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HANDBOOK AND GUIDE

TO THE

BRITISH MAMMALS

ON EXHIBITION IN

THE LORD DERBY NATURAL HISTORY
MUSEUM, LIVERPOOL.

Illustrated by Six Plates.



LIVERPOOL:

'DAILY POST' PRINTERS, WOOD STREET.

1921.

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Plate 1



Lower
Horse-shoe
Gallery

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MUSEUMS

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Handbook of the State

JAMES M. SMITH

Author of "The History of the State of New York" and "The History of the State of New Jersey"

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groups on exhibition.**

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P R E F A C E .

This Guide and Handbook to the British Mammals on exhibition is intended to be a companion work to the Guide and Handbook to the British Birds. The method of exhibition by "habitat" groups has been largely followed, most of the species being exhibited so as to give the observer some idea of the conditions under which the animals live and the nature of the environment in which the functions of life are performed. The preparation of these habitat groups has been carried out by and under the direction of Mr. J. W. Cutmore, the Head Taxidermist and Assistant in Vertebrate Zoology in the Museum, to whom also must be credited a large share in the preparation of this Handbook.

It is hoped that this work will rank with other Museum Guides in being of use to the visitor not only when in the Museum, but also for future reference.

JOSEPH A. CLUBB,
Curator of Museums.


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LIVERPOOL, *January*, 1921.

HANDBOOK AND GUIDE

TO THE

BRITISH MAMMALS.



The **TERRESTRIAL MAMMALS** known to have inhabited the British Islands during the historic period, number about 48. They include Bats, Insectivores (Moles, Shrews, etc.), Carnivores or flesh-eating; Rodents or gnawing, and the Ungulates or hoofed mammals. In addition, about 26 species of **AQUATIC MAMMALS** (Whales, Porpoises, Seals, and even the Walrus) have been recorded on our coasts as occasional visitors. Also Britain is comparatively rich in **FOSSIL MAMMALS**, remains being found of the Mammoth, the Leopard, a Sabre-toothed Tiger, the Hyæna, gigantic Bears, Rhinoceroses, the Bison and many others.

THE BATS.

CASE 73.

The Bats are the only mammals endowed with the power of true flight. The special modification of the fore-limbs for this purpose at once sharply distinguishes the bats from all other members of the Mammalian class.

The minute eyes of ordinary bats are of little use when the animal is flying swiftly at night, and to supplement this inefficiency bats have a marvellously delicate sense of touch seated in the membranes of the wings and ears and, in some instances, of the nose. Bats are gregarious and live during the day-time in hollow trees, caves, the roofs of buildings or church steeples, where they remain till nightfall, usually suspended head downwards, held by the claws of the hind feet, which are specially adapted for this purpose. They are only seen out in warm weather, and they become torpid in very cold weather.

All British bats are insectivorous. The cheek teeth are furnished with sharp cusps, specially adapted to seize and pierce the insect prey which they catch on the wing.

Bats are by nature tropical animals, and there are only fifteen species recorded in the British Isles. Several of these are of rare occurrence and, strictly, only twelve species can be regarded as British. In the winter the whole of the British species hibernate.

Of the twelve species of bats that can be regarded as British, nine are recorded by T. A. Coward ("Fauna of Cheshire") in this local area. Four are fairly common, viz., the Long-eared Bat, Pipistrelle, Noctule, and Whiskered Bat; one is fairly rare, Daubenton's; two are distinctly rare, Natterer's and Leisler's; and two, the Lesser Horseshoe and Barbastelle, are doubtful.

THE WHISKERED BAT (*Myotis mystacinus*).

(No. 1 in the group.)

This Bat resembles the Pipistrelle, but is much less common. It takes its name from the long hairs on the face, which cover the upper lip—Moustache Bat would be a more descriptive name. Further distinguishing features are that the wing-membranes take origin from the base of the outer toe and the lobe of the membrane, present in many bats near the spur of the ankle, is absent. It is fond of hawking over the surface of water, and it lives in hollow trees, roofs of buildings or caverns during the daytime.

THE LONG-EARED BAT (*Plecotus auritus*).

(No. 2 in the group.)

The Long-eared Bat is characterised by having ears nearly as long as the body. This species has a wide geographical distribution. It is one of the most common and is fond of the open country. In flight it resembles the Pipistrelle. During the day it is found in old buildings, steeples and the crevices of rocks; when at rest it folds back its big ears, and the earlets remaining erect appear to act as ears.

THE PIPISTRELLE or COMMON BAT

(*Pipistrellus pipistrellus*).

(No. 3 in the group.)

This Bat, known also as the Flittermouse, is the smallest British species. It is one of the most widely distributed, being found throughout the British Isles. It may be seen as early as March and as late as November, after sunset, in the neighbourhood of towns and villages, over the streets of cities and in the alleys and

lanes. It flutters along like a large moth or butterfly, and is fond of river courses and darting under bridges. It hides during the day in crevices in walls and in the eaves of houses.

NATTERER'S BAT (*Myotis nattereri*).

(No. 4 in the group.)

A small reddish grey bat, known by its light underparts and the fringe of hair along the edge of the membrane between the legs. This bat seems to be an exclusively European species, ranging from Ireland in the west to the Ural mountains in the east, and from the southern districts of Sweden in the north to the Alps in the south. In England, although somewhat local, it appears to be not uncommon in several of the southern and midland counties, but seems rarer towards the north. In this neighbourhood it is rare.

THE NOCTULE, or GREAT BAT (*Nyctalus noctula*).

(No. 5 in the group.)

This is a tree-loving species, existing in some abundance in the southern and midland counties of Great Britain. It lives in the holes of trees and in buildings, and feeds on beetles, moths or lesser insects when on the wing. It is fairly common in this local area. The specimen in the group was collected at Knowsley.

THE LESSER HORSESHOE BAT (*Rhinolophus hipposiderus*).

(No. 6 in the group.)

This species is confined in England chiefly to the southern counties. It also occurs in Ireland, but is not found in this local area.

THE GREATER HORSESHOE BAT

(*Rhinolophus ferrum equinam*).

(No. 7 in the group.)

This species is found in old buildings in the southern counties, seldom in the Midlands, and is unknown in the north.

Cases 74, 75 and 76 contain representatives of the group INSECTIVORES—the Hedgehogs, Moles and Shrews. There is considerable difference in the external form of the members of this group, yet nearly all are characterized by the projection of the muzzle over the lower jaw.

