII., who converted the Mews into stables. The name, however, confirmed by the usage of so long a period, remained to the building, although after the hawks were withdrawn it became inapplicable. But what is more curious, in more modern times, when the people of London began to build ranges of stabling at the back of their streets and houses, they christened those places "mews," after the old stabling at Charing Cross.

the crowns"—an event considered of ill-omen.*

Perhaps the most ancient birds now in London are the Rooks, numerous colonies of which exist, not only in the parks, but in other open spaces, and even in the gardens of private houses. The history of these rookeries, so far as could be ascertained, has been furnished by Dr. Edward Hamilton, in an article in *The Zoologist* for 1878 (pp. 193-199), since which some additional details have been published by Professor Newton.†

The history of the rookery in the Temple Gardens is rather curious. It is said to have been founded in Queen Anne's time by Sir William Northey, who colonised the place with birds from his estate at Epsom. "A bough was cut from a tree with a nest containing two young Rooks and taken in an open waggon from Epsom to the Temple, and fixed to a tree in the gardens. The old birds followed their young and fed them, and they remained and bred there. The following year a Magpie built her nest in the gardens: her eggs were taken and those of a Rook substituted, and in due course were hatched there.‡ This account, however, is at variance with the statement of Aubrey, who remarks:§ "'Tis certain that the rookes of the Inner Temple did not build their nests in the garden to breed before the Plague, 1665; but in the spring following they did."

* Aubrey's "Miscellanies," 1696. (Ed. 1784, p. 59.)

† *The Zoologist*, 1878, pp. 441-444; and Yarrell's "History of British Birds" (4th ed.), vol. ii. p. 290.

‡ This account was communicated to the writer by a son of the late Mr. Everest, who, in conjunction with Mr. Pownall, published, anonymously, in 1825, a History of Epsom.

§ Nat. Hist. Wilts., p. 64.

That Magpies formerly nested in St. James's Park, we learn from a story which has been preserved to us from Charles the First's time in connection with one of these birds. Amongst the numerous Frenchmen who flocked to this country in 1638, in the wake of Queen Henrietta Maria, was a certain M. Souscarrière, who, although a notorious cheat and gambler, had contrived to insinuate himself into good society, and came to London to recruit the health of his purse. He brought tennis-players, lute-players, and singers with him, as he said, to amuse the natives, and ere long gained large sums of money by gambling. On one occasion, however, he was cleverly overreached. For a long time he secretly practised to throw a tennis-ball into the nest of a Magpie in one of the trees in St. James's Park; and when he saw that he could manage it, he took a heavy bet with some unsuspecting gentleman that he would lodge a ball in the nest in a certain number of throws. Unfortunately for Souscarrière he had been observed practising this trick by another gentleman, who, the day before the bet came off, filled the nest with moss, so that the ball could not roll into it, and the Frenchman lost his wager, to the great amusement of all who were in the secret.*

The Carrion Crow is occasionally observed in the London parks; and we have more than once seen the Hooded or Grey Crow, in winter, in the Regent's Park—generally engaged in robbing the ducks of their food. On the 8th and 9th of November, 1874,

* Larwood, "London Parks," vol. ii. p. 77.

a Hooded Crow was seen feeding on the lawn of the Inner Temple Gardens.

A century ago Ravens were not uncommon in the London Parks. In a curious little volume, "The Universal Directory for taking alive and destroying Rats and all other kinds of four-footed and winged Vermin, by Robert Smith, Ratcatcher to the Princess Amelia, 1768," the author says:—

"I have often caught the London Ravens near twenty miles from home in warrens, where they will sometimes come after the young rabbits. By the London Ravens I mean those that generally frequent the outskirts of the metropolis, and live upon the filth lying there, grubbing up the dirt in order to get at their food, from whence the tips of their wings become of a dusky brown colour, occasioned by their wallowing in the dirt, by which means they are easily distinguishable from the country Ravens, which are as black as jet."

Jesse, in his "Gleanings" (2nd series, 1834, p. 33), has given an amusing account of a Raven which was taken from a nest on the top of an elm tree in Hyde Park, and which used to hop about familiarly amongst the workmen employed in the construction of the bridge over the Serpentine. This bridge was built in 1826. Ravens have been seen, however, since then in the London Parks.*

The Jackdaw makes himself at home in Kensington Gardens and Holland Park, living in holes in some of the old trees, and making excursions in all directions. His presence may often be detected when flying homeward with the Rooks by his smaller size and sharper cry.

Amongst the old trees in Kensington Gardens

* See "The Birds of Middlesex," p. 95.

both the Greater and Lesser Spotted Woodpeckers may be occasionally seen; the latter being the commoner bird of the two, although the former has been known to breed there. Both species have been noticed also in the Regent's Park.

Several naturalists have detected the Nightingale in summer in the Regent's Park; and of late years a favourite resort of this bird has been the Flower Walk in Kensington Gardens, whence its unmistakable notes have been poured forth in April and May to numbers of delighted listeners. Sky-larks sometimes visit Hyde Park, where we have occasionally both seen and heard them.

Few would expect to find in the great metropolis so sylvan a species as the Cuckoo, and yet this bird not only passes through town on its way to and from its summer quarters, but occasionally stays long enough to leave an egg to the care of some dupe of a foster-parent. In August, 1870, we observed a Cuckoo in Lincoln's Inn Fields; and in August, 1876, while passing from Bedford Row to Gray's Inn Square, we saw a Cuckoo fly across Gray's Inn Gardens and pass over Holborn in a southerly direction. It was flying so low that it only just cleared the tops of the houses. On the former occasion the strangeness of the sight suggested the following lines, which were pencilled on the spot:—

ON SEEING A CUCKOO FLY ACROSS LINCOLN'S INN FIELDS,
AUG. 4, 1870.

'Tis strange that midst the noise and din
Of such a place as Lincoln's Inn,
A cuckoo should be found to stray,
Yet 'twas the case the other day.

The well-known bird of greyish hue
 Just for a moment came in view,
 And pass'd across the spacious square
En route for purer country air.
 Perhaps 'twas afraid of being found
 By lawyers on their special ground,
 And lest they'd issue a "*ca sa.*"
 Thought it more prudent not to stay !

The Cuckoo has also been observed in Kensington Gardens, and in the Regent's Park.

An observant friend, who pays frequent visits in the early morning to the Botanical Gardens, Regent's Park, discovered that the Reed Warbler breeds there every summer; and in the nest of one of these birds, in 1872, he found the egg of a Cuckoo. The following summer he was much interested in observing a young Cuckoo sitting in the centre of a growth of large heracleums and being fed with caterpillars by a Reed Warbler. At the lake in the same gardens the Kingfisher is sometimes seen, generally in autumn, and occasionally makes a protracted stay. In August, 1863, a Kingfisher was seen frequently at the Ornamental Water in the Regent's Park.

Amongst the few observations of Gilbert White which relate to birds in London is one which has reference to the House Martin. He says: "I have not only seen them nesting in the Borough, but even in the Strand and Fleet Street; but then it was obvious, from the dinginess of their aspect, that their feathers partook of the filth of that sooty atmosphere."* Further on he says: "In London a party of Swifts frequent the Tower, playing and feeding over the river, just below the bridge; others haunt

* Letter XVI., to Daines Barrington.

some of the churches of the Borough next the fields, but do not venture, like the House Martin, into the close, crowded part of the town."*

Early in July, 1873, an immense flock of Swifts was observed passing over Hyde Park to the westward, at a height of about a hundred yards from the ground. It was estimated that there must have been 1500 or 2000 of them—a most unusual congregation for this species.

Before the greater part of the Scotch firs were cut down in Kensington Gardens, there were generally three or four pairs of Wood Pigeons breeding there every summer; and for several years up to 1878 a pair nested regularly in an old pollard poplar in the Green Park.

Did space permit, we might give particulars of the appearance of many uncommon birds (that is, uncommon for London) which have alighted at various times in different parts of the metropolis, and amongst which we should have to name the Partridge, Quail, Snipe, Woodcock, and Stork.

One day in the spring of 1874, as Mr. Maxwell Witham was crossing the Regent's Park, between Hanover Gate and the Zoological Gardens, a single Partridge flew past him within shot, and was marked down close to Holford House amongst the shrubs!

Snipe and Woodcock have been frequently picked up, and almost invariably in the vicinity of telegraph-wires, against which they must have flown when passing over the city at night. On the 26th Oct., 1869, Lord Lansdowne picked up a Jack Snipe under the wall of the Treasury Gardens, on the

* Letter XXI., to Daines Barrington.

Horse Guards Esplanade. It had flown against a lamp in the night, and fractured its skull. General Oglethorpe, who died in 1785, and who was considered the best shot of his day at birds on the wing, frequently killed Woodcocks, in company with his friend Carew Mildmay, on the ground where Conduit Street now stands.*

During severe weather strange wildfowl, such as Pochards, Scaups, and Coots, occasionally alight upon the lakes in the London parks; and now and then a Diver makes its appearance. We have observed the Little Grebe upon the Round Pond, in Kensington Gardens; and were not a little surprised one summer to find this bird nesting there, the nest, a floating, shallow structure, being moored to some aquatic plants at a distance from the shore.

At the periods of migration in spring and autumn Gulls and Terns occasionally visit the Serpentine, and never fail to attract attention, from the contrast which their snow-white plumage presents with the surrounding landscape.

To see all these and many other birds not named, the observer should be astir early, ere the noise and traffic of a busy day drives them to concealment, or, it may be, to the country. In these morning walks in town, the eye and ear may be surprised with rural sights and sounds which few would expect to meet with in the heart of a great city.

* See *Gentleman's Magazine*, July, 1785, and Pennant's "London."

ON THE FORMER NESTING OF THE SPOONBILL IN SUSSEX.

ALTHOUGH the Spoonbill, *Platalea leucorodia*, is generally classed amongst the rarer British birds, instances of its occurrence in this country in spring and autumn are not infrequent. This is more particularly the case in the eastern and south-eastern counties of England, where scarcely a year elapses without several of these birds being seen, and most of them unfortunately shot. Occasionally they arrive in small flocks, but are more often observed singly or in pairs.* This return year by year, with a certain amount of regularity, seems to indicate a lingering inherited impulse to revisit the spots where in former days their ancestors not only reared their

* In 1850 half-a-dozen Spoonbills arrived in Sandwich Haven during the first week in June, and afterwards betook themselves to Wingham Marshes, where several were eventually shot. (*Zoologist*, 1850, p. 2853.) The following year, on the 3rd October, three were killed out of a flock of six which had alighted in a field near Hailsham. (*Zoologist*, 1851, p. 3278.) Nineteen were seen at Newquay, Cornwall, during the third week of October, four of which were shot. (Bullmore, "Cornish Fauna," p. 28.) A flock of eight was seen at Horsey, near Yarmouth, on the 13th April, 1876, of which five or six were subsequently shot. ("Trans. Norfolk Nat. Soc.," 1877, p. 315.)



SPONBILLS IN A SUSSEX HERONRY.

young in safety, but were protected the while by Act of Parliament.

Records, however, of the former nesting of the Spoonbill in this country are extremely rare, and putting aside certain old statutes which provided for the protection of this species amongst others during the breeding season, and from which it is therefore to be inferred that the bird once nested here, I have not until recently met with any direct evidence on the subject, except that of Sir Thomas Browne, the celebrated physician of Charles the Second's day.

The testimony of this trustworthy observer on the subject is very clear. In his "Account of Birds found in Norfolk," written about the year 1668,* he particularly mentions, "the *Platea* or *Shovelard* which build upon the tops of high trees," and says, "They have formerly built in the Hernery at Claxton and Reedham; now at Trimley, in Suffolk. They come in March, and are shot by fowlers, not for their meat, but the handsomeness of the same; remarkable in their white colour, copped crown and spoon or spatule-like bill."

His description of the bird leaves no doubt as to the species intended.

Willughby, a contemporary and correspondent of Sir Thomas Browne, has described, in his "Ornithology," a young Spoonbill "taken out of the nest," and although he has not stated where the nest was found, it may well have been one of those referred to as being in existence at Trimley in Suffolk about

* See Sir Thomas Browne's Works. Ed. Wilkin, vol. iv., pp. 313-324.

four years before Willughby's death, which occurred in 1672.*

The record to which I now desire to direct attention is a century older, and, so far as I am aware, has not hitherto been brought to the notice of ornithologists.

In a MS. Survey of certain manors in Sussex, "taken by commandement of the Duke of Norfolk," and "begonne the xxvth daye of September, Anno xij^o Eliz. R." (1570), the following memorandum appears:—

"M^d that wthin half a furlonge of Halnaker parke pale on the west side thereof lyeth a parke called Goodwoode Parke; and by the northest parte thereof lyeth one other parke called Shelhurst Parke, distaunte from Halnaker pale one quarter of a myle. And on the north side of that pale lyeth one other parke called Estden, halfe a myle dystaunte. In the woods called the Weestwood and the Haselette, *Shovelers* and *Hérons* have lately breed, and some *Shovelers* breed there this yeere."

This curious MS., consisting of fourteen folios, is in the possession of Mr. Evelyn P. Shirley. The Survey in question, which was made by "Robt^e Harrys and John Dobbes, servauntes to the said Duke," is noticed in the ninth volume of the "Sussex Archæological Collections" (p. 223), but the contributor, the late Mr. M. A. Lower, not being an

* Sir Thomas died exactly ten years later. Willughby speaks of him (*op. cit.*, p. 286) as "my honoured friend Sir Thomas Browne of Norwich, a person deservedly famous for his skill in all parts of learning, but especially in Natural History."

ornithologist, has made no comment on the passage just cited.

Dallaway, in his "History of the Western Division of the County of Sussex" (vol. i., p. 174), thus describes the *locus in quo*:—

"East Dean is so called with reference to West Dean, from which it is disjoined by Singleton. It is a parish of larger dimensions, and nearly similar description, in point of soil and situation, in a narrow valley between the headlands formed by the range of downs by which this district of the county is intersected. It contains 4682 acres 2 roods and 33 perches from actual measurement,* with down and forest land in the same large proportion; and abounds in beautiful groves of beech wood. The confines are Singleton on the west, Cocking and Heyshot on the north, Up-Waltham on the east, and Eastham on the south. The village lies on the western extremity of the parish, about seven miles from Chichester [and the same distance south by east from Midhurst].

"Domesday includes this parish in Silleton, and gives no distinct description of it. In the 23rd of Henry II. the manor was held by William de Albini, Earl of Arundel, of the King *in capite*, as of the honour of the Castle of Arundel. It passed by partition, on the demise of Earl Hugh, to John Fitz Alan, whose descendants made a large park with a mansion there; and in the 18th of Henry VI. it was found to have been a member of the jointure settled

* Arable, 1896 acres 2 roods 2 perches; Down, 2076 acres 3 roods 29 perches; Woods, 691 acres 32 perches.

upon Beatrice, relict of Thomas, Earl of Arundel, who died in 1414 without issue. Having devolved to John, Lord Lumley,* it was by him for the first time aliened by sale, in 1589, to Peter Garton, of Gray's Inn, London, who was afterwards knighted.

"Selhurst Park, containing 886 acres, descended to Philip, Earl of Arundel; and in 1797 was transferred by sale to the late Charles, Duke of Richmond, by the late Charles, Duke of Norfolk.

"In the family of Garton, the manor appears to have been vested considerably above a century, when it was inherited by Garton Orme, Esq., of Peterborough, in pursuance of the will of the last William Garton, Esq., who died without issue.

"In 1752, in consequence of an Act obtained in 1750 for that purpose, the manorial property was sold to Sir Matthew Fetherstonhaugh, Bart., as held of the paramount manor of Stanstede,† who exchanged it with Charles, the late Duke of Richmond, for the estate of Lady Holt Park, in the parish of West Harting; and it has passed as the other settled estates of that noble family. Various small farms have been subsequently added to it."

That the species referred to in this Survey is the Spoonbill (*Platalea leucorodia*) and not the Shoveller Duck (*Anas clypeata*) seems clear, for several reasons. In the first place, "Shoveller," "Shoveler," "Shovelard," and "Sholarde" are so many forms of spelling the old name for that species, as clearly identified by Sir Thomas Browne. In the second

* An ancestor of the present Earl of Scarborough.

† Sold for 12,000*l.* See also Horsfield, "History and Antiquities of the County of Sussex," vol. ii., pp. 79, 80.

place, the birds in question were nesting "in a wood," where the Shoveller Duck would not be found at any season. And further they were breeding in company with Herons, a habit not uncommon with the Spoonbill, as formerly observed in Norfolk, and elsewhere.*

As a curious connecting link between these two records, it may be mentioned that Sir Thomas Browne, when writing of the "hernery" in Norfolk, knew an old man who might have seen the colony in Sussex, for he "wayted on the Earle of Leicester when Queen Eliz. came to Norwich, and told mee many things thereof."† Now Queen Elizabeth visited Norwich in 1578, or eight years after the date of the Sussex Survey.‡

* "In a certain grove, at a village called Sevenhuys, not far from Leyden, in Holland, Spoonbills build, and breed yearly in great numbers, on the tops of high trees; where also build Herons, Night-ravens (Night Herons), Shags, Cormorants, &c. In this grove every sort of bird (as they told us) hath its several quarter, where they build all together. When the young ones are ripe, those that farm the grove, with a hook on the top of a long pole, catch hold of the bough on which the nest is built and shake out the young ones, but sometimes nest and all down to the ground." (Willughby, "Ornithology," p. 289.) In January, 1871, on a small island at Scilly, known as "Hedge Rock," and frequented by Herons, a Spoonbill was observed for some considerable time. In the hope that it might prove to be a great white Egret (its species being at first undeterminable at a distance), it was unfortunately shot to satisfy the curiosity which prevailed concerning it, and was then found to be a Spoonbill.

† Letter to his son Edward, dated 1st November, 1680 (Works, vol. i., p. 290). In this letter mention is made of a poor woman, who was then living, at the age of 105, and one John More, who had recently died at the age of 102.

‡ "She came on horseback from Ipswich, by the high road to Norwich, in the summer time; but shee had a coach or two in her

In those days, it appears, Spoonbills were esteemed good eating, and were served up to table with many other fowl, which are now discarded as little better than carrion.

Amongst the Privy Purse Expenses of King Henry the Eighth, between the years 1529 and 1532, the following entry occurs in November, 1531:—

“Itm. the x daye of Novembr, paied to a s'vnt of my lorde Cobhams, in rewarde for bringing of Shovelards to the King's grace, iiijs. viiij*d*.”

For this sum the man may perhaps have brought nine birds, for we learn from another source that the value of a “Shovelard” in those days was sixpence. In the Earl of Northumberland's Household Book, which contains entries made between the years 1512 and 1525, the following occurs:—

“Item. Sholardes to be hadde for my Lordes owne Mees at Pryncipall Feestes, and to be at *vjd*. a pece.”

Not only was the bird eaten “at pryncipall feestes” in those days, but during the breeding season it was protected by Statute like other wild fowl.

In 1534 an Act of Parliament was passed entitled “An Act to avoide distruction of Wilde fowle,” whereby, amongst other things, it was enacted that between the first day of March and the last trayne. She rid through Norwich, unto the bishop's palace, where she stayed a weeke, and went sometimes a hunting on horseback, and up to Mushold (Mousehold) Hill often, to see wrestling and shooting.” (*Tom. cit.*, p. 289.)

day of June, "no maner of person or persons shall presume by day or by night, willyngly to withdrawe, purloyne, take, distroye or convey any maner of egges of any kinde or wildfowle, from or in any nette, place or places, where they shall chaunce to be laide by any kinde of the same wildfowle, upon peine of imprisonment for one yere, and to lese and forfait for every egge of any Crane or Bustarde, so distroied, purloined, withdrawne, conveide, or taken from any nest or place xx. pence, and for every egge of every Bittour, Heronne or *Shouelarde* viiid., and for every egge of every Malarde, Tele, or other wildfowle, one penie."

An attempt has been made by recent legislation to afford the Spoonbill that protection during the breeding season which was formerly accorded to it by ancient statute; but it is feared that this protection has come almost too late. So long an interval has elapsed since any nest of this bird has been seen in England, and so many changes in the progress of agriculture have affected its former haunts, that the most ardent ornithologist can scarcely hope to see this fine bird re-established in its old position, and breeding in our heronries. On this account any record of its former nesting in this country is worth preserving.

A SPRING RAMBLE IN FRANCE.

IT was a new sensation, being waked at early dawn in a French country house by the beautiful notes of the Golden Oriole. At the pressing invitation of a friend, I had agreed to spend a week with him at his château, situated about half-way between Paris and Orleans; and the month of May was fixed upon as being the time of year most favourable for natural-history observations. "We will show you," he said, "some splendid birds—birds that you do not see in England; and you will hear some music in our woods that will delight you." I longed to be there, and could ill conceal a restless anxiety on the subject, as the thoughts of all we were to see and do filled my mind by anticipation. At length the day was fixed for quitting Paris, and I started with a light heart to find greater attractions in the woods and fields than I had left behind me in the city, with all its amusements. With a kindness and consideration which I shall never forget, my host and hostess had determined to make my visit to them as enjoyable as possible, by placing a keeper at my beck and call, and allowing me to be perfectly independent in regard to hours for meals. It was in vain for me to say, through politeness, that of course I would be in punctually for dinner. They

would not hear of it. "Stay out," they said, "as long as you please. If it is not convenient, do not think of being punctual. We will dine without you; you can dine when you please." I had almost said in reply, "I shall not want any dinner"—such a secondary consideration was it in comparison with the object which I had in view; but this was more than could have been expected, and so I merely bowed with inward satisfaction at the arrangement thus made. Was it surprising after this that, between breakfast at six and dinner at seven p.m., my whole day was spent in the woods, meadows, or marshes?

The keeper had a busy time of it. It was something new for him to be at the door at six instead of ten, and to get home at seven instead of four or five; but the novelty of the excursions I think pleased him, and after a bit he seemed really to enjoy it. But the reader will say, "What could you want with a keeper in May? There is no game to be killed at that season." True, but I was not in search of game. My object was to make acquaintance with Hoopoes, Golden Orioles, Crested Larks, Great Reed Warblers, and other birds which rarely show themselves in this country, but which in the neighbourhood of which I write are not uncommon. The keeper was useful, not only as a guide to the best localities for the species I named to him, but also as enabling me to settle any questions of trespass which might arise in the course of my peregrinations over adjoining estates. For my kind host, not content with giving me the run of his own property, had considerately arranged that I

might ramble over his neighbours' land, and it sometimes became necessary to support my own explanations to inquiring keepers by reference to the trusty attendant of my friend. Methinks I see him now, as, with cap in hand while wiping the perspiration from his forehead, he used to exclaim "Mon Dieu, qu'il fait chaud, n'est-ce pas?" His "get-up" was most extraordinary—at least it seemed so me, although it in no way differed from that of other keepers in the district. Grey trousers tucked into long buff boots, such as one sees worn on the stage by cavaliers of Charles I.'s time; a bright blue blouse confined to the waist by a belt; a broad-brimmed, high-crowned felt hat; and a most elaborate game bag, adorned with much network and fringe. I had almost forgotten to mention an important item in the shape of a broad leather belt worn diagonally across the breast, in the centre of which is a silver plate, on which is engraved in large letters "Garde Particulière de M. So-and-So." This proves a useful badge upon occasions, for on meeting a French keeper you know at once who he is without having to ask him, and this saves a good deal of fencing and unnecessary explanations.

It was most amusing to observe the meeting between my friend's keeper and another when we chanced to encounter one. The stranger would come up, "dressed in a little brief authority," and ask almost sternly of François whether "*Monsieur ne sait pas que la chasse est fermée?*" upon which the other would explain that Monsieur was not in quest of game, but was particularly anxious to get a "*loriot*," or a "*bec-fin rousserolle*," or whatever

it might be; that Monsieur had come from England on purpose, and that it would be as much as his place was worth to let him go back without it. On this the stranger would look incredulous at first, but on production of a specimen would smile, raise his hat, with a "*Bon jour, Monsieur!*" and, as he turned away, mutter perhaps to himself, "*M' Dieu, comme ils sont drôles ces Anglais!*" On one occasion, while a little conversation of this kind was going on, I was lighting a pipe, leaving François to do the talking, when I saw the other keeper, although he did not think I observed him, touch his forehead significantly, and make a gesture, which seemed to me to imply, "Do you think he is quite right in his head?" He could not understand how one could take so much trouble to achieve what appeared to him so small a result. To come all the way from England to procure a few small birds, which he said were "*assez communs,*" seemed to him the height of absurdity, and what I might term enthusiasm he evidently considered lunacy. However he might regard it, it was at least a harmless kind of lunacy; for, like a certain noble lord who caused a notice to be put up at the commencement of what promised to be a very bad game season, I "neither intended to shoot myself, nor any of my tenants!"

The inquiries of the curious were soon satisfied, and eventually I always had my own way.

My programme was generally breakfast at six, walk, shoot, and collect all day, dine at seven, and, after a cigar in the garden with my host and a cup of tea with Madame, skin and preserve the birds I

had procured until bed time. It was a long day truly, but a pleasant one withal, and I was never the worse for taking only six hours' sleep.

The nights were so sultry that I was compelled to sleep with my window open, and, notwithstanding fatigue, was often kept awake by the thought of new adventures on the morrow. Another circumstance which tended to retard sleep was the extraordinary noise made by the frogs. Their loud croaking in chorus resembled the noise of a distant railway train, and was heard distinctly at the house, although, as I subsequently ascertained, the creatures were in a pond at least two hundred yards away.

Long before six on the morning after my arrival, I was awakened by a perfect chorus of birds; Black-cap, Nightingale, Thrush, Wood Pigeon, Chaffinch, Starling, and Magpie were all recognised; but what pleased me above all was a beautiful mellow whistle, which I took to be that of the Golden Oriole, and in less than an hour afterwards I found that I was right in my surmise, for on walking through the woods which flank one side of the house, I had the pleasure of seeing for the first time alive several of these beautiful birds. They were very shy, and kept to the tops of the oak trees, but by proceeding cautiously I managed to get near enough to see and hear them well. Their note is really splendid, so mellow, loud, and clear—something of the Blackbird's tone about it, but yet very different; while in their mode of flight and perching they reminded me of a Thrush. After a long search I at length found a nest, placed at the extremity of a thin bough, and at

the top of an oak tree about sixty feet up. There were no branches for more than thirty feet, and it would have been almost impossible to reach it without assistance. I therefore marked the spot, and determined to get a long ladder a little later and try and take it. The keeper informed me that it was early yet for Orioles' eggs, and so I left the nest for the last day of my stay here. In the afternoon I went with the keeper to the Parc de Marolles. We could hear the Orioles (or Loriots, as they are here called from their note) singing loudly in the recesses of the woods, but the foliage was so thick, and they kept so much to the tops of the trees, that it was almost impossible to catch sight of them. Their greenish-yellow feathers, too, harmonised so well with the leaves that it rendered them still more difficult to see. Following the direction of the notes, I continued to make my way through the underwood as noiselessly as possible, peering through the branches, and striving in vain to catch sight of a bird. For a long time the sound seemed to be as far away as ever, or as I advanced it receded. The sun was broiling hot, and the exertion of forcing my way through the underwood and straining my neck forward in my endeavours to get a sight of the bird put me in a profuse perspiration. The result of about three hours' work was that I finally succeeded in getting three shots at long intervals, and secured a pair of Orioles—a young male and an old female. Unfortunately I had no shot at the time but No. 5, the consequence of which was that the birds were hit very hard. However, I managed to preserve them both, and thought myself lucky, under the cir-

cumstances, in getting them. Subsequently, however, I got others. I found the stomachs of these birds crammed with caterpillars of several species, and can well understand the good they do in young plantations by ridding the trees of these pests. The colours of the soft parts in these birds, as noted by me at the time, were as follows: Iris reddish hazel, bill brownish flesh-colour, legs and toes pale lead-colour. Here I shot at a Jay, which paid the usual penalty for its incautiousness. It was, however, in such ragged plumage that I did not take the trouble to skin it. The keeper told me that when the Orioles come from Spain in the spring they are in fine plumage, but that they moult as soon as they arrive, and that it is almost impossible to get hold of a fine old male in the yellow and black plumage until about August. This seemed strange, for the result of a spring moult is generally the finest plumage of the year, and, although he was right with regard to the difficulty of getting an old yellow male, I differed with him as to the reason of it. The Crested Lark (*Alauda cristata*) was by no means uncommon in this district, and, though often seen in the fields, I noticed it more frequently in the roads, dusting itself after the manner of the common Skylark, or picking up odd grain and grit. In the woods of Marolles I saw and heard the Great Spotted Woodpecker several times, but I was so intent upon stalking the Orioles that I did not like to shoot at anything else for fear of disturbing them. The note of *Picus major* is something like "pic-pic-pic-pic-pic," uttered loudly and rapidly. Frequently, after climbing a tree in the true woodpecker fashion, I saw this

bird dart to the top of an oak and there hang like a Titmouse, when, after one or two pecks, no doubt at caterpillars, it would shoot down like a stone with half-closed wings to the foot of some other tree, when it would ascend as before. When hanging from a small branch at the top of a tree, the bright carmine feathers of the under tail-coverts showed in fine contrast to the black and white plumage of the bird and the green leaves which surrounded it. The number of Nightingales in these woods was something wonderful. They sang loudly all day long, as did also the Blackcaps; and when at the same time the notes of the Oriole, Blackbird, Chaffinch, Yellowhammer, and other birds were heard, the music was almost deafening. I saw but little game on this day—not a single Pheasant, and but few Hares. The Rabbits appeared to have been almost all killed off, for I only saw one. The note of the Quail I heard frequently, but except on one occasion, did not see the bird. On the occasion referred to, we were walking through a clearing on the edge of a wood, when I called the keeper's attention to the note of a Quail. He inquired whether I would like to see it, and, on my replying in the affirmative, he told me to stand behind a tree while he got behind another. Taking a "call" from his pocket, he then gave the note of the Quail to perfection; the bird replied. Again he called, again the bird answered, and finally it ran out into an open space in the wood, within shot of where I stood. The keeper was very anxious that I should at once make sure of it on the ground, calling out "Tirez, tirez!" and he seemed quite surprised at my pre-

ferring to walk it up and take a flying shot. I explained that in England we never shoot feathered game on the ground, but always on the wing. Strange to say, the Red-legged Partridge is not found in this part of the country at all, only the common Grey Partridge; but they say there is a smaller race of the latter, which is only found on the hills, and which migrates. I saw a Hoopoe to-day just out of shot. It flew over the park wall, so that I could not mark it down, or follow it without going round about a mile to the gate.

Next day, after breakfasting about six o'clock, I started with the keeper to walk to Fontigny, about five miles off. Here there is a good marsh, and a little further on some fine woods. I consequently expected to fall in with some rare birds. On calling on the proprietor with a note from my friend, to ask permission to shoot in the marsh, I learnt, to my disappointment, that he was in Paris, and no one could give leave in his absence. I further learnt that he was exceedingly particular about shooting out of season, and would be more so at this time of the year, as the young Wild-ducks were all hatched. On one of the larger pools in this marsh I saw a pair of Wigeon, and the keeper told me that a pair or two remain to breed here every year. This seemed rather far south for this bird to nest. I did not see a single Snipe; they never remain to breed here. Several broods of young Wild-ducks, with their mothers, scuttled away into the rushes as we advanced, and now and then a fine old Mallard sprang up and flew away. I only saw one Heron, and, with the exception of Coots and Moorhens, this

was the only wader to be found in that marsh. Once I caught sight of a small brownish-looking bird swimming amongst the reeds, and from its size and movements I took it to be the Spotted Crake, but from the short sight I had of it, I could not be quite sure. In this marsh I noticed a great number of dragonflies (which are here called *démoiselles*), many of them most beautiful in colour, and I regretted that I had not a net to take some of them. With my hat I managed to capture about half a dozen, but they were somewhat injured in consequence. Here I saw and heard for the first time the Great Reed Warbler. This bird, as well as the Sedge Warbler, was tolerably common, and both kept up an incessant noise all day. I was anxious to shoot one of the larger kind, in order to examine it more closely, but I found this no easy matter. It is an exceedingly shy bird, and keeps low down among the reeds, seldom exposing itself upon the top of a reed or flag stem, and then only for a second or two. Consequently I had great difficulty in procuring one. Only one chance, indeed, offered itself. This was a flying shot, and I was lucky enough to drop the bird just before it reached a patch of reeds. But then it was in the water, about forty yards from the shore, and the question was how to get it. A retrieving spaniel which we had with us would not go in for a long time, and then only swam for a few yards and turned back. This he did several times, after great persuasion, and on our throwing in pieces of turf, which unfortunately crumbled to pieces and would not carry far enough. I was determined to have the bird, even if I had to swim out for it myself, and

accordingly I had pulled off my coat preparatory to stripping, when by chance the keeper found some stones at a little distance, and with these we were enabled to throw close to the bird, and after a deal of trouble the dog at length caught sight of it, and brought it to the bank. It was of course in a deplorable state, somewhat shattered with No. 5 shot, saturated with water and blood, and all dragged and disfigured. With the assistance of a reed and the sun, however, I managed, after an hour's work, to get it thoroughly dry and in order again; and when I got home I washed and dried it again, and skinned it, making a much better job of it than I could have hoped for under the circumstances. The colours of the soft parts in this bird were: iris yellowish brown; bill horn colour, base of under mandible pale flesh colour; inside of mouth orange; legs and toes greyish flesh colour, soles of feet pale greyish green. The stomach contained remains of beetles, and a large dragonfly. This was the only bird of the kind which I could get at the time; but I subsequently renewed acquaintance with it in Belgium and Holland, and procured several specimens. The Flemish name for this bird, "*karekiet*," aptly describes its note. All day long you may hear it, *Karekiet, karekiet, Kara-kara-karakiet.*" In the same marsh I shot a specimen of the Marsh Warbler, though unfortunately it was too shattered for preservation. The legs of this bird were nearly yellow, but in other respects it was like a Reed Warbler. Leaving the marsh, we then struck into the woods, and were soon in the midst of song again. The Orioles sang loud, and

the Nightingales even louder, while the Blackcaps, Chiff-chaff, Great Tit, Blackbird, and other choristers combined to swell the burst of music which was poured forth on all sides. I found several nests of Turtle-doves, and a Mistletoe Thrush's, on which the old bird was sitting. It was placed so low down in the fork of a tree that I could touch the bird with my gun. I did not, however, disturb her, but passed on in the hopes of meeting with an Oriole, and above all a Hoopoe. The former I could *hear*, but it was a long time ere I could see, and longer still ere I could *shoot* one, but I was at length successful in bagging two: and, as if to crown my success and complete perhaps the chiefest object of the day's excursion, I fell in with a Hoopoe, marked it down in a roadway where I had a good opportunity of observing its movements, and finally, after making my observations, stalked and shot it. In its actions on the ground I thought it more nearly resembled the Rook than any other bird I could think of at the time; the same stately tread and gentle nodding of the head, every now and then stopping to pick up something. It did not carry the crest erect, but inclining backwards, and seemed less sprightly in its movements generally than I had previously supposed. On the wing it at first reminded me of the Jay, the principal colours being the same—viz., black, white, and pale cinnamon brown—but the distribution of colour is different, and the flight is not so rapid, and more undulating. The wings are large for the size of the bird, and, the first quill feather being much shorter than the second, the wing has a rounded appearance, which

makes the flight look heavier. The bird in question was in fine plumage, and proved on dissection to be a female. I had hardly walked thirty yards from the spot where the bird fell, when curiosity prompted me to look into a hole in an old stunted tree. It was full of moss, and on inserting my fingers I found a single egg, which to my delight was that of a Hoopoe. This I carefully packed up, and proceeded to examine the nest more carefully. The cavity had two entrances, both on the same side of the tree, and, as they were not more than five feet from the ground, I could easily look into the nest. Had it not been so far from home, and my plans were all made for excursions in another direction, I should have left the single egg for three days, on the chance of finding more; and, besides this, I was further influenced by the consideration that the bird which I had shot was probly the owner of the nest, and that I had therefore "killed the goose with the golden eggs." Under these circumstances, therefore, it was better to secure the single egg. While I was thus engaged, the keeper had strayed into the wood, and before long I heard the report of his gun, and soon after a second. On going to meet him, I found he had killed a Jackdaw and a couple of Turtle-doves, the last two at one shot. This I was sorry for, as I did not want any of them. We saw a Hawfinch or two to-day, but could not get a shot, as they were very shy. We' had a long but pleasant walk home, and I just got back in time for dinner. Before going to bed I skinned the Hoopoe and the Great Reed Warbler, but was very sleepy before the last was finished.

The next morning, after breakfast, I walked to the Buttes Itteville, and the Parc of Baron de Perignon. In the Buttes are still found a few Wild-boars, although we did not come across one to-day. Indeed, at this time of year it is quite a chance, for the leaves are now so thick, and the boars keep in the most retired situations. This parc is one of the prettiest I have seen—well wooded, with a river winding through it, and of such large extent that it is easy to lose sight of the house altogether, and to lose oneself entirely, except for the names of the rides and paths, which are written up on notice-boards at the corners. The baron's keeper was an intelligent sort of fellow, and I got a good deal out of him with regard to birds. He told me that the Great Grey and Woodchat Shrikes were often seen in the parc, but that, as they fed early in the morning, and were at rest during the heat of the day, it was not easy to find them at this time of day. He said he should be almost sure to see a Hoopoe; and we could already hear the Orioles whistling at no great distance. Before we had proceeded far, the keeper suddenly pointed his gun to the top of an oak and fired, when a Tree Sparrow fell to the ground. It was a male bird in good plumage, and so I took care of it. Walking along the river bank, my attention was attracted by a bird flying across the open on the other side of the river. From its size and general appearance I exclaimed, "*Voilà, une pie-grièche grise!*" (a Grey Shrike), and the keeper said I was right. We at once devised plans to obtain it, and the first step was to get the boat and cross the river. It was arranged that I should cross and endeavour to get

the shot, approaching from the furthest side; so that in the event of my disturbing the bird before I was near enough, or missing my shot, I might drive it out on the river side, and the chances were that it would fly across to the nearest clump of trees, close to which the keeper was to stand on the chance of a shot. This arrangement we carried out exactly. I carefully approached the tree in which I had seen the bird alight, but before I could get within shot it flew out on the other side, crossed the river as we had suspected, and in another moment was stretched lifeless on the grass by a well-aimed shot from the keeper. In half a minute I had run down to the river, recrossed in the boat, and was handling the prize. To my surprise, I found it was the Lesser Grey Shrike, *Lanius minor*, and not *Lanius excubitor*, as I had at first suspected. Carefully wrapping it up in paper, I followed the keeper to a tree which overhung the river, where he told me that a Green Woodpecker had a nest. The hole was a good height from the ground, and on the side of the tree nearest the river, and not easy to reach. On rapping the bole with the butt end of my gun, the hen bird darted out of the hole and flew away. I might easily have shot her, but had no wish to kill any birds at this time of year unless they were likely to be of real use to me; and so *Picus viridis* escaped. She probably had eggs, but we could not reach the nest to ascertain for certain. A little higher up, at a bend of the river, we came upon a deep pool, and, as the day was very sultry, a bath was most refreshing; accordingly I plunged in and enjoyed a long swim. After I had dressed, we crossed a large

tract of flat ground covered with coarse grass, and here and there only a small bush growing. A Common Bunting flew across and perched on one of these bushes, and the keeper would have it that it was a rare bird. It was in vain for me to tell him that I knew the bird well, and that it was very common—at least in England. He was determined to stalk it, and after following it for a long distance at length shot it. After leaving the plain we recrossed the river, and proceeded towards the centre of the parc, attracted by the note of the Hoopoe, which we heard frequently during the day. It sounds like “hoop-poop,” “hoop-poop,” very clearly and loudly uttered; and, from what I was able to observe of one of these birds within thirty yards of me, the old story about the way in which the Hoopoe makes the strange noise which has obtained for it its name, is a mere fable invented by the ancients, without any foundation. The grass was still uncut in the parc, and as we proceeded I caught sight of a Hoopoe feeding on one of the paths. By walking in the long grass which concealed the path at a little distance, I was able to approach very closely, and peeping over the grass could see the bird walking about with stately tread, nodding its head and calling, now and then stopping to pick up something from the path. Before I was tired of watching it, it rose and flew away; but the spirit of covetousness prompted me, and before it was out of range my shot had overtaken and laid it low upon the grass. It was a beautiful bird, the colour of the soft parts like those noticed in the female Hoopoe shot the other

day, viz., iris black, bill horn colour, the base of the under mandible pink, legs and toes flesh colour. The stomach was filled with the broken wing-cases and remains of small beetles. The report of the gun startled some Wood-pigeons, which flew across, though out of range, and the Hoopoe which we had heard in the wood ceased calling. Just as we entered the wood a large stag beetle (*Lucanus cervus*) flew across, and I knocked it down with my hat. After examining it, I let it go again, as I had no means of carrying it home uninjured. The keeper then led me to a little seat in the wood well screened with bushes, and designed as an ambush from whence to shoot vermin, and he soon gave me a good illustration of the method pursued for that purpose. Placing the back of his left hand to his mouth, he imitated to perfection the squeal of a rabbit. This was repeated at intervals, while we kept perfectly quiet and concealed; and before very long we heard a low chatter, and, looking up, saw a Magpie perched on the top of a small tree close by. In an instant the keeper's gun re-echoed through the wood, and "Mag" came tumbling down with a broken wing, and screaming loudly. The keeper told me that in this way he had killed scores of Magpies. We had now worked round the parc towards the keeper's cottage again, and here I saw a couple of live Buzzards, one of which had been shot and the other trapped. One was an uncommonly fine Honey Buzzard, in colour almost uniform chocolate brown; the other was a Common Buzzard, with more white about it. The latter had lost his tail, and looked rather ragged; but the

former was in splendid condition, and very wild. The baron's keeper, seeing the interest I took in the birds, and in listening to the history of their capture, offered to make me a present of the Honey Buzzard. Had I been nearer home, and on the eve of starting, I should have accepted it; but the idea of having to travel with it and feed it for a week deterred me from doing so. The keeper seemed much disappointed at my not accepting it; but I explained my motives, so as not to offend him, and then thanking him, and wishing him good day, I turned homeward, having about nine miles to walk before dinner. On reaching home, a cold bath, and a change soon made me feel comfortable, and, after dinner and a cigar in the garden, I sat down to skin the birds collected to-day—a task which was not completed till 1.30 a.m. On June 3, after breakfast, I went to the wood near the house to take a Golden Oriole's nest, and a difficult matter it was. The nest was placed in a slender fork at the extremity of a thin bough of an oak tree, and almost at the top. The oaks here are not, as in England, sturdy and short, with wide-spreading heads, but tall and slender, running up for a great height without any branches, and very tiring to climb. I was obliged to saw off the branch before I could look into the nest, and, after a deal of trouble, when I at length got it down safely, I found to my disappointment that it contained three young birds instead of eggs. Could I have ascertained this without cutting off the branch, I should certainly have left them where they were; as it was, there was no help for it but to take them. They were apparently about

three days old, and the hen bird left the nest just before I reached it. I fed them on maggots, and covered them with cotton wool to keep them warm ; and in this way I kept them alive until the middle of the following day, when I placed them in the hands of Fairmaire, of Paris, for preservation. He stuffed them, and replaced them in the nest which I had cut down, upon the oak branch on which it was placed ; and very natural they looked, forming at the same time a pretty souvenir of my spring ramble in France.

Long did the mellow notes of the Oriole ring in my ears, and I have often thought since how pleasant it was to awake at early dawn in that quaint old-fashioned room, through the open casement of which that song came wafted on the morning breeze. It seemed to say :

Lori, loriot

Je suis le compère Lorient

Qui mange les cerises et laisse les noyaux.

THE SWALLOW'S-STONE AND SWALLOW'S-HERB.

BETWEEN the so-called "Swallow's-stone" and the plant named "Swallow's-herb" there is this remarkable connection, that both were considered to be sovereign remedies for all diseases of the eye. An inquiry into the history of each of these productions leads to some curious information.

Mr. G. A. Lebour states* that an examination of some Swallow-stones collected in Brittany, where they are held in great estimation by the peasants, showed them to be the hard polished calcareous opercula of some species of *Turbo*, but that their worn state precluded an identification of the species. He adds that their peculiar shape, one side being flat and the other convex, admits of their being pushed under the eyelid, across the eyeball, and thus they remove any eyelash or foreign substance which may have got in the eye; but that further than this they have no curative power.

The popular belief on this subject, current amongst the peasants in Brittany, is no doubt of some antiquity, and the allusion which Longfellow has made to it in his beautiful poem of "Evangeline" would seem to confirm this impression, inasmuch as

* *The Zoologist*, 1866, p. 523.

we may assume that the legend found its way into Acadia through the French colonists, who were the first to settle there.

“ Oft in the barns they climbed to the populous nests
 on the rafters,
 Seeking with eager eyes that wondrous stone which
 the swallow
 Brings from the shore of the sea to restore the sight
 of its fledgings ;
 Lucky was he who found that stone in the nest of the
 swallow.”

EVANGELINE, Part i.

There is this noticeable difference, however, between the current opinion in Brittany and the popular belief in Acadia, as expressed by Longfellow, namely, that in the former case it is the *finder* of the stone in the Swallow's nest who is benefited; in the latter it is the sight of the “*fledglings*” that is thereby restored.

Eugène Rolland, in his excellent work, “*La Faune Populaire de la France*,” cites several passages* from French writers, to show the prevalence in parts of France of the popular belief concerning Swallow-stones. Thus: “*L'hirondelle n'a pas à craindre la cécité ; elle connaît une pierre sur le bord de la mer qui la guérit. Pour avoir cette pierre qui est un trésor, voici comment il faut procéder. On crève les yeux à un petit de l'hirondelle ; celle-ci va à la recherche de la pierre. Une fois de retour, quand elle a pratiqué l'opération, elle s'occupe de cacher son talisman en un endroit où il ne puisse jamais être découvert. Mais si l'on a eu soin d'étendre sous son nid un morceau d'étoffe écarlate, l'hiron-*

* Tome ii ;—*Les Oiseaux-Sauvages*, p. 317 (1879).

delle jetera sa pierre dessus, car abusée par la couleur, elle croira la laisser tomber dans les flammes."

Another historian of Normandy observes: "Si on crève les yeux à un petit de l'hirondelle, la mère va chercher une petite pierre sur le bord de la mer, avec laquelle elle lui rend la vu. Celui qui prend cette pierre dans le nid possède un trésor merveilleux."*

The efficiency of this stone consists, it is said, in its being a sovereign remedy for ophthalmia: "On crève les yeux aux petits dans le nid pour trouver au fond de ce nid les pierres que la mere apporte pour les guérir, pierres souveraines contre l'ophthalmie."†

On referring to ancient authors one is struck with a remark which is variously expressed, to the effect that the Swallow, for a similar purpose, makes use of a plant which it brings to its nest.

This plant is the well-known Celandine (*Chelidonium majus*) known also as Swallow-wort, and Tetter-wort. It belongs to the *Papaveraceæ*, or Poppies, and may be found growing about country cottages, near old walls, and in waste places, to the height of about two feet. It is brittle, slightly hairy, and full of a yellow fœtid juice, bearing small yellow flowers which expand in May in long-stalked umbels. The leaves are large, of a sea green tint, and are deeply notched at the edges into rounded segments. The name *Chelidonium* is undoubtedly derived from the Greek *χελιδόν*, a Swallow, but the reason for its being thus named is not so obvious. Some authors suggest that it was so called on

* Bosquet, "Normandie Merveilleuse."

† Pluquet, "Contes Normandes."

‡ Lemetteil, Soc. des amis des Sci. Nat. 1867, p. 145.

account of its flowering about the time of the arrival of the Swallow, while others assert that it derives its appellation from being the plant medicinally made use of by that bird.

Litré gives the derivation from “*χελιδών*, *hirondelle*, à cause qu'on disait que l'*hirondelle* se servait de cette plante pour rendre la vue à ses petits.”

Another version of the story about the plant is given by Rolland to the effect that it was brought by the bird to its nest, “*pour rendre fécond de nouveau ses œufs*,” &c.*

The belief that quadrupeds and birds possess a knowledge of plants which will cure a disease, or benefit them in some way, is very ancient, and this particular plant is alluded to by old authors as being especially selected for the purpose. Thus Pliny observes,† “*Animalia quoque invenire herbas imprimisque *Chelidonium*. Hac enim hirundines oculis pullorum in nido restitunt visum, ut quidam volunt, etiam erutis oculis.*” And the same author further remarks, “*Chelidonium visui saluberrimam hirundines monstravere vexatis pullorum oculis illa medentes.*” Ælian also (lib. iii. cap. 25), says: “Young Swallows, like whelps, are late endowed with sight, but on the application of a certain herb by their parent, they begin to see; and after some rest leave the nest to seek their food.” He adds that “men, though longing for this herb, could never find it.”

Gerard, referring to this plant, in his “*Herball, or Generall Historie of Plants*,” 1597, observes:—“It

* Rolland, *tom. cit.* p. 319.

† *Hist. Nat.* fol. 1530, p. 461, xv.

is called Celandine, not because it then first springeth at the coming in of the Swallowes, or dieth when they goe away; for as we have saide, it may be found all the yeare; but because some hold opinion that with this herbe the dams restore sight to their young ones when their eies be out, the which things are vaine and false; for Cornelius Celsus in his sixt booke doth wnesse that when the sight of the eies of divers young birdes be put foorth by some outward meanes, it will after a time be restored of itself, and soonest of all the sight of the Swallow, whereupon (as the same saith) that the tale or fable grew, how, thorow an herbe the dams restore that thing, which healeth of itselfe: the very same doth Aristotle alleadge in the sixt book of the Historie of Liuing Creatures; the eies of young swallows, saith he, that are not fledge, if a man do pricke them out, do grow againe, and afterwards do perfectly recover their sight." Subsequently when speaking of the "virtues" of the plant the sage Gerard continues: "The juice of the herbe is good to sharpen the sight, for it cleanseth and consumeth awaie slimie things that cleaue about the ball of the eie, and hinder the sight."

So also Lyte in his Herbal, 1619, thus describes the plant: "*Chelidonium*, that is to say Swallow-herbe bycause (as Plinie writeth), it was first found out by Swallowes, and hath healed the eyes and restored sight to their young ones that had harme in their eyes, or have been blinde."

The root was considered good for, yellow jaundice, and also (being chewed) for toothache. Gerard says, "The roote cut in small pieces is good to be

given vnto hawkes against sundrie diseases:" and Turbervile, in his "Booke of Falconrie" (1575), gives this remedy: "Sometimes the eyes of hawkes are hurt by some mishappe, some stripe, or otherwise, as I said afore. Against such unlooked for mischances,



CELANDINE. *Chelidonium majus.*

Master Malopin, in his boke of the Prince, willeth to take the juice of *Celondine* otherwise *Arondell*, or Swallowes hearbe, and to convey it into the eye. And if it bee not to be had greene, to take it drie, and to beat it into powder, and to blow it into her eye with a quill, and this shall recure the hawke."

A marginal note to this passage informs us that "*Aronde*" in French [Hirondelle] is "*Hirundo*," a Swallow, otherwise called "*Chelidon*."

Parkinson, in his "*Theatrum Botanicum*," 1640, alludes to two species of Celandine, *C. major* and *C. minor*, and says:—"Some call them *Chelidonia major* and *minor*, and tooke the name, as Dioscorides saith, because it springeth when swallowes come in; and withered at their going away, which is true in neither, the greater whereof Dioscorides chiefly speaketh, being greene both winter and sommer; and the lesser springeth before swallowes come in, and is gone and withered long before their departure.* Dioscorides likewise, and Pliny also, say it tooke that name from swallowes that cured their young one's eyes, that were hurt, with bringing this herbe and putting it to them: but Aristotle, and Celsus from him, doe show that the young ones of partridges, doves, swallowes, &c., will recover their sight (being hurt) of themselves in time, without anything applied unto them, and therefore Celsus accounteth this saying but a fable."

It is curious to observe how universally this plant appears to be associated with the Swallow. It is "*Celidonia maggiore*" of the Italians, "*Yerva de las Golondrinhas*" of the Spaniards, "*Chelidoine Felongue*" and "*Esclair*" of the French, and "*Schwalbenkraut*" of the Germans; while we, in

* The so-called Lesser Celandine, or Pilewort, *Ranunculus ficaria*, with its bright yellow, starlike flowers, belongs to the same natural order as the Buttercups, *Ranunculaceæ*, and, like them, possesses very acrid properties. Cattle will not eat the flowers, and the roots are very bitter.

English, call it "Celandine," "Swallow's herb," and "Swallow-wort." Our English poet, Cowley, has thus immortalised it:—

"Ten thousand blessings may the gods bestow
Upon thee tuneful swallow!
For that the use of a choice plant thou'st taught
Which ne'er before blind man had seen or sought."

To revert to the "Swallow's-stone," the connection between the herb and stone is this—that both were brought to the nest by the bird, and both were deemed good for the eyes. The authors above mentioned make no mention of the stone with reference to its curing diseases of the eyes, nor do they allude to its being brought to the nest by the parent Swallow. Pliny, however, refers to the alleged existence of a stone in the gizzard of the Swallow which was supposed to possess magic properties:—

"Avibus venter carnosus callosusque. In ventre hirundinum pullis *lapilli* candido aut rubenti colore, qui *chelidonii* vocantur, magicis narrati artibus reperiuntur."* And the same author goes further than would be expected when he informs us that Swallows themselves may be used medicinally: "Auxiliatur contra serpentes et columbarum caro recem concerpta, et hirundinum!"

Burton, in his "Anatomy of Melancholy," describing the curative virtues of various stones, remarks: "In the belly of a swallow there is a stone

* Obviously the explanation of the presence of small stones in the gizzard of any bird is that they have been voluntarily picked up to aid in triturating the food, which, in the case of the swallow, would be, amongst other things, the hard wing-cases of insects.

called 'chelidonium,' which, if it be lapped in a fair cloth and tied to the right arm, will cure lunatics and madmen, and make them amiable and merry!"

Another explanation of the "Swallow-stone" is that it was so called from its resemblance in shape to the seeds of the plant. Dr. Patrin, the writer of the article "Agate" in the "Dictionnaire d'Histoire Naturelle," Paris, 1803, observes:—

"On trouve dans les ruisseaux des environs de Sassenage en Dauphiné de tres petites Calcedoines, ou Agates, de forme lenticulaire, qu'on a nommées *pierres de Chélidoine*, parce qu'elles ont quelque ressemblance avec les semences de cette plante; *pierres d'hirondelle* parcequ'on en a trouvé dans l'estomac de ces oiseaux."

There are thus three different versions of the old story, whatever may be its origin, (1) the plant brought by the swallow to restore sight to its fledglings; (2) the stone brought by the bird for the same purpose from the sea shore; and (3) the stone found in the bird's gizzard, supposed to be endowed with curative properties for other maladies. The tradition in one form or another is evidently of great antiquity. Who shall explain its origin? I have looked into many a Swallow's nest, but have never been so lucky as to find there either the plant or the stone; unless I except those minute stones, or particles of grit which enter into the composition of the nest, and which are accidentally transported in the mud which the Swallow uses as cement.

THE "HUMMING" OF THE SNIPE.

AMONGST the many rural sounds which greet the ear of the vagrant naturalist in spring, none is more remarkable than that produced by the Common Snipe in pairing time. This peculiar sound, which is never heard except from a bird on the wing, has been variously termed "humming," "drumming," "neighing," and "bleating," according to the fancy of the auditor, and nothing has puzzled naturalists more, perhaps, than to discover how this noise is produced.

Amongst German ornithologists especially this has been a favourite theme for discussion, and various have been the opinions expressed by eminent observers on the subject. Some, like Bechstein, have maintained that the sound is emitted through the bill; others, like Naumann, considered it to result from a vibratory movement of the wings; whilst the most remarkable theory (that of Herr Meves) is that it is produced by the outer tail-feather on each side as it is drawn rapidly through the air in the bird's descent.

Let us see what foundation there is for these various opinions. As the noises made by birds usually proceed from the throat, it seemed but

natural to suppose at first that the "humming" of the Snipe was similarly produced. But, as the bird has been observed close enough to see that sometimes the bill is closed when the sound is heard, while at other times the well-known cry of "chook-chook" is uttered simultaneously with the "humming" sound, it becomes evident that the latter cannot be produced through the throat. In favour of the wings there is a good deal to be said, and here it will be desirable to refer to the peculiar position of the bird at the time the "humming" is produced.

On rising from the ground the Snipe mounts to a good height, and often flies to some distance before anything unusual is observed. A few rapid beats of the wing are then given, and, with half-closed pinions and spreading tail, the Snipe is seen to fall through the air in a sloping direction, as if about to re-align. At a distance the wings then appear to be motionless, but on a nearer view a tremulous movement in them is observable. It is during this descent, and at no other time, that the peculiar "humming" sound is heard. Its continuance may be thus described:—For five seconds the bird gives rapid strokes with the wings; during the next five it falls through the air as described; in the succeeding five it rises again for a similar interval, only to fall at its expiration as before, and these movements are continued alternately until the bird at length re-aligns in the fen. From the peculiar vibration of the wings in the downward descent of the bird, it would appear that the primaries, instead of firmly overlapping each other, are, in the act of

"humming," turned broadside to the air, which is thus able to play across the inner web of each, and so impart to each a vibratory motion and consequent sound—faint, indeed, in the case of a single feather, but audible enough when an entire wing is acted upon. Whether this be the true explanation of the singular sound, it is of course not easy to prove conclusively; but it has certainly been accepted as such by many naturalists in England, who are the more inclined to adopt this view from having observed that Peewits, Rooks, Gulls, and other birds, with tails very different from that of a Snipe, make an analogous sound when falling through the air. In the Peewit especially this sound is remarkably loud, and can be heard at a considerable distance by anyone who approaches in the nesting time the vicinity of its eggs or young. In the case of this bird, however, the sound seems to be produced more for the purpose of attracting the attention of the intruder, and leading him from the nest.

The "theory of the wings," then, might possibly have met with general approval, had it not been for the ingenious discovery of the Swedish naturalist Meves, whose original observations were first made known to English readers through the instrumentality of a well-known English ornithologist, the late John Wolley. While on a visit to Herr Meves at Stockholm, Wolley learnt from him that an accidental misprint of the word representing "tail-feathers" instead of "wing-feathers" first lead him to think on the subject. He subsequently examined the tail-feathers of different species of Snipe, blew upon them, and fixed them on levers that he might wave

them with greater force through the air; and finally hit upon an ingenious contrivance which to his mind, and subsequently to the minds of others, demonstrated that the "humming" is produced by the outer feathers of the tail.

This discovery was announced to English readers in an article which Wolley translated and communicated to the Zoological Society in April, 1858, and which was published in the Society's "Proceedings" for that year. As this article, however, appears to have received comparatively little notice in this country, and certainly not that attention which it deserves from naturalists who, residing near the summer haunts of the Snipe, are best qualified to decide the question, I have thought it desirable, by a repetition of Herr Meve's theory, to give English observers an opportunity of testing its value at a time of year when the humming sound may be heard by anyone who will take the trouble to visit the nearest Snipe-ground. Herr Meves says:

"The peculiar form of the tail-feathers in some foreign species nearly allied to our Snipe encouraged the notion that the tail, if not alone, at all events in a considerable degree, conduced to the production of the sound. On a closer examination of the tail-feathers of our common species, I found the first (outer) feather, especially, very peculiarly constructed; the shaft uncommonly stiff, sabre-shaped; the rays of the web strongly bound together, and very long, the longest reaching nearly three-fourths of the whole length of the web, these rays lying along the shaft like the strings of a musical instru-

ment. If you blow from the outer side upon the broad web, it comes into vibration, and a sound is heard, which, though fainter, resembles very closely the well-known 'neighing.'

"But to convince one's self fully that it is the first feather which produces the peculiar sound, it is only necessary carefully to pluck out such a one, to fasten its shaft with fine thread to a piece of steel wire a tenth of an inch in diameter and a foot long, and to fix this at the end of a four-foot stick. If now you draw the feather, with its outer side forward, sharply through the air, at the same time making some short movements or shakings of the arm, so as to represent the shivering motion of the wings during flight, you produce the 'neighing' sound with the most astonishing exactness.



Outer tail-feather of Snipe.

"If you wish to hear the humming of both feathers at once (as must be the case from the flying bird), this also can be managed by a simple contrivance. Take a small stick, and fasten at the side of the smaller end a piece of bent steel wire, in the form of a fork; bind to each point a side tail-feather; bend the wire so that the feathers receive the same direction which they do in the spreading of the tail as the bird falls through the air in flight; and then with this apparatus draw the feathers through the air as before.

"Such a sound, but in another tone, is produced when we experiment with the tail-feathers of other kinds of Snipe. But in *Scolopax major*, *capensis*, and *frenata* are found four humming feathers on each side, which are considerably shorter than in the species we have been speaking of, *Scolopax javensis* has eight on each side, which are extremely narrow and very stiff.

"Since in both sexes these feathers have the same form, it is clear that both can produce the 'humming' noise; and by means of experiment I have convinced myself that it is so. But, as the feathers of the hen are generally less than those of the cock bird, the noise also made by them is not so deep as in the other case."

I have tried this experiment for myself, and have succeeded beyond expectation in producing a sound like the "humming" of the Snipe; but I am still sceptical. In the first place, the outer tail-feather is not the only one which will emit a sound on being drawn through the air in the manner indicated, although I must admit that it is the only one which will make so loud and so good an imitation of the Snipe's "humming." But any of the primary wing-feathers will give forth a faint sound, which may be increased in proportion to the number of them passed through the air at once.

Again, it does not appear to me clear that the position of a tail-feather at the end of a long switch when drawn through the air is identical with the position which it would occupy in the tail of the bird when flying downwards. On the contrary, it would seem that the reason why the tail-feather emits a

sound at the end of a switch is because it is drawn through the air in a position at right angles to the direction of the flight, that is, in a position which is occupied naturally by the primaries, but unnaturally by the tail, and hence that it must be the primaries (collectively) which produce the sound in nature. In this our sense of hearing is assisted by the sense of sight, for a perceptible vibration of the quill-feathers is observed every time the bird descends.

In the case of Peewits, Rooks, and other birds, it may be said that the sound which they produce in falling through the air is by no means identical with that produced by the Snipe. True; but it is an analogous sound, and the fact that they are able, with very different tail-feathers, to make a sound of this nature at all, seems in itself a strong argument against the tail-feather being the agent in producing it.

In offering these remarks for the consideration of naturalists, it must not be supposed that I wish to disparage in any way the extremely ingenious theory of Herr Meves, which has met with the approval of many ornithologists; at the same time it may be observed that this theory is by no means universally accepted, and in expressing my own adherence to the "theory of the wings" I am supported by the opinion of many excellent field-naturalists.

The late Sir William Jardine wrote: *—"The sound is never heard except in the downward flight, and when the wings are in rapid and quivering motion; *their resistance to the air, without doubt, causes the noise* which forms one of those agreeable

* "The Naturalists' Library" (Ornithology), vol. xxvi., p. 180.

variations in a country walk, so earnestly watched for by the practical ornithologist."

Mr. John Hancock, in his "Catalogue of the Birds of Northumberland and Durham" (1874), devotes several pages (pp. 106—113) to a consideration of this question, and gives his entire adherence to the "theory of the wings." His remarks, too long to be quoted here, are most interesting, and ought to be read *in extenso* by all who have not already formed an opinion on the subject.

The late Dr. Saxby has discussed the matter in his "Birds of Shetland," and at page 204 of that work observes :—"The many years' intimate acquaintance with the bird and its habits which I have enjoyed confirms me in the now generally received opinion that *the 'drumming' is produced by the vibration of the wings alone.*"

Capt. W. V. Legge, in the appendix to his admirable work on the Birds of Ceylon, has expressed a very decided opinion on the subject, based on his own personal observation. He says :—

"The most favourable occasion I had for observation was on the evening of the 10th June [in Wales], when a Snipe, having young near where I was standing, 'drummed' over my head, flying backwards and forwards in the manner now to be described, without cessation, for a period of fifty-two minutes, timed by my watch. * * * *

The aërial course taken by the bird was an ellipse, of the average length of a quarter of a mile, described over where I stood; but it was sometimes varied by her making a figure of 'S' above my head, the bird always returning to its original

starting-point in the air, and again making the same tour. The movement for the purpose of 'drumming' was generally performed twice, but sometimes thrice, going and coming, making from four to six times in each figure described. It flew at a height of about 100 yards with a quick and regular movement of the wings, and 'drummed' in this wise:—The body was suddenly turned on one side and the bird descended rapidly for about 100 feet at an angle of 45 degrees, moving its wings with very rapid and powerful strokes, its tail being at the same time opened to the utmost; having arrived at the lowest point of its descent, it suddenly turned its body in the reverse direction, that is, elevated the wing which had been before depressed, and with a short upward sweep ceased the drumming noise and rose to its original position, continued its course for a short distance, and then descended with the same rush again. The movement was always performed with the same wing pointed downwards throughout one half of the bird's course; that is, if it commenced to drum with the left wing down when flying from east to west, that wing was inclined downwards the next time it descended, until the course was altered, and the bird flew back from west to east, when usually the other wing was inclined downwards. The instant the bird commenced its descent, the 'drumming' noise was heard, and it continued till it finished off with a sort of whiz directly the upper sweep, by which the bird recovered itself, was performed.

"By closely watching the bird it could be distinctly *seen* that the vibrations falling on the ear

coincided exactly with the beat of the wings, which, assisted by the downward rush through the air, were the *primary* cause of the sound. The tail, however, was spread as I have already remarked, and to such an extent that it took the form of a fan, the lateral feathers being at right angles to the centre; and herein lies the *secondary* cause of the sound. During the drumming beat of the wing, the quills are more drawn back than in the ordinary strokes (this can be observed if the bird be closely watched), so that the atmospheric wave or air propelled by the powerful stroke of the wing is drawn through the rigid, sabre-shaped and opened-out feathers of the tail, thus making the peculiar noise."

Thus, in the opinion of Capt. Legge, the sound is produced *by the combined action of wings and tail*: he suggests a compromise, in fact, between the adherents of the "wing-theory" and "the tail theory," reminding one of the old story of the disputants about the gold and silver shield!

The discussion has been revived in the *Ornithologisches Centralblatt*, 1880-81, translated in *The Zoologist*, 1881, but nothing therein advanced seems of sufficient weight to induce me to alter the opinion above expressed.

THE ANNALS OF IRISH ZOOLOGY.

CONSIDERING how wide a field of research lies open to the naturalist in Ireland, it is not a little remarkable how much that country in this respect has been neglected. In the case of nearly all the standard and more important works relating to the Zoology of the British Islands, it is apparent that by far the greater portion of the materials utilised in their composition have been collected and arranged from observations made in England. To this statement, no doubt, a few notable exceptions may be made, as in the case of such works as those of Macgillivray, Sir William Jardine, and William Thompson, of Belfast; but the fact remains that, as compared with the voluminous zoological literature relating to England, Irish records in this respect are very scanty. Under the mistaken notion that British Natural History is worked out, many English naturalists, anxious to find some new field for their labours, have travelled in distant lands and spent years in investigating the fauna of countries little known or little explored; until, through the medium of their publications, often splendidly and expensively illustrated, we have come to know more of the characteristic animals of the antipodes than we do of those by which we are, so to say, surrounded. It appears at least singular that a tolerably well-

informed zoologist of the present day should experience no difficulty in supplying a list of Australian mammals, or Ceylonese birds, and yet be unable to decide, for instance, whether the Wild Cat, the Weasel, or the Harvest Mouse are indigenous to Ireland, or how many species of Chiroptera are to be found there; whether the Black Grouse was ever a native of the Emerald Isle, or what is the distribution in that country, say, of the Crayfish. These examples, taken at random, and numerous other cases might be suggested, only serve to show that there are still questions relating to the fauna of Ireland which require investigation, and which it is a reproach to naturalists of the present day to leave unsettled.

When we consider that more than a quarter of a century has elapsed since the publication of what is generally regarded as the standard work on the Natural History of Ireland, it seems high time that steps were taken to furnish a more accurate view of the fauna of that country than is presented to us in the work referred to. Not that we regard Thompson's work as inaccurate in its details, so far as they go,—for it would be difficult to name a more careful or competent observer than he has proved himself to be,—but the researches of other naturalists in Ireland since the date of his publication have brought to light results which necessitate a modification of many of his statements, although the latter, no doubt, were true enough at the time they were made, so far as could be judged from the materials at command. The same may be said of some few writers who preceded Thompson in the same line of

research, although the further back we go in the annals of Irish Zoology the more vague and indefinite is the information to be derived. This want of precision on the part of some of the earlier writers on Irish Natural History deprives their works, in a great measure, of that value which would otherwise attach to them. Nevertheless, as illustrating the progress of scientific research in Ireland, such works ought not to be overlooked by naturalists of the present day in any attempt to improve upon the labours of their predecessors.

In view of the foregoing reflections, it may be not altogether unprofitable to inquire who are the writers, either ancient or modern, who have contributed in any way to a knowledge of the fauna of Ireland, and what may be the value of their testimony.

The earliest notice, so far as is known, of the wild animals of Ireland is to be found in a tract, "*De mirabilibus Sacræ Scripturæ*" written by an Irish ecclesiastic, by name Augustine, about the middle of the seventh century. It is very brief, amounting, in fact, to only a few lines, but deserves at least a passing notice, not only on account of the early date at which it was written, but because it contains a reference to the existence in Ireland of at least two animals which have long been extinct there, namely, the Wolf and the Wild Boar. The passage is as follows:—" *Quis enim verbi gratia lupos, cervos, et sylvaticos porcos, et vulpes, taxones, et lepusculos, et sesquirolos in Hiberniam deveneret.*"

In the "*Topographia Hibernica*" of Giraldus Cambrensis (A. D. 1183-86) we have the earliest

work in which there is anything like a detailed account of the fauna of Ireland, and considering the date of its composition and the circumstances under which it was written, it must be allowed to be a highly creditable production. At the same time it must be borne in mind that Giraldus—evidently a very credulous man—wrote down not only what he saw and observed for himself, but what others told him upon mere hearsay report; hence there is much mingling of truth with fiction in his work. Again, his knowledge of the country must have been very limited, extending, it may be assumed, no further than the English occupation then extended, over considerable parts of Leinster and Meath, and small parts of Munster and Ulster.* Even supposing that he went everywhere where the English had established themselves, still by far the larger part of Ireland was altogether unknown to him, except by vague reports of his English friends, or by very doubtful descriptions from the few Irish of the subjugated parts who would still remain on their lands in subjection to the English.

These circumstances, the too great credulity of the writer, and his limited acquaintance with the country through which he travelled, preclude us from attaching too high a value to his remarks on the fauna of Ireland. They are, nevertheless, too important to be overlooked in any memoir of the writers on Irish Natural History. To examine critically all that Giraldus has written on this subject would require a great deal more space than can be

* His first visit to Ireland was in 1183; his second, in company with Prince John, in 1185.

here devoted to it. It must suffice if we glance rapidly at some of the more interesting points upon which he has touched.

After some introductory chapters on the situation of Ireland and its physical aspect, the winds and rain with which it is visited, and so forth, we come to its natural productions; and one of the first passages which strikes us (cap. vi.) is a refutation of Bede's statement that the Roe-deer was a native of Ireland.* Giralduſ says this is not the case, and to the present day no traces of this animal have been found there. *Vide antea*, pp. 52-55.

Noticing the marine and fresh-water fish (cap. ix., x.) he refers to three kinds not found elsewhere—that is, peculiar to Ireland:—"Sunt enim quidam truttis, quæ et salares [Salmon] dicuntur, longiores et rotundiores, albis carnibus confertis et sapidis; thymallis qui vulgariter umbræ [Grayling, or Umber] dicuntur, persimiles, nisi quod capite degenerant grossiore. Sunt et alii, marino haleci tam forma et quantitate, quam colore et sapore simillimi. Sunt et tertii truttis, nisi quod maculis carent, per omnia similes; primos 'Glassanos,' secundos 'Catos,' tertius vero 'Bricios' vocant."

He adds that these three kinds were only met with in summer and never in winter; that is, they were migratory.

Passing on to the Birds (cap. ix. to xxiii.) he refers first to the falcons and hawks, for which

* Bede, it may be observed, was never in Ireland himself, and his brief allusions to the *feræ naturæ* of the country were derived from hearsay. See "The Book of Howth," Brewer and Bullen, Calendar Carew MSS., p. 32.

Ireland in the palmy days of falconry was celebrated, noticing by the way that amongst birds of prey the female is generally larger than the male, and calling attention to the various phases of plumage which the Sparrow-hawk undergoes, and to the different mode in which the short-winged hawks and long-winged falcons take their prey, all of which observations are found to be exact at the present day.

A long chapter on the Eagle (cap. xiii.) is followed by one on the Crane (cap. xiv.) a bird which, according to Giraldus, might be seen in large flocks in Ireland in his day. "*In tanta vero numerositate se grues ingerunt,*" he says, "*ut uno in grege centum, et circiter hunc numerum, frequenter invenias.*"

He repeats the story to the effect that the Crane is of so watchful a nature that a sentinel is always posted while the flock is at rest, and that the sentinel stands with a stone in one foot, so that in case he should fall asleep the fall of the stone would rouse him. The ancient legend, too, of the Bernicle Goose and its supposed generation from old sea-timber finds a place (cap. xv.) amongst the stories collected by the too credulous historian, who in this instance appears to have sought some justification for his belief in the story in consequence of having seen with his own eyes some Barnacles clinging to a beam alongshore.

He describes the flight of the Osprey from his own observation (cap. xvi.), but credits it with some remarkable peculiarities of structure and habit, which shows that he could never have examined a specimen closely. Had he been able to do so, he would

not have informed us gravely that this bird has one foot webbed, the other armed with talons, so that it may swim with the one, while it grasps its prey with the other. Some equally wonderful stories are related with regard to the Kingfisher, to which a chapter is devoted.

In the North of Ireland, we are told, wild Swans were common, but Storks very rare, and those black! The song of the dying Swan, as might be supposed, calls forth a passing allusion. The Hooded Crow is noticed as more common in Ireland than its black congener, and its habit of breaking open molluscs by letting them fall from a height in the air is briefly described. The Grey Shrike seems to have been not unknown in Ireland when Giraldus wrote. He refers to its habit of impaling beetles on a thorn. The Red-backed Shrike has not been met with there.

With regard to species not found in Ireland, Giraldus states that in his day there were no falcons but Peregrines; no Gerfalcons, which came from northern regions; no Partridges nor Pheasants; and no Magpies. The Nightingale, which he tells us was never seen in Ireland, is still unknown there.

Amongst the beasts of chase he includes Deer, Wild Boars (which were numerous, though small and ill shaped), Hares, and Martens, the last-named being very common in the woods.

The Badger is particularly noticed on account of a singular habit with which he is credited. According to report, apparently believed by Giraldus, a Badger when about to remove the soil which he has dug out from his burrow, lies on his back, taking as much as he can carry between his legs, and holding

a bit of wood in his mouth is by means of it drawn out by his friends!

The Beaver is mentioned only for the purpose of showing that it was unknown in Ireland, though a few were said to be then still existing in Wales and Scotland. Amongst other *feræ naturæ* absent from Ireland, Giraldus includes the Roe-deer, Fallow-deer, Hedgehog, Stoat, and Polecat.

The Roe-deer, we know, was never indigenous to Ireland; the Fallow-deer was introduced. But when? Apparently not before the date of the "Topographia Hibernica." Its abundance at a later period we shall have occasion to notice presently.

The Hedgehog in all probability was overlooked by Giraldus, for it is known to be generally distributed throughout Ireland. This is the case also with the Stoat (marked "absent" by Giraldus), though not with the Weasel, which he characterises as numerous: "*Mustelæ hic multæ sed minutæ plurimum et subrufæ.*" This is curious, for at the present day it is still doubted by many whether the Weasel is really to be found in Ireland; an impression prevailing amongst naturalists that this name is bestowed upon the Stoat.*

* Andrew Murray, in his "Geographical Distribution of Mammals" (p. 114), says the Weasel *formerly* inhabited Ireland, but is no longer found there. Macgillivray states that it is generally distributed in Ireland, but Thompson says he never met with it there, nor does he consider that it has been proved to be a native, though it may be so. The Stoat, which is called Weasel in Ireland, is common there (Nat. Hist. Irel., vol. iv., pp. 6, 7). For evidence, however, of the occurrence of the Weasel in Co. Mayo, cf. Borrer, *Zoologist*, 1877, p. 291.

The absence from Ireland of the Mole, as noted by Giraldus, is confirmed by modern investigations. Mice were said to abound and to do great damage.

It was apparently not enough to assert that no poisonous reptiles existed in Ireland, for Giraldus adds that none such could live there if imported from other countries; and further that the dust of Irish soil, if taken abroad, would be fatal to such reptiles! Frogs were occasionally to be met with, for he saw one which had been found at Waterford in 1179.

Here we must take leave of Giraldus, for at this point in his work he quits the domain of Natural History for the field of marvels and miracles, which, however curious and entertaining, can scarcely be regarded as pertinent to the present inquiry.

Ranulphus Higden, a Benedictine monk, of St. Werburg's Abbey, in Chester, who died at an advanced age about 1363, compiled a "Polychronicon," or Universal History, reaching to his own time, which was one of the most popular histories during the fourteenth and fifteenth centuries, and continued to be much in use during the following century also.

In that portion of the work which relates to Ireland (vol. i., chapters xxxii.—xxxvi., ed. Babington), the compiler, as might have been expected, has borrowed largely from the work of his predecessor, Giraldus. The nature of the information which he imparts, and which is often very tersely expressed, may be seen from the following extracts. To some readers, possibly, the quaint English translation by John of Trevisa might be more acceptable than the original Latin. But we prefer

to quote from the latter, because John of Trevisa is not always literal in his translation, and in cases where he has evidently failed to identify an animal by its Latin name he has preferred to omit all mention of it rather than venture upon a translation which might possibly be erroneous. In some cases, moreover, where he has supplied an English name, he has malidentified the species. In an inquiry like the present it is important to note this.

Higden thus refers to the natural productions of Ireland:—"Terra hæc magis vaccis quam bobus, pascuis quam frugibus, gramine quam grano fecunda. Abundat tamen salmonibus, murænis, anguillis, et cæteris marinis piscibus; aquilis quoque, gruibus, pavonibus, coturnicibus, niso, falcone et accipitre generoso. Lupos quoque habet, mures nocentissimos; sed et araneas, sanguisugas et lacertas habet innocuas. Mustelas quoque parvi corporis sed valde animosas possidet. Habet et aves quas 'bernaces' vocant, quas ancis silvestribus similes de lignis abietinis quasi contra naturam natura producit. * * * * Item Beda dicit caprorum venatu insulam fere insignem, cum tamen constet cum semper capreis caruisse. Nec mirum; cum Beda nihil de hac insula oculis suis cognoverit sed per relatores audierit."*

* It is possible that by "venatu caprorum" Bede did not intend to refer to the chase of the Roe-deer, as Higden and his translator have assumed, but to the Wild Goat, which in some parts of Ireland is still to be met with at the present day. In Achill, as we have been lately informed by Sir R. Payne Gallwey, Wild Goats still abound, and, from the inaccessible nature of the cliffs which they frequent, as well as from their natural wildness, they are almost unapproachable even with a rifle.

Of the *feræ naturæ* absent from Ireland, Higden writes:—"Desunt hic degeneres falcones quos laniarios [Lanners] vocant, desunt et gyrofalcones, perdices, phasiani, picæ et philomelæ. Caret quoque capreis et damis [Fallow-deer] hericiis [Hedgehogs] putaciis [Polecats] et talpis [Moles] et cæteris venenosis."*

He then refers to the absence of venomous reptiles from Ireland, and to the tradition that all such creatures were banished from the country by St. Patrick, as well as to the popular belief, as noticed by Bede and Giraldus, that the dust of Irish soil, even if transported to other lands, was a preservative against the attacks of poisonous reptiles.

If we refer briefly, in passing, to the works of Campion,† Holinshed, and Camden, it is rather for the purpose of showing that they have not been overlooked than because they contain anything of importance bearing on the present inquiry; the fact being that each one of these writers has retailed, in his own way, information regarding the fauna of Ireland evidently borrowed from Giraldus Cambrensis and Ranulphus Higden.