CASE 74.**THE HEDGEHOG OR URCHIN (*Erinaceus europæus*).**

This species is common in every part of England and Wales, the lowlands of Scotland, Ireland and the Isles of Wight, Anglesey and Man, but in the Scottish Islands it is absent. Its food consists of beetles, worms, slugs, snails and various other insects, and its presence in gardens is entirely beneficial. It has been credited with eating many other things, among them eggs, but it has been proved by specimens in captivity that it will not attack a perfect egg until the taste of a broken one has first encouraged it. The young, from four to eight, are born in April or May. A second litter sometimes appears about August or September. The flesh of the hedgehog is eaten in some parts of this country, and is considered a delicacy. It hibernates during the winter months, and in summer is seldom seen during the daytime, which it spends in hedges or in crevices of rocks or walls. It comes out after sunset in search of food. The young are born in a rough nest of dried leaves and grasses, a very bulky affair, which is also used as a winter retreat.

CASE 75.**THE MOLE (*Talpa europæ*). (Pl. 2.)**

This animal is abundant in England, Wales and Scotland, but unknown in Ireland. The velvet-like fur is usually black in colour, but colour variation is frequently seen, from dusky shades to cream, and occasionally piebald. The fore-limbs are very powerful, and with them the animal can burrow at a good speed through the solid soil. The eyes are like small black points hidden by the fur and are only just sensitive to light, and there is neither orbit or eyelash. The food consists chiefly of earthworms, insects and their larvæ. The young, usually four or five, are born from the end of April to the middle of June. They are born blind and naked, but are able to follow their parents when four or five weeks old. Occasionally late litters are born about August. In its travels underground it is guided by its powerful sense of smell and hearing. Barrett-Hamilton, in "A History of British Mammals," gives a fine series of 20 drawings of Mole Encampments, Fortresses, Nests, etc. The group in this case shows a section of fortress with three nests.



COMMON MOLE.

THE SHREWS.

CASE 76.

The Shrews, sometimes called Shrew-mice (although they are not mice and not even remotely related to them), are represented by three British species, viz., the Common Shrew, the Pigmy Shrew, and the Water Shrew.

THE COMMON SHREW (*Sorex araneus*).

The Common Shrew is found throughout Great Britain, but is absent from Ireland. There may be an abundance of shrews in a locality, yet seldom are they to be seen alive because of their nocturnal habits; an occasional dead one may be seen on paths or in lanes, and the true cause of their death has never been settled. Probably these are few in number to those that die hidden away. The young are born from April to November. A litter is generally under ten in number. The shrew was formerly the centre of a whole host of extravagant superstitions which, like all ignorant prejudices, disappear but slowly from our midst. The animal is highly beneficial to the farmer and the gardener; its food consists largely of insects, worms and other creeping things. A moss or ivy-covered bank is generally the home of the Common Shrew.

THE PIGMY SHREW (*Sorex minutus*).

The smallest British mammal. This species has a wider distribution in the British Isles than the Common Shrew; it is found in Ireland and the Hebrides. In habits it resembles the Common Shrew.

THE WATER SHREW (*Neomys fodiens*).

Larger than the Common Shrew, and is much darker in colour, generally black on the back and sometimes silver on the underparts. Its power in swimming is aided by a fringe of hairs along the underside of the tail and along the sides of the feet. It is not found in Ireland and the Scottish Isles. It lives in the banks of streams, ditches and ponds. Its food consists of fresh-water shrimps, snails, insect larvæ, etc. The nest is placed at the end of a burrow, in which several litters of young are born between May and November. Each litter may contain from five to ten. The Water Shrew may sometimes be found several miles from water, when it lives on worms and insects.

THE WEASEL, STOAT, POLE-CAT AND PINE MARTEN.

(Cases 77, 78, 79 and 80.)

These, together with certain allied forms which have no representatives in Britain, constitute a special sub-family of the order Carnivora, known as the **MUSTELIDÆ**—a word derived from Latin, and meaning weasel-like. They are terrestrial and more or less arboreal in their habits, and possess short and slightly webbed toes, with sharp, curved, and frequently retractile claws. In all cases the body is much elongated, while the limbs are short, and the relative length of the tail is subject to considerable variation.

CASE 77.

THE WEASEL (*Mustela vulgaris*).

This is the smallest British representative of the typical group of the *Mustelidæ*. The long lithe body enables it to follow mice into their holes. Its food consists of mice, voles, moles and rats (chiefly young rats). It will sometimes take the eggs of small birds, but it is too small an animal to take the eggs of fowls. The Weasel produces five or six young at a birth, and is said to have two or three litters in a year. It is smaller than the stoat, and has a shorter tail with no black at the end. It is fairly abundant in this local area, and is named the Mouse-Killer. This little carnivore ought to receive all encouragement by farmers

CASE 78.

THE STOAT OR ERMINE (*Mustela erminea*). (Pl. 5).

This animal is distinguished from the weasel by the black tip to the tail, as well as by its superior size. It has a wider distribution in the British Isles than the weasel, occurring in Ireland as well as Great Britain, although the Irish representative forms a distinct race. The stoat changes its coat to white in the winter in the coldest part of the country. (See case on Upper Gallery, illustrating seasonal change, and Pl. 5.) It is most abundant in this local area. The British stoat is of no commercial value, owing to the shortness of its fur, but the longer-furred skins from Northern Europe and America, constituting the "ermine" of the fur trade, have a high value. The stoat preys on game and other birds, and sucks their eggs; it is a determined enemy of rats and voles, young rabbits and leverets. Stoats are expert climbers, climbing trees to rob the bird nests. The young, usually five to eight in number, are born in April or May. They seem to stay with the mother till autumn and are full grown by the following spring. The young of stoats and weasels are very playful and frolicsome little animals.

CASE 79.

THE POLECAT, FOU MART OR FITCHET (*Putorius fœtidus*).

This creature is much larger than the stoat, formerly common in England, Scotland and Wales, but owing to the destruction by gamekeepers it has been exterminated over the greater part of the country. Polecats dwell chiefly in woods, copses and thicket-clad hills. The male is called the "Hob," the female the "Jill." It ejects an evil-smelling odour when handled, and its food consists of almost any other animal it can destroy, killing many more than it can devour, seeming to delight in killing. The ferret is a domesticated Polecat. The young are born in May or June, and are from four to six in number,—they are generally littered in a rabbit warren.

CASE 80.

THE PINE-MARTEN OR MARTEN CAT (*Mustela martes*).