"The Description of Ireland," written by Fynes Moryson,‡ who was Secretary to Lord Mountjoy

* John of Trevisa here translates *hericiis* "ilespiles," omits *putaciis*, and renders *talpis* "wontes." "Want" or "Wont" is a provincial name for the Mole, still used in several counties. Cf. Ray. Dict., and Merret's Pinax, p. 168.

† A Historie of Ireland, written in the yeare 1571, by Edmund Campion, sometime Fellow of St. John's College in Oxford.

‡ An History of Ireland from the year 1599 to 1603; with a short narration of the state of the Kingdom from the year

when Lord Deputy of Ireland (1599—1603), possesses more originality, and contains some few passages of interest.

After noticing the Irish Wolf-dogs "of great stature" (vol. ii., p. 367), the abundance of Wolves "whose destruction being neglected by the inhabitants, oppressed with greater mischiefs, had so grown in number as sometimes in winter nights they would come to prey in villages and the suburbs of cities," he thus refers to the Deer, both Red and Fallow, which were then preserved by certain noblemen in Ireland, and it would appear from his remarks that the Fallow-deer at that date had been only recently introduced:—

"The Earl of Ormond, in Munster, and the Earl of Kildare, in Leinster, had each of them a small park enclosed for *Fallow-deer*, and I have not seen any other park in Ireland, nor have heard that they had any other at that time. Yet in many woods they have many *Red-deer* loosely scattered, which seem more plentiful because the inhabitants used not then to hunt them, but only the governors and commanders had them sometimes killed with the piece. They have also about Ophalia and Wexford, and in some parts of Munster, some *Fallow-deer* scattered in the woods: yet in the time of the war I did never see any venison served at the table, but only in the houses of the said Earls and of the English commanders."

At the present day, the Red-deer, which still roam

1169. To which is added a Description of Ireland. By Fynes Moryson, Gent., Secretary to the Lord Mountjoy, then Lord Deputy 2 vols., 8vo. Dublin, 1735.

through parts of Kerry, are descendants of the original wild stock, although fresh blood has now and then been introduced by Lord Kenmare and Mr. Herbert of Muckross. These deer are now numerous and strictly preserved by the above-named proprietors, whose lands adjoin. The weight of the heaviest stag killed on the Muckross estate was $31\frac{1}{2}$ stone, and several have been found to average from 28 to 30 stone.

In the West of Ireland at the present day Fallow-deer roam in a wild state through many districts, descendants of animals which have long since escaped from parks or other inclosures. In Galway and Clare, and even across the Shannon, as we are informed on good authority, every large cover holds a few Fallow-deer. During the spring they issue at night from the woods and uplands, and make sad havoc amongst the neighbouring crops.

But to return to Fynes Moryson. "Ireland," he says, "hath great plenty of Birds and Fowls, but, by reason of their natural sloth, they [the inhabitants] have little delight in birding or fowling. But Ireland hath neither singing Nightingal, or chattering Pie,* nor undermining Mole, nor black Crow, but only crows of mingled colour, such as we call Royston Crows. They have such plenty of Pheasants as I have known sixty served up at one feast, and abound much more with Rails, but Partridges are somewhat rare. There be very many Eagles and great plenty of Hares, Conies, Hawks called Goss-hawks, much esteemed with us, and also of Bees, as well in hives

* The Magpie, as will be seen later, is said to have been introduced into Ireland in James the Second's time.

at home as in hollow trees abroad, and in caves of the earth. * * * The hawks of Ireland called Goss-hawks are (as I said) much esteemed in England, and they are sought out by money and all means to be transported thither."

On the subject of Reptiles he says:—"I may not omit the opinion commonly received that the earth of Ireland will not suffer a snake or venomous beast to live, and that the Irish wood transported for building is free from spiders and their webs. Myself have seen some (but very few) spiders, which the inhabitants deny to have any poison, but I have heard some English of good credit affirm by experience the contrary."

In the Commentary of Peter Lombard, "*De Regno Hiberniæ*," 1632, we find but a brief allusion to the Natural History of Ireland in the chapter "De generibus animalium tam mansuetorum quam ferarum," and even in this there is no great originality, the author quoting freely from the older works of Bede and Giraldus. After naming deer, for which Ireland was celebrated, wild boars, wolves, foxes, hares, and rabbits, of which there was a great store in his day, he especially refers to the Marten (p. 99), and to the value set upon its fur: "Præcipue martes," he says, "quorum pelles plurimum æstimantur, et in universum in animalium pellibus magna pars est sita divitiarum hujus regionis."

Irish Marten-skins seem to have been formerly much sought after. In Charles the First's time Lord Deputy Strafford, in a letter to Archbishop Laud, dated Dublin, 27th November, 1638, wrote:—

“Before Christmas your Lordship shall have all the Marten skins I could get either for love or money since my coming forth of England, yet not to the number I intended. The truth is that as the woods decay, so do the Hawks and Martens of this kingdom. But in some woods I have, my purpose is by all means I can to set up a breed of Martens; a good one of these is as much worth as a good wether, yet neither eats so much or costs so much attendance; but then the Pheasants must look well to themselves, for they tell me these vermin (*i.e.*, Martens) will hunt and kill them notably. Perchance you think now I learn nothing going up yonder amongst them into the forests and rocks.”*

Amidst all the cares and anxiety of his responsible position, this same Lord Députy found leisure to kill an Irish Deer now and then. Writing from Coshawe, Co. Galway, to the Archbishop of Canterbury, in May, 1638, he says:†—“To say the plain truth, whether we shall have a Government or no, and to the intent that I might be the better ‘in utrumque paratus,’ at this present I am playing the Robin Hood, and here in the country of mountains and woods hunting and chasing all the outlying Deer I can light of; but to confess truly, I met with a very shrewd rebuke the other day; for, standing to get a shoot at a Buck, I was so damnably bitten with midges [he was addressing an Archbishop, too!] as my face is all mezled over ever since, itches still as if it were mad; the marks they set will not go off again, I will warrant you, this week. I

* Strafford’s “Letters and Despatches” (1638), vol. ii., p. 249.

† “Letters and Despatches” (1638), vol. ii., p. 173.

never felt or saw such in England; surely they are younger brothers to the moskitoes the Indies brag on so much."

From the titles of Dr. Gerard Boate's works,* it might be expected that they would contain some account more or less important of Irish Vertebrata; but the inquiring zoologist who turns over their pages with such expectations will be certainly disappointed. It may be well to note here that these works relate chiefly to the physical aspect of the country, its hills, woods, bogs, lakes, and rivers; mines and minerals; natural curiosities and antiquities.

We will quote but one passage to give an idea of the writer's style, and of the kind of information imparted. It occurs in the second of the books named (p. 192), amongst the natural curiosities, and relates to the Brent Goose, misnamed by Boate the "Barnacle":—

"Barnacles," he says, "are of the Wild Goose kind, and, like them, migrate from foreign countries to Ireland; they commonly come into Ireland in August, and leave it about March; their taste is very different, according to the places where they feed; in most places they are so rank that no curious palate can dispense with such unsavoury food; but in other places they have a most delicious relish, rather better than either a Wild-duck, Teal, or Snipe. This is the case of the Barnacles at

* "Ireland's Natural History," by Dr. Gerard Boate, 12mo, London, 1652; and "A Natural History of Ireland," in three parts, by Dr. Gerard Boate, Thomas Molyneux, M.D., F.R.S., and others, 4to, Dublin, 1726.

Londonderry and Wexford, and I hear the same concerning those at Belfast: the difference I understand arises from the food. At Londonderry, in the bay commonly called Lough Foyle, there grows a grass that sends out a stalk about a fathom long; the root of this is white and tender, and continues such for some space above the root, and 'tis almost as sweet as a sugar-cane. The Barnacles dive to the bottom, and lay hold on it as near as they can to the root, and pull it up with them to the surface of the water, and eat the tender part of it; the rest they let drive with the wind to the shore, where it lies in great heaps, and when rotten is good manure for land; and from this sweet grass, 'tis supposed, proceeds the sweetness of their flesh. They are taken by nets, set in proper places on the shores. 'Tis observable that the Divers and Widgeons, which are very rank and unsavoury elsewhere, undergo the same change of their flesh when they feed in this place."

This habit of the Brent Goose explains the origin of the old northern name "Rotgans" (*i.e.*, Root-goose), the corrupted form of which—Road-goose—is applied to it both by Willughby and Pennant, neither of whom explain the word. It occurs in the "Durham Household Book," under date 1534, thus: "Feb. 3. Item, one 'Rutgoys,' 3d; one Mawler [mallard], six Dunlings,* 2d.; one Seepy, 1d."

In O'Flaherty's "Chorographical Description of West or H-Iar Connaught," written in 1684, we

* Does not this orthography suggest the origin of the word, *i.e.*, "the little dun thing?" Compare the diminutives, Titling, Duckling, Gosling, &c.

have the following brief account of the fauna of that part of Ireland:—"The land produces wild beasts as wolves, deere, foxes, badgers, hedgehogs, hares, rabbits, squirrells, martens, weasels, and the amphibious otter, of which kind the white-faced otter is very rare. It is never killed they say but with the loss of man or dog, and its skin is mighty precious. It [*i.e.*, the country] admits no rats to live anywhere within it except the Isles of Aran, and the district of the west liberties of Galway.* The water streames, besides lampreys, roches, and the like of no value, breed salmons (where is recourse to the sea) eels and divers sorts of trouts. There was never a pike or bream as yet engendered in all this countrey, nor in the adjacent parts of Mayo or Galway counteys. The sea here is plentifully stored with fish, as cods, lings, hawk-fish, coalefish, turbets, plaises, hadogs, whittings, gurnards, macrells, herrings, pilchards, &c.; and no less liberall of shell-fish as oysters, scollops, cokles, muscles, razures, together with lobsters, crabs, shromps, &c. It now and then casts ashore great whales, gramps, porcupisses, thunies. Both sea and land have their severall kinds of birds. Here is a kind of black Eagle [*Aquila chrysaëtus*] which kills the deere by grappling him with his claws and

* The Editor (J. Hardiman), in a foot-note (p. 10), remarks upon this statement, in 1848:—"This is not the case at present. The Norway rat everywhere prevails, having nearly extirpated the little Irish black rat. The latter was the species mentioned by Giraldus Cambrensis in the following passage:—'Est et aliud ibi (*i. e.*, in insula Aran in occidentali Connactiæ solo posita) notabile; quia cum per totam Hiberniam copiose nimis mures abundant, hæc tamen insula mure caret.'"

forcing him to run headlong into precipices. Here the Gannet soars high into the sky to espy his prey in the sea under him, at which he casts himself headlong into the sea, and swallows up whole herrings in a morsell. This bird flies through the ships sailes piercing them with his beak. Here is the bird engendered by the sea out of timber long lying in sea. Some call them 'clakes' and soland-geese, some puffins, others bernacles, because they resemble them. We call them 'girrinn.' I omit other ordinary fowl and birds, as bernacles, wild geese, swans, cocks of the wood, and woodcocks, choughs, rooks, Cornish choughs with red legs and bills, &c. Here is fowle that custom allowed to eat on fasting days, as Cormorant feeding only on fish; as alsoe birds found in the high cliffs and rocks of Aran, which never fly but over the sea, which with all other numerous sea birds, yield a great store of feathers."

In the year 1744 a number of gentlemen in Ireland formed a society, known as "The Physico-Historical Society," with the object of investigating the Natural and Civil History of the several counties of Ireland, and raised funds by subscription "to employ proper persons to travel through the kingdom, to make observations and collect proper materials for the purpose." The labours of this Society began to bear immediate fruits; in the same year appeared "The Ancient and Present State of the County of Down," which, though bearing no author's name on the title-page, is usually attributed to Walter Harris; and this was followed, in 1746, by the "Ancient and Present State of the County and City of Waterford,"

by Dr. Charles Smith, who, in 1750 and 1756, published two similar works relating to the Counties of Cork and Kerry. Of that on Kerry, Macaulay wrote, "I do not know that I have ever met with a better book of the kind and of the size," (Hist. Eng. iii. p. 136), and all three of Dr. Smith's works were reprinted with additions in 1774. They have now become scarce and valuable.

To refer briefly to the first volume of the series, Harris's "County of Down," there is an account therein (p. 146) worth perusal of the pearl fishery which used to be carried on formerly on the River Bann, near Bann Bridge, the much-coveted mollusc being the Pearl-bearing Mussel, *Unio margaritifera*. The author says:—"The common method of fishing for these mussels in the Bann is very simple. In the warm months, while the river is low and clear, the poor people wade into the water, and some with their toes, some with wooden tongues, and others with sharp sticks, thrust into the opening of the shells, take them up. But this method can be practised only in shallow water; whereas the large mussels and the greater quantities are found in deep smooth water. If dredges or other mechanical contrivances were used to fish the deep waters in the Bann, they might probably meet with better success in the size, and it may be in the colour of the pearls." But he adds:—"The pearl-fishery in this river is of late not much pursued, few pearls being to be met with, and those in smooth deep water. Most that are found there now are not much larger than the head of a small pin, and of a dusky faint colour; yet a pearl has been within these few years taken near Bann

Bridge of the size of a middling pea, but so muddy and full of specks that it was of little value."

Sir Hans Sloane had some of these pearls sent him, and said they were of the same sort with those of England and Lorraine, and probably differed little from the British pearls described by Tacitus as *subfusca ac liventia*—of a pale brownish colour.

In Chapter xviii. an account is given "Of the Feathered and Finny Tribes of this County." Amongst the more remarkable birds noticed are the Chough, sometimes seen in the neighbourhood of Killileagh, but "a stranger to the rest of Ireland except a few on the shores of Lough Earn in the County of Fermanagh, and (as we are informed) some in the County of Clare;" the Bittern, "frequenting quaggy marshes among bulrushes and reeds, and common in the lower Ardes and about Magherelin and other places;" the Water Ouzel, "a bird very common in this county, and to be found about many rivers near the mountains, and sometimes about rivers at several miles distant from them;" the Black-tailed and Bar-tailed Godwits and the Stone Curlew "often met with on the shores of this county, on Anahilt Bog, and about Killileagh." Assuming that no mistake was made in identifying the species, it is curious that a bird characterised a century later by Thompson as an extremely rare visitant to Ireland, should, in 1744, have been noted as common in the localities above mentioned.*

* It was reported also, in 1750, as occurring in the County of Cork in terms sufficiently clear. Dr. Smith, in his History of that county, writes (p. 345), "*Ædicnemus*, Stone Curlew: the feathers and feet resemble those of a Bustard, and its cry is something like that of a Green Plover (*C. pluvialis*). We have it on our shores."

The Crossbill is noticed (p. 228) as a winter visitant. "They are not natives of this county; yet many of them were seen at Warringstown in the winter of 1707, of which Mr. Samuel Waring gives an account to Dr. Molyneux by letter that year, an extract of which is among Dr. Gilbert's collections in the College Library."

The Shel Drake is referred to (p. 230) as a resident, breeding in rabbit-burrows on the shores of this county, particularly about Killileagh, and the south of the barony of Lecale.

Great numbers of Wild Swans, it is said (p. 233), used to breed on the islands of Strangford Lough.*

The account which is given of the fishes, both marine and fresh-water, too long to be quoted here, deserves attention, especially the remarks on the Lake Trout and Pollan. Of the latter fish the author, after describing it, remarks:—"This fish was for a time supposed to be a peculiar inhabitant of Lough Neagh, but time has corrected that error, and it is now known that Lough Earn, in the Co. Fermanagh, has the same sort of fish, though not in so great plenty."

Chapter xix. (pp. 241—250) treats "of the Herring Fishery of this county in particular; and something in general of the decay of the Herring Fishery on all the coasts of Ireland; with some hints concerning the recovery and improvement of it."

In Smith's "History of Waterford" (1746) we

* The names of these islands, with their respective areas, are given in a footnote, p. 153.

find some testimony to the decadence of certain species which were at one time numerous in Ireland. Thus of the Red-deer it is stated (p. 343) :—"In the mountains of Knockmeledown we have some remains of the Red-deer, but so few that it is to be feared the species will in a few years be extinct, especially if a little more care be not taken of them."

The Crane (which, in the time of Giraldus, was so numerous in Ireland that flocks of a hundred and more might often be seen) is included as a bird of passage with the remark that "during the great frost of 1739 some few Cranes were seen in this county, but not since, or before, in any person's memory."

In Smith's "History of Cork" will be found a Catalogue of the Birds observed in this county (pp. 325—354). "For catching Larks," the author says, "the Hobby is let fly, and soars in the air above them; the Larks, spying their mortal enemy, lie flat on the ground, and so are easily taken in nets drawn over them. This sport is called 'daring of Larks.'" It is often mentioned by old writers, and is referred to by Shakespeare. The sport is doubtless of some antiquity; but it should be noted that Dr. Smith does not affirm that it was practised in the County of Cork, or indeed in any other part of Ireland, where, according to recent observation, the Hobby is an extremely rare bird. The Goshawk is included and described (p. 327), although, according to Thompson, it cannot with certainty be included in the Irish fauna.

The Common Brown Owl is also included (p. 328)

as well known, feeding on mice, and in the evening destroying rabbits ; although Thompson states that, if included at all in the Irish fauna, it must be considered extremely rare. Dr. Smith nevertheless distinguishes the sexes of this bird, describing one as brown, the other grey.

The Heath-cock, or Black-game or Grouse, *Tetrao, seu Urogallus minor*, is noticed as "frequent, and needs no particular description. It inhabits mountains, and is rarely seen in lower heath grounds. The cock is almost black, but the female is coloured like a Woodcock or Partridge." This description, as remarked by Thompson, would be decisive as to the species if taken from native birds, but it appears to be borrowed from Willughby.

Three species of Wild Pigeons are recorded as occurring in the County of Cork, including the Stock Dove, *C. ænas sive vinago*, although Thompson believed it to be unknown in Ireland. It is included by Dr. Rutty, however, in his "Natural History of the County of Dublin," to which work we shall have presently to refer, and of late years it has certainly been proved to be at least an occasional visitor to Ireland. Lord Clermont, for instance, has recorded its occurrence in the County of Down in October, 1875 (Zool. 1876, p. 4798). There is a specimen, too, in the Belfast Museum, which was shot also in the County of Down, and presented by Mr. A. O. D. Taylor, of Belfast, in 1876 ; and a young bird, shot after it had left the nest, was obtained by Mr. Darragh for the Belfast Museum.

In "The Ancient and Present State of the Co. Kerry" we find but a brief chapter (Chapter xiii.)

devoted to an account of the fauna, for the reasons thus stated in the opening paragraph:—"Having in some former volumes given a detail of the several species of fish and fowl that are to be met with in the southern parts of this kingdom; as this county is contiguous to those already described, it is frequented by almost the same kinds of both; therefore to avoid a repetition of what has been already treated of at large, I shall refer the reader to Chap. v. and vi. of the 4th book of the Natural History of Cork, as also to pages 259 and 335 of that of Waterford. All that I shall add here will be an account of some peculiar species not observed in the above-mentioned counties, with some curious particulars relative to their natural history, either new or not touched upon in the said tracts."

Then follow some brief remarks on the habits of the common Seal, the Cuttle, and common Crab, and a reference to the only bird which the author considers to be peculiar to the County of Kerry, which, from his description, appears to be the Storm Petrel, "an inhabitant of the Blasquet Islands."

Dr. John Rutton's "Essay towards a Natural History of the County of Dublin" (2 vols., 8vo, 1772), may be said to mark a new era in the Annals of Irish Zoology by the methodical and systematic way in which his observations are recorded. The four chapters at the end of the first volume (pp. 263-392) deal respectively with the Quadrupeds, Birds, Fishes, and Insects, which at the date of publication were regarded as indigenous to the County of Dublin, and contain several passages worth noting.

“The Stag, Hart, or Red-deer is found here, although much rarer than the *Cervus platyceros*, the Buck, or Fallow-deer, whose horns are palmated.”

It would have been desirable to know in what particular parts of the County of Dublin the Red-deer was to be found in Dr. Rutty's day, and whether in a wild state, or only in parks.

“A vulgar error,” he says, “has prevailed, mentioned in Johnson's ‘*Historia Animalium*,’ that the Dormouse is not found in Ireland, nor could live in houses built of Irish oak, which is equally fabulous with what is related concerning the antipathy of the Viper to Irish wood” (p. 277). But Dr. Rutty by no means disproves Johnson's statement, nor adduces any evidence of the existence of the Dormouse in Ireland.

“The Martern, or Marteron, *vulgo* Martin, is found at Lutterelstown. It destroys rabbits and poultry, and is almost as mischievous as the fox” (p. 281). The Weasel is included with the remark, “It may be very useful, as it kills rats and mice better than cats do” (p. 283); but as the Stoat is omitted, and no sufficient description of the animal called Weasel is given, it is possible that the Stoat may be the species referred to.

“The Frog was brought into this kingdom A.D. 1699 by Dr. Guithers” (p. 290).

“The Squirrel is said to have been found in the wood at Lutterelstown. The skins dressed with the hair are much valued as furs for their warmth and fineness of their touch” (p. 291). “The Badger, Gray, Brock, or Bawson,” is mentioned as a native of the county (p. 291). Only one species of Bat is

included (p. 293), and that not identified. In all probability the Common Pipistrelle.

The birds of Ireland having been so thoroughly dealt with in the well-known work of Thompson, who naturally availed himself of Dr. Rutty's labours, so far as seemed to him desirable, little need be said here by way of comment. Attention, however, may be directed to a few species which are included by Dr. Rutty as found in the county of Dublin, and yet by no means generally admitted to be indigenous to Ireland. Of these may be named the Black Grouse (p. 302), Red-legged Partridge (p. 303), and the Stock Dove (p. 305).

The Magpie, which, according to Giraldus, as above noted, was in his day said to be unknown in Ireland, is included by Dr. Rutty amongst the birds of the county of Dublin (p. 308), but with this remark :—"It is a foreigner, naturalised here since the latter end of King James the Second's reign, and is said to have been driven hither by a strong wind."

A noticeable feature in this catalogue of birds is that in almost every instance the food of each species is specified. Four folding plates are given, on which are figured (1) the Ringed Plover and Snow Bunting, (2) the Whitethroat, (3) the Widgeon and Easterling, (4) the Little Grebe.

From the description given, the Easterling of this author is apparently the Gadwall (*Anas strepera*), and if so, it is remarkable that this bird should have been noticed as occurring in the county of Dublin. Thompson, who considers it a rare species in Ireland, does not refer to this passage.

The account which follows of the Fishes is equally methodical, if not quite so accurate, but it appears to be derived in a great measure from the histories of Down, Cork, Kerry, and Waterford, already noticed.

In the appendix to a "Statistical Survey of the County of Down," by the Rev. John Dubourdieu, 8vo, Dublin, 1802, will be found (p. 312), "Some Notice respecting the Natural History, ancient as well as modern, of this County." It extends, however, to only half a dozen pages, and, with the exception of some remarks on the fossil horn of the Great Irish-deer, appears to have been chiefly compiled from Harris's "History of Down," before noticed.

"A Statistical Survey of the Co. Antrim," by the same author (Dubourdieu), published in two parts, 8vo, Dublin, 1812, contains, in the first part, a section (pp. 113—126) on the Fishes of Lough Neagh, including the first definite notice of a Charr-like fish in Ireland. This fish, there called the Whiting, is identified as *Salmo alpinus*, but as, in the opinion of Dr. Günther, the description does not give any specific characters, we are left in doubt as to the correctness of the determination. It is probable that the Whiting of Lough Neagh is now extinct.*

Another section (pp. 126—128), relates to "the Birds which either live about Lough Neagh, or frequent it in their passage."

The "Grosbeak (*Loxia*)," therein mentioned as being "like a Green Linnet but larger," and "often

* Cf. Günther, "On British Charrs," P.Z.S., 1862, p. 42.

resorting to the wooded farms in its neighbourhood in winter," is most likely not the Hawfinch, but the Crossbill. "The Jay," it is said, "was much more frequent before the woods at Portmore were cut; it is still, however, to be met with about Shane's Castle, and other woods at the borders of the lake." "Pheasants were formerly numerous at Portmore; now, I believe, they only exist at Shane's Castle and its immediate vicinity."

"Wild Turkeys are now nearly extinct, though once in such numbers at the former place; the breed the true copper-colour, with red legs." It seems to have been formerly the fashion to introduce and preserve Wild Turkeys for the sport of shooting them.*

The next work on our list is M'Skimin's "History and Antiquities of the County and Town of Carrickfergus," 12mo, Belfast, 1811. In the Appendix to this little volume will be found (pp. 173—183) a "List of Fish found in the Bay of Carrickfergus," together with lists also of the Crustacea and Mollusca. At pp. 196—203, we find a "Catalogue of the most remarkable Birds observed within the County of Carrickfergus." In this Catalogue the Magpie and the Partridge, which were stated by older authors to be unknown in Ireland, are here noted as common.

In the more important quarto of the Rev. George Sampson, entitled "A Memoir explanatory of the Chart and Survey of the County of Londonderry," 1814, we find "A Catalogue of some of the Birds observed in Londonderry" (pp. 171—177), amongst

* *Vide antea*, pp. 180-181.

which the Kite is noted as "frequently seen hovering over poultry." The Brown or Tawny Owl, considered by Thompson as extremely rare in Ireland, is characterised as commoner than the White Owl. The Magpie is said to be "very common and destructive to young poultry, eggs, &c. Imported from England not one hundred years, now a common nuisance, and instead of being solitary, is becoming gregarious." The Partridge also, at this date, is said to be "common and well known."

The most remarkable statement in this catalogue, perhaps, is that which refers to the Great Auk:— "*Alca impennis*, Pinguin; on steep rocks sometimes; more frequent near Hornhead, in Donegal County." The author does not explain how a bird which is *impennis* contrives to surmount steep rocks, and his statement reminds us of the equally curious one attributed to Temminck concerning this same bird, which, it was said, retired to breed "upon the banks of Newfoundland," or, in other words, under water! The "Pinguin" referred to is, in all probability, either the Razorbill or the Guillemot; notwithstanding that the author, at the end of his list, remarks, "There are doubtless many other birds. I mention only such as I have myself observed"—seventy-eight species in all.

Of the "Fishes observed on the coast and in the rivers of the County of Londonderry," a systematic list of nearly fifty species is given (pp. 178—181), with observations, as in the case of the birds, and a figure of the Opah, or King-fish (*Lampris luna*) is given as "the only fish of this species which has been known to be taken on the Irish coasts."

“Among the quadrupeds which formerly existed, but are now extinct (says the author), is the native stag or red-deer. The moose-deer is only claimable to these regions by the discovery of his horns in our bogs; * the wolf is happily no more; and even the fox is gradually withdrawing from the haunts of man and his vigilant satellite the dog. Neither have we moles, serpents, nor toads, but the frog, who not one hundred years ago was (with the magpie) imported in a luckless hour, has, like his fellow-voyager, multiplied exceedingly to our discomfort. The otter is yet discoverable, though not common: the marten still more rare; the weazel is frequent, but here, as elsewhere, leaves it doubtful whether he is to be ranked with the workers of good or evil. Had his antipathy to the Norway rat been more active, he might have preserved the black natives, now almost, if not entirely, extinct.† With the mischievous domestic mouse, and the inoffensive shrew-mouse, I may close this catalogue of our natural and adopted quadrupeds.”

The information here given respecting the fauna of Londonderry is much the same as will be found in the “Statistical Survey” of that county, published by the same author in 1802.

Of the limited number of works relating to the fauna of Ireland which have been published during the last forty years, it will suffice to mention only

* A fine pair of horns of the true Elk (*Alces*), discovered at Dardistown, near Drogheda, are described and figured by Dr. Molyneux in Boate’s “Natural History of Ireland.” Others found in the Co. Tyrone are described by Thompson, P.Z.S., 1837, p. 53.

† *Vide antea*, p. 163.

the titles, since they are doubtless sufficiently well known. Taking them in the order of publication we have:—

1845. Harvey, J. R. Contributions towards a Fauna and Flora of the County of Cork, read at the meeting of the British Association held at Cork in the year 1843. The Vertebrata by J. R. Harvey; the Mollusca, Crustacea, and Echinodermata by J. D. Humphreys; the Flora by Dr. Power. 1 vol., 8vo. Cork and London.

1846. Richardson, H. D. Facts concerning the Natural History of the gigantic Irish Deer. 8vo. Dublin.

1849-56. Thompson, W. The Natural History of Ireland. Vols. I.—III., Birds. Vol. IV., Mammalia, Reptiles, Fishes, and Invertebrata. 8vo. London.

1853. Watters, J. The Natural History of the Birds of Ireland, Indigenous and Migratory. Post 8vo. Dublin.

1878. A Guide to the County of Dublin: its Geology, Industries, Flora, and Fauna. Lists by various contributors.

1880. Patterson, R. L. The Birds, Fishes, and Cetacea commonly frequenting Belfast Lough. 8vo. London and Belfast.

To give a complete list of the various papers relating to Irish zoology, which may be found scattered throughout the pages of scientific journals, need not here be attempted. It will suffice for our present purpose if we indicate the names of the journals in which they may be found. These are:—

The Transactions of the Royal Irish Academy. 4to. Dublin.
1787 to date.

Proceedings of the Royal Irish Academy. 8vo. Dublin.
1837 to date.

Journal of the Geological Society of Dublin.

Journal of the Royal Geological Society of Ireland.

Proceedings of the Natural History Society of Dublin.

Proceedings, Dublin University Zoological and Botanical Association.

Journal of the Royal Dublin Society.

Proceedings of the Belfast Natural History and Philosophical Society.

Loudon's Magazine of Natural History.

Magazine of Zoology and Botany.

Annals of Natural History.

The Zoologist.

Doubtless there are other periodicals in which papers relating to the fauna of Ireland may be found, and it is almost superfluous to name the Transactions and Proceedings of the Royal, Linnean, and Zoological Societies, which would of course be consulted by any one seeking information on such a subject.

It will be gathered from the foregoing remarks that there are comparatively few works of real value relating to the fauna of Ireland, by far the greater number of those which we have mentioned being more curious than useful.

In searching for reliable information on any point connected with Irish zoology, most people would probably content themselves with referring to the works of Harvey, Thompson, Watters, and Patterson, and to the various papers by Sir James Wilde, Prof. M'Coy, Dr. Carte, Dr. Ball, Dr. Scouler, Prof. Leith Adams, Messrs. A. G. More, Warren, Barrington, Freke, Ussher, Blake Knox, and other good observers in Ireland which have been published in the periodicals above named. But something more than this is required. The standard work of Thompson, published a quarter of a century ago, now stands in need of revision and emendation; while most of the scattered papers to which we have referred may be said to be practically inaccessible to most people. A reference to them at least is attended with con-

siderable trouble and inconvenience. We stand sadly in need of a good modern comprehensive work on the fauna of Ireland, and one cannot doubt that the appearance of such a work would be hailed with satisfaction by the large and ever-increasing body of British zoologists.

The question is one which might well be dealt with by the British Association. Considering the success which attended the efforts of the Irish Physico-Historical Society made in the same cause more than a century ago, with slender means and far fewer facilities than now exist for the prosecution of scientific research, it cannot be doubted that a far greater success would be achieved at the present day if some scheme for the investigation of the fauna of Ireland were carried out under the auspices of the British Association for the Advancement of Science. It would not be difficult to appoint for the purpose a committee of specialists, and place a fund at their disposal for three years. In that time it would be possible to collect and arrange materials for a practically exhaustive work on Irish Zoology—a work which, as we have said, is much needed; would redound greatly to the credit of the British Association; and relieve British naturalists of the reproach under which they remain of knowing less of the natural productions of their own country than they do of those of the antipodes.

THE GREAT BUSTARD.

THE appearance of a Great Bustard in England at the present day is of sufficiently rare occurrence to deserve something more than a passing notice; and when, as in the instance about to be mentioned, the illustrious stranger contrived to escape destruction and remain unmolested for several weeks on a farm in the fens, to the great delight of the proprietor and his friends, the details of so lengthened a visit deserve to be chronicled.

It would be beside the present purpose to offer any remarks here on the previous occurrence of Bustards in England, or to dilate on the rarity of such visits, and the persistent and deplorable persecution which almost invariably attends these noble birds whenever and wherever their presence is detected. Suffice it to say that the Great Bustard (*Otis tarda*, Linn.), although in former days extremely common on all the open parts of this island which were suited to its habits, has, from various causes, long ceased to be a resident here. From time to time, often at intervals of several years, a straggler from the Continent pays us a visit in the early spring or autumn; but, too often, alas! it is either shot or immediately driven away.

On the 14th of January, 1876, a female Great

Bustard was shot on the downs near Eastbourne, as reported in *The Field* of Jan. 22, and was preserved by Mr. Bates, a bird-stuffer at Eastbourne, for the collection of Mr. Monk, of Lewes.

With the exception of this hen bird, and one other which was reported in August, 1873, as having been seen on the Wangford and Lakeheath warrens,* I am not aware that any Bustard was killed or seen in England since 1871, when several were shot in different parts of the country.†

The instance to which I have now to refer is chiefly remarkable for the pains and trouble taken, not to shoot the bird and stuff it, but to protect it from molestation, and to encourage it to remain here by providing a mate for it! Strange as these words may appear, it is nevertheless the fact that the gentleman upon whose land the bird in question made its appearance—Mr. H. M. Upcher, of Feltwell, near Brandon—not only gave strict orders for its protection, but, through the liberality of a friend, was enabled to turn down a hen Bustard to keep it company.

The promised sight of a wild Bustard would of itself be sufficient to tempt many a lover of birds from town, and it was accordingly with no little

* See *The Field* for Aug. 16th, 1873.

† See *The Field* for Jan. 7th and Jan. 14th, 1871. In September, 1870, I saw a Great Bustard in Somersetshire, on the low flat country by Shapwick, and within a short time afterwards three were killed in the adjoining county of Devon, and one or two more in other parts of the country. At this date, it will be remembered, the peace of Europe was disturbed by the Franco-Prussian war, and it is most probable that the Bustards were disturbed by the noise of the heavy field guns and the movement of troops through their particular haunts.

pleasure that I accepted Mr. Upcher's invitation to be present at the interesting ceremony of providing so illustrious a visitor with a partner.

So far as curiosity was concerned, I was amply gratified. I had an excellent view of the wild bird, both while feeding and on the wing, and was enabled to make a few sketches, here reproduced, which will give some idea of the bird as it appeared when



viewed through a telescope. The wild, flat fen in which we found it, only partially cultivated, and with dykes instead of hedgerows dividing the land, seemed as lonely and cheerless a situation as could well be selected. Its only merit, so far as the Bustard was concerned, seemed to lie in its remoteness from the haunts of men.

But it will be better that Mr. Upcher should speak for himself in the following account which he has

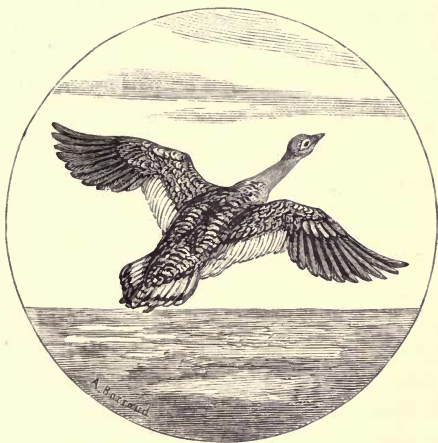
kindly furnished, and which contains a record of his observations from the day when the bird was first seen by him. He says:—

“On Jan. 24, 1876, being in the fen, one of my men came to tell me that he had seen a ‘wonderful cur’ous bird’ in a piece of coleseed belonging to me. He had been told it was ‘suffun’ of a pelican!’ I at once went to the place indicated, and was not long in making out the illustrious stranger. Judge of my astonishment when I saw before me a Great Bustard! The sun was shining at the time, and I had a very clear view of it. It was a fine male bird. I walked up to within a couple of hundred yards, when it rose and flew round me. The flight was grand, with a slow but powerful stroke, and I remarked that the primaries when extended were separated and turned slightly upwards, like those of an eagle when on the wing. Even then I could scarcely believe my eyes as I stared after him with open mouth, which I only closed to anathematise the man who a few days previously had shot a female Bustard in Sussex—in all probability the mate of the bird now before me.

“I at once gave stringent orders for its protection, and directed that if any prowling gunner were found on my land he should be consigned to the bottom of the nearest fen dyke without benefit of clergy. Riding home, I got a powerful telescope, and, setting out again in the direction in which I had seen the bird go, after a long search found that he had returned to the field where I had first seen him. A look through the glass only confirmed my view as to the species.

“Jan. 25. Returned at daybreak to the spot, but it was so foggy that I could not see him; and that afternoon I was unfortunately obliged to leave home.

“The field in which he had taken up his quarters is in the heart of Black-dyke Fen, in the parish of Hockwold; a poor crop of coleseed on one half of it, the other half not sown, in consequence of the



very unpropitious weather we had last summer. A wide ditch on one side separates it from the ‘drove’ or road across the fen; at the other end is an osier belt; while the two remaining sides are flanked by dykes. The situation thus selected was a pretty safe one, as it would have been extremely difficult, if not impossible, to approach the bird within gunshot. This seemed to be its favourite feeding

ground, to which it invariably returned when disturbed, and was almost certain to be found there at early morning. It appeared to feed much on the coleseed, biting off the tips of the leaves, as one of the farm men said, 'just like a sheep.' On my return home I continued my observation of it.

"Feb. 2. Mr. Edward Newton, with Messrs Francis and Edward Newcome, went in search of it, and, after a long walk, found it back in the old place again.

"Feb. 3. Professor Newton, with his brother, came over from Cambridge on purpose to see it, and we had a capital view, measured the stride and foot-prints, and picked up a few feathers. A neighbouring keeper took the opportunity of giving the professor a lesson in ornithology. When asked whether it was he who thought the bird was a pelican, he replied, 'No, sir; *you* know a pelican well enough: a sort of a bird with a large pouch as goes down to the sea and fills his pouch with water, and then goes back to the desert again for two or three weeks!'"

"Feb. 8. Mr. J. H. Gurney, jun., came over from Norwich to see the bird, and had a good view of it. In the course of the day I received a telegram from Lord Lilford, to whom the news had been sent, offering me a hen Bustard to turn out, with the view of inducing the cock bird to remain. I replied, joyfully accepting, and the next day the hen arrived, accompanied by Lord Lilford's keeper, whom he had kindly sent all the way from Oundle with her to insure her safe transit. She was at once turned into a loose box for the night and well fed.

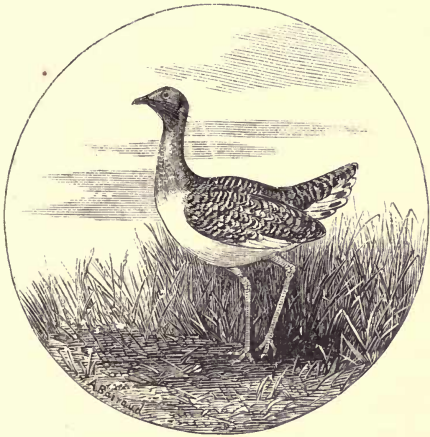
“Feb. 10. Quite a warm spring morning. No better day could have been selected for making the experiment which we had in view. After breakfast the hen was taken up, placed in a large hamper well padded, and conveyed in a pony cart to the fen, while I collected the ‘marriage guests.’ These were Professor Newton, Mr. Edward Newton, Mr. O. Salvin, Messrs. F. and E. Newcome, and Mr. J. E. Harting. Such a procession, and for such a purpose, probably never before was formed, and, as one of the company remarked, there was something amusing in the idea of a party of naturalists and sportsmen walking out three miles into the fens in search of a Great Bustard, each armed with no more offensive weapon than a telescope, although one of them when opened, from its size, might have been mistaken for a punt gun! Yet so it was; and much we all enjoyed it. As we approached the spot where the bird was supposed to be, all glasses were brought into requisition, from the small ‘binocular’ to the big ‘punt gun,’ and after an anxious search we at length made it out, about four hundred yards away, standing perfectly still, with its back towards us, the sun shining brightly at the time. We decreased the distance by another hundred yards or so, and had another peep through the glass. We could see his fine yellow neck looking all the yellower in the sunlight, and watched him for some time as he walked slowly away from us, flirting and spreading his tail, which he carried higher than his back. As soon as we had all satisfied our curiosity, preparations were made for turning out the hen. With the assistance of the keeper, I carried the

hamper across the fen, in the direction of the wild bird, as near as I dared go without alarming him, whilst my friends remained behind on the 'drove.' Suddenly the sun was obscured by cloud, a cold wind blew keenly, and snow began to fall. This was unfortunate; for, as the wind blew almost directly across the fen, the hen headed away up wind as soon as she was released. I tried to drive



her gently towards her intended mate, but could not get her into the coleseed; she would keep on the bare fen. By this time I was getting pretty close to the wild bird, who, after moving away suspiciously for some yards, suddenly rose and flew away. Just as he was leaving the hen rose, and, although the feathers in one wing had been slightly cut, she managed to fly about ten or a dozen yards and then

pitched again. We fancied that the male bird as he passed over caught sight of her, for in less than half an hour he returned, and alighted in the coleseed again. Many were the comments made upon his flight, and although it was said that on rising with a heavy flap of wing he reminded one of a Heron, or an Eagle, yet when fairly launched this resemblance ceased. The quicker stroke of wing and out-



stretched neck reminded us then of a Wild Goose. The wings showed a good deal of white, the legs we could not see. Whether they were doubled up in front like an Eagle, or carried straight out behind after the manner of a Heron, did not appear. If the latter, as we suspect, they seemed not to project beyond the tail.

“During the interval which elapsed in the absence

of the cock bird, I caught and carried the hen right into the coleseed, and had hardly set her down and got back to the drove when he returned to his old haunt, pitching down, however, at a considerable distance from her. Here we thought it prudent to leave them ; for, as they were now in the same field together, we had really accomplished the object of our excursion. Nothing could have been more satisfactory. Even the weather became accommodating, for the snow ceased and the wind blew less coldly. We watched the happy pair for some time through our glasses from the top of a stack, and then withdrew to the farmhouse, where we drank to the health of the bride and bridegroom, and the good housewife told us ' she hoped they would unite and live comfortable together !'

" Feb. 11. Twelve degrees of frost, and a thick mist, which froze on the trees. The cock bustard had taken his departure just before I arrived, but I found the hen in the adjoining field. She had had the primaries of one wing slightly clipped to prevent her from going right away, but she could manage to fly across the narrower dykes. As it had suddenly turned so cold, I had a hut built of hurdles and straw, and put her in and fed her, leaving the front open.

" Feb. 12. The old man, whom I had put on as watcher, reported the happy pair as walking about together ' quite comfortable-like.'

" Feb. 13, Sunday. Both birds together as yesterday, the male bird reported as strutting about and ' traping his wings like a turkey cock.'

" Feb. 14. A most unfortunate change in the

weather. Last night it snowed hard with a cold wind, and this morning there were three or four inches of snow on the ground. The male bird was seen close to the hut, and the keeper, supposing that the hen was inside, did not disturb him. In the evening it blew a gale and rained in torrents.

“Feb. 15. The snow all disappeared, but rain falling at intervals. The hen bustard reported as missing. As I was obliged to leave home to-day, I directed the keeper and others to make a search for her. To my great regret, she was found dead in one of the deep ditches which bounded the field she was in. There was very little water in this ditch, and she had apparently crept for shelter into a tuft of grass, instead of going into her hut. This was most unfortunate, as the two birds had taken so well to one another. I wrote at once to Lord Lilford to communicate the circumstances, and in due course received a reply, in which he expressed his disappointment, but offered in the most liberal manner to send me another hen, in the hope that a second experiment might be more successful.

“Feb. 21. Lord Lilford’s keeper arrived with a second hen bustard, and we drove over at once to the fen. The cock bird was still there. It was blowing so heavily from the north-west, with every appearance of a continuance of bad weather, that I hesitated to turn her out after her predecessor’s untimely end, owing, as I feel sure, to the very inclement weather. So I put her into the hut, with this time a hurdle across the entrance, and left her. The cock bird was in the field, and by this time he

appeared to have become accustomed to our presence.

“Feb. 22. The keeper saw the cock bustard about 100 yards from the hut, and went to let out the hen; but, unfortunately, while so engaged the cock took flight. Thereupon, as this hen’s wings were uncut, he thought it more prudent not to let her out in his absence. This evening, the wind still blowing a gale from the north-west, the male returned, but, flying over the field in which the hen was, passed on about a mile to another spot, which he had been observed to visit before.

“Feb. 23. The male bird in the same field in which he had been seen to alight overnight. A boy going for some harrows put him up, but he alighted again almost immediately. The same afternoon he was seen flying towards Brandon.

“Feb. 24. The male bustard was seen to-day near Mildenhall, on the corner of Eriswell Warren.

“Feb. 25. The Maharajah’s keeper reported the bird as seen to-day at Elvedon, near Thetford. I have since sent to Lakenheath, Eriswell, and Mildenhall, but can hear no tidings of him, although most of the landowners in the neighbourhood, including the Maharajah Duleep Singh, Mr. Angerstein, Mrs. Lyne Stephens, and Mr. Amherst, had given orders for his protection. I fear, therefore, that he will not return.”

Mr Upcher believed this to be the first instance in which a Bustard had revisited the old haunts of this species in Norfolk and Suffolk since the last of the original stock perished. But in *The Field* of Aug. 16, 1873, appeared a note from Mr. Howlett,

of Newmarket, in which he stated that a bird answering to the description of a Great Bustard had been then recently observed at Lakenheath.

The trouble taken by Mr. Upcher to preserve the Bustard on his property, and the liberality displayed by Lord Lilford in his zealous endeavours to procure a brood, deserve the cordial approval of all true naturalists and sportsmen.

It is to be wished that other owners of land suited to the habits of this bird would similarly exert themselves should opportunity occur. It should not be forgotten that the Great Bustard is a "game bird," and, although unhappily of rare occurrence in England at the present day, it is nevertheless still entitled, whenever it may be found, to the protection afforded by existing game laws. By 1 & 2 Will. IV., cap. 32, bustards are protected between the 1st of March and the 1st of September, and any person killing one between these two dates is amenable to prosecution and fine, besides being liable to pay the costs of prosecution.

PURPLE GALLINULES.

IN the seventh volume of "Stray Feathers," a Journal of Ornithology for India, edited by Mr. Allan Hume; will be found a paper by Mr D. G. Elliot on the genus *Porphyrio*, which throws some light on the subject of the occurrence in England of one or more species of this handsome group of birds.

The question has arisen, "To what species of *Porphyrio* do the specimens of Purple Gallinule belong which have been recorded to have been shot at various times in this country; and how is their presence here in a state of freedom to be accounted for?" The recorders of these specimens have almost invariably written as if they were under the impression that only one such species exists, while Mr. Elliot, in the paper referred to, recognises no less than nine, reduceable, however, to eight, should *Porphyrio cælestis*, Swinhoe, prove to be identical, as Mr. Elliot thinks likely, with *Porphyrio calvus*, Vieillot.

Before reviewing the species, it may be well to point out, for the benefit of those who may be unacquainted with the appearance of these birds, that in shape and make they resemble large water-hens, with an attractive plumage of peacock-blue, or green, glossed with shades of purple; white under-tail coverts; legs and feet red, or green, or

flesh colour; a bright red bill, and a horny plate or shield of the same colour on the forehead, and covering a considerable portion of the top of the head. Such is their external appearance. Anatomically considered, they have a narrow sternum, like the Rails, with one lengthened emargination and a weak furculum. The stomach is muscular, the intestines long, the cœca large; the tongue is thick and fleshy, with a horny tip; and toes long and slender, enabling the bird to walk easily over the water plants, although it swims well. The large foot is often employed to hold the food, very much in the manner of a parrot, while the bird is eating.

In discriminating the several species, colour seems to be almost the only guide, and, except where the hue of the legs and feet varies, as in the Australian *Porphyrio bellus*, in which these parts are grass-green instead of bright red, it requires a careful comparison of specimens before one can thoroughly appreciate the distinguishing combinations of blue, green, or purple, which characterise each member of the genus.

Mr. Elliot, in his monographical review above referred to, recognises nine species, two of which, inhabitants of Southern Europe and a considerable part of Africa, especially claim our attention from the fact of their having occurred, it is said, in England in a wild state as accidental visitors.

These two are (1) *Porphyrio veterum*, Gmelin (vel *P. hyacinthinus*, Temm., vel *P. antiquorum*, Bonap.), but the proper designation of which has lately been shown to be *P. cœruleus*, Vandelli,*

* Cf. Sclater, "The Ibis," 1879, p. 195.

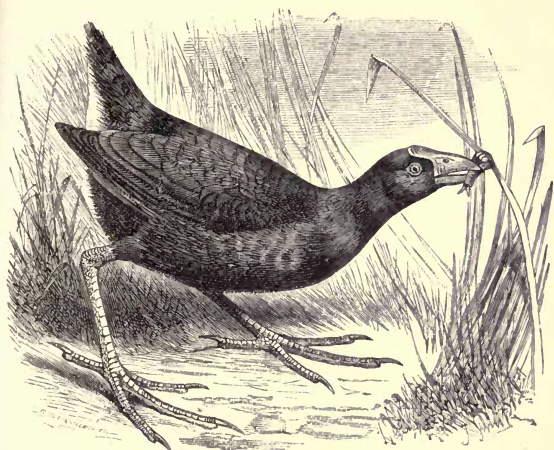
occurring in Spain and Portugal, Majorca, Sardinia, Italy, Greece, and Palestine; Tangier, the Eastern Atlas, and the Sahara; and (2) *Porphyrio chloronotus*, Vieillot (vel *P. smaragdonotus*, Temm.) which is found in widely distant parts of Africa, as well as in the Mauritius and Madagascar, and has occurred also, in one or two instances only, in Sardinia and the south of France.

In the former species the back is dark blue; in the latter grass-green. The legs and feet in the former are flesh colour; in the latter bright red. Both forms have been captured in a *quasi*-wild state in different parts of England, although, as already remarked, in the majority of cases, no discrimination of species was noted.

Writing of *Porphyrio cæruleus*,* Professor Giglioli says: "This is *the* Italian species, and is not rare in Sardinia and in Sicily, but is not easy to be got at, for it keeps to the thickest of the marsh-reeds, which must be sometimes fired to make it rise. It breeds beyond doubt in the former island, and as recently as the 26th of last September four specimens in juvenile garb were shot in the marsh of Assemiori, not far from Cagliari. I have received one of them, a male. In Sicily it is a resident species in the marshes at Lentini, between Catania and Syracuse, whence I have a pair, male and female, shot in December, 1879; moreover all the Purple Waterhens I have seen in the museums at Messina, Catania, and Syracuse, belong to this species. I am not aware of its occurrence in Corsica; but there is no reason why it should not

* "The Ibis," 1881, p. 210.

be found in the marshes of Biguglia and Aleria. It has repeatedly occurred on the Continent; and, besides the cases mentioned by Salvadori (Faun. d'Ital. Ucc. pp. 236, 320), I have seen a specimen shot at Ancona which was found in the Florence market during the winter of 1872. This, and I



PORPHYRIO CÆRULEUS.

believe all other species of *Porphyrion*, have a rudimentary spur on the wing."

Amongst the records of so-called British-killed Purple Gallinules are the following:

One, Rowner, Hants, Aug. 10, 1863 (Stares, *Zoologist*, 1865, p. 9418, and 1867, p. 829).

One, Boldon Flats, Northumberland, Aug. 1863 (Hancock, "Birds of Northumberland and Durham," p. 126).

One, near Campbeltown, Argyllshire, Dec. 1863 (Gray, "Birds of West of Scotland," p. 337).

One, Redbridge, near Southampton, Feb. 1864 (Reeks, *Zoologist*, 1866, p. 229).

One, near Ponteland, Northumberland, Aug. 1873 (Hancock, "Birds of Northumberland and Durham," p. 126).

One, Tarnock, Badgworth, Somerset, Aug. 1875 (*Science Gossip*, 1876, p. 41). Mathew, *Zoologist*, 1877, p. 178. This specimen was stated to be *Porphyrio veterum*, i.e., *P. cæruleus*, and another was seen at the same time.

One, Grange-in-Furness, Lancashire, Sept. 1876 (*Zoologist*, 1877, pp. 228 and 381).

One, Tatterford, near Pinckney, West Norfolk, Oct. 1876 (Stevenson, *Zoologist*, 1877, pp. 96, 228). This specimen, as ascertained by Mr. Gurney (*Zoologist*, 1877, p. 253), was *Porphyrio smaragdonotus*, Temm., or, as it should now be called, *P. chloronotus*, Vieillot.

One, Hickling Broad, Norfolk, Sept. 7, 1877 (Gurney, *Zoologist*, 1877, p. 447). This bird, identified as *Porphyrio chloronotus*, was claimed by Mr. J. H. Gurney, jun., as one of his own, which had escaped from Northrepps, at no great distance from Hickling.

One, Stalham, Norfolk, Nov. 1, 1877 (Gurney, *Zoologist*, 1878, p. 29). Identified by Mr. Gurney as *P. chloronotus*.

One, Dedham, Essex, Oct. 30, 1878 (Bree, *The Field*, Nov. 16, 1878). This specimen, at first supposed to be *P. veterum* (i.e., *cæruleus*), proved, on re-examination, to be *P. chloronotus*. See *The Field*, Nov. 23 and 30, 1878.

In addition to these examples, two Irish specimens may be noticed. The first is recorded in Thompson's "Birds of Ireland" (vol. ii., p. 331), under the name of "Martinico Gallinule," but the author states that "the dimensions of the different parts, and the colour, so far as noted, agreed with those of the Purple Gallinule (*Porphyrio hyacinthinus*, Temm.) of authors;" and he afterwards had an opportunity of comparing the bird with a specimen of *hyacinthinus*, in the British Museum, with which

he found it to correspond. It was picked up dead in a ditch near the village of Brandon, on the coast of Kerry, about the first week of November, 1845.

The second Irish example is one which was formerly in the possession of the late Mr. N. Troughton, and on the sale of his collection, after his decease, it was purchased by Mr. John Marshall, of Taunton, by whom it has since been presented to the Rev. M. A. Matthew, of Bishop's Lydeard. This specimen was labelled by Mr. Troughton as "Killed in Ireland." On comparing it with specimens in the British Museum, Mr. Matthew identified it (*Zoologist*, 1877, p. 339) as *Porphyrio veterum*, i.e., *P. cæruleus*.

On the question whether these British-killed Purple Gallinules are really wild birds, or only "ornamental waterfowl" that have escaped, opinions differ. On the one hand it is alleged that no traces of confinement have been observable in the plumage or condition of the birds; that advertisements in local papers have failed to find owners for them, and that individuals of allied species have been met with at sea, at a considerable distance from any land, indicating that they occasionally migrate, or are blown out to sea by adverse winds. See Wilson Amer. Orn. (Jardine's Ed.), vol. iii., p. 189, and Audubon Orn. Biog., vol. iv., p. 40. The latter author states that three individuals of the Martinique Gallinule were caught three hundred miles from land.

On the other hand, it is asserted with truth that birds, on regaining their liberty, speedily lose all traces of confinement, and this is especially the case with

waterfowl which usually have a good deal of freedom accorded them; that Purple Gallinules, from the beauty of their plumage and their hardy nature, are often sought after for "ornamental waters;" and that the two species which have been met with in this country are not migratory in their native haunts.

On the last point, it may be remarked that Mr. Howard Saunders—who is familiar with the habits of *Porphyrio cæruleus*, as observed by him in Southern Spain—is of opinion that few birds migrate less, and are more locally restricted, than this species. If the bird were really "migratory" in the usual acceptance of the word, he says, it is strange that it should have become scarce or almost extinct in the marshes of the Albufera of Valencia, in those near Murcia, in those of the Prat and the Almenasa, of the Island of Majorca, and other localities. He thinks there are few European species less likely to have come to England of their own accord than this Purple Gallinule. The argument applies still more forcibly to the African Green-backed Porphyrio, which is scarcely recognised as a visitor even to Southern Europe. There can be little doubt, I think, looking to the "probabilities" of the case, that the Purple Gallinules which have been found at large in this country, must, at some time or other, have been imported hither, and, contriving to elude the vigilance of their owners, have made good their escape for a time, only to meet a worse fate than captivity at the hands of prowling gunners. In one instance, as above noted, a specimen killed at Hickling was claimed by a gentleman residing only a few miles

distant at Northrepps, he having previously lost a bird of the same species.

While on the subject of British-killed Purple Gallinules, it will not be irrelevant to glance briefly at the other species of the genus as differentiated by Mr. Elliot, and note the geographical distribution of each. The two just noticed are, as already observed, natives of South-West Europe and parts of Africa. The remaining seven are :

3. *Porphyrio poliocephalus* (Latham), which is found throughout India and Ceylon, as well as in the Tenasserim provinces on the eastern side of the Bay of Bengal.

4. *Porphyrio pulverulentus*, Temminck, inhabiting the Phillipines, but which particular island or islands has not yet been ascertained. It is extremely rare in collections, the type in the Leyden Museum and an example in the Paris Museum being the only specimens at present known to exist.

5. *Porphyrio calvus*, Vieillot, better known as *P. indicus* (Horsfield), is a native of Java, Sumatra, Celebes, and Timor, the Samoan Islands, Fiji, and the New Hebrides.

6. *Porphyrio cælestis*, Swinhoe, from one of the islands of the Eastern Archipelago, but which is uncertain. Mr. Swinhoe's description of this bird applies equally well to *P. calvus*, with the exception that the *upper* tail coverts are stated to be white. This Mr. Elliot believes to be an oversight, and suggests that the *under* tail coverts were intended.

7. *Porphyrio cyanocephalus*, Vieillot, occurring in Australia, Yule Island, New Guinea, New Zealand, New Caledonia, and the Chatham Islands.

8. *Porphyrio bellus*, Gould, a native of Western Australia and New Caledonia, which has the legs and feet grass-green, instead of red as in the last-named.

9. *Porphyrio edwardsi*, a new species from Cochin China, Saigon, and Bangkok, recently described by Mr. Elliot (Ann. & Mag. Nat. Hist., 1878, p. 98), and figured in colours in "Stray Feathers" (vol. vii., p. 23). It appears to be a green-backed form of the Indian *poliocephalus*, and may be said to hold pretty much the same relation to that species that *P. chlorontus* does to *P. cæruleus*.

With the birds here named some authors have classed *Fulica martinica* (Linn.), above referred to; *Fulica parva* (Boddaert); and *Porphyrio alleni* (Thompson); while others have referred these to *Gallinula*. Mr. Elliot considers that they belong to neither of these genera, but constitute more naturally an intermediate genus, partaking of the characters of both *Porphyrio* and *Gallinula*, and for which the name *Porphyrula*, proposed by the late Mr. Blyth, may be conveniently adopted.

From the foregoing remarks it will be observed that all the species of *Porphyrio* are restricted to the Old World; so far as at present known, none are to be found either in North or South America.

NOTES ON THE ZOOLOGY OF ARABIA.

IF those whose inclination and means enable them to visit distant and unexplored lands would, previously to setting out upon the journey, make themselves acquainted with what is known of the fauna and flora of the adjacent countries, and ascertain from zoological and botanical experts what should be observed and particularly noted, what collected and brought home, they might render incalculable service to science with very little trouble to themselves. Unfortunately this course is not always adopted; they only become aware of what they ought to have observed from inquiries which are made on their return, and discover when too late what good opportunities have been lost of supplying much desired information.

These reflections have been suggested by the recent perusal of Lady Anne Blunt's "Pilgrimage to Nejd," which, although of considerable interest from a geographical point of view, is somewhat disappointing to naturalists.

As few people have the geography of Arabia at their finger's ends, it may be well to note briefly the position of Nejd, which is supposed by some to be a term applicable only to that district of Central Arabia which is bounded by the Jebel Toweykh and

the lesser Nefûds (intermittent deserts of red sand), neither Jebel Shammar nor Kasim being included in it. Mr. and Lady Anne Blunt, however, ascertained from the Arabs of every tribe and town they visited, that Nejd is held to include the lands which lie within the Nefûds. It is, in fact, a geographical expression, including three principal sub-districts, Jebel Shammar and Kasim in the north, and Aared in the south. The only doubt the travellers ever heard expressed was as to the Nefûds themselves, whether they were included or not in the term. The Bedouins certainly so consider them, for they are the only part of Nejd which they habitually inhabit, the stony plateaux of the centre being unfit for pastoral life. Jôf is considered outside the limit northwards, as are Kheybar and Teymar to the north-west; while Jobba and Harik are doubtful, being towns of the Nefûd.

On leaving Nejd, to which they made their way in a tolerably direct line from Beyrout, the travellers proceeded due north to Bagdad, passing round the northern end of the Lake Huseyn, and thence to Dilam, at the head of the Persian Gulf, whence they reached Bushire.

So much, then, for the geographical position of the country explored. Let us now glance at the zoological results of the expedition, premising, as it is only fair to do, that the investigation of the fauna of Arabia was not the primary object which the travellers had in view.

An attempt to deal with the zoology of Arabia is attended with some difficulty, on account of the double element which it is evident exists there. To

the north the animals are of the Mediterranean type, to the south the African element prevails. The conclusion suggested is that in Arabia there has been a repetition or extension of the same phenomenon which occurs in Africa, viz., that, until the recent epoch the south has been separated from the north by a great sea, similarly situated to the Sahara, and that, while this existed, the southern part was united to Africa. The features of the country harmonise with this view, and Palgrave, whose narrative of a journey in Central and Eastern Arabia is well-known, has expressed his concurrence therein. He says :

My own observation of the superficies of the soil, its qualities, the forms of the mountains and valleys, the character of the rivers, or rather torrents, the vegetation also, would lead me to class Arabia with Africa, much more than with Asia. At what point on the eastern shores of the Red Sea such relationship ceases I cannot say, but *within* Arabia itself I should place the limit at Jebel Toweykh, an African mountain; while Jebel Shammar, and what lies about it to north, east, and west, appear to me rather a continuation of Syria—Asia, in short. Thus I should incline to give Nejd (Kasim included), along with Hasa and Oman, to the east and south-east, and the westerly coast from Meda in Salih and Kheybar, besides Yemen, its Zehamah and Hadramowt, with the entire tract of desert between its limits, over to Africa, regarding the desert itself, in a certain measure, as a continuation of the Great Sahara of Africa, from which, indeed, it is only to be separated by the two long parallel undulations or valleys, that of the Nile and that of the Red Sea.

Discussing the question, "which class of animals is of most importance in determining zoological regions," Mr. Wallace is of opinion that we should construct our typical or standard zoological regions, in the first place, from a consideration of the dis-

tribution of the mammalia, only bringing to our aid the distribution of other groups to determine doubtful points. He adds that—

Regions so established will be most closely in accordance with those long-enduring features of physical geography, on which the distribution of all forms of life fundamentally depend; and all discrepancies in the distribution of other classes of animals must be capable of being explained, either by their exceptional means of dispersion, or by special conditions affecting their perpetuation and increase in each locality.

Monkeys are not uncommon in some of the southern parts of Arabia, and, so far as known, are the same as those found in Abyssinia and Nubia, *e.g.*, *Cynocephalus hamadryas*. What the exact extent of their range may be is uncertain; but they are said to be abundant in the south-west. Niebuhr states that in the woods of Yemen they occur in great numbers, and according to Palgrave their distribution northward lies south of Nejd. He neither saw nor heard of any in that region; but in Oman he saw a few of a small grey species, with brown faces and long tails, resembling a kind not uncommon in the Soudan. The natives of Oman, he adds, like those of the Nile valley, called them "Nisnas." A Porcupine was met with at Sotar by Palgrave, but he neither saw nor heard of any Hyrax. Squirrels he noted as plentiful both in Nejd and Oman.

Throughout the greater part of Arabia, as might be expected, Gazelles (*Gazella arabica*), and Antelopes (*Oryx beisa* and *O. beatrix*) are tolerably abundant; and a small light-coloured Hare (*Lepus aegyptius*) seems generally dispersed, and apparently not

uncommon, its footprints being everywhere visible in the sand.

Mr. Blunt and his party observed neither Monkeys nor Squirrels in the course of their travels, nor did they meet with the Porcupine noticed by Palgrave; but they came across several animals which had escaped his observation, such as the Jerboa (*Dipus ægyptius*) and the White Antelope (*Oryx beatrix*) in the Nefûd, and the Ibex (*Capra arabica*, Rüpp.), and a Marmot (*Arctomys sp.*) in Jebel Aja. Of these, the most noticeable is the so-called White Antelope, of which Mr. Blunt, in his "Editor's Preface" (xxi.), says: "The existence now proved of the White Antelope (*Oryx beatrix*) in Nejd is, I believe, a fact new to science." This is correct no doubt as regards its existence in Nejd, but its validity as a species has been for some time established. As it is a rare beast, of which no living example is at present to be found in the fine collection of antelopes belonging to the Zoological Society, it may be well to refer to what is known of it.

In 1857 Capt. John Shepherd, of the India House, presented to the Zoological Society of London an Antelope, which was at first regarded as a half-grown *Oryx gazella*, and was said to have been brought from Bombay, a pair having been shipped from that port, one of which died at sea. Dr. Gray described the survivor, a male, as a new species under the name *Oryx beatrix* (Proc. Zool. Soc. 1857, p. 157), and, expressing a doubt as to its true home, suggested that it had probably been brought from the shores of the Red Sea. This surmise proved to be a tolerably correct one. The

animal died and was preserved for the British Museum.

In March, 1872, the survivors of another pair, procured by Col. Pelly at Bushire, arrived at the Zoological Society's Gardens, and confirmed the view which had been expressed by Dr. Gray as to its specific distinctness from the other known species of Oryx, and afforded some clue also as to its native country.

A third example was received by the Society in July, 1878, from Commander Burke of the "Arcot," who obtained it at Jedda from a friend, who had received it as a present from the Shereff of Mecca. It had originally been captured in the neighbourhood of Taïf, some 150 miles E.S.E. from the Red Sea, in the Hedjaz passes. Unfortunately, it reached the Zoological Gardens in such bad health that it did not long survive.

The adult animal may be briefly described as resembling the true Oryx (*O. leucoryx*), but with the horns straight instead of arched and recurved; general colour sandy-white, with black legs and white feet, and with a black patch on each cheek, and on the face between the eyes and nose. A good portrait of it by Wolf will be found in the Proceedings of the Zoological Society for 1857, plate 55.

There appear to be four well-marked species of the genus Oryx, namely *O. beatrix* and *O. beisa* of Arabia, *O. leucoryx* of Eastern and Western Africa, and *O. gazella* of South Africa.

O. beatrix is known to the Bedouins in the Nefûd as *bakar wahash*, or "wild cow"; and when we

consider its size, depth of body at the shoulder, and long tufted tail, the name does not seem inapplicable. Its large footprints, too, as seen in the sand, are not unlike those of a small cow. These were noticed by Mr. Blunt quite a hundred miles away from any spring, so that the Arabs may be pardoned, as he says, for affirming that it never drinks. It frequents every part of the red sand desert, but Mr. Blunt and his party, although they often came across its tracks, only saw it alive in confinement. This was at Hail, in the gardens of the Emir, where there were three of these Antelopes, together with several Gazelles and a couple of Ibexes. Although fat, they evidently suffered from confinement, for all were lame, one with an enlarged knee and the others with overgrown hoofs. They had been captured in the great Nefûd, a continuous desert of pure red sand, stretching from west to east for nearly four hundred miles, and extending from north to south about one hundred and eighty miles. The fact of its occurrence here, as ascertained by Mr. Blunt, is of some interest; for, since the Zoological Society has received living examples from the Hedjaz passes in Southern Arabia, and from Bushire on the further or eastern side of the Persian Gulf, it shows that the animal has a very considerable range.

But a still more interesting and much rarer animal noticed by Mr. Blunt is a curious little rodent, *Lophiomys imhausi*, known to the Arabs of the Jebel Aja as "Webber." It was first described by M. Milne Edwards from a living specimen brought from Aden by M. Imhaus, who purchased it there from a

negro, but could learn nothing as to its origin. He inferred, however, that it had not been brought far, and that its native country was either Southern Arabia, or some region in Abyssinia, or Nubia. It was brought to Paris, and lived for about a year and a half in the gardens of the Acclimatisation Society. It fed upon maize, vegetables, and bread, slept during the day, and climbed with ease by the aid of its hinder feet. When irritated, it elevated the crest right down to the end of the tail, and defended itself by biting vigorously.

Through the courtesy of Messrs. Cassell, I am enabled to give a figure of it from the third volume of their Natural History, wherein (at pages 104, 105) Mr. Dallas has furnished an account of all that was known of it at the date of his writing. He points out that in its general structure, and especially in that of the skeleton, the animal is murine, that is, allied to the mice, but with a very important distinction, namely, that the collar bones, which are well developed in the rats and their allies, are here reduced, as in the hares and rabbits, so as to form only two small bony styles freely suspended among the muscles; and that the first toe in the hind foot, although not very long, is so attached as to be opposite to the rest, thus converting the organ into a prehensile hand, which the animal uses freely in climbing.

In its general appearance (to quote Mr. Dallas) it has much resemblance to a small Opossum, but the bushy tail and the peculiar arrangement of the hair on the body are met with in no marsupials. The head is small, the general form stout, the limbs

short, and the hind ones not much longer than their fellows; the ears of moderate size, and sparingly clothed with hair. The prevailing colour is blackish brown, but a triangular spot on the forehead, a streak under each eye, and the tip of the tail are white; and the long hairs which clothe the body and tail are dark only in the middle, the base and tip



LOPHIOMYS IMHAUSI.

being white, as are also a quantity of finer and shorter hairs, which form a sort of under-fur. But the chief peculiarity of the coat is to be found in the arrangement of the hairs of the body. The long hairs of the middle of the back and tail, some of which are nearly three inches in length, are capable of being raised into a nearly upright position, forming a sort of crest, which gives the animal a very

peculiar aspect, and has suggested the generic name *Lophiomys*. This crest is separated from the pendulous hair of the flanks by a sort of furrow, clothed with very peculiar hair of a greyish-tawny colour. These hairs are unlike any others known to occur among mammals.

Since the reception of the first specimen brought home by M. Imhaus, Professor Peters had described the skull of another, obtained by Dr. Schweinfurth from the tombs of Maman, north of Kassalá, in Upper Nubia; and a third has been brought from Keren, in the Bogos country.

All that Mr. Blunt could ascertain from the Arabs respecting it was that it has a habit of sitting up on its hind legs and whistling, and that it climbs the rough stems of the wild palms and feeds on the dates—a practice quite consistent with what is known of its anatomy. Since the publication, however, of the "Pilgrimage to Nejd," Mr. Blunt has obtained a specimen of "the Webber," and it has proved to be not *Lophiomys imhausi*, but a Hyrax (*Hyrax syriacus*), a species comparatively well-known to naturalists. *Lophiomys* on the contrary is so little known, that a figure of it is here given for the benefit of future travellers who may chance to meet with it, and who, it is to be hoped will not fail to secure specimens for further examination.

Of the other animals met with by Mr. Blunt and his party, such as the Wolf, Fox, and Hyena, little need be said. The tracks of these grew frequent as they approached Jebel Aja, and it may be assumed that it is there they have their lairs, making use of the Nefûd as a hunting ground.

Amongst the birds observed, the Ostrich only made known its presence by the discovery of a fresh egg which was brought in at Hail. The bird itself was not seen on any portion of the route, and must, therefore be rare at the present time in Northern and Central Arabia. Canon Tristram obtained a skin of an Ostrich which was said to have been procured in the Belka, close behind the hills of Moab, which is, perhaps, the most northern point at which the bird has been met with in recent times.

Other birds were by no means numerous—Sandgrouse and Quail, and a few Hawks and Buzzards, were perhaps the most frequently noticed. Unfortunately, in no instance was the species identified. Mr. Blunt states (Appendix, p. 249) that the Bedouins of Nejd train the Lanner, the only falcon they possess, to take Hares and Bustards. There can be little doubt, however, that the Saker is here intended—a more powerful bird, and one more suited to the purpose. It would be interesting to learn what is the comparative geographical range of these two Falcons; for on this point there appears to be some conflict of opinion.

AN ARABIC TREATISE ON HUNTING AND HAWKING.*

A CURIOUS book has been recently published in Paris—namely, a French translation of an Arabic manuscript of the tenth century, on Hunting and Hawking. Several such manuscripts are known to exist not only in Arabic, but in Persian and Turkish also; but hitherto no one has attempted a translation of any of them. The reason is pretty obvious—namely, the difficulty of finding a translator who is not only familiar with the language, but equally conversant with the technicalities of the chase. Such a one has at length appeared in the person of M. Florian Pharaon, a grandson of the interpreter to the first Napoleon in Egypt, and son of the interpreter to the French army corps in Africa. Initiated from his youth in all the Eastern languages and many of their dialects, he was for years interpreter to the army in Algeria, where his love of sport gave him ample opportunities of becoming thoroughly acquainted with the various methods employed by the Arabs for chasing and killing wild animals, and

* Sid Mohamed el Mangali, *Traité de Vénérerie*, traduit de l'Arabe par Florian Pharaon, avec une introduction par M. le Marquis G. de Cherville. Paris: Dentu, 1880.

of learning their technical terms in the various branches of their sport. With such advantages as these to recommend him, it is evident that M. Pharaon is eminently qualified to undertake the translation of a treatise like the present.

The Marquis de Cherville, who has written a very neat introduction to this volume, speaks of it as "a curiosity of the first order," and compares it to the rare "*Livre du roy Modus*," to which, however, he maintains, it is superior. It is the work of El Mangali ("*polygraphe Syrien du dixième siècle*"), singularly original in the treatment of the subject, and containing such vivid descriptions of men and animals, that, although the scenes depicted are those of a remote age, they are presented to us with a freshness as if written yesterday.

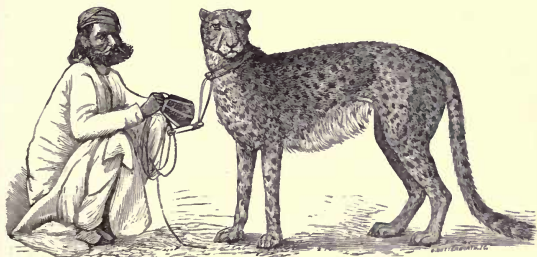
After some preliminary observations in regard to the object of his treatise, which he admits is not the first of its kind, the author proceeds to point out what is lawful or otherwise in the chase of wild animals as enjoined by the Koran, and especially the conditions under which certain animals may or may not be eaten. Some of these are very curious, and, at the present day, strike one as verging on the absurd, for, under certain circumstances, a man might starve with plenty of dead game before him were he to abstain from touching the prohibited yet perfectly wholesome flesh. For instance, should the hunter come upon an Antelope, recently killed by a Lynx, he may not touch it, for the Koran enjoins that no game killed by any wild animal may be eaten. Should his own dogs, even, kill the Antelope they are pursuing before he can reach it, it becomes

prohibited, it being necessary that the hunter should take it, and, while yet some life is left in it, immediately bleed it by cutting its throat. No game killed by a blunt instrument, such as a pellet from a crossbow, or a blunt stone or stake, is allowable, even where an accidental wound of this kind results in death, as in the case of a hunted animal falling over a rock. Again, should the game fall dead in the water, and the water penetrate its wounds, it may not be eaten, although if the wound be above water, no such restriction is imposed. These are only a few of the many ancient laws and prohibitions dwelt upon by the author of this treatise.

In the two succeeding chapters he descants upon the duties of sportsmen in general, and of princes or others in command of expeditions in particular. Then follows a chapter on the use of weapons of the chase, which, at the period when this MS. was composed, were the club, spear, bow and arrow, cross-bow, sword, and dagger, firearms being of course unknown. The club seems to have been used chiefly for knocking over Antelopes by riding alongside and throwing at their legs. Of the various methods of hunting the Lion, Elephant, Hyena, Wolf, and Wild Boar a long account is given, coupled with remarks on the alleged medicinal properties of various parts of these animals. The Arabs say that whoever takes two grains of the brain of a Lion dissolved in an ounce of milk will never have grey hairs, and that children who are subject to epilepsy may be cured by wearing a bit of Lion-skin suspended round the neck by a hair! The gall

and fat of a Lion are said to possess some wonderful properties. For instance, anointing the eyelids with Lion's gall is said to give a piercing eyesight; and a sword-cut may be speedily healed by anointing the wound with the dry gall powdered.

Some curious hints are given for putting wild animals to flight. An Elephant, for instance, will take himself off at once if the traveller has a Cat with him and pinches its ear to make it cry. The screams of a young Wild boar, similarly produced, will have, it is said, a like effect.



THE CHEETAH (*Felis jubata*).*

One of the most interesting chapters in the book is that in which the author describes in detail the method of catching and training the Cheetah or hunting leopard. It is not essential that the animal should be taken young, any more than that hawks and falcons should be taken from the nest when required for the purposes of falconry. In taming both, the same principle is adopted, namely, watching them from sleep, and stinting them in their food for a time, until they gradually get accustomed

* From a photograph taken in N.W. India.

to the human voice, and allow themselves to be handled. (See *The Field*, Dec. 4, 1858).

Several varieties of the hunting Leopard are described, which differ in colour in different districts. Those which came from Samaoua, between Coufa and Syria, are said to be the best, being very handsome, light, and long legged. They are described as being paler in colour than those from other parts, being almost white, and with fewer spots—long in the back, with loins curved like the folds of a snake, and with a tail, when outstretched, resembling a lance. The males are considered preferable to the females. The Leopards of Hedjaz are more patient, and capable of fatigue in difficult ground, while the Leopards of Samaoua possess better wind and pace.

The colour of the former is much redder or yellower, which arises, says El Mangali, from the nature of the soil they frequent, those of Yemen being black, and those of Sahel approaching to black. The desert of Mosul, on the left bank of the Tigris, is renowned for its Antelopes and Leopards. The latter are much esteemed, and are brought into the city of Mosul to Arbela, Khalat, and even to Choherzor.*

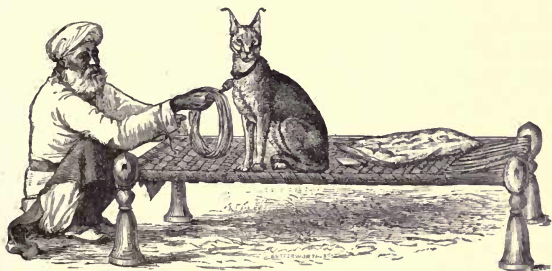
The Leopard of Syria is less admired, and has a fierce expression. It is of large size. Sitting on a crupper behind a mounted hunter, it looks almost taller than he does.†

* Owing to the variation in the spelling of the French and English names it is not easy to identify the localities referred to.

† A curious figure of a mounted horseman, with a hunting leopard seated behind him, occurs on a stamp of Jean Stradan (16th century), and is given in La Croix's "Manners and Customs of the Middle Ages," p. 193.

Some fine Leopards are brought to Antioch and Ascalon. Those of Zarka are very handsome and of a fine colour. Some consider that those of Krik are better than any others; in some respects they resemble those of Samaoua.

A Leopard trained to hunt in concert with a Falcon, says El Mangali, is "of inestimable value." A brief chapter is devoted to the Caracal or Desert Lynx, which is trained in much the same way as the Leopard, although used for taking different "quarry." The Cheetah is slipped chiefly at Antelopes; the



THE DESERT LYNX (*Felis caracal*).*

Caracal takes Hares, Bustards, Wild-fowl, Francolin, and Sand-grouse. The author, who only refers to this animal incidentally, because, as he says, it is not found in his country (Syria), remarks that it is trained for hunting in Persia, in the desert of Mosul, and in Roumelia,† and adds that the Persians understand how to train it better than any other people. They call it *Siah kouch*, that is

* From a photograph taken in N.W. India.

† At the present day it is used also in some parts of India, particularly in the north-west provinces.

“black ear.”* The Arabs call it *Anak el ard*, because its sandy colour resembles that of the ground it frequents, and out of which it seems to spring, so effectually does its colour conceal it from view until the traveller is close upon it.

It takes its prey in rather a different manner from the Cheetah—that is, not by coursing it, but by creeping stealthily towards it, and springing from an extraordinary distance upon it. El Mangali states that, in an ordinary bound, it clears ten cubits, that is, fifteen feet, but that when making an effort to catch a bird it has been known to jump twenty cubits high and forty wide!—a statement which seems incredible, that is, if the Arabic cubit is the same as the Greek and Roman, between which there is only the difference of an inch, the Greek cubit being 1ft. 6in., the Roman 1ft. 5in.