In Lakeland the Pine-Marten is called the "Sweet Mart," and the Polecat the "Foul Mart." It is the largest representative of the more typical members of the weasel tribe. Throughout the British Isles, wherever there were woods, the Pine-Marten was common in former days. Nowadays it survives only in isolated parts of the country, such as parts of Suffolk, North Devonshire, Epping Forest, and Hampshire. In the Lake District, it is, however, less rare; in Scotland it is very scarce, but in North Wales it still lingers and occasionally crosses over into Cheshire—recently (July, 1919) one was caught in a rabbit trap at Worsley Hall, near Manchester. Mr. H. E. Forrest, in the "Fauna of North Wales," states that the Pine-Marten is still found in the wilder parts of Carnarvon and Merioneth, but in no part of Wales is the Marten so numerous as around Dolgelly, where the thickly-wooded valleys and rugged crags afford it a suitable asylum. The Pine-Marten probably breeds twice a year, in February and June. The average number of young in each litter is three. It breeds in trees, in old nests of birds or squirrels, or in crevices of rocks. Its food includes birds, rabbits, hares, rats, mice, game birds, and sometimes poultry. It is a very swift climber, and catches squirrels with ease. It will even take fruit, and if near the shore will eat shell-fish.

CASE 81.

THE WILD CAT (*Felis catus*).

The time of the disappearance of this species is not recorded and it lingered in the Lake District till about the middle of the

19th century. In Scotland, though still seen, it is rapidly decreasing in numbers. The specimen in the case (on the left) was killed in Scotland a few years ago. Although existing in North Wales till a comparatively late period, there is no direct evidence as to the time when it became locally extinct. It was co-existent in England with the mammoth, the lion, the hyæna, the reindeer, and the hippopotamus. It has never been an inhabitant of Ireland at any time. Statements of the occurrence of the Wild Cat in Ireland are based on instances of domesticated cats which have run wild (Sir Harry Johnston, "British Mammals"). The same can be said of any recent records of the presence of the Wild Cat in England. The tail of the Wild Cat is short and thick, ending in something like a large brush, and is very boldly striped with black rings and a large black tip. This creature is, of course, purely carnivorous in the choice of its food, and will attack and kill prey as large as a roebuck fawn. It also kills and eats lambs and large numbers of rabbits, hares, grouse, pheasants and other birds. It is fierce and untamable in captivity.

CASE 82.

THE BADGER OR BROCK (*Meles taxus*). (Pl. 3.)

This species is a nocturnal animal, living in pairs. It passes its days securely concealed in its burrow, which is generally excavated in some unfrequented part of a wood or thicket. It comes forth to feed in the evening or during the night. The food consists mainly of roots of various kinds, fruits and nuts, birds' eggs, together with the smaller mammals, reptiles, frogs and insects. It is also particularly fond of the grubs of wasps, which it scratches out without fear of the stings of the insects, against which the thick fur of the Badger appears to afford an effectual protection. Except that it may destroy a certain number of eggs of game birds, the Badger is harmless alike to the game preserver and the farmer. The young, three to four in number, are born from March to June, in a large snug nest made of dry ferns and grass. Till comparatively recent times Badgers were very common, but the numbers have been greatly reduced, and in some parts the species is exterminated. They survive, however, in larger or smaller numbers in many English counties, as well as throughout Scotland and Ireland. They are still found in this local area, but are scarce.



COMMON BADGER.



COMMON FOX.

CASE 83.

THE OTTER (*Lutra vulgaris*).

The Otter belongs to a sub-family of the weasel-like quadrupeds and is thoroughly aquatic. At the present day this species is still pretty generally distributed over this country, although becoming scarce in the more cultivated districts where the rivers are small. In Cheshire it is widely distributed and not uncommon (Coward, "Fauna of Cheshire"). In North Wales it is generally distributed in the lowlands and more or less common in all the counties (Forrest, "Fauna of North Wales"), and in the Lake District, which is most suitable for the Otter, it generally meets an untimely end by trapping, and is therefore rare in these more suitable haunts. The Otter feeds almost exclusively on fish, which it pursues, not only in rivers and lakes, but also in the open sea. It brings the fish out of the water to devour, and generally begins eating away at the shoulders, sometimes leaving the rest of the fish, so that fish are frequently left only partly eaten. The young, three to five in number, are born in March or April, either in a tunnel in the river bank or under a wood pile; the Otter is not hunted in this country for its fur as it is on the Continent.

THE COMMON FOX (*Canis vulpes*). (Pl. 4.)

The Fox belongs to the dog family, and is a burrowing animal, living concealed during the day in "earths" under banks and trees, coming abroad towards the evening. The group in the case consists of the dog-fox returning home to his family with food. One of his family, too young to exhibit the usual foxy caution, has rushed out of the "earth" to welcome him, the vixen (mother), rendered anxious by the risk taken by one of her cubs, is also showing her face at the mouth of the "earth." A young fox of a previous litter, seeing his father returning to the old home, has ventured to follow him, where he is now an unwelcome guest. A pair of foxes generally occupy an "earth," which may consist of a series of dens, two or three in number, in one of which three to five young are born towards the end of the spring; the female exhibits great courage in defending them. A cub is easily tamed and makes a nice pet. It will live to the age of twelve to fifteen years in captivity. The food of foxes is the flesh of mammals, birds and reptiles. It may destroy lambs and certainly does partridges, grouse, fowls, rabbits and leverets. It is said that the Fox will cross with the dog. This is difficult to prove, but there is in the Worcester Museum an animal, killed near Ledbury, which is

considered to be a cross between a fox and a dog. The Fox is abundant in Cheshire, where it is preserved for sport in the lowlands. In North Wales it is generally distributed, except in Anglesey, where it is not indigenous. In the Lake District it is not uncommon.

CASE 84.

THE SEALS.

This case contains British representatives of the group of aquatic carnivores known as Seals. Although not so modified for an aquatic life as the whales and porpoises, they are, in fact, thoroughly aquatic in habits. Their movements on land are awkward and ungainly in the extreme. In the true Seals the hind-limbs are extended backwards parallel to the tail, and are thus incapable of taking any share in the movements which are concerned in what is ordinarily termed walking. The mode of progression is effected mainly by a kind of jumping movement of the body.

The British Seals, although not numerous, include five representatives of three distinct genera. These are: The Grey Seal, the Common Seal, the Harp Seal, the Ringed Seal, and the Hooded or Bladder Nose Seal.

THE GREY SEAL (*Halichoerus grypus*).

(No. 1 in the case.)

The Grey Seal inhabits the shore of the North Atlantic Ocean, and breeds on the British shores, taking up the most exposed situations in the Hebrides. They produce their young in September or October. When first born the young seal is clothed in white hair; the adult colour is attained when it takes to the water. The Grey Seal, like all other British species, has no under fur. In 1861 a Grey Seal was caught in the Canada Dock, Liverpool; this specimen is still in the Museum. In June, 1908, one was procured in the Mersey, near Warrington Bridge, 7ft. 6in. in length, and is now in the Warrington Museum. On October 28th, 1909, a young Grey Seal was stranded on a bank off Hoylake; it was secured alive for the Liverpool Museum. The old adult male in the case was caught about 15 or 20 miles off Annalong, Co. Down, Ireland, by one of Messrs. Harley & Miller's fishing boats.

THE COMMON SEAL (*Phoca vitulina*).

(No. 2 in the case.)

The Common Seal is distinguished from the preceding genus by the relatively smaller and more pointed teeth, and by those of the cheek series having accessory cusps with mostly double roots. The head also is rounded, instead of flattened, and the muzzle naked and not truncated, while the brain cavity of the skull is proportionately larger. The Common Seal is smaller than the Grey Seal, reaching only 5ft. in length, and unlike the Grey Seal is essentially gregarious, congregating in herds of two to three dozen. It feeds on fishes and is said to live largely on flounders when in the sea; it is especially fond of salmon and sea-trout, but in captivity we find that this seal prefers herrings to any other kind of fish. The young, one or occasionally two, in number are born in June. The young, as in the Grey Seal, has a coat of white hair, which is replaced by the adult coat in two or three weeks' time. It breeds on the British coasts and islands off Scotland. The Common Seal, sometimes seen on the Lancashire coasts, is an occasional wanderer to the estuaries of the Mersey and Dee, and is not uncommon on the Welsh coast. The range of this species includes both sides of the North Atlantic and North Pacific.

THE HARP SEAL (*Phoca greenlandica*).

(No. 3 in the case.)

The Harp Seal inhabits the Arctic Ocean and the shores of the North Atlantic and the North Pacific. It is only a casual visitor to the British Isles. It is also known as the Greenland Seal. In January, 1868, a specimen 6ft. long was captured in Morecambe Bay, and is preserved in the Kendal Museum.

THE HOODED OR BLADDER-NOSE SEAL

(Cystophora cristata).

(No. 4 in the case.)

This Seal inhabits the colder regions of the North Atlantic. It is migratory in its habits, occurring in South Greenland from April to June, straggling as far south as Iceland, North Scandinavia and sometimes to the coasts of Britain and France. The chief food of this seal is stated to consist of cod and flounder. This seal spends the greater part of its life on the ice, upon which its young

are born in the spring. The first British specimen recorded was taken in the River Orwell in 1847, and is now in the Ipswich Museum; a second specimen was killed at St. Andrews in 1872, and others are reported to have been taken on the Scottish coasts. The specimen in the case (No. 4) was captured alive on the Mersey shore at Frodsham Marsh on the 3rd of February, 1873, and was exhibited at Widnes, where the then Curator of this Museum (the late Mr. T. J. Moore) saw it alive and made sketches from it. It was large and powerful, being about 6ft. in length and in very fine condition. A full description of this specimen is given in the Proceedings of the Liverpool Biological Society, Vol. III.

Cases 85, 86 and 87 contain representatives of the British species of the Gnawing Mammals (*Rodentia*). The possession of a single pair of chisel-like incisor teeth in the lower jaw, which grow continuously throughout life, and are opposed by a similar pair of upper teeth, is a character which distinguishes the rodents from all other mammals. In number of species the rodents exceed any other order, and they have, likewise, a wider geographical distribution, being found even in Australia. Although divided into a very large number of families, only four are now represented in the British Islands. Within the historic period the Beaver family was represented by its typical member (the Beaver) within this area.

CASE 85.

THE BRITISH VOLES.

THE FIELD VOLE (*Microtus agrestis*).

THE BANK VOLE (*Arvicola glareolus*).

THE ORKNEY VOLE (*Microtus orcadensis*).

THE WATER VOLE (*Arvicola amphibius*).

The Field Vole or Short-tailed Field Mouse (the three adults and three young specimens on the raised centre of the group) ranges all over England and Scotland, including the Hebrides, although it is unknown in Ireland. It is the most mischievous of all the rodents to the farmer. It occasionally appears in great numbers, and in the absence of its natural enemies, such as the owls, hawks, crows, weasels and stoats, it may increase to almost incredible swarms so as to destroy grass land and spoil the corn harvest. Plantations of young birch trees have been destroyed by their gnawing of the bark. The Field Vole is very gregarious, they multiply with extreme rapidity, the young are born from

April onwards, four to eight in number, in nests built of fine grass or hay and moss; the nest is found in meadows, lanes, or edges of fields in any position from the surface under a sheltering tuft of grass to twenty-four inches below the surface. The female may produce four to six litters during the year. The Field Vole or Short-tailed Field Mouse is common in this district, and is on the increase in consequence of the destruction of owls and kestrels. Few people realise the harm done by the destruction of these birds, but museum workers and taxidermists know that a great number of owls and kestrels are killed by thoughtless and foolish persons.

The ORKNEY VOLE.—While the Field Vole of the Hebrides is not specifically distinct from the one inhabiting the mainland, the Orkneys have two species of their own, the Orkney Vole (*Microtus orcadensis*), of which five adult and five young specimens are shown in the case near the end of the group, and the Sanday Island Vole (*Microtus sandayensis*) (not shown in the case). The Orkney Vole is larger than the mainland species.

The BANK VOLE, or Red Field Mouse (the two specimens on the edge of the bank in the group), is about the size of the Short-tailed Field Vole, but the colour of the back is chestnut, the flanks grey and the under parts nearly white. The tail is longer and there is an important difference in the cheek teeth, which develop roots in the adult, whereas those of the Field Vole do not. On this account the Bank Vole has been placed in a separate genus. It is common in this local area, although seldom seen on account of its nocturnal habits, but a nipper trap baited with bread and placed in a run on any ivy-covered bank will reveal its presence. In general habits the Bank Vole resembles the Field Vole, but it prefers hedge banks and other sheltered positions. It is equally destructive and does much damage in gardens. •

The WATER VOLE, or Water Rat, is the largest of the British Voles, and the least harmful. It feeds almost entirely on water plants and roots. It is found in suitable situations in large numbers throughout England and the greater part of Scotland, and lives in burrows on the banks of rivers and streams. It is the least prolific member of its tribe, producing one single litter of five or six young each year. The Water Vole is abundant in this local area, and black varieties of the species have been frequently seen. A colony of fifteen was collected by a member of the Museum Staff at Leasowe a few years ago. The black variety has been confused frequently with the old English black rat, but this rat belongs

to a different group altogether. A specimen of the black variety of the Water Vole, or Water Rat, can be seen in the Introductory Room on the Upper Gallery in the case of Albino and Melanic varieties of birds and mammals.

CASE 86.

THE COMMON SQUIRREL (*Sciurus vulgaris*).

THE DORMOUSE (*Muscardinus arvellanarius*).

THE HARVEST MOUSE (*Mus minutus*).

THE WOOD MOUSE (*Mus sylvaticus*).

THE RABBIT (*Oryctolagus cuniculus*).