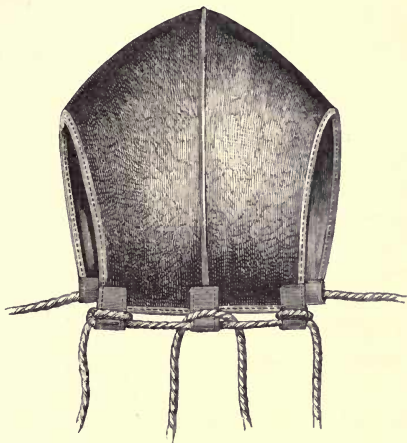
Modern observers, however, testify to the ability of the Caracal to catch birds on the wing, for it has been known to steal up to a covey of Francolins, or Desert Partridges, and at the instant of their rising to spring into the air and knock down one with each forepaw. Its strength and activity are said by those who have witnessed it to be something marvellous.

Allusion is made in this treatise to the head of the hunting Leopard being sometimes covered, and sometimes uncovered, but nothing is said about the

* According to Professor Blochmann in his admirable translation from the Persian of the *Ain I Akbari* (the mode of governing by Akbar, A.D. 1590, vol. i. p. 290), *Siyagosh*, or “black-ear,” is the Persian translation of the Turkish *qara-qolag*, whence our *Felis caracal*.

form of the hood, nor is there any reference made to the ornamental cloth with which, in ancient times, according to some authorities, the animal's back was covered.

In parts of the East, it appears, some species of Wild Cat (*Her* and *Nouä*) used to be employed in



CHEETAH'S HOOD. From N.W. India.*

the chase, and El Mangali professes to tell us the name of the man who first trained one.

Of the remainder of this volume the most interesting portion is that which relates to the Syrian method of taming and training Hawks of

* The Cheetah's hood measures 10 inches in length over the curve, 2 inches at its greatest width, and $1\frac{1}{2}$ inches at each end: the Lynx's hood measures 7 inches in length over the curve, $1\frac{1}{2}$ inches at its greatest width, and $\frac{3}{4}$ inch at each end.

various kinds. The Saker is particularly mentioned as a bird of double passage, and several varieties are specified. There is a chapter on the first man who ever tamed the Saker, and another on the mode of taking the Ostrich with Sakers. Several other Eastern Falcons are described, with remarks on their various qualifications and peculiarities. Some useful advice, evidently derived from experience, is given in regard to the feeding of Hawks and the management of them on a journey.

Altogether it is one of the most curious books on sport that we have met with for some time. The French translation occupies one hundred and forty pages, the remainder of the volume being occupied with a reproduction of the Arabic text. This we presume is chiefly intended for the benefit of French sportsmen, many of whom are in the habit of visiting Algeria for shooting, and are tolerably conversant with the language of the Arabs. The French translation, however, will place it within reach of most persons interested in the subject, and sportsmen and naturalists, of whatever nationality, will thank M. Pharaon for the perusal of so interesting a treatise.

WILD CAMELS.

A MORE ancient form of animal than the Camel perhaps hardly exists; for, since fossil remains of Camels have been discovered in the Sevalik range of the Himalayas, it seems probable that the species is one which saw the Miocene epoch, and which has survived all the chances and changes that have taken place since that time. Such is the opinion expressed by the late Mr. Andrew Murray in his useful work on the Geographical Distribution of Mammals.

Until quite recently, naturalists have been accustomed to regard it as having been always, as at present, the servant of man. In the oldest book perhaps in the world—the book of Job—it is spoken of as domesticated, and there appear to be no records of its ever having been otherwise. Other domesticated animals have been referred, more or less satisfactorily, to their wild types, but in the case of the Camel it has long been supposed that no members of the genus existed in a wild state.

Within the last few years, however, the great progress made in geographical science, and the extended explorations of travellers and naturalists, have revolutionised existing opinions on the subject, and it is now regarded as not merely probable, but

even as satisfactorily proved, that there *is* a country in the world where Camels may be found wild.

The first intimation of this received by naturalists in this country was contained in a letter from Dr. O. Finsch, of Bremen, dated Saissan, S.W. Siberia, May, 1876, which was read at a meeting of the Zoological Society held on the 7th of November, 1876. This letter contained the following remarks on the supposed existence of wild Camels in Central Asia :—

“ During my recent trip through Turkestan and the northern frontier of China, I had the opportunity of collecting some notes relating to the existence of the wild Camel; *Camelus bactrianus*. When in St. Petersburg, Col. Prejevalsky had told me that he was sure of finding the Camel wild during his proposed new expedition.

“ When on the Arcad mountains, 150 versts above Semipalatinsk, where we had a successful hunt after *Ovis argali*, we became acquainted with Mr. Kamensky, a gentleman who is fitting out a large expedition, half mercantile and half scientific, to China, in order to open the route traversed by Col. Lassnowsky from Peking to the frontier of China, by Saissan. After reaching the latter place by way of Tschugutschek, conducted by Major Tichanoff, we obtained more notices as to the occurrence of the Camel wild, Mr. Harkloff, an intelligent merchant who has long resided in Saissan, and has made many trips into Northern China, told me the following on this subject, mostly based upon the reports of native Tanguts, as Mr. Harkloff had never had the opportunity of seeing the wild Camel himself :

“The wild Camel has two humps; the size is nearly that of the tame, but it is larger and higher on the legs. It is of a darker colour than the tame, and the white around the nose is much clearer and paler. The wild Camel is to be found 250 versts south-east from Saissan, in the district of Kubano, part of the desert of Gobi. In the spring they pair, and the time of gestation is the same as with the tame Camel. The Tanguts and Kirgizes hunt the wild Camel, and eat its flesh; they also use the hair. It is said not to be shy, and accordingly not difficult to obtain.’

“Major Tichanoff had also the kindness to inquire on this subject of an intelligent and experienced Kirgiz, who reported as follows :

“The Kirgizes hunt and eat the wild Camel. It is not to be tamed. It lives in the western part of the High Gobi, called Kubano, about two hundred versts from Saissan. According to an old legend, there was a rich Kirgiz, who had so many horses and camels in his possession that he was unable to take care of them. A great number escaped, and the camels became wild. The wild Camel is much larger, higher on the legs, and has a much finer and softer wool than the tame kind. It runs faster than the horse. It is of a red-brown colour, darker than the tame. The weight is about 40 to 48 “pud,” and it requires four tame camels to transport the body of a wild one. The voice is not so strong as that of the tame Camel. The female produces in February or the beginning of March one calf, rarely two, and bears young every year; whereas the tame Camel bring forth only every two years. The flesh of the

wild Camel is, much appreciated by the Tanguts, and they hunt the animal with great zeal. The Kirgiz who told us this assured us he had seen wild Camels himself when travelling with Tanguts through the the Gobi desert to Kuldshen. He had often tasted the flesh, which he found sweeter than that of the tame.'”

Since the publication of this letter, the anticipations of Col. Prejevalsky, as confided to Dr. Finsch, have been realised. During his third journey in Central Asia, when he travelled from Kuldja across the Tian-Shan mountains to Lake Lob-Nor and the Altyn-Tag range southward of it, he made various inquiries, and organised several excursions in the hope of meeting with wild camels.* Native reports were unanimous in declaring that the most likely place for these animals was the Kum-Tag desert, which stretches away to the north-east between Lob-Nor and the Altyn-Tag mountains. Twenty years ago they were said to have been very common, and the guide affirmed he had seen herds of dozens, and even of upwards of a hundred, together, but that with the increase of the population of Charchalyk and of hunters they had much diminished. A skin is now worth at Lob-Nor ten “tenge,” or about 4s. 2d.

The animals seek the upper valleys of the Altyn-Tag in the summer, and the most inaccessible deserts in the winter. Their sight, sense of hearing, and of smell, are exceedingly quick—a striking

* Some account of this journey, from the German translation of the Russian original, will be found in the *Geographical Magazine* for May, 1878.

contrast to what obtains in the domesticated Camel.

Only one wild Camel was seen by Col. Prejevalsky himself, and this one he unfortunately missed at five hundred yards. The hunters, however, whom he had despatched, returned to Lob-Nor with the skins of a male, female, and young one, and a fourth shot on the lower Tarim. The last-named had been bred in a warmer climate, and had already (March 10) begun to shed its hair.

On looking at a map of Asia, it will be observed that the Kum-Tag desert, where these wild Camels were killed, is a portion, as it were, of the great desert of Gobi referred to by Dr. Finsch and his informants, Mr. Harkloff and Major Tichanoff, as the home of the wild Camel; and it is satisfactory to find that the accounts first received from them of the existence of these animals in a wild state, have been confirmed by the subsequent observations of the intrepid Russian traveller, and the actual capture of specimens.

With regard to their origin, Col. Prejevalsky argues at some length that the preponderance of evidence is in favour of their being of wild stock, the descendants of which, however, have mingled with tame camels.

On the question whether there is more than one existing species of Camel, opinions seem to differ. There are, at all events, two very well marked races to be found in different geographical areas, and meeting in a country common to both. The Arabian or single-humped Camel (*Camelus dromedarius*) is used over the whole of south-west Asia and

North Africa, and as far south and west as the river Niger. The two-humped, or Bactrian Camel (*Camelus bactrianus*), the one found in a wild state by Col. Prejevalsky, is the prevailing species in the somewhat colder regions to the north and east of the country of the Dromedary. It extends across Asia to China, has been introduced into India, and reaches as far north as the Caspian, and as far west as the Black Sea and the Crimea.

Andrew Murray, in his "Geographical Distribution of Mammals," states that both species (or races) occur in Persia and Bokhara, where they are crossed with each other; and the offspring is said to be sometimes fertile.

KIWIS.

AMONGST the few birds incapable of flight which to the present day have contrived to escape extermination, none are more remarkable in appearance than the Kiwis of New Zealand. For want of an English name, the native one (an imitation of its cry) is often employed; but the genus is almost universally as well known by its scientific designation of *Apteryx*. Possessing certain characters which connect them obviously with the Struthious or Ostrich-like birds, the *Apterygidæ*, according to the best systematists, constitute a second family of the same order (*Ratitæ*), which includes all those birds which are characterised by the possession of a sternum or breast bone which is without a keel, and hence resembles a raft (*ratis*). For other reasons, however, they must be regarded as but distantly related to the Ostrich family.

Although, as in the Ostrich, the head is small and the neck large and muscular, the bill is long, broad at the base, and tapers in a curve to the extremity, which is slightly dilated. The wings, which are rudimentary, are quite concealed by the dorsal plumage, the feathers of which are lanceolate, and composed externally of long disunited filaments, the downy portion towards the root much developed,

and exceeding in extent the exposed or hairy portion.

They are destitute, moreover, of the accessory plumule so highly developed in some of the Struthious birds, but the basal or concealed portion of each feather is fine and silky. The difference of structure in the feathers of the *Apterygidæ* and *Struthionidæ* has been well shown by Mr. Dawson Rowley in a coloured plate in the first volume of his "Ornithological Miscellany."

With this hair-like dress a single shake rids the bird of every foreign particle, while the feathers, covering the body like a thatch, effectually keep off the wet of the ever humid ferns and mosses amongst which the bird lives.

The thighs in the *Apteryx* are prominent, and very muscular; the feet robust, and armed with sharp claws, while a hind toe, which is not present in any of the *Struthionidæ*, is in the *Apterygidæ* prominently developed. A well-known observer in New Zealand, Mr. T. H. Potts, has remarked that, after looking over numbers of all the known species of *Apteryx*, he has arrived at the conclusion that no specific character can be safely drawn (as has been proposed) from the skin of the tarsus being scutellate or reticulate. In old birds the scales which cover the tarsi and toes are closely set with overlapping edges, and are perfectly smooth; in the young they are soft and detached, presenting a reticulated surface.

Four species of Kiwi are stated to exist, and to be exclusively confined to New Zealand; but, being incapable of flight, and hunted down upon every

opportunity, it is evident that, like other wingless birds which have preceded them, they must succumb to their numerous enemies, and eventually become classed amongst the forms which are extinct.*

The four species referred to are the North Island Kiwi (*Apteryx mantelli*, Bartlett), the South Island



APTERYX HAASTI.

Kiwi (*Apteryx australis*, Shaw), the Little Grey Kiwi (*Apteryx oweni*, Gould), distributed over a great portion of the South Island, to which it is restricted, and the Large Grey Kiwi (*Apteryx haasti*, Potts), of which the few specimens at present known

* One Kiwi hunter alone informed Mr. T. H. Potts that up to the close of 1871 he had killed 2200 specimens of *A. australis* and *A. oweni*.

to exist were procured on the west coast of the South Island, on the high ranges above Okarita.

In a discussion on the subject before the Wellington Philosophical Society, New Zealand, Mr. Buller contended for the specific value of *Apteryx mantelli* of the North Island, on the ground that it is readily distinguishable from the other bird, and that the variation is constant; while Prof. Kirk agreed with Dr. Finsch, who proposes to call it *Apteryx australis*, variety *mantelli*, considering that the bird discovered in the North Island is merely a variety of the species in the South (*Apteryx australis*), the slight difference between them being insufficient to warrant this separation.

In order to convey an idea of the size of these birds, it may be stated that an average pair of *Apteryx australis* measured as follows :

	Male.	Female.
Total length	21in. 9 lines ...	25in. 0 lines.
Bill from gape	4 ,, 6 ,, ...	6 ,, 4 ,,
Tarsus	2 ,, 8 ,, ...	2 ,, 11 ,,
Middle toe with claw	2 ,, 9 ,, ...	3 ,, 0 ,,

Thus it will be seen that of the two sexes, the female is somewhat larger than the male.

The osteology and anatomy of these singular birds have been exhaustively treated by Professor Owen in several able memoirs contributed to the "Transactions" of the Zoological Society; while as regards their life-history Mr Buller's work, "The Birds of New Zealand," Mr. Dawson Rowley's essays in the "Ornithological Miscellany," and Mr. T. H. Pott's memoirs in the "Transactions of the

New Zealand Institute" and the *Zoologist* (1874, pp. 3939, 3979, 4014) contain almost all that is known of their haunts and habits. From these sources we learn that the absence of wings in the Kiwi is in some measure compensated for by its swiftness of foot. It runs with long strides, and carries the body in an oblique position, with the neck stretched to its full extent and inclined forwards. In the twilight it moves about cautiously, and as noiselessly as a rat, to which, indeed, at this time it bears some outward resemblance. In a quiescent posture, the body generally assumes a perfectly rotund appearance, and it sometimes, but only rarely, supports itself by resting the point of the bill on the ground.

If often yawns when disturbed in the daytime, gaping its mandibles in a very grotesque manner. When provoked, it erects the body, and, raising the foot to the breast, strikes downwards with considerable force and rapidity, thus using its sharp and powerful claws as weapons of defence. The story of its striking the ground with its feet to bring the earthworms to the surface, which appears to have gained currency amongst naturalists, is as fanciful as the statement of a well-known author that it is capable of "inflicting a dangerous blow, sometimes even killing a dog."

While hunting for its food, the bird makes a continual sniffing sound through the nostrils, which are placed at the extremity of the upper mandible. Whether it is guided as much by touch as by smell is not clear, but it appears that both senses are called into action. That the sense of touch is

highly developed seems certain, because the bird, although it may not be actually sniffing, will always first touch an object with the point of its bill, whether in the act of feeding, or of surveying the ground; and when shut up in a cage, or confined in a room, it may be heard all through the night tapping softly at the walls. The sniffing sound is heard only when a Kiwi is in the act of feeding, or hunting for food; but Mr. Buller has sometimes observed the bird touching the ground close to or immediately round a worm which it had dropped without being able to find it. He has remarked, moreover, that a Kiwi will pick up a worm, or a piece of meat, as readily from the bottom of a vessel filled with water as from the ground, never seizing it, however, till it has first touched it with its bill in the manner described. Probably, in addition to a highly developed olfactory power, there is a delicate nervous sensitiveness in the terminal enlargement of the upper mandible. It is interesting, says Mr. Buller, to watch the bird in a state of freedom foraging for worms, which constitute its principal food; it moves about with a slow action of the body, and the long flexible bill is driven into the soft ground, generally home to the very root, and is either immediately withdrawn with a worm held at the extreme tip of the mandibles, or it is gently moved to and fro by an action of the head and neck, the body of the bird being perfectly steady. It is amusing to observe the extreme care and deliberation with which the bird draws the worm from its hiding place, coaxing it out, as it were, by degrees, instead of pulling roughly or breaking it. On getting the worm fairly

out of the ground, it throws up its head with a jerk, and swallows it whole.

The tongue is very short but muscular, of angular shape, and can be used in crushing insects against the flat opposed surface of the upper mandible, as the strong muscle on the lower surface gives a great degree of strength.

The stomach of a recently killed wild bird, dissected by Mr. Buller, contained a hinau berry (*Elæocarpus dentatus*) and several rounded fragments of white quartz. Dr. Day states that in its very muscular stomach he has usually found the remains of beetles, pebbles, and many hard kernels of the hinau berry.

The Zoological Society of London has procured alive at different times three out of the four species of this singular genus, namely, *Apteryx mantelli*; *Apteryx oweni*, presented in 1869 by the Acclimatisation Society of Otago, the first which had been brought alive to Europe; and *Apteryx haasti*, a specimen of which was presented to the Society in December, 1875, by Baron F. von Mueller.

In 1859 an individual of the first-named species laid an egg in the Society's gardens. It was smooth and of a dirty white colour, the form an elongated oval, slightly tapering towards the smaller end, 4.75in. in long and 2.9in. in short diameter. It weighed 14½oz., or nearly one-fourth of the weight of the bird itself, which was found by experiment to weigh 60 ounces.

In Gould's "Handbook to the Birds of Australia" (vol. ii., p. 570) several statements are made with reference to the mode of reproduction in the

Apteryx; but these strange stories are most of them derived from the natives of New Zealand, and do not appear to have been verified by anyone upon whom reliance can be placed.

Mr. Potts, from close observation of their habits in New Zealand, thinks it probable that these birds pair for life, for there appears to exist between the sexes a lasting companionship. For a nesting place, he says, they select a hole in some huge tree or log, or amongst roots. Sometimes the hole is excavated in a soft bank, where the soil is light, but in every case the site selected is on a ridge, or dry ground. They make no nest, but lay two eggs on the bare and dry soil.

It may be well to note a few facts that have occurred under the observation of Mr. A. D. Bartlett in the Gardens of the Zoological Society. Mr. Bartlett says ("Proc. Zool. Soc.," 1868, p. 329): "In 1851 Lieut.-Governor Eyre presented to the Society an *Apteryx*, which proved to be a female of *A. mantelli*. In 1859 she laid her first egg, and has continued to lay one or two every year since that time. In 1865 a male bird was presented by Mr. Henry Slade, and in 1862 these two showed symptoms of a desire to pair. This was known by the loud calling of the male, which was answered by the female in a lower key and shorter note. They were particularly noisy during the night, but altogether silent in the daytime. On the 2nd of January the first egg was laid, and for a day or more the female remained on the egg; but as soon as she quitted the nest the male bird took to it, and remained constantly sitting. On the 7th of

February the second egg was laid, the female leaving the nest as soon as the egg was deposited. The two birds now occupied the two opposite corners of the room in which they were kept, the male on the two eggs in the nest under the straw, the female concealed in her corner, also under a bundle of straw placed against the wall.

During the time of incubation they ceased to call at night—in fact, were perfectly silent—and kept apart. The eggs were found in a hollow formed on the ground in the earth and straw, and placed lengthwise side by side. The male lay across them, his narrow body appearing not sufficiently broad to cover them in any other way ; the ends of the eggs could be seen projecting from the side of the bird. The male continued to sit in the most persevering manner until the 25th of April, at which time he was much exhausted, and left the nest. Mr. Bartlett then examined the eggs, but found no trace of young birds.

The experiment, however, though unsuccessful, showed that this bird's mode of reproduction does not differ materially from that of the allied species of Struthious birds, the males of which all take their turn at incubation.

WALRUSES AND SEALS.

THE important group of fin-footed mammals, scientifically known as the *Pinnipedia*, and comprising the Walruses and Seals, may be briefly described as true carnivora modified for an aquatic existence, their form being entirely adapted for life in the water, which element is their true home. Here they display extreme activity, but on land their movements are confined and laboured; consequently they rarely leave the water, and then generally for short periods only, and are never found far from the shore.

Like other marine mammalia—*e.g.*, the *Cetacea* and *Sirenia* (Whales, Dolphins, Porpoises, and Manatees)—their bodies are more or less fishlike in form, with limbs transformed into swimming organs; but, unlike them, they are clothed with hair, while several of them have underneath the exterior coarser hair a thick soft silky under-fur. As compared with the terrestrial carnivora, they present osteologically many obvious points of difference, notably in regard to the structure of the skull and limbs, as well as in their dentition.

The latest contribution to our knowledge of this little-studied group of animals is comprised in the recently published "Monograph of the North American Pinnipeds," by a well-known American

zoologist, Mr. J. A. Allen,* which furnishes valuable details on the structure, classification, synonymy, distribution, and habits of the Walruses and Seals to be met with on the coasts of North America. Not that the species dealt with are exclusively confined to North America, for some of them, as will be noted presently, have a tolerably extensive range along the northern shores of the Palæarctic region; and hence Mr. Allen's monograph, although ostensibly dealing only with Nearctic forms, has practically a wider scope, which proportionally enhances its value.

The *Pinnipedia* are naturally divisible into three large families, which differ widely from each other in important characters. These are the Walruses (*Odobænidæ*), the Eared Seals (*Otariidæ*), and the Earless Seals (*Phocidæ*). The two first-named are much more nearly allied to each other than either of them is to the third, with which, therefore, they may both be contrasted. The last-named is the lowest or most generalised group, while the others appear to stand on nearly the same plane, and equally remote from the *Phocidæ*. According to Mr. Allen:

The Walruses are really little more than thick, clumsy, obese forms of the Otarian type, with the canines enormously developed, and the whole skull correlatively modified. The limb structure, the mode of life, and the whole economy are essentially the same in the two groups, and apart from the cranial modifications presented by the *Odobænidæ*, which are obviously related to the development of the canines as huge tusks, the Walruses are merely elephantine Otariids, the absence or presence of an external ear being in reality a feature of minor importance.

* History of the North American Pinnipeds: a Monograph of the Walruses, Sea Lions, Sea Bears, and Seals of North America. By Joel Asaph Allen. 8vo., pp. 773, with numerous illustrations. Washington: Government Printing Office. 1880.

Two species of Walrus are recognised by Mr. Allen, the Atlantic form (*Odobænus rosmarus*) and the Pacific form (*Odobænus obesus*), which are stated to differ in certain structural details, and notably in the configuration of the skull, to an extent sufficient to warrant specific separation. And here we may remark upon the generic name for the Walruses adopted by Mr. Allen; for, although not new, it will be nevertheless unfamiliar to those who have long been accustomed to employ the time-honoured name *Trichechus* of Linnæus. *Odobænus* is likewise a Linnæan name, though of earlier date, and Mr. Allen attempts to justify the employment of it by pointing out (p. 15) that

The name *Trichechus*, for so long a time in general use for the Walruses, proves not, as long ago shown by Wiegmann, Von Baer, and others, to belong at all to these animals, but to the Manatee. The name *Trichechus* originated with Artedi in 1738 in a posthumous work ("*Ichthyologia*"), edited by Linnæus. The citations under *Trichechus* embrace no allusion to the Walrus, but relate wholly to Sirenians, or to the Manatee, as the latter was then known.

Hence he concludes (p. 16), "to whatever the generic name *Trichechus* may be referable, it certainly is not pertinent to the Walrus." This being settled, the question arises, "What generic name is of unquestionable applicability to the Walruses?" Mr. Allen says *Odobænus*, Linnæus, *Syst. Nat.*, 1735. We have not space here to follow his arguments on this point, nor is the question of sufficient general interest to warrant further discussion in these pages. We will therefore only remark that Mr. Allen, in adopting a name of earlier date (1735) than that of the publication of the 12th

edition of the *Systema Naturæ* (1766), pursues a course in direct contravention of the second rule for zoological nomenclature in the British Association Code now so universally adopted by zoologists. Linnæus, in the 12th edition of his work, named the Walrus *Trichechus rosmarus*, and this name has been in very general use ever since. We confess we are opposed to its rejection.

Two species of the genus, as we have stated, are recognised by Mr. Allen on perfectly legitimate grounds, and his monograph contains engravings of the skulls of both, in various positions, as well as of other portions of the frame, showing the differences of structure which have been detected in the two forms. So far as at present known, the Atlantic Walrus (*O. rosmarus*) ranges along the north-eastern coast of North America, from Labrador northward to Repulse Bay and Prince Regent's Inlet, and along the shores of Greenland; in the Old World only about the islands and in the icy seas to the northward of Eastern Europe and the neighbouring portions of Western Asia, where it rarely, if ever, now visits the shores of the continent. On the eastern coast of North America walruses have been met with as far north as explorers have penetrated, and as far as the Esquimaux live. They winter as far north as they can find open water, retiring southward in autumn before the advance of the unbroken ice-sheet.

The habitat of the Pacific Walrus (*O. obesus*) embraces a much smaller extent of coast, and a much narrower breadth of both latitude and longitude, than the Atlantic species. It is confined on

the one hand to a comparatively small stretch of the northern and eastern coasts of Asia, and to a still smaller portion of the opposite American coast. To the westward this Walrus appears not to have been traced beyond Cape Schelatskoi ($157^{\circ} 30'$ E. long.), and to have occurred in large herds only as far west as Koljutschin Island (185° E. long.) These herds are reported as composed almost entirely of males, the females, according to Middendorf, rarely passing beyond the mouth of the Kolyma River. Wrangell, who passed two winters at the mouth of this river, asserts confidently that the Walrus of Behring's Straits was abundant at Cape Jakan ($176^{\circ} 30'$ E, long.), but only once reached Cape Schelatskoi, while he found it numerous at Koljutschin Island. Thence eastward it forms the chief subsistence of the Tschutschi, just as the Atlantic Walrus furnishes food to the Esquimaux.

Of the habits of these two species of Walrus, so far as can be gathered from the published reports of different explorers, Mr. Allen gives many details, and furnishes a most interesting account of the various modes of hunting them for the sake of their oil and ivory. As his descriptions, however, are taken from works with which most people will be familiar (such, for instance, as Lamont's "Seasons with the Sea Horses," Capt. Hall's "Arctic Researches and Life among the Esquimaux," and Dr. Hayes's "Open Polar Sea"), it will be unnecessary to give any extracts.

The food of the Walruses has long been a subject of dispute, not less from the varied character of the substances found in their stomachs by different

observers, than from the peculiar conformation of their teeth. It appears, however, to be now well ascertained that their principal sustenance is derived from various species of mollusca, chiefly *Mya truncata*, sand worms, starfish, shrimps, clams (*Tridacna*), and cockles (*Cardium*), all of which they dig up with their tusks.

Mr. Elliott, referring to the Pacific Walrus as observed in Alaska, describes its food as consisting exclusively of shellfish (principally clams), and the bulbous roots of certain marine grasses and plants, which grow in great abundance in the broad shallow lagoons and bays of the mainland coast.

I have taken from the paunch of a Walrus (he says) over a bushel of crushed clams, shells and all, which the animal had but recently swallowed, since digestion had scarcely commenced. Many of the clams in the stomach were not even broken, and it is in digging these shellfish that the service rendered by the enormous tusks becomes evident.

The statement that these enormous tusks, besides being employed as weapons of offence and defence, as well as for the purpose above referred to, are of use in effecting a landing on icebergs and rocky shores, although at first received with incredulity, proves after all to be founded on fact. Amongst other trustworthy observers who have testified to the truth of this, Dr. Kane expressly states : *

The tusks are so strong that he uses them to grapple the rocks with, and climbs steeps of ice and land which would be inaccessible to him without their aid. He ascends in this way rocky islands that are sixty and a hundred feet above the level of the sea ; and I have myself seen him in these elevated positions basking with his young in the cool sunshine of August and September.

* "Arctic Exploration," vol. i., p. 415.

In a few instances of late years Walruses have been brought alive to England, and exhibited in the Zoological Society's Gardens; but these were young animals, and, although every care and attention was bestowed upon them, they did not live long. The last one was brought over in 1867, and was figured in the *Field* of Nov. 16 in that year. When defunct it furnished Dr. Murie with material for a valuable memoir on the anatomy of the Walrus, which he published in the "Transactions of the Zoological Society" for 1872. This has not been overlooked by Mr. Allen in his recent monograph, which furnishes a complete, and it may be said exhaustive, account of both species of this remarkable genus.

The *Otariidæ*, or family of Eared Seals, of which nine species are recognised, naturally resolve themselves into two groups, commercially distinguished as the Hair Seals or "sea lions," and the Fur Seals or "sea bears." The Hair Seals have coarse, hard, stiff hair, varying in length with age and season, and are wholly without soft under-fur; the Fur Seals have an abundant, soft, silky, under-fur, giving to the skins of the females and younger males considerable commercial value. Although great variation in colour, or rather shade of colour, is observable even in individuals of the same species, it may be stated broadly that the Hair Seals are yellowish or reddish brown, darkest when young, and becoming lighter with age; while the Fur Seals, which are black when young, become ultimately of a yellowish or whitish grey colour. These two groups have nearly the same geographical distribution, and are commonly found frequenting the same shores, but generally

living apart. Usually only one species of each is met with in the same locality, and it is worthy of note that (except on the coast of California) no naturalist has ever reported the occurrence together of two species of Hair Seals or two species of Fur Seals, although Mr. Allen is of opinion that two species of Hair Seals exist on the islands and shores of Tasmania and Australia, as well as on the Californian coast.

All the Eared Seals show a remarkable resemblance in their gregarious and polygamous habits, resorting in great numbers to particular breeding stations, which in sealers' parlance have acquired the strangely inappropriate name of "rookeries." A marked disparity in the size of the sexes is observable, the weight of the adult males being generally three to five times that of the adult females of the same species. Moreover, says Mr. Allen,

There are great differences in the form of the skull, especially in respect to the development of crests and protuberances for muscular attachment, these being only slightly developed in females, and enormously so in the males. With such remarkable variations in colour and cranial characters dependent upon age and sex, it is not a matter of surprise that many nominal species have arisen through a misappreciation of the real significance of these differences.

He adds:

Of about fifty synonyms pertaining to the eared seals, probably *two-thirds* have been based, directly or indirectly, upon differences dependent on sex and age, and the rest upon defective descriptions by travellers.

The difficulty, therefore, of ascertaining the actual number of valid species, and the proper names of each, may be imagined. After a careful comparison

of the various descriptions which have been published, and an equally careful examination of a large series of skulls and preserved specimens, evidently involving very considerable labour, Mr. Allen has arrived at the conclusion that there are apparently nine different species of *Otariidæ*, of which five are "hair seals" and four "fur seals." Two of the five "hair seals" are northern and three southern, and of the four "fur seals" three are southern and only one northern; "but the three southern are closely related (perhaps doubtfully distinct, at least two of them), and are evidently recent and but slightly differentiated forms of a common ancestral stock."

Condensing Mr. Allen's elaborate monographic account of the *Otariidæ* (occupying 226 pages), in which he first treats generally of the synonymy and distribution of all the recognised species, and then furnishes a detailed history of those only which are found on the shores and islands of North America, we obtain the following *résumé*: There are five hair seals or "sea lions," namely:

1. The Southern Sea-lion (*Otaria jubata*, Forster), which is found on the southern shores of South America, from Peru and Chili on the Pacific coast to Rio on the Atlantic coast, as well as on the Galapagos Islands.

2. Hooker's Sea-lion (*Phocarctos hookeri*, Gray), frequenting the Auckland Islands.

3. Steller's Sea-lion (*Eumetopias stelleri*, Peters), the largest of the group, found along the shores of the North Pacific from Behring's Straits southward to California and Japan.

4. The Californian Sea-lion (*Zalophus californianus*, Lesson), apparently confined to the coast of California ; and

5. The Australian Sea-lion (*Zalophus lobatus*, Gray), inhabiting the Australian seas and frequenting, it is believed, the shores of Japan.

The four fur seals, or "sea bears," all of much smaller size than the hair seals or "sea lions" are :

1. The Northern Fur Seal (*Callorhinus ursinus*, Gray), frequenting the shores of the North Pacific from California and Japan northward.

2. The Falkland Islands Fur Seals (*Arctocephalus falklandicus*), which has the same habitat as *Otaria jubata*.

3. The Cape Fur Seal (*Arctocephalus antarcticus*, Thunberg), found at the Cape of Good Hope ; and

4. Forster's Fur Seal (*Arctocephalus forsteri*, Lesson), found on the coasts of Australia, New Zealand, and the Auckland Islands, and believed also to frequent Kerguelen Island, St. Paul, and Amsterdam Island.

It is remarkable that no representative of the *Otariidæ* is found in the North Atlantic. With regard to nomenclature, it will be observed from the above *résumé* that, according to the latest authority on the subject, the nine known species of Eared Seals are placed in no less than six different genera, thus indicating the existence of important structural differences, which would hardly be suspected from the general external resemblance of the species. One would at first be inclined to suppose that, having separated the family into the two groups of

“hair seals” and “fur seals,” two generic names would suffice for all practical purposes. Mr. Allen, however, has satisfied himself, after a detailed examination of the skulls and skeletons of as many specimens as he could procure, that the differences of structure, more especially noticeable in the skull, are sufficiently important to warrant the generic division he has adopted.

Of the five species of hair seals above specified, two only have been found on the coasts of North America, namely, Steller's Sea-lion (*Eumetopias stelleri*), and the Californian Sea-lion (*Zalophus californianus*.)

The former, which was first described in 1751 by Steller, under the name of *Leo marinus*, is the largest of all the Eared Seals, although in size, general form, and colour, it closely resembles the Southern Sea-lion, *Otaria jubata*. Old males measure from eleven to thirteen feet in length, and seven to nine feet in girth, and weigh from 1000lb. to 1200lb. The adult females are much smaller, measuring from eight to nine feet in length, four feet in girth, and weighing between 400lb. and 500lb. This species frequents the shores of the North Pacific, from Behring's Straits southward to California and Japan, and is particularly numerous on the Prybilov Islands off the coast of Alaska, where it resorts in thousands to breed, in company with the Northern Fur Seal, *Callorhinus ursinus*.

Early in 1874 a very full and interesting account of the habits of these animals as observed on the Prybilov Islands by Mr. W. H. Elliott, was issued in a Report printed at Washington. This is

reprinted almost entire by Mr. Allen in his monograph.* The further accounts, from personal observation, furnished by Capt. Scammon and Capt. Charles Bryant, and quoted by Mr. Allen, afford all the materials for a very complete history of the species.

The Californian Sea-lion (*Zalophus californianus*), which is found on the coast of California and its islands, from San Diego and San Nicholas Island, northward to the Bay of San Francisco, is a much smaller animal.

Adult males measure from seven to eight feet in length, and between four and five feet in girth; while the females average from five to six feet in length, with a girth of about 3ft. 9in.

With the appearance of this species of "sea lion" the public in this country have had an opportunity of becoming familiar through the living examples so long exhibited at the Brighton Aquarium.

Several more or less full accounts of the habits of "Californian Sea-lions" have been published by different writers, who have, however, failed to distinguish the two species occurring along the Californian coast, and consequently their descriptions are not wholly satisfactory. Mr. Allen, selecting the most trustworthy, and applying the descriptions quoted to the particular species to which they refer, is enabled to furnish a very fair account of the habits

* Since the publication of Mr. Allen's work, the U.S. Commission of Fish and Fisheries has issued a "Special Bulletin" (No. 176), entitled a "Monograph of the Seal Islands of Alaska," by Henry W. Elliott, 4to, pp. 176, with map and illustrations; being a reprint with additions of the former report.

of *Zalophus californianus*, and of the modes employed for capturing it. Capt. Scammon observes :

A few years ago great numbers of Sea-lions were taken along the coast of Upper and Lower California, and thousands of barrels of oil obtained. The number of seals slain exclusively for their oil would appear fabulous, when we realise the fact that it requires on an average, throughout the season, the blubber of three or four sea lions to produce a barrel of oil. Their thick coarse-grained skins were not considered worth preparing for market in a country where manual labour was so highly valued. At the present time, however, they are valued for glue stock, and the seal hunters now realise more comparative profit from the hides than from the oil.

Of the four species of Fur seal now recognised, the only one known on the North American coasts is the Northern Fur seal (*Callorhinus ursinus*), which frequents the shores of the North Pacific, from California and Japan northward, and which, as above noted, resorts in thousands to the Prybilov Islands, in company with Steller's Sea-lion. The number of Fur seals present on St. Paul's Island (one of the Prybilov group) in July, 1872, was estimated by Mr. Elliott to exceed three millions, and on St. George's Island adjoining in July, 1873, at about one hundred and sixty-three thousand. These islands probably form their most populous resorts. Although at one time abundant on the California coast, they are by no means numerous there now, having been nearly exterminated by unrestricted destruction by the sealers.

They have other enemies, too, besides man, for it has been ascertained that Killer Whales (different species of *Orca*) habitually prey on the young seals, as proved by finding their remains in the

whales' stomachs. Great numbers also are destroyed by Sharks and Swordfishes, and by being crushed in the ice.

A diversity of opinion exists as to whether the Fur seals shed their fur as well as the coarse outer hair, but the question appears to be now decided in the negative. Capt. Bryant, who writes from long personal observation of the Fur seals on St. Paul's Island, Alaska, and who has paid close attention to this point, finds that all the evidence is against the opinion that the fur is shed. His observations are so curious as to be worth transcribing. He says :

The great quantity of overhair annually shed by this immense number of animals covers the ground like dead leaves in a forest. It is blown by the winds around the rocks, and becomes trodden into the soil, so that when the earth is dry, if a piece be broken, the whole mass is found to be permeated with it, like the hair in dried plaster. The difference between the fibres of the overhair and the fur is plainly apparent to the eye. I have, however, gathered parcels of it at all times during the shedding season, and subjected it to microscopic examination, but have always failed to detect the presence of fur in sufficient quantity to warrant the belief that any of it is shed naturally. The shedding of the overhair begins about the middle of August, and the seals are not fully clothed with their new coat until the end of September, and it does not attain its full length before the end of October.

The accounts which Mr. Allen has collected of the haunts and life-history of the three species of *Otariidæ* or Eared Seals, found in North American waters, enable us to form a very fair notion of the habits of the remaining six species whose history he has not detailed, and which doubtless are not very dissimilar.

The *Phocidæ*, or family of Earless Seals, are distinguished not alone by the absence of external

ears, but by their having the anterior limbs placed well forward, and the hind limbs not susceptible of being turned forward, and therefore incapable of use in terrestrial locomotion. They are found along the coasts of the temperate and colder portions of the globe, but those of the southern hemisphere belong, with one exception, to different genera from those of the northern hemisphere, and for the most part to a distinct sub-family not elsewhere represented. From the middle of the sixteenth century until the time of Stella (1751), all the Earless Seals known to systematic writers were referred to the Common Seal (*Phoca vitulina*) of Middle and Northern Europe, and this, in fact, was the only species recognised by Linnæus from the northern hemisphere, even in the last edition of his "Systema Naturæ" (1766). Other species, however, had been incidentally and vaguely described by the early Greenland missionaries, and by explorers and travellers in both the Arctic and Antarctic regions. Gradually, as naturalists were furnished with more exact descriptions, and with skulls and skeletons from various localities, it became evident that several different species of Earless Seals had been confounded under one name; and, on the other hand, a great variety of names had been bestowed on one and the same animal, owing to its having been described at different ages by different writers in various localities. To clear up the confusion thus created is by no means an easy task. It has been several times attempted, notably by the late Dr. Gray, in his "Catalogue of the Seals in the British Museum," and by Dr. Theodore Gill, in his "Prodrome of a

Monograph of the *Pinnipedia* ;” but the result is not wholly satisfactory. Mr. Allen, in his recently published volume, after giving a very able and lengthy review of the labours of his predecessors, arrives at the conclusion that, so far as the materials at his command enable him to form a judgment, there are *sixteen* recognisable and valid species of Earless Seals, upon which no less than one hundred and three distinct specific and varietal names have been bestowed. Thus eighty-seven of these names became reduced to synonyms. Fourteen names, he says, refer to species wholly indeterminable, while fourteen others can be referred only with more or less doubt.