The COMMON SQUIRREL has an extensive range across Europe and Asia. Throughout the whole of England, in suitable localities it appears to be pretty generally distributed, also in Ireland, where it has been introduced by man. It is plentiful in Cheshire, common in wooded districts of North Wales, but rarer in the Lake District. It is rare in the woods around Liverpool. The Squirrel is arboreal in its habits. Its food consists of nuts of various kinds, fungi, and it will also eat the eggs and young of birds. It does not hibernate, but lays up a store of provisions for winter use. The Squirrel differs considerably in general appearance at different seasons of the year, as can be seen by the specimens in the case. The short reddish fur is the summer coat, and the long greyish fur with tufts to the ears is the winter coat. The winter coat makes its appearance about November, and the summer coat in May. The "drey" or nest is placed in a fork of a tree and has a roof, as seen in the specimen exhibited in Case 86A. In the spring three or four young are born; duplicate nests are said to be built for the purpose of removing the young from one to the other at any sign of danger. The squirrel makes an interesting pet if taken young.

The DORMOUSE resembles a miniature squirrel, both in form and habits, sitting up on its haunches and grasping its food with its paws in true squirrel-like fashion. Although it resembles the squirrel in its habits, it is structurally allied to the mice—it is a tree mouse. The Dormouse builds its nest in holes in trees, in hedgerows, and in thick grass; a specimen nest in a gorse bush is shown in Case No. 86A; sometimes a bird's nest is adapted by roofing it over. The young are born about May or June onwards, four or five in number. The nests are built of grass and leaves. The Dormouse hibernates from October continuously to April. The food consists of fruit, nuts, corn and insects. The Dormouse

makes a nice pet and readily produces young in confinement. It has lived three years in captivity, but from one to two years is the usual length of its life under such conditions. The length of life in its natural state is unknown. The Dormouse appears to spread over the southern and central districts of England, although much more abundant in some localities than others. In the North of England it is generally very thinly distributed. In Wales it is generally distributed, common in the east, rare in the west (Forrest, "Fauna of North Wales"). In Cheshire it is rare—has only been observed occasionally in recent years (Coward, "Fauna of Cheshire").

The HARVEST MOUSE is the smallest British mouse. It is distributed over the greater part of Europe, and is an inhabitant of most districts in England, although much more abundant in some than in others. In the Lake District it appears to have been only observed on two occasions. Very rare in Cheshire, it has not been noticed within recent years (Coward, "Fauna of Cheshire"). In North Wales it is reported in various scattered localities, but no certain record (Forrest, "Fauna of North Wales"). Unknown in Ireland. The Harvest, or Corn Mouse, lives in the cornfields, builds a nest supported between three or four cornstalks after the fashion of the Reed Warbler. The material used is dry coarse grass. The young vary from five to nine in number, and like all the mice and rats are born blind, naked and helpless, but grow rapidly and soon reach maturity. The Harvest Mouse weighs about one-fifth of an ounce—next to the Lesser Shrew it is the smallest British mammal.

The WOOD MOUSE; or Long-tailed Field Mouse, is larger than the House Mouse, has a longer tail, and is reddish in colour with white underparts. It is found all over the British Islands. It inhabits hedgerows, cornfields and gardens. Its food includes corn of all kinds, bulbs, nuts, acorns, seeds, insects, and grubs. This mouse is a serious pest to farmers and gardeners. It produce several litters of young during the summer, and in winter does not hibernate, but continues its ravages all the year round. The Wood Mouse hoards up food for winter use. The natural enemies of this destructive pest are the kestrel, owl, stoat, and weasel.

The RABBIT, or Coney. Whatever may have been its origin, it is now the most vigorous, prolific and abundant mammal in these Islands. The Rabbit is a defenceless creature, surrounded by a legion of enemies, including Man, who kills for sport, for food and fur. The fur is used chiefly for felting hats and is also dyed, clipped and sold as an imitation (Coney Seal) of the pelts of other more valuable animals, such as the fur Seal. Although it

thrives best on dry rich pastures, the Rabbit may be expected wherever a blade of grass can grow; and from Cornwall to Caithness it holds its own in face of the most relentless persecution, not only by Man, but many animals. It is found in cultivated fields, sheltered woodlands and on the barren wind-swept sand dunes. The group in the case represents a family in a locality resembling the last-named. When the doe is about to give birth to her young she leaves the general burrow and digs a short one, known as a "stop" or "stab," a few feet long, at the end of which she makes a warm nest of grass or moss, lined with fur from her own belly. This burrow is often placed some distance from the warren. It has only one entrance, and this the mother covers with earth when she leaves it. The young are from three to six or eight in number, and several litters are produced yearly.

CASE 87.

THE COMMON HARE (*Lepus europæus*).

THE MOUNTAIN HARE (*Lepus timidus*).

THE BLACK RAT (*Rattus r. rattus*).

THE ALEXANDRINE RAT (*Rattus r. alexandrinus*).

THE TREE RAT (*Rattus r. frugivorus*).

THE COMMON BROWN RAT (*Rattus norvegicus*).

The COMMON HARE is found throughout England and Wales and the Lowlands of Scotland, but is unknown in Ireland. The Hare feeds on vegetable substances, such as grass, clover, turnips, and the bark of young trees. It advances by leaps, and as its hind legs are much longer than the front ones it runs with more ease up hill than down. During the day it crouches in its "form," which is a secluded spot in the cornfield or among grass or ferns. Its hearing is extremely acute. The eyes, being placed directly on the sides of the head, take a wide range. The Hare has no burrow to which it may retreat, but trusts to vigilance and extraordinary speed to enable it to elude its numerous enemies. Young Hares are called leverets; they are born with the eyes open, covered with hair, and capable of running. There are generally two born to each litter, and they are born in the open, without the shelter of a burrow.

The MOUNTAIN HARE (see Pl. 5) occurs both in Scotland and Ireland. It is inferior in size to the Brown or Common Hare, with a relatively smaller head, shorter ears, hind legs and tail. This species differs further in having the upper parts uniform buff, sprinkled



SEASONAL CHANGE IN BRITISH ANIMALS.

with black, whereas in the Common Hare the upper surface presents the appearance of being coarsely flecked with black, portions of the individual hairs extending higher up. The Irish Hare (*Lepus hibernicus*) is larger and redder than the Scotch, and generally does not exhibit any appreciable difference in colour. Scotch Mountain Hares, on the other hand, become greyer at the approach of winter, the bleaching process going on until the whole coat except the black tips to the ears becomes white. (See Pl. 5 and the Case illustrating seasonal dimorphism, or the change of appearance of animals according to season, on the Upper Gallery.)