Mr. Allen would separate the family *Phocidæ* into three sub-families: The *Phocinæ*, which are strictly northern, and by far the most numerous; the *Cystophorinæ*, of which one genus is boreal, and another has representatives on the coast of Lower California and the southern shores of South America and South Africa; and the *Stenorhynchinæ*, which are confined to the south temperate and Antarctic seas. Sub-dividing these again into genera, he assigns five genera to the first-named, two to the second, and four to the third. In other words, he would concur in placing sixteen species of Earless Seals in eleven different genera. It is a question whether this is not carrying generic division rather too far, and, if so, whether the groups termed sub-families are really entitled to that rank. Adopting the primary separation of the Eared and Earless Seals, one might reasonably be content to regard as genera the groups which Mr. Allen would elevate to the rank

of sub-families. If every species is to bear a different generic name (a condition of things to which many systematists nowadays seem gradually drifting), not only will the simplicity of the binomial system be entirely destroyed, but classification will become so complicated as to be distasteful to the majority of inquirers—to the hindrance, instead of the advancement, of science.

In briefly reviewing the sixteen species of Earless Seals recognised by Mr. Allen, it will simplify the subject if we treat his three sub-families as genera, and omit sub-generic distinctions, or what may be considered as equivalent to them. The *Phocidæ*, then, comprise—

1. *Phoca vitulina*, Linnæus, inhabiting the North Atlantic and North Pacific.
2. *Ph. grænlandica*, Fabricius, with a similar distribution.
3. *Ph. fætida*, Fabricius (*Ph. hispida*, Schreber), inhabiting the same seas.
4. *Ph. caspica*, Gmelin, found in the Caspian and Aral Seas.
5. *Ph. sibirica*, Gmelin, from Lakes Baikal and Oron.
6. *Ph. fasciata*, Zimmerman, found in the North Pacific.
7. *Ph. barbatus*, Fabricius, with a distribution similar to that of *Ph. vitulina*.
8. *Ph. grypus*, Fabricius, inhabiting the North Atlantic, from Newfoundland and Western Islands northwards.
9. *Ph. monachus*, Hermann, found in the Mediterranean, Adriatic, and Black Seas, Madeira, and

Canary Islands, and, it is thought, the West Coast of Africa.

10. *Cystophora cristata*, Erxleben,* dwelling in the North Atlantic and Arctic Seas.

11. *C. leonina*, Linnæus, inhabiting the southern portions of the South Pacific and Indian Oceans, and the Antarctic Seas.

12. *C. angustirostris*, Gill, found on the coasts of Western Mexico and Southern California.

13. *Stenorhynchus leptonyx*, Blainville, from New Zealand, Lord Howe's Island, and Desolation Islands.

14. *S. carcinophaga*, Gray, inhabiting the Antarctic Seas.

15. *S. weddelli*, Lesson, from the Antarctic Seas and East Coast of Patagonia.

16. *S. rossi*, Gray, also found in the Antarctic Seas.

On this list it may be remarked that further investigation, coupled with an examination of a larger number of specimens than has yet been brought together for comparison, is almost certain to result in a reduction of the number of species here indicated.

There is already good reason for believing that the Seals of the Caspian and Lake Baikal are merely varieties of *Phoca vitulina* and *fætida*. "These great interior and almost isolated seas have been for so long a time separated—the Caspian Sea wholly, and Lake Baikal nearly—from the great

* Having inadvertently numbered this species "11" instead of "10" (p. 465), Mr. Allen has unintentionally made it appear (p. 467) that there are 17 instead of 16 species of earless seals.

oceans, or any other large body of water communicating with the sea, that, if originally derived from the marine species to which they are allied, it may well be supposed that the peculiar conditions of environment, to which they have been for so long a time subjected, have not been powerless in effecting slight changes of structure, as they have certainly led to well-marked changes in habits."

If we are not mistaken, those who favour the specific separation of *Phoca caspica* and *P. sibirica* rely more upon an observed divergence of habits (simply the result of isolation and altered conditions of life) than upon any marked peculiarity of form or colour.

Again, the *Phocidæ* of the Antarctic Seas are still so little known, many of them having been described only from skulls, and the describers of these having at different times expressed such different opinions, that we are scarcely yet in a position to come to a safe conclusion concerning either the number of species, or their precise geographical distribution.

Of the sixteen species above enumerated, Mr. Allen considers that nine have claims to be included in the fauna of North America. These are the Common Seal (*vitulina*), the Ringed Seal (*fætida*), the Harp Seal (*grænlandica*), the Bearded Seal (*barbata*), the Ribbon Seal (*fasciata*), the Grey Seal (*grypus*), the West Indian Seal, doubtfully assigned to the same genus as the Monk Seal of the Mediterranean; the Hooded Seal (*cristata*), and the Californian Elephant Seal (*angustirostris*), so called from its lengthened attenuated proboscis. These, it will be seen, include the only five species which have

been recorded to have been met with on the coasts of Great Britain, namely, *Ph. vitulina*, *fætida*, *grælandica*, *grypus*, and *C. cristata*. In the first edition of Bell's "British Quadrupeds," the Bearded Seal (*barbata*) was included, but was omitted from the second edition, because, on consideration, there appeared to be no really good evidence of its occurrence in British waters.

The only species of which Mr. Allen has given any detailed account are (as pointed out in the case of the Eared Seals) those only which he regards as North American. Of these he has given a most interesting history, collected from authentic sources, and has described their habits, food, migrations, and geographical distribution, as well as the various methods employed for capturing or killing them at different "sealing stations," and preparing the products.

In regard to habits, one of their most remarkable traits is the length of time they are able to remain under water. Dr. Robert Brown states that the average time is five to eight minutes, and that he never saw them remain below the surface for more than fifteen minutes, although other observers give from twenty minutes to half an hour. Various theories have been offered in explanation of this remarkable power in a warm-blooded, air-breathing animal, but none seems quite satisfactory. Strange as it may seem, it is a well-established fact that young seals take to the water reluctantly, and have to be actually taught to swim by their parents.

The food of Seals is known to consist largely of fish; but some of the species are believed to subsist

mainly upon mollusca and crustacea, particularly the latter, and have even been observed to rise up and take birds off the surface of the water. In *The Zoologist* for 1871, p. 2762, an eye-witness of this fact, Mr. Angus, has related how on one occasion, on the coast of Aberdeen, he saw a Seal rise and take down a Herring Gull.

The periodical movements of Seals have long been noticed, and it has been found that with some species a regular migration takes place in spring and autumn. The Common Seal (*Ph. vitulina*) is believed to be non-migratory, for, wherever it occurs at all, it is reported to be found at all seasons; but the Harp or Greenland Seal, and the Hooded Seal, move northward in summer and southward in winter. Most Arctic explorers have noticed these movements, which in point of regularity have been compared to the migrations of birds, and an interesting account of this subject, by Mr. J. C. Steavenson, was published in *The Field* of Nov. 28, 1863.

Of their geographical distribution a brief outline has already been given, and want of space precludes further quotation from Mr. Allen's excellent monograph. Although professing to be merely "a History of North American Pinnipeds," it is in reality much more than this; for, while only the North American species are treated in detail, the volume furnishes a systematic review of the entire sub-order. It is to be regretted that we have not as good an account of the Antarctic species as Mr. Allen has furnished of their northern allies.

SPORT IN JAPAN.

IF English readers are not speedily made well acquainted with the manners and customs of the Japanese, and with the nature and productions of the country which they inhabit, it will not be for lack of literature on the subject. Within the last few years several works of authority relating to Japan have issued from the press, although written from very different standpoints. In the latest, by Capt. St. John, we have a sketch of the country from a sportsman's point of view.*

For prosecuting inquiries on this head, Capt. St. John enjoyed unusual advantages and facilities. The son of a well-known Scotch naturalist (the accomplished author of "A Tour in Sutherlandshire," "Natural History and Sport in Moray," and "Wild Sports and Natural History of the Highlands"), his early training as a deer-stalker and wildfowl-shooter must have stood him in good stead while exploring the wild coasts of Nipon. For seven years, while in command of H.M.S. *Sylvia*, he was engaged on surveying duty in Japan, and, enjoying a fair amount of leisure during the winter months, was often enabled to go ashore in quest of game as well as to

* "Notes and Sketches from the Wild Coasts of Nipon, with Chapters on Cruising after Pirates in Chinese Waters." By Capt. H. C. St. John, R.N. Edinburgh: Douglas. 1880.

collect natural history specimens. His work lay almost entirely on ground never visited by Europeans, a circumstance which renders the narrative of his explorations all the more interesting. Indeed, having regard to the rocky nature of the coasts, the dangerous currents between certain of the islands, and the periodical cyclones which are encountered in those seas, it may be said that no one not similarly situated and equipped could have succeeded in reaching the localities visited by Capt. St. John. In his explorations of the country, and in his search for wild animals, he had to rely chiefly on his own resources; for, although he tells us that the Japanese are fond of sport, it does not appear that they rendered him much practical assistance in pursuit of it. He was, however, invariably treated with hospitality and kindness by them, whenever in the course of his shooting excursions he entered their dwellings for rest or refreshment; and he speaks in high terms of the attention which was always shown him by the female members of the family, who, without waiting to be asked, provided him as soon as he came in with hot water for his feet and a delicious cup of tea, two items of refreshment most grateful to a tired sportsman.

Occasionally he was an interested witness of some of the methods of fowling and fishing practised by the Japanese. One of their modes of catching wild ducks—now almost obsolete—was rather amusing, and certainly novel to our ideas.

In former days most of the Princes' and Daimios' castles were surrounded by splendidly laid-out parks; the wild and the cultivated were both represented, and many a good day's shooting have

I enjoyed amongst these forsaken and beautiful grounds. But about the ducks. Some portion of these park-like inclosures was often devoted to the sport of catching them. Narrow canals were cut in different directions; they turn and twist so that only short pieces of the water can be seen from any one part. Banks about six feet high were raised on each side of these little water courses, covered with grass. The inside of these banks was arranged with steps, so that you could quickly mount to the top. Wild ducks were regularly fed in these canals, and, from never being fired at or frightened by noises, they very soon took regularly to them. Towards evening the sportsman sallied out, armed with a large silken landing net about two feet in diameter, mounted on a long light bamboo pole, the whole thing being very light, so as to be handled and wielded quickly. Two or three attendants of course accompanied the sportsman to carry his game when caught, and point out where the birds are, which was easily done by looking carefully through peep holes. The exact position of a flock being marked, the now eager netter walked quickly but noiselessly along under cover of the grassy bank, until he knew he had reached the spot where the ducks were. Then suddenly springing to the top of the bank he endeavoured, and generally successfully, to catch a bird in his net as they rose from the water. Quickness and decision were both necessary for this kind of sport. The object in having the canals so winding is to prevent the birds in one bend being disturbed by what is going on in the next one."

No mention is made by Capt. St. John of falconry in Japan, yet this sport was once in high favour with the Japanese. At the present day it would seem to be well-nigh obsolete, or, at all events, but rarely practised in that country.* The kindred sport of fishing with trained cormorants, although not noticed by Capt. St. John in Japan, was witnessed by him in North China, and he has described what he saw in detail.

* The cause of this decline will be found adverted to in an article on "Hawking in Japan," which appeared in the *Field* of 18th Oct., 1879.

To judge by his narrative, there is plenty of good shooting in Japan to be had for the asking. Deer, pheasants, hares, wild boar, wild duck, quail, and snipe are plentiful, with the additional excitement of an occasional bear hunt or wolf hunt.

There is only one species of deer in Japan, *Cervus sika* ("skha" is the Japanese word for deer), of which several specimens may be seen in the Zoological Society's Gardens. In some parts of Japan it is very abundant, as, for instance, in the fir woods of the islands of Sikok and Hirado; but it is generally distributed throughout the country, although the deer in the north are far finer than those of the south. This appears to be owing to the great difference in climate in the extremes of the island, or, more properly, islands, and to the herbage, which varies immensely, being succulent and nutritious in the north, but coarse, rank, and indifferent in the south. On this account the deer vary much in size, 100lb. being above the average in the south, while in the north 200lb. to 250lb. is not an uncommon weight. The antlers of those in the north are finely formed, large, and well-grown; but in the southern parts are stunted, and often imperfect. Capt. St. John states that he has never seen any species of deer so regular in their points.

There are always four, except where malformation has occurred in the early stages of the horns' growth. The horns are shed in March or beginning of April, and by the end of July they are full grown, and clean from velvet by the middle of August. The rutting season is in September and all October, and many a fine stag then comes to grief by the wily Japanese hunter, who, waiting concealed near some stream or pond, imitates the call of the female so accurately, by means of a small instrument made out of the

horn of the deer, and covered with the skin of the same animal, that the stags are easily attracted to within a few yards, and then shot.

These deer swim well, and not unfrequently take to the water and swim two or three miles. They are very timid and shy; but at night they often break through the mud wall or other fence which invariably surrounds the cultivated ground, and do a lot of mischief in a very short time, as much by trampling the standing corn or rice as by eating it.

The inhabitants of some parts of the Goto Islands informed the author that they seldom got half their crops of corn and sweet potatoes in before the other half was destroyed by deer, wild boars, and pheasants; and, from what he himself observed, he did not think they were very far wrong in their calculation.

The Wild Boar of Japan (*Sus leucomystax*) is an animal by no means to be despised by the hunter, often showing good sport, and caring little for the dogs. It will run at first; but an animal of any size soon turns and faces its pursuers. Many a time the author has seen the dogs beaten off, and sometimes badly hurt.

Pitfalls are used, but with indifferent success. The dogs occasionally fell into them; and on one occasion an officer of the *Sylvia*, when out shooting, suddenly disappeared from his companions' sight in one of these pits, much to his own discomfort. It was no easy matter to get him out. Fortunately, the Japanese do not use spikes in these pits.

Badgers (*Meles ankuma*), says Capt. St. John, are very numerous in some parts of Japan, and are

not the nocturnal creatures they are in this country. It was a very common occurrence to meet them walking about the edges of the paddy fields any time during the day; and, on observing the approach of an intruder, they only shuffled off into the cover, remaining close at hand, and were easily turned out and shot. In winter the skin makes a nice mat; but during the summer the fur gets very thin, and the skin is then not worth a charge of shot.

In Yesso, as well as on the Kii coast, Bears seem tolerably common. They are hunted in spring by the Ainos, for the sake of their skins. At these hunts very young cubs are often caught, and are handed over by the hunters to their wives to be brought up. The women suckle them with their own children until young Bruin's teeth get disagreeably long. They are kept until about a year old, and then eaten at the annual autumn feast of bears—a sort of half spirit-worship, half custom feast, held at that season.

Amongst other wild animals noticed by Capt. St. John are the Wolf (*Canis hodopylax?*), particularly common at Taskara Ura, on the Kii coast; the Fox, which in size, colour, and habits, the author considered identical with our own; several species of Marten and Weasel, which, unfortunately, were not identified, but which were presumably *Mustela melampus*, *M. brachyura*, and *M. itatsi*; Otters, the common species and the Sea Otter, and both very plentiful; and a Hare not named, of which some description, with measurements, would have been acceptable. In addition to these, we find mention of a Hog Deer, not identified, and of which we should

have been glad to learn more; and the so-called Japanese Chamois, *Antilope crispata*, a rare animal, and difficult to procure. It is called by the natives Nigou. Of this Capt. St. John writes :

They keep to the highest mountains and to the highest and most rugged peaks of these ranges. I have hunted them with the natives and with their dogs, and this often; and yet only once, although often close to the creatures, have I had a glimpse of one, much less a shot. On one occasion I was lucky enough to see one, and this was by mere accident, and when not in search of game. I have often been told fabulous stories of these animals. They were supposed to have but one horn, and to use this as a means of hanging on to trees as well as in self-defence. After some years of anticipation and endeavour to get even a dead specimen, I got a couple, and then, strange to say, several others were brought to me. A young male, alive, was caught after its mother was shot. Only one specimen of all that were brought to me by the native hunters had both horns intact—always one, and often both, being more or less broken. In hunting them with dogs it soon became evident why this was so generally the case. The Japanese invariably placed me near some huge bare slab of rock, on which the Nigou, when pressed by the dogs, was expected to appear; and, on looking at these slippery, sloping platforms, I tried to conjecture where, if I knocked one over, it would tumble, and what shape or form it would be in by the time it stopped. I could then easily understand why the horns were usually so damaged. I have no doubt, also, they are often caught in the bushes or trees by the slightly turned-back horns, on their falling and reaching the foot of these rocks; hence the origin of the story of their holding on to the trees. The colour of the Nigou is a brownish slate; the older they get, the lighter-coloured they become. Until I actually had one in my hand, I was unable to decide whether they had a beard or not, and was pleased to find they do not possess this ornament; they are, therefore, true antelopes, and not goats.

Of the quadrumana there is only one species in Nipon, a short-tailed Macaque with a red face, *Macacus speciosus*, which is not uncommon in the woods, and which apparently is not found further

north than 35° N. latitude. Of this animal Captain St. John writes :

I often came upon families of these apes. The old patriarchs of the community were about the size of my Irish retriever—grey, grizzly-looking fellows, who never hurried themselves when suddenly come upon, but very leisurely walked off, seeing their wives and children well ahead before they thought of moving. From being never molested by the natives, doubtless, they consider themselves quite safe.

The Birds of Japan are even more interesting than the quadrupeds, especially to those who are fond of shooting; for abundant sport is to be had with Pheasants (*P. versicolor* and *soemmeringi*), Spruce Grouse (*Bonasia sylvestris*), Quail; Snipe of four species, including the Australian Snipe, which breeds there in June, of which an interesting account is given, and the Painted Snipe (*Rhynchœa bengalensis*); and wildfowl of various kinds, of which the common Wild duck is one of the most numerous—the Harlequin Duck also being very common along the northern shores of Yesso. The descriptions given by Capt. St. John of the pheasant and wildfowl shooting he has enjoyed at different times in Japan are calculated to make the mouth water of many a less fortunate stay-at-home sportsman.

In an appendix to his book the author has given a list of Japanese birds, taken from the well-known "*Fauna Japonica*" of Temminck and Schlegel, to which he has added between forty and fifty more which are not included in that work. But his labour would have been much lightened, and his list much improved, had he consulted some ornithological friend before putting it in type. He is entirely under

a misapprehension in assuming, as he does, in the opening paragraph of his appendix, that no list of Japanese birds has been published since the appearance of the "Fauna Japonica" thirty years ago. Several such lists have, in fact, been published; for instance, in Perry's Narrative of the U.S. Expedition to Japan, 4to., 1856; Blakiston on the Ornithology of Northern Japan, *Ibis*, 1862, with corrections and additions to same, *Ibis*, 1863; Swinhoe on the Ornithology of Northern Japan, *Ibis*, 1863; Whitely on Birds collected near Hakodadi, Japan, *Ibis*, 1867; Sharpe on a collection of Birds from China and Japan, *Ann. and Mag. Nat. Hist.*, August, 1870; and Collingwood, *Proc. Zool. Soc.* 1870, p. 600; and since Capt. St. John's work was published, Messrs. Blakiston and Pryer have printed a revised list of the Birds of Japan, enumerating 326 species.

It was at least to be expected that, in the preparation of a new catalogue of Japanese birds, reference would be made to all these sources of information, and a careful comparison instituted of all of them. This not having been done, Capt. St. John's list can scarcely be regarded as furnishing a correct key to the avifauna of Japan. On the other hand, it affords evidence of the keen interest which he has personally taken in the subject, and which has enabled him to make numerous additions to the only list of Japanese birds with which he happened to be acquainted.

With regard to the Fishes and Crustacea, some interesting information is given, notably with reference to the Salmon fishery on the Iskari, the largest river in Yesso, which supplies the whole of

Japan with fish, and to the trout fishing in the mountain streams on the Kii coast, which is said to be very good. The author's search for a remarkable Spider Crab (*Inachus kæmpferi*), a specimen of which measured 1 ft. 6 in. from tip to tip, and presented a most gorgeous appearance — crimson blotches on a bright yellow ground — is most graphically described.

Capt. St. John's book is one that commends itself throughout to sportsmen and naturalists. His descriptions are pleasantly written, and furnish a good general idea of the physical aspect of the country, the mode of life of the natives (more particularly the dwellers on the coast), and the capabilities of the country for sport in its various branches. From it also we obtain a very fair notion of the characteristic animals and plants of Japan, although there are several little-known species which Capt. St. John does not notice, and about which some information would have been welcome. Had he possessed some acquaintance with the publications of previous writers on the natural history of Japan, he would not only have experienced less difficulty in identifying species already described, and in detecting new forms, but would have been enabled to turn his attention at once to points which require elucidation, and to collect materials which would be of real use to science.

AN ESSEX DECOY.

ON looking at a map of Essex, dated July, 1825, prepared from a survey made by Grimwood in 1824, it appears that in the eastern division alone, and immediately north and south of the Blackwater, no less than eight decoys for wildfowl then existed. At the present time only three of these, it is believed, are still worked. The sites of four others remain, which have long been disused, while of the eighth not a trace now remains. Tradition only points to the place where, one hundred and sixty years ago, a profitable business was carried on in the capture of wildfowl, chiefly Wigeon,* for the London market. Fortunately, however, for those who, at the present day, take an interest in such matters, the Essex yeoman who constructed this decoy, being a business-like man, took the trouble to write down the cost of its construction, and for thirteen years kept a strict account of the numbers of wildfowl captured by him and of the prices which they realised. This curious MS., which is contained in a small folio volume bound in vellum, was written between the years 1713 and 1727, and by the favour of the

* On the etymology of this name, see *The Zoologist*, 1882, p. 110.

present owner, Mr. Robert Smith, of Maldon, is now before me. The decoy in question was situate in Canney Marsh, just behind Steeple Church, and rather more than half-way between Maldon and Tillingham. It was originally constructed in 1713, but in 1721 the owner, evidently finding it to be a source of considerable profit, went to some expense in enlarging it; and it would appear that when the pond was dug out, it was at first filled by pumping from one of the tributaries of the Blackwater, but was subsequently supplied from a well which was sunk at what nowadays appears an insignificant outlay, 10*l.*, but which probably represents about 50*l.* of our money.

As affording a good illustration of the prices paid for materials and labour in the days of Queen Anne, the first page of this MS. is not without interest, and I here transcribe it *verbatim et liberatim*:

AN ACCT. OF THE CHARGE OF MAKEING THE DUCKOY POND
UPPON CANNEY MARSH BY ME JOHN COOCH 1713.

	£	s.	d.
Bot. 2½ of rope yarn	02	00	00
Bot. reed and broom	08	16	00
Bot. one barrl. of tarr	01	05	00
Bot. netts and twine	07	03	06
Bot. piles	12	19	04
Bot. 1660 poles	14	09	00
Pd. for diggin the pond and the four pipes	64	19	00
Pd. for 120 rod of ditching about ye pond...	23	05	00
Pd. Thayers for a pump and filling the pond	15	01	00
Pd. Thomas Peach, duckoyman at Tillingham, for his judgement and trouble in setting out the pond	26	13	06
Tottall	176	11	04

AN ACCT. OF THE CHARGE OF MAKEING THE DUCKOY POND
CANNEY MARSH LARGER BY ME WILLIAM COOCH 1721.

	£	s.	d.
Pd. for removing pt. of a bank and diging ye new pt. of ye pd	97	00	00
Pd. for makeing 3 new pipes	4	12	00
Pd. for 600 of poles	4	15	00
Pd. for 300 of piles	4	00	00
Pd. for tar	1	05	00
Pd. for netts	4	15	00
Pd. for 200 bolts of reed and carridge	2	16	00
Pd. for rope yearn	1	00	00
Pd. for makeing ye well and arch, and new pump, and materials for ye mill	10	00	00
1721 Total	£130	03	00
1713 Total	176	11	04
In all	£306	14	04

The decoy was completed and ready for use by September, 1714; and on the 3rd of that month the result of the first day's take by "Jos. Woodward Duckoyman" is set down as Duck 8, Teal 4, and "Wiggin" 54—in all 66 birds. The decoy season the first year lasted from September to January inclusive, during which period there were captured 675 Ducks, 347 Teal, 46 "Pyntail," and 6296 "Wiggin"—in all 7364 birds—in the following proportions:

	Duck.	Teal.	Pyntail.	Wiggin.
September	39 ...	81 ...	9 ...	3907
October	26 ...	19 ...	1 ...	1899
November	185 ...	92 ...	3 ...	244
December	219 ...	103 ...	13 ...	153
January	206 ...	52 ...	20 ...	93
	<u>675</u>	<u>347</u>	<u>46</u>	<u>6296</u>

Then follows the entry, "Sold to Mr. Neptune this year's whild fowll at 9s. 6d. per doz.—£150." From

this, however, it appears that only Ducks and Pintail counted 12 to the dozen; Teal and Wigeon, being only "half birds," were reckoned 24 to the dozen. Had the owner sold all at 9s. 6d. per dozen, he might have paid the original cost of the decoy out of the first year's proceeds, and had a balance in hand of 115*l*. This shows what a profitable source of income in those days a decoy was when properly managed. At the present day probably (could the same number of fowl be captured), the money value would be five times as great.

On glancing at the table last given, several points of interest are suggested. In the first place, it appears that by far the larger number of fowl taken in Essex at that date were Wigeon. In the next place, it seems that the great body of Wigeon arrived in autumn before the cold weather had set in, and that after November comparatively few were taken. The Ducks and Teal, on the other hand, did not appear in force until mid-winter; while "Pyntails" were always scarce and irregular in their appearance. These conclusions are not based merely on the returns for the first year, 1714, but are borne out by the returns for subsequent years. In 1716 the price paid for wildfowl thus captured rose to 10s., and the following year to 10s. 6d. per dozen, the purchaser being "Jno. Deal." In 1718 Joseph Woodward ceased to be "Duckoyman," and in his stead one "Ben Carter" was employed, but either he was not so skilful as his predecessor, or wildfowl were never afterwards so plentiful. He never succeeded in taking more than 4500 Wigeon in a season (this was in 1722), while Woodward never

took less than 5200 of these birds in a season, and once captured 6296 in five months. The months of December, 1718, and January, 1719, were singularly unproductive. In December the decoy was worked on two days only, the 22nd and 30th, when only forty Ducks were taken. In January four days' work produced only fifty-three Ducks and twelve Wigeon.

In 1720-21 the season was prolonged until March 3, but to little purpose; for on that day only fourteen Ducks were taken, and the total number captured during the previous month was only thirty-three.

In 1721 the price of vildfowl rose to 12s. per dozen, Mr. John Deal still finding a market for all that could be spared from this decoy. The following year he gave 12s. per dozen to Michaelmas, and 14s. per dozen from that date to the end of the season.

In 1723 appears the entry, "Sold to Mr. Wm. Foster this years wild fowll att sixteen shillings per dozn." The same purchaser took all he could get the following year at the same price; and in 1725 and 1726 16s. per dozen was again the price given by Messrs. Darnoll and Basset. With the close of this season the MS. ends, and we are left in ignorance as to whether the decoy was then given up, or whether the owner died and it changed hands, or what its fate was.

To judge by the following summary, copied from the last page of the MSS. (which is all in the same handwriting), it would appear as if one reason for giving up the decoy was the gradual falling off in numbers of fowl observable during the last three years in which it was worked—or, at least, the last

three years of which an account has been preserved, and the consequent falling off in the profits, which dwindled from 81*l.* to 69*l.*, and eventually to 33*l.* only. Whether this falling off was occasioned by the establishment, or successful working, of other decoys in the neighbourhood, or by the reclamation and cultivation of the surrounding marsh lands, does not appear; both these causes probably had their influence upon the birds. Here is the summary referred to:

AN ACCOUNT OF WILDFOWLL KETCHT AT STEEPLE
DUCKOY.

	Ducks.	Teal.	Pyntail.	Wiggin.	Doz.	Burds.	Half Burds.	£	s.	d.
1714.	675	347	46	6296	339	11	00	150	00	00
1715.	449	518	42	6088	308	00	00	143	04	04
1716.	392	154	15	5817	295	08	00	147	04	02
1717.	329	30	1	5207	248	05	01	130	08	09
1718.	193	40	6	3138	149	10	01	78	13	08
1719.	207	14	2	825	52	11	01	27	15	06
1720.	81	07	0	2789	118	01	01	62	00	3
1721.	267	24	3	3317	158	00	00	94	16	00
1722.	568	17	8	4514	239	02	01	164	15	08
1723.	449	70	7	3260	175	03	01	142	08	08
1724.	498	145	4	1306	102	03	00	81	16	06
1725.	202	19	4	1671	87	04	01	69	18	00
1726.	266	11	0	449	41	07	00	33	00	00

It would seem that nearly all the Ducks and Teal taken in this decoy were foreigners, and not home-bred birds; for it is remarkable that during the months of August and September, before the large migrating flocks had arrived, comparatively few were captured, which would scarcely have been the case had these birds nested in any numbers in the surrounding marshes.

FISHING WITH CORMORANTS.

THE art—for it is an art—of fishing with trained Cormorants is of very ancient origin; so ancient, indeed, that history, so far as I am aware, does not disclose the name of the ingenious wight who first conceived the idea of turning to account the remarkable fishing powers of the Cormorant; nor does it proclaim his nationality or fix, even approximately, the date or period of his existence. Under these circumstances it seems justifiable to assert that the origin of Fishing with Cormorants, like the origin of Falconry, is shrouded in obscurity. There is, however, good reason to believe that it was initiated by the Chinese, since the earliest mention of it is made by writers who travelled in China, and who described the sport from personal observation of its practice in that country.* Figures also of

* For an interesting account of early European literature relating to China, the reader may be referred to Mr. R. H. Major's excellent introduction to Sir George Staunton's edition of Mendoza's work hereafter quoted. He states (Intro. p. ix.) that the first traveller from whom accounts collected from personal experience respecting China were received in Europe, was William Van Ruysbroek, commonly known by the name of De Rubruquis, a friar of the Minorite order, and sometimes called William of Tripoli, from the circumstance of the narrative of his travels having been transmitted from Tripoli to St. Louis, King of France, at whose instance they were undertaken.

fishing Cormorants may be seen upon Chinese porcelain of some antiquity, and doubtless there are ancient Chinese MSS. referring to the subject, which, were they deciphered, would probably throw some light on the early history of the sport.

The earliest description which I have met with of the sport as observed in China by a European occurs in an English translation by R. Willes (from the Italian version first printed at Venice) of a Portuguese MS. by one Galotti Pereira, who, about the middle of the sixteenth century, was, with others of his countrymen, a prisoner in China.*

As this quaint description is not easily accessible to the general reader (Eden's work being of great rarity and value), I may quote it *literatim et verbatim*:

The kyng hath in many ryuers good store of barges full of sea-crowes, that breede, are fedde, and do dye therein in certayne cages, allowed monethly a certayne prouision of ryse. These barges the kyng bestoweth vppon his greatest magistrates, geuyng to some two, to some three of them, as he thynketh good, to fyshe therewithall after this maner. At the houre appoynted to fyshe, all the barges are brought together in a circle, where the ryuer is shalowe, and the crowes, tyed together vnder the wynges, are let leape downe into the water, some vnder, some aboue, worth the lookyng vppon: eche one as he hath filled his bagge, goeth to his own barge and emptieth it, whiche done he retourneth to fyshe agayne. Thus hauyng taken good store of fyshe, they set the crowes at libertie, and do suffer them to fyshe for their owne pleasure. There were in that citie where I was [Pekin] twentie barges at the least of these aforesayde crowes: I wente almost

* See "Reportes of the Province China," in "*The History of Trauayle in the West and East Indies and other countreys lying eyther way towardes the fruitfull and ryche Moluccaes.*" By Richarde Eden. Sm. 4to. Lond. 1577 (p. 253).

euery day to see them, yet coulde I neuer be throughly satisfied to see so straunge a kynde of fyshyng.

No less curious is the account given by Mendoza (or rather by his translator Parke) in the work of which the title is given below, although it is too long to be here quoted *in extenso* :*

They take their cormorantes, or sea rauens, (he says), and with a corde they do binde their mawes in such sort that no fish can fall into it ; then they do cast them into the riuer to fish, the which they do with such good will and couetousnesse, that it is a woonder to see : they throwe themselues into the water with great swiftnesse, and diue, whereas they do fill their throate with fish. Then they come fourth, &c.

In Nieuhoff's account of the Embassy of Peter de Goyer and Jacob de Keyzer, from the Dutch East India Company to the Emperor of China, in 1665,† it is related that at Si-ning-chew, in the province of Shan-tong, on an artificial channel of the Yellow River, the ambassadors witnessed the natives fishing with Cormorants :

Here they saw them catch fish with a bird called *Lou-wa*, somewhat less than a goose, and not much unlike a raven. It has a

* “ *The Historie of the Great and Mightie Kingdome of China.*” Compiled by the Padre Juan Gonzales Mendoza. Translated from the Spanish by R. Parke. Lond. 1588. Reprinted and edited for the Hakluyt Society by Sir George Thomas Staunton, Bart., 1853 (vol. i. pp. 154, 155). The author, an Augustinian friar and Chinese missionary, was made Bishop of Lipari in 1593. His work, originally printed in Spanish (Rome, 1585), was translated at intervals in Italian, Latin, English, and French, the English version having been undertaken by Parke, it is said at the request of Hakluyt himself.

† Translated in “ *Pinkerton's Voyages and Travels,*” vol. vii., p. 254. See also Dapper, *Beschryving des Keizerryks van Taising op Sina*, Folio, Amsterdam 1670, which contains a good engraving of the sport (p. 234).

long neck and a bill like an eagle. They go out in small boats made of Bambû canes, placing the bird on the outside, which, on sight of a fish, shoots down and swims after it under water. As soon as she has caught her prey she rises, and the fisherman, having taken it from her, sends her out to seek more.

To prevent the bird from swallowing the prey, they put an iron ring (!) about her neck. If the fish is too big for her to bring up she makes a noise in the water for the master to come to her help. When they have caught enough for their owners the ring is taken off and they are left to fish for themselves.

In case they are averse to dive, they are brought to it by beating. The fishermen pay a yearly tribute to the Emperor for the use of these birds, which are much valued by the Chinese. One of those which are well taught is often sold for 50 tael of silver, which is about 150 guilders. The Dutch would have bought a couple of an old fisherman, of whom they had some carp, but he refused to sell them because they served to maintain his family. He could not inform them either whence those birds came, or how they were instructed; only he said they were left him by his ancestors, and bred very seldom.

It seems that the Chinese do not *always* use a neck strap or collar for their Cormorants. With well-trained birds it is dispensed with. Sir G. Staunton says: * "They appeared to be so well trained, that it did not require either ring or cord about their throats to prevent them from swallowing any portion of their prey, except what the master was pleased to return to them for encouragement and food. Mr. Milne, who has given one of the best modern accounts of the sport as witnessed by him in China, says: "I could find neither ring nor cord about the necks of any of them to prevent the

* *An authentic Account of an Embassy from the King of Great Britain to the Emperor of China.* From the papers of Lord Macartney. By Sir George [Leonard] Staunton, Bart. 4to. Lond. 1797 (vol. ii. pp. 388, 389).

swallowing of fish."* Being very narrow, however, the strap might be easily concealed by the neck feathers.

So far as I have been able to discover, the date of the introduction of Cormorant fishing into Europe was towards the close of the sixteenth or beginning of the seventeenth century, when fishing Cormorants appeared almost simultaneously at both the English and French courts, and afforded considerable amusement to the reigning sovereigns of that period. It is not unlikely that the sport was first made known in Europe by the Dutch, who, besides being enterprising navigators and traders in the East, have in all ages been known as skilful falconers and great bird fanciers.

According to Baron Dunoyer de Noirmont,† this mode of fishing was introduced into France by a Dutchman, who visited the Court of Louis XIII. (1610-1643) with two trained Cormorants, and exhibited them before the King, who was so pleased with the spectacle that he desired to have some himself to use on some of his ornamental waters, especially at Fontainebleau. But, as Count le Couteulx observes,‡ trained Cormorants were known in France in the previous reign, as appears by entries in the journal of Dr. Héroard, who was chief physician to Louis XIII. when a youth. Under date "24 Septembre, 1609," he writes :

"Mené le Dauphin avec leurs Majestés au grand jardin à Fontainebleau où il voit pêcher au Cormorant au canaux."

* "Life in China," 8vo., 1857, p. 307.

† *Histoire de la Chasse en France.* Paris, 1868, vol. ii., p. 227.

‡ *La Pêche au Cormoran.* Roy. 8vo. Paris, 1870., p. 18.

And, again, the following day:

“25 Septembre, 1609.—Mené à la chapelle, puis au jardin des canaux pour y voir le Cormoran prendre du poisson.”

It is observable that Dr. Héroard does not allude to it as a novel spectacle, and it may therefore have been no novelty in France even then.*

Count le Couteulx, referring to the use of Cormorants for fishing in England, is of opinion that the art of training them was made known here about the same time as it was in France, but the only record that he is able to cite places the date of their introduction here somewhat later, namely, during the reign of Charles I. Quoting Pennant, he says that Whitelocke† kept Cormorants for fishing; that they were “manned” like hawks, and taught to come to the hand. He took much pleasure in them, and relates that the best he had was one presented to him by Mr. Wood, master of the Cormorants to Charles I.

But there is earlier evidence than this of the employment of trained Cormorants in England, as I discovered some years ago when examining the Issues of the Exchequer in James the First’s time, commonly called “the Pell Records.” From these records it appears that James I. took great delight

* There was a “keeper of the Cormorants” (*garde des cormorans*) in the park at Fontainebleau in 1698, an office which was still maintained in 1736. *Le Mercure* of October, 1713, gives a grand description of the spectacle, which at that date might be witnessed twice a week at Fontainebleau, when the King, with a numerous retinue on horseback and in gilt coaches, promenaded along the canal to watch the Cormorants fishing.

† It is presumed that the author of “Memorials of English Affairs” is here intended, although I have not been able to discover the passage in that work.

in fishing with trained Cormorants (as he did also in watching his tame Otters, which were trained for a similar purpose), and went to some expense in procuring them, and in building accommodation for them. A "Master of the Cormorants" was appointed, one John Wood, who in April, 1611, was paid 30*l.* "for his trouble in bringing up and training of certain fowls called Cormorants, and making of them fit for the use of fishing."

In May of the following year he was appointed "to travel into some of the further parts of this realm for young Cormorants, which afterwards are to be made fit for his Majesty's sport and recreation," and for which he received another 30*l.*

In 1618 the King had become so fascinated with the sport, that he decided to build a house and make some ponds for his Cormorants, Ospreys, and Otters at Westminster,* and for this purpose he leased of Lord Danvers a piece of meadow ground, about an acre and a quarter, lying in the Vine Garden, near Westminster Abbey,† at the yearly rent of 7*l.* A brick building was erected on this ground at a cost of 100*l.*, and nine fish ponds were dug costing altogether another 40*l.* These ponds were stored with carp, tench, barbel, roach, and dace (100 of each), and a sluice of elm-planking was made to bring the water from the Thames. The total

* It would be interesting to know what success attended the efforts of Master Wood to train the Osprey. It is not certain that he ever succeeded. The Ospreys in question may have been procured for experiment and found intractable. Capt. Salvin is of opinion that this bird cannot be trained in consequence of its incurable habit of "carrying," a term well understood by falconers.

† Apparently on the site of the present Houses of Parliament.

outlay incurred upon this, the first Westminster Aquarium, was 286*l.*, for which amount, in August, 1618, the King gave an order upon the Treasury. A copy of this order, with the bill annexed, will be found printed in the appendix to Devon's Issues of the Exchequer (temp. Jas. I.).

Nor was it only on the Thames at Westminster that King James amused himself with his trained Cormorants. At Theobalds, his favourite hunting seat in Hertfordshire, where he inclosed the park with a wall ten miles in circumference, for the better preservation of the deer and game, there was a large pool, with an island in it, whereon he kept wildfowl which he had had netted in Lincolnshire, and caught fish with his Cormorants.

In Norfolk, also, he appears to have had some good sport with these birds in the neighbourhood of Thetford, as we learn from an entry in an interesting MS. diary, in French, of Hans Jacob Wurmser v. Vandenhaym, who accompanied Louis Frederick, Duke of Wurtemberg, in his diplomatic mission to England in 1610.