BRITISH RATS.—Four different kinds of rats inhabit this country, and are here shown in the group, viz., the Black Rat, the Alexandrine Rat, the Tree Rat, and the Common Brown Rat. None of them are original inhabitants of this country, but have at some time been brought here in ships. The first arrived during the 15th century. It is known as the old English Black Rat. It differs from the Common Brown Rat chiefly by its smaller size, the average length being, head and body, 7 inches, tail 9 inches, and the weight 7 ounces. Its ears are thinner and larger, the head more pointed and the tail longer than the Common Brown Rat. There are two other rats closely allied to this species—one a brown rat with slatey under parts, the Alexandrine Rat from Europe, Egypt and Palestine, and the other the Tree Rat, a reddish brown rat with white or cream under parts, from India, Ceylon and Burmah. These rats are found chiefly on ships and in seaport towns near the docks, in houses and warehouses. The black rat had a much wider distribution in this country before the arrival of the big brown rat. The average size of this rat is, head and body 9 inches, tail 7 inches, and weight 15 ounces, but it is sometimes found weighing over 20 ounces. It is more carnivorous in its habits than the *rattus* group and shows less desire for green vegetable food. In Ireland a black variety of *Rattus norvegicus* is found, and is called the Irish Rat (*Rattus hibernicus*). It has frequently a white chest spot and white fore-feet.

The COMMON BROWN RAT is found in barns, warehouses and sewers; it is also a field rat, and is sometimes called a water rat because of its fondness for drains, ditches and ponds. It settled in this country some time after 1750, and it destroys the black rat whenever they meet. The tame rat is an albino variety of the common brown rat.

CASE 88.ROE DEER (*Capreolus caprea*).

This case contains representatives of a tribe of Ruminants, which differs from the oxen tribe in that the appendages of the head (which when present are almost without exception restricted to the male) take the form of antlers, usually more or less branched, and invariably shed every year. In the Roe Deer the antlers are small, simple and rounded, less than twice the length of the head, usually with only three tines each, of which the front one springs from the anterior surface of the upper half of the antler and has an upward direction. They are comparatively small animals, and vary somewhat in colour according to the season. The group consists of four specimens, male and female and fawn with a male showing the antlers in velvet. At one time the Roe Deer was generally distributed over Great Britain, but now it is mainly restricted to Scotland. It is a forest-loving species and non-gregarious, usually found in small parties only, of from two to four, the sexes remaining together throughout the year. It feeds chiefly in the morning and evening. It can show great speed when pursued, and can with ease leap a wall 6 feet high. The doe usually produces two fawns at a birth. They are born in May or June, and remain with their parents till the winter, by whom they are most zealously protected from danger. The first antlers of the bucks are in the form of simple spikes; those of the second winter are forked; while in the third season the three tines of the adult are developed. The flesh of the Roe Deer is very dark coloured and somewhat dry.

CASE 89.RED DEER (*Cervus elaphus*).

This case contains specimens of the Red Deer, the largest of the British Deer. The antlers rise somewhat slantingly and divergently from their bases on the top of the skull, above and a little behind the orbits of the eyes. Just above the "coronet" (the burr or folding of bone where the antler joins the pedicle on the skull) arises the brow tine. Above and close to the brow tine is the bez or second tine, followed at a little longer interval by the trey or third tine. In well-developed antlers the beam or portion above the trey broadens and increases greatly in girth and then divides into a variable number of prongs, in the centre of which is the "cup," sometimes actually a hollow. It is in the development of this cup that the Red Deer differ from all other deer. The Red Deer is a member of a group comprising several



FALLOW DEER.

closely allied species or varieties, spread over Northern Europe, Asia and America, and is also represented in Northern Africa. When Great Britain was covered with almost continuous forest, the Red Deer ranged throughout the whole country. To-day, Red Deer survive in a wild state in the Scottish Highlands, the Island of Mull, the Hebrides, Devonshire and Somersetshire, while in a state of semi-domestication they are kept in many parks. In some of the wilder parts of Ireland wild Red Deer survive, and in earlier times they were numerous there. Antlers from the river and lake deposits of England and Ireland indicate larger stags than any wild British Red Deer now living. The male is called a stag and the female a hind. The stags generally shed their antlers in February or March and begin to grow the new ones in April, becoming fully developed by August. During growth the antlers, as in other deer, are covered with a velvet-like skin, which serves to protect the underlying blood-vessels (see specimen of Roe Deer in Case 88). When the growth is completed, the velvet gradually peels off, its removal being hastened by the stag rubbing the loosened skin against trees. By September the last traces of the velvet have disappeared and the stags proceed in search of the hinds, at which season they not only fight among themselves but, when in packs, are dangerous to approach. For the greater portion of the year the sexes live apart in herds, the stags on the higher ground and the hinds on the lower. The fawns are born in May or June; generally one at a birth. Their feeding time is chiefly morning and evening, the middle of the day being spent in repose and cud-chewing among the heather. Both in sight and hearing the Red Deer is one of the most acute of animals; it can also swim well. The flesh of the Red Deer is less highly esteemed than the Fallow Deer.

CASE 90.

THE FALLOW DEER (*Cervus dama*). (Pl. 6.)

The Fallow Deer belongs to a totally different group of the genus to that containing the Red Deer, and is readily distinguished from it by the form of the antlers (as will be seen on comparison with the specimens in Case 89). There is a greater variation in the colour of the Fallow Deer, it is also smaller than the Red Deer. Like the Rabbit and the two species of Rats, it does not belong to the British fauna, only so far as it has been introduced from the Mediterranean countries. The dark variety was long considered to have been imported from Norway by King James I., but Mr. Harting has shown that it existed long before his time.

The period of changing its coat varies in most parks according to the nature of the season. The brown variety loses its spots in winter. The antlers are shed in May, and the new ones begin to sprout in about ten days afterwards. The fawns are born early in June, generally one but sometimes two at a birth. Their food, like the rest of the deer family, is varied; the Fallow Deer, however, shows a special partiality for chestnuts.

The case contains an adult male (or buck) with the summer coat of yellowish fawn above with rows of large white spots on the back and sides and white underparts; a young male (or buck) with the darker winter coat; and a female of the almost black breed, without spots at all seasons. The antlers of the bucks increase in size and complexity up to the sixth year.

CASE 91.

COMMON PORPOISE (*Phocaena communis*).

COMMON DOLPHIN (*Delphinus delphis*).

The Porpoise is the smallest and most common of the Cetaceans (Aquatic Mammals) found in the seas around the British Isles. It is sociable and gregarious in its habits, being usually seen in small herds. It feeds on fishes, such as mackerel, pilchards and herrings, of which it devours large quantities; and in following the shoals of fish the Porpoise is often caught by fishermen in the nets. The very young specimen in the case, 18 inches in length, was brought to the Museum on March 22nd, 1888, by Mr. John Hanmer, who brought it up in a shrimp-net after being submerged for two hours, but it lived only about ten minutes after. The same fisherman reported that he had observed, within ten yards of his boat, a shoal of porpoises which he estimated to extend fully three miles. The Porpoise produces a single young at a birth. The length of an adult is from four to five feet. The Common Porpoise ranges over the greater part of the North Atlantic, but is rarely found in the Mediterranean.

The Dolphin, differing from the porpoise by the beak-like snout, is also larger, the length of the adult being five to eight feet. It is found in the Atlantic, but is more common in the Mediterranean. The skeleton in the case is that of a specimen found on the shore at New Brighton on the 12th February, 1879, minus its tail, evidently cut off by collision with the screw of a steamship.

No. 92.THE PILOT WHALE (*Globicephalus melas*).

This specimen was stranded with 40 others in the River Humber on June 9th, 1862. The Pilot Whale has a world-wide distribution. It is a frequent visitor to the Faroe Islands, as well as to the Orkneys, and more rarely to the Hebrides. It is easily distinguished by its nearly uniform black colour, rounded head, low triangular back-fin, and the great length and narrowness of the flippers. The Pilot grows to about 20 feet in length, and is a sociable and inoffensive animal, feeding chiefly on cuttle-fishes and squids. When a "school" is attacked, all the members crowd together, and can thus be easily driven ashore by boats, so that in the Faroes hundreds are frequently captured at a time in this manner.

No. 93.

SKELETON OF THE PILOT WHALE.

No. 94.THE WHITE-BEAKED DOLPHIN (*Lagenorhynchus albirostris*).

The White-beaked Dolphin takes its name from its white lips. The mounted skin and the skeleton are from the same beast. Its capture is thus recorded in the "Proceedings of the Liverpool Biological Society," Vol. III., by the late T. J. Moore, the then Curator of this Museum:—

"On the 29th of December, 1862, at daybreak, a fresh wind blowing from W.S.W., and the tide being about quarter ebb, a cetacean was discovered stranded at Little Hilbre, one of two closely contiguous islands at the mouth of the River Dee. It was observed by Mr. Barnett, Inspector of Buoys, who resided on the larger island, and who had noticed others off the shore a few days previously. I had urged Mr. Barnett, on the occurrence of such creatures, to endeavour to secure examples for the Liverpool Museums, and he was, in consequence, kind enough to immediately proceed to the mainland for a suitable conveyance, into which it was carefully removed and brought to Birkenhead Ferry and thence across the Mersey to the Museum. The creature was still living, spasmodically breathing at irregular intervals; the body was warm to the hand, and tear-like moisture oozed from its eyes as it lay quiescent in the cart. It died at the moment when a tank was ready to receive it. Its total length from snout to cleft of tail was nine feet."

This Dolphin is a rare species inhabiting the North Atlantic, and was first recorded in Britain in 1848 by Brightwell. This specimen described by Mr. Moore was evidently the second recorded as British. The next recorded occurrence was at Cromer in 1866. Of its habits nothing definite is known.

No. 95.

SKELETON OF THE WHITE-BEAKED DOLPHIN.

No. 96.

SKELETON OF THE BOTTLE-NOSED DOLPHIN

(*Tursiops tursio*).

Mr. T. J. Moore, in his report of the capture of this Dolphin ("Proceedings of the Liverpool Biological Society," Vol. III.), says:—

"Into the northernmost of the two bays formed by the railway embankment connecting Holyhead with Anglesey, a small shoal of cetaceans found their way on April 14th, 1866, and proceeded so far that they got stranded near Valley, on the Anglesey shore. The workmen of Valley foundry waded into the water and succeeded in killing and capturing fifteen or sixteen of the animals. I arrived on the spot ten days after, just in time to make a few notes before the remains were all dispersed. All the heads and most of the bodies had already been purchased for the Cambridge and London Museums, but I managed to secure for the Liverpool Museum one of the decapitated bodies and the head to match. The largest of the batch measured 11 feet 8 inches."

On the 20th of August, 1918, a member of the staff of the Museum examined a male of this species cast ashore at Leasowe. It measured 12 feet in length and 80 inches in girth, and the general colour of the upper parts was black, gradually shading into white beneath. The Bottle-nosed Dolphin is a rare visitor to the British Coast. Its distribution ranges from the Mediterranean to the North Sea.

No. 97.

THE HUMP-BACKED WHALE (*Megaptera boöps*).

On June 17th, 1863, this whale was stranded on a sandbank in the Mersey opposite Speke. It was examined in the flesh and described by Mr. T. J. Moore, the late Curator of this Museum, in his Report on the Seals and Whales of the District in the

“Proceedings of the Liverpool Biological Society,” Vol. III. The dimensions taken at the time were: “Total length in a straight line from snout to cleft of tail, 31ft. 4in.; length of gape, about 8ft.; from snout to eye, 8ft.; length of eye, 3in.; from the snout to the commencement of the pectoral fin, 10ft.; extreme width of tail at the tips, 11ft.; from the snout to the commencement of the dorsal fin or hump, 18ft.; length of the dorsal fin, 3ft. 3in.; from snout to cloaca, 21ft. Quantities of shrimps were found in the stomach.” The genus *Megaptera* is distinguished from the genus *Balæna*, or whalebone whales, by the presence of a dorsal fin or hump. The belly is plaited or deeply grooved, and the plates of baleen (whalebone) are broad and short, which characters agree with this specimen. The longest plate of the baleen measures about 2 feet long by $5\frac{1}{2}$ inches at the base, and the plates are close together, counting 38 to a foot. The creature was quite black, except the belly, which was mottled and streaked with white, and the pectoral fins were milk-white, except a black blotch here and there. The usual length attained by this species ranges between 45 and 50 feet, the female being superior in size to the male. Humpbacks are widely distributed over the Atlantic and Pacific Oceans, although they rarely visit the British Seas. They are remarkable for their sportive habits, frequently throwing themselves out of the water.

No. 98.

THE MEGACEROS OR GIGANTIC DEER (*Cervus giganteus*).

(Also incorrectly known as the Irish Elk.)

This magnificent creature, now extinct, the males of which stood at least six feet high at the shoulder, is little else than a gigantic development of the fallow deer type, greatly as it differs in appearance from the fallow deer of our parks. Although there were European types of this deer, the grandest development took place in Britain and Ireland. *Cervus giganteus typicus*, the typical *Megaceros* or Gigantic Irish Deer, was probably developed first in England, from whence it spread to the N.W. of Scotland. From here it passed over to Ireland, where, no doubt, partly owing to the absence of great Carnivores, such as the Lion and Sabre-tooth, it had the whole island or the Hibernian Peninsula to itself, and reached the acme of magnificent development.