In that year the duke, proceeding by way of Ware, Royston, Cambridge, and Newmarket, arrived on May 7, at Thetford, where the King was then staying, and on the following day, according to the writer of the diary :

Après que son E[xcellence] eut disné avecq sa Ma^{te} le Duc de Lenox qui l'estoit venu visiter devant disné le menu à la chasse, ou l'on courrut le lievre, fit voller ung Espervier et print des Doterelles, oiseau qui se laisse prendre par ung estrange manière ainsy que nous avons veu, et qui se peult mieulx dire qu' escripre.

S.E. [son excellence] soupa derechef avecq sa Ma^{te} lesquelq en sortans de table entrèrent en carrosse pour aller à la rivière ou ils

virent des Cormorans, oyseau qui par signe, que le maistre, qui les a dressé leur donne, se plongent soul l'eaux et prennent des anguilles, et aultre poisson, lequel aussy par signe l'on le faict rendre et vomir tous vifs, chose bien merveilleuse a voir. Sur toute chose estoit les sages discours de sa Ma^{te}, très admirables,*

Perhaps the Cormorants used at Thetford came from Reedham in the same county, where, as we learn from Sir Thomas Browne, they used formerly to build upon trees, and whence, he says, "King Charles the First was wont to be supplied."†

Willughby, in his "Ornithology," 1678, quoting Faber,‡ observes (p. 329):

They are wont in England to train up Cormorants to fishing. When they carry them out of the rooms where they are kept to the fish-pools, they hood-wink them, that they be not frightened by the way. When they are come to the rivers they take off their hoods, and, having tied a leather thong round the lower part of their necks, that they may not swallow down the fish they catch, they throw them into the river. They presently dive under water, and there for a long time, with wonderful swiftness, pursue the fish; and when they have caught them they arise presently to the top of the water, and, pressing the fish lightly with their bills, they swallow them, till each bird hath after this manner devoured five or six fishes. Then their keepers call them to the fist, to which they readily fly, and little by little, one after another, vomit up all their fish, a little bruised with the nip they gave them with their bills. When they have done fishing, setting the birds on some high place, they loose the string from their necks, leaving the

* This curious diary, which is bound in parchment, is preserved amongst the Additional MSS. in the British Museum (No. 20,001), and is entitled "Wurmser, H. J., Travels with Louis Count of Wurtemberg."

† An Account of Birds found in Norfolk, temp. Car. II., Sir E. Browne's Works (ed. Wilkin), vol. iv., p. 316.

‡ Annotations to Recchi's remarks on the zoology of Mexico in Hernandez' *Rerum Medicarum Novæ Hispaniæ Thesaurus*, folio, Rome, 1649 (p. 693).

passage to the stomach free and open, and for their reward they throw them part of their prey they have caught, to each, perchance, one or two fishes, which they, by the way, as they are falling in the air will catch most dexterously in their mouths.

This is not only a very partial translation, but several points of interest are left unnoticed. The passage in question was not written *by* Faber, but *to him* by his friend C. A. Puteus, who states that he saw trained Cormorants fishing at Fontainebleau, in the presence of the King and of the Cardinal Legate Barberini. This must have been about 1625, when Barberini was in Paris.* Puteus adds the important remark that the birds he saw had been presented to the French King by the King of England (doubtless James I.), and had an English keeper. This favours the supposition that the sport was known in England before it was introduced in France.

The whole story is so interesting, connected as it is with the history of Cormorant fishing in England, that I am tempted to give the entire passage in Faber's own words (1649). It may be easily skipped by those to whom it may appear tedious.

Post tam varias igitur disceptationes hæc tandem subiit mentem sententiæ, posse forsân non incongrue *Gallis Anglisq.* avem dictam Cormorant, antiquorum *Mergum* appellari, de qua necesse prorsus judico hic illa enarrare, quæ *Carolus Antonius Puteus* observavit in piscatione, quam avis hæc exercebat in Galliis, præsentibus huic ludicro spectaculo Christianissimo Rege et Illustrissimo Cardinale Barberino, hoc verborum tenore ad me perscripsit.

Solent in Anglia assuefacere *Corvos marinos* ad piscium præ-

* Francesco Barberini, nephew of Pope Urban VIII., was created Cardinal in 1623; and was in Paris as Legate 1625-26. See Michelet, *Hist. de France*, tom. xi. pp. 399, 403.

dam, nō aliter atque nos in Italia volucres rapaces ad avium rapinam edocemus. Vendūtur autem ita edocti *Corvi marini* pretio nō exiguo. Hujusmodi piscatoriam venationem in gratiam *Legati Cardinalis Barberini* exhibitam, et *Corvos* seu *Cormorants* simul piscantes in Fontebellaquensi, Gallicé Fontenablo, dicto loco quatuor vidimus qui omnes cum *vulture* quodam maximo *Galliarum Regi* ab *Angliæ Rege* dono missi fuerant, una cum harū avium magistris et instructoribus. Corvi hi sæpius in canali ibidé in *Truttarum* piscatione exercitabantur. Dum autē è cubiculis suis ad piscinas transportarentur, capita et oculi ipsis obvelabantur, ne in transitu perterrefierent. Detractis igitur ubi ad flumina perventum erat, obvolucris illis, et ima colli parte prius per ligulam coriaceam leviter astrictà, ne deglutire quos cœperant pisces, valerent, in torrente præcipitabantur. Hi repente aquis sese immergebant, diuque sub his pisces velocitate mirabili sequebantur fugientes, quas ubi rapuissent ex aquis emergebant, piscemq. quilibet rostro suo leviter compressum deglutiebat, donec quatuor vel sex pisces hoc modo quivis ingurgitasset. Tum demum à magistris suis *Anglicana* lingua ad manum seu pugnum vocabantur, ad quem obedientissimi convolabant et paulatim pisces omnes, unum post alterum nempe, eosq. tantillum saltem rostri pressura læsos evomebant. Finita autem piscatione, loco eminentiore his *Corvis* collocatis, ligulam ex collo solvebant, via ipsis ad ventriculum libera permissa et pro cibo, prædæ partem cuilibet piscem unum inquam, projiciebant, quem dexterrimè hi per aera descendente hiante rostro excipiebant. Voces autem quibus ad manum vocitabantur hi *Corvi* erant, *con, con* (Germani dicerent *Kum, Kum*) quod linguà *anglicana*, nihil aliud sonat, quam *Veni, veni*. Hæc *Carolus Antonius Puteus* cujus supra quoq. industriam in explorandis animalium plerorumque Avium tamen præcipuè proprietatibus, jure ac merito laudavi.

It is now many years since I first saw trained Cormorants used, and as the narrative of an eyewitness is preferable to a description second-hand, I will relate what I saw, premising that the birds in question belonged to Capt. F. H. Salvin, well known as an accomplished falconer, and who may be said to have revived the art of Cormorant fishing in

England, where, until its re-introduction by him about the year 1847, it had long gone out of fashion and out of practice.

As a matter of fact, I believe that in 1846 the late Mr. E. C. Newcome, of Feltwell Hall, Norfolk, brought over a trained Cormorant from Holland, but the country in his neighbourhood was not suited to the sport, and he soon gave it up, devoting himself more than ever to falconry, in which he was a most enthusiastic proficient.

It was not, I think, until the summer of 1867 that I first saw Capt. Salvin's Cormorants at work. We were both staying on a visit with the accomplished author of "*Ornithological Rambles in Sussex*," and the ramble which we three took on that occasion, with the Cormorants, will not be easily forgotten.

The "meet" was at Midhurst, where a large pond with a stream through it held some good trout.

So far as I personally was concerned, a spectator of the sport for the first time, no better spot could have been selected; for, an old tree having blown down half way across the pond, I was enabled to climb out for some distance from the bank, and from this "coign of vantage" observe every movement of the birds as they pursued the fish through the clear water beneath and around me.

They were brought to the "meet" in a palanquin divided into compartments, littered down with straw, each bird being in a separate stall. After undergoing the operation of having a little strap buckled round the lower part of the neck to prevent the passage of the fish beyond the pouch (which when distended, and thus constricted by the strap, forms a capacious bag), the birds were liberated, and at a sign from

their owner plunged into the water. Their movements were extremely rapid, yet silent and graceful. They would disappear with the slightest possible disturbance of the water, remain immersed some time, and return to the surface, either with or without a fish, as the case might be, for they were not successful at every dive.*

I watched an old Cormorant, who from experience had evidently grown cunning. He dived towards the shore, and, swimming rapidly along, probed all the likely holes and crevices along the bank, in the hope of finding a trout. Presently a good-sized fish darted out in front of him. Instantaneously he gave chase, and, quickening his pace, seemed to vie with, nay, even surpass, the fish in speed, so rapidly did he overtake and seize it.

But he had seized it too near the tail, and on reaching the surface the fish, a trout, making a convulsive effort to escape, threw itself a yard or more away from its enemy, and regained the water. In an instant the Cormorant re-dived, and rapidly gaining upon it, turned it twice, as a greyhound would a hare, and caught it for the second, and, as it proved, the last time; for having this time secured a better hold, on regaining the surface the bird, with a convulsive twist of the head, turned the fish and pouched it head first. As it swam ashore with its prey towards its master, it presented a somewhat ludicrous

* One of these birds, "Kao-wang," is still alive, aged $19\frac{1}{2}$ years. In the spring of 1882 she paired with another, "The Sub-inspector," and laid three eggs, from which two young birds were reared. One of these, "The Water Nymph," has since been trained by Capt. Salvin, and is a superior fisher, and very obedient.

appearance; for the trout being longer than the length of the bird's neck from gape to strap, its tail stuck out for some distance beyond the Cormorant's mouth.



A TRAINED CORMORANT.

The bird on landing was at once relieved of its burden, and rewarded with a piece of chopped fish, the trout being washed and slipped into a creel.

In this way we proceeded until eleven fine trout had been landed, when the birds, having had exercise enough, were allowed to dry themselves on the bank before re-entering their palanquin, which was ornamented in the Chinese style, slung on two poles, and carried on men's shoulders.

The trout were none the worse for having been temporarily pouched by a Cormorant. The largest

were served up at dinner the same day, and were much commended.

Since that time I have had many opportunities of seeing trained Cormorants at work; not only those of Capt. Salvin, but those belonging to other friends. Mr. T. Evans, of Sawston, Cambridge-shire, had several trained by the late John Barr, the falconer, who was in the service of Mr. Evans at the time of his death and managed his Hawks* and Cormorants for him.

A river running at no great distance from the house, well stocked with roach and eels (of which Cormorants are very fond), no better place could be found for carrying on the sport. No palanquin was necessary, for the birds, on being liberated, followed their master across the fields like a pack of hounds, and at a crack of the whip, with a "get away in," would dash into the water with every manifestation of delight. In this river I once saw three Cormorants trying to tackle a large eel which one of them had brought up but, from its size and weight, could not hold. The other two came to his assistance, and the three worried it like hounds with a fox. Twice it broke away and disappeared, the first time being brought to the surface again almost immediately by two of the birds; but the second time it apparently contrived to bury itself in the mud, and so escaped. Sometimes, for a treat, the neck-straps were removed, and the birds were allowed to fish on their own account, when a fine gorge was the result, after which a good deal of "whipping in" was required to get them home.

* These were Peregrines for Rook-hawking.

Cormorants are by no means difficult to train, and do not require half the care and attention which has to be bestowed upon Hawks for example.

They may be taken from the nest just as they are ready to fly, or may be caught later in the year when fully feathered. The latter plan is preferable, for the birds have then had some experience in fishing, and are sure to be in good condition. To catch them it is only necessary to visit some tidal harbour wherein there are large posts set (to mark the river channel) on which Cormorants are fond of resting. A few large gins, having the teeth bound with list to prevent injury, may then be set, *unbaited*, on the square tops of two or three of the favourite posts, each gin being attached to the post by a line with a float.

It is easy to arrange with a fisherman to keep watch in a boat at a little distance; and as soon as a Cormorant alights and is trapped, it will come off at once into the water, and should be taken up as soon as possible, a cloth thrown over the back and wings, two corners being tied securely under the chin, and the other two corners under the tail behind the legs. The bird may then be tethered by the legs until brought ashore. While this operation is being performed it should be held firmly, yet gently, by grasping first the back of the head and then the closed bill, care of course being taken to avoid a bite, which would be a very sharp one.

On getting ashore with two or three captures, the flight feathers of the left wing should be cut neatly with a large pair of scissors, and the birds turned into a loose box, or any outhouse from which they

cannot escape, care being taken to lay down straw, tan, or sawdust, to prevent the breakage of the tail feathers, which are so useful to them as rudders when in the water. Here they may be fed on fish until such time as they can be forwarded to their ultimate destination.

I have been thus particular in describing the mode of capture, because I have never met with any such description in print, and the tyro who essays to train a Cormorant might be at a loss to know how to proceed in regard to the first essential, namely, "how to catch your Cormorant."

In regard to other details of training and management, it would be presumptuous on my part to attempt to improve upon what has already been stated by two masters of the craft in their respective treatises on the subject.*

Suffice it to say that the Cormorant having leather jesses on one or both legs (like a hawk), to which a line is attached when it is first allowed in the water, is taught to come to the lure—a tin box containing its food, which is rattled every time the bird is fed—and may even be carried on the gloved hand like a falcon.† A small leather strap being buckled round

* See (1) "Falconry, its Claims, History, and Practice." By G. E. Freeman and F. H. Salvin. To which are added *Remarks on training the Otter and Cormorant*. By Capt. Salvin. 8vo. London, 1859. (2) "La Pêche au Cormoran." Par M. le Comte le Couteulx de Canteleu. Roy. 8vo. Paris, 1870. See also "Les Oiseaux de Sport." Par Pierre A. Pichot. Post 8vo. Paris, 1875.

† Hence the reason for cutting the *left* wing as advised above; for the sharp edges of the cut quills would, on the right side, scratch the owner's face when carrying his bird.

the lower part of the neck before the bird enters the water, it is unable to do more than pouch any fish that it may catch, and has to come ashore to be relieved of its burden by its master, who rewards it every time for its obedience. After a little practice the line is dispensed with, and the bird soon becomes very docile, seeming fully to understand all that is required of it. Capt. Salvin deprecates the use of a line, believing that it makes the bird shy, and advises that the training should be commenced in a tank, or small wadeable stream.

The Chinese method of fishing with Cormorants differs but little from that employed by English and French amateurs at the present day.* In China, however, the birds, smaller than ours, and of a different species (*Phalacrocorax sinensis*), called by the Chinese *Leu-tze*, are carried on light shallow punts or rafts, and are commonly employed, not as here for amusement, but as a matter of business to supply the markets with fish. Twenty or thirty Cormorants, it is said, will catch six francs worth of fish a day—fish being very cheap there. Their owners club together, their respective birds being marked, and divide the profits proportionally. A Cormorant may be used until ten years old, and, when well trained, they fetch as much as 60 taels, or 160 francs a pair.

* See "La Pisciculture et la Pêche fluviale en Chine," par. P. Dabry de Thiersant, avec une introduction, par J. L. Soubeyran. Roy. 8vo. Paris, 1869. (pp. 171-173, pl. xix.)

A SHOT AT WILD SWANS.

IT was early in January, and the ground was covered with a mantle of snow to the depth of two or three inches. The harbour looked bleak, drear, and deserted. Too shallow to be navigable except at high tide, and then only available for small craft, it was just the place of all others to attract wildfowl. Extensive marshes on either side, intersected by dykes, from which the dead reed tops showed through the glistening snow, gave promise of snipe and teal, to say nothing of a chance at larger fowl, and an occasional frozen-out hare. I had just come in after a long tramp over these marshes with four and a half couple of Snipe, a Teal, a Golden-eye, and three Golden Plover in the bag, and was approaching the inn where I was staying, when I encountered a fisherman and wildfowler of my acquaintance, whose radiant face and unusually excited manner betokened that there was "something up." We had hardly approached within speaking distance when he hailed me with "Well, sur, good news." "What," said I, "some fowl in the harbour?" "Better than that, sur." "Geese, eh? Black geese?" "Better than that, sur." "What, you don't mean—" "Swans, sur, wild swans; five of 'em—two white 'uns and

three grey 'uns, and they be all down in 'the Narrows' feeding, and there's no one seen 'em but me, and you'll have *just* a good chance at 'em, I believe!" Here was a piece of news, then; something worth going after. Who wouldn't prick up his ears and finger his triggers at the mention of wild swans? But it was past five o'clock, dark, and the tide was out, and I had had nothing to eat all day. The last consideration would not have weighed heavily had there been any reasonable prospect of success by immediate action; but, on talking it over as we walked homewards, we agreed that the birds were not likely to be disturbed by anyone else, that they would be sure to remain all night in the harbour; and that, with so much snow on the banks and on the beach, I should stand a better chance of finding them by a morning light. It was, therefore, decided that I should be called early the next day, and that the punt should be in readiness with the long gun on board, and my large double under the fore peak in case of necessity.

Was it to be wondered at that I could hardly get to sleep that night with the prospect of what might be in store for me on the morrow? Tired as I was after a long day in the marsh, and eager to rise fresh and ready for perhaps another hard day in the punt, it was some time before I could compose my restless thoughts and forget for a while where I was. The crash of a handful of shingle against my window at early dawn came sooner than I expected. Hastily opening the window and looking out, I could barely distinguish surrounding objects and the indistinct form of the owner of the long gun, who informed me

that the punt was alongside, and that everything was in readiness. As may be supposed, I was not long in making my appearance, and in finding my way almost in the dark to the harbour side. The punt lay alongside nice and clean, the long gun in its cover, and a rug thrown down for me to lie upon, everything just as it should be. As I shoved off into the darkness, a cheery "Good luck, sur," gave me encouragement to hope that our wishes might be realised, and that on my return the punt would hold another, though defunct, passenger.

As the spot where I expected to find the swans was considerably more than a mile away, and I knew all the channels pretty well, I decided first to get as warm as I could by exercise, and, after working down to within a few hundred yards of what I knew to be the best feeding ground for swans, to lay up and wait for daylight.

It was cold work, but a good thick guernsey over a "cardigan" kept me as warm as circumstances would permit, while a nightshirt over all tended to prevent too great a contrast of colour between my moving figure and the surrounding white landscape.

As the punt glided onwards, and the land became lost to view, a strange sensation of loneliness came over me. The darkness, the stillness, the wide waste of water over which I was journeying, as it seemed vaguely, all contributed to make the situation a most exciting one. Occasionally the silence was broken by the weird cry of a Curlew, or a quack and a splash as some fowl dropped into the water ahead of me, and then all was still again.

Onward I went, making for a particular point a

long way down on my right, where the sea-wall ran out at a sharp angle into the harbour. From this point on a port tack, as a yachtsman would say, I could run for about five hundred yards and find myself in proximity, I hoped, to the birds. They could hardly have wandered very far from the spot where they had been seen over-night, and might possibly still be roosting on the beach.

Having reached the spot where I intended to lay up, I rolled myself up in my rug, and, lighting a pipe, lay head to wind and mused till daylight. As soon as I could well see, the telescope was pulled out, and I began to look about me. Several little bunches of Wigeon were on the move, a Heron or two, and three ducks, at a distance, which I could not at first make out, but which afterwards proved to be Mergansers. The Swans were nowhere to be seen! I waited, moved on a little, and looked again. No, they were not on the water, they must be ashore somewhere; but *where* it was not easy to say, or rather to see, for the snow on the beach and on the harbour banks of course rendered it difficult to detect them against so white a background. There was nothing for it but to coast along within shot of the shore, and keep a sharp look-out ahead. This I proceeded to do, first using the glass to make sure the coast was clear, and then pushing along vigorously but quietly. I had gone down the lower side of the harbour, round the bay in the south-west corner, and had proceeded for some distance to the eastward parallel with the beach, without seeing anything of the birds I was in search of. I began to feel uneasy, and to suspect that they must have

been disturbed overnight and had left the harbour ; but yet there was a chance of their being somewhere about, and there was still a good stretch of beach to be explored. Cautiously I paddled on for another two or three hundred yards, scanning the snow-clad shingle on my right, until I could see just ahead of me the small uninhabited gravelly island at the mouth of the harbour, whereon I had made many a good shot at passing wildfowl. On this island the tide casts up heaps of seaweed, and by banking some of this up with the aid of shingle, to keep it steady, a capital screen can be made from which one can command the channel, which flows on either side towards the sea. This island is a favourite resting place for the fowl at night, and it was not improbable that in the present instance the Swans might have discovered and availed themselves of it. Such, indeed, proved to be the case, and it was not long before I could make out the forms of some of them on the side next the sea ; they were busily engaged in turning over the heaps of seaweed that lay scattered about in all directions, and in the hard weather that then prevailed, found some little difficulty no doubt in procuring sufficient food. They were in a favourable situation for getting at them, and the fact of their being so busily employed increased my chances of a shot. It was time now to get out the long gun and lie down to my work ; and, putting a couple of cartridges into the shoulder-gun in case of need, I began anxiously to approach the island. As the punt drew nearer and nearer, I could make out the birds well without a glass. There were five, as I had been told, two

old ones and three young ones, distinguishable by their greyer plumage. For some distance all went well. The birds were not alarmed, and I felt certain of a shot. As I crept within range, however, end on, I became aware that the tide, which was setting out through the channel, was causing the punt to drift, and that if I continued on my present course until within range I should find, on letting go the scull to take hold of the trigger, that I should be borne too much to the right, and the gun as laid, for it was not on a swivel, would be pointing quite away from the birds. I was obliged, therefore, to keep the punt well above the island, so as to get my shot on drifting down past it. It was desperately cold—I could scarcely feel my fingers; but the excitement kept me alive, and it was now or never. Timing myself as well as I could, I got two birds in a line, and pulled. To my surprise and mortification, the cap snapped, and the gun missed fire. The Swans left off feeding, and looked up in my direction. Of course I kept as still as a mouse, but the punt continued to drift; and by the time the birds had become reassured and recommenced turning over the seaweed, I was some way out of my course, and had to get back.

It was a long time before I could feel and adjust a fresh cap, my fingers were so benumbed. At length this was accomplished, and again I was drawing near the island. This time by good luck I got the punt in a more favourable position, and, owing no doubt to its colour and that of the occupant, got pretty close—much closer, in fact, than I expected. For the second time my finger was on the trigger;

a moment of breathless excitement; a pull, and again a missfire! "Shiver my timbers!" as my man would say, this was too bad after all the trouble and hard work I had had to get the shot. But there was no time for reflection. The birds, alarmed by this second attempt, ran together with outstretched necks, and, spreading their wings, were just getting under way as I pulled out the old double, and, sitting up in the punt, let drive at the head of one of the white ones. Just as I pulled the trigger he ducked his head preparatory to taking flight, and the charge floored a grey bird beyond him. Holding on him, however, with the left barrel, I had the satisfaction of seeing him come down with a broken wing; while the other three took the air with loud cries, and were soon out of shot. They continued, however, to circle round for a long time, calling at intervals, and wondering no doubt why their companions did not join them. One, the grey one, was dead, being shot through the neck. The old white one was making off with a waddling gait as fast as his legs could carry him. It suddenly occurred to me that he was making for the channel on the other side of the island, and had he reached this and gone seaward I could not have followed him out of the harbour without a risk of being swamped. Instead of pursuing him, therefore, from where I was, I pulled away, and went down channel with the tide, got round, and came up on the other side of the island, heading him back towards the centre of it, and then, running ashore and pulling the punt up, gave chase on foot. Although a stern chase, this time it was not a long one, for swans are not formed for rapid move-

ment on the ground, and he was soon overhauled. But the difficulty was to know how to kill him. In the excitement of the moment, I had forgotten my gun, and, seizing the uninjured wing, which flapped away vigorously, I found myself the next moment sprawling on the shingle. My foot had slipped on the rolling surface, and down I came, swan and all. Up again, and still holding on; this time had him by the neck; incautiously letting go the uninjured wing, with which I was soon severely buffeted. Never shall I forget that struggle! How we tumbled about on the beach, making the shingle fly in all directions, until, from being benumbed with cold, I almost perspired with the exertion. He positively declined to have his neck broken, and a task indeed it was to break it.

But at length he succumbed, and as his lifeless form lay stretched before me on the beach, I was reminded of that scene so vividly painted by "Christopher North" in his description of the death of a Wild Swan upon a Highland loch. "To have shot such a creature—so large, so white, so high-soaring, and on the winds of midnight wafted from so far—a creature that seemed not merely a stranger in that water, but belonging to some mysterious land, in another hemisphere, whose coast ships with frozen rigging have been known to visit, driving under bare poles through a month's snowstorms—to have shot such a creature was an era in my imagination, from which, had nature been more prodigal, I might have sprung up a poet. I trembled with a sort of fear to behold him lying indeed dead on the beach. The cold waste of water in the grey morning light,

the mighty foreign bird whose plumage I had hardly ever hoped to touch but in a dream, lying like the ghost of something that ought not to have been destroyed. The scene was altogether such as made the heart quake, and almost repent of having killed a creature so surpassingly beautiful."

But that was a fleeting fancy. Sitting upon a heap of seaweed, with a Swan on either side of me, I smoked and mused until the tide turned, when, sculling homeward on the flood, I reached the inn at breakfast time, with a feeling of triumph that can be better imagined than described.

Clanging from northern climes they cleave the sky,
Intently followed by the fowler's eye ;
To yon lone harbour's mouth they wing their way,
The five descend—and two are doom'd to stay !

Impromptu.

PRACTICAL HINTS ON BIRD PRESERVING.

I HAVE been so frequently asked for information on the subject of bird-preserving by friends who are fond of travelling and shooting, and who have experienced frequent disappointment from their inability to preserve their trophies, that it has occurred to me to try and write down two practical lessons in the art. In the first I will describe in plain and simple terms the method to be employed in detaching the skin and curing it; in the second, directions for mounting and casing the specimens.

Lesson I. Skinning.—The implements required to start with are few and inexpensive: they are a sharp knife, a strong pair of nail-scissors, some cotton-wool, plaster of Paris (to be obtained at any oil and colour shop), a tin of arsenical paste and brush for applying it (to be procured of any professional bird-stuffer), some needles, thread, and a wooden knitting needle.

One of the best birds to begin with is a Starling, for not only is it easily procured of a bird-dealer, but, its skin being tougher than that of most small birds, it is not so liable to get torn in the process of skinning. It was with a Starling that I

made my first experiment in bird-stuffing, one-and-twenty years ago, and I recall, even now, the satisfaction with which I contemplated the result of my handiwork, although there were certain defects which I did not then know how to remedy, but which practice has since enabled me entirely to remove. As these defects are such as will be almost certain to occur to every tyro, I shall refer to them again as I proceed with the lesson.

Having procured a Starling, then—one that has been caught is better than one that has been shot, as the skin will be uninjured—the first thing to do is to fill the mouth with cotton-wool, tying the two mandibles together by passing a needle and thread through the nostrils to prevent the thread from slipping off. This is done in order to prevent any saliva, or mucus, from the crop or mouth oozing out between the mandibles, and staining the neck feathers when the skin is turned over the head. Having laid the bird upon its back, break the wing-bones high up on each side—that is, close to the shoulder—and this will cause the wings to lie open and be out of the way while the skinning proceeds. Part the feathers on the breast, and with the nail-scissors cut the skin from the middle of the breast down to the vent. Pick up the edge of the skin on one side with the nail of the left forefinger, hold it between that finger and the thumb; and with the knife in the right hand separate the skin from the body as far as possible both ways, until the leg and wing, or rather portions of them, the thigh and shoulder on that side are exposed to view. Throw in some plaster of Paris, and rub it gently against the skin to absorb

the moisture, and to prevent any blood or grease that there may be from soiling the feathers. Take hold of the thigh with the left forefinger and thumb, press the right forefinger and thumb against the skin and close to the bone, then draw the latter out of the skin for half its length, break it across the middle, and with the scissors cut through the flesh and ligaments which surround the bone; take hold of the foot and draw it towards you, when one half of the thigh will return to its place, the other half remaining attached to the body, which may then be further skinned on that side as far as the vertebræ of the tail.

Proceed in the same way with the other side, and having now got both legs free, and the skin below them adhering only round the tail, turn the bird over, breast downward, and head towards you, pressing your left thumb upon the tail coverts and drawing the skin back towards you as far as it will come; the body is pushed outward in a semicircular form, the concavity towards you.

With the knife or scissors the vertebræ of the tail must then be severed as near the tail as possible, taking care not to cut through the roots of the tail-feathers, which would otherwise drop out.

Having applied a little more plaster of Paris about the tail, next take the body with a firm grip in your left hand, and, holding it just above the thighs, push the skin gently off the back until you reach the wings, using a little plaster as you proceed. Draw out the shoulder on one side, already broken, until the splintered end appears. Cut away the flesh and ligaments surrounding the bone, and one wing will

then be free. Proceed in the same way with the other wing, and the whole of the body will then be skinned, except the neck and head.

The skin will now be inside out. Separate the body from the head, leaving the neck attached to the latter, to enable you to hold it with the left hand, while with the right hand push the skin down over the head until the skull is fairly exposed to view. With the sharp points of the scissors cut out the roots, so to say, of the ears, otherwise, in trying to remove the skin you will tear it. In the same way cut the membrane which connects the eyelids with the orbits, and you will thus avoid tearing the former.

Having then skinned the head right down to the base of the bill, cut away not only the neck, but a sufficient portion of the base of the skull to enable you to extract the brain. Remove the tongue and palate, and with these the piece of cotton-wool which was placed in the mouth at starting. You have now nothing but the bare skin turned inside out, with portions only of the wings and legs remaining in their places, and the reduced portion of the skull, as clean as may be. This will be the best time for removing all particles of fat and flesh which may still be adhering to the skin, and for drying the skin as much as possible with plaster of Paris, which, however, must not be suffered to remain, but must be brushed off with a little cotton-wool. Dipping your brush in water, you will now moisten the arsenical paste, giving a very thin coat of it to the skull, or what remains of it, and to the inside of the skin of the neck. Fill up the orbits and the mouth

with cotton-wool, taking care to restore in this way the shape of the head as much as possible. Return the skin, then, over the head, and proceed to return the skin of the neck until the extremity of the bill appears. Take hold of the bill in one hand, and with the other continue to draw the skin gently downwards until it is restored to its original position. It will then be found that the feathers of the head, and particularly those around the eyes, are all awry. This is one of the difficulties above referred to, which is encountered at starting. Here the wooden knitting-needle comes in useful; by inserting it through the eyelids from the outside, the skin can be raised and depressed at any particular point, and the feathers consequently made to lie in their natural order. Should it appear that the head has not been sufficiently stuffed, more cotton can be introduced through the eye-holes.

The skin being now in order, and the head finished, the wings next claim attention. Take the broken shoulder-bone (the *humerus*) between the finger and thumb of the left hand, and with the right thumb-nail push down the skin from the bones immediately attached to it (the *radius* and *ulna*) as far as the next joint, called the carpal joint. Remove all flesh and ligament, apply a little arsenical paste, wrap the bones round with cotton-wool, and draw back the skin over them, amputating the broken shoulder-bone at the joint. The same with the other wing; the same with each leg. Remove any of the vertebræ of the tail that may remain, as well as any flesh or fat that may still be adhering towards the tail.

We have now to make an artificial neck ; tie the wing bones together (to keep the wings in a natural position) ; fill the cavity of the skin with cotton-wool to the bulk of the body which has been removed ; sew up the skin (unless intended to be mounted), and it is then ready to put away.

A good neck may be made of cotton-wool wound round the knitting-needle ; smear it over with arsenical paste, and insert it with a corkscrew movement into the skin of the neck, until you feel that the point of the needle has touched the base of the skull ; reverse the corkscrew movement, and the needle will come away, leaving the wool in the neck. Until I hit upon this plan I had always a difficulty with the neck. Now bringing the wing-bones to the centre of the skin, tie them together, not quite close, but near enough to allow them free play. Give the whole of the inside a dressing with the arsenical paste (say of the consistency of cream), fill it with cotton-wool, piecemeal, until it is once more of the natural size, and then it may be sewn up. It need not be sewn if it is intended to mount the bird afterwards, nor, if mounted at once, need the body be filled out with wool. This need only be done in order to preserve the natural size of the skin, where there is likely to be a delay in mounting the specimen, as in cases, for example, where the collector is away from home.

The sewing up is managed thus : Take a needleful of linen thread, insert the needle at one side of the breast (always inserting from the *inside*), leaving one end of the thread hanging down beyond the tail (the reason for which will be seen later), then

insert the needle in the same way on the other side, and so on, across and across, until you reach the tail. Do not draw each stitch tight, but leave the skin open until you have taken the last stitch, and then each stitch may be drawn up tight, by simply lifting it with the knitting needle, just in the same way as you would lace up a boot, or football, with the aid of a button-hook. The end of the thread which was allowed to hang down is now tied to the other end, close to the skin, in a double knot, and it then becomes impossible for the skin to reopen unless the thread be cut. Now lift the breast feathers into their proper places with the finger and thumb; brush the skin all over with a piece of cotton wool to remove any plaster there may be upon it (which will not stick to the feathers unless they are wet), and the operation is complete.

Nothing remains but to put the skin in shape and allow it to dry. Many persons, after getting thus far, fail at the last moment to give the skin a natural shape and appearance. This can only be acquired by practice and acquaintance with the structure of the particular bird which is being operated upon.

Having adjusted the wings in their proper place, a band of paper and a pin will keep them in position until the skin is dry.

With the aid of the knitting needle the plumage is very easily put in order, and nothing more is requisite, except to take care that no one shall touch it until it is dry.

Should the collector desire to mount his specimens in cases, it will be unnecessary to sew up the skin and put it in paper; and it should be borne in

mind that, although a dried skin may be relaxed and mounted at any time, it is always preferable to mount it as soon as possible after the skin has been taken off, for it is then much easier to secure the natural size and proportions of the bird. The skin shrinks in drying, and it is not easy to restore it afterwards without risk of tearing it.

Lesson II. Mounting and Casing.—The directions given for skinning and preserving will be useful chiefly to those who intend to collect birds abroad, and who, by making them into skins, as it is termed, in the manner described, will be enabled to bring home a large number of birds in a comparatively small space. It would be difficult, if not impossible, for a traveller to mount all his specimens as they come to hand, still more so to case them, while the risk of damage in transit would be proportionately increased.

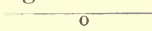
With collectors at home, however, it is different, and for many reasons it is desirable, if the birds are ultimately to be cased, that they should be mounted as soon as skinned; for although it is easy to relax a skin, however dry it may be, there is always a risk of tearing it, and a specimen never looks so well when mounted from a dry skin, as when set up from one recently taken off.

The process of relaxing, although not difficult, should be carefully proceeded with. In the first place, the whole of the cotton wool, tow, or whatever else the stuffing may be, should be removed from the body cavity, and its place supplied by a damp linen rag. A piece of damp rag should be wrapped round each leg and foot, the entire skin wrapped

also in a damp cloth, and then put aside for some hours in a tin box to prevent evaporation as much as possible. The time it should be allowed to remain in this condition will depend upon the size of the specimen, for small birds with thin skins will naturally be more quickly relaxed than larger ones with thicker skins. On examining the specimen from time to time, the collector will soon ascertain when it is ready. All he has to bear in mind, at this point, is that his relaxed skin should be as nearly as possible in the same condition as it would be if just taken off the dead bird. In particular he should see that the legs are sufficiently soft, otherwise in thrusting his wire through them from the heel upwards into the body cavity he will cause the skin of the legs to split, and look very unsightly.

The late Charles Waterton, who collected a great many birds in Demerara and Guiana, mounted them on his return home, and without the aid of wire. He always contended that wire imparted a stiff and formal appearance to a bird, and strongly condemned the use of it, insisting that if a specimen were properly skinned, and the skin well dried, filled with cotton-wool, modelled into shape while drying, and the cotton afterwards removed, the dry skin would support the weight of the bird without any assistance from wire. He penned some carefully-detailed instructions on the subject, which will be found printed at the end of his "Wanderings in South America." But in spite of his views, experience has proved that, however well his method may apply to small birds with short necks and legs, like warblers, finches, and humming-birds, it does not

answer in the case of larger long-necked and long-legged birds, which cannot be mounted in a position which will be permanent, without the artificial support which is afforded by the use of wire. The superincumbent weight is too great, and causes the specimens to drop into positions as if paralysed. Nothing could be more unsightly or unnatural.

Wire, then, cannot be dispensed with. It must be selected, however, with judgment, for if too thin it will not afford the necessary support, or remain in position when bent; and if too large will split the legs or cause them to look unnaturally large. Having selected wire, then, which is suited to the size of the bird, cut a piece of such a length as to project beyond head and tail. This is called the body wire, and upon this the artificial body has to be formed with tow bound round with thread. In order to prevent it from slipping a turn is given to the wire in the centre thus . In forming the body care must be taken not to make it too large or clumsy; and the best guide will be the natural body which has just been removed. Four shorter wires are then cut for the legs and wings. To insert a leg wire, take hold of the clean leg bone which has been left in, draw it forward until the skin of the leg is inside out, sharpen the end of your wire to a point with a small file; thrust it in at the heel and up the back of the leg carefully, until the point appears inside the skin; draw it gently on until it is long enough to insert into the artificial body, and clench it by turning the point over and inwards, and bind the wire to the leg-bone with tow and thread, using no more tow than is necessary to make an artificial

thigh of the natural size. The other leg, the wings, and the neck are dealt with in the same way; in the case of the neck, the wire (*i.e.*, the body wire) being pushed forward until the point can be drawn through one nostril. By this means the neck can always be pushed up or down until adjusted to the natural length. The specimen will now present the appearance of having a straight wire through it, with cross wires sticking out in a very stiff and unsightly way, and it is here that the skill of the manipulator will be called forth in folding the bird, so to say, into shape. The skin being drawn together at the breast and sewn up, the wings folded into their proper position, the leg wires bent at the knee so as to give a natural attitude, and the neck-wire also bent in such a manner that the head may be carried in a life-like position, the specimen should then be fixed upon a stand to dry. If a perching bird, it should be placed upon a branch with the toes grasping it; if a ground bird, on a plain piece of board; the ends of the wires in either case being drawn through holes in the stand and turned over, to keep the bird steady. If it is desired to spread the tail, a very fine-pointed wire should be run through the quill of each tail feather, and allowed to protrude on each side. The tail may then be opened like a fan, as little or as much as may be, according to fancy.

As soon as this has been done the specimen should be modelled into shape, the wings set in position with wires, and a pin wire inserted through the breast and another through the back into the body, and the whole wound round and round with

fine worsted, so as to keep the feathers down in their proper position until dry.

The eyes are best inserted, with adhesive glue paste, while the skin is soft, and care should be taken first that they are of the proper size and natural colour, and secondly, that they should not protrude. As the skin of the eyelids is very distensible, it is sometimes desirable, after inserting the artificial eye, to put a fine stitch in the upper and under eyelid, so as to bring them together close behind the eye.

This done, the specimen may be allowed to dry, and, while drying, the case may be prepared.

Upon the subject of cases much difference of opinion will, of course, prevail. The specimen may be simply placed under an oval shade; in a square wooden case with glass front; in a case with glass sides and top, as well as a glass front, only the bottom and back being of thin wood; or, as in many museums, the birds may be kept upon separate stands on shelves in a cabinet with glass doors. The chief advantage of the last-mentioned plan is that it economises space. To those, however, who prefer separate cases, I will offer a few hints and suggestions. In the first place, the less material and ornament there is in the case the better and more natural the bird will look. A mass of dried grass, moss, lichens, leaves, sea-weed, &c., &c., which some people (country bird-stuffers especially) are so fond of introducing into their cases, not only distracts attention from the bird, which should be the principal object, but offends the eye of the observant naturalist, who knows that

no such association of materials as that which one so often sees in a case of stuffed birds is to be found in a state of nature. In the second place, it should be borne in mind that while the surroundings of a bird should only be those with which it may be found associated in nature, those surroundings should be seasonable. That is to say, that if the specimen is in winter plumage there must be no artificial flowers in the case, or if in summer dress no artificial snow on the ground. Yet I have seen this rule infringed repeatedly.

Again it is most important to bear in mind that nothing should be introduced into the case which will harbour insects, beetles especially, which will eventually destroy everything. On this account I would say avoid the introduction of bark and green wood.

The most perfect imitation of both, as well as of rock and chalk-cliff, may be made in *papier-maché*, and coloured so as to defy detection. Grass and fern may be most naturally dyed, and plants and flowers modelled in wax.

Those who want to know what may be done in this way, and see how closely art may copy nature, should pay a visit to the beautiful collection of birds belonging to Mr. E. T. Booth, of Dyke-road, Brighton. They will there find a museum about two hundred feet long and forty wide, which he has kindly opened for public inspection and instruction, and in which are ranged on either side upwards of 300 large glass cases, containing specimens of all the commonest and many of the rarer British birds, all procured by Mr. Booth himself, and stuffed and

cased under his immediate supervision and direction. The birds being set up in the most lifelike attitudes, and grouped amidst the most carefully studied surroundings, the general effect is most natural and instructive.

Those who, having mastered the simple directions above given for skinning and mounting, are desirous of gaining a few hints for casing and finishing touches, cannot do better than arrange for a visit to Brighton and to Mr. Booth's museum.

With regard to the colouring of bills and legs—which, in many birds, are bright enough in life, but fade soon after death—two points should be attended to. In the first place, no colour should be applied until the parts are thoroughly dry; and, in the next place, it should never be applied so thickly as to obscure the fine reticulations or scutelations which are observable on the legs and feet. If tube oils are used, naphtha or some other medium should be employed to kill the gloss which oil colours always have, for it will be observed in nature that the colours in the bills and legs of birds, although often very bright, are never glossy.

If attention be paid to this point, and to the other hints above given, the amateur taxidermist will have no cause for disappointment, and practice will ere long enable him to turn out a case of trophies entirely to his satisfaction.

FINIS.

INDEX.

- Accipitres*, or Birds of Prey, 85
 „ characteristics of, 86
 „ Sharpe's Catalogue of, 88
 Adams, A. Leith, "Recent and Extinct Irish Mammals," 55
 Ælian, "*De Natura Animalium*," 69
 Alfric, Colloquy of, 41
 Allen, J. A., on N. American Seals and Walruses, 387
 Alston, E. R., on Roe-deer horns, 51
 Animals absent from Ireland, 301, 305, 307, 325
 Annals of Natural History, 19
 „ of the Four Masters," 53
 Anne, Queen, at Wolmer, 5
 „ „ Rookery in the time of, 241
 Antelopes in Arabia, 354, 355
 „ White, 355, 356
 Antlers, 7
 „ their growth explained, 7-9
Apteryx, the genus, 377-385
 „ *haasti*, figured, 379
 „ four species of, 379
 Arabia, Zoology of, 351-361
 Arabic Treatise on Hunting and Hawking, 362-370
 Archæologia, 173, 174
 Aristotle, "*Historia Animalium*," 69
 Asiatic Society of Bengal, Journal of the, 183
 Asser, "Life of Alfred the Great," 71
 Atkinson, "Travels in Siberia," 90
 „ "The Upper and Lower Amoor," 90
 Aubrey, "Miscellanies," 82-83, 241
 „ "Natural History of Wilts," 241
 Augustine, "*De Mirabilibus Sacræ Scripturæ*," 297
 Auk, Great, in Ireland, 324
- BADGER, 25, 26, 149-155, 175, 177
 „ at home, 149-155
 „ food of, 25

- Badger fur for trimming, 175
 „ habits of, 26, 301
 „ portrait of a, 153
 „ in Ireland, 301
 „ in Japan, 411, 412
 Bale, "*Illust. Britan. Scriptorum Summarium*," 97
 Barberini, Cardinal, 432
 Barnacles, 310, 311, 313
 Barnes, Dame Juliana, 96 (*see* Berners).
 Barr, John, falconer, 83
 Bartlett, A. D., on incubation of *Apteryx*, 384
 Bats in London, 238
 „ in Dublin, 320, 321
 Bavon, St., Legend of, 115
 Bayeux tapestry, 73
 Bears in Japan, 412
 Beasts of Chase, 38, 41, 45
 „ Venery, 38
 „ Warren, 38, 45
 Beaumont and Fletcher, "Humorous Lieutenant," 204
 Beavers in Wales and Scotland, 302
 „ unknown in Ireland, 302
 Bedingfeld, Sir Edmund, 84
 Bell, "British Quadrupeds," 12, 16, 157, 160, 164, 170
 Bells for hawks, 107, 108, 114, 115
 Bellamy, "Natural History of South Devon," 40, 161
 Bentley, "*Excerpta Historica*," 79
 Berners, Dame Juliana, 96 (*see* Barnes).
 Bert, Edmund, "Treatise on Hawks," 81
 Bewick, "History of Quadrupeds," 49
 Birds, absent from Ireland, 301
 „ notable in Ireland, 315-319
 Birds of Prey, their characteristics, 85
 „ in London, 239
 Bird-calls, 205
 Bird-preserving, Practical Hints on, 450, 463
 Bischoff, Professor, on the gestation of the Roe-deer, 16
 Bishop Pudsey, 42
 Blackwall, T., on Spiders, 224, 225
 Blades, edition of *The Boke of St. Albans*, 96
 Blain, a disease with hawks, 142
 Blakiston on the Birds of Japan, 415
 Blasius, "*Naturgeschichte der Säugethiere Deutschlands*," 166
 Block for Hawks, 135, 136
 Blount, "Ancient Tenures," 42, 62, 74, 178
 Blunt, Lady A., "Pilgrimage to Nejd," 351
 Blyth, E., on *Mus rattus* in the East, 169

- Blyth, E., on the origin of the name Turkey, 183
 Boate, Gerard, "Natural History of Ireland," 310
 Bohemia, Queen of, 13
 "Boke of St. Albans, The," 96
 "Boldon Book, The," 43
 "Book of Howth, The," 53, 299
 Boner, "Forest Creatures," 8
 Borlase, "Natural History of Cornwall," 4
 Bosquet, "*Normandie Merveilleuse*," 278
 Bots, Jean, falconer, 111, 112
 Bowland, Forest of, 5, 43
 Bow-net described, 122-127
 Boyd Dawkins, Professor, "Cave Hunting," 40
 Boughesses, 104
 Brail for hawk, 138
 Branchers, 104
 Brent Goose, 310, 311
 Brewer and Bullen, "Calendars," 53, 299
 British Association Reports, 40
 Brocket, 8
 Brodrick, *see* Salvin.
 Browne, Sir Thomas, "Works," 250, 251, 431
 Buller, "Birds of New Zealand," 380
 Bullets, effects of, on deer, 35, 36
 Bunting, Snow, in Ireland, 321
 Burton, "Anatomy of Melancholy," 283
 „ "Falconry in the Valley of the Indus," 90
 Bustard, the Great, 329-341
 „ still protected by Statute, 341
 Butcher-bird used by falconers, 93, 123, 125
 Buzzards, 118, 119, 273, 361
 „ common, 118, 273
 „ honey, 273, 274
 „ rough-legged, 118
 Byerley, "Fauna of Liverpool," 160
 CALENDAR of State Papers, 231
 „ Carew MSS., 299
 Call-birds, 203
 Calling-off, 145
 Cambrensis, Giraldus, "*Topographia Hibernica*," 297, 305
 Cambridge, Rev. O. P., on Spiders, 224
 Camden, "*Britannia*," 173, 305
 Camel, 3, 371
 „ Arabian, or single-humped, 375
 „ Bactrian, or two-humped, 376
 „ fossil remains of, 371

- Camel, wild, 371-376
 Campion, "History of Ireland," 62, 305
 Caracal, or Desert Lynx, 367
 " origin of the name, 368
 Carew, "Survey of Cornwall," 4, 79
 Carleton, Sir Dudley, 76
Carnivora, 25-29
 Castings, Hawks', 104, 143
 Cat, Wild, extinct in England, 28
 " the last, in England, 29
 " in Scotland, 29
 " unknown in Ireland, 29, 296
 " trained for the chase, 369
 Celandine, 278, 281
 " the plant figured, 281
 Chase, Cranbourn, 28, 51
 " Enfield, 12
 " Hatfield, 4-5
 " beasts of, 38, 41, 45
 " phraseology of the, 38, 39
 Chafin's, Mr., hounds, 28
 " "Anecdotes of Cranbourn Chase," 51
 Chamois of Japan, 413
 Champagne Hawking Club, 83
 Charles I., Cormorant fishing, 428, 431
 " hawking, 81-83
 " preserving Roe-deer, 47, 48
 Charles II., 81-83
 " his Sparrowhawk, 240
 " his waterfowl in St. James's Park, 232
 Chaucer, "The Squire's Tale," 78
 Chauncy, "History of Hertfordshire," 97
 Cheetah, the, or Hunting Leopard, 365
 " hood for, 369
 " training the, 365-366
 Childrey, "*Britannia Baconica*," 23
 Chinese Cormorant fishing, 423-426, 440
 " hawking, 68
 Choughs in Ireland, 313, 315
 Clarke, "Travels in Russia and Tartary," 57
 Classification of Hawks, 87-89
 Clermont, Lord, "Quadrupeds and Reptiles of Europe," 168
 Coat armour, 99, 100
 College of Surgeons' Museum, 51
 Collingwood, on Birds from China and Japan, 415
 Colquhoun, "The Moor and the Loch," 16
 Collyns, "Chase of the Wild Red-deer," 9, 11

- Coney, 17-20, 38
 Cooper, "*Thesaurus Linguae Britannicæ*, 182
 Coquerel on *Mus rattus* in Bourbon, 169
 Cordeaux, J., on Migration of Birds, 191
 Cormorant-fishing, 423-440
 Cormorants, how to capture alive, 438
 ,, how to train, 439
 Cowley, on the Swallow's herb, 283
 Cox, Nicholas, "The Gentleman's Recreation," 195
 Crane, 75, 77, 92
 ,, in Ireland, 300, 317
 ,, migration of, 119
 Cromwell, Order of, as to Wolf-dogs, 63, 64
 "*Chronicum Saxonicum*," 71
 Crows in the London Parks, 242
 ,, in Ireland, 301
 Crustacea in Japan, 415, 416
 Cuckoo, in London, 244, 245
 Cud, chewing the, 2
 Curlew, 214
 ,, Sandpiper, 210
- DAAMS, J., falconer, 115
 Dabry de Thiersant, "*La Pisciculture en Chine*," 440
 Dallaway, "History of Sussex," 252
 Daniel, "Rural Sports," 13
 Dapper, "*Beschryving des Keizerryks van Taising*," 425
 D'Arcussia, descriptions of hawking, 81
 Dawson Rowley, "Ornithological Miscellany," 380
 Decoy, an Essex, 417-422
 Decoy-birds, 203
 Deer in Ireland, 301, 306, 312, 317, 320, 325
 Deer Axis, 13
 ,, food of, 11
 ,, Fallow, 12-14, 306, 307
 ,, Red, 3-12, 306, 317, 320, 325
 ,, in Japan, 410, 411
 ,, Roe, 14-17, 38-55, 299
 ,, teeth of, 10
 ,, Musk, 2
 ,, in London Parks, 229-233
 ,, horns, 7-9, 17, 51
 ,, parks, 7
 ,, shooting, 30-37
 Devon, "Issues of the Exchequer," 5, 12, 90, 428
 Diseases of hawks, 105, 106
 Donovan, "British Quadrupeds," 29

- Dormouse, 21-22
 " food of, 22
 " habits of, 21-22
 " in Ireland, 320
 " white, 22
 Dorsetshire, Roe-deer in, 50
 " spiders of, 224-225
 Dubourdieu, "Survey of Co. Antrim," 322
 " "Survey of Co. Down," 322
 Ducks, 417-422
 " mode of catching in Japan, 408
 " Island in St. James's Park, 236
 Dugdale, "Baronage of England," 178
 Dunlin, 207, 209, 210, 311
 "Durham Household Book, The," 46
 Dunoyer de Noirmont, "*Histoire de la Chasse en France*," 427

 EAGLE caught in a bow-net, 114
 " trained to take antelopes, 90
 Easterling, or Gadwall, in Ireland, 321
 Eden, R., "History of Travayle," 424
 Edward the Confessor, hunting and hawking, 71
 Edward I., his wolf-hounds, 62
 " his gerfalcons, 75, 78
 Edward III., prosecution by, for Roe hunting, 44
 " hawking in France, 78
 Edward IV., Paston Letters, 79
 Elizabeth, Queen, 15, 47, 63, 79, 182, 230, 231, 254
 Elk, 55, 325
 Elliot, D. G., on the genus *Porphyrio*, 342
 Elliott, H. W., "The Seal Islands of Alaska," 397
 El Mangali, "*Traité de Venerie*," 69, 70, 362
 Epsom, History of, 241
 Erxleben, "*Systema Regni Animalis*," 170
 Ethelbert, King, letter to St. Boniface, 71
 Everest and Pownall, "History of Epsom," 241
 Evelyn's Diary, 233
 Extinct British Animals, 233
 Eyesses, 109

 FABER, Annotations to Hernandez, 431
 " on Cormorant fishing, 432, 433
 Falcons for the King, 176
 Falconer's hut, the, 117-120
 Falconry, origin of, 68, 69
 " in Holland, 109-128
 " in Japan, 409

- Falcons in Ireland, 299, 300
 „ Eastern, 361, 370
 Fallow-deer, 12-14, 55
 „ origin of, 12
 „ variety in colour of, 13
 „ in London Parks, 229-233
 „ in Ireland, 302, 309
 Fenton, "Historical Tour through Pembrokeshire," 47
Feræ Naturæ of the London Parks, 229-247
Field, The, 19, 20, 25, 129, 160, 161, 164, 392, 406
 Field-mice, 22-23
 „ barking trees, 23
 „ long-tailed, 22
 „ short-tailed, 23
 "Field Songster, or Bird Fancier's Delight," 195
 Fishes in Ireland, 299, 316, 322, 323, 324
 Fisherman, a Dutch, 219-220
 „ a Norfolk, 220
 Fishing in Holland, 217-221
 „ in Japan, 415, 416
 „ with natural fly, 221
 „ with Cormorants, 423-440
 Florence of Worcester's "Chronicle," 71
 Fly-fishing, 221
 Flying at hack, 92
 Forest animals, 1-29
 Forests of Bowland, 5
 „ Blackburnshire, 5
 „ Dean, 5
 „ Enfield, 12
 „ Epping, 6, 12
 „ Martindale, 3
 „ New, 6
 „ Wolmer, 5
 „ Windsor, 13
 Fouilloux, Jacques de, "*Traité de Vénérie*," 81
 "Fowler, the Experienced," 204
 Fox, 28, 175, 177, 360
 „ in Arabia, 360
 „ in Japan, 412
 „ in London Parks, 234
 „ in Ireland, 325
 Fox-skins in the olden time, 175
 France, Cormorant fishing in, 427, 428, 432
 „ Plover catching in, 201-205
 „ Spring Ramble in, 257-275
 Franchières, Jean de, "*La Fauconnerie*" de, 81

- Francolin, 368
 Frogs in Ireland, 320-325
 Fynes Moryson, "Description of Ireland," 305

 GADWALL, in Ireland, 321
 Gage, "History of Hengrave," 84
 Gallinules, Purple, 342-350
 " " in England, 345, 346
 Gardener's Chronicle, 24
 Garrod, Professor, on Roedeer in England, 50
 "Gentleman's Magazine," 82, 247
 George I., 15
 Gerard's "Herball," 279
 Gersfalcon, 75, 76, 77, 80, 92, 176
 Gervais, Professor, "*Zoologie et Palæontologie Francaises*," 168
 Giglioli, Professor, on *Porphyrio cæruleus*, 344
 Gilpin, "Forest Scenery," 29, 51
 Giraffe, 3
 Giraldus Cambrensis, *Topographia Hibernica*, 297, 305
 Goats, wild, in Ireland, 304
 Godman, "Natural History of the Azores," 168
 Godwit, bar-tailed, 212
 " black-tailed, 212
 Golden Oriole, 257, 261-263
 " nest of, 262, 274
 " note of, 257, 261, 275
 Gooze, Barnaby, "Four Bookes of Husbandrie," 181, 182
 Goshawk, 62, 92, 105, 108, 307
 " in Ireland, 307, 308, 317
 Gough, Capt., and the Axis Deer, 13
 Gould, "Handbook to the Birds of Australia," 383
 Graham, Capt., on the Wolfhound, 58, 59, 66
 Grebe, Little, in Ireland, 321
 Grey, the Badger, 175
 Grindal, W., "Hawking, Hunting," &c., 81
 Grosley, "Tour to London," 232
 Grouse, Black, in Ireland, 318, 321
 Guinea-fowl, 182-184
 Gull, Great Black-backed, 126
 Gulls on London waters, 247
 Günther, Dr. A., on British Charrs, 322
 Gurney, Commentary on Sharpe's Catalogue of the *Accipitres*, 88
 Gyr-falcon, 75, 76, 77, 80, 92, 176

 HACK, flying at, 92
 Haggard-falcon, 112
 Hall, "Arctic Researches," 390

- Hall's "Chronicle," 79
 Hamilton, Dr. E., on London Rookeries, 241
 Hammer, Von, *Falknerklee*, 69
 Hancock, John, on the "humming" of the Snipe, 292
 Hardiman, *see* O'Flaherty, 311, 312
 Hare, 17-20, 38, 177, 229, 234-235, 301
 ,, pied and black, 20
 ,, hunt in Hyde Park, 234
 ,, swimming, 20
 ,, coursed in Regent's Park, 235
 ,, weight of, 19
 ,, hawking, 92
 ,, skins, 175
 ,, Japan, 212
 Harris, Walter, "History of the Co. Down," 313, 314
 Hart, royal, 8, 320
 Harvey, "Fauna and Flora of Cork," 163, 326
 Harvie Brown, on Wild Cat in Scotland, 29
 ,, on migration of birds, 191
 Haslewood, Reprint of Boke of St. Albans, 96, 97, 100
 Hatfield Chase, 4, 5
 Havant, Manor of, 14
 Hawk-catching, 92, 93
 Hawks and hawking, 67-95
 ,, bells, 107
 ,, classification of, 87-89
 ,, Iceland, 76
 ,, long and short winged, 90, 91
 ,, Norwegian, 75
 ,, passage, 109
 ,, plea for, 95
 ,, prices paid for, 74
 Hawk and Heron, story of, 116
 ,, house, a model, 112, 113
 ,, how to enter, 144, 146, 147
 ,, how to feed, 137
 ,, how to train a, 129-148
 "Hawkery, The," at Epsom, 84
 Hawking by the Boke, 102-108
 ,, causes of decline, 84
 ,, in Holland, 109-128
 ,, in Japan, 409
 ,, statutes relating to, 74
 ,, the palmy days of, 81
 Haye or Haie, 41, 42
 Hayes, "Open Polar Sea," 300
 Hedgehog in Ireland, 302

- Hedgehog, 24, 25
 „ its omnivorous habits, 24
 „ killing a leveret, 24
 „ preying on frogs, 25
- Henry I., 73
 „ II. hawking, 76
 „ VII., laws on hawking, 74
 „ VIII., anecdote of, 79
 „ „ preserving game at Westminster, 230, 231
 „ „ privy purse expenses, 255
- Henry, Prince, son of James I., 5
- Heresbach, Conrad, "Four Bookes of Husbandrie," 181, 182
 (see Googe, Barnaby.)
- Héroard, Journal of Dr., 427, 428
- Hérons, 75, 92, 265
 „ nesting with Spoonbills, 254
 „ preserved by Henry VIII., 230, 234
- Herring-fishery in Ireland, 316
- Higden, Ranulphus, "Polychronicon," 52, 303, 304
- Hobby, 90, 92, 108
 „ food for, 94
 „ flying at larks, 317
- Holinshed, "Chronicles," 45, 305
- Hood for cheetah or hunting leopard, 369
 „ for hawks, 112, 131, 140, 141
 „ for lynx, 369
 „ proper, 140, 141
 „ rufter, 112, 131
- Hooding, 139
- Hooper, Rev. R., on origin of the name Turkey, 184
- Hoopoe, 258, 265, 268
 „ nest of, 269
 „ note of, 272
- Horns, growth of, explained, 7-9
 „ malformation of, 17
- Horsfield, "History of Sussex," 253
- "Household Books," 46, 47, 48, 74
- Howard, Lord W., "Household Books of," 47, 48
- Howel Dha, laws of, 42, 72
- Hunter's terms, 38, 39
- Hunting, past and present, 101
- Hunting leopards, 366
- Huxley, Professor, on classification, 87
- Hyde Park, a royal hunting ground, 230
 „ executions in, for deer stealing, 231
 „ last deer in, 233

Hyæna in Arabia, 360
Hyrax syriacus, 354, 360

IMPING, 94

Inachus Kæmpferi, 416

Insectivora, 23-25

Ireland, animals absent from, 301, 305, 307

Irish MS. Poem of 9th century, 53, 54

„ Academy, Royal, Proceedings of, 53, 54

„ Zoology, Annals of, 295-328

JACKDAWS in France, 269

„ in London, 243

James I., 5, 12, 13, 79, 81, 231, 428, 429

Japan, birds of, 414, 415

„ sport in, 407-416

Jardine, Sir W., on the "humming" of the Snipe, 291

Jay, 263

Jerboa in Arabia, 355

Jerfalcon, 75, 76, 77, 80, 92, 176

Jesse, "Gleanings in Natural History," 23, 180, 243

Jesses, swivel, and leash, 113, 141

"Jewel for Gentry, a," 194

John, King, charter of liberties, 43, 44

„ hawking Cranes, 77

Johnson, "*Historia Animalium*," 320

Johnston, "Indian Field Sports," 90

KANE, "Arctic Exploration," 391

Kermode, P., on migration of birds, 191

Kestrels in London, 239, 240

Kite, flown at by falconers, 81, 90

„ nesting in London, 239

Kiwis, 377-385

„ food of, 383

„ haunts and habits, 381-385

„ reproduction, 383, 384

„ species, 379

„ structure, 377

Knot, 207, 212, 213

LAMONT, "Seasons with the Sea-horses," 390

Lancelot, "*Explication de la tapisserie Bayeux*," 73

Lanner in Arabia, 361

„ breeding in Hungary, 112

„ flying at partridges, 112

- Lapwing, or Peewit, 203, 205, 207
 Lark, the crested, 258, 263
 ,, hawking with Hobby, 317
 ,, ,, with Merlin, 92
 ,, migration of, 190, 191
 ,, striking lighthouses, 191
 Lark-mirrors, 190-200
 ,, illustrations of, 196, 197
 Larwood, "Story of the London Parks," 234
 Latham, "Faulconry, or the Faulcons Lure and Cure," 81
 Layard, E. L., on *Mus rattus* at Ascension, 169
 Lebour, G. A., on Swallow Stones, 276
 Le Couteulx, Comte, "*La Pêche au Cormoran*," 427, 428
 Legge, W. V., on the "humming" of the snipe, 292
 Leland, "Itinerary," 13, 45, 46
 Lemetteil, on Swallow Stones, 278
 Leopard, varieties of, 366
 "*Liber Eliensis*," 42
 Lighthouses and birds, 191
 Lodge, "Illustrations of British History," 230
 Lombard, Peter, *De Regno Hiberniæ*, 308
 Longcroft, "Topographical Account of Bosmere," 14
 Longfellow, on Swallow Stones, 277
 Loo Hawking Club, 112
Lophiomys imhausi, 357, 359
 Louis XIII., a great falconer, 81
 ,, fishing with Cormorants, 427
 ,, shooting flying, 193
 Low, "*Fauna Orcadensis*," 158
 Lubbock, "Fauna of Norfolk," 41, 160
 Lure for hawk, 147
 Lynx, the Desert, or Caracal, 367
 Lyte's "Herbal," 280
- Macacus speciosus*, 413, 414
 Madox, "History and Antiquities of the Exchequer," 73
 Magazine of Zoology and Botany, 158, 159
 Magpie and Peregrine, 92
 ,, decoying in France, 273
 ,, introduced in Ireland, 307, 321, 324
 ,, nesting in St. James's Park, 242
 Major, R. H., on European literature relating to China, 423
 Malcolm, Sir J., "Sketches of Persia," 90
 Malmsbury, William of, 71
 Malopin, "Boke of the Prince," 281
 Mansell Pleydell, J. C., on Roe-deer, 15

- Markham, G., "Country Contentments," 81
 „ "Gentleman's Academie," 81
 „ "Maison Rustique, or the Country Farme," 6
 „ "Hunger's Prevention, or the Art of Fowling," 194
 Marmot in Arabia, 355
 Marsh-birds in Holland, 110, 114
 Marten, 27, 28
 „ hunted with foxhounds, 28
 „ in Ireland, 301, 308, 309, 320, 325
 „ in Japan, 412
 Martial, "Epigrams," 69
 Martindale Fells, 3
 Marylebone Park, 231
 „ stocked with deer, 231
 M'Skimin, "History and Antiquities of Carrickfergus," 323
 Mendoza, "Historie of China," 425
 Merlin, 90, 92, 108
 „ food for, 94
 Merret's "Pinax," 305
 Mew, the hawk's, 107
 „ at Charing Cross, 240
 Mice, 22, 23
 „ barking trees, 23
 „ harvest, 296
 „ long-tailed, 22
 „ short-tailed, 23
 "Middlesex, the Birds of," 243
 Miller and Skertchly, "Fenland, Past and Present," 42
 Milne, "Life in China," 426
 Mirrors, Lark, 196, 197
 Mole absent from Ireland, 303, 325
 Mollen, Adrien, falconer, 111, 113, 118, 128, 130
 Molyneux, Dr. Thomas, 325 (*see* Boate, Gerard.)
 Monkeys in Arabia, 354
 Monson, Sir Thomas, 80
 „ prices paid by him for hawks, 80
 Moose, 55
 „ in Ireland, 325
 Moryson, Fynes, "Description of Ireland," 305
 Moulting hawks, 106, 107
 Muffett, "Health's Improvement," 47, 182
 Murray, A., "Geographical Distribution of Mammals," 302, 371,
 376
 Murie, Dr. J., on Anatomy of Walrus, 392
 Museum, the Keeper's, 26
 Music, effect of, on deer, 12
 Musk-deer, 2

- "NATURE," 11, 159, 166, 167
 Neuhoff, "Embassy to China," 425
 Newton, Professor, on hawking in Norfolk, 79-80
 " " on London Rookeries, 241
 " " on origin of the name Turkey, 184
 Nichols' "Progresses of Queen Elizabeth and James," 231
 Nightingale in London, 244
 Nigou, the, of Japan, 413
 Nilsson, "*Fauna Scandinavica*," 166
 Noirmont, Baron de, "*Histoire de la Chasse en France*," 427
 Norden, "Survey of Middlesex," 232
 Norfolk Naturalists' Society, Transactions of the, 80, 82, 160
 Northey, Sir William, 241
 "Northumberland Household Book," 255

 O'FLAHERTY, "Description of West or H'Iar Connaught, 311
 Oglethorpe, General, 247
 Olive, 213
 Opah, or King-fish, in Ireland, 324
 Oppian, "Cynegeticon," 69
 Oriole, Golden, 258, 261-263
 " " nest of, 262, 274
 " " song of, 257, 261, 275
 Ornithology of Shakspeare, 74, 172, 204
Oryx, the genus, remarks on, 354-356
 Osprey, trained to take fish, 90, 429
 " anecdote of, 126
 " flight of, 300
 Ossian, Poems of, 53, 72
 Ostrich, in Arabia, 361, 370
 " structure of, 376
 Otter, 177, 229, 235-237
 " in St. James's Park, 236
 " trained to take fish, 429
 " in Ireland, 325
 " in Japan, 412
 Owls, 23
 " in Ireland, 317, 318, 324
 " brown, 317, 318, 324
 " short-eared, 23
 Ox-bird, 209
 Oyster catcher, 213, 214

 PAGET, "Natural History of Yarmouth," 160
 Palgrave, "Travels in Arabia," 353
 Parke's translation of Mendoza's "Historie of China," 425
 Parkinson, *Theatrum Botanicum*, 282

- Partridge-hawking, 83, 105, 112
 „ and pheasant at Westminster, 230
 „ in France, 265
 „ in Ireland, 307, 321, 324
 „ in the Regent's Park, 246
 Passage, birds of, 118
 „ hawks, 109-128, 129-148
 "Paston Letters, The," 79
 Patterson, R. L., "Birds, Fishes, &c., of Belfast Lough, 326
 Patrin, on Swallow stones, 284
 Pearl-fishery in Ireland, 314
 Peewit, or Lapwing, 203, 205, 207
 "Pell Records, The," 5, 12, 90, 428
 Pennant, "British Zoology," 40, 47, 57, 156
 „ "History of London," 247
 „ on Kites' nests in London, 239
 „ on Cormorant fishing, 428
 Pennington, on the Bone Caves of Derbyshire, 40
 Pepys, Samuel, on Hawks, 76
 Perch for hawks, 140
 Pereira, Galotti, on Cormorant fishing, 424
 Percy, "Reliques of English Poetry," 49
 Peregrine Falcon, 92, 108, 128, 240
 „ food for, 94
 „ in London, 240
 "Peregrine's Practical Falconry," 94
 Pheasant, in Ireland, 307
 Pheasant-shooting, 37
 Pike and Osprey, 219
 Pike fishing, 217-219
 Pinkerton, "Voyages and Travels," 425
 Pintail, 420-422
 Pinguin (*see* Auk, Great), 324
 Playford, "Introduction to Music," 12
 Pliny, "*Historia Naturalis*," 69, 279, 282, 283
 Plover-catching in France, 201-205
 „ Green, or Peewit, 203, 205, 207
 „ Grey, 215, 216
 „ Golden, 201, 203, 207, 215, 216
 „ Ringed, 207, 209, 213, 321
 Pluquet, "*Contes Normandes*," 278
 Polecat, 27
Porphyrio, the genus, 342-350
 „ *cæruleus*, figured, 345
 Porcupine in Arabia," 354
 Potts, T. H., on the habits of *Apteryx*, 381
 Power, Sir John, his Wolfhounds, 66

- Preserving Birds, Practical Hints on, 450, 463
 Proceedings of the Royal Irish Academy, 53, 54
 " of the Zoological Society, 51, 87, 288
 Prynne's account of a deer hunt, 5
 Punt for shore shooting, 209
 Purre, 209
 Puteus, C. A., on Cormorant fishing, 432, 433
- QUAIL, call of, 264
 " in France, 264
 " in Arabia, 361
- RABBIT, 17-20, 38
 " killed with a Goshawk, 92
 Raine, "Account of the Episcopal Palace of Auckland," 43
 Ramble in France, 257-275
 Rat, Alexandrian, 162
 " black, 156-170
 " brown or Norway, 157, 158, 165, 325
 Ratcatchers, royal, 156
 Ravens in Hyde Park, 243
 Ray, *Synopsis Animalium*, 57
 Recipes for diseases of hawks, 105, 106
 Reptiles in Ireland, 308, 325
 Retzius, *Fauna Suecica*, 166
 Richard I. hawking, 77
 Richardson, "The Dog, its Origin," &c., 58, 65
 " "The Gigantic Irish Deer," 326
 Ridgway, arrangement of the *Falconidæ*, 88
 Rifle for deer shooting, 32
 Rito, "*Topographie de la Province Kawatsi*," 68
 Road-goose, 311
 Rodents, 17-23
 Roe-deer, 14-17, 38-55, 101
 " extinct in England, 49
 " female with horns, 17, 51
 " fossil remains of, 40
 " gestation of, 16
 " hunt in Northumberland, 49
 " names at various ages, 38
 " not in Ireland, 52-55, 299
 " preserved by Charles I., 47, 48
 " reintroduced in Dorsetshire, 50
 " taken in nets, 41
 " white, 16
- Rogers, Professor, "History of Agriculture and Prices," 74
 Rolland, "*Faune Populaire de la France*," 277-279

- Rooks in London, 241
 „ in the Temple, 241
Rotulus Miscæ, 78
 Rowe, "Catalogue of the Mammals, &c., of Devon," 161
 Rowley, Dawson, "Ornithological Miscellany," 380
 Rozmital, Baron Von, 13
 Rubruquis, De, "Travels in China," 424
 Ruff and Reeve, 204
 Ruminants, 1-17
 Rutty, "Natural History of Dublin," 319
- SAKER, the, in Arabia, 361
 „ flown at the Ostrich, 370
- Salisbury, John of, 69
 Salter, J., on *Mus alexandrinus*, 162
 Salvin, F. H., on Cormorant Fishing, 433, 439, 440
 Salvin, F. H., and Brodrick, W., "Falconry in the British Islands," 94
 Sampson, "Survey of Londonderry," 323
 Sandpiper, Common, 214
 „ Curlew, 210
 „ Dunlin, 207, 209, 210, 213
 „ Green, 214, 215
 „ Wood, 214, 215
- St. James's Park stocked with deer, 231
 „ otter hunt in, 236
 „ waterfowl in, 232
- St. John, Natural History of the Highlands, 23
 „ "Wild Coasts of Nipon," 407
- Saxby, H., on the "humming" of the snipe, 292
 Schlegel and Temminck, "*Fauna Japonica*," 414
 „ "*Traité de Fauconnerie*," 68, 69, 70, 111
- Schmarda, "*Geographische Verbreitung der Thiere*," 166
 Sclater and Salvin, "*Nomenclator Avium*," 88
 „ List of Vertebrates in the Zoological Gardens, 88
- Scott, "British Field Sports," 13, 49, 51
 „ R., "Discoverie of Witchcraft," 164
 „ Sir Walter, his Wolfhounds, 65
- Scrope, "Days of Deerstalking," 10
- Seals, 319, 386-406
 „ eared, 392, 399
 „ earless, 399-405
 „ food of, 405, 406
 „ fur, 395, 398
 „ habits of, 405
 „ hair, 394
 „ in Ireland, 319

- Seals, migration of, 406
 Seeling, a term in Falconry, 104
 Selby, "Mammals of Northumberland," 158
 Shakespeare on "daring Larks," 317
 " on Lark-mirrors, 193
 " on Rats, 164
 " on "Stales" or Decoys, 204
 " on Turkeys, 182
 Sharpe, R. B., "Catalogue of *Accipitres*," 88
 " on birds from China and Japan, 415
 Sherborne, Sir Edward, 83
 Shirley, English Deer Parks, 7
 Shore-shooting, 206-216
 Shovelard, or Sholarde, 253, 255
 Shrews, 23, 24
 " eaten by owls, 24
 " mortality of, 24
 " in Ireland, 304, 325
 Shrike, Grey, used by falconers, 93, 123, 125
 " Lesser Grey, 271
 " Woodchat, 270
 Sidney, "Arcadia," 204
 " Sir Robert, 231
 Sloane, Sir Hans, 315
 Smith, "Historical Recollections of Hyde Park," 234
 " Dr. Charles, "Hist. Co. Waterford," 313, 316, 317
 " " "Hist. Co. Cork," 314, 319
 " " "Hist. Co. Kerry," 314, 318, 319
 Snipe, "humming" of the, 285-294
 " outer tail feather of, 289
 Sock, for hawks, 132, 133
 Sopwell Priory, 98
 Sparrowhawk, 92, 105, 107, 108, 177, 300
 " anecdote of, 240
 " food for, 94
 " in London, 239
 Spelman's "Glossary," 71, 72
 Spiders, British, 222-228
 Spider's Web, a, 228
 Spider-crab, 416
 Spoonbill nesting in Sussex, 247-256
 " " in Norfolk and Suffolk, 250
 "Sporting Magazine," 51
 Spring Ramble in France, 257-275
 Squirrel, 20, 21, 177
 " food of, 20
 " injurious to trees, 21

- Squirrels killing birds, 21
 ,, in London Parks, 238
 ,, in Ireland, 320
 ,, in Arabia, 354
 Stag-beetle, 273
 Stag, 8, 320, 325
 Staggard, 8
 Stales, *i.e.*, decoys, 203, 204
 Statutes relating to Hawking, 74
 Staunton, Sir George, "Embassy to China," 426
 ,, Sir G. T., edition of Mendoza, 425
 Stoat, 26, 27
 ,, in Ireland, 302
 Stock-dove in Ireland, 318, 321
 Storks in Ireland, 301
 Strafford, Lord, Letters and Despatches of, 309
 Strutt, "Sports and Pastimes," 72, 108
 Stuart, "Lays of the Deer Forest," 16
 Sussex, Archæological Collections, 40, 251
 ,, the four good things of, 171
 ,, Dallaway's History of, 252
 ,, Horsfield's History of, 253
 Swallow's herb, 276-284
 ,, figure of, 281
 ,, stone, 276-284
 Swans in Ireland, 301, 316
 ,, wild, a shot at, 441-449
 Swinhoe, R., on the Birds of China and Japan, 415
 THOMPSON, "Natural History of Ireland," 163, 315, 321, 326
 Thorkelin, *Analecta Hist. Reg. Norw.*, 75
 Trevisa, John of, 16, 44, 52, 303, 305
 Tristram, Canon, "The Great Sahara," 168
 "Tristram, Sir," 99, 100
 Truffles, 185-189
 Truffle-dogs, 186, 187
 ,, hunters, 189
 Turbervile, "Booke of Hunting," 38
 ,, "Booke of Falconrie," 81, 281
 Turkey-fowl, date of introduction, 181
 ,, origin of name, 182-184
 Turkeys, Wild, 179-184
 ,, in Richmond Park, 180
 ,, in Windsor Park, 180
 ,, in Norfolk, 181
 ,, in Ireland, 181, 323
 Turnstone, 113
 Twici, Guillaume, "*L'Art de Vénérerie*," 99

- UPTON, "*de Studio Militari*," 99
- VALKENSWAARD, 109, 117
- Vole, short-tailed, 23
- WALLACE, A. R., "The Geographical Distribution of Animals," 353
- Wallis, Natural History of Northumberland, 46
- Walrus, food of, 390
 ,, use of tusks, 391
- Walruses and Seals, 386-406
- Walsingham, Sir F., his Wolfhounds, 63
- Warbler, the Great Reed, 258, 266
- Ware, Sir James, "Antiquities of Ireland," 60, 61, 62
- Warrant to preserve Roe-deer, 48
- Warren, beasts of, 38, 45
- Watters, "Natural History of the Birds of Ireland," 326
- Weasel, 26, 27, 296
 ,, in Ireland, 302, 325
 ,, in Japan, 412
- Webber, the, 357, 360
- Weldon, Sir Anthony, 80, 82
 ,, "Court and Character of James I.," 81
- Wheelwright, "Spring and Summer in Lapland," 169
- Whimbrel, 214
- White, Gilbert, 5, 6, 188, 189, 238, 245
- Whitaker, "History of Whalley," 5, 43
- White-fish, 219, 221
- Whitelocke, "Memorials of English Affairs," 428
- Whitethroat, in Ireland, 321
- Wigeon in France, 265
 ,, in Essex, 420-422
 ,, in Ireland, 321
- Wild boar, chase of the, 101, 270
 ,, in Ireland, 301
 ,, in Japan, 411
- Wildfowl on London waters, 247
 ,, an Act to avoid destruction of, 255
 ,, in Essex, 417-422
- Willes, R. (*see* Pereira, G.), 424
- William III. a game-preserved, 232
- Willughby, "Ornithology," 250, 251, 254, 431
- Winchester, Bishops of, 14
- Wolf, in Arabia, 360
 ,, in England, the last, 233
 ,, in Ireland, 325
 ,, in St. James's Park, 233
 ,, in Japan, 412

- Wolf-hound, 56-66
 " in Ireland, 63, 64
 " portrait of, 61
 Woodcock-hawking, 107
 " in London Parks, 247
 Woodpecker, Great Spotted, habits of, 263, 264
 Wood Pigeons in London, 246
 Wurmser, H. J., "Travels with Louis, Count of Wurtemberg,"
 430, 431
 Wynkyn de Worde, edition of *The Boke of St. Albans*, 100

 YARRELL, "History of British Birds, 80, 241

 ZOOLOGICAL Society, Proceedings of the, 51, 87, 288, 322, 325,
 384, 415
 Zoology, *Irish Annals of*, 295-328
Zoologist, The, 19, 22, 28, 51, 159, 161, 162, 239, 241, 247, 276,
 294, 381

UNIVERSITY OF CALIFORNIA LIBRARY
Los Angeles

This book is DUE on the last date stamped below.

ORION
LD URL NOV 07 '90

RENEWAL
LD URL DEC 05 1990

REC'D LD URL
RENEWAL
LD URL JAN 07 1991
JUN 07 1991

H Harting -
1 Essays on sports
25e and natural his-
tory

BINDERY DEC 15 1957

University of California, Los Angeles

L 006 063 357 5

UC SOUTHERN REGIONAL LIBRARY FACILITY

AA 000 776 879 9

QH
81
H25e