This specimen measures 10 feet from tip to tip of antlers. Mr. Rowland Ward's book on big game measurements gives 11 feet 6 inches and 11 feet 3 inches as the greatest recorded measurements

of the horns of the Gigantic Irish Deer from tip to tip. The females were hornless. The vertebræ of the neck, in the male especially, were greatly enlarged and strengthened to bear the burden of these massive antlers.

The *Megaceros* in England was certainly co-existent with the earliest types of man that arrived in Britain, but it disappeared soon after their arrival, no doubt in consequence of the attacks made upon it for food purposes, and also because at that time there existed in Britain enormous lions, and one, if not two, forms of sabre-toothed felines. In Scotland its remains have only been found in Ayr and that portion of Scotland which approaches nearest to Ireland, and where the last land bridge existed which connected Ireland with Great Britain. The greater number of remains are found in the shell-marl underlying the peat in Ireland. Remains are met with in most of the cavern deposits, brick-earths, and river gravels of England.

CASE 99.

EXTINCT BRITISH MAMMALS.

ANTLERS OF RED DEER.

Mr. Millais is of opinion, in his classic work on "British Deer and their Horns," that there has been a gradual degeneration in antlers amongst British Deer. It certainly seems like it when the present-day antlers are compared with the skull and antlers of the Red Deer found on the Leasowe shore (submerged forest) exhibited in this case.

SKULL OF BRITISH BEAVER (*Castor fiber*).

The distribution of the European Beaver at the present day is limited to a few limited areas on the Rhine (where they are nearly extinct), on the Rhone (but not elsewhere in France), here and there in the Elbe Basin, especially in Bohemia and on the Lower Danube. The Beaver still lingers on some of the rivers of Western and Arctic Russia, in Poland, and on a few of the Siberian rivers. In the British Islands the Beaver existed well into the historic period. It was finally extinguished (in Scotland) during the sixteenth century. The specimen of a Skull in the case was found in the Fens near Soham, Norfolk. Remains have been found in all parts of England.

SKULL OF THE BROWN BEAR (*Ursus arctos*).

Bears were also at one time common in this country, as is seen by the skull of the Brown or European Bear exhibited in this Case. It was found in the North Dock excavations at Bootle. The remains of the Cave Bear in absolutely extraordinary quantities are found also in all the fossil holding caves of England, France, Germany, Belgium, Poland, Italy, Algeria, the Balkan Peninsula, and South Russia, which would seem to show that this enormous bear used caverns as its home and lair, dragging its prey to be devoured in these retreats where, its hunger satisfied, it abandoned the remains to spotted hyaenas of great size. Remains of a bear found in Ireland seem to resemble more nearly the grizzly bear of North America than the ordinary brown bear of Europe. Traces of the grizzly bear type are also found in England.

SKULLS OF FOSSIL OXEN.

Bos taurus (primigenius) and *Bos longifrons*.

The skull of the *Bos taurus* here shown was found at the bottom of Wallasey Old Pool and the single horn at Leasowe. This ox is extinct as a wild species, but it inhabited Great Britain (not Ireland) during the Pleistocene and Pre-historic Periods, lingering perhaps down to the commencement of the historical age, when it merged into the existing breeds of feral cattle. With it may be classed *Bos taurus longifrons* (skull here shown was also found in the Wallasey Old Pool). This may have been an early domestic race of the aurochs. *Bos taurus longifrons* is the ancestor of several breeds of cattle, and its remains are found in Great Britain and Ireland (Sir Harry Johnston, "British Mammals").

CAST OF SKULL OF A FOSSIL RHINOCEROS

(*Rhinoceros* (or *Diceros*) *leptorhinus*).

The original is in the British Museum and was found in brick earth at Ilford, Essex. The Slender-nosed Rhinoceros, now extinct, inhabited central and southern England and Wales in the Pleistocene Period. Bones of it are also exhibited in the same case.

THE RIGHT LOWER JAW OF THE MAMMOTH

(*Elephas primigenius*).

The Mammoth, now extinct, was found over all England and Wales, in the southern and lowland regions of Scotland, and all over Ireland. It entered Great Britain during the Pleistocene Period and lingered in Ireland almost to the verge of historical times.

HEAD OF WOLF (*Canis lupus*).

The head of the wolf is to show the type that was formerly distributed all over Great Britain and Ireland, but is now extinct. Mr. Harting ("Extinct British Mammals") brings much evidence to bear to show that wolves were not exterminated in England till the close of the fifteenth century, during the reign of Henry VII. The last wolf was probably killed in Scotland about 1743, and in Ireland (Kerry) as late as 1766.

WILD BOAR'S HEAD (*Sus scrofa*).

The Wild Boar's Head represents the type that inhabited Great Britain and Ireland through Pleistocene and Pre-historic Periods, and only became finally extinct in Britain during the seventeenth century.

CASE 100.

DOMESTICATED DOGS.

This case contains a few examples or types of the varieties of Domesticated Dogs. Although many different views have been, and still are, entertained with regard to the mutual relationship and origin of the various breeds of domesticated dogs, most naturalists are agreed that in the first instance all, or at least most of them, were derived from wolves or jackals, or from both together. In outward appearance the most wolf-like of all the domesticated breeds is the Eskimo Dog of Arctic America, and it crosses readily with the wolf. The nearest to this type in the case is the Chinese Dog, or Chow-chow, a type resembling the larger Pomeranians. It is evident from the structure of their skulls that their origin is not far from the fox, but in favour of the wolf or jackal, and that they are not from the Dholes or Wild Dogs of Asia is evident from the latter having one molar tooth less in the lower jaw. Domesticated dogs readily cross with the wolf, but rarely with the fox. The "Dingo," or Wild Dog, of Australia is considered to have originated from some of the domesticated dogs of Asia.

There are about 185 varieties of domesticated dogs, divided up by Mr. R. Lydekker ("Harmsworth Natural History") into six groups:—1st Division includes the Eskimo, Chow-Chow, Pomeranian, Sheep-dogs and Collies. 2nd Division: All the Greyhound types. 3rd Division: The Spaniels, Newfoundland and Retriever. 4th Division: The Bloodhound, Foxhound, Beagle, Otterhound and Dachshunds. 5th Division: The Mastiff, Bulldog, Pug and St. Bernard. 6th Division: The Terrier Group—Fox Terrier, Irish, Scotch and Yorkshire Terriers, and the Poodles.

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Days and Hours of Admission.



WEEK DAYS:—

January to March	.	from 10 a.m. to 5 p.m.
April to September	-	„ 10 a.m. „ 6 p.m.
October to December	-	„ 10 a.m. „ 5 p.m.

SUNDAYS - - from 2 p.m. to 5 p.m.

The Museums are closed on Good Friday and Christmas Day.

Tuesdays are reserved for Students and special Visitors on application.

By Order,

JOSEPH A. CLUBB, D.Sc.,

Curator of Museums.